



OFFICE OF THE INSPECTOR GENERAL

U.S. NUCLEAR REGULATORY COMMISSION
DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Audit of NRC's Oversight of 10 CFR 50.59, “Changes, tests and experiments.”

OIG-16-A-19
August 24, 2016



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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

**OFFICE OF THE
INSPECTOR GENERAL**

August 24, 2016

MEMORANDUM TO: Victor M. McCree
Executive Director for Operations

FROM: Steven E. Zane */RA/*
Acting Assistant Inspector General for Audits

SUBJECT: AUDIT OF NRC'S OVERSIGHT OF 10 CFR 50.59,
"CHANGES, TESTS AND EXPERIMENTS" (OIG-16-A-19)

Attached is the Office of the Inspector General's (OIG) audit report titled *Audit of NRC's Oversight of 10 CFR 50.59, "Changes, tests and experiments."*

The report presents the results of the subject audit. Following the August 9, 2016, exit conference, agency staff indicated that they had no formal comments for inclusion in this report.

Please provide information on actions taken or planned on each of the recommendations within 30 days of the date of this memorandum. Actions taken or planned are subject to OIG followup as stated in Management Directive 6.1.

We appreciate the cooperation extended to us by members of your staff during the audit. If you have any questions or comments about our report, please contact me at (301) 415-5915 or Paul Rades, Team Leader, at (301) 415-6228.

Attachment: As stated



Office of the Inspector General

U.S. Nuclear Regulatory Commission
Defense Nuclear Facilities Safety Board

OIG-16-A-19

August 24, 2016

Results in Brief

Why We Did This Review

The U.S. Nuclear Regulatory Commission (NRC) oversees nuclear power plant licensees' compliance with requirements stipulated in Title 10, Energy, Code of Federal Regulations, Section 50.59, "Changes, tests and experiments" (10 CFR 50.59). 10 CFR 50.59 establishes the conditions under which licensees may make changes to their facilities or procedures, and conduct tests or experiments, without prior NRC approval for a license amendment. When implementing the provisions of 10 CFR 50.59, licensees use the 10 CFR 50.59 process, which involves applicability review, screening, evaluation, and documentation and reporting.

In 2015, NRC staff estimated the number of licensee 10 CFR 50.59 implementation actions. For each operating reactor unit, licensees conduct approximately 475 screenings annually, from which result about 5 evaluations. This amounts to a combined total of about 49,000 screenings and evaluations per year.

The audit objective was to assess the consistency and effectiveness of NRC's oversight of 10 CFR 50.59 implementation.

Audit of NRC's Oversight of 10 CFR 50.59, "Changes, tests and experiments."

What We Found

Federal internal control guidance recommends that agencies establish communication internal controls, and NRC's own guiding principles call for clear regulatory positions. Federal internal control guidance calls for agencies to develop training that meets organizational goals and needs in order to ensure they have the required knowledge, skills, and abilities to achieve organizational goals.

NRC's processes for 10 CFR 50.59 oversight could be strengthened by coordinating communication of 10 CFR 50.59 guidance and process-related information. NRC staff having responsibilities for oversight of 10 CFR 50.59 implementation, including inspectors, and headquarters and regional staff do not always coordinate communication of 10 CFR 50.59 process-related information, including reports and requirements. Additionally, NRC's oversight of the 10 CFR 50.59 process could be strengthened by enhancing the agency's post-qualification 10 CFR 50.59 training to include recurring formal training.

These program weaknesses have occurred because NRC does not employ a well-structured approach for 10 CFR 50.59 process management and NRC's 10 CFR 50.59 training needs were based on the agency's immediate focus on addressing a San Onofre Nuclear Generating Station (SONGS) lessons learned training recommendation.

What We Recommend

This report makes recommendations to strengthen processes for NRC's oversight of 10 CFR 50.59 implementation. Agency management stated their agreement with the findings and recommendations in this report.

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ABBREVIATIONS AND ACRONYMS

CFR	Code of Federal Regulations
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
NRR	Office of Nuclear Reactor Regulation
OIG	Office of the Inspector General
SONGS	San Onofre Nuclear Generating Station

I. BACKGROUND

The U.S. Nuclear Regulatory Commission (NRC) oversees nuclear power plant licensees' compliance with requirements stipulated in Title 10, *Energy*, Code of Federal Regulations, Section 50.59, "Changes, tests and experiments" (10 CFR 50.59). 10 CFR 50.59 establishes the conditions under which licensees may make changes to their facilities or procedures, and conduct tests or experiments, without prior NRC approval for a license amendment.

10 CFR 50.59 Process

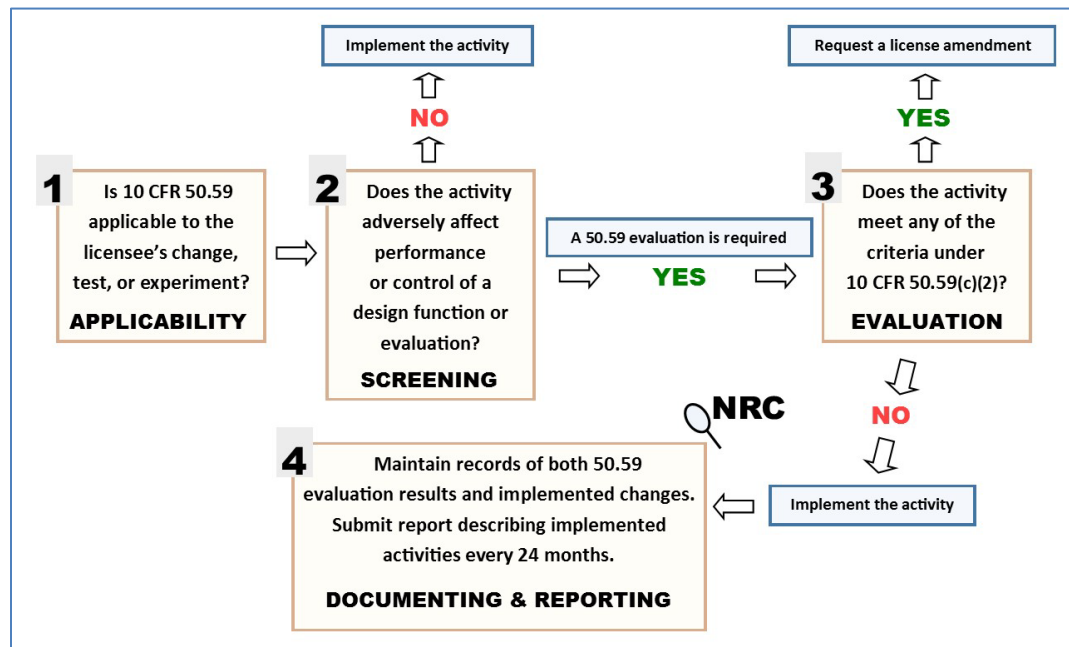


Figure 1. Source: OIG-generated from documentation of 10 CFR 50.59 processes

When implementing the provisions of 10 CFR 50.59, licensees use the 10 CFR 50.59 process, which involves applicability review, screening, evaluation, and documentation and reporting as follows:

Applicability Review. Licensee personnel ascertain whether the proposed change requires a change to their facility's technical specifications. They also determine whether the proposed change is controlled by another regulation or process.

Screening. Licensee personnel assess whether the proposed change adversely affects the design function of plant systems, structures, and

components. If the proposed change "screens out" and does not require further evaluation, licensee personnel must support and document their decision to a degree commensurate with the safety significance of the proposed change.

Evaluation. Licensee personnel conduct a written evaluation that must address the effects of the proposed change against 10 CFR 50.59 evaluation criteria. These 10 CFR 50.59 evaluation criteria are used to evaluate the effects of the change on accidents and malfunctions previously evaluated in the facility's updated final safety analysis report.

Documentation and Reporting. Licensee personnel maintain records of changes in their facility, including the bases for determining that changes in procedures, and of tests and experiments did not require license amendments. They must report summaries of these activities to NRC on a biennial basis.

In 2015, NRC staff estimated the number of licensee 10 CFR 50.59 implementation actions. For each operating reactor unit, licensees conduct approximately 475 screenings annually, from which about 5 evaluations result. This amounts to a combined total of about 49,000 screenings and evaluations per year. NRC staff further estimated that licensees submit about 1 license amendment per site every 10 years, based on 10 CFR 50.59 criteria alone.

Appendix B of this report contains the full text of 10 CFR 50.59 which includes evaluation criteria at (c)(2)(i-viii), documentation of records requirements at (d)(1) and biennial reporting requirements at (d)(2).

10 CFR 50.59 Process Scenario

The following scenario of actions a licensee took to mitigate a flood hazard and NRC's related inspection illustrates implementation and NRC's oversight of the 10 CFR 50.59 process.

- First, licensee personnel proposed a facility change to mitigate a flood hazard.
- Next, licensee personnel determined that 10 CFR 50.59 requirements could apply to installation of a flood outlet device because this activity would affect functionality of reactor safe shut down equipment as described in the plant's final safety analysis report.
- Then, the licensee personnel developed a modification package and screened it.

- Finally, licensee personnel concluded from the screening results that the flood outlet device modification did not require the more in-depth 10 CFR 50.59 evaluation.

NRC inspectors subsequently reviewed the licensee's 10 CFR 50.59 screening records for the flood outlet device modification. They concluded that licensee personnel had correctly screened their modification package, and thus, did not need to perform a 10 CFR 50.59 evaluation.

NRC 10 CFR 50.59 Oversight Roles and Responsibilities

Multiple NRC organizations share responsibility for oversight of 10 CFR 50.59 implementation. Primarily, the Office of Nuclear Reactor Regulation (NRR) establishes policy and procedures associated with accomplishing key components of NRC's nuclear reactor safety mission with respect to operating commercial power reactors. NRR divisions with 10 CFR 50.59 process roles and responsibilities include:

- Division of Policy and Rulemaking, Generic Communications Branch, is the NRC 10 CFR 50.59 process owner. Branch staff provide 10 CFR 50.59 process management support to other headquarters and regional staff. Such support includes oversight of 10 CFR 50.59 training activities and providing direct assistance to staff in interpreting aspects of 10 CFR 50.59 regulations and guidance.
- Division of Inspection and Regional Support staff perform activities associated with inspecting and assessing licensee performance; evaluating plant events and communicating lessons learned to cognizant groups; and administering enforcement and allegations activities.
- Division of Operating Reactor Licensing staff manage the review and processing of nuclear power plant license amendments, and serve as headquarters' central point-of-contact with licensees, the regions, and other stakeholders in matters pertaining to assigned facilities. The Division of Operating Reactor Licensing staff are also currently responsible for receiving and processing licensees' biennial report summaries of 10 CFR 50.59 evaluations. As a result of NRC's re-baselining initiative, Project AIM, NRR staff will no longer review licensees' biennial report summaries effective October 2016.

NRC's oversight of 10 CFR 50.59 implementation includes inspection of licensees' processes. Staff based at NRC's regional offices conduct inspections at nuclear power plants during which they assess

representative samples of evaluations, screenings, and/or applicability reviews, and permanent plant modifications.¹ Additionally, NRC resident inspectors based at nuclear power plants conduct annual inspections of temporary and/or permanent facility modifications.²

NRC's Office of Enforcement is responsible for the development and oversight of the policies and procedures used to disposition and enforce violations of 10 CFR 50.59 provisions. Colloquially referred to as the "dual path," inspectors must disposition 10 CFR 50.59 violations according to the Reactor Oversight Process path (procedures are established under NRR) or the traditional enforcement path (procedures are established under the Office of Enforcement). Traditional enforcement applies when the violation impedes the regulatory process and is dispositioned as a non-minor issue. Examples of non-minor issues include:

- Failure to provide complete and accurate information.
- Failure to receive prior NRC approval for changes in licensed activities.
- Failure to notify the NRC of changes in licensed activities.
- Failure to perform 10 CFR 50.59 analyses.

SONGS Lessons Learned

NRC published the SONGS lessons learned report partly in response to an OIG Investigations event inquiry.³ Among other topics, the event inquiry examined NRC's oversight of the licensee's application of the 10 CFR 50.59 process for the replacement of steam generators in SONGS Units 2 and 3. As a result, NRC's lessons learned report committed to process improvement actions to include additional training and enhancements to internal NRC procedures related to 10 CFR 50.59. In addition, on April 13, 2016, NRC issued a Regulatory Issue Summary that reviewed the issues identified with the SONGS steam generator replacements and reiterated the staff position on 10 CFR 50.59. Finally, in April 2016, NRC instituted a 10 CFR 50.59 online training module.⁴

¹ Inspection Procedure 71111.17T, *Evaluations of Changes, Tests, and Experiments and Permanent Plant Modifications*.

² Inspection Procedure 71111.18, *Plant Modifications*.

³ The OIG Investigation event inquiry is titled, *NRC Oversight of Licensee's Use of 10 CFR 50.59 Process To Replace SONGS' Steam Generators*, Case No. 13-006, October 2, 2014.

⁴ 10 CFR 50.59 Refresher Training (Web-based), Course ID 254144, NRC iLearn online training system April 14, 2016.

Revision of Digital Instrumentation and Controls Guidance

NRC has continued work relating to 10 CFR 50.59, including involvement in the development of the revised draft guidance for digital instrumentation and controls, which will be used to address obsolete analog systems in facilities. At the time of this audit, the agency is in the process of reviewing updated industry digital instrumentation and controls guidance, which will be added to existing 10 CFR 50.59 guidance.

II. OBJECTIVE

The audit objective was to assess the consistency and effectiveness of NRC's oversight of 10 CFR 50.59 implementation. To meet this objective, OIG auditors focused on the agency's processes for oversight of facility licensees' 10 CFR 50.59 implementation. Appendix A contains information on the audit scope and methodology.

III. FINDINGS

NRC could better assure the consistency and effectiveness of its oversight of 10 CFR 50.59 implementation by using a more structured approach for coordinating communication of 10 CFR 50.59 process information and improving the 10 CFR 50.59 training process.

A. NRC Oversight of 10 CFR 50.59 Process Could Be Strengthened with More Coordinated Communications

Federal internal control guidance recommends that agencies establish communication internal controls, and NRC's own guiding principles call for clear regulatory positions. However, NRC's processes for 10 CFR 50.59 oversight could be strengthened by coordinating communication of 10 CFR 50.59 guidance and process-related information. Communication weaknesses exist because NRC has not employed a well-structured approach for 50.59 process management. As a result, NRC's ability to achieve consistent and effective regulatory oversight is potentially diminished.

What Is Required

Coordinated Communication for Process Clarity

Federal standards require NRC to establish communication internal controls, and agency's Principles of Good Regulation include process clarity. The Government Accountability Office's *Standards for Internal Control in the Federal Government* requires agency management to communicate the necessary quality information to achieve the entity's objectives and to define policies through day-to-day procedures. Furthermore, clarity is one of the principles that guides how NRC carries out its regulatory activities, as stipulated in *NRC's Principles of Good Regulation*. Specifically, this principle calls for regulatory positions that can be readily understood and easily applied.

What We Found

Communication of Process-Related Information is Not Well Coordinated

NRC staff having responsibilities for oversight of 10 CFR 50.59 implementation, inspectors, and headquarters and regional staff do not always coordinate communication of 10 CFR 50.59 process-related information, such as guidance, reports and requirements.

According to several headquarters and regional staff, 10 CFR 50.59 inspection and enforcement guidance could be better communicated for consistent understanding and clarity regarding use of the dual path Reactor Oversight Process and traditional enforcement to disposition 10 CFR 50.59 inspection findings. Staff indicated that guidance regarding the threshold for determining whether 10 CFR 50.59 findings would be dispositioned as more than minor, as well as determining the severity of potential 10 CFR 50.59 findings has not been clearly communicated.

Agency actions to clarify dual path guidance are underway. This effort is being managed by NRR, Division of Inspection and Regional Support and

involves input from NRC's regional offices and Office of Enforcement. The 10 CFR 50.59 process owners are not included in the clarification process; thus remain unaware of staff difficulties regarding the dual path use of Reactor Oversight Process and traditional enforcement in dispositioning 10 CFR 50.59 inspection findings.

NRC staff indicated that the guidance, Nuclear Energy Institute (NEI) 96-07 *Guidelines for 10 CFR 50.59 Implementation, Revision 1* (NEI 96-07, Revision 1), endorsed by NRC, is challenging to use. NRC staff indicated that NEI 96-07, Revision 1 is challenging for less experienced inspectors. This is because it lacks sufficient examples of what constitutes a violation of the 10 CFR 50.59 process. For example, the guidance contains convoluted language, and does not clearly define a more than minimal increase in the likelihood of accidents or malfunctions previously evaluated as per 10 CFR 50.59 evaluation criteria at (c)(2)(i-viii) in the regulation. (See Appendix B of this report). Additionally, an inspector with over 10 years of inspection experience had a difficult time understanding the 10 CFR 50.59 process with the guidance provided and resorted to extensive research on the origins of the 10 CFR 50.59 process, including going back to original rulemaking documents to further understand what defines a more than minimal increase in the 10 CFR 50.59 process. Although extensive research on the origins of 10 CFR 50.59 may be helpful for clarification, less experienced inspectors may not know to use legal background documents for guidance.

While inspectors stated that more clarification is needed, the process owner indicated awareness only of the digital instrumentation and controls clarifications and asserted that NEI 96-07, Revision 1 was the best, most well written guidance on 10 CFR 50.59 in existence. Additionally, agency managers stated NEI 96-07, Revision 1 can be challenging for new inspectors to use because 10 CFR 50.59 is a very complex and nuanced area of expertise.

Additionally, a report containing 10 CFR 50.59 process related information has not been communicated to staff. Office of Nuclear Reactor Regulation, Division of Inspection and Regional Support, Operating Experience Branch conducted a 10 CFR 50.59 process study that reportedly concluded in a draft document, in part, the lack of effective training for 10 CFR 50.59 inspectors. However, to date, the Operating Experience Branch's 10 CFR 50.59 process study has not been published

or disseminated to Division of Policy and Rulemaking, Generic Communications Branch staff—the NRC 10 CFR 50.59 process owner.

Region I staff also completed a 10 CFR 50.59 self-assessment in September 2015 that recommended improvements to existing documentation and guidance, as well as for additional training. However, to date, Region I has communicated the results of the self-assessment to regional staff and to enforcement staff, but not to Generic Communications Branch staff.

The last example of communication of 10 CFR 50.59 process-related information that could have been better communicated is the 10 CFR 50.59 staff requirement for reviews of biennial reports which was not communicated to staff. The Commission approved the staff recommendation that NRR's Division of Operating Reactor Licensing discontinue reviews of biennial reports that are submitted by licensees in accordance with 10 CFR 50.59. Per the regulation, licensees are still required to submit these reports to NRC. Headquarters staff indicated that the responsibility for reviewing the biennial reports would be taken over by regional staff, but regional staff had not heard anything official about the regions taking over this review. NRR management has stated that the agency will no longer be reviewing the biennial reports. According to NRR management, inspections will provide adequate oversight of licensee use of 10 CFR 50.59.

Why This Occurred

NRC Approach for 10 CFR 50.59 Process Management is Not Well-Structured

NRC does not employ a well-structured approach for 10 CFR 50.59 process management. The 10 CFR 50.59 process owner is not consistently addressing program concerns because questions must flow up through the regional and headquarters staff before reaching the Generic Communications Branch. This has led to instances of the process owners not being specifically aware of staff's concerns raised about clarity of guidance. Additionally, staff take different approaches to leveraging 10 CFR 50.59 subject matter expertise across the agency.

While some staff communicate directly with process owners regarding oversight questions, staff sometimes try to resolve their questions on a peer-to-peer basis without involving process owners. The latter approach can expedite information sharing across organizational lines, but can also distance process owners from working-level observations, concerns, and questions that could help enhance 10 CFR 50.59 oversight.

Why This Is Important

Opportunity to Improve Ability to Provide Consistent and Effective Regulatory Oversight

Adoption of a more structured approach for managing NRC's 10 CFR 50.59 oversight processes could enhance NRC's regulatory consistency and effectiveness. This is particularly important given the multiple NRC headquarters and regional organizations that play different, yet complimentary, roles in the agency's oversight of licensees' compliance with 10 CFR 50.59. Additionally, NRC would be better positioned to provide nuclear power plant licensees throughout its four regions with consistent and predictable regulatory positions on 10 CFR 50.59 compliance and enforcement matters.

Recommendation

OIG recommends that the Executive Director for Operations

1. Implement a structured approach for 10 CFR 50.59 process management that includes guidance clarification and coordination of program communications.

B. The 10 CFR 50.59 Training Process Could Be Improved

NRC's oversight of the 10 CFR 50.59 process could be strengthened by enhancing the agency's post-qualification 10 CFR 50.59 training to include recurring formal training. Federal and agency guidance requires training to meet organizational goals and needs. NRC has not used established guidance to comprehensively evaluate 10 CFR 50.59 training needs. As a result, NRC could enhance knowledge management, improve training resource allocation, and tailor training needs to address key oversight issues and emerging industry trends.

What Is Required

Recurring Formal Training

Federal internal control guidance calls for agencies to develop training that meets organizational goals and needs. Specifically, Government Accountability Office *Standards for Internal Control in the Federal Government* recommends that agencies train their personnel to ensure they have the required knowledge, skills, and abilities to achieve organizational goals. Government Accountability Office guidance⁵ also stipulates agencies should tailor training based on the needs of specific job roles. Accordingly, NRC's training on the 10 CFR 50.59 process should be formalized and recurring, such that it reflects the current, actual 10 CFR 50.59 process needs.

What We Found

NRC's Post-Qualifications 10 CFR 50.59 Training Could Be Enhanced

NRC's post-qualification 10 CFR 50.59 training could be enhanced with recurring formal training on the 10 CFR 50.59 process after inspector qualifications are completed. Many reactor inspectors have noted the absence of recurring formal 10 CFR 50.59 training. Reactor inspectors with over 10 years of inspection experience indicated that they have never

⁵ GAO-04-546G, *HUMAN CAPITAL: A Guide for Assessing Strategic Training and Development Efforts in the Federal Government*

seen or completed formal 50.59 training after the completion of initial inspector qualifications.⁶

In one example, a region independently developed and conducted 10 CFR 50.59 informal training. This region conducted its own 10 CFR 50.59 training seminar and disseminated its own training and guidance material to inspectors, including those that attended from other regions.

NRC staff characterized the frequency of the recently developed 10 CFR 50.59 training differently. Agency staff and developers of the 10 CFR 50.59 Refresher Training, available via NRC's iLearn online training system, indicated that this training is a one-time refresher course created in response to SONGS lessons learned. The training has been available since April, 2016. Furthermore, the training developer stated that each year a different reactor inspection topic is selected for an hour long annual refresher course for inspectors. In 2016, the 10 CFR 50.59 process was the chosen topic. Conversely, the Generic Communications Branch staff indicated that the online training module would recur on an annual basis. At the time of this audit, staff had not yet reached agreement on whether the 10 CFR 50.59 training would recur, and if so, how frequently.

Why This Occurred

Training Needs Based on Immediate Considerations

NRC's 10 CFR 50.59 training needs were based on the agency's immediate focus on addressing a SONGS lessons learned training recommendation. NRC has adopted Office of Personnel Management standards⁷ for training development in NRC's Human Resources Training and Development Operating Procedure No. 0406, Revision 2, *Systematic Training Program Development Process*. This guidance calls for NRC to

⁶ Initial reactor inspector qualification training is identified in Inspection Manual Chapter 1245, Appendix A, *Basic-Level Training and Qualification Journal*; Inspection Manual Chapter 1245, Appendix C-1, *Reactor Operations Inspector Technical Proficiency Training and Qualification Journal*, and Inspection Manual Chapter 1245, Appendix C2, *Reactor Engineering Inspector Technical Proficiency Training and Qualification Journal*.

⁷ The Office of Personnel Management training standards prescribe three levels of training needs assessment. Organizational assessment evaluates the level of organizational performance. Occupational assessment examines the skills, knowledge, and abilities required for affected occupational groups. Individual assessment analyzes how well an individual employee is doing a job and determines the individual's capacity to do new or different work.

use a systematic approach for training development that includes an assessment of organizational, occupational, and individual training needs. The 10 CFR 50.59 process owner documented its training needs in a Human Resources Training and Development Use Request. The request included both an initial 1-hour course and an in-depth 16-hour workshop. Agency management implemented 10 CFR 50.59 refresher training for the staff, thereby limiting the course duration to 1-2 hours in an online format. Staff are currently in the process of adding 10 CFR 50.59 refresher training content to the reactor technology review courses, as well as, determining training frequency.

Why This Is Important

Implementing 10 CFR 50.59 Training Based on Long-Term Needs Could Enhance Knowledge Management Over Time

Implementing 10 CFR 50.59 training based on long-term needs could enhance knowledge management over time. Furthermore, addressing long-term training needs could help NRC more cost-effectively develop training that focuses on key oversight issues and emerging industry trends. According to a regional staff member who developed and implemented their own 10 CFR 50.59 training, this effort entailed significant resource expenditure. The staff member indicated that they could not afford to undertake any similar future initiatives. Furthermore, this approach could help NRC better prepare its staff to meet the demands of changing technological and regulatory environments. By incorporating emerging issues and lessons learned into recurring training, NRC is in a better position to identify and correct gaps in knowledge, skills, and abilities as these requirements change over time.

Recommendation

OIG recommends that the Executive Director for Operations

2. Implement recurring 10 CFR 50.59 training with an emphasis on scope, depth, and periodicity of training.

IV. CONSOLIDATED LIST OF RECOMMENDATIONS

OIG recommends that the Executive Director for Operations

1. Implement a structured approach for 10 CFR 50.59 process management that includes guidance clarification and coordination of program communications.
2. Implement recurring 10 CFR 50.59 training with an emphasis on scope, depth, and periodicity of training.

V. AGENCY COMMENTS

An exit conference was held with the agency on August 9, 2016. After reviewing a discussion draft, agency management provided comments that have been incorporated into this report, as appropriate. As a result, agency management stated their agreement with the findings and recommendations in this report and opted not to provide formal comments for inclusion in this report.

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The audit objective was to assess the consistency and effectiveness of NRC's oversight of 10 CFR 50.59 implementation.

Scope

This audit focused on evaluating NRC's oversight of the implementation of the 10 CFR 50.59 process. We conducted this performance audit from February 2016 through June 2016 at NRC headquarters in Rockville, Maryland. Internal controls related to the audit objective were reviewed and analyzed. Throughout the audit, auditors were aware of the possibility of fraud, waste, and abuse in the program.

Methodology

OIG reviewed relevant criteria for this audit, including:

- 10 CFR 50.59, "Changes, tests and experiments."
- Government Accountability Office's *Standards for Internal Control in the Federal Government*, GAO-14-704G.
- *HUMAN CAPITAL: A Guide for Assessing Strategic Training and Development Efforts in the Federal Government*, GAO-04-546G.
- Office of Personnel Management, *Training and Development Planning & Evaluating Training Needs Assessment*.
- NRC's Principles of Good Regulation.
- Regulatory Guide 1.187, *Guidance for Implementation of 10 CFR 50.59, "Changes, tests, and experiments."*
- NRC Enforcement Manual.
- NRC Enforcement Policy.
- Human Resources Training and Development Operating Procedure No. 0406 Revision 2, *Systematic Training Program Development Process*.
- NEI 96-07, Revision 1, *Guidelines for 10 CFR 50.59 Implementation*.

To understand how NRC staff and managers oversee the implementation of the 10 CFR 50.59 process, OIG reviewed additional sources such as NRC Inspection Manual Chapters, Inspection Procedures, inspection reports, and agency lessons learned activities related to the 10 CFR 50.59 process.

To obtain their perspectives of the 10 CFR 50.59 process, OIG interviewed NRC staff from the: Division of Policy and Rulemaking, Division of Operating Reactor Licensing, and Division of Inspection and Regional Support within the Office of Nuclear Reactor Regulation; Office of Enforcement; Office of the Chief Human Capital Officer/Technical Training Center; Region I; Region II; Region III; and Region IV. OIG also interviewed regional inspectors and interviewed and obtained written responses from a sample of senior resident inspectors and resident inspectors from Region I, Region II, Region III, and Region IV. Representatives from the Nuclear Energy Institute and Union of Concerned Scientists were also interviewed for their perspectives on NRC's 10 CFR 50.59 oversight.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The audit was conducted by Paul Rades, Team Leader; Vicki Foster, Audit Manager; Timothy Wilson, Senior Analyst; Jenny Cheung, Auditor; John Thorp, Senior Technical Advisor; and Urvi Banerjee, Student Management Analyst.

§50.59 Changes, tests and experiments.

(a) Definitions for the purposes of this section:

(1) *Change* means a modification or addition to, or removal from, the facility or procedures that affects a design function, method of performing or controlling the function, or an evaluation that demonstrates that intended functions will be accomplished.

(2) *Departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses* means:

(i) Changing any of the elements of the method described in the FSAR (as updated) unless the results of the analysis are conservative or essentially the same; or

(ii) Changing from a method described in the FSAR to another method unless that method has been approved by NRC for the intended application.

(3) *Facility as described in the final safety analysis report (as updated)* means:

(i) The structures, systems, and components (SSC) that are described in the final safety analysis report (FSAR) (as updated),

(ii) The design and performance requirements for such SSCs described in the FSAR (as updated), and

(iii) The evaluations or methods of evaluation included in the FSAR (as updated) for such SSCs which demonstrate that their intended function(s) will be accomplished.

(4) *Final Safety Analysis Report (as updated)* means the Final Safety Analysis Report (or Final Hazards Summary Report) submitted in accordance with §50.34, as amended and supplemented, and as updated per the requirements of §50.71(e) or §50.71(f), as applicable.

(5) *Procedures as described in the final safety analysis report (as updated)* means those procedures that contain information described in the FSAR (as updated) such as how structures, systems, and components are operated and controlled (including assumed operator actions and response times).

(6) *Tests or experiments not described in the final safety analysis report (as updated)* means any activity where any structure, system, or component is utilized or controlled in a manner which is either:

(i) Outside the reference bounds of the design bases as described in the final safety analysis report (as updated) or

(ii) Inconsistent with the analyses or descriptions in the final safety analysis report (as updated).

(b) This section applies to each holder of an operating license issued under this part or

a combined license issued under part 52 of this chapter, including the holder of a license authorizing operation of a production or utilization facility, including the holder of a license authorizing operation of a nuclear power reactor that has submitted the certification of permanent cessation of operations required under §50.82(a)(1) or §50.110 or a reactor licensee whose license has been amended to allow possession of nuclear fuel but not operation of the facility.

(c)(1) A licensee may make changes in the facility as described in the final safety analysis report (as updated), make changes in the procedures as described in the final safety analysis report (as updated), and conduct tests or experiments not described in the final safety analysis report (as updated) without obtaining a license amendment pursuant to §50.90 only if:

(i) A change to the technical specifications incorporated in the license is not required, and

(ii) The change, test, or experiment does not meet any of the criteria in paragraph (c)(2) of this section.

(2) A licensee shall obtain a license amendment pursuant to §50.90 prior to implementing a proposed change, test, or experiment if the change, test, or experiment would:

(i) Result in more than a minimal increase in the frequency of occurrence of an accident previously evaluated in the final safety analysis report (as updated);

(ii) Result in more than a minimal increase in the likelihood of occurrence of a malfunction of a structure, system, or component (SSC) important to safety previously evaluated in the final safety analysis report (as updated);

(iii) Result in more than a minimal increase in the consequences of an accident previously evaluated in the final safety analysis report (as updated);

(iv) Result in more than a minimal increase in the consequences of a malfunction of an SSC important to safety previously evaluated in the final safety analysis report (as updated);

(v) Create a possibility for an accident of a different type than any previously evaluated in the final safety analysis report (as updated);

(vi) Create a possibility for a malfunction of an SSC important to safety with a different result than any previously evaluated in the final safety analysis report (as updated);

(vii) Result in a design basis limit for a fission product barrier as described in the FSAR (as updated) being exceeded or altered; or

(viii) Result in a departure from a method of evaluation described in the FSAR (as updated) used in establishing the design bases or in the safety analyses.

(3) In implementing this paragraph, the FSAR (as updated) is considered to include FSAR changes resulting from evaluations

performed pursuant to this section and analyses performed pursuant to §50.90 since submittal of the last update of the final safety analysis report pursuant to §50.71 of this part.

(4) The provisions in this section do not apply to changes to the facility or procedures when the applicable regulations establish more specific criteria for accomplishing such changes.

(d)(1) The licensee shall maintain records of changes in the facility, of changes in procedures, and of tests and experiments made pursuant to paragraph (c) of this section. These records must include a written evaluation which provides the bases for the determination that the change, test, or experiment does not require a license amendment pursuant to paragraph (c)(2) of this section.

(2) The licensee shall submit, as specified in §50.4 or §52.3 of this chapter, as applicable, a report containing a brief description of any changes, tests, and experiments, including a summary of the

evaluation of each. A report must be submitted at intervals not to exceed 24 months. For combined licenses, the report must be submitted at intervals not to exceed 6 months during the period from the date of application for a combined license to the date the Commission makes its findings under 10 CFR 52.103(g).

(3) The records of changes in the facility must be maintained until the termination of an operating license issued under this part, a combined license issued under part 52 of this chapter, or the termination of a license issued under 10 CFR part 54, whichever is later. Records of changes in procedures and records of tests and experiments must be maintained for a period of 5 years.

[64 FR 53613, Oct. 4, 1999]

Effective Date Note: See 64 FR 53582, Oct. 4, 1999, for effectiveness of Sec. 50.59. At 65 FR 77773, Dec. 13, 2000, the effective date of the Oct. 4, 1999 revision of Sec. 50.59 appearing at 64 FR 53613 was confirmed as Mar. 13, 2001.

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