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VICE-PRESIDENT
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April 4, 1985

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

SUBJECT: Limerick Generating Station, Units 1 and 2
Detailed Control Room Design Review

REFERENCE:

1) Letter, D. G. Eisenhut to E. G. Bauer, Jr. dated October 26, 1984

2) Letter, A. Schwencer to E. G. Bauer, Jr. dated March 15, 1985

3) Letter, J. S. Kemper to A. Schwencer, dated August 16, 1984

4) Letter, J. S. Kemper to A. Schwencer, dated November 2, 1984

5) Letter, J. S. Kemper to A. Schwencer, dated March 21, 1985

6) Letter, J. S. Kemper to A. Schwencer, dated June 26, 1984

FILE: GOVT 1-1 (NRC)

Dear Mr. Schwencer:

The purpose of this letter is to advise you of the current status of our efforts to satisfy the three parts of License Condition 2.C.(8)(a), as contained in the reference 1 letter, and to provide information responsive to the requests for additional information transmitted by your reference 2 letter.

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

Part 1: Task Analysis and Control Room Inventory

As previously committed in our reference 3 letter, PECo will complete a task analysis for the Limerick Generating Station and report on it to the NRC by June 30, 1985. This effort is currently in progress and on schedule.

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Part 2: Control Room Survey

Our reference 4 letter reported the partial satisfaction of this part of the License Condition and identified the completion of HED SI4-04 (testable lights on the remote shutdown panel) as the only item needed to completely satisfy it. Correction of HED SI4-04 was recently completed.

As stated in response to the first request for additional information of this letter, safety significance assessment for eight of the seventeen HED's identified by the NRC Audit Team remain to be completed. Preliminary assessment of these HED's have failed to identify any Pricrity 1 (High Safety Significance) HED's. These safety significance assessments will be completed, documented and reported by April 12, 1985. Therefore, following confirmation of these preliminary HED assessments, we consider this part of the License Condition to be completely satisfied.

Part 3: Control Room Enhancements

As we recently advised you in our reference 5 letter, this part of the License Condition has been satisfied.

REQUEST FOR ADDITIONAL INFORMATION

Item 1: Control Room Survey

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

Response:

In December 1983, an NRC Audit Team conducted an audit of the Limerick control room. In their June 1984 Report, the NRC Audit Team identified 17 Human Engineering Discrepancies (HED's). These HED's are listed in Attachments 1 and 2.

Attachment 1 provides a cross reference which lists the 9 NRC Audit Team HED's that have been previously identified and resolved by the Limerick CRDR team along with the HED numbers used to describe them in the Final and Supplement #1 CRDR Reports (references 6 and 4 respectively).

The 8 remaining NRC Audit Team HED's have been reclassified as Limerick CRDR Team HED's. Attachment 2 provides a cross reference between the two identification systems used by the NRC Audit Team and the Limerick CRDR Team. These HED's will be assessed for safety significance by April 12, 1985.

Item 2: Assessment of HED's, Resolution of HED SI4-04

The licensee shall report details on the temporary resolution of HED SI4-04 prior to exceeding five percent power.

Response:

As stated in response to License Condition 2.C.(8)(a) part 2, the permanent resolution to HED SI4-04 is complete.

Item 3: Assessment of HED's, Reassessment of SPV-07

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

Response:

Completion of this HED has been rescheduled from the first refueling outage to prior to exceeding 5 per cent of rated power. This will be done by April 12, 1985.

Item 4: Verification That Improvements Will Provide Necessary Corrections And Will Not Introduce New HED's

The staff requests the data which verifies the use of a solid red background as an enhancement to areas of the workbench and panels and also requests the data verifies that no new HED is introduced by the correction.

Response:

The CRDR team identified that a red light lit against a red background will be visible. The only time confusion might arise is with an extinguished red light where the unlit bulb could blend in with the red background. This concern has previously been addressed in the final report (reference 6) under HED I4-02. This HED identifies failed light bulb conditions. Normally at least one of the lights would be lit (red or green lit at all times, or both red and green lit with appropriate process feedback). The absence of any lighted bulb identifies a failed light bulb.

The red background was used during the final validation phase on the full scale mock-up of the control room. As documented in the Supplement #1 Report, no problems were identified with respect to red lights on a red background. In addition, the control room enhancements were completed with this red background in October of 1984 and no problems have been identified during operation since that date.

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

Sincerely,

John S. Kemper

DFC/dg/04028502

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)
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Mr. Thomas Gerusky (w/enclosure)
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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

NRC AUDIT TEAM/EXISTING CRDR TEAM HEDS (LIMERICK)

NRC Audit Team HED	Existing CRDR Team HED
1.0 CONTROL ROOM WORKSPACE	
1.2 B104 - On all vertical panels, the bottom 1/3 is not visible from the front of the benchboard.	D1-04 - Panel Obstruction. Vertical panels behind benchboards are partially obstructed.
3.0 ANNUNCIATOR WARNING SYSTEMS	
3.2 B109 - Coding of annunciator controls is inconsistent in shape and layout. The color coding of red for central reset and black for local reset is acceptable.	SD3-08 - Control Layout Consistency. Annunciator controls are not consistently laid out. SD2-04 - Annunciator Control Coding. No apparent color coding of annunciator controls.
5.0 VISUAL DISPLAYS	
5.1 B103 - The four-rod display is too dim to be read in normal room light.	No Discrepancy - Readings taken during the Supplemental Survey indicate light level to be within acceptable range.
6.0 LABELS AND LOCATION AIDS	
6.1 B107 - Containment boundary demarcation does not make clear which side is in and which is out.	D2-07 - Demarcations on Vertical Panels. There is inadequate differentiation of groupings on some vertical boards.
6.2 B108 - On Reactor and Containment Cooling and Isolation Panel 601, the mimics are confusing.	D2-13 - Mimic Flow Path Arrangement. Flow paths and arrangements are not orderly or easily recognized.
6.3 B102 - On Panel 647 there are labels marked "BOP". These are redundant displays or insufficient labels.	D5-05 - Label Nomenclature. Inconsistent use of nomenclature, acronyms, and abbreviations. D5-06 - Hierarchal Labeling. Labels are not size coded.

NRC Audit Team HED	Existing CRDR Team HED
6.4 B101 - Abbreviations are inconsistent. Several acronyms are used for one word.	D5-05 - Label Nomenclature. Inconsistent use of nomenclature, acronyms, and abbreviations.
7.0 PROCESS COMPUTERS	
7.2 B201 - There is excessive glare on the concave keys which make the engraving difficult to read, and there are many un-needed keys over and above the QWERTY board.	SC3-01 - Process Computer Keyboard Glare. Glare makes keys difficult to read. SC1-01 - Process Computer Key Arrangement. Functional keys are difficult to understand.
8.0 PANEL LAYOUT	
8.2 B112 - On Panel 668, the order of controls is reversed numerically.	SD3-12 - Order of Switches. Switches are not in the expected order (left to right).

Attachment 2

NRC AUDIT TEAM/NEW CRDR TEAM HEDS (LIMERICK)

NRC Audit Team HED	New CRDR Team HED
1.0 CONTROL ROOM WORKSPACE	
1.3 B110 - No procedures or place to store emergency shutdown procedures is provided at the Remote Shutdown Panels.	NP1-01 - Procedure Storage. No storage space for procedures is provided at the Remote Shutdown Panels. (E1.5)*
3.0 ANNUNCIATOR WARNING SYSTEMS	
3.1 B111 - The annunciator audible alarm for two different sets of annunciators uses the same bell sound. Localization is by direction of sound.	NA2-01 - Annunciator Audible Alarms. Annunciator audible alarms are not distinguishable for alarm location. Different sets of annunciators use the same bell sound. (F2.1)
7.0 PROCESS COMPUTERS	
7.3 B202 - Contrast of engraved printing on keys is not very good, using white on gray QWERTY keys. This is due partly to dirt in engraving.	NC5-01 - Process Computer Keyboard Lettering. Lettering on keyboard is not visually distinctive. (A5.8)
7.4 B203 - On the printers, the guide on the paper drive covers part of the printing of approximately 16 lines (covers 4 to 5 characters near margin of paper).	NC4-01 - Process Computer Printout Readability. Printouts are not easily readable while in printer. (D4.8)
7.5 B204 - Printouts are subject to dust cover glare from overhead lights on both front and top - especially from a sitting position.	NC4-02 - Process Computer Printout Readability. Printouts are not easily readable while in printer. (D4.8)
7.6 B205 - Physical access to printer copy is difficult inside the bottom compartment in front of the printer.	NC4-03 - Process Computer Paper Accessibility. Paper in printer is not easily accessible. (D4.7)

* BWROG CRS Item Number

NRC Audit Team HED	New CRDR Team HED
8.0 PANEL LAYOUT	
8.1 B106 - On Panel 648, RCIC Division 3 and Division 1 are not in numerical order left to right.	ND3-01 - Control Layout Consistency. Components of similar functions are not consistently ordered from left to right. (A3.2)
8.3 B105 - On Panel 648, RCIC status lights have different arrangements for Division 3 and Division 1.	ND3-02 - Control Layout Consistency. Components of similar functions are not consistently ordered from left to right. (A3.2)