Docket No.: 50-352/353

MAR 14 1985

Mr. Edward G. Bauer, Jr.
Vice President & General Counsel
Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Dear Mr. Bauer:

Subject: Request for Additional Information - Limerick

The NR staff has conducted an in-progress audit of the Detailed Control Room Design Review (DCRDR), has reviewed the DCRDR Program Plan report provided in August 1984 and has reported the results of that review in SSER-3. The staff has subsequently reviewed Supplement 1 to the DCRDR program Plan provided in November 1984 and requires additional information as noted in the enclosure to enable the resolution of issues addressed by conditions to License No. NPF-27 prior to proceeding beyond the low power level. This information should be provide by March 22, 1985 to enable the timely issuance of a supplement to the SER.

Sincerely,

A. Schwencer, Chief
Licensing Branch No. 2
Division of Licensing

Enclosure: As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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DETAILED CONTROL ROOM DESIGN REVIEW

I. CONTROL ROOM SURVEY

In the SER the staff stated that several elements in the control room survey were incomplete because control room construction was incomplete. The incomplete elements of the survey were:

- Illumination,
- Atmosphere,
- Noise,
- Verbal Communication,
- Emergency Equipment,
- Computers.

In addition, the SER also identified several HEDs which were found by the NRC audit team during our in-progress audit. Based on this data, the staff established condition 2.C(8)(a), part 2 to license NPF-27 to ensure completion of the survey and the correction of high safety significance HEDs which may result from the survey. In supplement 1 to the Summary Report, the licensee states that the Control Room Survey effort is completed and was accomplished using the Boiling Water Reactors Owners' Group (BWROG) Control Room Survey checklists (original and supplemental).

The checklists listed below were administered:

BWROG CRS CATEGORY	BWROG CRS ITEM NO'S
° Computers	(D&SD)
- Consoles	(D1 & SD1)
- Capability	(D2 & SD2)
- CRTs	(D3 & SD3)
- Printers	(D4 & SD4)
° PROCEDURES	(E & SE)
- Availability	(E1 & SE2)
- Access	(E2)
- Standardization	(E3)
- Format	(E4 & SE1)
- Reference material	(E5)
- Revisions	(E6)
- Administrative	(E7)
° CONTROL ROOM ENVIRONMENT	(F & SF)
- Communications systems	(F1 & SF1)
- Audible Signals	(F2)
- Lightings	(F3 & SF2)
- Control Room Heating and Ventilation	(F4)

BWROG CRS CATEGORY	BWROG CRS ITEM NO'S
- 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 AND MANNING	(H)
- Training and Requalification	(H1)
- Administrative Guideline	(H2)
- Shift Change	(H3)

The report states that seven computer related HEDs were discovered. These HEDs were for keyboard design, terminology and visibility items, including software terminology. In addition to the computer HEDs, two procedure-related HEDs were defined. These HEDs were concerned with component identification and related procedure referencing. Further, the Report states that the survey of control room environment, maintenance and surveillance, and training and manning revealed no discrepancies.

The staff evaluated the survey activities described and the results stated in Supplement 1 to the licensee' Summary Report. The activities described and the results stated appear to be consistent with other DCRDR reviews conducted by the staff. However, we noted that the licensee did not assess all of the HEDs found by the NRC audit team during the In-Progress Audit. These specific HEDs are stated under the title of Process Computers, Part A, Appendix A of our SER. For confirmatory review, the staff requests the licensee to assess and to report to the staff the results of the assessment of all of the HEDs identified by the NRC audit team. In summary, this issue remains an open item.

ASSESSMENT OF HEDs

Based on the results of the staff's review of the licensee's progress in the assessment and correction of HEDs, we established a condition 2.C(8)(a)part 3 to license NPF-27 to ensure timely completion of control room enhancements.

Subsequently, the licensee in Supplement 1 to the Summary Report states that the panel enhancement effort was completed in mid-September 1984. Photographs of several control room panels before and after enhancement were provided in the report. Further the report states that refinements to the enhancements are currently ongoing.

One high priority HED review by the staff is HED SI4-04 (Ref. 1). This HED states that failed indicator light bulbs on the remote shutdown panel cannot be distinguished from a normal condition. The licensee has planned actions as a temporary resolution to this HED and these actions must be completed prior to exceeding five percent power. In the Summary Report, the licensee restates a commitment to complete these planned actions prior to operation of the plant at a power level greater than 5 percent of rated power. Upon completion of these planned actions, the staff will evaluate the actions and report on the results of the evaluation in a future supplement to the SER.

Supplement 1 to the licensee's report discussed to total of 36 HEDs which were found during the DCRDR activities. The sources of the HEDs were as follows:

Control Room Validation	
- Panel design	15
- Instrumentation	5
- Procedural	7
Computer	7
Procedures	2
Total	36

The staff reviewed the contents of the 36 HED Assessment forms and examined in detail HED SPV-07, which deals with inconsistencies between panel ID numbers/nomenclature and procedure valve numbers/ nomenclature within the T-200 series of procedures.

The HED was assessed as Priority 2, with resolution scheduled by the first refueling. The resolution for the HED was to make all procedure nomenclature and identification numbering consistent with CRDR assigned nomenclature and identification numbers.

In the staff's assessment of the T-200 Series Procedures, we noted that many of these procedures were for the operation of the Engineered Safeguard Systems. Engineered Safeguard Systems must be operated correctly to successfully mitigate the consequences of an accident. As the procedure nomenclature is inconsistent with updated panel nomenclature, operator errors may be made in the execution of the procedures. The staff requests the licensee to reassess HED SPV-07 and to provide further justification for the priority and resolution schedule of this HED. The staff will report on its evaluation of this data in a future supplement to the SER.

VERIFICATION THAT IMPROVEMENTS WILL PROVIDE NECESSARY CORRECTION AND WILL NOT INTRODUCE NEW HEDS

Our evaluation of the methods proposed by the licensee to achieve the above objectives concluded in our SER that the intent of NUREG-0737, Supplement 1 was being met. In evaluating the licensee's Supplement 1 to the Summary Report, the staff assessed the licensee's effort and results from the implementation of the proposed methods. Figures 1 and 2, of the licensee's report show photographs of control room panels before and after enhancement.

The staff analyzed the photographs and noted that several portions of the workbench and panel area were enhanced with a red background. The intent is to color code the background for operator ease in location and use of the enclosed instruments and controls. We also noted HED SDV-10, Automatic Depressurization System (ADS) Valve Enhancements, was resolved by enclosing five ADS valve controls in solid red background. The staff is concerned that rad status lights for the valves would not be detected within the solid red background areas of the workbench and panel. We asked the NRC Resident Inspector at Limerick to evaluate this problem. The NRC Resident Inspector communicated (by phone) the results of his assessment, that contrast existed between lighted, red status bulbs and the red background and the lighted status bulbs could be easily detected for normal and emergency lighting conditions. However, the Inspector noted that when the

status bulb was unlighted, it blended with the solid red background. The Inspector pointed out that a potential loss of operator information may exist during a loss of electrical power, that is, a condition where the status bulb should be lighted, but is not, and this would not be noted by the operator as the bulb blends with the red background.

The staff requests the licensee to provide that data which verifies the use of a solid red background as an enhancement to areas of the workbench and panels. The data should show how the original HED is corrected for all operating environments and also it should verify that no new HED is introduced with the use of the enhancement. The staff is concerned that a loss of information to the operator may result with the use of a solid red background.

SUMMARY

Because of inadequate information in the licensee's Supplement 1 to the DCRDR Summary Report, the staff was unable to complete its review of the material. The staff requests the following additional information from the licensee:

Control Room Survey

- To assess and to report on the results of the assessment on all of the HEDs defined by the NRC audit team during the In-Progress Audit.

Assessment of HEDs

- To report details on the temporary resolution of HED SI4-04 prior to exceeding five percent power.
- To report results on the reassessment of HED SPV-07.

Verification That Improvements Will Provide Necessary Corrections And Will Not Introduce New HEDs

- 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.

REFERENCES

1. Letter from J.S. Kemper, Philadelphia Electric Company to A. Schwencer, NRC, Subject: "Limerick Generating Stations Units 1 and 2, Limerick Control Room Design Review, "dated August 16, 1984.

2. U.S. Nuclear Regualtory Commission, "Safety Evaluation Report Related to the Operation of Limerick Generating Station Units 1 and 2, "US NRC Report NUREG-0991, Supplement NO. 3, October 1984.

3. Letter from D.G. Eisenhut, NRC, to E.G. Bauer, Philadelphia Electric Company, Subject: "Issuance of Facility Operating License NPF-27 Limerick Generating Station, Unit 1," dated October 26, 1984, with Enclosure 1: "Facility Operating License NPF-27."

4. Letter form J.S. Kemper, Philadelphia Electric Company, to A. Schwencer, NRC Subject: "Limerick Generating Station, Units 1 and 2, Limerick Control Room Design Review, Final Report, Supplement 1," dated November 2, 1984.