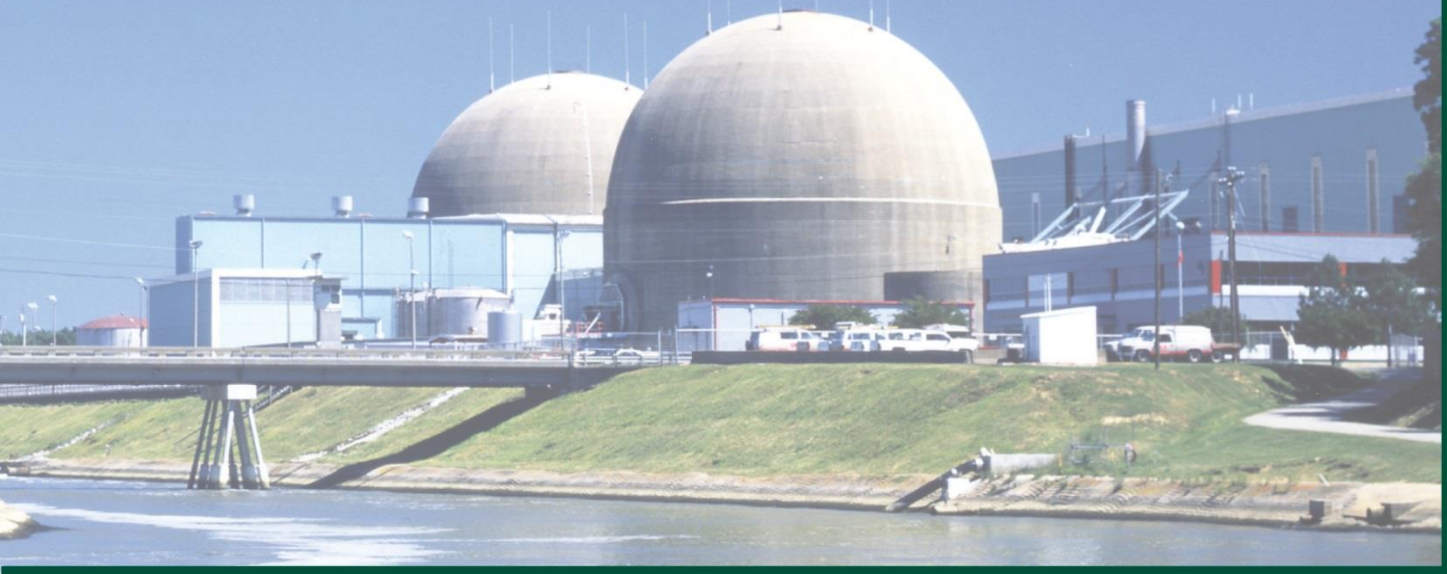
OFFICE OF THE INSPECTOR GENERAL

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

Audit of the NRC's Nuclear Power Reactor Inspection Issue Screening

OIG-21-A-07
March 29, 2021



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

OFFICE OF THE
INSPECTOR GENERAL

March 29, 2021

MEMORANDUM TO: Margaret M. Doane
Executive Director for Operations

FROM: Dr. Brett M. Baker ***/RA/***
Assistant Inspector General for Audit

SUBJECT: AUDIT OF THE NRC'S NUCLEAR POWER REACTOR INSPECTION ISSUE SCREENING (OIG-21-A-07)

Attached is the Office of the Inspector General's (OIG) audit report titled *Audit of the NRC's Nuclear Power Reactor Inspection Issue Screening*.

The report presents the results of the subject audit. Following the March 23, 2021, 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 recommendation(s) 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

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Results in Brief

Why We Did This Review

The U.S. Nuclear Regulatory Commission's (NRC) internal guidance requires inspectors to screen issues of concern identified during nuclear power reactor inspections to determine whether the issues in question fall under the agency's traditional enforcement (TE) program and Reactor Oversight Process (ROP).

Under the ROP, if an issue of concern screens positive for a performance deficiency, inspectors must determine if it has minor or more-than-minor safety or security significance.

When screening issues of concern under the TE pathway, inspectors do not use the ROP screening process to screen TE violations, but rather, use that process to screen for performance deficiencies.

The audit objective was to assess the consistency with which NRC staff screen issues of concern for TE and ROP in accordance with agency guidance.

Audit of the NRC's Nuclear Power Reactor Inspection Issue Screening

What We Found

NRC staff screen issues of concern in accordance with agency guidance.

However, the NRC could benefit from clarifying guidance to periodically review the consistency with which staff document inspection results in the agency's RPS as well as in inspection reports.

This occurs because the NRC has multiple guidance documents that address inspection result data entry into the RPS and management review of inspection result documentation. In addition, the NRC needs to continue implementing quality assurance checks introduced in early 2021 to further identify and fix RPS data entry and report generation errors.

What We Recommend

The report contains recommendations to clarify guidance for inputting inspection results into RPS, to review the RPS data entries for accuracy and completeness, to improve quality assurance processes, and to conduct training regarding the RPS data input.

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ABBREVIATIONS AND ACRONYMS

COVID-19	Coronavirus Disease-2019
GAO	U.S. Government Accountability Office
IMC	Inspection Manual Chapter
NRC	U.S. Nuclear Regulatory Commission
OIG	Office of the Inspector General
ROP	Reactor Oversight Process
RPS	Reactor Program System
SL	Severity Level
SDP	Significance Determination Process
TE	Traditional Enforcement

I. BACKGROUND

Issues of Concern Screening

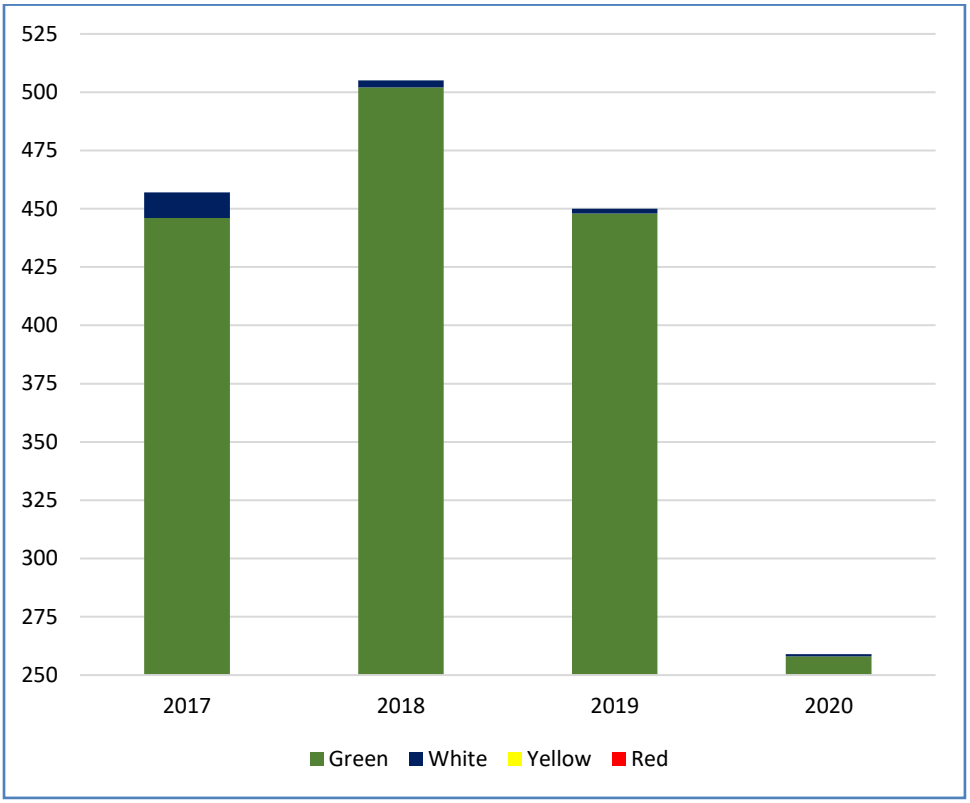
The U.S. Nuclear Regulatory Commission's (NRC) internal guidance requires inspectors to screen issues of concern identified during nuclear power reactor inspections to determine whether the issues in question fall under the agency's traditional enforcement (TE) program and Reactor Oversight Process (ROP).[1] The NRC defines an issue of concern as a well-defined observation or collection of observations potentially impacting safety or security which may warrant further inspection, screening, evaluation, or regulatory action. The NRC can screen issues of concern for both the ROP and TE pathways.

The ROP Pathway

Under the ROP, if an issue of concern screens positive for a performance deficiency,[2] inspectors must determine if it has minor or more-than-minor safety or security significance. The NRC generally does not document issues that screen minor, while more-than-minor issues become potential findings to be assessed through the agency's Significance Determination Process[3] (e.g., Green, White, Yellow, and Red). Figure 1 shows the total number of ROP findings by significance between January 1, 2017 and December 31, 2020.[4]

[1] Inspection Manual Chapter (IMC) 0612, *Issue Screening*.
[2] The NRC defines a performance deficiency as the licensee's failure to satisfy one or more regulatory requirements or self-imposed standards where such failure was reasonably foreseeable and preventable.
[3] The Significance Determination Process uses risk insights and other relevant information as appropriate to assess the safety or security significance of inspection findings identified at operating reactors. The safety significance of inspection findings are expressed through colors: Green – very low safety significance, White – low to moderate safety significance, Yellow – substantial safety significance, and Red – high safety significance.
[4] There were no yellow or red ROP findings between January 1, 2017 and December 31, 2020. This table is based on raw data extracted from the IR4 "Advanced Finding_Violations Search" report in the RPS, and is intended to show general reactor inspection finding totals. Raw RPS data is subject to revision based on future quality assurance checks.

Figure 1: Reactor Oversight Process Findings[5]



Source: OIG's analysis of the Reactor Program System (RPS)[6] data.

The TE Pathway

When screening issues of concern under the TE pathway, inspectors do not use the ROP screening process to screen TE violations, but rather, use that process to screen for performance deficiencies. If an issue of concern screens positive for TE, the NRC may cite the reactor licensee for a violation. Violations can involve actual safety or security consequences, willful misconduct, and licensee actions that impede the regulatory process. Additionally, if an issue screens positive for a performance deficiency under the ROP, inspectors must assess whether the issue is minor or more-than-minor, and whether it is associated with any cross-

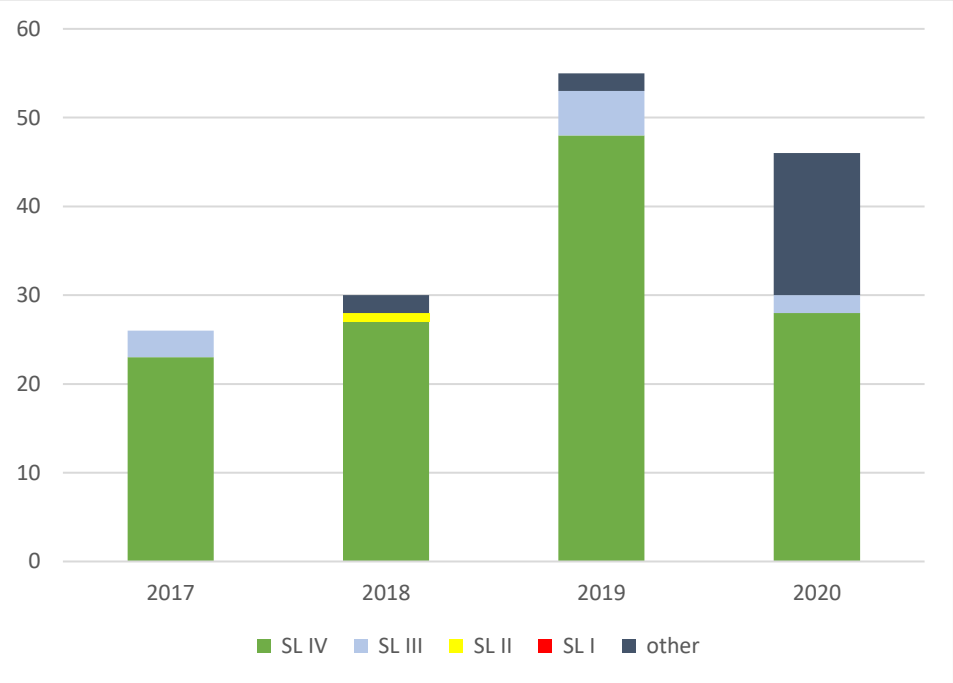
[5] In response to Coronavirus Disease-2019 (COVID-19), the NRC suspended some regulatory requirements and deferred some inspection activities. In addition, the agency's COVID-19 response resulted in inspection data reporting delays. Together, these factors may have contributed to the significant decline in ROP findings documented in 2020 compared to the preceding 3 years.

[6] RPS is a web-based application that is designed to capture information about reactor inspection and licensing activities.

cutting areas.[7] If the issue is associated with any cross-cutting areas, the agency must decide what action to take in response to signs of declining licensee performance.

The agency assigns TE violations severity levels (SL), ranging from SL IV for those of more-than-minor concern to SL I for the most significant, that are associated with findings assessed through the ROP's Significance Determination Process. Figure 2 shows the total number of TE violations between January 1, 2017 and December 31, 2020. Most TE violations were SL IV.

Figure 2: Traditional Enforcement Violations[8]



Source: OIG's analysis of RPS data.

[7] Cross-cutting areas are the fundamental performance characteristics that extend across all of the ROP cornerstones of safety. These areas are human performance, problem identification and resolution, and safety conscious work environment.

[8] Other TE violations include items marked within the RPS as TE without a SL, for example: observations, assessments, apparent violations, minor violations, licensee event reports, notices of violation, and enforcement discretion. This table is based on raw data extracted from the IR4 "Advanced Finding_Violations Search" report in the RPS, and is intended to show general totals of TE actions resulting from operating reactor inspections. Raw RPS data is subject to revision based on future quality assurance checks.

Furthermore, the NRC documents inspection results with ROP findings and TE violations in the agency's RPS and inspection reports. NRC policies require ROP findings and TE violations to be consistent and accurately documented.

The NRC Organizations Responsible for Screening Issues of Concern

The NRC's Office of Nuclear Reactor Regulation is responsible for the overall management, support, and oversight of issue screenings including updates of regulatory requirements. The Division of Reactor Oversight within the Office of Nuclear Reactor Regulation revises reactor inspection guidance and oversees regional implementation. NRC inspectors are responsible for screening issues of concern, while regional managers are responsible for ensuring issue of concern screenings are completed in accordance with agency guidance.

II. OBJECTIVE

The audit objective was to assess the consistency with which NRC staff screen issues of concern for TE and ROP in accordance with agency guidance. Appendix A contains information on the audit scope and methodology.

III. FINDING

NRC staff screen issues of concern in accordance with agency guidance. However, the NRC could benefit from clarifying guidance to periodically review the consistency with which staff document inspection results in the agency's RPS, as well as, in inspection reports.

A. NRC Inspection Results Need Periodic Quality Assurance Checks

The NRC should ensure inspection results entered in the agency's RPS are consistent, complete, and accurate. Additionally, the agency should ensure that staff clearly communicate inspection results to the licensee, NRC staff, and the public in a consistent manner. However, the NRC does not consistently document inspection results within the RPS and in accordance with agency guidance. This occurs because the NRC does not have clear guidance and application controls on documenting inspection results. This inconsistent documentation of inspection results merits attention because NRC management needs reliable inspection data for effective management and oversight of its reactor inspection programs.

What Is Required

Ensure Inspection Results are Consistently Documented in Accordance with Federal and Agency Guidance

Federal Standards

The U.S. Government Accountability Office, *Standards for Internal Control in the Federal Government,*[9] (GAO Green Book) states management should use quality information to achieve the entity's objectives. Therefore, agency managers are responsible for ensuring processed data is accurate, complete, accessible, and timely. Agencies use such information to make informed decisions regarding the use and prioritization of resources, as well as evaluating agency performance and potential risk areas that could affect efficiency and effectiveness.

What is internal control?
Internal control is a process used by management to help an entity achieve its objectives.

How does internal control work?
Internal control helps an entity:

- Run its operations efficiently and effectively,
- Report reliable information about its operations and,
- Comply with applicable laws and regulations.

The GAO Green Book also states that management should design the entity's information system and related control activities to achieve objectives and respond to risks. This includes application controls, which are those controls that are incorporated directly into computer applications to achieve validity, completeness, accuracy, and confidentiality of transactions and data during application processing. Application controls include controls over input, processing, output, master file, interface, and data management system controls.

[9] Government Accountability Office, *Standards for Internal Control in the Federal Government,* GAO-14-704G, September 2014.

Agency Policies

The NRC's IMC 0306, *Planning, Scheduling, Tracking, and Reporting of the Reactor Oversight Process,* requires staff to enter consistent, complete, accurate, and timely inspection results in the agency's RPS to support plant and ROP self-assessment activities.

Additionally, the NRC's IMC 0611, *Power Reactor Inspection Reports,* requires the NRC staff to clearly communicate significant inspection results in a consistent manner to licensees, NRC staff, and the public.

What We Found

Inspection Results not Consistently Documented in Accordance with Guidance

The NRC does not consistently document inspection results within the agency's RPS and in accordance with agency and federal guidance.

The OIG reviewed 142 TE violations associated with operating reactor inspections documented in the RPS between January 1, 2017 and September 1, 2020. The OIG analyzed the inspection reports for all the TE violations in this period for documentation consistency within the RPS and in accordance with IMC 0611 requirements.

RPS Documentation Inconsistency

Regarding TE violation entry into the RPS, there were inconsistencies with inspection result documentation. For example, there were 50 incorrectly documented TE violations[10] in the RPS. Figure 3 shows RPS documentation errors and the number of inspection results with each error.

[10] The sum of errors in Figure 3 and Figure 4 is greater than the 50 TE violations that were incorrectly documented in RPS and the 12 TE violations that were not documented in accordance with IMC 0611 because some TE violations had multiple errors.

Figure 3: RPS Documentation Errors

Errors	Count
Should not have been documented as TE	13
Missing Source	9
Should not have included Cornerstone	9
Incorrect Inspection Procedure	5
Incorrect Significance Determination	5
Missing ID Numbers	4
Old System Conversion Error	2
Missing Case Number	1
Should not have included Cross-cutting	1
Should not have been in the RPS	1

Source: OIG's analysis of RPS data and inspection reports.

IMC 0611 Non-compliance

Regarding the documentation of TE violations, there were 12 TE violations incorrectly documented in accordance with IMC 0611 requirements. Figure 4 shows the inspection report IMC 0611 noncompliance errors and the number of affected inspection results.

Figure 4: IMC 0611 Non-compliance Errors

Errors	Count
Incorrect Performance Assessment	8
Should not have included Cornerstone	3
Missing Enforcement Severity	2
Missing Inspection Procedure	2
Significance did not match detailed results	1
Incorrect report format	1

Source: OIG's analysis of RPS data and inspection reports.

Other Inconsistencies

This audit identified other inconsistencies with how data was documented in the RPS. In general, the cornerstone, cross-cutting area, and significance determination columns were blank; however, there were instances where inspection reports inconsistently included additional data.

The OIG did not count these inconsistencies as documentation or IMC 0611 compliance errors:

- 13 significance determinations were marked "No Performance Deficiency" and 7 were marked "Minor Performance Deficiency;"
- 7 ROP cornerstones were marked "Not Applicable;" and
- 2 cross-cutting areas were marked "NA."

Why This Occurred

Unclear Guidance and Application Controls Impact Documentation of Inspection Results

The NRC has multiple guidance documents that address inspection result data entry into the RPS and management review of inspection result documentation. However, staff do not clearly understand the relationship among these documents, which has contributed to the RPS documentation errors and IMC 0611 non-compliance. In addition, staff acknowledge an RPS programming flaw that has led to erroneous data outputs.

Guidance

Both IMC 0306, *Planning, Scheduling, Tracking, and Reporting of the Reactor Oversight Process,* and the RPS Desktop Guide do not provide sufficient details as to how staff should enter inspection results in the RPS. For example, the NRC has no specific guidance on how to enter escalated enforcement actions, notices of violation, and licensee identified violations into the RPS, which resulted in improper RPS data entries.

Application Controls

In addition to insufficient guidance in documenting inspection results, the NRC needs to continue implementing quality assurance checks introduced in early 2021 to further identify and fix RPS data entry and report

generation errors. Notably, staff told the OIG that the RPS has a known programming flaw that can cause correctly entered data to be displayed or outputted incorrectly in a report known as "IR4." Consequently, a RPS user may extract data from the RPS and see erroneous data elements in IR4 even if those elements have been corrected in the system.

Together, clearer and better understood guidance, along with adequate management review, quality assurance checks, and correction of RPS programming flaws, can help prevent and detect RPS documentation errors, IMC 0611 non-compliances, and data entry inconsistencies identified by the OIG.

Why This Is Important

Quality Information Supports Program Management and Transparency

NRC management relies on quality information to conduct accurate end of cycle assessments of licensees, track findings and violations, ensure consistency among inspectors, charge licensees for inspection hours, and determine effectiveness and where to devote more time. Additionally, Congress and licensees rely on quality information when making decisions. When the NRC releases inaccurate data:

- poor decisions could be made by Congress, the licensees, and the NRC;
- licensees could easily dispute violations;
- it could confuse the public, licensees, and stakeholders; and,
- it could reduce public confidence in the NRC.

Recommendations

The OIG recommends that the Executive Director for Operations:

1. Clarify guidance for inputting inspection results into the RPS that involve TE actions, such as escalated enforcement actions, notices of violation, and licensee identified violations, etc.;

2. Periodically review RPS data and test RPS controls for accuracy and completeness;

3. Improve quality assurance processes implemented in 2021 to identify and fix RPS data entry reporting errors; and,

4. Conduct periodic training regarding RPS data input.

IV. AGENCY COMMENTS

An exit conference was held with the agency on March 23, 2021. Prior to this meeting, 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 general agreement with the finding and recommendations in this report and opted not to provide formal comments for inclusion in this report.

Appendix A

OBJECTIVE, SCOPE, AND METHODOLOGY

Objective

The audit objective was to assess the consistency with which staff screen issues of concern for TE and ROP in accordance with agency guidance.

Scope

This audit focuses on how the NRC screens issues of concern for both TE and ROP pathways and documents inspection results in the RPS and inspection reports. We analyzed inspection results for the period of January 1, 2017 through December 31, 2020. The OIG conducted this performance audit from August 5, 2020 through February 3, 2021 at NRC headquarters in Rockville, Maryland. The OIG used RPS data as the basis for its audit finding. The OIG performed a data reliability test of the RPS and determined that the data were sufficiently reliable for assessing the consistency with which staff screen issues of concern.

Internal controls related to the audit objective were reviewed and analyzed. Specifically, the OIG reviewed the components of control environment, risk assessments, control activities, information and communication, and monitoring. Within those components, the OIG reviewed the principles of exercising oversight responsibility; identifying, analyzing, and responding to risk; assessing fraud risk; identifying, analyzing, and responding to change; designing control activities; designing activities for the information system; implementing control activities through policies; using quality information; communicating internally; performing monitoring activities; and evaluating issues and remediating deficiencies.

Methodology

To accomplish the audit objective, the OIG analyzed relevant criteria for this audit including:

- Government Accountability Office, *Standards for Internal Control in the Federal Government*, GAO-14-704G, September 2014;
- Management Directive 8.13, *Reactor Oversight Process*, January 16, 2018;
- IMC 0306, *Planning, Scheduling, Tracking, and Reporting of the Reactor Oversight Process*, November 4, 2019;
- IMC 0307, *ROP Self-Assessment Program*, June 1, 2020;
- IMC 0612, Appendix B, *Additional Issue Screening Guidance*, January 1, 2020;
- IMC 0611, *Power Reactor Inspection Reports*, January 7, 2020;
- The NRC's *Enforcement Policy*, January 15, 2020; and,
- The NRC's *Enforcement Manual*, October 1, 2019.

The OIG conducted analyses to determine whether the agency consistently screens issues of concern for TE and the ROP. The OIG reviewed the trend of TE and ROP violations from calendar year 2017 through 2020. The OIG also reviewed 114 inspection results from January 1, 2019 through June 1, 2020 for compliance with IMC 0611 and ensured their proper documentation in the RPS. The OIG analyzed 142 TE violations between January 1, 2017 and September 1, 2020 for compliance with IMC 0611 and ensured their proper documentation through a review of the IR 4 Advanced Findings search report in the RPS. Additionally, the OIG interviewed NRC staff and management from the regions and headquarters.

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.

Throughout the audit, auditors considered the possibility of fraud, waste, and abuse in the program.

The audit was conducted by Paul Rades, Team Leader; Avinash Jaigobind, Audit Manager; John Thorp, Senior Technical Advisor; Chanel Stridiron, Senior Auditor; Brigit Larsen, Senior Auditor; and Melissa Chui, Auditor.

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COMMENTS AND SUGGESTIONS

If you wish to provide comments on this report, please email the OIG using this link.

In addition, if you have suggestions for future OIG audits, please provide them using this link.