

NEI 15-04 [Revision 0]

Guidelines for a Certified Fuel Handler Training and Retraining Program

November 3, 2015

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Nuclear Energy Institute

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Fuel Handler Training
and Retraining Program**

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ACKNOWLEDGMENTS

This document was developed by the Nuclear Energy Institute (NEI) Decommissioning Task Force.

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EXECUTIVE SUMMARY

The purpose of this document is to provide a standard Certified Fuel Handler (CFH) training and retraining program that meets NRC acceptance criteria and can be approved by the NRC pursuant to 10 CFR 50.2. The program described herein is based on CFH training and retraining programs that were recently approved by NRC for individual licensees.

CFHs are non-licensed operators commonly used at permanently defueled nuclear reactor facilities that continue to store irradiated fuel in a spent fuel pool. Consistent with SECY-00-0145, the CFH is intended to be the on-shift licensee representative who is not only responsible for safe fuel handling activities at a decommissioning plant, but is always present on shift to ensure the safe maintenance and storage of spent fuel and the overall safety of any decommissioning-related activities at the facility.

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GUIDELINES FOR A CERTIFIED FUEL HANDLER TRAINING AND RETRAINING PROGRAM

1 INTRODUCTION AND PURPOSE

Upon submitting the 10 CFR 50.82(a)(1)(i) and (ii) certifications for permanent cessation of power reactor operations and permanent removal of fuel from the reactor vessel, 10 CFR 50.82(a)(2) no longer authorizes operation of the reactor or emplacement or retention of fuel in the reactor vessel. The regulation at § 50.54(m) is not applicable to a permanently shutdown and defueled reactor, therefore licensed reactor and senior reactor operators are no longer required, and are replaced by the Certified Fuel Handler (CFH). The qualification, training and retraining of the CFH provides an appropriate level of on-shift oversight for a nuclear power reactor during decommissioning, commensurate with the reduced risks and relative simplicity of the facility systems needed for safe storage of spent fuel, for safely conducting decommissioning-related activities, including the safe handling and storage of spent fuel, and response to plant emergencies.

The purpose of this document is to describe a standard program, developed using NRC guidance and recent precedents, which may be approved by the NRC for use by nuclear power reactor licensees in developing a training and retraining program for the CFH. Licensees may use the standard program, upon approval by NRC, to develop licensee specific CFH training program documents and procedures in order to implement the CFH training program. Licensees retain the option to develop and submit a licensee-specific program for NRC approval.

2 DEFINITIONS AND GUIDANCE

This section provides definitions for terms applicable to the CFH training and retraining program, and identifies regulatory requirements and guidance that was adopted, applied or otherwise used in the development of the program, based on recent precedents. Applicability of regulations to the CFH training program is described in SECY-00-145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning."

The NRC definition of Certified Fuel Handler is contained within 10 CFR 50.2:

Certified fuel handler means, for a nuclear power reactor facility, a non-licensed operator who has qualified in accordance with a fuel handler training program approved by the Commission.

10 CFR 50.120, "Training and qualification of nuclear power plant personnel," states, in part, that:

(b)(2) The training program must be derived from a systems approach to training as defined in 10 CFR 55.4, and must provide for the training and qualification of the following categories of nuclear power plant personnel:

(i) Non-licensed operator.

(b)(3) The training program must incorporate the instructional requirements necessary to provide qualified personnel to operate and maintain the facility in a safe manner in all modes of operation. The training program must be developed to be in compliance with the facility license, including all technical specifications and applicable regulations. The training program must be periodically evaluated and revised as appropriate to reflect industry experience as well as changes to the facility, procedures, regulations, and quality assurance requirements. The training program must be periodically reviewed by licensee management for effectiveness. Sufficient records must be maintained by the licensee to maintain program integrity and kept available for NRC inspection to verify adequacy of the program.

10 CFR 55.4 defines Systems Approach to Training as:

Systems approach to training means a training program that includes the following five elements:

- (1) Systematic analysis of the jobs to be performed.*
- (2) Learning objectives derived from the analyses 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.*

3 BACKGROUND

3.1 CFH TRAINING PROGRAM BROAD-SCOPE OBJECTIVES

The 1996 "Decommissioning of Nuclear Power Reactors" rulemaking that adopted the definition of a CFH recognized that the risks posed by permanently shutdown and defueled power reactors are significantly less than those posed by operating reactors. In that rulemaking, the Commission noted that:

- While the spent fuel is still highly radioactive and generates heat caused by radioactive decay, no neutron flux is generated and the fuel slowly cools as its energetic decay products diminish.
- The systems required for maintaining the spent fuel in the spent fuel pool as well as the operations required to contain the remaining residual contamination in the facility and spent fuel pool are relatively simple.
- Because the spent fuel is stored in a configuration that precludes the nuclear fission reaction, no generation of new radioactivity can occur, and during the

decommissioning stage of the reactor the potential for consequences that could result from an inadvertent nuclear reaction are highly unlikely.

Because of the reduced risks and relative simplicity of the systems needed for safe storage of the spent fuel, the Commission stated in the rulemaking that "[t]he degree of regulatory oversight required for a nuclear power reactor during its decommissioning stage is considerably less than that required for the facility during its operating stage."

In the rulemaking, the Commission also provided insights as to the responsibilities of the new position of the CFH. Specifically, the CFH is needed to ensure that emergency action decisions necessary to protect the public health and safety are made by an individual who has both the requisite knowledge and plant experience.

These CFH responsibilities were further affirmed in the NRC staff's proposed decommissioning rulemaking plan (SECY-00-145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning," dated June 28, 2000). Although never voted on by the Commission, the paper provided the following insights on CFH responsibilities:

The certified fuel handler is intended to be the onshift licensee representative who is not only responsible for safe fuel handling operations at a decommissioning plant, but is always present on shift to ensure the safe maintenance and storage of spent fuel and the overall safety of any decommissioning-related activities at the facility.

Considering the definition of Certified Fuel Handler in 10 CFR 50.2, the background provided by the 1996 decommissioning rule statements of consideration, and the insights provided in SECY-00-145, an acceptable CFH training program should ensure that the trained individual has requisite knowledge and experience in spent fuel handling and storage, reactor decommissioning, and is capable of evaluating plant conditions and exercising prudent judgment for emergency action decisions. In addition, since the CFH is defined as a non-licensed operator, the criteria in 10 CFR 50.120 may be used as a basis for an acceptable training and qualification program. This program should be assessed against the elements of a systems approach to training.

Based on the above, three broad-scope objectives are used as criteria for an acceptable CFH training program:

- (1) Safe conduct of decommissioning activities
- (2) Safe handling and storage of spent fuel
- (3) Appropriate response to plant emergencies

3.2 TRAINING PROGRAM EVALUATION

Following issuance of the 1996 decommissioning rule, the NRC commenced review and approval of CFH training programs for permanently shutdown and defueled reactors consistent with the requirements in the rule. Reactors that permanently shut down would reassess their staffing plans related to decommissioning organization structure; retaining,

re-assigning or releasing staff; and meeting minimum staffing requirements in technical specifications and regulatory required programs (e.g., emergency response organizations, fire brigade size, security, etc.). The effort balanced personnel and plant status commensurate with the reduced risk once the certifications associated with permanent cessation of operation had been submitted. Included in the effort was the transition from licensed operators to CFHs. With a simplified operating configuration in the permanently shutdown and defueled condition, licensed operators were replaced with CFHs following NRC approval of the CFH training program.

Consistent with these changes, the training and requalification programs required by 10 CFR Part 55 were modified to reflect the reduced staffing levels and responsibilities of the operations staff at a decommissioning facility. Past practice by the NRC related to review of a CFH training program (see NRC safety evaluations for Maine Yankee, dated November 26, 1997 (ADAMS Accession No. 9712040233), and Zion, dated July 20, 1998 (ADAMS Accession No. 9807240263) included confirming that the program was based on a systems approach to training (SAT) as defined in 10 CFR 55.4. On May 12, 2014, the NRC staff approved a CFH program for Kewaunee (ADAMS Accession No. ML14104A046). On June 26, 2014, the NRC staff approved a CFH program for Crystal River 3 (ADAMS Accession No. ML14155A181). On August 1, 2014, the NRC staff approved a CFH programs for San Onofre (ADAMS Accession No. ML13268A165). On October 1, 2014, the NRC staff approved a CFH program for Vermont Yankee (ADAMS Accession No. ML14162A209).

4 PROGRAM DESCRIPTION

The Certified Fuel Handler Training and Retraining Program described herein ensures the CFH provides an appropriate level of oversight for decommissioning-related activities associated with a permanently shutdown and defueled reactor, including safe handling and storage of spent fuel, and response to facility emergencies. This level of oversight is commensurate with the reduced risks and relative simplicity of the facility systems required for these functions, and ensures activities are 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 will ensure the qualification of the CFH is consistent with the level of hazard at the facility and adequate to ensure the facility is maintained in a safe and stable condition. CFHs will not be trained as licensed operators; however, candidates in the training program shall comply with the requirements of Section 4.1.1. Changes to this program may be made without prior NRC approval provided the program continues to comply with the requirements of Section 4.1.1 and the conditions specified in Section 4.5 are met.

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

- (1) NRC approval of the Certified Fuel Handler Training and Retraining Program described in this document, and;
- (2) If required, amendment of the 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, the Certified Fuel Handler Training and Retraining Program shall be based on a systematic approach to training (SAT) process, and should adhere to the guidelines of NUREG-1220, "Training Review Criteria and Procedures," as applicable.

The SAT process contains the following elements:

- (1) Systematic analysis of the jobs to be performed (Section 4.1.2).
- (2) Learning objectives derived from the analysis which describes desired performance after training (Section 4.1.2).
- (3) Training design and implementation based on the learning objectives (Sections 4.1.2 and 4.1.3).
- (4) Evaluation of trainee mastery of the objectives during training (Sections 4.1.4, 4.1.5, and 4.2).
- (5) Evaluation and revision of the training based on the performance of trained personnel in the job setting (Sections 4.3 and 4.5).

Consistent with the requirements of 10 CFR 50.120(b)(3):

- Training requirements are based on job analysis, and examination areas for CFH training and retraining are provided (Sections 4.1.2, 4.1.4, and 4.2.4, Appendix A and Appendix B)
- The program is developed in compliance with the facility license (Section 4.1.1)
- Management reviews and assessments of the effectiveness of the program are performed (Section 4.3)
- Training records are retained (Section 4.4)

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

4.1 INITIAL TRAINING PROGRAM

4.1.1 Eligibility Requirements

The CFH training program, including eligibility requirements associated with the CFH qualification, shall be in compliance with the requirements of the facility license and technical specifications, the quality assurance program as applicable, and applicable regulations, consistent with 10 CFR 50.120(b)(3). Typically these requirements are directly tied to ANSI/ANS standards for selection and training of nuclear power plant personnel, such as ANSI N18.1-1971, ANSI/ANS-3.1-1978 (revision to N18.1-1971), or ANSI/ANS-3.1-1981, and the licensee may have committed to a revision of Regulatory Guide 1.8. For the purposes of the CFH training program, the requirements for minimum training, qualification and experience that applied to licensed operators prior to permanent cessation of plant operations are considered acceptable, and the CFH training program should not require a commitment to a different or later standard than was accepted during plant operations. Therefore, the CFH training program shall be in accordance with these requirements unless the licensee changes these requirements using the appropriate change process, such as 10 CFR 50.90 for changes to the technical specifications, or 10 CFR 50.54(a) for changes to the quality assurance program.

For example, ANSI/ANS-3.1-1978 requires supervisors not requiring NRC licenses (e.g., Certified Fuel Handlers) to have a high school diploma or equivalent and four years of experience in the discipline being supervised. ANSI/ANS-3.1-1978 requires plant operators to have a high school diploma or equivalent, two years of power plant experience, and should possess a high degree of manual dexterity and mature judgment. ANSI/ANS-3.1-1978 requires that one year of experience shall be nuclear power plant experience, with at least six months experience at the facility, unless the experience was acquired at a similar facility, and six months credit may be granted towards the experience requirement for related technical training or relevant experience. Manual dexterity and mature judgment may be determined by the hiring process and minimum experience requirements, the qualification process demonstrating performance capability for the tasks assigned, the judgment of a medical review officer that the individual possesses the ability to operate the required controls (e.g., valves and switches), or a combination of these. This qualification may be validated by successful completion of the initial CFH training program.

For the purposes of the Certified Fuel Handler training program the definition of nuclear power plant experience listed in ANSI/ANS-3.1-1978, or equivalent, is amended to also include experience acquired at a defueled reactor site which has spent nuclear fuel stored in a spent fuel pool, and, if similar to the facility, this applies to the requirement for minimum experience at the facility (e.g., six months as specified in ANSI/ANS-3.1-1978).

4.1.2 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, and other decommissioning-related activities, and includes training on CFH tasks as well as required fundamental topics. 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 shall be based on a job analysis for the Certified Fuel Handler tasks and functions.

The job analysis should be performed by a knowledgeable individual, such as an individual holding a Senior Reactor Operator license at the facility, or combination of individuals, with a broad understanding of the tasks required to support decommissioning-related activities. The job analysis should initially use the Senior Reactor Operator task list for the plant when it was operating as a basis, and evolve the task list to reflect the changes to the facility based on the decommissioning status, by adding, modifying or deleting tasks as needed. A Difficulty, Importance and Frequency (DIF) review on the job analysis should be performed by a knowledgeable individual or combination of individuals familiar with the expected facility conditions and activities during decommissioning. The review should assign DIF ratings for each task, upon which the training requirements for CFH candidates are based.

Applicable training objectives and materials should be selected for the required fundamentals topics based on the CFH tasks and their supporting knowledge requirements. It is expected that only a subset of generic fundamental topics applicable to an operating reactor will be required after the reactor is permanently shut down and defueled, due to the relative simplicity of the facility systems needed for the safe storage of spent fuel. Typically the fundamental topics should 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.

Lesson plans shall identify learning objectives, and training design and materials shall be sufficient to cover the learning objectives, subject to the oversight requirements of Section 4.3.

Depending on an evaluation of the candidate's background, self-study may be used for up to 100 percent of the course material.

4.1.3 On-the-Job Training (OJT)

The on-the-job training phase of the Certified Fuel Handler Training Program includes hands-on training of on-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; and Emergency Plan. A minimum of 40 hours of on-shift watches under the instruction of a Certified Fuel Handler shall be completed as part of the qualification process.

4.1.4 Candidate Evaluation

4.1.4.1 Examination

A comprehensive final examination shall be administered at the end of the initial training program to provide assurance of mastery of the skills, knowledge, and abilities required for successful performance of Certified Fuel Handler tasks. 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 should be pre identified as defined in Supplement 1 to NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." Each JPM will be scored on a pass/fail basis. The candidate shall pass at least 80 percent of the administered JPMs to successfully pass the operating examination.

4.1.4.2 Examination Failures

An individual who fails to pass either the written or operating examination shall not perform Certified Fuel Handler duties independently 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).

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

For example, training of current 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 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 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 previous training and qualification/examination were equivalent to 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. 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.

4.1.5 Qualifications

All candidates shall satisfy the following requirements:

- (1) Complete the Certified Fuel Handler Training Program or have the requirement exempted per Section 4.1.4.3
- (2) Score at least 80 percent on a written examination
- (3) Pass at least 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

Following completion of initial training, an appropriate manager should approve qualification of the candidate prior to his or her assignment to any position requiring the Certified Fuel Handler qualification.

4.2 RETRAINING PROGRAM

4.2.1 Eligibility Requirement

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.

4.2.2 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 will be developed utilizing the SAT process described in Section 4. 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.

4.2.3 Schedule

4.2.3.1 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 Supplement 1 to NUREG-1021.

4.2.3.2 Missed Training

Any missed training or examination shall be made up not later than prior to taking the next annual examination. 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.

4.2.4 Evaluation of Retraining

4.2.4.1 Examinations

Participants in the Certified Fuel Handler Retraining Program shall 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 should be pre-identified as defined in Supplement 1 to NUREG 1021. Each JPM will be scored on a pass/fail basis. The candidate shall 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.

4.2.4.2 Examination Failures

An individual who fails to pass either the comprehensive biennial written or annual operating examination shall not perform Certified Fuel Handler duties independently 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.

4.2.5 Maintenance of Certified Fuel Handler Qualifications

4.2.5.1 Requirements to Maintain Qualification

To maintain the Certified Fuel Handler qualification, the following requirements shall be satisfied or they may be exempted per Section 4.1.4.3:

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
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.

4.2.5.2 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. 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.

4.3 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. Assessments should ensure the program is revised, as appropriate, to reflect changes to the facility and relevant industry experience. Licensee management shall periodically review the CFH training program for effectiveness, and verify the resolution of any discrepancies identified by the review. Any required changes to the program determined by the management review shall be incorporated into the program.

4.4 RECORDS RETENTION

Sufficient records associated with the Certified Fuel Handler Training and Retraining Program shall be maintained by the licensee to maintain program integrity and kept available for NRC inspection to verify the adequacy of the program. Records shall 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).

4.5 EVALUATING CHANGES TO THE CFH TRAINING AND RETRAINING PROGRAM

Because the program is based on SAT, licensees may change 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 the systems approach to training.

5 REFERENCES

- 5.1** SECY-00-145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning," dated June 28, 2000
- 5.2** Statements of Consideration for the "Decommissioning of Nuclear Power Reactors," Proposed Rule (60 FR [*Federal Register*] 37374, dated July 20, 1995 and Final Rule (61 FR 39278), dated July 29, 1996
- 5.3** NUREG-1220, Training Review Criteria and Procedures
- 5.4** NUREG-1021, Operator Licensing Examination Standards for Power Reactor

- 5.5** ANSI/ANS 3.1-(1978) (1981), “Selection and Training of Nuclear Power Plant Personnel”
- 5.6** ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel"
- 5.7** Regulatory Guide 1.8, Qualification and Training of Personnel for Nuclear Power Plants
- 5.8** NRC Safety Evaluation, “Crystal River Unit 3 – Review of Certified Fuel Handler Training and Retraining Program,” June 26, 2014 (ADAMS Accession No. ML14155A181)
- 5.9** NRC Safety Evaluation, “Kewaunee Power Station – Approval of Shift Manager/Certified Fuel Handler Training Program,” May 12, 2014 (ADAMS Accession No. ML14104A046)
- 5.10** NRC Safety Evaluation, “San Onofre Nuclear Generating Station, Units 2 and 3 – Approval of Safe Storage Shift Manager/Certified Fuel Handler Training Program,” August 1, 2014 (ADAMS Accession No. ML13268A165)
- 5.11** NRC Safety Evaluation, “Vermont Yankee Nuclear Power Station – Review of Certified Fuel Handler Training and Retraining Program,” October 1, 2014 (ADAMS Accession No. ML14162A209)
- 5.12** NRC Safety Evaluation for Amendment 160 to License DPR-36, Maine Yankee, November 26, 1997 (ADAMS Accession No. 9712040233)
- 5.13** NRC Safety Evaluation for Certified Fuel Handlers Training and Retraining Program for Zion Nuclear Power Station Units 1 and 2, July 20, 1998 (ADAMS Accession No. 9807240263)
- 5.14** NRC Safety Evaluation, “Millstone Nuclear Power Station, Unit 1 – Approval of Certified Fuel Handler Training Program,” February 11, 1999

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.