

NRC INSPECTION MANUAL

NMSS/FCSS

MANUAL CHAPTER 1247 APPENDIX C6

FUEL FACILITY NUCLEAR CRITICALITY SAFETY INSPECTOR TECHNICAL PROFICIENCY
TRAINING AND QUALIFICATION

Table of Contents	
Introduction	1
Required Fuel Facility Nuclear Criticality Safety Inspector Training Courses:.....	1
Refresher Training (as needed):	1
Required Rotational Assignment.....	2
Fuel Facility Nuclear Criticality Safety Inspector Study Guides.....	3
(SG-NCS-1) Regulatory Framework	4
(SG-NCS-2) Regulatory Guidance.....	5
(SG-NCS-3) Generic Communications	7
(SG-NCS-4) Industry Codes and Standards	10
(SG-NCS-5) Fuel Cycle Events	12
Fuel Facility Nuclear Criticality Safety Inspector On-the-Job Activities	14
(OJT-NCS-1) Criticality Safety Inspections	15
(OJT-NCS-2) Criticality Safety Codes.....	18
Fuel Facility Nuclear Criticality Safety Inspector Rotational Assignment.....	19
(ROT-NCS-1) Rotational Assignment to PORSB/NMSS	20
Fuel Facility Criticality Safety Inspector Technical Proficiency-Level	22
Form 1: Fuel Facility Nuclear Criticality Safety Inspector Technical Proficiency-Level Equivalency Justification	23
Revision History for IMC 1247, Appendix C6	Att1-1

Introduction

Consult with your supervisor prior to beginning the activities or completing the courses in this qualification journal. In most cases, you will need to complete the Basic Inspector Certification Journal prior to beginning the activities in this Appendix. You may complete the General Proficiency requirements contained in Appendix B together with the Technical Proficiency requirements outlined in this journal.

Several of the topics have both an individual study guide and on-the-job training. You must complete the individual study guide before beginning the corresponding on-the-job training.

Before signing up for any course, be sure that you have checked and have met any prerequisites.

Required Fuel Facility Nuclear Criticality Safety Inspector Training Courses:

- F-206S, Fire Protection for Fuel Cycle Facilities Self Study
- (40 hours) SCALE Training Course

Completion of one of the following:

- (80 hours) Hands on Nuclear Criticality Safety (NCS) Program (or equivalent) – [Note: This class is normally offered by the DOE]
- (40 hours) University of New Mexico – Nuclear Criticality Safety Short Course

Refresher Training:

(To be completed every three years)

- (8 hours) OSHA HAZWOPR Refresher Course or iLearn Health and Safety Training Suite as identified in Memorandum dated May 7, 2010, from Catherine Haney to NMSS Branch Chiefs (See ADAMS Accession No. ML100200563 for details of equivalent iLearn training modules).
- (16 Hours) Refresher Technical Training Seminar as approved by supervisor
- (40 hours) SCALE or MCNP Training (As needed)

Continuing Training:

These classes are suggested for continuing training for inspectors. You may propose alternate courses in additional topic areas to your supervisor.

- NQA-1 Training
- (32 hours) ANS Criticality Safety Meetings
- SCALE or MCNP Training Courses
- University of New Mexico Assessments and Criticality Safety Evaluations

Required Rotational Assignment:

Successful completion of the Nuclear Criticality Safety Inspector (NCSI) qualification program requires collaboration between Region II and NMSS to ensure the NCSI completes the program with sufficient knowledge and skill to be successful.

The rotational assignment (ROT-NCS-1) is the capstone project in the NCSI qualification program. This rotation is expected to be performed after the inspector has completed all required NCS training courses, a majority of the qualification card and participated on several NCS inspections. The inspector will develop a work plan by selecting one or more licensee's processes or activities for in-depth modeling and analysis. The work plan will be reviewed and approved by Region II and NMSS management prior to initiating the rotation. Additionally, a site visit may be conducted to facilitate the inspector's understanding and support reconstruction of the selected process(es). Thus, the inspector's rotation should be viewed as a culmination of activities performed during the course of several previous inspections.

The cognizant NMSS Branch Chief for NCS will document successful completion of the work plan at the conclusion of the rotation. The rotation to FCSS does not apply to NCS inspector qualification program candidates assigned to the NMSS branch that is responsible for NCS.

Fuel Facility Nuclear Criticality Safety Inspector Study Guides

Fuel Facility Nuclear Criticality Safety Inspector Study Guide

- TOPIC:** (SG-NCS-1) Regulatory Framework
- PURPOSE:** The purpose of this activity is to acquaint you with the regulations that specify the requirements for all aspects of Domestic Licensing of Special Nuclear Material. This SG will help you to understand the content of nuclear criticality safety portions of the regulations.
- COMPETENCY AREAS:** REGULATORY FRAMEWORK
- LEVEL OF EFFORT:** 80-120 hours
- REFERENCES:**
1. 10 CFR Part 70
 2. 10 CFR Part 76
 3. Safety Evaluation Report (SER) for your reference facility
 4. License Application for your reference facility
 5. ISA summary for your reference facility
- EVALUATION CRITERIA:** Upon completion of this activity, you should be able to do the following:
1. Describe the criticality safety portions of 10 CFR Part 70.
 2. Describe the criticality safety portions of 10 CFR Part 76.
 3. Describe the purpose of SERs.
 4. Describe the interaction between criticality safety licensing and inspection.
- TASKS:**
1. Read and discuss with a qualified NCS inspector or reviewer the criticality safety portions of 10 CFR Part 70.
 2. Read and discuss with a qualified NCS inspector or reviewer the criticality safety portions of 10 CFR Part 76.
 3. Discuss the SER for your reference facility with a qualified NCS inspector or reviewer.
 4. Discuss with a qualified NCS inspector or reviewer the difference between inspection and licensing.
- DOCUMENTATION:** Fuel Facility Operations Inspector Technical Proficiency-Level Qualification Signature Card, Item SG-NCS-1

Fuel Facility Nuclear Criticality Safety Inspector Study Guide

TOPIC: (SG-NCS-2) Regulatory Guidance

PURPOSE: The purpose of this is to familiarize you with the regulatory guidance available for NCS inspectors for fuel cycle facilities.

COMPETENCY AREAS: REGULATORY FRAMEWORK

LEVEL OF EFFORT: 60 hours

- REFERENCES:**
1. NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," Chapters 2, 3, 5, and 11.
 2. NUREG-1513, "Integrated Safety Analysis Guidance Document." (ML031340285)
 3. NUREG-1718, "Standard Review Plan for the Review of an Application for a Mixed Oxide (MOX) Fuel Fabrication Facility." (ML003741461 and ML003741581)
 4. Regulatory Guide 3.71, "NCS Standards for Fuels and Material Facilities."
 5. FCSS-ISG-01, "Methods for Qualitative Evaluation of Likelihood."
 6. FCSS-ISG-03, "Nuclear Criticality Safety Performance Requirements and Double Contingency Principle."
 7. FCSS-ISG-10, "Justification for Minimum Margin of Subcriticality for Safety."
 8. FCSS-ISG-12, "Reportable Safety Events per 10 CFR Part 70 Appendix A."

EVALUATION CRITERIA: Upon completion of this activity, you should be able to do the following:

1. Understand the guidance that the NRC has for criticality safety in fuel cycle facilities.

TASKS:

1. Read and discuss with a qualified NCS inspector or reviewer the criticality safety portions of NUREG-1520 and NUREG-1718.

2. Read and discuss with a qualified NCS inspector or reviewer the ISA portions of NUREG-1520, NUREG-1513, and NUREG-1718.
3. Discuss Regulatory Guide 3.71 with a qualified NCS inspector or reviewer. What standards has your reference facility committed to?
4. Read and Discuss and discuss with a qualified NCS inspector or reviewer the criticality safety portions of FCSS-ISG-01, FCSS-ISG-03, FCSS-ISG-10, and FCSS-ISG-12.
5. Discuss with a qualified NCS inspector or reviewer the requirements for fuel facilities to have criticality accident alarm systems. When are criticality accident alarm systems needed?

DOCUMENTATION: Fuel Facility Operations Inspector Technical Proficiency-Level Qualification Signature Card, Item SG-NCS-2.

Fuel Facility Nuclear Criticality Safety Inspector Study Guide

TOPIC:	(SG-NCS-3) Generic Communications
PURPOSE:	The purposed of this is to familiarize you with the NRC generic communications that have been issued for fuel cycle facilities.
COMPETENCY AREAS:	REGULATORY FRAMEWORK INSPECTION
LEVEL OF EFFORT:	80 hours
REFERENCES	<ol style="list-style-type: none">1. Bulletin (BL) 91-01, "Reporting Loss of Criticality Safety Controls"2. BL 91-01, Supplement 1, "Reporting Loss of Criticality Safety Controls"3. Information Notice (IN) 11-06, "Erroneous Criticality Alarm Monitoring Signal Caused By Incorrect Data Acquisition Module Configuration"4. IN 10-16, "Failure To Disable Unsafe Geometry Bandsaw Reservoir Results In Criticality Safety-Related Alert"5. IN 10-15, "Fuel Cycle Facility Configuration Management Errors"6. IN 08-14, "Criticality Safety-related Events Resulting from Fissile Material Operations under Procedures Not Reviewed by Criticality Safety Staff"7. IN 08-08, "Maintenance Procedures Compromise Double-Contingency of UO₂ Powder-Handling Equipment at Fuel Cycle Facility"8. IN 07-30, "Radiological Controls Create Criticality Safety Accident Scenario for Fissile Solution Container Transport at Fuel Cycle Facility"9. IN 07-13, "Use of As-found Conditions to Evaluate Criticality-related Process Upsets at Fuel Cycle Facilities"10. IN 06-10, "Use of Concentration Control for Criticality Safety"11. IN 06-07, "Inappropriate Use of a Single-Parameter Limit as a Nuclear Criticality Safety Limit"

12. IN 05-31, "Potential Non-Conservative Error in Preparing Problem-Dependent Cross Sections for Use with the Keno V.A. or Keno-VI Criticality Code"
13. IN 05-28, "Inadequate Test Procedures Fails to Detect Inoperable Criticality Accident Alarm Horns"
14. IN 05-22, "Inadequate Criticality Safety Analysis of Ventilation Systems at Fuel Cycle Facilities"
15. IN 05-13, "Potential Non-Conservative Error in Modeling Geometric Regions in the Keno-V.a Criticality Code"
16. IN 05-12, "Excessively Large Criticality Safety Limits Fail to Provide Double Contingency at Fuel Cycle Facility"
17. IN 05-05, "Improving Material Control and Accountability Interface with Criticality Safety Activities at Fuel Cycle Facilities"
18. IN 04-14, "Use of less than Optimal Bounding Assumptions in Criticality Safety Analysis at Fuel Cycle Facilities"
19. IN 94-73, "Clarification of Criticality Reporting Criteria"
20. IN 93-60, "Reporting Fuel Cycle and Materials Events to the NRC Operations Center"
21. IN 92-14, "Uranium Oxide Fires at Fuel Cycle Facilities"
22. IN 91-84, "Problems with Criticality Alarm Components/Systems"
23. IN 90-63, "Management Attention to the Establishment and Maintenance of a Nuclear Criticality Safety Program"
24. IN 89-24, "Nuclear Criticality Safety"
25. IN 82-21, "Buildup of Enriched Uranium in Effluent Treatment Tanks"

**EVALUATION
CRITERIA:**

Upon completion of this activity, you should be able to do the following:

1. Identify criticality safety problems that have occurred in fuel cycle facilities.
2. Identify how licensees can use as found conditions to evaluate events at their facilities.

TASKS:

1. Discuss with a qualified NCS inspector or reviewer how licensees can use as found condition to evaluate significant issues at their facilities.
2. Discuss with a qualified NCS inspector or reviewer recent problems experienced at fuel cycle facilities with their criticality accident alarm systems.

DOCUMENTATION: Fuel Facility Operations Inspector Technical Proficiency-Level Qualification Signature Card, Item SG-NCS-3.

Fuel Facility Nuclear Criticality Safety Inspector Study Guide

- TOPIC:** (SG-NCS-4) Industry Codes and Standards
- PURPOSE:** The purpose of this is to familiarize you with NCS industry codes and standards that are used by the NRC and fuel cycle facilities.
- COMPETENCY AREAS:** INSPECTION
- LEVEL OF EFFORT:** 60 hours
- REFERENCES:**
1. Regulatory Guide 3.71 Nuclear Criticality Safety Standards for Fuels and Material Facilities.
 2. ANSI NQA-1 Quality Assurance Requirements for Nuclear Facilities.
 3. LA-10860-MS, "Critical Dimensions of systems Containing 235U, 239Pu, and 233U."
 4. LA-12808, "Nuclear Criticality Safety Guide."
 5. LA-13638, "A Review of Criticality Accidents."
 6. R. A. Knief, "Nuclear Criticality Safety – Theory and Practice," American Nuclear Society.
 7. ARH-600, "Criticality Handbook," W.A. Blyckert, Atlantic Richfield Handford Company.
 8. NUREG/CR-6698, "Guide for Validation of Nuclear Criticality Safety Calculational Methodology." (ML050250061)
 9. TID-7016, "The Nuclear Safety Guide."
- EVALUATION CRITERIA:** Upon completion of this activity, you should be able to do the following:
1. Describe the significance of the ANSI/ANS 8 standards on the criticality safety community. Discuss the involvement of NRC staff on the ANS working groups.
 2. Describe how the fuel cycle licensees use and commit to the ANSI/ANS 8 standards.
 3. Discuss ANSI NQA-1 and how it is used in the nuclear criticality safety community.

TASKS:

1. Read and discuss ANSI/ANS-8 Consensus NCS Standards with a qualified NCS inspector or reviewer.
2. Discuss with a qualified NCS inspector or reviewer how licensees meet the double contingency principle. Discuss the history of the double contingency principle and how different organizations have different views on the implementation of the double contingency principle.
3. Read and discuss ANSI NQA-1.
4. Read and discuss reference 6 (Nuclear Criticality Safety – Theory and Practice) the Knief book with a qualified NCS inspector or reviewer. Try to identify things that have changed since the book was published.
5. Discuss with a qualified NCS inspector or reviewer how single parameter limits are used at facilities. Describe the conservatism that is established as part of the single parameter limit as compared to a calculated limit.

DOCUMENTATION:

Fuel Facility Operations Inspector Technical Proficiency-Level Qualification Signature Card, Item SG-NCS-4.

Fuel Facility Nuclear Criticality Safety Inspector Study Guide

- TOPIC:** (SG-NCS-5) Fuel Cycle Events
- PURPOSE:** The purpose of this is to familiarize you with previous accidents in fuel cycle facilities and how these have impacted the regulatory framework and the criticality safety community.
- COMPETENCY AREAS:** INSPECTION
- LEVEL OF EFFORT:** 80 hours
- REFERENCES:**
1. NUREG/CR-6410, "Nuclear Fuel Cycle Facility Accident Analysis Handbook."
 2. NUREG-1450, "Potential Criticality Accident at the GE Nuclear Fuel and Component Manufacturing Facility, May 29, 1991."
 3. NUREG-1198, "Release of UF6 From a Ruptured Model 48Y cylinder at Sequoyah Fuels Corporation Facility: Lessons-Learned Report."
 4. NUREG-1189, "Assessment of the Public Health Impact From the Accidental Release of UF6 at the Sequoyah Fuels Corporation Facility at Gore, Oklahoma."
 5. F-206S, "Fire Protection For Fuel Cycle Facilities Self-Study Course Manual."
 6. LA-13638, "A Review of Criticality Accidents."
 7. NRC INSPECTION REPORT (IR) NO. 70-1151/2004-001
 8. NRC IR 70-143/2006-006
 9. NRC IR 70-143/2006-011
 10. NRC IR 70-143/2006-012
 11. NRC IR 70-143/2006-019
 12. NRC IR 70-27/2009-006
- EVALUATION CRITERIA:** Upon completion of this activity, you should be able to do the following:

1. Understand how previous accidents in fuel cycle facilities have impacted the regulatory framework and the criticality safety community.
2. Understand how to apply lessons learned from previous criticality safety accidents to what to look for when inspecting.

TASKS:

1. Read and discuss how NUREG/CR-6410 applies to criticality safety with a qualified NCS inspector or reviewer.
2. Discuss the NFS HEU spill event in 2006 with a qualified NCS inspector or reviewer. Discuss the inspection reports (IR) IR 70-143/2006-006, IR 70-143/2006-011, IR 70-143/2006-012, and IR 70-143/2006-019, and enforcement actions that were taken.
3. Discuss the Westinghouse Incinerator event in 2004 with a qualified NCS inspector or reviewer. Discuss the IR 70-1151/2004-001 and enforcement actions that were taken.
4. Discuss the B&W bandsaw event in 2009 with a qualified NCS inspector or reviewer. Discuss the IR 70-27/2009-006 and enforcement actions that were taken.
5. Discuss with a qualified NCS inspector or reviewer the Sequoyah fuels accidents in 1986 and 1992 after reading NUREGs 1198 and 1189.
6. Discuss with a qualified NCS inspector or reviewer the GE Near criticality event in 1991 after reading NUREG-1450.
7. Read the UO₂ fires portion of the Fire Protection for Fuel Cycle Facilities Self-Study Course Manual (F-206S), and discuss with a fire safety inspector UO₂ fires, and then discuss with a NCS inspector or reviewer how fire safety and criticality safety interact.
8. Review LA-13638 and discuss with a NCS inspector or reviewer the United Nuclear- Wood River Junction accident in 1964.
9. Review LA-13638 and discuss with a NCS inspector or reviewer the Y-12 accident in 1958.
10. Review LA-13638 and discuss with a NCA inspector or reviewer the fuel fabrication accident in Japan in 1999. Be able to discuss common failures that happen in all of the events.

DOCUMENTATION: Fuel Facility Operations Inspector Technical Proficiency-Level Qualification Signature Card, Item SG-NCS-5.

Fuel Facility Nuclear Criticality Safety Inspector On-the-Job Activities

Fuel Facility Nuclear Criticality Safety Inspector On-the-Job Activity

TOPIC: (OJT-NCS-1) Criticality Safety Inspections

PURPOSE: The purpose of this activity is to familiarize you with the proper method for inspecting criticality safety documents and organizations.

COMPETENCY AREA: INSPECTION REGULATORY FRAMEWORK

LEVEL OF EFFORT: 128 hours

REFERENCES:

1. IP 88003, "Reactive Inspection for Events at Fuel Cycle Facilities Program."
2. IP 88015, "Nuclear Criticality Safety Program."
3. IP 88016, "Nuclear Criticality Safety Evaluations and Analyses."
4. IP 88017, "Criticality Safety Alarms."
5. IP 88020, "Operational Safety."
6. IP 88025, "Maintenance and Surveillance of Safety Controls."
7. IP 88070, "Permanent Plant Modifications."
8. IP 88071, "Configuration Management Programmatic Review."
9. IP 93800, "Augmented Inspection Team."
10. IP 98312, "Special Inspection."
11. ISA summary for designated facility.

EVALUATION CRITERIA: Upon completion of the tasks, you should be able to do the following:

1. Identify the hazards (nuclear criticality safety, radiation protection, chemical safety, and fire protection) associated with your designated fuel cycle facility.
2. Identify the IROFS and management measures for a designated operation or process to ensure that process operations remains safe during normal and credible abnormal conditions.

3. Identify the controlled parameters and controls, and safety limits for a specified process.
4. Describe the differences between the general types of NCS controls used an LEU facility and an HEU facility.

TASKS:

1. Review the ISA summary for your assigned facility and select a risk significant area or process based on the potential safety significance as described in the ISA.
2. Review the License Application and procedures used by the licensee at your designated facility to review, revise and approve procedures. Discuss this process with your mentor or a qualified fuel facility inspector.
3. Review the License Application and procedures used by the licensee at your designated facility to implement the Corrective Action Program (CAP). The License Application requirements for the CAP may vary between fuel facilities.
4. Review the License Application and NCS procedures used by the licensee at your designated facility to implement the NCS program. Discuss the information with a qualified NCS inspector or reviewer.
5. Obtain a copy of an internal and external audit of NCS. Discuss the information with a qualified NCS inspector or reviewer.
6. Identify the existing safety controls and the associated Management Measures for Nuclear Criticality.
7. Review the facility's Operating Procedures for the selected process or area. Identify if specific safety limits or criteria for IROFS or Management Measures have been translated into the Operating Procedures or Postings.
8. Participate in NCS inspections at a minimum of an enrichment facility, an LEU fuel fabrication facility, and an HEU fuel fabrication facility. Walk down the areas to observe the implementation safety controls.
9. Discuss the operation and maintenance of the safety controls with the workers. Discuss normal and emergency operational requirements.
10. Discuss procedural compliance with the workers.

11. Review the maintenance and surveillance requirements for the safety controls as listed in the Management Measures. Review a sampling of maintenance records for the maintenance and surveillance testing for specific controls.
12. Discuss your evaluation of the operability of the safety controls with your supervisor or the qualified criticality safety inspector or reviewer person designated as a resource.

DOCUMENTATION: Fuel Facility Criticality Safety Inspector Proficiency-Level Qualification Signature Card, Item OJT-NCS-1.

Fuel Facility Nuclear Criticality Safety Inspector On-the-Job Activity

- TOPIC:** (OJT-NCS-2) Criticality Safety Codes
- PURPOSE:** The purpose of this activity is to familiarize you with the criticality safety codes that you may encounter at licensee's sites.
- COMPETENCY AREA:** INSPECTION
- LEVEL OF EFFORT:** 80 hours
- REFERENCES:**
1. SCALE Criticality Safety Calculations Course (via ORNL)
 2. LA-UR-04-0294, "Criticality Calculations with MCNP5: A Primer."
- EVALUATION CRITERIA:** Upon completion of the tasks, you should be able to do the following:
1. Understand how input/output decks are set up.
 2. Be able to identify conservative practices when modeling systems.
 3. Understand what the licensee's go through during an inspection.
- TASKS:**
1. Have a criticality safety inspector or reviewer assign to you different parametric studies to investigate the effects that moderation, interaction, enrichment, and geometry can have on a system.
 2. Have a criticality safety inspector or reviewer assign you a practice criticality safety evaluation to do. Your evaluation should include physically measuring your system, creating controls, and defending your evaluation to a criticality safety inspector.
 3. Review criticality calculations and the validation report for your reference facility. Discuss with a qualified criticality safety inspector or review your observations about the facilities calculations and differences that are observed from facility to facility. Also discuss areas in which you determine that licensee may have weak areas that need focus during inspections.
- DOCUMENTATION:** Fuel Facility Criticality Safety Inspector Proficiency-Level Qualification Signature Card, Item OJT-NCS-3.

Fuel Facility Nuclear Criticality Safety Inspector Rotational Assignment

NCS Inspector Rotational Assignment

- TOPIC:** (ROT-NCS-1) Rotational Assignment to PORSB/NMSS
- PURPOSE:** The purpose of this assignment is to help the NCS inspector to become thoroughly familiar with the operation, analysis tools and techniques, including criticality safety codes, used by the Programmatic Oversight and Regional Support Branch (PORSB) at NRC Headquarters. Those permanently assigned to PORSB are not required to complete this rotation, but should still complete the tasks.
- COMPETENCY AREA:** TECHNICAL AREA EXPERTISE
- LEVEL OF EFFORT:** Length of rotation is 6-8 weeks.
(Duration is dependent upon successful completion of rotation tasks.)
- REFERENCES:** None
- EVALUATION CRITERIA:** Upon completion of the tasks, you should be able to:
1. Demonstrate proficiency in using criticality safety computer codes such as SCALE or MCNP to calculate the k_{eff} of configurations.
 2. Identify lead technical experts in NMSS, who can provide information on issues affecting NCS.
 3. Demonstrate an understanding of fuel facility licensing and how it is related to inspection and enforcement activities.
- TASKS:** Note: The tasks are designed to be accomplished as part of a single integrated project¹. They do not have to be completed in strict sequential order, but all tasks should have been accomplished at the completion of task 4. An individual work plan should be completed prior to beginning the rotation. This includes selecting a process or activity to focus the project on:
1. Obtain information related to the selected process or activity and facility that will be needed to complete the project. This will include site specific information from the licensee (e.g. system and process

¹ Project examples include examining criticality safety evaluations or analyses for a particular fissile material process. Other projects may include examining the licensee's criticality code validation or CAAS detector placement calculations.

information, NCS evaluations and analysis, NCS program documents, etc.) and licensing basis documents (e.g., license application, amendment request, staff's safety evaluation report, etc.), from the Project Manager.

2. Construct and run models using SCALE or MCNP and interpret the results to confirm that processes will meet the applicable regulatory requirements and commitments (e.g.: be subcritical under normal and credible abnormal conditions for a process analysis).
3. Discuss NCS questions and issues related to the project with the lead technical experts in PORSB/NMSS, other branches and the licensing Project Manager as needed, especially in the following areas:
 - a. Applicable regulatory requirements and commitments
 - b. The application of the double contingency principle
 - c. Validation (Benchmarking, Area of Applicability, etc.)
 - d. Techniques used for CAAS detector placement
4. Demonstrate (as a written report described below) how the licensee's analyses and calculations comply with the regulatory requirements and license commitments. Justify their acceptability.

If they are not acceptable, identify issues that should be followed up on in subsequent inspections or licensing actions. Identify the issues to management promptly if they constitute an immediate safety concern.

- a. Develop Safety Evaluation Report (SER) input, utilizing Chapter 5 of NUREG 1520 as a reference. The focus should be on applicable SER sections that relate to the project topic.
- b. Develop an inspection plan for the process or activity evaluated in this project that can be used in a future inspection.

DOCUMENTATION: Proficiency Level Qualification Signature Card Item ROT-NCS-1

**Fuel Facility Criticality Safety Inspector Technical Proficiency-Level
Signature Card and Certification**

<i>Inspector Name:</i> _____	<i>Employee Initials/Date</i>	<i>Supervisor's Signature/Date</i>
A. Training Courses		
SCALE or MCNP training class		
Hands on Criticality Safety Course		
UNM Nuclear Criticality Safety Short Course		
F-206S, Fire Protection for Fuel Cycle Facilities Self Study		
B. Study Guides		
SG-NCS-1 Regulatory Framework		
SG-NCS-2 Regulatory Guidance		
SG-NCS-3 Generic Communications		
SG-NCS-4 Industry Codes and Standards		
SG-NCS-5 Fuel Cycle Events		
C. On-the-Job Training Activities		
OJT-NCS-1 Criticality Safety Inspections		
OJT-NCS-2 Criticality Safety Codes		
D. Rotational Assignment		
ROT-NCS-1 Rotational Assignment to PORSB/NMSS		

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: _____

The appropriate Form 1, Fuel Facility Operations Inspector Basic-Level Equivalency Justification, must accompany this signature card and certification, if applicable.

Form 1: Fuel Facility Nuclear Criticality Safety Inspector Technical Proficiency-Level Equivalency Justification	
Inspector Name: _____	Identify equivalent training and experience for which the inspector is to be given credit.
A. Training Courses	
SCALE or MCNP training class	
Hands on Criticality Safety Course	
B. Individual Study Guides	
SG-CRT-1 Regulatory Framework	
SG-CRT-2 Regulatory Guidance	
SG-CRT-3 Generic Communications	
SG-CRT-4 Industry Codes and Standards	
SG-CRT-5 Fuel Cycle Events	
C. On-the-Job Training Activities	
OJT-CRT-1 Criticality Safety Inspections	
OJT-CRT-2 Criticality Safety Codes	
D. Rotational Assignment	
ROT-NCS-1 Rotational Assignment to PORSB/NMSS	

Supervisor's Recommendation Signature/Date _____

Division Director's Approval Signature/Date _____

Copies to: Inspector
 Human Resources Office
 Supervisor

Attachment 1

Revision History for IMC 1247, Appendix C6

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Changes	Description of Training Required and Completion Date	Comment and Feedback Resolution Accession Number
N/A	ML14051A526 06/11/14 CN 14-012	New inspection manual chapter appendix to specify qualification requirements for NRC criticality safety inspectors. Researched commitments for four years and found none.	None	ML14084A483