POLICY ISSUE
(Information)

April 12, 2018 SECY-18-0045

FOR: The Commissioners

FROM: Victor M. McCree
Executive Director for Operations

SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR CALENDAR YEAR 2017

PURPOSE:

This paper presents the results of the U.S. Nuclear Regulatory Commission (NRC) staff's annual self-assessment of the Reactor Oversight Process (ROP) for calendar year (CY) 2017. This paper does not address any new commitments or resource implications.

SUMMARY:

The NRC staff completed the CY 2017 ROP self-assessment in accordance with the revised self-assessment process and the NRC's Strategic Plan. The ROP self-assessment program assesses the effectiveness of the ROP by focusing on the efficacy of recent changes to the program, performing in-depth reviews of specific areas of interest, and verifying staff adherence to program governance documents. The results of the CY 2017 self-assessment indicate that the ROP met its program goals and achieved its intended outcomes. The staff found that the ROP provided objective, risk-informed, understandable, and predictable oversight. The staff implemented several ROP improvements in CY 2017 and will continue to solicit input from the NRC's internal and external stakeholders to further improve the ROP.

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BACKGROUND:

The ROP is the NRC's primary means of ensuring that commercial nuclear power plants are operated safely, securely, and in accordance with applicable regulations. The ROP is a mature and effective oversight process that has continued to evolve, based on feedback and lessons learned, since its implementation in 2000. As noted in Inspection Manual Chapter (IMC) 0308, "Reactor Oversight Process Basis Document," dated October 4, 2017 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML16306A386), the staff's goals and objectives in developing the various components of the ROP were to provide tools for inspecting and assessing licensee performance in a manner that was more objective, risk-informed, understandable, and predictable than the previous oversight processes. A contributor to the ROP's ongoing success has been the opportunity for, and inclusion of, continuous feedback and ongoing improvements via the staff's ROP self-assessment program. The program is governed by IMC 0307, "Reactor Oversight Process Self-Assessment Program," dated November 23, 2015 (ADAMS Accession No. ML15216A347). The self-assessment approach is designed to ensure that the ROP is being implemented reliably, consistently, and predictably across all four NRC regional offices, as well as at NRC headquarters.

NUREG-1614, Volume 7, "Strategic Plan: Fiscal Years 2018–2022," issued February 2018 (ADAMS Accession No. ML18032A561), describes how the NRC plans to achieve its two strategic goals: (1) to ensure the safe use of radioactive materials and (2) to ensure the secure use of radioactive materials. The plan provides an overview of the NRC's responsibilities; describes how stakeholders participated in plan development; summarizes key challenges the agency will face during the planning period; and lays out the objectives, strategies, and key activities that will be used to achieve the agency's goals.

The ROP employs a risk-informed, tiered approach for ensuring the safety of nuclear power plants. It includes collecting information about licensee performance, assessing the safety significance of the information, taking appropriate actions in response to performance issues, and ensuring that licensees correct deficiencies. As described in NUREG-1614, Appendix C, "Planned Program Reviews," the agency conducts annual reviews of the ROP. The annual ROP evaluation has two objectives: (1) to determine whether the program is effective in supporting the achievement of the performance goals and the agency's strategic goals, and (2) to provide timely, objective information to inform program planning and improvements. The scope of the evaluation includes (1) the efficiency of the agency's baseline inspection program, (2) the effectiveness of the significance determination process (SDP), (3) the usefulness of current performance indicators (PIs) for enhancing agency planning and response, and (4) the effectiveness of the assessment program in prescribing appropriate regulatory oversight for those plants with performance deficiencies.

The ROP self-assessment process, and more specifically the program area reviews described below and included in Enclosure 1, "Reactor Oversight Process Program Area Evaluations," fulfills the intent of the review described in Appendix C to the Strategic Plan.

The staff has issued an annual ROP self-assessment Commission paper each year since ROP inception, except for CY 2014, when the NRC suspended the self-assessment program to focus on program improvements, as approved by the Commission in the staff requirements memorandum (SRM) to COMSECY-14-0030, "Staff Requirements—COMSECY-14-0030—Proposed Suspension of the Reactor Oversight Process Self-Assessment for Calendar Year 2014," dated September 19, 2014 (ADAMS Accession No. ML14262A078). NRC senior

management has briefed the Commission annually on the self-assessment and other ROP-related results following the Agency Action Review Meeting (AARM).

The ROP self-assessment program applies to all seven cornerstones of the ROP and to all processes and procedures that are used to implement the ROP. The self-assessment includes the four specific program goals of being objective, risk-informed, understandable, and predictable, as well as the cross-cutting strategies of regulatory effectiveness and openness, as stipulated in the NRC's Strategic Plan. The goals and objectives are also consistent with the NRC's Principles of Good Regulation, dated May 15, 2014 (ADAMS Accession No. ML14135A076), to be independent, open, efficient, clear, and reliable.

DISCUSSION:

The staff performed the CY 2017 ROP self-assessment in accordance with IMC 0307 and its appendices. The staff conducted many activities and obtained data from many sources to ensure that it performed a comprehensive and robust self-assessment for CY 2017. Data sources included the objective ROP performance metrics and insights and lessons learned from internal and external stakeholder feedback.

The self-assessment approach consists of three distinct elements designed to: (1) measure the effectiveness of, and adherence to, the current ROP; (2) monitor ROP revisions and assess effectiveness of recent program changes; and (3) perform focused assessments and peer reviews of regional offices. Each of the three elements is discussed in more detail below.

Element 1: Measure the Effectiveness of, and Adherence to, the Current ROP

ROP Performance Metrics

As governed by Element 1 of the self-assessment process, the staff measured the effectiveness of, and adherence to, the current program using objective metrics based on readily-available data. The staff conducted the performance metrics evaluation in accordance with IMC 0307, Appendix A, "Reactor Oversight Process Self-Assessment Metrics," dated August 25, 2017 (ADAMS Accession No. ML17186A115). The metrics are aligned with the NRC Principles of Good Regulation and employ a graded approach to measure performance: (1) a metric is considered Green if it meets or exceeds the specified criterion that represents expected performance and does not warrant further evaluation; (2) a metric is considered Yellow if it falls within the specified range that warrants further evaluation and potential staff action to correct before the acceptance criterion has been exceeded; and (3) a metric is considered Red if it meets the criterion that represents unexpected performance and necessitates further evaluation and likely staff action to address the cause(s) for the failed metric.

The staff found that the ROP met 22 out of the 26 performance metrics based on the criteria defined in Appendix A to IMC 0307. All but four of the metrics were evaluated as Green. One metric, associated with Completion of Final Significance Determinations (E-5), was found to be Yellow and fell within the specified range that warrants further evaluation and potential staff action to correct. Three metrics were evaluated as Red, which indicates unexpected performance, requiring further evaluation and staff action to address the cause(s) of the failed metrics. The following summarizes the CY 2017 Red metrics:

- Completion of Performance Deficiency Determinations (E-4): 73% of the performance deficiency determinations were completed within the 120-day timeframe (Green metric is

greater than 90%). This was the first year data was collected for this metric.
- Responsiveness to ROP Feedback Forms (E-6): 46 percent of CY 2017 feedback forms were dispositioned within 12 months (Green metric is greater than 90%). Two hundred twenty nine feedback forms remain in the backlog. This was the first year data was collected for this metric.
- Performance of Lessons Learned Evaluations (R-1): Although efforts started on a ROP lessons learned tracker in CY 2017, it was not complete until the first quarter of CY 2018. Because development of this tracker is a component of meeting metric R-1, the staff did not meet the metric in CY 2017.

Red metrics represent unexpected performance and necessitate further evaluation, and they identify potential areas of programmatic weakness. These metrics (two of which are new) are aimed at making the program timelier. The new metrics represent revised expectations intended to improve the ROP. The staff has identified and will execute action plans for each of these Red metrics throughout CY 2018.

Enclosure 1 briefly discusses the performance metric evaluations for each of the program areas. The annual ROP performance metric report provides data and staff analysis for each ROP metric (ADAMS Package Accession No. ML18039A288).

ROP Program Area Evaluations

The staff completed the ROP program area evaluations in accordance with the second aspect of Element 1 of the self-assessment process. Based on objective metrics and other relevant feedback, the staff evaluated the effectiveness of each of the four major program areas of the ROP: the PI program; the inspection program; the SDP; and the assessment program. The program area evaluations also summarize changes to the program, current and future focus areas, and recommendations for improvement. These program area evaluations align directly with, and fulfill the intent and scope of, the planned program reviews for the ROP, as stipulated in Appendix C to the FY 2014-2018 Strategic Plan (NUREG-1614, Vol. 6).

The PI program continued to provide insights into plant safety and security in CY 2017. The staff and industry continue to improve the PI program guidance through ROP Working Group meetings and feedback from stakeholders.

NRC inspectors independently verified that plants were operated safely and securely. Except for those annotated in the annual ROP performance metric report, all inspection program metrics met or exceeded performance expectations for CY 2017, including the completion of the baseline inspection program and multiple metrics related to inspector objectivity, qualifications, and site staffing. Throughout the year, the staff made changes to various ROP inspection procedures (IPs) based on feedback.

The SDP continued to be an effective tool for determining the safety and security significance of inspection findings, although efforts are underway to further streamline the process and improve the timeliness of dispositioning inspection findings. Additionally, the staff has continued efforts to improve the use of integrated risk-informed decision making in the SDP. In response to the SRM to SECY-13-0137, “Staff Requirements—SECY-13-0137—Recommendations for Risk-Informing the Reactor Oversight Process for New Reactors,” dated June 30, 2014 (ADAMS Accession No. ML14181B398), the staff evaluated the need to provide additional clarity on the use of qualitative factors in the SDP for operating reactors to provide more transparency and predictability to the process. Enclosure 2 provides the results of this evaluation and a summary

of planned revisions to IMC 0609, “Significance Determination Process,” Appendix M, “Significance Determination Process Using Qualitative Criteria,” dated April 12, 2012 (ADAMS Accession No. ML101550365). The planned revisions to IMC 0609, Appendix M, are designed to improve efficiency and consistency in using the procedure, while not altering the circumstances under which it is used. The staff will use the criteria in the recently-revised Management Directive 8.13, “Reactor Oversight Process,” dated January 16, 2018 (ADAMS Accession No. ML17347B670), to determine whether Commission notification or approval is needed prior to its issuance.

The assessment program continued to ensure that the NRC and licensees prescribed appropriate regulatory oversight to address performance issues commensurate with their significance. The staff did not make major revisions to the assessment program during CY 2017. The program has undergone several significant changes during the past 3 years, and the staff is allowing sufficient time to pass before assessing the impact and effectiveness of those changes before further revising the program as detailed in Enclosure 1.

Element 2: Monitor ROP Revisions and Assess Effectiveness of Recent Program Changes

Monitor ROP Revisions

As governed by Element 2 of the self-assessment process, the staff monitored the status of longer-term program changes resulting from more complex ROP feedback, including enhancements and recommendations from the 2016 Regional Peer Review and various lessons-learned reports. Additionally, the staff created a database to track the status of these longer-term program enhancements and recommendations. These more comprehensive efforts often involve multiple internal and external stakeholders to evaluate and resolve, and may require Commission approval to revise policy and implement the changes, as appropriate. The ROP feedback form process and supplemental database ensure that ROP recommendations are gathered, assessed, and tracked to completion.

Assess Effectiveness of Recent Program Changes

The second aspect of Element 2 is to assess recently implemented ROP changes to evaluate their effectiveness to ensure that the intended results have been realized and to evaluate any unintended consequences. The staff had planned on conducting an effectiveness review of Fort Calhoun lessons learned in CY 2017. However, the staff determined that first a major revision to IMC 0350, “Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Conditions,” dated December 15, 2006 (ADAMS Accession No. ML063400076), was required in order to address many of the recommendations resulting from the Fort Calhoun lessons learned. The revised IMC 0350 was issued on March 1, 2018 (ADAMS Accession No. ML17116A273). The staff concluded that because this revision was issued recently and because no other plants had entered the IMC 0350 process since Fort Calhoun, it would be premature to conduct an effectiveness review. Instead, the staff intends to conduct an effectiveness review of Fort Calhoun lessons learned at a future date. For CY 2018, the planned effectiveness review topics are the Inspection Finding Resolution Management pilot; closure of inspections conducted using IP 95001, “Supplemental Inspection Response to Action Matrix Column 2 Inputs,” dated August 24, 2016 (ADAMS Accession No. ML15223B348); and effectiveness of the safety culture common language initiative.
The staff will continue to evaluate the cumulative effects of recently implemented changes to the ROP and provide related insights in the ROP self-assessments for future years. The staff will

continue to document the results of the effectiveness reviews in the annual self-assessment and share them broadly across offices and regions. In addition, staff will continue to brief senior NRC management on these efforts during the AARM and the Commission during the subsequent Commission meeting.

Element 3: Perform Focused Assessments and Peer Reviews of Regional Offices

Perform Focused Assessments of Specific Program Areas

Under Element 3 of the self-assessment process, the staff selects one or more topics for a focused assessment that delves more deeply into specific aspects of the ROP. The staff selected the engineering inspection program as the topic for the CY 2017 focused assessment.

The staff developed a charter (ADAMS Accession No. ML17172A620) and formed a team with representatives from the regions and NRC headquarters. The staff performed a holistic review of all engineering inspections during CY 2017 to review (1) areas of potential overlap between the various engineering IPs; (2) gaps in the IPs; and (3) inspection structure, to include team composition and expertise, team size, schedule and duration, and inspection frequency. The team also reviewed the program governance and regional operating procedures.

As documented on the NRC's web site, https://www.nrc.gov/reactors/operating/oversight/rop-design-insp-review.html, the review team found the engineering inspection program described in the revised design engineering IPs, IP 71111.21M, "Design Bases Assurance Inspection (Team)," and IP 71111.21N, "Design Bases Assurance Inspection (Programs)," both dated December 8, 2016, to be robust. However, as documented in Enclosure 1, the staff noted that the engineering inspection program could be improved to make it more effective and efficient.

The staff will brief NRC senior management on the results, conclusions, and planned actions from the CY 2017 focused assessment of engineering inspections during the 2018 AARM. The results of that evaluation will also be discussed at the subsequent Commission meeting and the staff plans to provide the Commission with recommendations for improving the program in CY 2018.

Inspection Procedure Assessments and Regional Peer Reviews

At the 2017 AARM and in the associated SRM, the Commission authorized a periodicity change for the baseline IP assessments and regional peer reviews to alternate biennially with the focused review(s). In CY 2017, the staff did not conduct a regional peer review or baseline IP assessment. This allowed the staff time to evaluate strengths, areas for improvement, and best practices identified in the CY 2016 Region II peer review (ADAMS Accession No. ML17047A602 (non-public)). The results of these evaluations were documented by Region I (ADAMS Accession No. ML17156A773 (non-public)), Region III (ADAMS Accession No. ML17144A219 (non-public)), and Region IV (ADAMS Accession No. ML17293A502 (non-public)).

The next peer review will occur in Region III during CY 2018. The staff intends to fully leverage complementary ROP activities to make the regional peer review process more efficient, as directed by the Commission in "Staff Requirements Memorandum – Briefing on Results of the Agency Action Review Meeting (AARM), 9:00 a.m., Thursday, June 15, 2017," dated June 27, 2017 (ADAMS Accession No. ML17178A453).

Other Related Activities

ROP Communications

The staff continued to focus on making the ROP more open and transparent through effective communications and implementing improvements to existing communication tools. The staff used a variety of communication methods to ensure that stakeholders had access to ROP information and ample opportunity to provide feedback. For example, the staff continued to conduct monthly public meetings with the industry's ROP Working Group, in addition to holding topic-specific meetings and telephone conferences throughout the year. The staff also highlighted its activities at ROP poster sessions at the 2017 and 2018 Regulatory Information Conferences, and at a technical session on the engineering inspection program during the 2018 conference. The staff continued to implement additional changes to improve the effectiveness of NRC messages through more extensive use of plain language and a focus on the desired effect of the communication based on the intended audience. These efforts include the streamlining of inspection reports to make them more user-friendly and more understandable to the broadest possible audience.

With respect to internal stakeholder communication, the staff continued to use the ROP feedback form process, bi-weekly division director calls, numerous counterpart meetings, and the inspector newsletter to gather feedback from, and disseminate useful information to, internal stakeholders. In addition, the staff maintained a "Contact Us" form to solicit feedback from inspectors and other staff members on topics such as administrative issues, operating experience, resident support, regional best practices, and information technology. The staff also maintained and updated the public ROP Web pages to ensure that they communicate accurate and timely information to all stakeholders. In addition, the staff has made use of posts to Facebook and Twitter in order to inform the public of significant changes to the ROP.

Construction ROP and Transition to New Reactor Oversight

Similar to the ROP for operating reactors, the staff implements the Construction Reactor Oversight Process (cROP) for the oversight of new reactors that are under construction. The results of the cROP self-assessment are discussed in a separate Commission paper. Additionally, the NRC established a transition working group in 2013 to develop an integrated plan that identifies all regulatory functions necessary to support the transition of new reactors from construction to operation. The working group summarized its results in "Assessment of the Staff's Readiness to Transition Regulatory Oversight and Licensing as New Reactors Proceed from Construction to Operation," dated September 9, 2014 (ADAMS Package Accession No. ML14031A387).

The report includes 21 readiness issues with associated options and recommendations. The staff tracks the status of these readiness issues and briefs NRC senior management on a regular basis. Specific readiness issues include the four primary ROP program areas: PIs, inspection, SDP, and assessment. Although most of the readiness issues do not need to be in place until CY 2020 to support new reactor operations, the staff has made significant progress in addressing some of them. The staff recently issued the "Implementation Plan to Ensure NRC Staff Readiness for AP1000 Operations," dated November 16, 2017 (ADAMS Package Accession No. ML17215A436). This implementation plan clarifies new reactor operational regulatory oversight and licensing responsibilities through the transition from construction to operation. It will be revised as new plans are developed and significant decisions are made while addressing the readiness issues identified in the report.

ROP for New Reactors

In the SRM to SECY-13-0137, the Commission approved the staff's recommendation to develop appropriate PIs and thresholds for new reactors, specifically those PIs in the initiating events and mitigating systems cornerstones, or to develop additional inspection guidance to address any identified shortfalls to ensure that all cornerstone objectives are adequately met. Consistent with this direction, the staff held discussions with internal and external stakeholders through the ROP Working Group to attempt to either develop new PIs within the mitigating systems cornerstone or modify the existing Mitigating Systems Performance Index to be able to monitor new reactor designs. As discussed in more detail in Enclosure 1, the staff plans to recommend that the Mitigating Systems Performance Index indicators be eliminated for new reactors. The staff is drafting a notation vote SECY paper describing recommended changes to the ROP for new reactors and plans to deliver it to the Commission in CY 2018.

Resident Inspector Recruitment and Retention

In July 2017, the Office of the Executive Director for Operations established a working group to evaluate options to improve resident inspector recruitment and retention, and has taken the initiative to explore challenges potentially impacting current and future recruitment and retention of resident inspectors. The staff evaluated the following areas of concern: disruption of partner's career plans, change of station benefits, end-of-tour reassignments, pay issues with promotions, the 3-step pay incentive, the saved-pay feature, career progression and promotional opportunities, and work/life balance. The working group has completed its evaluation and provided recommendation to the Deputy Executive Director for Reactor and Preparedness Programs in a memo dated March 29, 2018 (ADAMS Accession No. ML18079A118 (non-public)). The senior leadership team is evaluating the recommendations.

CONCLUSIONS:

The self-assessment results for CY 2017 indicate that the ROP provided effective oversight of operating reactors by meeting the program goals, achieving its intended outcomes, and identifying areas for improvement. The ROP ensured openness and effectiveness in supporting the agency's mission and its strategic goals of safety and security, and the staff completed the planned program reviews in accordance with Appendix C to the Strategic Plan. The program was successful in being objective, risk-informed, understandable, and predictable. The staff is evaluating and implementing several program improvements based on lessons learned and feedback from stakeholders and independent assessments, consistent with the continuous improvement focus of the ROP.

COORDINATION:

The Office of the General Counsel has reviewed this Commission paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this Commission paper and has no objections.

/RA/

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Enclosures:
1. Reactor Oversight Process Program Area Evaluations
2. Evaluation of the Clarity of Qualitative Factors in the Significance Determination Process

SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR CALENDAR YEAR 2017
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