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MURRAY R. EDELMAN

VICE PRESIDENT
NUCLEAR

February 29, 1984

PY-CEI/NRR-0095 L

Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Perry Nuclear Power Plant
Docket Nos. 50-440; 50-441
Responses to NRC Staff Comments
on Detailed Control Room
Design Review Program Plan

Dear Mr. Youngblood:

This letter and its attachments are provided in response to your letter dated December 23, 1983 regarding NRC Staff Comments on the Detailed Control Room Design Review Program Plan for Perry Nuclear Power Plant (Units 1 and 2).

If you have any questions, please let me know.

Very truly yours,

Murray R. Edelman
Vice President
Nuclear Group

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Attachments

cc: Jay Silberg, Esq.
John Stefano
Max Gildner

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1. General

NRC Comment:

A human factors evaluation of the design of the remote shutdown capability provided to meet 10 CFR Part 50, Appendix A, GDC-19 and 10 CFR Part 50, Appendix R is not specifically identified as a requirement in Supplement 1 to NUREG-0737. Staff review of this issue is not complete. In the interim, we recommend that the scope of the DCRDR include a human factors evaluation of the design of the remote shutdown capability. To the extent practicable, without delaying completion of the DCRDR, it should also address any control room modifications and additions (such as controls and displays for inadequate core cooling and reactor system vents) made or planned as a result of other post-TMI actions, and the lessons learned from operating reactor events such as the Salem ATWS events. Generic implications of the Salem ATWS events are discussed in NUREG-1000 and required actions are described in Section 1.2, Post-Trip Review - Data and Information Capability, of the enclosure to Generic Letter 83-28.

Response:

We are aware that no requirement exists to include a human factors evaluation of the remote shutdown capability. We understand the importance of this capability and had taken it upon ourselves to review the remote shutdown panel (1C61-P001) in the BWR Owners Group survey conducted on September 21-25, 1981, (see June 7, 1982 submittal Attachment 2). In addition, we committed in our May 4, 1983 letter (finding B1.2) to conduct a procedure walk-thru when final instructions for remote shutdown are completed. Control room panel and environmental modifications since the initial survey have been reviewed on an ongoing basis for human factors impact. These include changes due to new regulatory positions such as NUREG 1000. A human factors review of control room modifications is expected to continue throughout the life of the plant.

2. Qualified Multidisciplinary Team

NRC Comment:

Attachments to CEI's June 7, 1982 letter provided a list of survey team participants and information on survey team responsibilities. The description of survey team responsibilities was limited to activities during the BWROG control room survey. Information about the qualifications of team members, assignment of team members by discipline, and involvement of team members in activities other than the control room survey was not provided. CEI's response to Generic Letter 83-18 referenced attachments to the June 7, 1982 letter and noted that information about the qualifications of team members was being assembled and would be provided in the Summary Report. Information sufficient to allow evaluation of the DCRDR team for Perry was not provided. Staffing guidance for the DCRDR is provided in NUREG-0700 and NUREG-0801. In the staff's judgment continuing technical participation of design, operating, and human factors personnel throughout the review is needed to satisfy the DCRDR requirements of Supplement 1 to NUREG-0737.

Response:

Resumes of the BWROG survey team members have been assembled and will be included in Summary Report as stated in our June 21, 1983 letter. A qualified multidisciplinary team of design, operating, and human factors personnel has been established to review human factors issues. This team includes engineering and operations personnel involved with the initial survey and Dr. Paul Nicholson, as human factors consultant.

3. Function and Task Analysis

NRC Comment:

CEI's June 7, 1982 submittal provided a brief description of the task analysis performed as part of the BWROG control room survey. That process involved a walkthrough comparison of existing controls and displays with these called for by three emergency operating procedures. It was not clear that the emergency operating procedures had resulted from a function and task analysis of the type required by Supplement 1 to NUREG-0737. In the staff's judgment, a systems function and task analysis which is independent of the instrumentation and controls currently in the control room (i.e., one which leads to identification of the operator's information and control requirements) is essential to the DCRDR. CEI's response to Generic Letter 83-18 included a commitment to perform an updated task analysis using the Perry Plant Emergency Instructions. Expansion of the scope of that effort to include all tasks required to implement Perry emergency operating procedures, and identification of the operator's information (parameter type, dynamic range, accuracy, frequency, feedback, etc.) and control (discrete/continuous, precision, duration, criticality, etc.) requirements would satisfy DCRDR requirements.

Response:

A task analysis of the Perry emergency operating procedures is now planned for April 1984. This analysis will be conducted in accordance with the BWR Owners Group Control Room Survey Workshop conducted in Tulsa, Oklahoma on October 18-20, 1983. The owners group methodology is in line with the approved owners group program contained in Generic Letter 83-18.

4. Control Room Inventory

NRC Comments:

No mention of a control room inventory is made in the Perry Program Plan documents. Supplement 1 to NUREG-0737 requires comparison of display and control requirements (i.e., the displays and controls needed to satisfy the operator's information and control requirements identified in the function and task analysis) with a control room inventory to identify missing controls and displays. In order to assure the adequacy of the control room inventory for that use, the inventory should include all the

data needed for comparison with the information and control requirements addressed in the above discussion of the function and task analysis.

Response:

Generic Letter 83-18 identifies the BWR Owners Group approach to satisfy the control room inventory requirements, (BWROG response 6c). Perry will accomplish this requirement as part of the upcoming task analysis review.

5. Control Room Survey

NRC Comment:

The original BWROG Control Room Survey, as described in CEI's June 7, 1982 submittal, has been performed at Perry. An independent survey has also been performed by the NRC during an August 10-13, 1982 on-site audit. Finally, CEI has committed to conduct a supplemental control room survey in response to Generic Letter 83-18. That supplemental survey will include completion of the BWROG Control Room Survey Checklist Supplement. Any topics which could not previously be addressed due to the construction status of the control room should also be included in the supplemental survey. The supplemental activities described above should complete satisfaction of the Supplement 1 to NUREG-0737 requirement for a control room survey.

Response:

The supplemental survey is now planned for April 1984.

6. Assessment of HEDs

NRC Comments:

The BWROG Control Room Survey Program does not address assessment of HEDs. Generic Letter 83-18 requires that utilities referring to the BWROG Program prioritize HEDs. CEI's June 21, 1983 response to Generic Letter 83-18 stated that prioritization or categorization of HEDs was not planned because they intended to identify and correct all "pertinent" HEDs prior to fuel load. Pertinent was not defined, but in practice some categorization or prioritization appears to have been done. HEDs were divided into four groups based on plans for their correction. They are:

1. Fix - plans to correct HED
2. Modify - plans to improve but not totally correct the HED
3. None - modifications not warranted
4. Disagree - condition is not an HED.

Conflicting information as to whether or not an assessment is planned and lack of any description of such an assessment process made evaluation of this DCRDR element impossible. In the staff's judgment, an assessment

process which identified HEDs that affect operator performance in a way which degrades plant safety is essential unless there is a commitment to correct all HEDs.

Response:

Prioritization as identified in NUREG 0801 is used for determining which HED should be corrected immediately. Our June 21, 1983 letter describes our approach to correcting HED's. The approach being taken is such that the significance of the HED is not the overriding factor in correcting the HED. The approach is to attempt to correct all HED's prior to fuel load since modifications after that time are much more difficult than during the construction phase. The assessment of all HED's is contained in our May 4, 1983 letter. Safety significance of an HED only enters into the assessment for those which no corrective action is expected. The Justification column identifies the reasons for the proposed action.

7. Selection of Design Improvements

NRC Comments:

There was no description of the process by which CEI will (or has) determined the specific corrective action for an HED identified during the review phase. This element of the Perry DCRDR could not be evaluated. The selection process should identify HEDs that can be corrected by enhancement and HEDs that must be corrected by design improvement. The process for selection of design improvements should also provide justification for not correcting or only partially correcting HEDs which the assessment process determined should be corrected.

Response:

The proposed action for each HED is contained in the May 4, 1983 letter. Differentiation of enhancements vs. design improvements are not identified because both are treated the same. Schedule considerations do not require immediate implementation of enhancements. The selection of the design improvement was done by the same task force which assessed the HED's. The details of the change or the justification for no change are contained in the May 4, 1983 letter.

8. Verification That Improvements Provide Correction and Do Not Result in New HEDs.

NRC Comment:

The CEI submittals did not address Supplement 1 to NUREG-0737 requirements for verification that improvements provide correction of HEDs and verification that no new HEDs were introduced. Those elements of the Perry DCRDR could not be evaluated. Activities designed to satisfy those elements should be planned as part of the DCRDR.

Response:

Proposed corrections will be reviewed as part of the upcoming Task Analysis review as they affect implementation of the Perry Emergency Procedures.

9. Coordination With Other Programs

NRC Comments:

CEI submittals did not specifically describe how the Perry DCRDR will be coordinated with the control room changes resulting from other control room improvement programs such as the SPDS, Reg. Guide 1.97 post accident monitoring instrumentation, operator training, and upgraded emergency operating procedures. Some coordination with the upgraded emergency operating procedures is suggested by the description of the walkthrough portion of the control room survey and the commitment to perform the supplementary control room survey. However, not enough information to evaluate this element of the DCRDR has been provided. Activities designed to integrate the control room changes resulting from the various control room improvement programs should be planned as part of the DCRDR.

Response:

The Task Analysis review of the Perry Emergency Procedures will also include review of the control room improvements due to the other programs mentioned. SPDS information will be reviewed as part of the Task Analysis of the emergency procedures.

10. Generic Letter 83-18

NRC Comment:

The requirements of Supplement 1 to NUREG-0737 and Generic Letter 83-18 overlap in the areas of:

1. Qualified multidisciplinary team
2. Function and task analysis
3. Control room survey
4. Assessment of HEDs
5. Selection of Design Improvements.

Comments in the previous paragraphs address those overlapping requirements. Utilities referencing the BWROG Control Room Survey Program must additionally identify portions of their DCRDR not performed in accordance with BWROG Program and must update their operating experience review. CEI's June 21, 1983 response to Generic Letter 83-18 indicated that the Perry DCRDR would follow the BWROG Program without exception.

However, that same document indicated that no update of operating experience was planned. Human performance problems will undoubtedly be identified as operators gain experience at the Perry simulator and in the control room. Some plan for keeping at least the operator survey current throughout the conduct of the DCRDR is recommended. Such a plan might even be extended in a way that would contribute to safety throughout the life of the plant.

Response:

As stated in the June 21, 1983 letter (item 7), we are not updating operating experience review because Perry is not an operating plant. Feedback from simulator training is done on an ongoing basis the same as hardware modifications. We expect this ongoing human factors review to carry on into plant operation. Additionally, Perry is committed to the INPO SEE-IN Program. Human performance problems identified in the SEE-IN Program will be assessed by Perry personnel.