

Appendix C-7
Decommissioning Inspector
Technical Proficiency
Training and Qualification Journal

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Introduction

Do not begin the activities or complete the courses in this qualification journal until you have completed the Basic Inspector Certification Journal. You may complete the General Proficiency requirements contained in Appendix B together with the Technical Proficiency requirements outlined in this journal.

Required Decommissioning Inspector Training Courses:

- Power Plant Engineering (self study of selected chapters)
- GE Technology (R-105B)
- Westinghouse Technology (R-104P)
- Introductory Health Physics (H-117)
- Radiological Surveys in Support of Decommissioning (H-120)
- Transportation of Radioactive Materials (H-308)

Required Decommissioning Inspector Refresher Training: None identified

Decommissioning Inspector Individual Study Activities

Decommissioning Inspector Individual Study Activity

TOPIC: (ISA-DEC-1) Documents for Decommissioning Inspectors

PURPOSE: The NRC provides guidance to industry stakeholders for the accomplishment of decommissioning. These documents, in part, provide methodologies, techniques, and insight into industry lessons learned, regulatory requirements, and generic information. Inspectors detailed for inspection to decommissioning power reactor facilities (i.e., Part 50 licensees), need to understand the regulatory process of decommissioning and licensee plans, programs and activities necessary to safely dismantle and decontaminate the site, structures, systems, and components (SSCs) in an effort to terminate its Part 50 license. This ISA will provide the inspector with knowledge of where to look for detailed information on regarding the regulatory and licensee activities associated with decommissioning.

COMPETENCY

AREA: INSPECTION

LEVEL

OF EFFORT: 200 hours

REFERENCES:

1. 10 CFR Part 20
2. 10 CFR Part 50
3. 10 CFR Part 73
4. See list of references related to the various topics at the end of this activity.

EVALUATION

CRITERIA:

1. Demonstrate detailed understanding and working knowledge of Safety Evaluations for 50.59's and design modifications based on the information contained in the Section A of the list of references.
2. Demonstrate understanding and a working knowledge of license termination and radiological surveys that demonstrate compliance with site radiological release criteria based on the information contained in Section B of the list of references.
3. Demonstrate detailed understanding and working knowledge of wet spent fuel storage based on the information contained in Section C of the list of references. Be able to describe the safety considerations and insights associated with each, inspection focus, and how risk changes with time.

4. Demonstrate understanding and describe the safety considerations associated with each of the following subject areas based on the information contained in the corresponding section of the list of references. This section is not required if candidate is qualified Reactor Health Physics Inspector or Materials Radiation Specialist Inspector or has commensurate knowledge, experience, or qualification as determined by regional instructions.
 - a. Disposal of Low-Level Radioactive Waste (LLRW) at a Part 50 Site or Facility (Section D)
 - b. Radiation Protection (RP) (Section E)
 - c. Radiological Effluents and Environmental Monitoring (Section F)
 - d. Radioactive Material Transportation (Section G)
5. Demonstrate understanding of the following subject areas based on the information contained in the list of reference documents.
 - a. Dry Fuel Systems (Section H)
 - b. Quality Assurance (Section I)
 - c. Financial Assurance (Section J)
 - d. Emergency Preparedness (Section K)
 - e. Fire Protection (Section L)
 - f. Safeguards (Section M)
 - g. Maintenance/Dismantlement/Decontamination (Section N)
 - h. Records and Reporting (Section O)

TASKS:

1. Read References 1 and 2. Discuss with qualified inspectors or your supervisor, those sections which are applicable to decommissioning. Understand why particular parts and sections of the 10 CFR are no longer applicable to a decommissioning commercial nuclear power plant. Understand these regulations to a level commensurate with the ability to perform inspection, verify compliance, and assess safety significance and licensee performance.
2. Read Reference 3. Discuss with qualified inspectors or your supervisor, sections important to decommissioning including the following:
 - a. how an ISFSI is licensed
 - b. the differences between specific and general licenses
 - c. the change process associated with ISFSI design
 - d. the requirements for ISFSI quality assurance, safeguards requirements, and emergency preparedness.
 - e. NRC inspection and project management oversight of ISFSIs.

3. Review the documents contained in the list at the end of this activity. Use the introductory paragraph with the various sections to determine to what extent you must know the information contained in the reference.
4. Discuss with qualified inspectors or your supervisor, the information contained in these documents and its applicability to decommissioning. Understand these regulations to a level commensurate with the ability to perform inspection, verify compliance, and assess safety significance.
5. Meet with you supervisor, or the person designated to be your resource for this activity and discuss the answers to the questions listed under the Evaluation Criteria.

DOCUMENTATION: Decommissioning Inspector Qualification Card Item
ISA-DEC-1

Reference Documents for ISA-DEC-1, "Documents for Decommissioning Inspectors"

A. Safety Evaluations for 50.59s and Design Modifications

The qualifying inspector should have an understanding of the 50.59 process and design modifications. The inspector should understand the Reactor Oversight Program guidance on 50.59 and design change problems and safety significance determinations.

- a. Reg Guide 1.187, Guidance for Implementation of 10 CFR 50.59 Changes, Tests, and Experiments
- b. NEI 96-07, revision 1, Guidelines for 10 CFR 50.59 Implementation
- c. NRC Inspection Manual Part 9900, 10 CFR Guidance 50.59
- d. Regulatory Issuer Summary (RIS) 2001-03, Changes, Tests, and Experiments
- e. RIS 2001-09, Control of Hazard Barriers (guidance on 50.59 applicability to barriers)
- f. 10 CFR 50, Appendix B, Criterion III, Design Control

B. License Termination/Site Radiological Surveys

The qualifying inspector should have an understanding of the decommissioning and license termination process. Although the inspector need not memorize the specific technical terms, processes, and survey strategies in the following documents, the inspector must possess sufficient knowledge of where to look and to be able to effectively articulate concepts and technical considerations to a level of proficiency commensurate with inspection. Emphasis should be placed on items a-c.

- a. Supplement 1 of NUREG-0586, Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities
- b. NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual, (MARSSIM)"
- c. NUREG-1500, Regulatory Guide on the Release Criteria for Decommissioning
- d. Reg Guide 1.86, Termination of Operating Licensed for Nuclear Reactors
- e. NUREG-1501, Background as a Residual Radioactivity Criterion for Decommissioning
- f. NUREG-1507, Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions
- g. NUREG-1706, Measurement Methods For Radiological Surveys in Support of New Decommissioning Criteria
- h. NUREG/CR-5512, Residual Radioactive Contamination from Decommissioning
- i. NUREG/CR-5849, Manual for Conducting Radiological Surveys in Support of License Termination BTP: "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for Byproduct, Source, or Special Nuclear Material," Aug 1987
- j. Branch Technical Position: "When to Remediate Inadvertent Contamination of the Terrestrial Environment," Oct 1994
- k. Branch Technical Position: Site Characterization for Decommissioning, Nov 1994

C. Wet Spent Fuel Storage

The qualifying inspector should be familiar with safety and technical considerations associated with the wet storage of spent fuel. The inspector should understand the different types of spent fuel accidents, radiological consequences, mitigating actions, and design considerations implemented for mitigation or prevention. Emphasis should be placed on Items b, c, f, g, h, and i.

- a. NUREG-1353, Regulatory Analysis for the Resolution of Generic Issue 82, "Beyond Design Basis Accidents in Spent Fuel Pools"
- b. NUREG-1726, Predictions of Spent Fuel Heatup after a Complete Loss of Spent Fuel Pool Cooling, July 2000
- c. Final Technical Study on Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants, December 20, 2000, memo from William D. Travers, EDO, to Commissioners
- d. NUREG/CR-6441 (BNL-NUREG-52494), Analysis of Spent Fuel Heatup Following a Loss of Water in a Spent Fuel Pool
- e. NUREG/CR-6451 (BNL-NUREG-52498), A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants
- f. BL 94-01, Potential Fuel Pool Draindown Caused by Inadequate Maintenance at Dresden Unit 1
- g. BL 96-02, Movement of Heavy Loads Over Spent Fuel, Over the Reactor Vessel, or Over Safety-Related Equipment
- h. IN 94-13, Unanticipated and Unintended Movement of Fuel Assemblies and Other Components Due to Improper Operation of Refueling Equipment
- i. Reg Guide 8.12, Criticality Accident Alarm Systems
- j. Reg Guide 1.25, Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for BWRs and PWRs
- k. BL 96-04, Chemical, Galvanic, or Other Reactions in Spent Fuel Storage and Transportation Casks
- j. GL 96-04, Boraflex Degradation in Spent Fuel Storage Racks

For the Sections D - G, if the qualifying inspector is qualified as a Radiation Health Physicist or as a health physics inspector for either power reactors or materials facilities, the items in paragraphs D - G should be reviewed to as a refresher. Other qualifying inspectors must understand the regulatory requirements for radiation protection and the application of these requirements to decommissioning activities for the conduct of inspection.

D. Disposal of LLRW at a Part 50 Site or Facility

- a. NUREG-1101, On-site Disposal of Radioactive Waste: Vol. 1 - Guidance for Disposal by Subsurface Burial; Vol. 2 - Methodology for the Radiological Assessment of Disposal by Subsurface Burial; Vol. 3 - Estimating Potential Groundwater Contamination
- b. GL 80-009, Low- Level Radioactive Waste Disposal
- c. GL 80-051, On-Site Storage of Low-Level Radioactive Waste
- d. GL 81-038, Storage of Low-Level Radioactive Wastes at Power Reactor Sites

- e. GL 85-014, Commercial Storage at Power Reactor Sites of Low-Level Radioactive Waste Not Generated by the Utility

E. Radiation Protection (RP)

- a. DG-8004, Radiation Protection Programs for Nuclear Power Plants
- b. Safety Guide 8.2, Administrative Practices in Radiation Monitoring
- c. Reg Guide 8.8, Information Relevant to Ensuring that Occupation Radiation Exposure at Nuclear Power Stations will be ALARA (OP 618-4)
- d. Reg Guide 8.10, Operating Philosophy for Maintaining Occupational Radiation Exposures As Low As Is Reasonably Achievable
- e. NUREG-0041, Manual of Respiratory Protection Against Airborne Radioactive Materials
- f. Reg Guide 8.15, Acceptable Programs for Respiratory Protection
- g. Reg Guide 8.25, Air Sampling in the Workplace
- h. Reg Guide 8.27, Radiation Protection Training for Personnel at Light-Water Cooled Nuclear Power Plants
- i. Reg Guide 8.34, Monitoring Criteria and Methods to Calculate Occupational Radiation Doses
- j. PG-8-08, "Scenarios for Assessing Potential Doses Associated with Residual Radioactivity", May 1994
- k. NUREG-1507, Minimum Detectable Concentrations with Typical Radiation Survey Instruments for Various Contaminants and Field Conditions

F. Radiological Effluents/Environmental Monitoring

- a. Reg Guide 4.1, Programs for Monitoring Radioactivity in the Environs of Nuclear Power Plants
- b. IN 94-081, Accuracy of Bioassay and Environmental Sampling Results
- c. IN 94-007, Solubility Criteria For Liquid Effluent Releases to Sanitary Sewerage Under the Revised 10 CFR Part 20
- d. IN 94-16, Recent Incidents Involving Offsite Contamination
- e. Reg Guide 1.143, Design Guidance for Radioactive Waste Management Systems, Structures, and Components

G. Radioactive Material Transportation

- a. Reg Guide 7.1, Guide for Packaging and Transporting Radioactive Material
- b. Reg Guide 7.7, Guide for Verifying Compliance with Packaging Requirements for Shipments of Radioactive Materials
- c. IN 92-072, Employee Training and Shipper Registration Requirements for Transporting Radioactive Materials
- d. TP 914-4, Measurement of Radiation Levels on Surfaces of Packages
- e. IN 85-092, Surveys of Wastes Before Disposal From Nuclear Reactor Facilities
- f. IN 93-030, NRC Requirements for Evaluation of Wipe Test Results; Calibration of Count Rate Survey Instruments

- g. IN 93-50, Extended Storage of Sealed Sources
- h. BL 79-019, Packaging of Low-Level Radioactive Waste for Transport and Burial
- i. BL 79-020, Packaging, Transport and Burial of Low-Level Radioactive Waste
- j. GL 96-07, Interim Guidance on Transportation of Steam Generators
- k. GL 95-09, Monitoring and Training of Shippers and Carriers of Radioactive Materials

H. Dry Fuel Storage Systems

The following dry fuel storage items are not required if the candidate is already qualified to inspect ISFSIs pursuant to IMC 1246.

- a. NUREG-1536, Standard Review Plan for Dry Cask Storage Systems
- b. NUREG-1571, Information Handbook on ISFSIs

I. Quality Assurance

- a. Reg Guide 4.15, Quality Assurance for Radiological Monitoring Programs
- b. BL 95-01, Quality Assurance for Transportation of Radioactive Material

J. Financial Assurance

- a. Reg Guide 1.159, Assuring the Availability of Funds for Decommissioning
- b. IN 93-100, Reporting Requirements for Bankruptcy

K. Emergency Planning

- a. Reg Guide 1.101, Emergency Planning and Preparedness for Nuclear Reactors
- b. NUREG 0696, Functional Criteria for Emergency Response Facilities
- c. ANSI/ANS 3.8.4, Criteria for Maintaining Radiological Emergency Response Capability

L. Fire Protection

- a. Reg Guide 1.120, Fire Protection Guidelines for Nuclear Power Plants

M. Safeguards

The following safeguards items are not required if the candidate is qualified Safeguards Inspector for reactors or materials licensees.

- a. Reg Guide 5.43, Plant Security Force Duties

- b. Reg Guide 5.66, Access Authorization Program for Nuclear Power Plants
- c. Reg Guide 5.7, Entry/Exit Control for Protected Areas, Vital Areas, and Material Access Areas
- d. Reg Guide 5.68, Protection Against Malevolent Use of Vehicles at Nuclear Power Plants

N. Maintenance/Dismantlement/Decontamination

- a. Reg Guide 1.160, Effective of Maintenance at Nuclear Power Plants
- b. DG-1001, Maintenance Programs for Nuclear Power Plants
- c. IN 94-53, Hydrogen Gas Burn Insider Pressurizer During Welding
- d. IN 96-34, Hydrogen Gas Ignition During Closure Welding of a VSC-24 Multi-Assembly Sealed Basket
- e. IN 96-26, Recent Problems with Overhead Cranes

O. Records and Reporting

- a. DG-1006, Records Important for Decommissioning of Nuclear Reactors
- b. IN 96-47, Recordkeeping, Decommissioning, Notification for Disposal of Radioactive Waste by Land Burial Authorized Under Former 10 CFR 20.302, 20.304, and 20.002
- c. IN 94-21, Regulatory Requirements When No Operations are being Performed
- d. GL 93-03, Verification of Plant Records

Decommissioning Inspector Individual Study Activity

TOPIC: (ISA-DEC-2) CFR for Decommissioning Inspectors

PURPOSE: Title 10 of the Code of Federal Regulations (10 CFR) is a codification of the general and permanent rules published in the *Federal Register* by the Executive departments and agencies of the Federal Government. The Code is divided into 50 titles which represent areas subject to Federal regulation: Title 10, ENERGY, is applicable to US NRC regulated activities and volumes 1 and 2 of Title 10 contains parts 1-50 and 51-199, respectively. These rules (i.e., regulations), in part, are necessary to provide adequate assurance that licensed activities are not inimical to the common defense and security or the environment. Inspectors detailed to decommissioning power reactor facilities, need to understand and inspect to the rules and regulations associated with decommissioning of Part 50 commercial power reactor licensees. This ISA will provide the inspector with a broad knowledge of the regulatory requirements for decommissioning commercial power plants.

COMPETENCY

AREA: Inspection

LEVEL

OF EFFORT: 200 hours

- REFERENCES:**
1. U. S. Nuclear Regulatory Commission, "Radiological Criteria for Decommissioning," Federal Register, Vol. 59, No. 161, 43200-43232, August 22, 1994
 2. U. S. Nuclear Regulatory Commission, "Decommissioning of Nuclear Power Reactors," Federal Register, Vol 61, No. 146, 39278-39304, July 29, 1996
 3. U. S. Nuclear Regulatory Commission, "Decommissioning, Recordkeeping and License Termination: Documentation Additions - Final Rule," Federal Register, Vol. 58, No. 141, 39628-39635, July 26, 1993
 4. U. S. Nuclear Regulatory Commission, "Clarification of Decommissioning Funding Requirements," Federal Register Vol. 60, 38235, July 26, 1995
 5. 10 CFR Parts 20, 50, 51, and 73

EVALUATION

CRITERIA:

1. Discuss how the Reactor Safety Cornerstones are applicable to decommissioning and how they are verified through inspection.
2. Discuss the 10 CFR 50.82 certifications and how they provide reasonable assurance of safety.
 - a. Describe how plant safely transitions into decommissioning and how the resulting change in radiological and safety significance effects the scope and effort of decommissioning inspection.
 - b. Demonstrate understanding of why operationally-oriented, shutdown requirements are not sufficient to provide adequate assurance of safety during decommissioning.
3. Discuss contents of the Post-Shutdown Decommissioning Activities Report, its regulatory basis, and its use as an inspection planning tool. Describe the requirements of 10 CFR 50.82(a)(7).
4. Discuss the schedule and expenditure of decommissioning monies prior to and following a plant permanent shutdown.
 - a. State NRC oversight and coordination of regulatory review of decommissioning monies, trusts, and funds.
 - b. Discuss examples of what are legitimate decommissioning activities; discuss examples of situations which are not considered legitimate decommissioning activities and what should be done if these are identified.
 - c. Describe what a site-specific decommissioning cost estimate is and its contents. Describe how this report might help with inspection.
 - d. Describe inspector responsibilities with regard to licensee expenditure of decommissioning monies and who is responsible for this review.
5. Discuss and provide examples of major decommissioning activities and major radioactive components and the relationship of these activities to decommissioning schedules.
 - a. Discuss how these licensee activities and schedules impact/affect inspection planning.
6. Discuss examples of 10 CFR 50.82(a)(6). Discuss who makes these determinations, and what is required of the licensees. Describe the relationship of this regulation with 10 CFR 50.59.
7. Describe the required contents of License Termination Plans.

- a. Specifically describe what is meant by: (1) plans for site remediation; (2) plans for characterization; (3) dismantlement activities; and (4) detailed plans for final radiation survey, using examples of previous shutdown plants.
 - b. Describe who is responsible for this review and the regulatory process that provides for public involvement.
8. In general terms, describe the requirements of 10 CFR Part 20, Subpart E.
 - a. Describe the requirements of restricted release and unrestricted release.
 - b. Describe site disposal of radioactive material (Section 20.2002).
9. Describe the contents of a licensee's environmental report (ER). State how this report supports or impacts decommissioning. Describe when is the ER required to be updated or supplemented. State the regulatory bases for this document and who is responsible for its review.
10. Describe the applicability of the General Design Criteria (GDC) of 10 CFR Part 50, Appendix A, to a facility that has certified permanent shutdown and defuel.
 - a. Describe which GDC are still applicable to decommissioning power plants.
11. Discuss some of the expected changes to licensee Technical Specifications (TSs) following licensee certification of permanent shutdown and fuel removal.
 - a. Describe situations in which the licensee's TSs (following plant shutdown) may not be applicable to the mode of operation the plant is currently in.
 - b. Describe what should be done if a TS requirement is not applicable because of the plant status, but the TS wording still requires the requirement to be performed.
 - c. Describe why it is important for a licensee to evaluate and make changes to its FSAR early in decommissioning.
 - d. Explain, using an operating plant TS, expected changes to TS following permanent plant shutdown and defueling.
12. Discuss the applicability of 10 CFR Part 73 to decommissioning power plants. Describe some of the expected safeguards exemptions that a licensee might request following final plant shutdown and defueling.

- a. Specifically describe the applicability of the Fitness-for-Duty and vehicle barriers to decommissioning facilities and how the application of these regulations may change following permanent shutdown and defueling. What happens if the licensee voluntarily wants to implement a particular safeguards regulation but is not required to do so?
 - b. Describe expected changes to the licensee's Owner Controlled Area, Protected Area, and Radiological Control Area following plant shutdown.
 - c. Explain changes in the use of security vital areas, and why or why not vital areas are applicable to the subject site.
 - d. Describe inspector responsibilities with regard to security, coordination with headquarter's staff, and evaluation of 50.54(p) issues.
 - e. Discuss, in general terms, the safeguards 10 CFR requirements associated with Independent Spent Fuel Storage Installations (ISFSIs) co-located at decommissioning facilities. Be able to explain how safeguards command and control is coordinated onsite (between the reactor facility and the ISFSI) and with local law enforcement agencies.
13. Discuss the applicability of 10 CFR 50.48 and Appendix R to decommissioning power plants. What is still required of licensees and who provides NRC regulatory assessment/evaluation of fire protection.
14. Discuss the applicability of 10 CFR 50.65 to decommissioning power plants.
- a. Describe how is this regulation applied to a permanently shutdown defueled plant.
 - b. State what is still required of licensees and who provides NRC regulatory assessment/evaluation of the Maintenance Rule.
 - c. State what structures, systems, and components are typically included in a licensee's Maintenance Rule program?
15. Discuss the applicability of emergency preparedness requirements (10 CFR 50.47, 50.54(q) and (s), and Appendix E) at decommissioning power plants.
- a. Describe the overall strategy of emergency preparedness and how it will change following permanent shutdown, permanent defueling, and with time following reactor shutdown.
 - b. Provide examples of radiological accidents/events/situations that could possibly result in offsite doses and those resulting in onsite doses. Discuss the accidents of concern described in NUREG-0586 and its supplement. Discuss the accidents described in operating plant FSARs and how these accidents change following plant shutdown and defueling.

- c. Based on a review of plants that have already entered decommissioning, provided examples of regulations that have been reduce or relaxed through exemption.
 - d. Discuss inspector responsibilities with regard to emergency preparedness verification, coordination with headquarter's staff, and evaluation of 50.54(q) and (s) requirements.
- 16. Discuss the applicability of plant operator requirements at a decommissioning facility. Specifically describe the applicability of Parts 55, 50.120, and 50.54(i)-(m) to decommissioning.
 - a. Describe the process to change license operator requirements.
 - b. Describe expected changes to the "Control Room" and what is meant by control functions.
 - c. Describe the applicability of 50.54(x) and (y) to decommissioning facilities.
 - d. Describe the requirements of licensed operators performing fuel handling and Certified Fuel Handlers.
 - e. Describe fuel handling, sequence of events, procedural compliance, fuel verification, safety considerations, handling interlocks, and coordination with NMSS/SFPO.
- 17. Describe the applicability of quality assurance (QA) requirements at a decommissioning facility. Describe the applicability of 50.54(a) and Appendix B to decommissioning.
 - a. Describe the process to change QA program requirements, who performs the NRC review and approval.
 - b. Describe the sequencing of proposed changes to the QA program and TSs that govern QA-related activities.
 - c. Discuss inspector responsibilities with regard to QA program verification, coordination with headquarter's staff, and evaluation of 50.54(a) changes.
- 18. Discuss, in general terms, the NRC-OSHA Memorandum of Understanding, NRC oversight of OSHA activities, and processing of OSHA-type findings and/or observations.
- 19. Be able to respond to questions regarding the Atomic Energy Act, Energy Reorganization Act, Low-Level Radioactive Waste Policy Act; and Nuclear Waste Policy Act.

TASKS:

- 1. Read the References in general detail to a level of understanding to adequately demonstrate good working knowledge of the requirements of the Evaluation Criteria.
- 2. Read Regional and headquarter guidance on the Reactor Oversight Process. Read to a level of understanding to

understand how this process can be applied to decommissioning, such as the cornerstones and significance determination process.

3. Read Part 50.82 and the Statements of Consideration for this rule (Reference 2). Read to a level of understanding to describe the safety justifications for this rule; the public involvement process; licensee submittals and the contents of these submittals; evaluations required of the licensee and why these are necessary; schedule of expenditure of decommissioning funds; and definitions of decommissioning, major radioactive components, and major decommissioning activities.
4. Read Part 20, Subpart E, and Section 20.2002 be able to explain these regulations with respect to 50.82, disposal of radioactive material, and public health and safety.
5. Read copies of a licensee's environmental report, FSAR, and technical specifications. Read to a level of understanding to understand their contents, regulatory bases for these documents, when they are required to be updated, how they are changed, and how they change following permanent cessation of power operations.
6. Read copies of a licensee's safeguards plan quality assurance plan, and emergency preparedness plan. Read to a level of understanding to understand their contents, regulatory bases for these documents, when they are required to be updated, how are they changed, and how they change following the permanent cessation of power operations.
7. Read the regulations associated with 50.65, the maintenance rule, and 50.48, fire protection. Read to a level of understanding to describe how these regulations apply to decommissioning power plants.
8. Read for understanding the following Acts and understand their applicability to decommissioning nuclear power plants:
 - a. Atomic Energy Act
 - Sec. 188, Continued Operation of Facilities
 - Sec. 229, Trespass Upon Commission Facilities
 - Sec. 230, Photographing Commission Installations
 - Sec. 235, Protection of Nuclear Inspectors
 - Sec 236, Sabotage of Nuclear Facilities or Fuel
 - Sec. 274, Cooperation with States
 - Sec. 276, State Authority to Regulate Below Level of Regulatory Concern of Nuclear Regulation Commission
 - b. Low-Level Radioactive Waste Policy Act

- Sec. 4, Low-Level Radioactive Waste Disposal
- c. Nuclear Waste Policy Act
 - Sec. 131, Findings and Purpose
 - Sec. 132, Available Capacity for Interim Storage of Spent Nuclear Fuel
 - Sec. 133, Interim Storage at Reactor Storage
 - Sec. 135, Storage of Spent Nuclear Fuel
 - GL 83-007, The Nuclear Waste Policy Act of 1982

9. Meet with your supervisor or the person designated to be your resource for this activity and discuss the applicability of the Part 50, Appendix A, General Design Criteria to decommissioning nuclear power plants.
10. Skim 29 CFR Part 1910, Occupational Safety and Health Standards, and read the memorandum of understanding between the NRC and OSHA (or similar administrative instruction) to a level of understanding to describe what to do if a problem or issue is identified requiring OSHA involvement.
11. Meet with your supervisor or person designated to be your resource for this activity and discuss the answers to the questions listed under the Evaluation Criteria.

DOCUMENTATION: Decommissioning Inspector Technical Qualification Card Item ISA-DEC-2

Decommissioning Inspector Individual Study Activity

TOPIC: (ISA-DEC-3) Licensee Documents Related to Decommissioning

PURPOSE: Licensees of commercial nuclear power plants are required by 10 CFR Part 50, to develop and/or implement documents related to decommissioning. These documents may involve information related to decommissioning activities, schedules, and finances; evaluation reports on plant modifications; or program changes associate with emergency preparedness (EP), safeguards, or quality assurance (QA). These documents form part of the licensing bases of the facility and provide adequate assurance that decommissioning can be conducted safely in accordance with the regulatory requirements. Inspectors detailed to decommissioning power reactor facilities, need to understand licensee documents associated with decommissioning. This ISA will provide the inspector with knowledge of what licensee documents are important to decommissioning.

COMPETENCY

AREA: INSPECTION

LEVEL

OF EFFORT: 24 hours onsite
24 hours in office

REFERENCES:

1. License and Technical Specifications (TSs)
2. Final Safety Analysis Report (FSAR)
3. Environmental Report (ER) and Supplements
4. Post-Shutdown Decommissioning Activities Report (PSDAR)
5. Emergency Plan and Implementing Procedures
6. Security Plan and Implementing Procedures
7. Radiation Protection Plan
8. Quality Assurance Plan
9. Fire Protection Plan
10. Site-Specific Decommissioning Cost Estimate

EVALUATION

CRITERIA:

1. Discuss the licensee programs and documents listed in References.
 - a. Describe some of the particular items, activities, requirements, and instructions that are contained in the plans, programs, and document.
 - b. Discuss some site-specific situations that may or could require inspection.
2. Discuss the regulatory bases for each licensee plan, program, or document listed in References. Discuss how the PSDAR may be useful in the planning and conduct of inspection.
3. Discuss expected changes in the programs/plans listed in the References following licensee certification of permanent reactor shutdown and fuel removal.
 - a. Describe some of the major differences between operating and decommissioning plans and programs.
 - b. Describe why there remains an adequate level of safety and regulatory assurance even though some requirements may be reduced, relaxed, or exempted.
4. Describe the processes required to make changes in the licensee documents listed in References. Emphasis should be placed on References 1, 2, 5, 6, and 8.
 - a. State the particular regulatory requirement that governs the change process.
 - b. State who performs the review and approval of program and plan changes.
 - c. Describe why there must be agreement between licensee plans and programs and the status and configuration of the site and facility. State why this is important to the conduct of inspection.
5. State which Reactor Oversight Program cornerstones are verified by the independent reviews of the particular licensee plans and programs listed in References.
 - a. Describe how the inspection of these licensee documents contributes to the accomplishment of the NRC Mission.
 - b. Describe using examples how the Significance Determination Process can be used for findings at decommissioning power plants.

TASKS:

1. Read the References for the assigned facility/plant/licensee in specific detail to adequately demonstrate good working knowledge of the requirements of the Evaluation Criteria.

2. After reading the References, as required by Task 1, read/skim the corresponding documentation (NRC or licensee) which describes or approves the licensee change from an operationally-oriented plan/program to one that reflects a permanently shutdown and defueled condition. If the assigned facility has not recently shutdown or the information is not available for that particular plant, the qualifying inspector should review the plans/programs and documentation of a facility which is available. The qualifying inspector needs to understand some of the major changes that occurred and the safety consideration(s) justifying the change. Emphasis should be placed on References 1, 2, 5, 6, and 8.
3. Read the regulations which are applicable to the References. Read to a level of knowledge to understand the requirements associated with these licensee documents and the required change control processes and approvals.
4. Read regional/headquarters information on the Reactor Oversight Process (ROP) and Significance Determination Process. Assess how portions of the ROP program can be applied to decommissioning power plants.
5. Meet with your supervisor or the person designated to be your resource for this activity and discuss the answers to the questions listed under the Evaluation Criteria.

DOCUMENTATION: Decommissioning Inspector Technical Qualification Signature Card Item ISA-DEC-3

**Decommissioning Inspector
On-the-Job Activities**

Decommissioning Inspector On-the-Job Activity

TOPIC: (OJT-DEC-1) Dismantlement and Decontamination Activities

PURPOSE: To perform effective inspection, an inspector must understand, in part, the applicable regulatory requirements; licensee procedures and programs; and the design, operation, and maintenance of structures, systems, and components (SSCs) important to the conduct of safe decommissioning, fuel handling and storage, and radioactive material processing. The inspector must also be able to critically and independently assess licensee performance, verify compliance with the applicable regulations, and to serve in the protection of public health and safety and the environment. Effective implementation of these inspection attributes requires preparation, field observation, and post-inspection assessment, evaluation, and conclusion. This OJT will familiarize the candidate with in-field inspection and contribute to the inspector's knowledge of how to inspect.

COMPETENCY

AREA: INSPECTION

LEVEL

OF EFFORT: Two site visits, each:
24 hours, on-site, preparation and post-activities
8 hours, in-field inspection training

REFERENCES: Technical Specifications (TSs) and License

1. Final Safety Analysis Report
2. Emergency Plan
3. Safeguards Plan
4. Site/facility radiation protection procedures and practices
5. Site 50.59, modification, and design change procedures
6. Site system drawings

EVALUATION

CRITERIA:

1. Describe the SSCs that are required for the safe storage, maintenance, handling, and control of spent fuel. Describe the safe storage configuration of the spent fuel and its characteristics.
2. Describe site features and characteristics associated with the plant and facility that will be used for dismantlement, decontamination, and fuel storage and handling. Specifically,

- a. Describe relative locations and positions of any major or large components to spent fuel handling storage and systems.
 - b. Describe any unique man-made features that may adversely impact decommissioning, fuel handling or storage, or major decommissioning activities.
 - c. Describe any unique environmental or terrestrial conditions that may impact decommissioning, fuel handling or storage, or major decommissioning activities.
3. Describe the facility control and monitoring station (i.e., Control Room) for the control and/or monitoring of structures, systems, and instruments used by plant operators (i.e. Control Room Operators and Auxiliary Operators) for:
 - a. spent fuel;
 - b. radiological effluents;
 - c. radiation protection; and,
 - d. electrical and ventilation systems.
4. Describe the radiological release points for gaseous, liquid, and airborne release pathways. Specifically discuss the:
 - a. location of radiation monitors, flow sensors, and other control and monitoring instrumentation;
 - b. alarms and automatic isolation actuations associated with radiological releases; and,
 - c. relative location of the radiological release points, closest public points, and population centers, rail lines, highways, etc.
5. Describe the licensee's emergency response and security facilities. State the local and state contacts/representatives who would be notified by the licensee and/or requested to provide assistance in case offsite assistance is needed.
6. Describe the major decommissioning activities that are occurring at the assigned facility, special radiological precautions, work considerations, and administrative control features.
7. Describe a typical NRC inspection, including: preparation, review, field activities, observations and findings, licensee meetings, and documentation.

TASKS:

1. Perform a complete walkdown of the entire spent fuel pool (SFP) structure and make-up water system, including primary, backup, and emergency water supplies and sources.
 - a. Walkdown and observe the power supplies and electrical control locations.

- b. Observe facility layout, heavy loads, and surrounding impediments.
 - c. Observe the SFP low-level drain points and pool refill location.
 - d. Walkdown and observe all accessible locations adjacent to the outside of the spent fuel: (1) pool structure and (2) SFP building.
- 2. Walk down the spent fuel storage support systems.
 - a. Observe the actual location of fuel handling and storage equipment.
 - b. Observe the actual location of SFP water level instrumentation, skimmer, filtration, pump, and heat exchange sub-systems.
 - c. Observe the SFP biological removal system and purification system.
 - d. Observe and understand any engineered-design features that lend to independence, diversity and or redundancy of the spent fuel system.
 - e. Observe the actual location of the SFP area radiation monitors and criticality monitors (these monitors could be the same instrument).
 - f. Observe spent fuel racking and storage of any spent fuel. Describe engineered features (mechanical and/or chemical) to prevent criticality.
- 3. Understand the current heatup rate of the SFP bulk water temperature with a loss of all SFP cooling. Know the time to reach 212 degrees; time to reach the SFP water low-level alarm at this boil off rate; and the refill capacity (in inches per minute) of the various refill pumps/methods. Be able to describe site activities to restore SFP water, where the water source is, what its motive force is, where the power supplies and feeders are.
- 4. Review plant procedures and locate the control and monitoring systems, instruments, and structures used by the facility security force in the conduct of their duties.
 - a. Observe the location of the safeguards electrical power supply and alternate power supply.
 - b. Understand the failure mode of various safeguards systems.
 - c. Observe the central and secondary alarm stations, or equivalent.
- 5. Review plant procedures and locate the control and monitoring systems, instruments, and structures, systems, and components used by plant and corporate personnel for response to unplanned emergency accidents or events.

- a. Locate the plant operator's control copy of the Emergency Plan and Implementing Procedures.
 - b. Walkdown the facility's emergency facilities (Emergency Operations Facility, Technical Support Center etc, if still installed).
 - c. Observe the contents of a local emergency preparedness supply kit if applicable (e.g, temporary hoses and/or motive power to re-fill the spent fuel pool).
6. Review plant documents and locate the main fire water supply and pressure source. Review the contents of a local fire protection kits and understand the fire water system, supplies, piping, and coordination protocols established with the local fire department.
 7. Observe and assess the conduct of a three (3) pre-selected dismantlement or decontamination activities.

Activity 1: _____ Date: _____

Activity 2: _____ Date: _____

Activity 3: _____ Date: _____

These activities should be complex involving: multiple disciplines (engineering, maintenance, and operations, etc); radiological or safety significance; and a major decommissioning activity or radioactive component (if possible).

- a. Prepare for this field observation by reviewing licensee documents involving:
 - i. the FSAR description of the structure system or component being worked;
 - ii. the 50.59, 50.82(a)(6), and 50.82(a)(7) determinations;
 - iii. quality assurance and fire protection requirements; and,
 - iv. personal safety considerations (radiological and non-radiological).
- b. Review in-field documentation, specifically:
 - i. radiation work permit(s);
 - ii. maintenance/work instructions; and,
 - iii. technical manuals.
- c. Observe the conduct of in-field radiation surveys at the work site. Verify that survey data are utilized in work planning and that subsequent survey data are completely and accurately documented, as required by plant procedures, throughout the conduct of the work.
- d. Observe procedural compliance by the facility personnel.

- e. Evaluate the licensee's safety evaluation written for the selected activities.
 - i. Complete the NRC WEB site training on 10 CFR 50.59.
 - ii. Assess and describe when provision 50.65(a)(4) of the maintenance rule should be used instead of 50.59.
 - iii. Assess and describe when 50.82(a)(6) needs to be preformed in concert with or independent of 50.59.
- f. For at least two observed or simulated findings, process the issue through the significance determination process (SDP).

Finding #1 _____ Date

Finding #2 _____ Date

- g. Brief your supervisor or person designated to be your resource on your observations and findings for Activities 1, 2, and 3.
 - i. Articulate any regulatory and/or safety concerns.
 - ii. Articulate any OSHA-related worker safety issues or concerns.
- 8. Demonstrate to your supervisor or the person designated to be your resource for this activity that you have an acceptable understanding of the activities required in Evaluation Criteria.

DOCUMENTATION: Decommissioning Inspector Technical Qualification Card Item OJT-DEC-1

Decommissioning Inspector Technical Proficiency Level Signature Card and Certification

Inspector Name: _____	Employee Initials/Date	Supervisor's Signature/Date
Required Training Courses		
Power Plant Engineering (self study of selected chapters)		
GE Technology (R-105B)		
Westinghouse Technology (R-104P)		
Introductory Health Physics (H-117)		
Radiological Surveys in Support of Decommissioning (H-120)		
Transportation of Radioactive Materials (H-308)		
Individual Study Activities		
(ISA-DEC-1) Documents for Decommissioning Inspectors		
(ISA-DEC-2) CFR for Decommissioning Inspectors		
(ISA-DEC-3) Licensee Documents Related to Decommissioning		
On-the-Job Training Activities		
(OJT-DEC-1) Dismantlement and Decontamination Activities		

Supervisor's signature indicates successful completion of all required courses and activities listed in this journal and readiness to appear before the Oral Board.

Supervisor's Signature _____ Date _____

Form 1: Decommissioning Inspector Technical Proficiency Level Equivalency Justification	
Inspector Name: _____	Identify equivalent training and experience for which the inspector is to be given credit
Required Training Courses	
Power Plant Engineering (self study of selected chapters)	
GE Technology (R-105B)	
Westinghouse Technology (R-104P)	
Introductory Health Physics (H-117)	
Radiological Surveys in Support of Decommissioning (H-120)	
Transportation of Radioactive Materials (H-308)	
Individual Study Activities	
(ISA-DEC-1) Documents for Decommissioning Inspectors	
(ISA-DEC-2) CFR for Decommissioning Inspectors	
(ISA-DEC-3) Licensee Documents Related to Decommissioning	

<i>On-the-Job Training Activities</i>	Identify equivalent training and experience for which the inspector is to be given credit
OJT-DEC-1) Dismantlement and Decontamination Activities	

Supervisor's Recommendation: Signature / Date _____

Division Director's Approval: Signature / Date _____

Copies to: Inspector and official training file