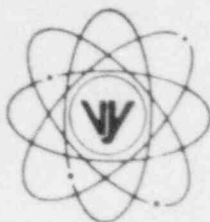


VERMONT YANKEE NUCLEAR POWER CORPORATION



RD 5, Box 169, Ferry Road, Brattleboro, VT 05301

FVY 85-87

REPLY TO

ENGINEERING OFFICE

1671 WORCESTER ROAD

FRAMINGHAM, MASSACHUSETTS 01701

TELEPHONE 617-872-8100

September 16, 1985

U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Attention: Office of Nuclear Reactor Regulation
Mr. Domenic B. Vassallo, Chief
Operating Reactors Branch No. 2
Division of Licensing

Reference:

- a) License No. DPR-28 (Docket No. 50-271)
- b) Letter, USNRC to All Operating Reactors, Generic Letter 82-33, Supplement 1 to NUREG 0737 - Requirements for Emergency Response Capability, dated 12/17/82
- c) Letter, VYNPC to USNRC, FVY 83-85, dated 8/4/83
- d) Letter, USNRC to VYNPC, NVY 84-128, dated 6/12/84
- e) Letter, VYNPC to USNRC, FVY 84-64, dated 6/15/84
- f) Letter, USNRC to VYNPC, NVY 84-223, dated 10/11/84
- g) Letter, USNRC to VYNPC, NVY 85-124, dated 6/7/85
- h) Letter, VYNPC to USNRC, FVY 85-61, dated 7/1/85

Dear Sir:

Subject: Vermont Yankee Detailed Control Room Design
Review Summary Report (DCRDR) In-Progress Audit

Vermont Yankee Nuclear Power Corporation (VYNPC) submitted a Detailed Control Room Design Review Program Plan (DCPDR) for the Vermont Yankee Nuclear Power Plant in June 1984 [Reference e)]. An in-progress audit of the DCRDR activities was conducted in Vernon, Vermont in April 1985 and the results of that audit transmitted to VYNPC in June 1985 [Reference g)].

Many of the suggestions expressed at the audit exit interviews were incorporated in our Summary Report submitted shortly thereafter in July 1985 [Reference h)]. The enclosure to this letter contains our response to the remaining audit report suggestions.

We trust that the enclosed summary report is deemed acceptable and complete; however, should you have any questions or require additional information concerning this subject, please contact us.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Warren P. Murphy
Warren P. Murphy
Vice President and
Manager of Operations

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PDR ADOCK 05000271 PDR
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RESPONSE TO THE
IN-PROGRESS AUDIT OF THE
DETAILED CONTROL ROOM DESIGN REVIEW FOR
VERMONT YANKEE NUCLEAR POWER PLANT

SEPTEMBER - 1985

Introduction

Vermont Yankee Nuclear Power Corporation (VY) submitted a Detailed Control Room Design Review Program Plan (DCRDR) for the Vermont Yankee Nuclear Power Plant in June, 1984. An in-progress audit of the DCRDR activities was conducted at Vernon, Vermont in April, 1985. Many of the suggestions expressed at the audit exit interviews were incorporated in the DCRDR Summary Report submitted shortly thereafter in July, 1985. The paragraphs which comprise this supplementary report respond to the remaining suggestions presented by Science Applications International Corporation's (SAIC) In-Progress Audit Report, which was received in June, 1985.

NUREG Element 1

Established of a Qualified Multidisciplinary Review Team.

Audit Conclusion

Vermont Yankee should ensure that resumes are provided for all persons participating in the DCRDR to permit review of qualifications and a human factors specialist to be involved through the rest of the DCRDR.

Response

Resumes have since been provided in the Summary Report.

NUREG Element 2

Function and Task Analysis to identify Control Room Operator Tasks and Information Control Requirements during Emergency Operations.

Audit Conclusion

Vermont Yankee should ensure that a formal systematic task analysis will be performed for all technical guidelines derived from the BWR EPG's, Rev. 3 to determine operator tasks and information and control needs.

Response

In accordance with suggestions made by the audit team, VY has begun the process of expanding the task analysis of the existing symptom oriented EOP's. This expansion is being performed by our consultant, General Physics, whose services include the disciplines of human factors and reactor operations. In addition, the DCRDR Review Team also contains these same disciplines and will review and evaluate the conceptual design improvements. Validation of these improvements is discussed in our response to Elements 7 and 8, later in this report.

As stated in the NRC In-Progress Audit Report, our subject matter expert, General Physics, "produced a rather extensive list of I&C needs and did so independently of the existing control room." That same expert has begun the task of more completely documenting the function and task analysis process which was used including documenting all explicit and implicit tasks and subtasks required by the EOP's. Should any new findings develop from this effort, they will be processed as before and as described in the original Program Plan.

Vermont Yankee has also contracted the services of the Nuclear Services Division (YNSD) of the Yankee Atomic Electric Company to perform technical evaluations of specific scenarios which may affect certain areas of the BWR EPG's, including Secondary Containment Control and Radioactivity Release

Control specific to Vermont Yankee. This work is expected to be completed by January, 1986 and, if determined appropriate, changes or additions to the EOP's will be implemented in July, 1986. In this event, they would also be examined using the same function and task analysis and identification of information and control requirements process employed for all other EOP's.

NUREG Element 3

Comparison of Display and Control Requirements with a Control Room Inventory.

Audit Conclusion

Vermont Yankee should ensure that when comparing information and control needs to the control room inventory, the dynamic nature of operator tasks and workloading is considered for determining instrument/control suitability.

Vermont Yankee should ensure that findings related to missing information needs, discarded as being incorrect since information was available on back panels, be reassessed for suitability and accessibility.

Response

The Vermont Yankee Site Specific Simulator began Factory Acceptance Testing at the Singer-Link manufacturing facilities on July 1, 1985. Delivery and operation are expected to occur before the end of this year. It remains our plan to dynamically evaluate the EOP's in real time and with a full complement of trained operators soon after the Simulator is made operational. Any lack of important instruments, controls or calculated variables should become evident in this process. Of course, physical changes, procedural changes or additions determined to be necessary will be addressed in a similar way as described in the Program Plan.

In addition to the dynamic evaluation noted above, all licensed plant operators will routinely participate in other similar simulator exercises as a part of their annual license requalification training requirements. In this manner, the adequacy of procedures, controls, and information location will be reverified with each training program.

NUREG Element 4

A Control Room Survey to Identify Deviations from accepted Human Factors Principles.

Audit Conclusion

Vermont Yankee should ensure that a control room survey is conducted addressing concerns of NUREG 0737 related to mirror imaging.

Response

Vermont Yankee has contracted an experienced consultant to perform an additional control room survey to investigate mirror imaging. This survey will be conducted in accordance with established regulatory guidance and will use a check sheet developed for this purpose. Human factors expertise will be used in the development of methods and criteria, in the actual survey, and in evaluation of any suggested modifications which may result. Such modifications, if necessary, will be coordinated with other related changes as discussed in our response to NUREG Element 9 (below).

NUREG Element 5

Assessment of HED's to Determine which are Significant and Should be Corrected.

Audit Conclusion

The audit team observed that HED assessment was underway and appeared to be satisfying the requirement. It should be noted that due to incomplete review (e.g., task analysis), HED's or findings previously discarded may require reassessment.

Response

In the event that new procedures, training, or review activities identify issues which cause previously discarded findings to become suspect, these findings will be reassessed in accordance with the Program Plan.

NUREG Element 6

Selection of Design Improvements.

Audit Conclusions

Vermont Yankee should ensure that DCRDR Summary Report requirements are fulfilled on all HED's, including "set-aside" issues such as annunciators and labeling; that the Summary Report will include all HED's that VY is going to correct, and how the HED's are going to be corrected; and that the report will include all safety-significant findings/HED's that VY is not going to correct, and why the findings/HED's are not going to be corrected. VY should ensure that HED's presently included in special studies or evaluations are resolved.

Response

The Summary Report submitted in July, 1985 provided resolutions and schedules for all HED's, including annunciators, labeling, and special studies. It remains our intent to complete those studies and implement the recommendations on the schedule submitted. HED's which can be construed to have safety significance and which have no further corrective action intended have been provided with a summary justification (e.g. HED 0202, 0906, and 1301). With this Supplemental Report, Vermont Yankee considers the requirement 5.2.b of NUREG 0737, Supplement 1 to be fulfilled.

NUREG Elements 7 and 8

Verification that Selected Improvements Will Provide the Necessary Corrections, and Verification that Improvements Will Not Introduce New HED's.

Audit Conclusions

Vermont Yankee should insure that a methodology is established and implemented to verify that selected improvements correct HED's and do not introduce new HED's.

Response

The conceptual designs for all control room modifications will be evaluated by a Review Team, which includes the disciplines of reactor operations and human factors. In this manner, we intend to avoid piecemeal corrections and the introduction of new HED's.

A final hands-on walkthrough validation will be performed after the design change has been implemented to demonstrate that operators can effectively use the correction to execute the EOP tasks and that the correction has not introduced new HED's. Since we have a firm commitment to maintain our simulator as an exact replica of the station control room in accordance with ANS 3.5, this final validation may occur at either the simulator or control room location depending on which best duplicates the conditions of application.

NUREG Element 9

Coordination of Control Room Improvements With Changes Resulting From Other Programs such as the SPDS, Operator Training, Reg. Guide 1.97 Instrumentation, and Upgraded EOP's.

Audit Conclusion

Vermont Yankee should ensure that a procedure for integrating control room changes from all improvement programs is established and implemented.

Response

The normal constraints of procedural controls, review process, QA requirements, documentation and training common to all design changes at Vermont Yankee will apply to all changes resulting from the various NUREG 0737 improvement programs. In addition, other requirements unique to a human factors process will also be applied. For example, the Review Team evaluation and post-implementation walkthroughs discussed earlier will be performed to ensure that these changes will not themselves introduce new HED's.

Vermont Yankee enjoys the benefits of an organization with a relatively small group of people responsible for NUREG 0737 Supplement 1 Improvement Programs. We have assigned a management level member of our corporate staff the responsibility for coordinating and integrating the various improvement program changes including, Detailed Control Room Design Review, Emergency Operating Procedures, Safety Parameter Display System, Reg. Guide 1.97, Emergency Response Facilities, Radiological Effluent Technical Specifications, and others.

The process we will employ consists of performing the following subtasks for each identified improvement change;

- SCOPING - Each program change will be clearly and concisely defined conceptually so that the resulting engineering design change(s) addresses the correct problem. The Scope Objective will be to ensure solving the right problem.
- LINKING - All program recommendations and design changes will be reviewed collectively to ensure that engineering solutions are applied consistently and piecemeal corrections are avoided. The Link Objective will be to solve related problems consistently and to avoid piecemeal corrections.
- COORDINATING - Several changes are likely to impact the same physical, procedural, or subject area. It will be necessary to coordinate the engineering solutions so that two instruments do not seek to occupy the same space, two technicians do not compete for the same installation time, and that "fixes" necessary to solve a particular problem, including procedure revisions and operator training, are implemented together. The Coordinate Objective will be to avoid hardware, procedural and schedule conflicts.
- INTEGRATING - Solutions will arise from engineering changes, procedure changes, and training changes, which respond to NUREG 1.97, EOP, SPDS, EOF, RETS, DCRDR and other improvement programs. It is quite likely that a 1.97 solution could also resolve a DCRDR problem that an SPDS solution could also solve an EOP and EOF problem. The Integrate Objective will be to find common solutions to common problems.
- VALIDATING - As stated earlier, each physical change will be conceptually reviewed for human factors and reactor operations. A final hands on walkthrough verification/validation will be performed after control room design changes are installed to demonstrate demonstrate that the discrepancy has been adequately resolved. The Validation Objective will be to insure the problem has been solved properly.