

15.0 MANAGEMENT MEASURES

15.5 PLANT PROCEDURES

15.5.1 PURPOSE OF REVIEW

The purpose of this review is to establish that there is reasonable assurance that the applicant is capable and committed to providing management control of facility operations identified as items relied on for safety through the development, review, approval, control, and implementation of written plant procedures¹ that will protect the workers, the public, and the environment during testing, startup, and operation of the facility.

15.5.2 RESPONSIBILITY FOR REVIEW

Primary: Project Manager

Secondary: Primary staff reviewers of other Management Measures
Human Factors Engineer

Supporting: Fuel Cycle Facility Inspector

15.5.3 AREAS OF REVIEW

The staff's review of the license application should address the process the applicant has developed for the production, use, and management control of written plant procedures. This should include the basic elements of identification, development, verification, initial review, comment resolution, approval, validation, issuance, change control, and periodic review. There should be two general types of plant procedures:

- A. Plant procedures used to directly control process operations, commonly called "operating procedures." These are procedures for workstation operators, and they should include directions for normal operations as well as off-normal incidents caused by human error or failure of equipment. Procedures of this type should include required actions to ensure nuclear criticality safety, chemical safety, fire protection, emergency planning, and environmental protection.
- B. Plant procedures used to perform activities that support the process operations, commonly referred to as "management control procedures." These are procedures used to manage the conduct of activities such as configuration management, radiation safety, maintenance, human-systems interface, quality assurance, design control, test control,

¹This SRP section provides guidance for the review of information on plant procedures identified as items relied on for safety. Section F5 of SRP Appendix F on quality assurance and Basic Requirement 5 of ASME NQA-1-1994 provide review guidance for other procedures (for example, construction procedures) relied on for safety.

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startup, plant personnel training and qualification, audits and assessments, incident investigations, record-keeping, and reporting.

15.5.4 ACCEPTANCE CRITERIA

15.5.4.1 Regulatory Requirements

The requirement for plant procedures is addressed in the following:

Nuclear Regulatory Commission (U.S.), Washington, D.C. "Domestic Licensing of Special Nuclear Material (10 CFR Part 70)." Federal Register: Vol. 64, No. 145. pp. 41338-41357. July 30, 1999.

Specific references are as follows:

- A. In §70.4, "Definitions," the term management measures is defined. Procedures are included as a management measure.
- B. In §70.22(a)(8), the application is required to include proposed procedures to protect health and minimize danger to life or property.
- C. In §70.62(d), the applicant or licensee is required to establish management measures to provide continuing assurance of compliance with the performance requirements.
- D. In §70.64(a)(1), the design of new facilities or the design of new processes at existing facilities is required to be developed and implemented in accordance with management measures.
- E. In §70.65(a), the application is required to include a description of the management measures.

15.5.4.2 Regulatory Guidance

Appendix A of Reference 2 contains a list of typical procedures for the operation of nuclear power plants. Similar procedures should be developed and implemented for this facility.

15.5.4.3 Regulatory Acceptance Criteria

As part of the application for construction approval, the applicant should commit to establish a process for the production, use, and management control of written plant procedures which meets or exceeds the acceptance criteria in Section 15.5.4.

The reviewers should determine that the applicant's process for developing and implementing plant procedures is acceptable (for license approval) if the process satisfies the following:

- A. Plant procedures should be written or planned for the conduct of all operations involving controls identified in the ISA as activities relied on for safety and for all management control systems supporting those controls.
- B. Operating procedures contain the following elements:
 - i. Purpose of the activity;
 - ii. Regulations, policies, and guidelines governing the procedure;
 - iii. Type of procedure;
 - iv. Steps for each operating process phase;
 - v. Initial startup;
 - vi. Normal operations;
 - vii. Temporary operations;
 - viii. Emergency shutdown;
 - ix. Emergency operations;
 - x. Normal shutdown;
 - xi. Startup following an emergency or extended downtime;
 - xii. Hazards and safety considerations;
 - xiii. Operating limits;
 - xiv. Precautions necessary to prevent exposure of hazardous chemicals or licensed special nuclear material;
 - xv. Measures to be taken if contact or exposure occurs;
 - xvi. Safety controls associated with the process and their functions; and
 - xvii. Time period for which the procedure is valid.
- C. Management control procedures contain elements reflecting the important elements of the functions described in the applicable chapters of this SRP. Management control procedures should exist for the following activities:
 - i. Configuration management;
 - ii. Radiation safety;
 - iii. Maintenance;
 - iv. Human-systems interface;
 - v. Quality assurance;
 - vi. Training and qualification;
 - vii. Audits and assessments;
 - viii. Incident investigations;
 - ix. Records management;
 - x. Nuclear criticality safety;
 - xi. Fire safety;
 - xii. Chemical process safety;
 - xiii. Design control;
 - xiv. Test control;
 - xv. Startup; and
 - xvi. Reporting requirements.

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- D. The applicant's method for identifying plant procedures includes using ISA results to identify needed procedures. Operating procedures should provide specific direction regarding administrative controls to ensure operational safety.
- E. The applicant's method for identifying, developing, approving, implementing, and controlling plant procedures should include, as a minimum:
 - i. Operating limits and controls are specified in the procedure;
 - ii. Procedures include required actions for off-normal conditions of operation as well as normal operations;
 - iii. If needed, safety checkpoints are identified at appropriate steps in the procedure;
 - iv. Procedures are validated through field tests;
 - v. Procedures are approved by management personnel responsible and accountable for the operation;
 - vi. A mechanism is specified for revising and reissuing procedures in a controlled manner;
 - vii. The quality assurance and configuration management programs at the facility ensure that current procedures are available and used at all work locations; and
 - viii. The facility training program ensures that the required persons are trained in the use of the latest procedures.
- F. The application should include the following statement regarding adherence to plant procedures: "Activities involving special licensed nuclear material will be conducted in accordance with approved procedures."
- G. The applicant should discuss plant procedure categories used at the facility. An acceptable discussion should clearly state areas for which a plant procedure is required. The applicant should provide a list of the types of activities that are covered by the plant procedures. This should include the topics of administrative plant procedures; system plant procedures that address startup, operation, and shutdown; abnormal operation/alarm response; maintenance activities that address system repair, calibration, inspection and testing; and emergency procedures. Appendix G to this SRP provides an acceptable list of the items to be included under each topic.
- H. The applicant should indicate that following an incident—such as an accident, unexpected transient, significant operator error, or equipment malfunction—or following any modification to a system, a review of written plant procedures will take place.

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- I. The applicant should indicate how technical accuracy of plant procedures will be ensured as written. The discussion should identify who is responsible for verification.
- J. The applicant should indicate how documents will be distributed in accordance with current distribution lists. A process limiting the use of outdated plant procedures should be addressed.
- K. The applicant should describe how formal requirements governing temporary changes to plant procedures will be developed and implemented.
- L. Formal requirements for design control of items relied on for safety should be provided and should identify who is responsible for design inputs, processes, outputs, changes, interfaces, and records.
- M. A description of the test control program should be provided and should indicate that an effective program has been established for tests, including commissioning and preoperational tests. Acceptable plant procedures for test control should provide criteria for determining when a test is required or how and when testing activities are performed.
 - i. Tests should be performed under conditions that simulate the most adverse design conditions, as determined by analysis.
 - ii. Test results should be documented, evaluated, and their acceptability determined by a responsible individual or group.
- N. Plant procedures for maintenance involving safety controls should commit to the topics listed below for corrective and preventive maintenance, functional testing after maintenance, and surveillance/monitoring of maintenance activities:
 - i. Pre-maintenance activity involving reviews of the work to be performed, including reviews of facility procedures for maintenance for accuracy and completeness.
 - ii. Steps that require notification of all affected parties (operators and supervisors) prior to performing work and upon completion of maintenance work.
 - iii. Control of work by comprehensive facility procedures to be followed by maintenance technicians.
- O. The applicant should commit to conduct periodic reviews of plant procedures to ensure their continued accuracy and usefulness. The applicant should establish the time frame for these reviews. At a minimum all procedures should be reviewed every 5 years and emergency procedures should be reviewed every year.
- P. The applicant should describe the use and control of procedures.

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- Q. A pre-operational testing (startup) program should be described. Information pertaining to how, and to what extent, the facility operating, emergency, and surveillance procedures will be user-tested during this test program should be provided.

15.5.5 REVIEW PROCEDURES

15.5.5.1 Acceptance Review

The primary reviewer should perform an acceptance review to determine if the application a license adequately addresses the specific items in Section 15.5.3, "Areas of Review." If the primary reviewer verifies that procedures are adequately addressed, the primary reviewer should accept the application for the safety evaluation in Section 15.5.5.2. If the primary reviewer identifies significant deficiencies in the material provided, the primary reviewer should request that the applicant submit additional information prior to the start of the safety evaluation.

15.5.5.2 Safety Evaluation

For construction approval, the reviewer should determine that the applicant has committed to a maintenance program that will meet or exceed the acceptance criteria in Section 15.5.4.

After determining that the application for license approval is acceptable for review in accordance with Section 15.5.5.1, the primary reviewer should perform a safety evaluation against the acceptance criteria described in Section 15.5.4. On the basis of its review, the staff may request that the applicant provide additional information or modify the application to meet the acceptance criteria in SRP Section 15.5.4.

The safety evaluation forms the basis for staff findings and supports the reviewers' conclusions that the applicant has committed to:

- A. Controls that are identified in the ISA for facility safety procedures (i.e., procedures that constitute administrative controls for safety).
- B. The independent verification and validation of procedures before use.
- C. The review and approval by an independent multi-disciplinary safety review team and control by the configuration management function of any change to facility procedures.
- D. Follow approved procedures while processing licensed special nuclear material.
- E. Having procedures for the notification of operations personnel before and after maintenance is performed on safety controls.

Secondary staff reviewers should ensure that the applicant's facility procedures do not conflict with their primary review areas.

The supporting staff reviewer (Fuel Cycle Facility Inspector) should become familiar with the applicant's written plant procedures and determine whether ongoing activities are in agreement with them.

15.5.6 EVALUATION FINDINGS

The primary reviewer should document the safety evaluation by preparing material suitable for inclusion in the Safety Evaluation Report (SER). The primary reviewer should describe the review, explain the basis for the findings, and state the conclusions.

The staff could document the safety evaluation for construction approval by stating that the applicant has committed to establish a process for the production, use, and management control of written plant procedures with meets or exceeds the acceptance criteria in Section 15.5.4.

The staff could document a the safety evaluation for the license application as follows:

The applicant has described suitably detailed processes for the development, review, approval, control, and implementation of procedures. [Insert a summary statement of what was evaluated and why the reviewer finds the submittal acceptable.] Special attention has been paid to items relied on for safety, as well as to systems important to the health of workers and the public and to the protection of the environment during testing, startup, and operation of the facility.

15.5.7 REFERENCES

- A. Code of Federal Regulations, Title 10, Part 70, Domestic Licensing of Special Nuclear Material, U.S. Government Printing Office, Washington, D.C., 1999.
- B. Proposed 10 CFR Part 70, "Domestic Licensing of Special Nuclear Material; Possession of a Critical Mass of Special Nuclear Material." 64 FRN 41338, July 30, 1999.
- C. U.S. Nuclear Regulatory Commission, (U.S.), Washington, D.C. "Guidance on Management Controls/Quality Assurance, Requirements for Operation, Chemical Safety, and Fire Protection for Fuel Cycle Facilities." Federal Register: Vol. 54, No. 53. pp. 11590-11598. March 21, 1989.
- D. Nuclear Regulatory Commission, (U.S.) (NRC). Regulatory Guide 1.33, Rev. 2, "Quality Assurance Program Requirements (Operation)." NRC: Washington, D.C. February 1978.
- E. American Society of Mechanical Engineers (ASME), "Quality Assurance Requirements for Nuclear Facility Applications," (An American National Standard). ASME NQA-1-1994, New York. 1994.

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