

## APPENDIX C1

### TRAINING REQUIREMENTS AND QUALIFICATION JOURNAL FOR FUEL CYCLE TECHNICAL REVIEWER

#### I. TRAINING REQUIREMENTS

##### A. Applicability

The training described below is required for all fuel cycle technical reviewers assigned to perform safety reviews of fuel cycle license applications.

##### B. Training

###### 1. Required Initial Training.

- a) Self-Study and On-The-Job Training:
  - (1) NRC Orientation.
  - (2) Code of Federal Regulations.
  - (3) Office Instructions.
  - (4) Regulatory Guidance.
  - (5) Fuel Cycle Licensing Branch Manual.
  - (6) Industry Codes and Standards.
  - (7) NRC Management Directives.
  - (8) Review of significant events at fuel cycle licensees.
  - (9) Directed Review of Selected Licensing Case Work.
- b) Core Training. These courses establish minimum formal classroom training requirements. Refer to Section 1246-09 for exceptions to these requirements.
  - (1) Root Cause/Incident Investigation Workshop (G-205)
  - (2) OSHA Indoctrination Course (G-111)
  - (3) NMSS Radiation Worker Training (H-102) or "Site Access Training" (H-100)
  - (4) General Health Physics Practices for Fuel Facilities Directed Self-Study Course (F-102S) or equivalent
  - (5) Fuel Cycle Processes Directed Self-Study Course (F-201S) or
  - (6) Uranium Enrichment Process Directed Self study Course (F-204S)
  - (7) Integrated Safety Analysis Course (F-103) or Hazards Analysis for DOE SARs and QRAs
- c) Specialized Training. Depending on the fuel cycle license reviewer's previous work experience and planned reviewer activities, additional courses may be required in order to gain knowledge necessary for specialized licensing activities. Headquarters branch management will make this determination on an individual basis. For example, if a license reviewer is assigned activities in one of the areas listed below then that reviewer should attend the appropriate training course or have equivalent experience as determined by their management.
  - (1) Nuclear Criticality Safety Directed Self-Study Course (F-101S)
  - (2) Air Sampling for Radioactive Material Course (H-119)
  - (3) Transportation of Radioactive Materials Course (H-308)
  - (4) Environmental Monitoring for Radioactivity (H-111)

(5) Fire Protection for Fuel Cycle Facilities Directed Self-Study Course (F-206S)

2. Supplemental Training. Additional training beyond that identified as Core Training. This training will be determined by the individual's supervisor and will depend on the individual's previous work experience and planned inspection or licensing activities in specific areas.
3. Refresher Training. Refresher training will be conducted every three years following initial certification. Refresher training will be determined by management on a case-by-case basis.

## II. QUALIFICATION JOURNAL

### Applicability

This NRC License Reviewer Qualification Journal implements NRC Manual Chapter 1246, Appendix A, by establishing the minimum training requirements for personnel assigned to perform license reviews for fuel facilities.

The NRC License Reviewer Qualification Journal serves as a guideline for the development of a Qualification Journal, and establishes the minimum training requirements consistent with NRC Manual Chapter 1246. The Qualification Journal must provide traceable documentation to show that minimum requirements are met for each license reviewer.

The NRC License Reviewer Qualification Journal consists of a series of qualification guides and signature cards. Each signature card is used to document task completion, as indicated by the appropriate signature blocks. The corresponding qualification guide establishes the minimum knowledge levels or areas of study that must be completed for each signature card.

Most of the qualification guides are divided into sections. The review sections of the qualification guides identify references with general application to the license reviewer's qualification. The license reviewer is expected to have a general familiarity with these references. Other sections of the qualification guides identify specific references that have direct application to the license review discipline. The license reviewer is expected to demonstrate detailed knowledge of the license review specific references.

In order to support the review of upper tier documents, programs, and policies, the license reviewer's immediate supervisor will assign one or more specific fuel facilities as reference facilities. The selection of a reference facility is intended to provide the license reviewer's management with the ability to tailor the qualification process to the experience and training level of the license reviewer, and to meet the needs of the NRC. The use of specific real world material will reinforce the qualification process.

LICENSE REVIEWER QUALIFICATION JOURNAL  
Fuel Cycle License Reviewer

\_\_\_\_\_  
(Name)                      (Title)                      (Branch)                      (Section)                      \_\_\_\_\_

To complete your qualification as a Fuel Cycle License Reviewer you are to complete the following signature cards. All signoffs shall include the signature of the responsible reviewer and the date. Maintain these cards in a notebook along with any background or written material required by the program. This notebook will comprise your NRC License Reviewer Qualification Journal.

		<u>Signature When Complete</u>	<u>Date</u>
1.	NRC Orientation	_____ First Line Supervisor	_____
2.	Code of Federal Regulations	_____ First Line Supervisor	_____
3.	Office Instructions	_____ First Line Supervisor	_____
4.	Regulatory Guidance	_____ First Line Supervisor	_____
5.	Fuel Cycle Licensing Branch Manual	_____ First Line Supervisor	_____
6.	Industry Codes and Standards	_____ First Line Supervisor	_____
7.	NRC Management Directives	_____ First Line Supervisor	_____
8.	Review of Significant Fuel Cycle Events	_____ First Line Supervisor	_____
9.	Directed Review of Selected Licensing Case Work	_____ First Line Supervisor	_____
10.	Formal Training	_____ First Line Supervisor	____ _

Qualification Board  
Requirement Met

\_\_\_\_\_  
Second level supervisor  
or Board Chairman

Recommended as a qualified  
license reviewer

\_\_\_\_\_  
Second Level Supervisor

Certification Memo Issued

\_\_\_\_\_  
Second Level Supervisor

Qualification Card 1  
NRC Orientation

A.	Site Orientation	<u>Initials</u>	<u>Date</u>
1.	New employee processing package completed	_____ Employee	_____
2.	Facility tour and introduction	_____ First Line Supervisor	_____
B.	NRC Organization		
1.	Review of NRC headquarters and regional organization	_____ Employee	_____
2.	Discussion of NRC organization	_____ First Line Supervisor	_____

Qualification Card 2  
Code of Federal Regulations (CFR)

	<u>Initials</u>	<u>Date</u>
A. Familiarization with selected CFR parts completed	_____ Employee	_____
B. Discussion completed on CFR parts related to the fuel cycle license review program	_____ First Line Supervisor	_____

Qualification Card 3  
Office Instructions

Initials

Date

A. Familiarization with office policies and procedures

\_\_\_\_\_  
Employee

\_\_\_\_\_

B. Discussion completed on office policies and procedures

\_\_\_\_\_  
First Line Supervisor

\_\_\_\_\_

Qualification Card 4  
Regulatory Guidance

		<u>Initials</u>	<u>Date</u>
A.	Review of regulatory guidance		
	1. Regulatory Guides	_____ Employee	_____
	2. Information Notices /Bulletins	_____ Employee	_____
	3. NUREGs	_____ Employee	_____
	4. Generic Letters	_____ Employee	_____
	5. Federal Register Notices	_____ Employee	_____
	6. NRC Branch Technical Positions	_____ Employee	_____
B.	Discussion of regulatory guidance with application to the fuel cycle license review program	_____ First Line Supervisor	_____

Qualification Card 5  
Fuel Cycle Licensing Branch Manual

	<u>Initials</u>	<u>Date</u>
A. Review of appropriate portions of Licensing Branch Manual completed	_____ Employee	_____
B. Discussion of Licensing Branch Manual and its relation to the fuel cycle license review program	_____ First Line Supervisor	_____

Qualification Card 6  
Industry Codes and Standards

Initials

Date

A. Review of selected codes  
and standards completed

\_\_\_\_\_  
Employee

B. Discussion of the application  
of codes and standards in the  
fuel cycle license review  
program

\_\_\_\_\_  
First Line Supervisor

Qualification Card 7  
NRC Management Directives

Initials

Date

A. Review of selected portions of the NRC Management Directives completed

\_\_\_\_\_  
Employee

B. Discussion of the application of the NRC Management Directives to the fuel cycle license review program

\_\_\_\_\_  
First Line Supervisor

Qualification Card 8  
Review of Significant Fuel Cycle Events

Initials

Date

A. Review of selected significant historical fuel cycle events

\_\_\_\_\_  
Employee

B. Discussion of the importance of these events and lessons learned

\_\_\_\_\_  
First Line Supervisor

Qualification Card 9  
Directed Review of Selected Licensing Case Work

	<u>Initials</u>	<u>Date</u>
A. Review of selected licensing casework	_____ Employee	_____
B. Discussion by first line supervisor of directed review of the selected casework and its relation to the fuel cycle license review program	_____ First Line Supervisor	_____

Qualification Card 10  
Formal Training

A. CORE TRAINING:	<u>Initials</u>	<u>Date</u>
1. Root Cause/Incident Investigation Workshop (G-205)	_____	_____
	Training Coordinator	
2. OSHA Indoctrination Course (G-111)	_____	_____
	Training Coordinator	
3. NMSS Radiation Worker Training Course (H-102)	_____	_____
	Training Coordinator	
4. General Health Physics Practices for Fuel Facilities Directed Self-Study Course (F-102S) or equivalent	_____	_____
	Training Coordinator	
5. Fuel Cycle Processes Directed Self-Study Course (F-201S) or Uranium Enrichment Process Directed Self study Course (F-204S)	_____	_____
	Training Coordinator	
6. Integrated Safety Analysis Course (F-103) or Hazard analysis for DOE SARs and QRAs	_____	_____
	Training Coordinator	

B. SPECIALIZED TRAINING

Other training courses required for license reviewers performing licensing actions in specific areas:

<u>Course Title</u>	<u>Course #</u>	<u>Initials</u>	<u>Initials</u>	<u>Date</u>
_____	_____	Supervisor	_____	_____
			Training Coordinator	
_____	_____	Supervisor	_____	_____
			Training Coordinator	
_____	_____	Supervisor	_____	_____
			Training Coordinator	
_____	_____	Supervisor	_____	_____
			Training Coordinator	

## Qualification Guide 1 NRC Orientation

### A. Site Orientation

1. The qualifying individual should read and complete, as appropriate, the following forms for processing into the NRC:
  - a. Personnel information
  - b. Health insurance elections
  - c. Retirement plan elections
  - d. Savings elections (e.g. U.S. Savings Bonds, TSP, etc.)
  - e. Fitness for Duty requirements and physical examination
  - f. Any other forms which may be required by NRC Office of Human Resources
  - g. Forms for issuance of tagged, controlled NRC equipment
  - h. Payroll forms and time cards
  - i. Regulatory Information Tracking System (RITS)
2. The First Line Supervisor should orient the qualifying individual to the facility as follows:
  - a. Tour the facility and introduce the qualifying individual to the staff
  2. Indicate to the qualifying individual the location of controlled documents, reference material, supplies, office equipment, classrooms, etc.

### B. NRC Organization

1. The qualifying individual should review and become familiar with:
  - a. Organizational charts of division, NMSS, regions and headquarters and overall NRC organization (NUREG-0325)
  - b. Role of Headquarters in policy and interpretation of regulations
  - c. Role of NRC General Counsel
  - d. Role of NRC Inspector General
  - e. Role of NRC Public Affairs
  - f. Role of NRC Office of Investigations

- g. Role of NRC Office of Enforcement
  - h. Physical location of NRC offices and regions
  - i. Role of NRC as a regulatory agency
    - (1) 10 CFR Part 1 (Organization)
    - (2) Atomic Energy Act of 1954, as amended
    - (3) Energy Reorganization Act of 1974, as amended
    - (4) NRC Enforcement Policy (NUREG 1600)
    - (5) Incident Response Plan (NUREGs 0728 and 0845)
    - (6) Energy Policy Act of 1992
2. The First Line Supervisor should discuss NRC organization and role with the qualifying individual to ensure the qualifying individual has a full understanding of NRC's organization and mission and the role of the license reviewer in that mission.

Qualification Guide 2  
Code of Federal Regulations (CFR)

- A. A selection of currently applicable CFR Parts should be made by the First Line Supervisor. The selection should include the references listed below and be documented. The qualifying individual should be expected to have a general knowledge of the topics addressed in the references. This review may be accomplished by self-study, study-quizzes, briefings, or discussions.
1. 10 CFR Part 1 Statement of organization and general information
  2. 10 CFR Part 2 Rules of practice for domestic licensing proceedings and issuance of orders
  3. 10 CFR Part 9 Public Records
  4. 10 CFR Part 19 Notices, instructions and reports to workers; inspections
  5. 10 CFR Part 20 Standards for protection against radiation (includes selected Questions and Answers, Q & As)
  6. 10 CFR Part 21 Reporting of defects and noncompliance
  7. 10 CFR Part 30 Rules of general applicability to domestic licensing of byproduct material
  8. 10 CFR Part 40 Domestic licensing of source material
  9. 10 CFR Part 51 Environmental protection regulations for domestic licensing
  10. 10 CFR Part 61 Licensing requirements for land disposal of radioactive waste
  11. 10 CFR Part 70 Domestic licensing of special nuclear material
  12. 10 CFR Part 71 Packaging and transportation of radioactive material
  13. 10 CFR Part 73 Physical protection of plants and materials
  14. 10 CFR Part 74 Material control and accounting of special nuclear material
  15. 10 CFR Part 75 Safeguards on nuclear material
  16. 10 CFR Part 76 Certification of Gaseous Diffusion Plants
  17. 10 CFR Part 95 Security facility approval and safeguarding of national security information and restricted data
  18. 10 CFR Part 170 Fees for facilities, materials, import and export licenses and other regulatory services under the Atomic Energy Act of 1954, as amended
  19. 10 CFR Part 171 Annual fees for reactor operating licenses, and fuel cycle licenses and materials licenses, including holders of certificates of compliance, registrations, and quality assurance program approvals and government agencies licensed by

## NRC

20. 29 CFR Part 1910 Occupational Safety and Health Standards
21. 40 CFR Part 61, National Emissions Standards for Hazardous Air Pollutants Subpart I
22. 40 CFR Part 190 Environmental Radiation Protection for Nuclear Power Operations (Uranium Fuel Cycle Standards)

B. Following completion of the qualifying individual's self study of the listed 10 CFR Parts, a discussion will be held with the qualifying license reviewer by the First Line Supervisor to test the qualifying license reviewer's knowledge of these Parts. To the extent possible, recent application of various sections, new regulatory initiatives, and current industry issues should be emphasized.

Qualification Guide 3  
Office Instructions/Regional Procedures

A. Office/Division Policies and Procedures

1. Read the applicable Policy and Procedures Manual
2. The qualifying individual should review the office/division/NRC policies and practices on:
  - a. Travel, including Management Directive 14.1 Official Temporary Duty Travel
  - b. Telephone use
  - c. Policies on use of annual, sick, and excused leave, including Bulletin 4135, Leave Administration
  - d. Work schedule, including NRC Appendix 4136, Hours of Work and Premium Pay
  - e. Use of government equipment, including computers (NUDOCS and ADAMS) and Management Directive 13.1, Property Management
  - f. Union activities, including Management Directive 10.102, Labor-Management Relations Program for Federal Employees
  - g. Communications outside NRC
  - h. Policies on outside employment and acceptance of gifts
  - i. Participation in political activities
  - j. Routing of mail and procedures for sending mail and materials (via U.S. Mail, Federal Express, etc.), including Management Directive 3.23, Mail Management
  - k. Ordering of documents (e.g NUREGs)
  - l. Emergency and evacuation procedures
  - m. Employee appraisal system and Individual Development Plan (IDP)
    - (1) Employee trial period (Management Directive 10.14 Employment and Staffing)
    - (2) Employee appraisals (Management Directive 10.67, Non-SES Performance Appraisal System)
  - n. Differing Professional Views or Opinions (Management Directive 10.159, General Personnel Management Provisions)

- B. The First Line Supervisor should discuss these policies and practices with the qualifying individual to ensure that the qualifying individual has a full and complete understanding.

## Qualification Guide 4 Regulatory Guidance

A. A selection of currently applicable regulatory guidance should be identified by the First Line Supervisor. It should be noted that not all of the referenced regulatory guides will be applicable to each license reviewer's area of responsibility. These references should be selected from those listed below and should be documented. The qualifying individual should be expected to have a general knowledge of the topics addressed in the references. The review may be accomplished by self-study, study-quizzes, briefings, or discussions. Note that many Regulatory Guides reference or endorse industry codes and standards listed in Qualification Guide 6. Study of corresponding and subtier codes and standards is recommended.

### 1. Regulatory Guides (use latest revision)

- 3.2 Efficiency Testing of Air-Cleaning Systems Containing Devices for Removal of Particles
- 3.3 Quality Assurance Program Requirements for Fuel Fabrication Plants
- 3.7 Monitoring of Combustible Gases and Vapor in Fuel Fabrication Plants
- 3.10 Liquid Waste Treatment System Design Guide for Fuel Fabrication Plants
- 3.12 General Design Guide for Ventilation Systems of Fuel Fabrication Plants
- 3.16 General Fire Protection Guide for Fuel Fabrication Plants
- 3.21 Quality Assurance Requirements for Fuel Fabrication Plants
- 3.34 Assumptions Used for Evaluating the Potential Radiological Consequences of Accidental Nuclear Criticality in a Uranium Fuel Fabrication Plant
- 3.52 Standard Format and Content for the Health and Safety Sections of License Applications for Fuel Cycle Facilities
- 3.55 Standard Format and Content for the Health and Safety Sections of License Renewal Applications for Fuel Fabrication
- 3.71 Nuclear Criticality Safety Standards for Fuels and Materials Facilities (Draft DG-3013 published 1/98) (Guide Withdraws RG 3.1, 3.4, 3.43, 3.45, 3.47, 3.57, 3.58, 3.68, 3.70, and 8.12)
- 4.15 Quality Assurance for Radiological Monitoring Programs (Normal Operations) - Effluent Streams and the Environment
- 4.16 Monitoring and Reporting Radioactivity in Releases of Radioactive Materials in Liquid and Gaseous Effluents from Nuclear Fuel Processing and Fabrication Plants and Uranium Hexafluoride Production Plants
- 8.1 Radiation Symbol
- 8.2 Guide for Administrative Practices in Radiation Monitoring

- 8.4 Direct Reading and Indirect Reading Pocket Dosimeters
- 8.5 Criticality and Other Interior Evacuation Signals
- 8.6 Standard Test Procedure for Geiger Muller Counters
- 8.7 Instructions For Recording and Reporting Occupational Radiation Exposure Data
- 8.8 Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will Be As Low As Reasonably Achievable
- 8.10 Operating Philosophy for Maintaining Occupational Radiation Exposure As Low As Is Reasonably Achievable
- 8.11 Applications of Bioassay for Uranium
- 8.13 Instruction Concerning Prenatal Radiation Exposure
- 8.14 Personnel Neutron Dosimeters
- 8.21 Health Physics Surveys for Byproduct Material at NRC Licensed Processing and Manufacturing Plants
- 8.24 Health Physics Surveys During Enriched Uranium 235 Processing and Fuel Fabrication
- 8.25 Air Sampling in the Workplace
- 8.29 Instruction Concerning Risks from Occupational Radiation Exposure
- 8.30 Health Physics Surveys in Uranium Mills
- 8.31 Information Relevant to Ensuring that Occupational Radiation Exposures at Uranium Mills Will Be As Low As Reasonably Achievable
- 8.33 Quality Management Program
- 8.34 Monitoring Criteria and Methods to Calculate Occupational Radiation Doses
- 8.35 Planned Special Exposures
- 8.36 Radiation Doses to the Embryo/Fetus
- 8.37 ALARA Levels For Effluents From Materials Facilities
- 10.10 Guide for the Preparation of Applications for Radiation Safety Evaluations

2. Information Notices(IN) and Bulletins (BL)

- IN 82-21 Buildup of Enriched Uranium in Effluent Treatment Tanks
- IN 87-26 Cracks in Stiffening Rings on 48-inch-diameter UF<sub>6</sub> Cylinders
- IN 89-24 Nuclear Criticality Safety

IN 90-27	Clarification of Regulatory Requirements for Packaging of Uranium Hexafluoride (UF <sub>6</sub> ) for Transportation
IN 90-63	Management Attention to the Establishment and Maintenance of a Nuclear Criticality Safety Program
IN 91-84	Problems with Criticality Alarm Components/Systems
IN 92-11	Soil and Water Contamination at Fuel Cycle Facilities
IN 92-14	Uranium Oxide Fires at Fuel Cycle Facilities
IN 92-58	Uranium Hexafluoride Cylinders - Deviations in Coupling Welds
IN 93-60,	Reporting Fuel Cycle and Materials Events to the Supplement 1 NRC Operations Center
IN 94-73	Clarification of Criticality Reporting Criteria
BL 91-01	Reporting Loss of Criticality Safety Controls Supplement 1

Others as selected by the First Line Supervisor

3. NUREGs (latest revision, where applicable)

NUREG 1198	Release of UF <sub>6</sub> From A Ruptured Model 48Y Cylinder at Sequoyah Fuels Corporation Facility
NUREG 1198,	Release of UF <sub>6</sub> From a Ruptured Model 48Y Cylinder at Sequoyah Supplement No. 1 Fuels Corporation Facility: Lessons-Learned Report
NUREG 1189, Vol. 1 and 2	Assessment of the Public Health Impact From the Accidental Release of UF <sub>6</sub> at the Sequoyah Fuels Corporation Facility at Gore, Oklahoma
NUREG 1324	Proposed Method for Regulating Major Materials Licensees
NUREG 1450	Potential Criticality Accident at the General Electric Nuclear Fuel and Component Manufacturing Facility, May 29, 1991
NUREG 1513	Integrated Safety Analysis Guidance Document
NUREG 1520	Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility
NUREG 1600	General Statement of Policy and Procedures for NRC Enforcement Actions

Others as selected by the First Line Supervisor

4. Generic Letters (GL)

GL 95-001            NRC Staff Technical Position on Fire Protection For Fuel  
Cycle Facilities

Others as selected by the First Line Supervisor

5. Federal Register Notices

U.S. Nuclear Regulatory Commission, "Guidance on Management Controls/Quality Assurance, Requirements for Operation, Chemical Safety, and Fire Protection for Fuel Cycle Facilities," *Federal Register* 54 (No. 53), 11590-11598, March 21, 1989

U. S. Nuclear Regulatory Commission, "Guidance on Fire Protection for Fuel Cycle Facilities," *Federal Register* 57 (No. 154), 35607-35613, August 10, 1992

Others as selected by the First Line Supervisor

6. NRC Branch Technical Positions (BTP)

None

7. Policy and Guidance Directives

FCSS Policy and Guidance Directive FC 84-14, "Radiological Contingency Planning Requirements and License Application Review"

NRC Policy and Guidance Directive 83-23, "Termination of Byproduct, Source, and Special Nuclear Materials Licenses"

Others as selected by the First Line Supervisor

B. The First Line Supervisor should test the qualifying individual's knowledge of application of the selected regulatory guidance documents to the fuel cycle license reviewer program by discussions, interviews, or oral quizzes.

Qualification Guide 5  
Fuel Cycle Licensing Branch Manual

- A. A selection of portions of the Licensing Branch Manual with direct application to the fuel cycle license review program should be identified by the First Line Supervisor. The application of the specific sections to the fuel cycle license review program should be studied in detail by the qualifying individual.
  
- B. The First Line Supervisor will hold discussions, interviews, or oral quizzes to test the qualifying individual's knowledge and understanding of the application of the selected sections to the fuel cycle license review program.

Qualification Guide 6  
Industry Codes and Standards

A. A selection of currently applicable industry codes and standards should be identified by the First Line Supervisor. These references should be selected from those listed below for the specific area of the license reviewer's responsibility and be documented. The qualifying individual should be expected to have a general knowledge of the topics addressed in the references. This review may be accomplished by self study, study quizzes, briefings, or discussions.

1. American National Standards Institute (ANSI)

ANSI/ANS 8.1	Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors
ANSI/ANS 8.3	Criticality Accident Alarm System
ANSI/ANS 8.5	Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material
ANSI/ANS 8.7	Guide for Nuclear Criticality Safety in the Storage of Fissile Materials
ANSI/ANS 8.9	Nuclear Criticality Safety Criteria for Steel-Pipe Intersections Containing Aqueous Solutions of Fissile Material
ANSI/ANS 8.10	Criteria For Nuclear Criticality Safety Controls in Operations with Shielding and Confinement
ANSI/ANS 8.12	Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors
ANSI/ANS 8.15	Nuclear Criticality Control of Special Actinide Elements
ANSI/ANS 8.17	Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors
ANSI/ANS 8.19	Administrative Practices for Nuclear Criticality Safety
ANSI/ANS 8.20	Nuclear Criticality Safety Training
ANSI N13.1	Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities
ANSI N13.2	Guide for Administrative Practices in Radiation Monitoring
ANSI N323	Radiation Protection Instrumentation Test and Calibration
ANSI NQA-1	Quality Assurance Requirements for Nuclear Facilities

ANSI NFPA Standards as selected and documented by the First Line Supervisor (NOTE: a list is provided in Section 8.4.2 of NUREG 1520).

2. NRC Accepted HP Computer Codes  
PC-DOSE  
Varskin  
RASCAL  
REMIT
3. U.S. Environmental Protection Agency (EPA)  
EPA Federal Guidance Report No.11
4. Committee on the Biological Effects of Ionizing Radiation (BEIR)  
BEIR Reports (As selected by Supervisor)
5. American Society for Testing Materials (ASTM)  
ASTM C986-89, Developing Training Programs in the Nuclear Fuel Cycle
6. Other  
LA-10860-MS, Critical Dimensions of Systems Containing U-235, Pu-239, and U-233, H.C. Paxton and N. L. Pruvost, Los Alamos National Laboratory, Los Alamos, NM, 1987  
  
Draft Regulatory Guide, DOE/NCT-04, A Review of Criticality Accidents, W. R. Stratton, Revised by D. R. Smith, U.S. DOE, March 1989  
  
Nuclear Criticality Safety - Theory and Practice, R. A. Knief, American Nuclear Society, La Grange Park, IL, 1985  
  
Underwriters Laboratories, Inc. (UL) Standard 555, "Standard for Fire Dampers and Ceiling Dampers"

- B. The First Line Supervisor should test the qualifying individual's knowledge of application of these codes and standards to the fuel cycle license reviewer program by discussions, interviews, or oral quizzes.

## Qualification Guide 7 NRC Management Directives

- A. A selection of currently applicable NRC Management Directive (MD) references should be identified by the First Line Supervisor. These references should include those listed below and be documented. The qualifying license reviewer should be expected to have a general knowledge of the topics addressed in the references. This review may be accomplished by self-study, study-quizzes, briefings, or discussions. The selection should include:
1. NRC MD 9.1 Organization Management
  2. NRC MD 9.29 Organization and Function of Regional Offices
  3. NUREG 0325 USNRC Functional Organization Chart
  4. NRC MD 3.2 Privacy Act
  5. NRC MD 3.1 Freedom of Information Act
  6. NRC MD 10.130 Safety and Health Program Under the Occupational Safety and Health Act
  7. NRC MD 10.131 Protection of NRC Employees Against Ionizing Radiation
  8. NRC MD 14.1 Official Temporary Duty Travel
  9. NRC MD 10.159 Differing Professional Views or Opinions
  10. NRC MD 10.42 Hours of Work and Premium Pay
  11. NRC MD 10.43 Time and Attendance Reporting
  12. NRC MD 10.67 Non-SES Performance Appraisal System
  13. NRC MD 10.101 Employee Grievances
  14. NRC MD 8.3 NRC Incident Investigation Procedures
  15. NRC MD 8.8 Management of Allegations
- B. Application of the selected NRC Management Directives to the fuel cycle license review program will be discussed with the qualifying individual by the First Line Supervisor to test the qualifying individual's knowledge.

## Qualification Guide 8 Review of Significant Fuel Cycle Events

- A. A selection of significant historical fuel cycle related events should be identified by the First Line Supervisor. These events should be studied in detail by the qualifying individual. Such events would include the following. Other events may be chosen but in any case the events chosen should be documented.
1. Sequoyah Fuels accidents in 1986 and in 1992
  2. Potential criticality at the GE Wilmington plant in 1991
  3. Y-12 criticality accident in 1958
  4. UO<sub>2</sub> fires at fuel fabrication plants
  5. United Nuclear - Wood River Junction in 1964
  6. Japan fuel fabrication nuclear criticality accident in 1999
- B. The First Line Supervisor should discuss the selected events in detail with the qualifying license reviewer and go over recommendations made, lessons learned, and changes identified to prevent recurrence. The relevance of the event to the overall fuel cycle license review program should be stressed.

Qualification Guide 9  
Directed Review of Selected Licensing Case Work

- A. The First Line Supervisor will select documents from the file of a licensed facility and direct their review by the qualifying individual. The qualifying individual will study in detail the selected documents. The selection should be documented. Such documents would include:
1. Initial license application and facility description
  2. NRC Safety Evaluation Report
  3. Associated licensing correspondence (NRC staff comments and licensee responses)
  4. License renewal applications and associated NRC correspondence
  5. Copy of the license
  6. Integrated Safety Analysis (ISA), if available
  7. Facility pre-fire plan, if available
- B. The First Line Supervisor will discuss in detail with the qualifying individual the selected documents and their relation to the overall fuel cycle license review program.

## Qualification Guide 10 Formal Training

The standards for each Training Course are provided in the NRC Technical Training Division Course Catalog and will not be duplicated in the Qualification Guide.

Attachment 1  
Revision History for IMC 1246, Appendix C1

Commitment Tracking Number	Document Accession Number and Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
N/A	ML11230B319 10/26/11 CN 11-022	Revision history sheet added. Combined Appendix A7 with Appendix B7 and renamed as Appendix C1. Added "training requirements" section from Appendix A7.	None	N/A	ML11235A674