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Mr. A. Schwencer, Chief
Licensing Branch No. 2
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docket No.: 50-352
50-353

FOL No.: NPF-27

APR 12 1985

SUBJECT: Limerick Generating Station
Control Room Design Review

REFERENCES: 1) Letter, D. G. Eisenhower to E. G. Bauer, Jr.
dated October 26, 1984
2) Letter, J. S. Kemper to A. Schwencer,
dated April 4, 1985
3) Teleconference between Leo Beltracchi of the NRC and
T. J. Cabrey and D. F. Ciarlone of PECO dated April 9, 1985
on the same subject.
4) Letter, J. S. Kemper to A. Schwencer,
dated November 2, 1984

FILE: GOVT 1-1 (NRC)

The purpose of this letter is to provide the information required to close Limerick License Condition 2.C.8(a) part 2, as contained in the reference 1 letter, and to complete the information submitted in our reference 2 letter.

LIMERICK LICENSE CONDITIONS 2.C.(8) (a) DETAILED CONTROL ROOM DESIGN REVIEW

Part 2: Control Room Survey

The licensee shall satisfactorily complete the control room survey, evaluate all human engineering discrepancies defined by the survey, including those defined by the staff's audit team during the In-Progress Audit, and correct human engineering discrepancies which have been categorized as Priority 1 (High Safety Significance) prior to operation at a power level greater than five percent of rated power. The results from the effort are to be documented in an addendum to the Final Report and submitted for staff review.

Response:

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PDR ADOCK 05000352
F PDR

The control room survey is complete with the exception of the review of the Safety Parameter Display System (SPDS) which is not operational at this time. The delay in the completion of this part of the survey is acceptable for the following reasons:

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- 1) The SPDS itself will not be operable until its validation and testing program is complete.
- 2) General Electric, the system designer of the SPDS, has hired a human factors consultant to assist in the man-machine interface development. The NRC has performed a Design Verification Audit of the General Electric design effort and reported the results of their review in Supplement No. 3 of the Limerick SER. (Section 18.2.5)
- 3) During the Limerick CRDR validation effort a hardcopy of the SPDS displays were used to verify their coordination with the CRDR.

Based on the above, there is a very low probability that the completion of the SPDS survey will identify any priority 1 or priority 2 human engineering discrepancies (HEDs). A human factors survey of the SPDS will be performed prior to the turnover of the SPDS to Limerick for use by the control room operators. This survey will use the applicable portions of the BWR Owners' Group Control Room Survey Checklist. The portions of the survey used will include a review of the SPDS keyboard and CRT displays, (Computer console sections-D1 & SD1, Computer capability sections-D2 & SD2, and Computer CRT sections-D3 & SD3 of the BWR Owners' Group Checklist).

All the other items that are part of this License Condition (i.e., all HEDs assessed for safety impact and/or corrected prior to exceeding 5% power) have been completed. All HEDs identified have been corrected or assessed with no new priority 1 HEDs. This includes the 8 NRC Audit Team HEDs which were discussed in the reference 2 letter and is further discussed below in the response to item 1 of the request for additional information.

REQUEST FOR ADDITION INFORMATION

Item #1 - Control Room Survey

The licensee shall assess and report on the results of the assessment of all of the HEDs defined by the NRC Audit Team during the In-Progress Audit.

Response:

The CRDR review team has assessed the 8 open NRC Audit Team HEDs (see reference 2).

This assessment identified no priority 1 (high safety significance) HEDs and only one priority 2 (low safety significance) HED. This priority 2 HED (NP1-01) was identified during construction and was corrected prior to system turnover. The remaining seven HEDs were all assessed as priority 4 (no safety significance or reliability concern).

The HED assessment sheets for these 8 HEDs are enclosed in attachment #1.

Item #3 - Assessment of HED's, Re-assessment of HED SPV-07

The licensee shall report results on the reassessment of HED SPV-07.

Response:

The correction of HED SPV-07 (T-200 Series Procedures) has been completed. All T-200 series procedures have been revised and approved by the Plant Operations Review Committee (PORC) to properly reflect the enhanced hierarchical labeled control room.

Item #5: Coordination of NUREG-0737 Supplement 1 items.

During the reference 3 teleconference the NRC requested additional information on the coordination of the NUREG-0737 Supplement 1 items. These include the following:

1. Emergency Operating Procedures
2. Accident Monitoring Instrumentation - R.G.-1.97
3. Safety Parameter Display System (SPDS)
4. Emergency Response Facilities
5. Detailed Control Room Design Review

Response:

During the final validation effort the coordination of the above systems/facilities was completed. The actual validation was a walkthrough/talkthrough of the Emergency Operating Procedures using hardcopy displays for SPDS on a full-scale enhanced mockup of the Limerick unit #1 control room. This walkthrough/talkthrough identified areas where a control room operator would require communications with the Emergency Response Facilities and the operator described what control room communications equipment would be utilized to complete this task. In addition HED S11-06, (Reg. Guide 1.97 instrument enhancements) was implemented on the full scale mockup prior to this walkthrough/talkthrough. The operators could quickly identify these environmentally qualified instruments during these walkthrough/talkthroughs.

This final validation was an effective method of coordinating the integration of the NUREG-0737 Supplement 1 items. Any discrepancies identified during these walkthrough/talkthroughs were classified as a HED and assessed in the Final Report Supplement No. 1 (reference 4, page 8 and Appendix A).

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Should you require any further information, please do not hesitate to call.

Sincerely,

Jw Gallagher
for
JS Kanga

TJC:sjf
SF41085M1040
Attachment (1)
Copy to: (See attached service list)

cc. Judge Helen F. Hoyt	(w/enclosure)
Judge Jerry Harbour	(w/enclosure)
Judge Richard F. Cole	(w/enclosure)
Troy B. Conner, Jr., Esq.	(w/enclosure)
Ann P. Hodgdon, Esq.	(w/enclosure)
Mr. Frank R. Romano	(w/enclosure)
Mr. Robert L. Anthony	(w/enclosure)
Ms. Phyllis Zitzer	(w/enclosure)
Charles W. Elliot, Esq.	(w/enclosure)
Zori G. Ferkin, Esq.	(w/enclosure)
Mr. Thomas Gerusky	(w/enclosure)
Director, Penna. Emergency Management Agency	(w/enclosure)
Angus R. Love, Esq.	(w/enclosure)
David Wersan, Esq.	(w/enclosure)
Robert J. Sugarman, Esq.	(w/enclosure)
Martha W. Bush, Esq.	(w/enclosure)
Spence W. Perry, Esq.	(w/enclosure)
Jay M. Gutierrez, Esq.	(w/enclosure)
Atomic Safety & Licensing Appeal Board	(w/enclosure)
Atomic Safety & Licensing Board Panel	(w/enclosure)
Docket & Service Section	(w/enclosure)
Mr. James Wiggins	(w/enclosure)
Mr. Timothy R. S. Campbell	(w/enclosure)

ATTACHMENT #1

HED ASSESSMENTS OF NRC AUDIT TEAM HED'S NOT PREVIOUSLY ASSESSED

HED ASSESSMENT

HED No. NP1-01

EP = N/A

TITLE: Procedure Storage

COMMENT: No storage space for procedures located at Remote Shutdown panel.

Item: B110

Ref.: E1.5

Source: NRC
Audit

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

DESCRIPTION:

There is no apparent storage or laydown space at the Remote Shutdown Panel for procedures.

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

Work Station shelves have been installed which provide both storage and laydown space for procedures located at this panel. No longer a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached

HED ASSESSMENT

HED No. NA2-01

EP = N/A

TITLE: Audible Alarm

COMMENT: Alarm bells not distinguished from each other.

Item: B111

Ref.: F2.1

Source: NRC
Audit

IDENTIFICATION: Panel: N/A
Component Name: Annunciator Alarms
ID or Number: Audible tones

DESCRIPTION:

Audible annunciator alarms do not distinguish alarm location. Different annunciators use the same bell.

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

The audible bell is used to alert the operator of an alarm. The bell must be silenced at each respective station. The flashing annunciator window provides alarm location. Also, electrical alarms use a different tone.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached

HED ASSESSMENT

HED No. NC5-01

EP = N/A

TITLE: Lettering Contrast

COMMENT: Lettering is not visually distinctive.

Item: B202

Ref.: A5.8

Source: NRC
Audit

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

DESCRIPTION:

The contrast of engraved printing on the keyboard keys is not very good (white on grey). Dirt tends to collect in the engraving and obscure the letters.

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

The keyboard is used during normal operations. During an emergency, the keyboard is used as a backup. The primary source of information during an emergency is the control room instrumentation and ERFDS. Note the ERFDS keyboard provides adequate contrast and minimal glare.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached

HED ASSESSMENT

HED No. NC4-03

EP = N/A

TITLE: Printer Paper Accessibility

COMMENT: Paper in printer is not easily accessible.

Item: 7205

Ref.: D4.7

Source: NRC
Audit

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

DESCRIPTION:

Physical access to printer copy is difficult, especially inside the bottom compartment in the front of the printer.

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

When the main printer goes down, or runs out of paper, the computer automatically switches to the backup printer. This allows sufficient time for a technician to replace the paper.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached

HED ASSESSMENT

HED No. NC4-02

EP = N/A

TITLE: Printout Redability

COMMENT: Printouts not easily read white in printer.

Item: B204

Ref.: D4.8

Source: NRC
Audit

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

DESCRIPTION:

The printer dust cover collects dust and inhibits the readability of printouts while they are in the printer.

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

Printouts are backups and are not immediately time sensitive. A page advance pushbutton and a line advance pushbutton are located on the keyboard, should the operator require information quickly. Information on the printer is available to the operator on the CRT as well.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached

HED ASSESSMENT

HED No. NC4-01

EP = N/A

TITLE: Printout Readability

COMMENT: Computer printout is difficult to read.

Item: B203

Ref.: D4.8

Source: NRC
Audit

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

DESCRIPTION:

Printouts still in the printer are difficult to read as the paper drive guide covers four or five characters on about 16 lines of the printout.

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

Printouts are backups and are not immediately time sensitive. A page advance pushbutton and a line advance pushbutton are located on the keyboard, should the operator require information quickly. Information on the printer is available to the operator on the CRT as well.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached

HED ASSESSMENT

HED No. ND3-01

EP = N/A

TITLE: Control Layout Consistency

COMMENT: Controls not organized in a consistent manner.

Item: B106

Ref.: A3.2

Source: NRC
Audit

IDENTIFICATION: Panel: 648
Component Name: RCIC Div. 1 and Div. 3
ID or Number: N/A

DESCRIPTION:

The Div. 1 and Div. 3 RCIC controls located on 648 panel are not laid out in an identical manner.

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

These are status displays which provide backup information for an annunciator alarm. The label associated with each light must be read. This then dictates the action support personnel must take to troubleshoot the problem. There is no distinction necessary between DIV 1 and DIV 3. With a status light illuminated the control room operators shift to another injection mode. This is not a discrepancy.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached

HED ASSESSMENT

HED No. ND3-02

EP = N/A

TITLE: Control Layout Consistency

COMMENT: Components are not in expected order.

Item: B105

Ref.: A3.2

Source: NRC
Audit

IDENTIFICATION: Panel: 648
Component Name: RCIC Div. 1 and Div. 3 Controls
ID or Number: N/A

DESCRIPTION:

The Div. 1 and Div. 3 RCIC status lights are not ordered identically. This could lead to a misinterpretation in emergency situations.

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

These are status lights and are not primary displays during emergencies. RCIC status is primarily determined using the "RCIC Out of Service" alarm. Upon identifying this alarm, operators will activate a different injection system without observing RCIC status lights. No other immediate action is required. Once a different injection system has been selected, then the status light label will be read and support personnel will be sent to investigate.

TRAINING REQUIREMENTS:

PROCEDURE REQUIREMENTS:

Approval Signature:

Date: 4/5/85

() Additional page(s) attached