
INSPECTION PROCEDURE 88116

INSPECTION OF SAFETY FUNCTION INTERFACES FOR THE MIXED OXIDE FUEL FABRICATION FACILITY (PRE-LICENSING AND CONSTRUCTION)

PROGRAM APPLICABILITY: 2630

88116-01 INSPECTION OBJECTIVES

01.01 To determine if the interfaces that affect the Mixed Oxide Fuel Fabrication Facility (MFFF) safety functions are adequately controlled such that the principal systems, structures, and components (PSSCs) and items relied on for safety (IROFS) can be completed in accordance with the design bases of the construction authorization request and/or license application.

01.02 To determine if the applicant has established and implemented appropriate management measures to verify the effectiveness of the safety function interfaces.

88116-02 INSPECTION REQUIREMENTS

The inspection will verify that selected elements of the applicant's functional organization and quality assurance (QA) program structure [as identified in an U.S. Nuclear Regulatory Commission, (NRC)-approved inspection plan] are in accordance with the applicant's approved QA Plan.

02.01 Interface Controls. Determine if controls are established and implemented for safety function interfaces so information flow and coordination among organizations are effective. Determine if interface controls include the assignment of responsibility and the establishment of implementing documents among interfacing design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces. Determine if safety function interfaces are identified and controlled between the following:

- a. Integrated safety analysis (ISA) and design engineering
- b. Design engineering and procurement
- c. Design engineering and construction
- d. Design engineering and preoperational testing

02.02 Management Measures. Determine if audits, management assessments, and other management controls have been established and implemented to confirm that

safety-function interfaces are effective.

88116-03 INSPECTION GUIDANCE

General Guidance.

NRC will perform inspections of selected activities at the applicant's or licensee's project offices at the proposed MFFF site and other project facilities. Inspections will also be performed, as necessary, at the facilities of the applicant's consultants, contractors, and suppliers. IROFS and related activities will be selected for inspection, consistent with their importance to safety. The selection of IROFS should consider the past performance of the applicant in the areas inspected. The specific inspection guidance is based on the Duke, Cogema, Stone and Webster (DCS) Mixed-Oxide Project Quality Assurance Plan (MPQAP) and Construction Authorization Request, which includes the ISA report.

In general, the inspection approach is to evaluate the various interface controls and implementation of those controls applicable to the IROFS selected for inspection. Depending on the completion status of the IROFS, all or a portion of the inspection elements may be applied.

Specific Guidance.

03.01 Interface Controls.

a. ISA and Design Engineering Interface:

1. Verify that the quality levels assigned to quality affecting structures, systems, and components and their associated activities are commensurate with the safety significance of the structure, system, or component as defined in the ISA.
2. Verify that QA controls for the assigned quality level are sufficiently applied to ensure design integrity through compliance with technical, engineering, safety, and design requirements.
3. Verify that the graded QA program applied to previously proven designs, including that applied to foreign designs, is consistent with the DCS MOX project safety classification and is consistent with failure consequences (i.e., single failure and defense-in-depth).
4. Verify that design inputs are consistent with the design basis and other design information or criteria documented in the ISA.
5. When the design uses commercial-grade material, equipment or components, verify that critical characteristics are determined for Quality Level 1 IROFS. Verify that specified methods are used to provide reasonable assurance that the commercial-grade material or item meets the acceptance criteria for the critical characteristics.

6. Verify that relevant design information is carried through into design changes. Verify that the graded QA program applied to changed designs is equivalent to the quality levels applied to the original designs.
 7. When several organizations (internal or external) are involved in the design process, design analysis, or design verifications, verify that controls are established to ensure that necessary design information is communicated across interfaces, and activities are coordinated effectively.
 8. Verify that software verification and validation controls are established to ensure that relevant design information is correctly communicated for software used to produce or manipulate data that are used directly in the design, analysis, and operation of IROFS.
- b. Design Engineering and Procurement Interface:
1. Verify that procurement documents issued for Quality Level 1 IROFS, structures, systems, and components designated as defense-in-depth IROFS, and Quality Level 2 structures, systems and components and services, include technical requirements identifying or referencing design bases.
 2. Verify that the disposition option selected for identified supplier nonconformance considers design requirements.
 3. When the design uses commercial-grade material, equipment, or components, verify that critical characteristics are determined for Quality Level 1 IROFS. Verify that specified methods are used to provide reasonable assurance that the commercial-grade material or item meets the acceptance criteria for the critical characteristics.
 4. Verify that identification methods provide traceability to applicable design or other specifying documents.
- c. Design Engineering and Construction Interface:
1. Verify that controls are established so that implementing documents include technical requirements (i.e., design information), as appropriate to the work being performed.
 2. For the PSSCs and IROFS selected for inspection, identify implementing documents that specify design information and verify that the design information has been translated in implementing documents.
- d. Design Engineering and Preoperational Testing Interface:
1. Verify that inspection requirements and acceptance criteria are contained in the applicable design documents or other pertinent technical documents.

2. Verify that test requirements and acceptance criteria, including those for computer software testing, are contained in applicable design documents or other pertinent technical documents. Verify that test results identify the test criteria or reference the documents used to determine compliance.

03.02 Management Measures.

- a. Verify that the internal audit program includes evaluation of controls for, and implementation of, safety function interfaces, specifically, interfaces between the ISA and design engineering, and between design engineering and procurement, construction, and preoperational testing. Verify that the timing and scope of audits evaluating safety function interfaces is appropriate to the timing and status of design, procurement, construction, and testing activities.
- b. Verify that management assessments evaluate the adequacy of implementation of QA program controls relating to safety function interfaces.

88116-04 RESOURCE ESTIMATE

Inspection resources necessary to complete this inspection procedure are estimated to be 16–24 hours of inspection per facility visit. Inspections of safety function interfaces should be conducted throughout the construction phase.

88116-05 REFERENCES

U.S. Code of Federal Regulations, Title 10, Part 50, Appendix B “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants.”

U.S. Code of Federal Regulations, Title 10, Part 70, “Domestic Licensing of Special Nuclear Material.”

U.S. Nuclear Regulatory Commission, NUREG–1718, “Standard Review Plan for the Review of an Application for a Mixed Oxide Fuel Fabrication Facility,” August 2000.

Duke, Cogema, Stone and Webster, “Mixed-Oxide Fuel Fabrication Facility, MOX Project Quality Assurance Plan (MPQAP),” Docket Number 070-03098, under US Department of Energy Contract DE–AC02–99–CH10888, latest revision accepted by NRC (Sections 1, 2, and 18).

Duke, Cogema, Stone and Webster, “Mixed-Oxide Fuel Fabrication Facility Construction Authorization Request,” latest revision accepted by NRC.

END

ATTACHMENT 1

Revision History for IP 88116

Commitment Tracking Number	Issue Date	Description of Change	Training Needed	Training Completion Date	Comment Resolution Accession Number
	02/07/07 07-006	IP 88116 is a newly issued procedure. Issued for MOX inspection program to improve effectiveness and efficiency by incorporating and consolidating safety function interfaces and inspection requirements.	None	N/A	ML070120240