



Entergy Nuclear Operations, Inc.  
Vermont Yankee  
320 Governor Hunt Road  
Vernon, VT 05354  
Tel 802 257-7711

**Christopher J. Wamser**  
Site Vice President

BVY 13-095

October 31, 2013

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
11555 Rockville Pike  
Rockville, MD 20852

SUBJECT: Request for Approval of Certified Fuel Handler Training Program  
Vermont Yankee Nuclear Power Station  
Docket No. 50-271  
License No. DPR-28

- REFERENCES:
1. Letter, Entergy Nuclear Operations, Inc. to USNRC, "Notification of NRC Permanent Cessation of Operations," BVY13-079, dated September 23, 2013
  2. Zion Station, Units I and 2, letter dated March 16, 1998, "Request for Approval of the Certified Fuel Handler Training and Retraining Program"
  3. Zion Station, Units I and 2, letter dated July 20, 1998, "Acceptance of Certified Fuel Handlers Program"

Dear Sir or Madam:

By letter dated September 23, 2013 (Reference 1), Entergy Nuclear Operations (ENO) provided formal notification of the intention to permanently cease power operations of the Vermont Yankee Nuclear Power Station (VY) at the end of the current operating cycle, in accordance with 10 CFR 50.82(a)(1)(i).

After certifications of permanent cessation of power operations and of permanent removal of fuel from the reactor vessel for VY are submitted in accordance with 10 CFR 50.82(a)(1)(i) and (ii), the 10 CFR 50 license no longer will authorize reactor operation or placement or retention of fuel in the reactor vessel. As a result, licensed reactor operators will no longer be required to support plant operating activities. Instead, approval of a Certified Fuel Handler Training and Retraining Program is needed to facilitate activities associated with decommissioning and irradiated fuel handling and management.

Pursuant to 10 CFR 50.2, ENO hereby requests NRC approval of the VY Certified Fuel Handler (CFH) Training and Retraining Program. In 10 CFR 50.2, the definition of *Certified Fuel Handler* is described as "a non-licensed operator who has qualified in accordance with a fuel handler training program approved by the Commission."

A copy of the proposed CFH Training and Retraining Program for VY is provided in the attachment to this submittal. The program is patterned after the Zion Certified Fuel Handler Program which was previously submitted (Reference 2) and approved by the NRC (Reference 3).

The VY CFH Training and Retraining Program will ensure that the qualifications of personnel are commensurate with the tasks to be performed and the conditions requiring response. 10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel," requires training programs to be established, implemented, maintained, and derived using a systematic approach to training (SAT) as defined in 10 CFR 55.4. The requirements of 10 CFR 50.120 apply to holders of operating licenses issued under Part 50. After permanent cessation of operation and certification of fuel removal, the VY license will no longer authorize operation of the reactor. The VY CFH training program will nonetheless align with the provisions of 10 CFR 50.120. The five key elements are: (1) analysis of job performance requirements and training needs, (2) derivation of learning objectives based on the preceding analysis, (3) design and implementation of the training program based upon learning objectives, (4) trainee evaluation, and (5) program evaluation and revision. The VY CFH Training and Retraining Program provides adequate confidence that appropriate SAT based training of personnel who will perform Certified Fuel Handler duties is conducted to ensure the facility is maintained in a safe and stable condition. The program allows for changes to be made to the program without prior NRC approval provided the program continues to comply with ANSI/ANS 3.1-1978, "American National Standard for Selection and Training of Nuclear Power Plant Personnel," consistent with the level of hazard at the facility and to ensure the facility is maintained in a safe and stable condition.

By a separate submittal, ENO will provide a license amendment request to delete the requirements for Licensed Operators and Senior Reactor Operators and add new requirements for the Certified Fuel Handlers for VY.

ENO requests approval of this CFH Training Program by November 1, 2014 in order to support our timely transition to a permanently shutdown and defueled facility.

This submittal contains no new regulatory commitments.

If you have any questions regarding the content of this submittal, please contact Mr. Coley Chappell at (802) 451-3374.

Sincerely,



CJW/JTM

Attachments: 1. Vermont Yankee Certified Fuel Handler Training and Retraining Program

cc: Mr. William M. Dean  
Region 1 Administrator  
U.S. Nuclear Regulatory Commission  
2100 Renaissance Blvd, Suite 100  
King of Prussia, PA 19406-2713

Mr. Douglas V. Pickett, Project Manager  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Mail Stop O8C2A  
11555 Rockville Pike  
Rockville, MD 20852-2378

USNRC Resident Inspector  
Vermont Yankee Nuclear Power Station

Mr. Christopher Recchia, Commissioner  
VT Department of Public Service  
112 State Street, Drawer 20  
Montpelier, VT 05620-2601

Entergy Nuclear Operations, Inc.

**Vermont Yankee Nuclear Power Station**

DOCKET NUMBER 50-271

LICENSE NUMBER DPR-28

ATTACHMENT 1

VERMONT YANKEE NUCLEAR POWER STATION

CERTIFIED FUEL HANDLER TRAINING AND RETRAINING PROGRAM

**Vermont Yankee  
Certified Fuel Handler  
Training and Retraining Program**

Table of Contents

<u>Section</u>	<u>Title</u>	<u>Page</u>
1.0	Introduction .....	1
2.0	Initial Training Program .....	2
2.1	Eligibility Requirements .....	2
2.2	Fundamentals Training.....	2
2.3	On-the-Job Training (OJT) .....	3
2.4	Candidate Evaluation .....	3
	2.4.1 Examination .....	3
	2.4.2 Examination Failures .....	3
	2.4.3 Exemption of Training Requirements .....	4
2.5	Qualifications.....	5
3.0	Retraining Program.....	5
3.1	Eligibility Requirements .....	5
3.2	Retraining.....	5
3.3	Schedule .....	5
	3.3.1 Course Schedule .....	5
	3.3.2 Missed Training .....	6
3.4	Evaluation of Retraining .....	6
	3.4.1 Examinations .....	6
	3.4.2 Examination Failures .....	6
3.5	Maintenance of Certified Fuel Handler Qualifications .....	6
	3.5.1 Requirements to Maintain Qualification.....	6
	3.5.2 Exemption of Maintenance of Qualification Requirements .....	7
4.0	Program Evaluation .....	7
5.0	Record Retention.....	7
Appendix A	Written Examination Area, Certified Fuel Handler Training and Retraining Program .....	8
Appendix B	Operating Examination Areas, Certified Fuel Handler Training and Retraining Program .....	9

## 1.0 INTRODUCTION

The Certified Fuel Handler Training and Retraining Program contained herein describes the training program to be implemented by Vermont Yankee Nuclear Power Station (VY) to ensure the monitoring, handling, storage and cooling of nuclear fuel is performed in a manner consistent with ensuring the public health and safety.

The program describes the personnel to whom the program applies, the areas in which training is provided, what constitutes certification, how certification is maintained, and required qualifications (e.g., medical). The program shall comply with ANSI/ANS 3.1-1978, "American National Standard for Selection and Training of Nuclear Power Plant Personnel," consistent with the level of hazard at the facility and to ensure the facility is maintained in a safe and stable condition. Based on the anticipated permanently defueled status of VY as committed to under 10 CFR 50.82(a)(1), the Certified Fuel Handlers will not be trained as licensed operators; however, candidates in the training program will meet minimum operator experience requirements of ANS/ANS 3.1-1978. Changes to this program may be made without prior Nuclear Regulatory Commission (NRC) approval provided the program continues to comply with ANSI/ANS 3.1-1978.

The VY Certified Fuel Handler Training and Retraining Program will become effective upon:

(1) Approval of the Certified Fuel Handler Training and Retraining Program by the NRC,

and

(2) Amendment of the VY facility license to eliminate the requirements for the NRC Licensed Senior Reactor Operators and Reactor Operators, and the requirement for the associated 10 CFR 55 Training Program.

Training of personnel can be conducted prior to the Certified Fuel Handler Training and Retraining programs being approved by the NRC or prior to the training program effective date.

The Certified Fuel Handler Training and Retraining Programs are not accredited with National Academy for Nuclear Training in accordance with ACAD 02-002, The Process for Accreditation of Training in the Nuclear Power Industry. Although the program is not accredited, a systematic approach to training (SAT) process will be applied to the Certified Fuel Handler Training and Retraining Program. The program adheres to the guidelines of NUREG-1220, "Training Review Criteria and Procedures," Revision 1. Adherence may be demonstrated by compliance with applicable Entergy fleet training procedures.

As stated immediately above, an SAT process will be applied to the Certified Fuel Handler Training Program. The SAT process contains the following elements:

(1) Analysis of job performance requirements and training needs

- (2) Derivations of learning objectives based upon the preceding analysis
- (3) Design and implementation of the training program based upon learning objectives
- (4) Trainee evaluation
- (5) Program evaluation and revisions

The plant manager (or designee) may exempt an individual from a specific training requirement based upon the individual's depth of experience and previous training. Such exemptions, including the basis, shall be documented using a process similar to fleet training procedure EN-TQ-212, Conduct of Training and Qualification.

The Certified Fuel Handler Training Programs consist of an initial training program and a requalification training program (or retraining program) as described below.

## **2.0 INITIAL TRAINING PROGRAM**

### **2.1 Eligibility Requirements**

Candidates for enrollment in the Certified Fuel Handler initial training program shall meet the applicable requirements of ANSI 3.1-1978, Section 4.5.1.

Specifically at the time of appointment to the CERTIFIED FUEL HANDLER position the candidate shall have:

1. High school diploma or equivalent
2. Two years power plant experience; one year of which is nuclear power plant experience. At least 6 months of the nuclear experience shall be at VY.
3. Possess a high degree of manual dexterity and mature judgment

For the purposes of the Certified Fuel Handler training program the definition of nuclear power plant experience listed in ANSI 3.1-1978 is amended to include nuclear power plant experience acquired at a defueled reactor site which has spent nuclear fuel stored in its spent fuel pool.

### **2.2 Fundamentals Training**

The fundamental training phase of the Certified Fuel Handler Training Program consists of lecture, and/or self-study of topics appropriate to the monitoring, handling, storage, and cooling of nuclear fuel. The lecture method of instruction is the training of individual topics by classroom presentation. Self-study is training accomplished by the student through the independent study of texts, handouts, and other materials. Selection of topics will be based on a job analysis for the Certified Fuel Handler tasks and functions. Depending on an analysis of the candidate's

background, self-study may be used for up to 100% of the course material. A comprehensive exam at the end of the course will provide assurance of mastery of the skills, knowledges, and abilities required for successful performance of Certified Fuel Handler job and associated tasks.

Typically the fundamental topics include thermodynamics, heat transfer, fluid mechanics, radiological safety principles and monitoring, electrical theory, mechanical components operation, facility/system design and function, and facility administrative and safety procedures, as appropriate for the current plant status.

### **2.3 On-the-Job Training (OJT)**

The on-the-job training phase of the Certified Fuel Handler Training Program includes hands-on training of shift operations such as shift turnover, shift record keeping, removal and return of equipment to service, and specified watchstanding activities. Watchstanding activities include on-the-job training in operation of systems/components used to provide handling, storage, cooling, and monitoring of the fuel; normal, abnormal, and emergency procedures; accident analysis; Emergency Plan; facility license; and the content, bases, and importance of Technical Specifications. A minimum of 40 hours of on-shift watches under the instruction of a Certified Fuel Handler must be completed as part of the qualification process.

### **2.4 Candidate Evaluation**

#### **2.4.1 Examination**

A comprehensive final examination shall be administered at the end of the initial training program. The comprehensive examination shall include a written examination and an operating examination. Areas examined are described in Appendices A and B for the written and operating examinations, respectively. The written examination requires a minimum score of 80 percent to pass. The operating examination will consist of Job Performance Measures (JPMs). Passing criteria for an individual JPM is that the examinee successfully completes the assigned task in accordance with the governing procedure without missing any critical steps. Missed or incorrectly performed critical steps are the bases for JPM failure. Critical tasks for a JPM will be pre-identified as defined in NUREG 1021, Rev. 9, Supplement 1. Each JPM will be scored on a pass/fail basis. The candidate must pass at least 80 percent of the administered JPMs to successfully pass the operating examination.

#### **2.4.2 Examination Failures**

An individual who fails to pass either the written or operating examination shall not perform Certified Fuel Handler duties until he/she has completed a remedial training program and passes an appropriate re-examination. Only those portions of the original examination that were failed need to be re-examined (i.e. written or operating exam).



### 2.4.3 Exemption of Training Requirements

The plant manager (or designee) may exempt an individual from specific training requirements based upon the individual's depth of experience and previous training. Any exemptions granted shall be based on an evaluation of the candidate's training and/or work history to ensure that the intent of the exempted training objectives is satisfied. Such exemptions, including the basis, shall be documented using a process similar to fleet training procedure EN-TQ-212, Conduct of Training and Qualification.

The requirement for a medical examination shall not be exempted.

Training of current Licensed Operators (i.e. individuals who hold a current NRC issued VY Reactor Operator or Senior Reactor Operator License) may be evaluated to determine if they satisfy all of the requirements of this training program, or if they only need to complete portions of this program to qualify as a Certified Fuel Handler. This evaluation will focus on the differences between the requirements of a Certified Fuel Handler and a Licensed Operator to identify any additional training required to become a Certified Fuel Handler. Examples may include an examination on Technical Specifications, fuel handling, and administrative controls required to perform the Certified Fuel Handler function. The Certified Fuel Handler Training Program allows for the evaluation of other VY personnel to determine if portions of the required training have already been completed and therefore may be exempted. The evaluation will concentrate on required areas to determine if the level of previous training and examination were the same as that required for a Certified Fuel Handler.

In general the training of holders of NRC Senior Reactor Operator licenses who are also qualified as Fuel Handling Supervisors will meet the qualification requirements for Certified Fuel Handler. However it is expected that some additional training requirements may arise as the plant transitions to a permanently shutdown and defueled configuration. These additional training requirements may arise from changes to plant systems or procedures associated with Spent Fuel Pool operations. Therefore the training requirements for Certified Fuel Handler will be specifically identified and enumerated using the SAT process prior to permanent defueling. The training history of each currently licensed Senior Reactor Operator who is identified as a candidate for Certified Fuel Handler qualification will be separately evaluated to ensure that all the specific training requirements of the Certified Fuel Handler training program are met. Training to address any identified gaps between the individual's training history and the Certified Fuel Handler training program requirements will be completed prior to certification as Certified Fuel Handler.

The plant manager (or designee) shall approve the basis for evaluations qualifying an individual as a Certified Fuel Handler.

## **2.5 Qualifications**

All candidates shall satisfy the following requirements:

- (1) Complete the Certified Fuel Handler Training Program or have the requirement exempted per Section 2.3.3
- (2) Score  $\geq$  80 percent on a written examination
- (3) Pass  $\geq$  80 percent of the administered JPMs on the operating examination
- (4) Pass a medical examination by a physician to determine that the candidate's medical condition is not such that it might cause operational errors that could endanger other plant personnel or the public health and safety

## **3.0 RETRAINING PROGRAM**

### **3.1 Eligibility Requirements**

Candidates for enrollment in the Certified Fuel Handler retraining program (aka: requalification training program) shall have successfully completed the initial certified fuel handler training program.

### **3.2 Retraining**

All certified fuel handlers will participate in retraining program. The Certified Fuel Handler Retraining Program consists of lecture and/or self-study of topics appropriate to the monitoring, handling, storage, and cooling of nuclear fuel. The content of the retraining program will be based upon the tasks selected during program development for the retraining cycle. A retraining plan will be developed and will be approved by the plant manager (or designee). The training plan will be developed utilizing the SAT process described in Section 2.1. Retraining will typically include a review of changes associated with the facility and procedures, as well as problem areas associated with the monitoring, handling, storage, and cooling of nuclear fuel, and selected topics from the initial training program.

### **3.3 Schedule**

#### **3.3.1 Course Schedule**

The Certified Fuel Handler Retraining Program shall be administered in a biennial training cycle. This cycle includes annual operating examinations and biennial written examination. Biennial and annual are as defined in NUREG-I 021, "Operator Licensing Examination Standards for Power Reactors", Rev. 9, Supplement 1.

### 3.3.2 Missed Training

Any missed training or examination must be made up within 90 days of the missed training activity. If required training or evaluation is not completed within the specified makeup period, the Certified Fuel Handler shall be suspended from Certified Fuel Handler duties, pending successful completion of the missed training or evaluation.

## 3.4 Evaluation of Retraining

### 3.4.1 Examinations

Participants in the Certified Fuel Handler Retraining Program must pass a biennial written examination and an annual operating examination to maintain their qualification. Areas examined are described in Appendices A and B for the written and operating examinations, respectively. The written examination requires a minimum score of 80 percent to pass. The operating examination will consist of JPMs and each JPM will be scored on a pass/fail basis. Passing criteria for an individual JPM is that the examinee successfully completes the assigned task in accordance with the governing procedure without missing any critical steps. Missed or incorrectly performed critical steps are the bases for JPM failure. Critical tasks for a JPM will be pre-identified as defined in NUREG 1021, Rev. 9, Supplement 1. Each JPM will be scored on a pass/fail basis. The candidate must pass at least 80 percent of the administered JPMs to successfully pass the operating examination.

Periodic written and/or operating exams may be administered during the retraining cycle to assess student knowledge and training effectiveness.

### 3.4.2 Examination Failures

An individual who fails to pass either the comprehensive biennial written or annual operating examination shall not perform Certified Fuel Handler duties until a remedial training program is completed and an appropriate re-examination is passed. Only those portions of the examination that were originally failed need to be successfully re-examined prior to restoring qualifications (i.e. written or operating exam).

## 3.5 Maintenance of Certified Fuel Handler Qualifications

### 3.5.1 Requirements to Maintain Qualification

To maintain the Certified Fuel Handler qualification, the following requirements must be satisfied or they may be exempted per Section 3.4.2:

- (1) Complete all required Certified Fuel Handler Retraining
- (2) Score  $\geq$  80 percent on the biennial written examination

- (3) Pass  $\geq$  80 percent of the administered JPMs on the annual operating examination
- (4) Pass a biennial medical examination by a physician to determine that the Certified Fuel Handler's medical condition is not such that it might cause operational errors that could endanger other plant personnel or the public health and safety
- (5) Stand the designated Certified Fuel Handler watch for a minimum of eight (8) hours per calendar quarter. A Certified Fuel Handler who fails to meet this time requirement can regain qualified status by serving eight (8) hours of watch under the instruction of a qualified Certified Fuel Handler. The time under instruction should include a review of the spent fuel pool cooling system and shift turnover procedures.

An individual who fails to meet any of the requirements for maintaining the Certified Fuel Handler qualification shall be removed from all duties associated with that position until such time as the discrepancies can be resolved. The Operating Shifts shall be notified of the individual's removal and subsequent status.

#### 3.5.2 Exemption of Maintenance of Qualification Requirements

The plant manager (or designee) may exempt an individual from a specific retraining requirement. Such exemptions, including the basis, shall be documented using a process similar to fleet training procedure EN-TQ-212, Conduct of Training and Qualification. The requirement for a biennial medical examination shall not be exempted. An individual shall not be exempted from the annual operating or biennial written examinations unless that individual prepared the examination. No individual may be exempted from any two consecutive annual operating exams. No individual may be exempted from any two consecutive biennial written examinations.

## 4.0 **PROGRAM EVALUATION**

As part of the training process, routine assessments of the effectiveness and accuracy of training are conducted by appropriate VY management personnel during and at the end of each two (2) year training cycle. Evaluation results shall be reviewed by a station oversight board as defined in site procedures. The station oversight board will verify the resolution of any discrepancies identified by the evaluation. Any required changes to the program determined by the station oversight board, shall be incorporated into the program.

## 5.0 **RECORD RETENTION**

Records associated with the Certified Fuel Handler Training and Retraining Program will be retained in retrievable format for the duration of the plant license.

## APPENDIX A

### WRITTEN EXAMINATION AREAS

#### CERTIFIED FUEL HANDLER TRAINING AND RETRAINING PROGRAM

The written examination shall include a sample of the following aspects of the Certified Fuel Handler position:

- (1) Design, function, and operation of systems used in handling, storage, cooling, monitoring of nuclear fuel, and auxiliary support systems.
- (2) Purpose and operation of the radiation monitoring systems.
- (3) Radiological safety principles and procedures including radiation hazards that may arise during normal, maintenance, and abnormal activities.
- (4) Principles of heat transfer, thermodynamics, and fluid mechanics as they apply to fuel handling, storage, cooling, and monitoring.
- (5) Conditions and limitations of facility license, including content, basis and importance of Technical Specifications.
- (6) Assessment of facility condition and selection of appropriate procedures during normal, abnormal and emergency situations.
- (7) Fuel handling facilities and procedures.

## **APPENDIX B**

### **OPERATING EXAMINATION AREAS**

#### **CERTIFIED FUEL HANDLER TRAINING AND RETRAINING PROGRAM**

The operating examination will consist of Job Performance Measures and shall include a sample of the following aspects of the Certified Fuel Handler duties and tasks:

- (1) Evaluate annunciators; valve, pump, and breaker status indicators; and instrument readings as necessary to determine/perform appropriate remedial actions.
- (2) Evaluate the ability to manipulate the controls required to obtain desired operating results during normal, abnormal, and emergency conditions. This includes the spent fuel pool cooling system and those auxiliary and emergency systems that could affect the release of radioactive material to the environment.
- (3) Evaluate radiation monitoring system readings, including alarm conditions, to determine appropriate actions. Such actions may include setting an alarm setpoint to monitor a release or determine appropriate remedial actions for an alarm condition.
- (4) Evaluate abnormal or emergency conditions to determine if the emergency plan for the facility should be implemented and, if implemented, evaluate performance of duties as required by the emergency plan.