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## 11/4/05 DRAFT INSPECTION PROCEDURE 880XX

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### PERMANENT PLANT MODIFICATIONS

PROGRAM APPLICABILITY: 2600

#### 880XX-01 INSPECTION OBJECTIVES

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

- 01.01 The licensee or certificate holder has established an effective configuration management system to evaluate, implement, and track each permanent plant modification to the site which could affect safety.
- 01.02 The licensee or certificate holder's configuration management system ensures that permanent 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 design base.
- 01.03 The licensee or certificate holder's configuration management system effectively identifies and resolves the effects of permanent plant modifications to IROFS and other safety controls, processes, equipment, computer programs, and activities of personnel.
- 01.04 The licensee, if subject to the requirements of 10 CFR 70, has addressed the baseline design criteria stipulated in 10 CFR 70.64 in the designs for permanent plant modifications. For licensees or certificate holders not subject to 10 CFR 70, the designs of permanent plant modifications 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 or modifications to the integrated safety analysis (ISA), ISA Summary, or other safety program information developed in accordance with 10 CFR 70.62.

#### 880XX-02 INSPECTION REQUIREMENTS

- 02.01 Selection of Modifications. The NRC team leader should select the modifications to be reviewed in consultation with the inspection project inspector, the licensing project manager, and resident inspection staff where applicable. The selections should be made from those made since the last Permanent Plant Modifications inspection. The team leader should make appropriate arrangements with the licensee or certificate holder 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 the licensee or certificate holder transmit it for in-office review. If neither of these approaches are feasible, the on site time of the team should be expanded to include time to review information related to the selected modifications while on site.

## 02.02 Inspection

- a. Design Review. For the selected modifications:
  1. 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).
  2. For other licensees or certificate holders, review the design information and safety analyses to determine compliance with required design criteria.
- b. 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.
  1. Determine whether modification preparation, staging, and implementation do not impair the following:
    - (a) in-plant emergency/abnormal operating procedure actions.
    - (b) key safety functions.
    - (c) operator response to loss of key safety functions.
  2. Determine whether IROFS and other safety controls were adequately designed and implemented.
  3. Determine whether assumptions in the safety analyses are valid based on the actual configuration and operation of the modified processes.
  4. 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.
- c. 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.
- d. Document Update Review
  1. 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.
  2. Determine whether normal, abnormal, and emergency operating procedures, testing and surveillance procedures, and operator training manuals are updated prior to being used.

- 02.03 Problem Identification and Resolution. Determine whether the licensee or certificate holder is identifying permanent plant modification issues at an appropriate threshold and entering them in the corrective action program.
- 02.04 Programmatic Review. Determine recommendation for further inspection, such as programmatic review of the licensee or certificate holder's safety configuration management and change control programs, if this inspection of the licensee or certificate holder's performance determines programmatic or significant noncompliance issues.

### 880XX.03 INSPECTION GUIDANCE

03.01 Selection of Modifications. The modifications to be selected should be based on changes submitted to the ISA Summary and recommendations from the project inspector, project manager, as well as 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 Permanent Plant Modifications inspection. As a minimum, the team should review:

- a. All modifications that remove sole IROFS preventing or mitigating an accident sequence that exceeds the performance requirements of 10 CFR 70.61 (but allowed under 10 CFR 70.72 when a licensee or certificate holder determines that the IROFS were in fact not required to meet the performance requirement).
- b. A selection of modifications to risk-significant processes made within an existing ISA where no changes were made to the ISA.
- c. A selection of modifications to risk-significant processes that required changes to the IROFS as allowed by 10 CFR 70.72.
- d. A selection of modifications that required a license amendment or ISA Summary revision.

#### 03.02 Inspection

- a. Design Review. 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. Licensees may use other equivalent methods to perform the required tasks. The NUREGs are guidance only unless the licensee or certificate holder committed to them in the license.

**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 a facility or to procedures or 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 identifies that modifications adversely affect safeguards measures, the team leader should contact regional management.

1. 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.
2. Review selected portions of the ISA for the modifications selected. Determine whether the ISA meets the criteria of 70.62(c), demonstrates meeting the performance requirements of 70.61, and whether the baseline criteria of 70.64, if applicable, have been adequately addressed. 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).
3. For the selected modifications, determine whether management measures are adequately developed, graded commensurate with the reduction to risk for each item, to assure that IROFS are available and reliable to perform their function when needed.

b. System Condition and Capability Review

1. 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.
2. 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, determine whether:
  - (a) the installed IROFS and controls are consistent with the applicable process and instrumentation diagrams (P&IDs) and engineering drawings,
  - (b) equipment and instrumentation elevations, including the adequate sloping for piping and instrument tubing, support the design function of the IROFS and safety controls,
  - (c) 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,
  - (d) physical separation/electrical isolation exists for redundant IROFS or safety controls as specified in the ISA or other safety analyses,
  - (e) structural support equipment is installed properly, and
  - (f) fire protection systems are installed per design.
3. Select a sample of higher-risk IROFS and determine whether management measures as specified in the ISA and other safety analyses were adequately implemented, including revisions to procedures for normal operations, alarm response, and emergency conditions, training for any changes in operation, maintenance, surveillance, and procedures, and pre-fire plans have been changed where appropriate.
4. Determine whether the modification impacted safeguards measures.

- c. 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:
1. Acceptance criteria for tested parameters are supported by the appropriate calculations or other engineering documents.
  2. Unintended system interactions will not occur.
  3. The performance characteristics of IROFS and safety controls meet the design bases.
  4. 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).

- d. 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.

03.03 Problem Identification and Resolution. As it relates to permanent plant modifications, select a sample of problems documented by the licensee or certificate holder and determine whether the corrective actions were timely and appropriate.

03.04 Programmatic Review. No further guidance.

#### 880XX-04 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 design changes made during the year.

#### 880XX-05 REFERENCES

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.

NUREG-1513, Integrated Safety Analysis Guidance Document

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

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