

# **NRC INSPECTION MANUAL**

FCSS

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INSPECTION PROCEDURE 88070

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PLANT MODIFICATIONS

## 88070-01 INSPECTION OBJECTIVES

The objectives of this procedure are to determine, primarily through review of select plant modifications, whether:

01.01 The licensee or certificate holder effectively implemented the configuration management system to evaluate, implement, and track each plant modification to the site which could affect safety.

01.02 The licensee's or certificate holder's configuration management system ensures that plant modifications do not degrade the performance capabilities of items relied on for safety (IROFS) or other safety controls that are part of the safety basis of the facility

01.03 The licensee's or certificate holder's configuration management system effectively identifies and resolves the safety impacts of plant modifications to IROFS and other sites, structures, processes, systems, equipment, components, computer programs, and activities of personnel.

01.04 The licensee, if subject to the requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) 70, has addressed the baseline design criteria stipulated in 10 CFR 70.64 in the designs for new facilities or processes. For licensees or certificate holders not subject to 10 CFR 70, the designs of new facilities or processes meet their specific required design criteria.

01.05 The licensee or certificate holder, if subject to the requirements of 10 CFR 70, has addressed the impacts of modifications to the integrated safety analysis (ISA), ISA Summary, or other safety program or process safety information developed in accordance with 10 CFR 70.62.

## 88070-02 INSPECTION REQUIREMENTS AND GUIDANCE

### 02.01 Selection of Modifications.

- a. Inspection Requirement. The U.S. Nuclear Regulatory Commission (NRC) team leader should select a sample covering a range of risk significant modifications to be reviewed in consultation with the facility project inspector, the licensing project manager, and resident inspection staff where applicable. The plant modifications selected should be from those modifications made since the last Plant Modifications inspection. The team leader should ensure that the team has sufficient expertise to adequately conduct the inspection of the selected modifications (requesting support from other divisions if needed). The team leader should make appropriate arrangements with the licensee's or certificate holder's staff, in advance of the inspection, to have relevant documents available for review as part of inspection preparation. Depending on the amount of material needed for preparation, the team leader should obtain the material as part of an inspection preparation trip to the site, or by requesting that the licensee or certificate holder transmit it for in-office review. If neither of these approaches are feasible, the

time the team is to spend on site should be expanded to include time to review information related to the selected modifications.

- b. Inspection Guidance. The selection of plant modifications should be based on what changes were made to the ISA Summary, as well as recommendations from the project inspector, project manager, and the resident inspectors, where applicable. The selections should be based on the risk-significance of the modifications. Consideration should also be given to modifications which impact IROFS, as well as systems not part of the ISA. The number of modifications to be reviewed should be based on the number and significance of modifications made by the licensee or certificate holder since the last Plant Modifications inspection. As a minimum, the team should review:
  - 1. All modifications that remove or alter an IROFS that is the only item preventing or mitigating an accident sequence that would exceed the performance requirements of 10 CFR 70.61 (but would be allowed under 10 CFR 70.72 when a licensee or certificate holder determines that the IROFS was in fact not required to meet the performance requirement).
  - 2. A selection of modifications to risk-significant processes described in an existing ISA, but for which the ISA was not modified.
  - 3. A selection of modifications to risk-significant processes that required changes to the facility IROFS but did not require prior NRC-approval, according to 10 CFR 70.72.
  - 4. A selection of modifications that required a license amendment or ISA Summary revision.

#### 02.02 System Review.

- a. Inspection Requirement: The modifications selected will be reviewed with respect to their Design, Condition and Capability, Testing, and Documentation Control:
  - 1. Design Review. For the selected modifications:

For Part 70 licensees, review the ISA, the ISA Summary, and other safety analyses or program information to determine compliance with 10 CFR 70.62, the baseline design criteria of 70.64, where applicable, and whether the safety system designs will meet the performance requirements of 10 CFR 70.61. Note that 70.64 baseline criteria must be applied to new facilities and new processes, but do not require retrofits to existing facilities or existing processes (e.g., those housing or adjacent to the new processes).

    - (a) For other licensees or certificate holders, review the design information and safety analyses to determine compliance with required design criteria.

2. System Condition and Capability Review. For the selected modifications:

Determine whether the system condition and tested capability are consistent with the design basis and are appropriate.

- (a) Determine whether modification preparation, staging, and implementation do not impair the following:
  - 1) In-plant emergency/abnormal operating procedure actions
  - 2) Key safety functions
  - 3) Operator response to loss of key safety functions
- (b) Determine whether IROFS and other safety controls are adequately implemented and consistent with the design.
- (c) Determine whether assumptions in the safety analyses applicable to the modification are valid based on the actual configuration and operation of the modified processes.
- (d) Determine whether the licensee or certificate holder has implemented management measures to assure that IROFS or other safety controls from the modification are available, capable, and reliable to perform their function when needed.

3. Testing Review. For the selected modifications:

Determine whether post-modification testing maintained the plant in a safe configuration during testing. Determine whether the post-modification testing assured adequate implementation of design and safety system functionality.

4. Document Update Review. For the selected modifications:

Determine whether design and licensing documents have either been updated or are in the process of being updated to reflect the modifications in accordance with the licensee's or certificate holder's requirements. Examples of design documents which could be affected by modifications are: license amendments, ISAs, ISA Summary, IROFS lists, drawings, supporting calculations and analyses, plant equipment lists, and vendor manuals. Determine whether normal, abnormal, and emergency operating procedures, testing and surveillance procedures, and operator training manuals are updated prior to being used.

b. Inspection Guidance.

1. Design Review. For the selected modifications:

Use the licensee's or certificate holder's required plant modification process as the basis for review of the selected modifications. NUREG-1513, "Integrated Safety Analysis Guidance Document," and NUREG-1520, "Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility," provide one acceptable way of meeting NRC criteria for performing an ISA. In addition, Regulatory Guide 3.74, "Guidance for Fuel Cycle Facility Change Processes" provides information on how applicable licensees are to implement 10 CFR 70.72 for process modifications. Licensees may use other equivalent methods to perform the required tasks. The NUREGs and Regulatory Guides are used only as guidance unless the licensee's or certificate holder's commitment to specific measures is documented in the license or certificate.

**NOTE:** If, during the reviews of portions of safety analyses or ISAs not affected by the plant modification, safety issues are identified that indicate the need for modification of, or the addition to systems, structures or components of the facility, or to the procedures or the organization required to operate a facility; the team leader should contact regional management to discuss the potential applicability of 10 CFR 70.76, "Backfitting" requirements. In addition, if the team finds that modifications adversely affect any safeguards measures, the team leader should contact regional management.

- (a) Review the process safety information developed and evaluated in accordance with the licensee's or certificate holder's safety program, and compare identified hazards with the actual installed equipment to determine whether other hazards should have been considered.
- (b) Review selected portions of the ISA for the modifications selected. Determine whether the ISA meets the criteria of 70.62(c), demonstrates how the requirements of 70.61 are met, and whether the baseline criteria of 70.64, if applicable, have been adequately addressed. Note that baseline criteria in 70.64. must be applied to new facilities and new processes, but do not require retrofits to existing facilities or existing processes (e.g., those housing or adjacent to the new processes).
- (c) Review a sample of the licensee's procurement of new components for a modification, and determine if engineering specifications, qualifications, and quality standards, were appropriately identified and obtained. If commercial grade dedication was involved, the inspector should review the commercial grade dedication plan to determine if critical characteristics were appropriately identified and inspected by the licensee (according to the facility license conditions or management measures).
- (d) For the selected modifications, determine whether management measures are adequately developed and graded commensurate with the reduction to risk for each item, to assure that IROFS are available and reliable to perform their function when needed.

- (e) Determine whether the requirements for evaluation of changes and the need for prior NRC-approval are properly documented prior to implementation of the change

2. System Condition and Capability Review.

- (a) Through observations of work in progress and/or discussions with operators, engineering staff, and staff making the modifications, determine the adequacy of work controls and interface with operations.
- (b) Based on risk, select a sampling of IROFS and other safety controls changed or added as a result of the modifications, and determine through walkdowns, reviews, and discussions with licensee staff, whether:
  - 1) The installed IROFS and controls are consistent with the applicable process and instrumentation diagrams (P&IDs) and engineering drawings,
  - 2) Equipment and instrumentation elevations, including the adequate sloping for piping and instrument tubing, support the design function of the IROFS and safety controls,
  - 3) Protection defined in the ISA is provided for equipment located in areas susceptible to fire, chemical corrosion, high energy line breaks, adverse temperature, or other environmental concerns,
  - 4) Physical separation/electrical isolation exists for redundant IROFS or safety controls as specified in the ISA or other safety analyses,
  - 5) Structural support equipment is installed properly, and
  - 6) Fire protection systems are installed according to design requirements.
- (c) Select a sample of IROFS and determine whether management measures as specified in the ISA and other safety analyses were adequately implemented, including revisions to procedures for normal operation, alarm response, and emergency conditions; training for any changes in operation, maintenance, surveillance, and procedures, and pre-fire plans have been changed where appropriate.
- (d) Determine whether the modification impacted safeguards measures.

3. Testing Review.

Review post-modification test procedures and test results. Observe any tests in progress. Determine whether the test procedures adequately test the intended

functions, and have appropriate acceptance criteria. Determine whether deviations from acceptance criteria are resolved appropriately. Determine whether:

- (a) Acceptance criteria for tested parameters are supported by the appropriate calculations or other engineering documents.
- (b) Unintended system interactions will not occur.
- (c) The performance characteristics of IROFS and safety controls can perform their required safety functions
- (d) The modification test acceptance criteria have been met.

**NOTE:** Licensee or certificate holders often use existing procedures, such as surveillance procedures, for post-modification testing. Although performance of existing procedures may have been reviewed by inspectors, inspectors still need to determine the appropriateness of using the existing procedures for validating the modification (as opposed to simply confirming continued operability).

4. Document Update Review.

Determine whether revisions were necessary for the ISA Summary or other applicable design basis documents, and if so, that any such revisions are adequate.

02.03 Problem Identification and Resolution.

- a. Inspection Requirement. Determine whether the licensee or certificate holder is identifying plant modification issues at an appropriate threshold and entering them in the corrective action program.
- b. Inspection Guidance. As it relates to plant modifications, select a sample of corrective action program issues documented by the licensee or certificate holder and determine whether the corrective actions were timely and appropriate.

02.04 Programmatic Review.

- a. Inspection Requirement: Determine what if any further inspections are required, such as programmatic review of the licensee's or certificate holder's safety configuration management and change control programs. If this inspection of the licensee's or certificate holder's performance identifies programmatic or significant noncompliance issues, consider the performance of procedure 88071, Configuration Management Programmatic Review.
- b. Inspection Guidance. No guidance provided.

02.05 Plant Safety Committees.

- a. **Inspection Requirement.** Determine whether the plant safety committee (or equivalent) required by the license or certificate is operating according to the associated charter and implementing procedures.
- b. **Inspection Guidance.** Review changes to the membership, charter, and procedures for the onsite and/or offsite plant safety committees (or equivalent) that have occurred since the last inspection, to determine whether the license or certificate requirements continue to be met. Determine whether meetings have been held at the required frequencies specified in the license or certificate. Examine the minutes of select meetings held by the plant safety committees since the previous inspection to determine whether the committee's agenda items are in accordance with its charter. For recommendations made by the plant safety committee (or equivalent) since the last inspection, determine whether management has accepted or rejected the recommendations and for those recommendations that were accepted, confirm that implementing actions and schedules have been assigned to specific plant organizations. For those recommendations that were not accepted, the basis for rejection should be documented.

Determine whether the licensee or certificate holder has in place a process to designate alternate committee members when regular members are unavailable, as well as a definition of what constitutes a quorum.

If the license or certificate does not define the membership or duties of the plant safety committees, determine whether:

1. The plant safety committee membership consists of managers or individuals with expertise in the areas of safety over which the committee has responsibility,
2. The committee's functions are clearly specified in terms of whether it provides approval, recommendation, or fact-finding, etc., and,
3. The composition of the committee is sufficiently broad, and its working rules are appropriately constituted, so that the committee can function independently without excessive influence from line management.

88070-03 RESOURCE ESTIMATE

The size of the inspection team formed to implement this inspection procedure will vary depending on the facility safety/ISA changes made during the year. Engineering, chemical safety, radiation protection, fire protection, and NCS personnel should be selected as appropriate for the team. The size of the team will vary depending on the type and number of plant modifications made during the year. The hours of inspection should vary from 40 to 120 hours, depending of the number of design changes made during the year.

88070-04 REFERENCES

10 CFR 70, Domestic Licensing of Special Nuclear Material

10 CFR 70.61, Performance Requirements

10 CFR 70.62, Safety Program and Integrated Safety Analysis

10 CFR 70.64, Requirements for New Facilities or New Processes at Existing Facilities

10 CFR 70.72, Facility Changes and Change Process

Regulatory Guide 3.74, "Guidance for Fuel Cycle Facility Change Processes"

NUREG-1513 "Integrated Safety Analysis Guidance Document"

NUREG-1520 "Standard Review Plan for the Review of License Application for a Fuel Cycle Facility"

American National Standards Institute/American Nuclear Society (ANSI/ANS)-8.1-1998, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors," American Nuclear Society, La Grange Park, IL, 1998

88070-05 PROCEDURE COMPLETION

Implementation of each applicable inspection requirement will constitute completion of this procedure. Individual inspection samples and breadth of review will be determined by the inspector based on the inspector's evaluation of the licensee's or certificate holder's compliance with requirements, the risk- significance of the activities, and the extent of the records available for the activities, when specific sample sizes were not provided in the inspection guidance section.

END

Attachement:

Revision History for IP 88070

Attachment 1 - Revision History for IP 88070

Commitment Tracking Number	Accession Number Issue Date Change Notice	Description of Change	Description of Training Required and Completion Date	Comment Resolution Accession Number
N/A	09/05/06 CN 06-020	IP 88070 has been issued because of the need for a new Inspection Procedure for Permanent Plant Modifications.	N/A	ML061780357
N/A	ML13233A187 02/26/14 CN 14-006	The revision does not include any significant technical changes. The scope of the procedure was expanded via de-emphasizing permanent modifications in lieu of safety significant modifications. Plant Safety Committees, a section from the Management Organization IP, was included in the revised IP.	N/A	ML13347B004