RESIDENT INSPECTION PROGRAM
FOR ON-SITE CONSTRUCTION ACTIVITIES
AT THE MIXED OXIDE FUEL FABRICATION FACILITY

PROGRAM APPLICABILITY: 2630

88130-01 INSPECTION OBJECTIVES

01.01 To determine by direct observation if on-site construction is being accomplished in accordance with the license application, license conditions and construction authorization request and specifications.

01.02 To determine whether the licensee's activities are conducted in accordance with NRC-approved Quality Assurance (QA) program requirements and the MOX Project Quality Assurance Plan (MPQAP); and, if QA Program policies and procedures are established and implemented consistent with applicable procurement requirements for items and services that are important to the safety of a plutonium fuel fabrication facility.

01.03 To determine whether the system for preparing and maintaining records is functioning properly; if records reflect work accomplishment consistent with the license application, license conditions, and construction specifications; and if the records and/or work activities indicate any generic problems, inadequacies, or other weaknesses that could impact the facility operations.

01.04 To maintain current knowledge of the status of the construction of the facility and incomplete construction areas; of the status of pre-operational testing and incomplete system acceptance and testing; and status of the inspection program, findings, open items and their significance.

88130-02 INSPECTION REQUIREMENTS

Inspectors are responsible for adhering to the requirements specified in this procedure to the extent they can reasonably assure that the inspection objectives are met. On occasion, they may deviate from this procedure due to the exigencies of construction operations (e.g., shutdowns, event response, etc.), or in response to performance concerns in other areas. Sustained effective safety or safeguards licensee performance in one inspection area verified by inspection results may justify occasionally deviating from a particular inspection requirement, for the purpose of focusing additional inspection effort on another area or

activity where there are performance concerns or greater risks. Significant or sustained shifts in inspection focus or other deviations from this inspection guidance should be discussed with the Branch Chief to determine and document how to best meet the inspection objectives.

02.01 Daily Inspections Conduct selective examinations of the following areas focusing on principal systems, structures, and components (PSSCs) and/or Items Relied On For Safety (IROFS).

a. Construction Activities The inspector should review the daily construction schedule to gain insight into those activities affecting PSSCs, IROFS or safety.

1. Determine whether adequate staffing is available and maintained for the tasks being performed.

2. Assess construction activities which may be dependent on the weather-related conditions (temperature, rain, humidity, etc.) or involve continuous duration activities (such as concrete or painting). Evaluate the appropriateness of the planned construction activities given the predicted or given conditions.

3. Review the results of any daily safety audits, reviews or safety meeting information. Discuss industrial safety issues with the appropriate licensee representative. Determine whether the licensee has taken, or is taking, appropriate corrective actions to ensure proper safety of construction activities.

4. Identify whether abnormal conditions, events, or significant issues that may affect the safety of construction are present or have occurred.

5. Determine whether plant staff ending their shifts adequately convey all necessary safety-related information concerning plant systems status to the staff for the oncoming shift, during shift turnovers.

b. Plant Tour

Tour the facility on a daily basis. Areas with more dominant safety risks due to construction activities should be toured more frequently. Independently assess the safety conditions and adequacy of construction activities. Follow general plant safety guidelines during the tour to ensure inspector safety.

1. Tour areas of the construction site focusing on effectiveness of construction activities and safety of operations. Observe a portion of the construction area focusing on the work activities and communications. Any immediate life or health hazard shall be corrected immediately.

NOTE: Observation of any imminent industrial safety hazard (high heat, electrical or chemical hazards, fall protection, lock-out/tag-out, etc.) should be brought to the immediate attention of the affected workers and promptly corrected. Followup with the industrial safety representative to evaluate the adequacy of actions designed to prevent recurrence.

2. Determine the attentiveness of the workers in carrying out their assigned duties.

3. Determine whether workers are adhering to approved procedures or written instructions, including any special construction requirements, for ongoing construction activities.

4. Observe communications between supervisors, foreman, engineers and workers in order to assess communication effectiveness.

5. Observe general plant cleanliness and equipment conditions to ensure clear egress along established evacuation paths. Verify that guidelines have been established for the frequent removal of construction debris and trash. Verify that construction waste is handled in accordance with the environmental protection and safety requirements for the project.

6. Observe use of hazardous construction materials including flammable materials, ignition sources, excessive fire loads, explosives or incendiary devices in order to ensure safe handling and storage. Verify that paints and solvents are stored in either safety containers or approved storage lockers.

7. Observe plant areas where there is a potential for missile hazards caused by improper or unauthorized handling or storage of portable gas cylinders, that could cause unacceptable damage to workers or safety equipment.

8. For activities involving radiography, determine whether workers are following the licensee's health physics procedures, whether radiation areas are properly posted, and whether radiation protection instruments are calibrated and used properly.

9. Determine whether persons within the protected area (PA) display proper photo identification badges and those requiring escort are properly escorted. Determine whether personnel and packages entering the PA at access portals are searched using appropriate search equipment.

c. Plan-of-the-Day-Meeting

Attend appropriate portions of the licensee's plan-of-the-day meeting to understand the overall status of the project. Note activities that have significant manpower

requirements, are time sensitive and subject to schedule pressure, or have unique safety or construction aspects.

02.02 Periodic Inspections Approximately every eight weeks, conduct selective examinations of the following areas:

a. Safety Program Review

Perform a review of a safety program. Samples of various safety programs include: lock-out tag-out, fire prevention, confined space, electrical safety, control of hazardous chemicals, confined space permit, etc. Discuss safety controls and concepts with the responsible safety specialist or program manager. Review reports of safety events or incidents in the program area and the associated corrective actions.

b. PSSC or IROFS Review

Perform a walkdown and technical review of a selected PSSC or IROFS, as construction activities allow.

1. Review a PSSC or IROFS in order to assess whether key construction requirements, identified in the applicable safety analysis or construction documents, were completed as specified. Sample specific construction requirements listed in the specification or procedures in order to verify the requirements were performed as described.

2. Compare the design or installation drawings or Process and Instrumentation Diagrams (P&ID) to as-found PSSCs or IROFS.

3. Identify PSSCs or IROFS that may not be readily accessible during operation due to radiation, contamination or other operational issues (e.g. tanks, vessels, cable trays, pipe tunnels, etc.) for inspection during construction. Review and verify safety-related or other installation requirements.

4. Review construction acceptance tests (CAT) for PSSCs. Observe a CAT for a specific PSSC or IROFS. Review CAT results and evaluate corrective actions for any discrepancies or failed CATs.

5. Review a sample of construction configuration and design changes to PSSCs or IROFS to ensure adequate change control requirements and processes were implemented. Inspect installation of the changes to verify proper construction.

6. Observe construction turnover of a PSSC or IROFS. Verify construction turnover requirements are documented and performed in accordance with the turnover program requirements.

c. Corrective Action Program Review

Review the licensee's process for identification of conditions adverse to quality (CAQ) by selecting and examining a sampling of items, to verify that:

1. The licensee is identifying CAQ and capturing them in their corrective action program (CAP);

2. The licensee is tracking (CAQ) (identified during other inspection activities, audits, and self-assessments) via one or more CAP systems;

3. The licensee has evaluated the safety significance of the CAQ, adequately determined the root cause, corrective actions and compensatory measures to be maintained until the corrective actions are completed;

4. The licensee has implemented any compensatory measures that have been determined;

5. The licensee has scheduled completion of the corrective actions, and that they are on schedule;

6. The licensee has evaluated the problem to determine the applicable reporting requirements; and

7. The appropriate level(s) of plant management, and the NRC (if required), have been informed.

02.03 Quarterly Inspections

a. Review the licensee's self-assessments, if any, and determine their effectiveness. Determine whether the licensee has entered any recommendations into the appropriate CAP tracking system.

b. Contact the licensee to keep informed of any third-party reviews, evaluations, inspections, or their results, addressing safety significant issues. For those studies conducted, determine whether the licensee has evaluated the results, and initiated corrective actions for the findings.

c. Observe any security program measures required such as: general integrity of protected area (PA) barriers; maintenance of the isolation zones around PA barriers; and, PA illumination levels.

02.04 Annual Inspections

a. [Text removed under 10 CFR 2.390]

b. [Text removed under 10 CFR 2.390]

88130-03 INSPECTION GUIDANCE

General Guidance

The Senior Resident Inspector (SRI) is the senior NRC representative on the facility site. The SRI performs inspection of the facility in risk-informed manner focusing on construction of safety-significant PSSCs and IROFS. To the maximum extent practicable, the SRI accomplishes this by direct observation of safety-significant activities, tours of the facility, interviews and discussions with licensee personnel, independent verification of safety system status, and review of CAT and other facility records.

a. Inspection Hazards

The inspectors must be aware of the hazards associated with entry into various areas of the facility, and take appropriate precautions, including adhering to the licensee's rules for entry and work in these areas. Climbing and engaging in other hazardous activities should not be done alone. Conduct of this type of activity should occur in the company of another inspector or a licensee representative, if necessary and appropriate.

Inspectors touring a facility, particularly on backshifts, are subject to occupational hazards, the effects of which would be exacerbated if an injury occurred in a remote area. For that reason, inspectors need to be particularly safety-conscious during backshift inspections, and may wish to notify the licensee of their itinerary, or be accompanied by another worker. Inspection tasks, such as safety system verifications, housekeeping observations or fire protection inspections, requiring entry into potentially hazardous areas (e.g. confined space) may be coordinated to coincide with a planned licensee entry in order to avoid unnecessary burden or safety risk without degrading the effectiveness of the inspection program.

b. Risk-Based Inspection Guidance

Consider the associated risk significance when selecting the inspection sample of components and systems. Emphasis should be placed on PSSCs, IROFS, and potential fire hazards that could provide a driving force to spread a hypothetical radiological release offsite. Inspector judgement will also be necessary for identifying activities posing the greatest risk to personnel on site. Additional information regarding these risks may be available from the licensee's ISA, and from interviews of licensee personnel. Inspection samples chosen should be varied from one inspection period to the next to ensure the sampling is representative of the dominant safety risks from all areas of the plant.

c. Evaluation of Licensee's Self-Assessment Capability

NRC experience indicates that licensees with effective self-assessment and corrective action programs achieve superior operating performance. Self-assessment organizations act in a measurement and advisory capacity, monitoring the overall performance of the plant; identifying substandard or anomalous performance and precursors of potentially more serious problems. They should be reporting findings and assessment results in an understandable form, and in a timely fashion, to a sufficiently high level of line management with authority to effect corrective action. An effective self-assessment organization is technically proficient and performance-oriented. An effective self-assessment program should minimize the recurrence of safety-significant problems.

This inspection provides a means to ensure that self-assessments are effectively contributing to the identification, correction, and prevention of safety significant technical problems and deficiencies in plant systems and operations. This inspection requires the inspector to make judgments based on information obtained through interviews, observations, and review of available documentation.

Specific Guidance

03.01 Daily Inspections

a. Construction Activities

The resident inspector should review the construction schedule on a daily basis noting specific activities that have safety significance. Examples of these activities would include work on PSSCs or IROFS, and activities that are schedule, time, weather or condition sensitive. The inspector should evaluate adequate worker staffing, attentiveness, and procedural compliance by direct observation of construction activities in the field. The inspector should review the daily safety meeting and safety audit reports to evaluate safety of construction operations. The inspector should discuss the more significant safety issues with the appropriate supervision to ensure adequate corrective action. The inspector should perform followup inspection and review of significant safety events or significant construction problems in order to understand and evaluate the effectiveness of the construction and safety program.

b. Plant Tour

Facility tours need not be completed at one time, but can be a series of shorter tours of various areas of the facility conducted on a systematic basis, at different times, so safety-significant and safeguards-significant areas are covered with frequencies appropriate to their current safety or safeguards significance.

1. The resident inspector should perform a daily inspection of various portions

of the construction site with the intent of covering the entire site every eight weeks. Areas where the dominant safety risks due to construction activities are should be toured more frequently and in proportion to the relative safety risk.

2. Although the Occupational Safety and Health Administration (OSHA) is the primary agency to ensure worker protection, the resident inspector should provide an additional set of eyes to ensure the licensee and construction workforce maintain safety of construction activities. The inspector should immediately notify appropriate workers and supervision if unsafe or imminent hazards are present so as to avoid unnecessary personnel injury. The inspector should followup with the industrial safety representative to ensure actions to prevent recurrence are adequate.

3. Communication is an important aspect of any activity involving hazardous material and the inspector should review the adequacy of communications between supervisors, engineers, and construction workers in order to determine whether adequate instruction and oversight was provided. Frequent review of construction activities with workers and foreman should be done to gain understanding of the planned activities, methods of construction, special construction requirements and potential hazards.

4. The inspector should observe general plant cleanliness and equipment conditions to ensure clear egress along established evacuation paths.

c. Plan-of-the-Day Meeting

Plan-of-the-day meetings are an effective means of understanding the major issues affecting the facility. The inspector should attend these meetings to stay informed on current or planned activities.

03.02 Periodic Inspections

a. Safety Program Review

Construction activities present hazards that may not be controlled or planned as well as those associated with normal operations. Construction sometimes involves non-routine activities for which hazard analysis may not be fully developed. Schedule pressure can result in workers taking shortcuts to safety to improve the schedule or work completion rate. This can result in inferior construction, poor quality and impact operational safety. Therefore, the inspector should perform a review of the licensee's safety programs for ensuring adequate safety of construction activities. Approximately every eight weeks, the inspector should review the safety program.

1. Review various safety programs such as lock-out tag-out, fire prevention,

confined space, electrical safety, control of hazardous chemicals, confined space permit, etc. Discuss safety controls and concepts with the responsible safety specialist or program manager.

2. Review reports of safety events or incidents in the program area and the associated corrective actions.

3. Discuss safety and quality issues with workers and foreman to gain an understanding that the licensee is not promoting schedule completion over safety and quality.

b. Safety System, Structure, Component Review

Approximately every eight weeks, perform a general review of a selected PSSC or IROFS, as construction will allow.

1. Review a safety-significance PSSC or IROFS in order to assess whether key construction requirements identified in the applicable safety analysis or construction documents were completed as specified.

2. Compare the design or installation drawings or Process and Instrumentation Diagrams (P&ID) to as-found PSSC. Discuss any discrepancies with licensee staff and as corrective actions to ensure resolution.

3. Identify PSSCs that may not be readily accessible during operation due to radiation, contamination or other operational issues following construction (e.g. tanks, vessels, cable trays, pipe tunnels, etc.) for inspection during construction. Review and verify safety-related or other installation requirements.

4. Review a sample of CATs or other post installation testing requirements for PSSCs. Observe a sample of post installation testing in various disciplines (structural, electrical, fluid piping, etc.) in order to assess adequacy of construction. Review test results and evaluate corrective actions for failed post installation test.

5. Review the configuration or design change control process by walking down a selected a design change. Review the documented changes in the PSSC in the field. Discuss discrepancies with the appropriate person.

6. Observe the licensee's construction turnover process. Review the turnover requirements and verify actual completion. Perform a field review of any physical requirements. Keep a healthy skepticism when reviewing paperwork.

c. Corrective Action Program Review

Review the licensee's process for problem identification (trouble reports, non-conformance reports, etc.), by selecting and examining a sampling of items, to verify that deficiencies are identified, captured in the corrective action system for review, and, corrective actions are implemented. Evaluate if risk or safety significant issues are reviewed by the appropriate level of management. Review any audits available of the corrective action program.

03.03 Quarterly Inspections

a. Review the licensee's self-assessments, if any, and determine their effectiveness. Compare the self-assessments with the requirements in the Quality Assurance Program audits. Determine whether the licensee has entered any corrective action recommendations into the appropriate licensee tracking system and if appropriate management review.

b. Contact the licensee to keep informed of any third-party reviews, evaluations, inspections, or their results, addressing safety significant issues. For those studies conducted, determine whether the licensee has evaluated the results, and initiated corrective actions for the findings.

c. Observe any security program measures required such as: general integrity of protected area (PA) barriers; maintenance of the isolation zones around PA barriers; and, PA illumination levels.

03.04 Annual Inspections

a. Observe key portions of the drill, noting command and control, communications, response actions, protection measures for both on-site and off-site personnel.

88130-04 REPORTING REQUIREMENTS

Inspections conducted under this procedure should be reported approximately every eight weeks and integrated with regional specialist inspections during the period. Draft reports should be submitted to the regional branch chief responsible for fuel cycle inspections. Appendix A may be used to track completion of periodic inspection activities.

88130-05 RESOURCE ESTIMATE

Inspection performed using this procedure is estimated to require 90 hours of resident inspector resources per month. This estimate is only for the direct inspection effort and does not include preparation for, and documentation of, the inspection.

88130-06 TRAINING

No specific training is required for this procedure, beyond what is already required for qualification of Fuel Cycle Facility Resident Inspectors.

88130-07 REFERENCES

10 CFR 50, Appendix B

10 CFR Part 70, “Domestic Licensing of Special Nuclear Material”

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.

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

ASME NQA-1-1994 Edition with NQA-1a-1995 Addenda

Regulatory Guide 1.28, "Quality Assurance Program Requirements (Design and Construction)" (Rev. 3)

END

Appendix A

Inspection Checklist

88130-MOX Inspection Completion Matrix		
Eight Week Inspection Requirements		
02.02 Periodic Inspections	Area Inspected	Inspection Report
a. Safety Program Review		
b. PSSC or IROFS Review		
c. Corrective Action Program Review		

88130-MOX Inspection Completion Matrix		
Quarterly Inspection Requirements		
02.03 Quarterly Inspections	Area Inspected	Inspection Report
a. Self-Assessments		
b. Third Party Audits		
c. Security Measures		
Annual Inspection Requirements		
02.04 Annual Inspections	Area Inspected	Inspection Report Period
a. [Text removed under 10 CFR 2.390]		
b. [Text removed under 10 CFR 2.390]		