U.S.NRC
United States Nuclear Regulatory Commission
Protecting People and the Environment

Fuel Facilities
Construction Inspection Program

Public Meeting (Observation Category)
April 9, 2024, 1:00PM - 3:00PM ET

Agenda

- Open Remarks
- Purpose
- Feedback Summary of January 11, 2024, Public Meeting
- Management Measures Inspection Attributes During Construction Phase
- Closing Remarks

Opening Remarks

Purpose of Meeting

- Summary of feedback received from the January 11, 2024, public meeting* and how it is considered for proposed revisions of inspection manual chapters (IMCs) and inspection procedures (IPs).
- Examples of potential inspection activities/attributes for management measures during construction and operational readiness reviews (ORR).
- After each agenda section, the public is afforded an opportunity to ask questions and/or provide comments.

* The January 11, 2024, public meeting notice with the agenda, and the meeting presentations are available in the Agencywide Documents Access and Management System (ADAMS) under Accession Numbers: ML24010A123, ML23335A175, and ML24010A098. The public meeting summary is available under ADAMS ML24033A212.

Feedback Summary of January 11, 2024, Public Meeting

Feedback from January 11, 2024, Public Meeting

- Major modifications for existing licensees
  - Definition for “substantial” with respect to major modifications.
  - Licensee notifications regarding major modification inspections.
  - Basis for estimate of 100 – 400 hours for major modifications per year.
    - Hours are not constrained. Reasonable assurance of adequate protection to inform hours.
- Open Items during At-Risk Construction
  - Use of the term “At-Risk” Open Items during at-risk construction activities.
  - Definition of Open Items using the term “self-imposed standard.”
  - Documenting Open Items – use of “could” verses “should.”

Feedback from January 11, 2024, Public Meeting

- Safety Significant Items and Services
  - Inclusive of other regulatory requirements in a license, including integrated safety analysis (ISA) and Items Relied on for Safety (IROFS) language.
  - Examples of non-IROFS that fall into the category of Safety Significant Items and Services.
- Principal Inspection Plan (PIP)
  - Timing and development of PIP with respect to start of at-risk construction and major modifications.

Feedback from January 11, 2024, Public Meeting

- Construction Inspection Procedures
  - Additional details and usages of technical IP appendices.
  - IP 88200, Appendix L – “Nuclear Welding” and applicability for fuel facilities.
  - Four inspection requirements of IP predicated on license requirements, as applicable.
  - Risk inform content of inspection appendices for a fuel cycle facility with matching resources and inspection completion hours.

Feedback from January 11, 2024, Public Meeting

- Management Measures (MM)
  - MM implementation during construction verses operations and applicable NRC inspections.
    - How MMs relate to construction of IROFS.
    - Flow down of MMs to subcontractors.
    - Training and qualifications MMs during construction verses IROFS training requirements for operators.
- Operational Readiness Reviews (ORR)
  - New ORR IP with transparent fee-billing reporting.
  - Licensee readiness for ORR inspections.

Public Participation

At this time, the public is afforded an opportunity to ask questions and/or provide comments.

Management Measures Inspection Attributes During Construction and ORR Phase

IP 88201 “Inspections of Management Measures During Construction of Fuel Cycle Facilities”

Examples of Concepts/Revisions

Please note that these are still “in-draft” and are not meant to convey a final regulatory position.

IP 88201 Appendices **DRAFT LANGUAGE**

Appendix A: Configuration Management (CM)
Appendix B: Maintenance
Appendix C: Training and Qualification
Appendix D: Procedures
Appendix E: Audits and Assessments
Appendix F: Incident Investigations
Appendix G: Records Management
Appendix H: Other QA Elements (1-18) (as applicable)

Three Phases of Management Measures Inspections (Concept)

1. Initial Team Inspection/Program Review (in most cases, this inspection is for new applicants/new licensees only)
2. Sampling of implementation during in-process construction inspections (focused on construction applicable MMs)
3. ORR / Readiness Reviews (focused on operational applicable MMs, e.g. administrative IROFS, etc.)

Construction Inspection Example #1:
Safety-Significant Structure Inspection with MM Implementation Samples

For Example Use Only (MM Program is different for each licensee):

During a construction walkdown for a completed safety significance structure, inspectors identify gaps in the roofing for the structure, which is credited as a moderation control IROFS (prevents rain intrusion). During the review of the non-conformance, inspectors identified that the applicant's configuration management process, as documented in their procedures, and flowed down from MM requirements in their license application, failed to maintain design control when changes were made to the safety significant structure design, and failed to identify and capture the need to revise the roofing design and installation, which resulted in gaps in the roofing for the structure.

Construction Inspection Example #1: Potential Applicable Regulations and Requirements

For Example Use Only (MM Program is different for each licensee):

70.62 Safety program and integrated safety analysis.

(d) *Management measures.* (In part) The management measures shall ensure that engineered and administrative controls and control systems that are identified as IROFS pursuant to § 70.61(e) of this subpart are designed, implemented, and maintained, as necessary, to ensure they are available and reliable to perform their function when needed, to comply with the performance requirements of § 70.61 of this subpart.

Chapter 11, Management Measures, of the license application (LA), states *(for example):*

Configuration management (CM) applies to new facilities and are controlled by procedures, which includes during the construction phase. CM requirements listed in the LA include design control, change control, and document control.

Construction Inspection Example #1: Potential Applicable Regulations and Requirements

For Example Use Only (MM Program is different for each licensee):

70.62 Safety program and integrated safety analysis.

(c) *Integrated safety analysis.* (1) Each licensee or applicant shall conduct and maintain an integrated safety analysis, that is of appropriate detail for the complexity of the process, that identifies:

(i) Radiological hazards related to possessing or processing licensed material at its facility;

(ii) Chemical hazards of licensed material and hazardous chemicals produced from licensed material;

(iii) Facility hazards that could affect the safety of licensed materials and thus present an increased radiological risk;

(iv) Potential accident sequences caused by process deviations or other events internal to the facility and credible external events, including natural phenomena;

(v) The consequence and the likelihood of occurrence of each potential accident sequence identified pursuant to paragraph (c)(1)(iv) of this section, and the methods used to determine the consequences and likelihoods; and

(vi) Each item relied on for safety identified pursuant to § 70.61(e) of this subpart, the characteristics of its preventive, mitigative, or other safety function, and the assumptions and conditions under which the item is relied upon to support compliance with the performance requirements of § 70.61.

Construction Inspection Example #1: Potential Applicable Regulations and Requirements

For Example Use Only (MM Program is different for each licensee):

70.72 Facility changes and change process.

(a) The licensee shall establish a configuration management system to evaluate, implement, and track each change to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel. This system must be documented in written procedures and must assure that the following are addressed prior to implementing any change.

(1) The technical basis for the change;

(2) Impact of the change on safety and health or control of licensed material;

(3) Modifications to existing operating procedures including any necessary training or retraining before operation;

(4) Authorization requirements for the change;

(5) For temporary changes, the approved duration (e.g., expiration date) of the change; and

(6) The impacts or modifications to the integrated safety analysis, integrated safety analysis summary, or other safety program information, developed in accordance with § 70.62.

Construction Inspection Example #1: Potential Applicable Inspection Guidance

For Example Use Only (MM Program is different for each licensee):

- Inspections may use IP 88200, "Inspections of Safety Significant Items (and Services) During Construction of Fuel Cycle Facilities," Appendix A, "Inspection of Foundations and Buildings at Fuel Cycle Facilities," and/or Appendix C, "Inspection of Structural Steel and Supports at Fuel Cycle Facilities," to inspect technical aspects.
- For in-process inspections, sampling of MMs implementation using IP 88201, "Inspection of Management Measures During Construction of Fuel Cycle Facilities," and applicable appendices, may include Appendix A, "Configuration Management."

Standard Inspection Procedure Format for Reference

Section 01. “Inspection Objectives”

Section 02. “Inspection Requirements”

Section 03. “Inspection Guidance”

Section 04. “Resource Estimate”

Section 05. “Procedure Completion”

Section 06. “References”

IP 88201-01 Inspection Objectives **DRAFT IP LANGUAGE**

01.01 To determine if an applicant or licensee has established MMs in accordance with 10 CFR 70.62(d), or as required by the license, to ensure compliance with the performance requirements of 10 CFR 70.61.

01.02 To determine if the design has been developed and implemented in accordance with MMs, as required by 10 CFR 70.64(a)(1), to provide adequate assurance that IROFS will be available and reliable to perform their function when needed.

01.03 To determine if an applicant or licensee has effectively implemented MMs, as required by the license, for the design, procurement, fabrication, installation, construction, maintenance, and testing, as applicable, of IROFS.

01.04 To determine if an applicant or licensee has effectively implemented a corrective action program (CAP), if applicable, during construction activities.

IP 88201 Appendix A: Configuration Management

88201.A-02 Inspection Requirements **DRAFT LANGUAGE**

02.01 Determine if the applicant or licensee has established and is implementing an effective CM program to ensure consistency in the facility design and operational requirements, the physical configuration, and the facility documentation. Review the following areas, as applicable:

a. Design Control: Determine if the applicant or licensee has established and is implementing an effective design control process that ensures that design requirements and associated design bases, for those IROFS to which the CM program applies, are established and maintained through design, construction, and operation.

b. Document Control: Determine if the applicant or licensee has established and is implementing an adequate process to create and control documents that are relied on for safety or under the CM program.

IP 88201 Appendix A: Configuration Management

88201.A-02 Inspection Requirements **DRAFT LANGUAGE**

c. Change Control: Determine if the applicant or licensee has established and is implementing effective procedures to properly address the following aspects of modifications in accordance with 10 CFR 70.72:

1. Technical basis for the modification,
2. Impact of the change on safety and health or control of licensed material,
3. Revisions to existing operating procedures including any necessary training or retraining before operations,
4. Authorization requirements for the modification,
5. For temporary changes, the approved duration (e.g., expiration date) of the change, and
6. Impact or revision to existing program documents including the application, safety analysis reports, ISA, or other safety program information developed.

IP 88201 Appendix A: Configuration Management

88201.A-02 Inspection Requirements **DRAFT LANGUAGE**

d. Records of Modifications: Determine if the applicant or licensee has established and is implementing effective procedures to properly maintain records of modifications for specified periods, including the evaluation on which the change was based, as required by 10 CFR 70.72.

e. Assessments: Determine if the applicant or licensee is periodically performing audits or assessments to check the adequacy of the CM program.

f. Notification of Changes: Determine if the applicant or licensee has established and is implementing effective procedures to properly inform the NRC of changes made without NRC prior approval and that the applicant or licensee provides revisions to program documents at specified intervals, as required by 10 CFR 70.72.

Construction Inspection Example #1: Additional Potential Applicable Inspection Guidance

For Example Use Only (MM Program is different for each licensee):

Additional MMs Appendices that may be applicable based upon the requirements listed in the license application are:

- Appendix B: Maintenance
- Appendix C: Training and Qualification
- Appendix D: Procedures
- Appendix E: Audits and Assessments
- Appendix F: Incident Investigations
- Appendix G: Records Management
- Appendix H: Other QA Elements (1-18) (as applicable)

ORR Inspection Example #2:
Safety-Significant Process Area Inspection with MM ORR Inspection

For Example Use Only (MM Program is different for each licensee):

During an ORR inspection for a completed safety significant process area and associated IROFS, inspectors were verifying administrative IROFS (e.g. procedure controls) in the field and identified that a maintenance crane (non-IROFS) had been added to a process room during construction as a design change that allowed for a load to be lifted above process piping. As a result, the potential existed that during a seismic event or improper lift, the load could fall and damage the primary confinement boundary (IROFS) leading to a spill and release of licensed material.

- ORR inspections, conducted to meet a License Condition, as applicable, or to meet 10 CFR 40.41(g) and 10 CFR 70.32(k) conditions for licenses, include inspection of MMs, as applicable, and are conducted using IP 88201 and applicable appendices.

Construction Inspection Example #3:
Fire Protection Systems Inspection with MM Implementation Samples

For Example Use Only (MM Program is different for each licensee):

During a fire protection inspection of a major modification, performed using the guidance of IP 88200, Appendix L for fire protection systems, an inspector identifies significant combustible construction materials stored in the vicinity of the existing process areas. This combustible material is not accounted for in the fire hazard analysis, and calls into question the assumptions of the safety analysis. The licensee is committed to the requirements of NFPA 801, "Standard for Fire Protection for Facilities Handling Radioactive Materials," as stated in their license.

- The design must provide for adequate protection against fires and explosions. [10 CFR 70.64(a)(3)]
- The licensee shall establish a configuration management system to evaluate, implement, and track each change to the site, structures, processes, systems, equipment, components, computer programs, and activities of personnel. This system must be documented in written procedures and must assure that the following are addressed prior to implementing any change [10 CFR 70.72(a)]

Public Participation

At this time, the public is afforded an opportunity to ask questions and/or provide comments.

Construction Inspection Example #4: Safety-Significant As-Built System with MM Implementation Samples (Training and Qualification):

For Example Use Only (MM Program is different for each licensee):

During an inspection, an inspector identifies that a meaningful portion of an as-built IROFS system was designed by an engineer who was not appropriately qualified in accordance with licensee/applicant management measures training and qualification program. The licensee/applicant committed in their license/application to train personnel who provide design services associated with IROFS so that they have the knowledge and skills necessary to design the facility safely.

Construction Inspection Example #4: Potential Applicable Regulations and Requirements

For Example Use Only (MM Program is different for each licensee):

70.64 Requirements for new facilities or new processes at existing facilities.

(a)(1) Quality standards and records. The design must be developed and implemented in accordance with management measures, to provide adequate assurance that items relied on for safety will be available and reliable to perform their function when needed. Appropriate records of these items must be maintained by or under the control of the licensee throughout the life of the facility.

Chapter 11, Management Measures, of the license/application, states *(for example):*
Personnel providing design services associated with IROFS shall/will have the knowledge and skills necessary to design the facility safely.

Appendix C – Training and Qualifications

88201.C-01 Inspection Objectives **DRAFT LANGUAGE**

01.01. To determine if the applicant's or licensee's training and qualifications program adequately establishes and is implementing measures to ensure that all personnel who perform activities associated with IROFS are trained and tested so as to provide reasonable assurance that they understand, recognize the importance of, and are qualified to perform these activities in a manner that adequately protects public health and safety and the environment.

01.02. To determine if the applicant's or licensee's training and qualifications program is adequately coordinated and integrated with other management measures.

NOTE: Inspection Objectives for MM appendices are unique due to the specific attributes, however each appendices verifies a program in place and is adequately coordinated and integrated.

Appendix C – Training and Qualifications

88201.C-02 Inspection Requirements **DRAFT LANGUAGE**

02.01 Training and Qualifications Program

- Review relevant sections of the applicant's or licensee's ISA. Determine if appropriate measures have been established for the training and qualifications of personnel who perform activities associated with IROFS.
- Determine if any changes the applicant or licensee has made to the training program are in compliance with any requirements and/or licensee commitments.
- Determine if the applicant's or licensee's training program maintains established, written procedures as required by the license application.

Appendix C – Training and Qualifications

88201.C-02 Inspection Requirements **DRAFT LANGUAGE**

02.02 Program Implementation.

- Determine that the applicant or licensee is in compliance with license requirements relating to the implementation of the training program.
- Verify that training for administrative controls IROFS are implemented per 10 CFR 70.62 (d) to ensure that IROFS are available and reliable.

02.03 Training Observations.

- Determine if training classes and/or teaching aids are conducted in accordance with application or license requirements and procedural requirements.

02.04 Changes in Examinations

- Determine if changes to training examinations, if applicable, are in accordance with the license application.

Public Participation

At this time, the public is afforded an opportunity to ask questions and/or provide comments.

Closing Remarks