

U.S. NUCLEAR REGULATORY COMMISSION

REGION I

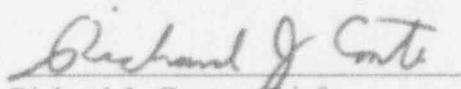
DOCKET NO: 50-271
REPORT NO: 50-271/93-23
LICENSE NO: DPR-28
FACILITY NAME: Vermont Yankee Nuclear Power Station
RD 5, Box 169
Ferry Road
Brattleboro, Vermont 05301
INSPECTION AT: Brattleboro, Vermont
INSPECTION CONDUCTED: October 18-22, 1993
INSPECTOR: J. Lynch, USNRC Consultant, Science Engineering Associates

LEAD INSPECTOR:


S. L. Hansell, Operations Engineer
BWR Section, Operations Branch
Division of Reactor Safety

11/4/93
Date

APPROVED BY:


Richard J. Conte, Chief
BWR Section, Operations Branch
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11/9/93
Date

Inspection Summary: Inspection from October 18-22, 1993 (Report No. 50-271/93-23)

Areas Inspected: The inspection was a followup to the NUREG-1220, Rev. 0, "Training Inspection," conducted in October 1991. The inspection concentrated on the seven outstanding training deficiencies noted in the 1991 inspection and overall management of the training department programs. A secondary objective was to assess the recent refuel event short term corrective actions related to training.

Results: The management and content of the current training programs have improved significantly in the past two years. The training programs have been upgraded to ensure implementation of the systems approach to training (SAT). The training programs were conducted in accordance with NRC requirements and licensee-approved procedures. All seven training deficiencies from the 1991 inspection were closed, and no new weaknesses were identified by NRC staff.

The Operations Training Curriculum Committee (OTCC) meetings provide a good forum to discuss and resolve operations and training-related issues. The meetings promote a common goal to provide the operators the best training available to operate the plant safely. The OTCC is considered to be a training program strength.

The OTCC minutes referenced each issue and proposed resolution to a training change request (TCR). The TCR ensures the recommended action would be tracked, documented, and satisfactorily completed. A review of the existing and closed TCRs noted that the training management continues to find and address program weaknesses to maintain high standards.

The Training Department Directives and Training Program Descriptions were revised to provide improved training program standards and expectations. There were no training program weaknesses noted for this inspection.

One unresolved item (URI) and one inspector followup item (IFI) will be tracked pending further review: the removal of high pressure feedwater heaters at the end of cycle (URI No. 50-271/93-23-01, Section 5.0); licensee's response to the chemistry technician qualification issue (IFI No. 50-271/93-23-01, Section 3.3.3).

The training conducted after the second refuel event was appropriate and completed prior to resuming refuel operations (this item was a short-term corrective action from VY letter BVY 93-105).

Within the scope of this inspection, no violations were identified.

DETAILS

1.0 INTRODUCTION AND OVERVIEW

1.1 Purpose of Inspection

The inspection was a followup to the NUREG-1220, "Training Inspection," conducted in October 1991. The inspection focused on the overall management of the training department and review of the seven outstanding training deficiencies (listed in section 3.3) noted in the 1991 training inspection. A secondary objective was to assess the recent refuel event short-term, corrective actions related to training.

1.2 Background

On March 1, 1991, Licensed Operator Requalification (LOR) examination failures occurred, with twelve licensed operators in three crews being examined. Two of three crews were determined to perform unsatisfactory.

On October 25, 1991, NUREG-1220, Rev. 0, "Training and Qualification Inspection," review of requalification program with the following general concerns: the Job Task Analysis was not kept current as job requirements changed; the training program objectives for shift engineers were incomplete; some training records had been lost; responsibilities for training were not always clearly stated; each learning objective was not tested; and no systematic method for evaluating training was in place. The specific weaknesses are discussed in section 3.3 of the report.

On February 14, 1992, the Requalification Training Program was examined with the following highlights: Requalification program determined to be satisfactory; four of four ROs, eight of eight SROs, three of three crews passed examination; and positive improvements noted over previous examination.

2.0 SUMMARY OF MAJOR FINDINGS AND CONCLUSIONS

- The management and content of the current training programs have improved significantly in the past two years. The training programs have been upgraded to ensure implementation of the systems approach to training. The training programs were conducted in accordance with NRC requirements and licensee-approved procedures. The training department directives and training program descriptions were of high quality and contained clear, concise information.
- Management continued to emphasize the importance of training as noted in their frequent observation of operator simulator performance. They have also committed sufficient resources to ensure the maintenance of the improved programs.
- All seven training deficiencies were closed and no new weaknesses were noted.

- The training conducted after the second refuel event was appropriate and completed prior to resuming refuel operations (this item was a short-term corrective action from VY letter BVY 93-105).
- One unresolved item (URI) and one inspector followup item (IFI) will be tracked pending further review. First, the removal of high pressure feedwater heaters at the end of cycle (EOC) will be tracked as URI No. 50-271/93-23-01 (section 5.0). Secondly, an IFI item will be opened to track the licensee's response to the chemistry technician qualification issue IFI No. 50-271/93-23-01 (section 3.3.3). The description of an URI and IFI is defined in section 6.0 of the report.

3.0 REVIEW OF TRAINING PROGRAMS

3.1 Scope

The inspection was conducted using the revised criteria in NUREG-1220, Rev. 1. The inspector interviewed training management, supervision, instructors, and operations personnel.

The inspection included observation of licensed operator requalification (LOR) and shift engineer (SE) initial classroom and simulator training.

The inspector reviewed selected training program procedures and individual records. The review included the Operations, Chemistry, and Instructor Curriculum Committee meeting minutes for 1993. Also reviewed were the revised Training Department Directives (TDDs) and Training Program Descriptions (TPDs).

3.2 Management of the Training Programs

Two examples were noted that showed the senior plant management's commitment to the importance of quality training programs. First, senior plant management continues to observe the licensed operator simulator performance on a regular basis. Second, management has provided the necessary resources to maintain high training standards. The changes in training department management have also resulted in a number of positive improvements in the training programs. The most notable improvements were the administration of the Training Curriculum Committee Meetings, revision of the Training Department Directives (TDDs) and the updated Training Program Descriptions (TPDs).

The Operations Training Curriculum Committee (OTCC) meetings were attended by a combination of Training and Operations managers, supervisors and instructors. The OTCC meetings provided a good forum to discuss and resolve operations and training-related issues.

The meetings promote a common goal to provide the operators the best training available to operate the plant safely. The OTCC is considered to be a training program strength.

The OTCC minutes referenced each issue and proposed resolution to a training change request (TCR). The TCR ensures the recommended action would be tracked, documented, and satisfactorily completed. A review of the existing and closed TCRs noted that the training management continues to find and address program weaknesses to maintain high standards.

The 1991 training inspection noted that the existing TDD procedures revisions removed numerous training program requirements and standards. The new training personnel performed a comprehensive review of all TDDs and upgraded the procedure information. The revised TDDs contain the necessary program requirements and standards to administer and maintain a systems approach to training (SAT).

The TPDs were also updated to include the SAT-based elements for each training program. An example of the improvement was in the shift engineer (SE) initial program description. The scope and knowledge requirements of the SE program were doubled. The new SETPD includes all the items missing in 1991 and additional items to raise the program standards.

The personnel interviews and training observations recognized that the training instructors continue to deliver quality training. The instructors were objective, dedicated, and professional. A review of the instructor's records for in plant observation time revealed that they met the TDD criteria of eight (8) hours per quarter.

3.3 Review of the Training Program Deficiencies

The inspector assessed the adequacy of the facility's corrective actions by reviewing the applicable training procedures, interviewing personnel, observing classroom and simulator training, and reviewing documentation related to each deficiency. The original deficiencies are listed below. The inspector's assessment and supporting documentation follow each item.

3.3.1 (Closed) Deficiency 271/91-81-01: The task analysis was not kept current. It appears that a conscious management decision had been made not to maintain the task analysis data base.

The current training management supports and provides the necessary resources to maintain the task analysis current. This is based on recent changes to the Training Department Directive (TDD) TDD-4, "Analysis, Design and Development," and the verification that the facility is implementing the procedure.

The inspector reviewed the reactor recirculation and feedwater system task analysis. The task analysis was updated to reflect recent industry changes. No job task analysis problems were noted during the inspection week.

The inspector reviewed the Operations Training Curriculum Committee (OTCC) meeting minutes for 1993. All OTCC reports contained numerous examples of operator job tasks that

were reviewed to determine if a new task was required, an existing task needed revision, or a task not specific to Vermont Yankee should be deleted from the task lists.

The OTCC minutes referenced each task resolution to a training change request (TCR) to ensure the recommended action would be satisfactorily completed. Procedure TDD 8.2 governs the Training Change Request (TCR) program, a VAX-based computer check list to track, evaluate, and implement changes in the training program. TCRs are triggered by reports of industry events, plant modifications, regulation changes, etc.

3.3.2 (Closed) Deficiency 271/91-81-02: Shift Engineer Training Program Description (SETPD) did not include training in Emergency Plan implementation, EOP implementation, or the use of Emergency Response Facility Instrumentation System.

The scope of the SETPD was doubled in January of 1993. The new SE program now contains a 27-week initial training program. The following eight phases are in the new program: technical/theory, systems, simulator/plant start-up, simulator/emergency response, accident analysis/performance monitoring, administration/procedures/computers, fire brigade and OJT; and evaluation.

On the basis of documentation reviewed at the Vermont Yankee training center, interviews with staff and SE trainees, and observation of classroom and simulator training, it is concluded that the SE training program now includes training in Emergency Plan implementation, EOP use, and use of the ERFIS system.

3.3.3 (Closed) Deficiency 271/91-81-03: Some training records for chemistry technicians were lost.

The facility has revised procedure TDD-2.5, "Records Constitution and Control." The new procedure clearly defines the requirements and responsibilities for the maintenance and retention of training records. A new computer system is used to compile training class attendance and documentation of other training tasks. The computer system should prevent the loss of additional training records. The facility has also replaced the chemistry training instructor responsible for the lost training records. The affected chemistry technician was retrained and reexamined. An internal review and an NRC review indicated that this was an isolated case.

The Vermont Yankee chemistry instructor was interviewed, records and procedures were reviewed, a walk-through of the training chemistry laboratory was conducted, and a random selection of training records for two chemistry technicians were audited. The facility personnel discovered additional chemistry technician qualification records at the plant. The qualification cards contained a few training items that were not signed for completion. The facility performed a comprehensive internal audit of all chemistry technician qualification records to determine the impact of the incomplete qual cards.

The chemistry training supervisor has forwarded the technicians audit information to the chemistry manager for review and recommended course of action. The chemistry manager has committed to provide his assessment and recommended actions by November 15, 1993. The inspector considered the facility's response appropriate and noted that the licensee's audit was detailed and comprehensive. The facility response will be tracked as an inspector follow-up item (IFI) No. 50-271/93-23-01, with respect to chemistry technician performance.

3.3.4 (Closed) Deficiency 271/91-81-04: The TDDs lack clear definition of training department personnel responsibilities and authority.

The inspector noted that all revised TDDs now contain a separate section of training personnel responsibilities and authority. The new TDD information provides clear standards for all training personnel.

An example of the deficiency was that the prior revision of the TDDs had conflicting guidance for the personnel required to perform the annual evaluation of training instructors. The last revision of the TDDs did not require an annual evaluation of instructors by both the department supervisor and the training analyst.

The inspector reviewed a random number of instructors' records to determine if they were properly evaluated. The inspector determined that the instructor evaluations appear to be conducted as required. However, the forms used for evaluation did not provide a section addressing corrective action for deficiencies identified, nor was there an indication where action status is fed back to the originator of the deficiency. The lack of this information may result in some identified deficiencies failing to be corrected.

3.3.5 (Closed) Deficiency 271/91-81-05: The licensed operator examination question bank did not include test items for each learning objective.

Procedure TDD 5.1, Rev. 0, governs the configuration of the examination banks. This directive states that, where practical, there should be at least two test items maintained for each objective. The procedure was revised to incorporate program guidance for the recommended number of test items. The procedure reviewed in October 1991, did not contain any program guidance or expectations.

The facility LOR and initial license written exam banks contain approximately 942 and 1600 questions respectively. The inspector performed an independent review of the reactor recirculation and feedwater system written questions. Both systems had an acceptable match between all tasks and learning objectives when compared to the existing test items.

The facility review of the Reactor Operator Qualification Standard (ROQS) noted that some tasks did not have sufficient exam bank questions to evaluate the task. The facility listed the ROQS task deficiencies in the October 1993 OTCC meeting and assigned a training change

request (TCR) number to track the item to completion. The facility committed to revise the ROQS by the end of 1993. The inspector determined the facility corrective action and established completion date to be acceptable.

3.3.6 (Closed) Deficiency 271/91-81-06: There was no predefined evaluation criteria for the shift engineers' simulator performance.

The facility revised the SE training program description (SETPD) to include evaluation criteria for the simulator. The inspector reviewed SETPD Appendix D, "SE Simulator Evaluation Criteria Guideline." The SE evaluation criteria cover the required SE performance standards and expectations during a dynamic simulator scenario. The form is comparable to the NRC competency forms in the Examiner Standard.

The SEs are given an annual requalification examination similar to the SRO examination. Since the annual SRO examination includes a simulator dynamic evaluation, the SE examination will also include simulator evaluation. The SEs are evaluated in the following major categories: diagnosis of events and conditions; understanding of plant/system response; compliance/use of procedures and technical specifications; and communications/crew interactions.

The inspector verified the changes to the SE program by observing all aspects of the SE initial training class and interviewing SE training instructors and students.

3.3.7 (Closed) Deficiency 271/91-81-07: There was no systematic method for using and prioritizing the annual training program evaluations.

The facility revised procedure TDD-8, "Systematic Evaluation of Training Program Effectiveness," to include a mechanism for prioritizing and tracking to completion any substantial training program recommendations. The inspector reviewed the new procedure and verified that the facility is using the procedure. The entire TDD-8 series of directives establishes a spectrum of evaluation, assessment, prioritization and tracking programs.

The inspector reviewed the 1993 Accreditation Self-Evaluation Report for Operations Training Programs. The evaluation was critical of the training program and contained both strengths and weaknesses. A TCR was initiated by the facility to correct and track the noted program weakness to completion.

The inspector also reviewed the Operations, Chemistry, and Instructor Curriculum Committee meeting minutes for 1993. The meetings documented the training program issues, recommended resolution and estimated date for completion. Each issue was assigned a TCR number for tracking, classification of priority, and recommended completion date. The closeout of almost all TCRs was on or before the assigned completion date.

3.4 Summary of Licensee Corrective Actions

The current training management supports and provides the necessary resources to maintain the task analysis current.

The Training Department Directives and Training Program Descriptions were revised to provide improved training program standards and expectations. The Operations Training Curriculum Committee (OTCC) meetings were attended by a combination of Training and Operations managers, supervisors and instructors. The OTCC meetings provided a good forum to discuss and resolve operations and training related issues.

The OTCC minutes referenced each issue and proposed resolution to a training change request (TCR). The TCR ensures the recommended action would be tracked, documented and satisfactorily completed. A review of the existing and closed TCRs noted that the training management continues to find and address program weaknesses to maintain high standards.

Based on the above information, all seven items from the 1991 training inspection are closed. There were no training program weaknesses noted for this inspection. The chemistry technician qualification issue requires further review.

4.0 REFUELING EVENT CORRECTIVE ACTIONS

The inspector reviewed the training provided to the refueling personnel after the second refuel event as described in Inspection Report 50-271/93-81. The attendance sheets listed all personnel involved with refueling attended the required training. The training was conducted in the classroom and on the refuel floor. The training was provided and completed prior to resuming refuel operations at the plant as stated in the licensee's letter BVY 93-105.

The Supervisor of Operations Training presented the classroom training. The training emphasized the recent changes to procedure OP-1101, "Management of Refueling Operations and Fuel Assembly Movement," Rev. 24. Also covered were the "self-checking" philosophy and refuel equipment modifications. The modifications discussed were: the reversal of the main grapple joystick; main grapple closed light color changed to a white lens; and operation of the hoist load cell > 450 pound interlock with the grapple closed light.

The Plant Manager discussed the significance of the events and management's expectations related to the refuel process. The Plant Manager also discussed the STAR concept, "Stop, Think, Act and Review."

The personnel were evaluated after the training by performing a job performance measure (JPM) on the refuel platform. The JPM - 23401, "Grapple a Single Blade Guide," reinforced the necessary teamwork and procedure adherence required of the refueling personnel.

The questions raised in training resulted in additional changes to operating procedure OP-1101. The training department sent a memorandum, before fuel movement, to all refueling personnel to describe the procedure changes.

5.0 REMOVAL OF FEEDWATER HEATERS AT THE END OF CYCLE

The inspector reviewed the feedwater system job task analysis. One of the required tasks was to "Bypass High Pressure Feedwater Heaters at the End of Cycle." Operating procedure OP-2172, "Feedwater System," section "J" provides the information to remove the HP heaters.

The inspector questioned the impact of removing high pressure (HP) feedwater heaters at the end of cycle to raise thermal power (approximately 20 MWt). The associated feedwater temperature going into the reactor vessel would drop from 370°F to 300°F. The drop in feedwater inlet temperature could affect core thermal operating and safety limits and thermal stress on the feedwater spargers in the reactor vessel. Procedure OP-2172 does contain caution statements to alert the operators about the above concerns.

The licensee agreed to provide additional information to the NRC about this topic; namely, was the plant operated in this mode and were the assumptions of the accident analysis met. This area is unresolved ((URI) 50-271/93-23-02), pending further licensee and NRC staff review.

6.0 DEFINITION OF AN INSPECTOR FOLLOWUP ITEM AND UNRESOLVED ITEM

An inspector follow-up item is an area that requires further review and evaluation by the NRC staff. An unresolved item is an area in which more information is needed to determine if the item is acceptable, a deviation, or violation.

7.0 EXIT MEETING

The inspectors met with licensee representatives at the conclusion of the inspection on October 22, 1993. The inspector summarized and discussed the findings and observations made during the inspection.

Key Personnel contacted during the inspection were:

Vermont Yankee Nuclear Power Corporation

- *D. Reid Vice President, Operations
- *R. Wanczyk Manager, Vermont Yankee Station
- *M. Mervine Training Manager
- *E. Harms Operations Training Supervisor
- *A. Chesley Training Supervisor

United States Nuclear Regulatory Commission

- *R. Conte Director, Division of Reactor Projects
- *S. Hansell Operations Engineer
- J. Lynch USNRC Consultant, Science Engineering Associates

*Denotes those present at the exit meeting on October 22, 1993. The inspector also held discussions with other licensee management, operations, training, and chemistry personnel.

Attach.nent: Documents Reviewed

ATTACHMENT 1
DOCUMENTS REVIEWED

<u>PROCEDURE NUMBER</u>	<u>TITLE</u>	<u>Revision</u>
<u>Training Department Directives (TDDs)</u>		
TDD-8.1	"Biennial Training Program Review"	Rev. 0
TDD-8.3	"Training Department Self Assessment"	Rev. 1
TDD-8.4	"Training Curriculum Committees"	Rev. 2
TDD-8.5	"Evaluation"	Rev. 0
TDD-4.1	"Task Analysis"	Rev. 1
TDD-8.2	"Training Change Requests (TCRs)"	Rev. 0
TDD-2.5	"Records Constitution and Control"	Rev. 8
TDD-8.2	"Training Change Requests (TCRs)"	Rev. 0
TDD-5.1	"Exam Bank Configuration"	Rev. 0
TDD-8	"Systematic Evaluation of Training Effectiveness"	Rev. 1
<u>Simulator Evaluation Guides (SEGs)</u>		
SEG-07,	"LOCA-SEC CONT RPV-ED,"	Rev. 1
SEG-09,	"Supp. Pool High Temp. RPV-ED,"	Rev. 10
SEG-12,	"LOCA-PRI CONT Flooding,"	Rev. 2
SEG-18,	"ATWS-Power/Level Control,"	Rev. 3
SEG-24,	"ATWS-Power/Level Control,"	Rev. 1

Reports and Audits

Revision

Audit Report VY-93-05, Training and Qualification

Accreditation Self-Evaluation Report for Operations Training Programs 1993

LORTPD Appendix "D"

VY Letter 93-105, "Fuel Handling Corrective Actions"

Chemistry Technician Training Records

SETDP

Rev. 4, 1/93

CHTPD Appendix "C"

Rev. 0

Written Examination Bank

SETDP Appendix "D"

Rev. 1

TCRs for 1993

Instructor Overtime for 1993

Instructor Quarterly In-plant Time for 1993

Operation Training Curriculum Committee meeting minutes for 1993

Chemistry Training Curriculum Committee meeting minutes for 1993