



Entergy Nuclear Operations, Inc.  
Pilgrim Nuclear Power Station  
600 Rocky Hill Road  
Plymouth, MA 02360

Everett P. Perkins, Jr.  
Regulatory Assurance Manager

February 2, 2017

U.S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, DC 20555-0001

SUBJECT: Request for Approval of a Certified Fuel Handler Training and Retraining Program

Pilgrim Nuclear Power Station  
Docket No. 50-293  
Renewed License No. DPR-35

- REFERENCES:
1. Letter, Entergy Nuclear Operations, Inc., to NRC, "Notification of Permanent Cessation of Power Operations," dated November 10, 2015 (Letter Number: 2.15.080) (ML15328A053)
  2. Letter, Entergy Nuclear Operations, Inc., to NRC, "Request for Approval of a Certified Fuel Handler Training and Retraining Program," dated January 15, 2016 (ML16015A455)
  3. Letter, NRC to Entergy Nuclear Operations, Inc., "James A. Fitzpatrick Nuclear Power Plant - Approval of the Certified Fuel Handler Training and Retraining Program," dated October 17, 2016 (CAC No. MF7282) (ML16259A347)

LETTER NUMBER: 2.17.001

Dear Sir or Madam:

On November 10, 2015, Entergy Nuclear Operations, Inc. (ENO) notified the U.S. Nuclear Regulatory Commission (NRC) that it intends to permanently cease power operations of the Pilgrim Nuclear Power Station (PNPS) no later than June 1, 2019 (Reference 1).

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

After certifications of permanent cessation of power operations and permanent removal of fuel from the reactor vessel, in accordance with 10 CFR 50.82(a)(1)(i) and (ii), the 10 CFR Part 50 license will no longer authorize reactor operation or emplacement or retention of fuel in the reactor vessel pursuant to 10 CFR 50.82(a)(2). As a result, licensed reactor operators will no longer be required to support plant operating activities. Instead, approval of a CFH Training and

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Retraining Program is needed to facilitate activities associated with decommissioning and irradiated fuel handling and management.

A copy of the proposed CFH Training and Retraining Program is provided in the Attachment of this submittal. PNPS proposed program is patterned after the James A. Fitzpatrick Nuclear Power Plant CFH Training and Retraining Program which was previously submitted (Reference 2) and approved by the NRC (Reference 3).

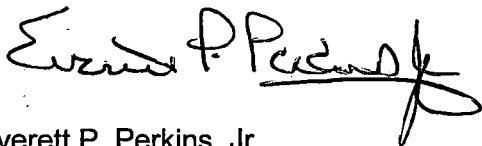
The CFH Training and Retraining Program will ensure that the qualifications of personnel are commensurate with the tasks to be performed and the conditions requiring response. 10 CFR 50.120, "Training and Qualification of Nuclear Power Plant Personnel," requires training programs to be established, implemented, 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 10 CFR Part 50. After permanent cessation of operation and certification of fuel removal, the license will no longer authorize operation. The CFH Training and Retraining Program will nonetheless align with the provisions of 10 CFR 50.120. The CFH Training and Retraining Program provides adequate confidence that appropriate SAT based training of personnel who will perform CFH duties is conducted to ensure the facility is maintained in a safe and stable condition.

ENO requests approval of this CFH Training Program by December 15, 2017 in order to support preparations for and the timely transition of PNPS to a permanently shutdown and defueled condition.

If you have any questions regarding the content of this submittal, please contact me at 508-830-8323.

There are no regulatory commitments contained in this letter.

Sincerely,



Everett P. Perkins, Jr.  
Regulatory Assurance Manager

EPP/sd

Attachment: Certified Fuel Handler Training and Retraining Program

cc: Mr. Daniel H. Dorman  
Regional Administrator, Region I  
U.S. Nuclear Regulatory Commission  
2100 Renaissance Blvd, Suite 100  
King of Prussia, PA 19406-2713

Ms. Booma Venkataraman, Project Manager  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop O-8C2-A  
Washington, DC 20555-001

Mr. John Priest, Director,  
Massachusetts Department of Public Health  
Radiation Control Program  
Commonwealth of Massachusetts  
529 Main Street, Suite 1M2A  
Charlestown, MA 02129-1121

Mr. John Giarrusso, Jr.  
Planning and Preparedness Section Chief  
Mass. Emergency Management Agency  
400 Worcester Road  
Framingham, MA 01702

NRC Resident Inspector  
Pilgrim Nuclear Power Station

**Attachment**

Letter Number 2.17.001

Pilgrim Nuclear Power Station  
Certified Fuel Handler Training and Retraining Program

## **Pilgrim Nuclear Power Station Certified Fuel Handler Training and Retraining Program**

### **1. INTRODUCTION**

The Certified Fuel Handler Training and Retraining Program contained herein describes the training program to be implemented at the Pilgrim Nuclear Power Station (PNPS) 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 the PNPS Technical Specifications (TS) and be consistent with the level of hazard at the facility to ensure the facility is maintained in a safe and stable condition. Certified Fuel Handlers will not be trained as licensed operators; however, candidates in the training program shall meet minimum applicable operator experience requirements of the facility TS. Changes to this program may be made without prior U. S. Nuclear Regulatory Commission (NRC) approval provided the program continues to comply with the TS.

The 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 PNPS Renewed Facility Operating License to eliminate the requirements for the NRC licensed Senior Reactor Operators and Reactor Operators, and the requirement for the associated 10 Code of Federal Regulations (CFR) Part 55 Training Program.

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

The Certified Fuel Handler Training and Retraining Program is not accredited with the 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, the Certified Fuel Handler Training and Retraining Program will adhere to the guidelines of Revision 1 of NUREG-1220, "Training Review Criteria and Procedures," that are applicable to a permanently defueled facility and be based on a systematic approach to training (SAT) process.

The SAT process contains the following elements:

- (1) Systematic analysis of the jobs to be performed.
- (2) Learning objectives derived from the analysis which describe desired performance after training.
- (3) Training design and implementation based on the learning objectives.

- (4) Evaluation of trainee mastery of the objectives during training.
- (5) Evaluation and revision of the training based on the performance of trained personnel in the job setting.

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.

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

## **1.1 INITIAL TRAINING PROGRAM**

### **Eligibility Requirements**

Candidates for enrollment in the Certified Fuel Handler initial training program shall meet the applicable requirements of the facility TS.

For the purposes of the Certified Fuel Handler Training Program, the definition of nuclear power plant experience listed in American National Standards Institute (ANSI) 3.1-1978 as amended to include nuclear power plant experience acquired at a defueled reactor site which has spent nuclear fuel stored in its spent fuel pool.

### **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. The job analysis will be performed by an individual holding a Senior Reactor Operator license at the facility. A Difficulty, Importance and Frequency (DIF) rating will be assigned to each Certified Fuel Handler task by a holder of a Senior Reactor Operator license who is familiar with the expected plant conditions during decommissioning. A review of the DIF ratings for each task will be performed by Operations and Training personnel and management. Learning objectives will be derived from the analysis to describe the desired performance after training. Training materials will be designed based on the learning objectives. 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, knowledge, 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 facility status.

The training plan will adhere to the guidelines of Revision 1 of NUREG-1220, "Training Review Criteria and Procedures," that are applicable to a permanently defueled facility and be developed utilizing the SAT process.

The following procedures provide specific guidance on training design and implementation, such as guidance on training program oversight, administration, analysis of training needs, development of lesson objectives and lesson plans, design and development of training materials, conduct of training, evaluation of training effectiveness, and record keeping:

- EN-TQ-201, Systematic Approach to Training Process
- EN-TQ-201-01, SAT – Analysis Phase
- EN-TQ-201-02, SAT – Design Phase
- EN-TQ-201-03, SAT – Development Phase
- EN-TQ-201-04, SAT – Implementation Phase
- EN-TQ-201-05, SAT – Evaluation Phase

### **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 watch-standing activities. Watch-standing 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 TS. 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.

### **Candidate Evaluation**

#### 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 steps for a JPM will be pre-identified as defined in Revision 10 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors" or later. 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.

### 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).

### 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. The requirement for a medical examination shall not be exempted.

Training of current PNPS Licensed Operators (i.e., individuals who hold a current NRC issued 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 TS, 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 facility 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.

## **Qualifications**

All candidates shall satisfy the following requirements:

- (1) Complete the Certified Fuel Handler Training Program or have the requirement exempted;
- (2) Score at least 80 percent on a written examination;
- (3) Pass at least 80 percent of the administered JPMs on the operating examination; and
- (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

## **1.2 RETRAINING PROGRAM**

### **Eligibility Requirement**

Candidates for enrollment in the Certified Fuel Handler Retraining program (also known as the requalification training program) shall have successfully completed the initial Certified Fuel Handler Training Program.

### **Retraining**

All Certified Fuel Handlers will participate in the 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 adhere to the guidelines of Revision 1 of NUREG-1220, "Training Review Criteria and Procedures," that are applicable to a permanently defueled facility and be developed utilizing the SAT process. 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.

### **Schedule**

#### 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 Revision 10 of NUREG-1021 or later.

#### 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.

## **Evaluation of Retraining**

### 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 Revision 10 of NUREG-1021 or later. 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.

### 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 that were originally failed need to be successfully re-examined prior to restoring qualifications.

## **Maintenance of Certified Fuel Handler Qualifications**

### Requirements to Maintain Qualification

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

- (1) Complete all required Certified Fuel Handler Retraining;
- (2) Score at least 80 percent on the biennial written examination;
- (3) Pass at least 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; and

- (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.

#### 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. 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.

### **1.3 PROGRAM EVALUATION**

As part of the training process, routine assessments of the effectiveness and accuracy of training are conducted by appropriate management personnel during and at the end of each two (2) year training cycle. These routine assessments ensure that the PNPS Certified Fuel Handler Training and Retraining Program:

- (1) Contains the guidance necessary to ensure compliance with the requirements of the SAT process defined in 10 CFR 50.120(b)(3); and
- (2) Is revised to incorporate changes to the program, as appropriate, to reflect industry experience, changes to the facility, procedures, regulations, and quality assurance requirements.

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.

### **1.4 RECORDS RETENTION**

Records associated with the Certified Fuel Handler Training and Retraining Program will be retained in retrievable format until there is no longer a need for the Certified Fuel Handler position at the facility (i.e., all fuel permanently transferred to a dry fuel storage facility).

## **1.5 EVALUATING CHANGES TO THE CFH TRAINING AND RETRAINING PROGRAM**

Because the program is based on SAT, changes may be made to program elements without NRC approval as long as the following are applicable: (1) suitable proficiency in the performance of the program's activities is maintained; and (2) changes are documented in an accessible manner that will allow the NRC to verify the adequacy of the program in accordance with 10 CFR 50.120.

Specifically, the NRC-approved Certified Fuel Handler Training and Retraining Program will be revised to incorporate changes to the program, as appropriate, to reflect industry experience, changes to the facility, procedures, regulations, and quality assurance requirements.

## **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.