POLICY ISSUE
(Information)

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FOR: The Commissioners

FROM: Raymond V. Furstenau
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SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR CALENDAR YEAR 2023

PURPOSE:

The purpose of this paper is to present the results of the U.S. Nuclear Regulatory Commission (NRC) staff's annual self-assessment of the Reactor Oversight Process (ROP) and the Construction ROP (cROP) for calendar year (CY) 2023. The staff conducted the CY 2023 self-assessment of the ROP in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," dated May 3, 2022 (Agencywide Documents Access and Management System Accession No. ML21341B399), and its appendices. The staff conducted the CY 2023 self-assessment of the cROP in accordance with IMC 2522, "Construction Reactor Oversight Process Self-Assessment Program," dated July 28, 2014, and IMC 2522, Appendix A, "Construction Reactor Oversight Process Self-Assessment Metrics," dated October 4, 2017. This paper does not address any new commitments or resource implications.

SUMMARY:

The results of the CY 2023 ROP self-assessment show that the ROP remained effective in achieving the goals of being objective, risk-informed, understandable, and predictable, as well as in supporting the agency's strategic goals. The ROP self-assessment for CY 2023 consisted of a review of ROP performance metrics and data trending, ROP program area evaluations, an ROP implementation audit, effectiveness reviews, the ROP lessons-learned tracker, and baseline inspection program routine monitoring. The ROP self-assessment program actively seeks feedback from all stakeholders, both internal and external, with the goal of continuously improving the ROP. This paper also discusses related ongoing ROP and cROP activities.

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BACKGROUND:

The ROP is the NRC's program to inspect, monitor, and assess the safety and security performance of operating commercial nuclear power plants and to respond to any declines in performance. The ROP self-assessment program is designed to evaluate ROP effectiveness in reaching the goals of being objective, risk-informed, understandable, and predictable, as well as in supporting the agency's strategic goals as delineated in NUREG-1614, Volume 8, "Strategic Plan: Fiscal Years 2022–2026," issued in April 2022 (ML22067A170), to ensure the safe and secure use of radioactive materials, to continue to foster a healthy organization, and to inspire stakeholder confidence in the NRC. The ROP is a risk-informed oversight program and, based on insights gained from ROP implementation and a self-assessment process, the staff has made various improvements over time to even further risk-inform the oversight program.

The ROP self-assessment program provides timely and objective information to enable program planning and to develop recommended improvements to the ROP. The ROP self-assessment program includes an annual CY assessment. NUREG-2251, Volume 1, "Capacity Assessment for Statistics, Research, Evaluation, and Other Analysis: Fiscal Year 2022," issued in April 2022 (ML22066B054), identifies the annual self-assessment of the ROP as an evidence-building activity for the agency.

The staff conducted the CY 2023 ROP self-assessment using IMC 0307 and its Appendices A, B, C, and D (ML23125A179, ML22117A010, ML23024A117, and ML19045A287, respectively). The ROP self-assessment approach consists of three distinct elements as described in IMC 0307. Element 1 measures regional and headquarters program effectiveness and uniformity in implementing the ROP; Element 2 assesses the effectiveness of recent ROP changes and evaluates the NRC's response to significant licensee events or declining licensee performance; and Element 3 performs focused assessments of specific ROP program areas, including the baseline inspection program.

DISCUSSION:

The results of the CY 2023 self-assessment show that the ROP remained effective in achieving its program goals. The discussion below, categorized according to ROP self-assessment program element, details the CY 2023 ROP self-assessment results. A summary of related ongoing ROP activities follows the ROP self-assessment results.

Element 1: Measure Regional and Headquarters Program Effectiveness and Uniformity in Implementing the ROP

ROP Performance Metrics

The staff measured the effectiveness of, and adherence to, the current ROP program using objective metrics as described in IMC 0307, Appendix A, "Reactor Oversight Process Self-Assessment Metrics and Data Trending," dated June 14, 2023. The ROP metrics are grouped according to the NRC's Principles of Good Regulation (independence, openness, efficiency, clarity, and reliability).

IMC 0307 uses a graded approach for measuring ROP performance, with each metric in Appendix A having three designated possible outcomes: green, yellow, or red. If a metric is green, it meets or exceeds expected performance; if yellow, it warrants further evaluation and potential staff action to correct; and if red, it represents unexpected performance and merits further evaluation and likely staff action to address the cause.

The ROP performance metric report for CY 2023, dated March 20, 2024 (package ML24074A372), provides detailed data and staff analysis for each ROP metric. The staff found that 15 of 17 ROP metrics were green and the remaining two were yellow. The ROP performance metrics that were evaluated as yellow are discussed individually below.

ROP metric I-5, "Analysis of Resident Inspector Site Staffing," measures whether resident inspector (RI) staffing levels are maintained to provide continuity of regulatory oversight at each reactor site. For CY 2023, the overall RI staffing percentage was 92 percent and 16 of 55 reactor sites individually were below the 90 percent metric threshold. Since the staffing percentage for the agency is less than 95 percent but greater than or equal to 90 percent, this metric is yellow, and the metric requires a review of the individual sites below 90 percent. The drivers of this yellow metric stem from a combination of factors, including staffing challenges with placing permanent RIs and not having enough qualified inspectors to provide backfill between permanent RIs. Enclosure 2 contains further information on RI staffing challenges and staff actions to address them.

ROP metric E-3, "SDP Completion Timeliness for Potentially Greater-than-Green Findings," measures whether potentially greater-than-green findings have a final significance determination issued within 255 days of identification. This metric applies to all findings in which the staff transmits to the licensee a preliminary determination that a finding is potentially greater-than-green, regardless of the final determination of that finding and its significance. In CY 2023, the staff issued 17 final significance determinations subject to this metric, 3 of which exceeded the timeliness goal. Since three findings were not finalized within 255 days, this metric is yellow[1]. Issuing findings in a timely manner is a fundamental attribute of the significance determination process (SDP). The staff previously evaluated metric E-3 to be yellow for CYs 2020 through 2022.

In CY 2022, the staff performed a detailed review of SDP timeliness and recommended additional actions (see enclosure 1 for details) to improve performance. Over the past 4 calendar years, due to increased focus in this area and implemented process enhancements, SDP timeliness has steadily improved from 33 percent (1 of 3) in CY 2021 to 82 percent in CY 2023 (14 of 17).

ROP Data Trending Focus Areas

In accordance with IMC 0307 and Appendix A to IMC 0307, the staff reviews the ROP Self-Assessment Data Trending Dashboard regularly. The underlying data in this dashboard are automatically updated daily. The staff reviews data from multiple sources, including unresolved items, licensee event reports, very low safety significance issue resolution items, ROP feedback forms, supplemental inspections and hours charged, inspection hours charged by site, baseline inspection hours charged, and baseline inspection samples completed. The staff also maintains a separate operating experience findings dashboard, which is likewise frequently reviewed.

The staff did not identify any significant trends in reviewing ROP data for CY 2023. The staff provides more information on the overarching efforts related to ROP data trending, visualization, and infrastructure in the "Modernizing ROP Inspection and Assessment through Data Improvements" section of this paper.

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[1] IMC-0307, Appendix A: E-3 SDP Completion Timeliness for Potentially Greater-than-Green Findings: Green – ≤ 1 finding not finalized within 255 days, Yellow – 2-3 findings not finalized within 255 days, Red – ≥ 4 findings not finalized within 255 days

ROP Program Area Evaluations

The staff evaluated the four ROP program areas in accordance with IMC 0307: the performance indicator program, the inspection program, the SDP, and the assessment program. The staff used ROP performance metrics, ROP data trending, internal and external stakeholder feedback, and other relevant information to evaluate the effectiveness of each program area. The discussion of each program area evaluation also summarizes any significant changes during CY 2023, any current or future focus areas, and any recommendations for improvement. The paragraphs below summarize the CY 2023 ROP program area evaluations, with the full program area evaluations provided in enclosure 1.

The performance indicator program continued to provide insights into plant safety and security in CY 2023. For CY 2023, all licensee-reported PIs were green. NRC inspectors used Inspection Procedure (IP) 71151, "Performance Indicator Verification," dated April 6, 2020 (ML20030A017), to periodically review the performance indicator data to independently verify accuracy and completeness.

The inspection program in CY 2023 continued to be effective in independently verifying that commercial nuclear plants were operated safely and securely. Enclosure 1 to this paper provides a detailed evaluation of the inspection program, which includes recommendations for improvement, current and future focus areas, and significant changes to the inspection program.

The SDP continued to be an effective, risk-informed process for determining the safety and security significance of inspection findings identified in the ROP. Nationwide, for CY 2023 inspections, the NRC issued 443 inspection findings that were determined to be of very low safety or security significance (i.e., green). The NRC also finalized 14 greater-than-green findings in CY 2023. This is an increase from CY 2022 for both Green and GTG findings but well below historic highs.

The staff's implementation of the assessment program continued to ensure that both the NRC staff and licensees acted appropriately to address performance issues in CY 2023, commensurate with their safety or security significance. The NRC did not issue any deviations to the ROP Action Matrix during CY 2023.

ROP Implementation Audit

In September 2023, the staff conducted an audit of Region II's implementation of the ROP. The audit team reviewed the four ROP program areas in accordance with IMC 0307, Appendix C, "Reactor Oversight Process (ROP) Self-Assessment ROP Implementation Audit," dated March 24, 2023. The team also evaluated two focus areas by performing an in-depth review of (1) the maintenance of qualification records for initial and subsequent qualifications as described in IMC 1245, "Qualification Program for the Office of Nuclear Reactor Regulation Programs," dated May 15, 2023 (ML23129A847), and (2) inspection sample selections. The audit team also assessed whether any improvements to ROP governance documents were necessary regarding how regional offices implement ROP-related functions.

The audit concluded that Region II successfully implemented the ROP in accordance with the associated program documents (ML23290A206, nonpublic). The team identified five strengths and best practices as well as five recommendations for improvement to be considered by Region II and shared these findings with the other regional offices to enhance agency-wide consistency. The audit team further identified 11 program recommendations for consideration by the Office of Nuclear Reactor Regulation. All program recommendations from this audit have

been added to the ROP lessons-learned tracking tool, which is discussed further under Element 2 in the section "ROP Lessons Learned Tracker," in order to track these audit recommendations to completion.

Each of the four regions, including Region II, reviewed the audit results and issued a response memorandum (ML23340A123, ML23333A866, ML23331A994, ML23326A098, respectively, all nonpublic). In CY 2024, the staff plans to audit Region III's implementation of the ROP.

Element 2: Assess Effectiveness of Recent ROP Changes and Evaluate the NRC's Response to Significant Licensee Events or Declining Licensee Performance

Effectiveness Review of the Incorporation of Safety Culture Oversight into the ROP

In CY 2022, the staff completed a review of the safety culture assessment program incorporated into the ROP to determine whether NRC's current program achieves the objectives established by the Commission in Staff Requirements Memorandum (SRM)-SECY-04-0111, "Staff Requirements—SECY-04-0111—Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscious Work Environment and Safety Culture," dated August 30, 2004 (ML042430661), and in subsequent communications with the staff.

The effectiveness review concluded that the agency's safety culture assessment program is most effective for plants that are in columns 3 and 4 of the Action Matrix and developed recommendations for enhancing the assessment of safety culture for plants in columns 1 and 2. The effectiveness review report dated March 20, 2023 (ML22340A452), discusses this conclusion and the recommendations in detail. The staff documented the disposition of the recommendations in a September 7, 2023, memorandum (ML23208A187). The staff is developing a notation vote SECY paper to seek Commission approval to implement selected recommendations.

Evaluate NRC Response to Significant Licensee Events and Declining Licensee Performance

During CY 2023, the NRC did not charter any incident investigation teams in response to operating power reactor events; the agency did not conduct any supplemental inspections using IP 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," dated June 7, 2022 (ML16050A095); and no licensees were under NRC oversight in accordance with IMC 0350, "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns," dated October 16, 2023 (ML23271A156). Thus, no specific assessments in this program area were conducted.

ROP Lessons-Learned Tracker

As required by IMC 0307, the staff continued monitoring the status of longer-term ROP programmatic changes resulting from more complex ROP feedback, including recommendations from independent evaluations, internal and external audit reports, supplemental and reactive inspection lessons-learned reports, and other significant inputs. The staff tracks the status of these longer-term program recommendations utilizing an ROP lessons-learned tracking tool ("tracker") with a focus on timely issue evaluation and disposition. The staff resolved 20 items from the ROP lessons-learned tracker in CY 2023, and as of December 31, 2023, the tracker contains 29 open items, which includes 10 open items from the ROP implementation audit of Region II, previously discussed under Element 1. This ROP lessons-learned tracker, in conjunction with the ROP feedback form process governed by

IMC 0801, "Inspection Program Feedback Process," dated March 29, 2023 (ML22314A269), ensures that recommendations for ROP improvement are gathered, assessed, and tracked to completion.

Element 3: Perform Focused Assessments of Specific ROP Program Areas, Including the Baseline Inspection Program

Focused Assessment

In accordance with IMC 0307, the staff conducts a focused assessment on a triennial basis. As discussed in SECY-22-0029, "Reactor Oversight Process Self-Assessment for Calendar Year 2021," dated April 8, 2022 (package ML22033A288), the baseline inspection program comprehensive review was the focused assessment performed for CY 2021 because the baseline inspection program review and the focused assessment periodicities aligned. The staff plans to conduct the next focused assessment in CY 2024.

Baseline Inspection Program Comprehensive Review and Routine Monitoring

In accordance with IMC 0307, the staff conducts a baseline inspection program comprehensive review every fifth year. The staff performed the most recent baseline inspection program comprehensive review in CY 2021. The staff plans to conduct the next baseline inspection program comprehensive review in CY 2026.

In August 2022, the staff revised IMC 0307, Appendix B, "Reactor Oversight Process Self-Assessment Baseline Inspection Program Monitoring and Comprehensive Review" (ML22117A010), to formally incorporate changes from the memorandum, "Staff Expectations for Inspection Procedure and Inspection Manual Leads of Reactor Oversight Process Governance Documents," dated August 8, 2019 (ML19219A225, nonpublic). In May 2023, the staff completed a successful trial period and documented the results of the baseline inspection program monitoring review in the memorandum "Results of the Calendar Year 2022 Baseline Inspection Procedure (IP) Assessment Meeting (Baseline IP Monitoring Report)" (package ML23138A363, nonpublic). The review identified no significant trends or issues. In mid-2023, the staff conducted training and expanded the applicability of revised IMC 0307 to other divisions and offices with ROP baseline IP oversight responsibilities. The CY 2023 baseline IP monitoring will be completed in the first quarter of CY 2024, and the results will be documented in the second quarter of 2024 in accordance with IMC 0307, Appendix B.

In recent years, some licensees have centralized certain functions, such as engineering and cybersecurity staff, at the corporate level. The staff is considering whether the inspection program should be revised to inspect certain items in a centralized manner, equivalent to the inspection effort that would have been conducted at each individual site. Office of Nuclear Reactor Regulation staff held a public meeting on December 15, 2023 (ML24004A161), to hear stakeholder views on this topic. The staff continues its review and plans to share the NRC staff's initial evaluation results in a future public meeting and allow industry to provide further feedback.

Other Related Activities

COVID-19 Lessons-Learned for the ROP

The Coronavirus Disease 2019 (COVID-19) public health emergency ended on May 11, 2023. The NRC returned to full implementation of the inspection and oversight program according to

governing documents by canceling the memorandum that changed aspects of the inspection program for the reactor safety program during the public health emergency (ML23082A106).

A COVID-19 Lessons-Learned Working Group was formed in December 2021 to identify lessons learned, best practices, and challenges during the public health emergency. The group sought input and feedback from internal, external, and international sources. On July 6, 2023, the Division of Reactor Oversight in the Office of Nuclear Reactor Regulation chartered (ML23086C054) a working group to implement key recommendations from the COVID-19 Lessons-Learned Working Group report, dated July 28, 2022 (ML22172A159). This implementation working group proposed modifications to the operating reactor inspection program IMCs that will properly leverage the use of information technology to accomplish inspection goals, while maintaining effectiveness and improving efficiency. Modifications to the applicable IMCs have either been issued or are being finalized for issuance.

Staff Recommendations to the Commission to Revise the ROP

In CY 2022, the staff provided the Commission with four notation vote papers related to the ROP: SECY-22-0053, "Recommendation for Modifying the Reactor Oversight Process Engineering Inspections," dated June 7, 2022 (package ML22080A253); SECY-22-0086, "Recommendations for Revising the Reactor Oversight Process Assessment Program," dated September 16, 2022 (ML22188A221); SECY-22-0087, "Recommendation for Problem Identification and Resolution Team Inspection Frequency," dated September 20, 2022 (ML22145A448); and SECY-22-0089, "Recommendation for Enhancing the Emergency Preparedness Significance Determination Process for the Reactor Oversight Process," dated September 22, 2022 (ML22189A201).

In SRM-SECY-22-0053, dated July 21, 2022 (ML22202A507), the Commission approved the staff's recommendation to transition to a quadrennial inspection cycle comprising one comprehensive engineering team inspection and three different focused engineering inspections over the 4-year inspection cycle. The staff subsequently issued IP 71111.21M, "Comprehensive Engineering Team Inspection" (ML19084A030), which incorporates the previous IP 71111.21M, "Design Basis Assurance (Team)" (ML16238A320), IP 71111.17T, "Evaluations of Changes, Tests, and Experiments" (ML16340A998), and the triennial portions of IP 71111.07, "Heat Exchanger/Sink Performance" (ML22024A114). Additionally, the staff developed two new focused engineering inspection procedures, IP 71111.21N.03, "Commercial Grade Dedication" (ML22075A251), and IP 71111.21N.04, "Age-Related Degradation" (ML22210A107). The new quadrennial inspection cycle began on January 1, 2023.

The Commission approved the staff recommendations documented in SRM-SECY-22-0089, dated February 9, 2023 (ML23040A378); in SRM-SECY-22-0087, dated March 3, 2023 (ML23062A686); and in SRM-SECY-22-0086, dated March 10, 2023 (ML23069A093). The staff has made or will make necessary conforming changes to inspection, assessment, and SDP documents under the ROP, as discussed in enclosure 1. Further, the staff will continue to adhere to the requirements in Management Directive 8.13, "Reactor Oversight Process," dated January 16, 2018 (ML17347B670), regarding Commission approval or notification for any additional ROP changes.

Resident Inspector Recruitment and Retention

The staff continues to monitor resident inspector (RI) recruitment and retention along with RI demographics (see enclosure 2). This topic is also being tracked at the agency level as a Programmatic Senior Assessment Team item as part of enterprise risk management. The RI

standing committee (charter ML22206A273, nonpublic), with both regional and headquarters representation, continues to meet regularly to monitor RI program health and develop recommendations as necessary. In October 2023, the Deputy Executive Director for Reactors and Preparedness Programs hosted an RI "Trust Huddle," a meeting between NRC senior leaders and the RI staff to openly discuss issues of concern impacting the desirability of the RI program. Most RIs were able to attend, along with the Regional Administrators and other agency leaders. A list of action items from the huddle was developed, spanning from exploring ways to increase compensation to reducing administrative burdens.

Following a period of high turnover and a significant increase in requests for additional relocation incentive amounts in response to a lack of interest in posted RI positions, the standing committee briefed NRC leadership and recommended actions to immediately address program recruitment and retention challenges. Staff determined that enough supporting data existed to seek a group retention incentive. This group retention incentive was approved by the Executive Director for Operations in December 2023 (ML23277A085, nonpublic) and was implemented in February 2024. The staff is continuing to explore other actions to attract and retain RIs, such as expanding the end-of-tour telework availability outlined in a memorandum from the Director, Office of Nuclear Reactor Regulation to the Executive Director for Operations (ML18324A672, nonpublic). These actions are intended to return the I-5 metric to green.

In 2024, the NRC is celebrating the 50th anniversary of the RI program. A Regulatory Information Conference Panel Session was held at the 2024 Regulatory Information Conference to revisit the program's history and purpose and highlight its critical role in fulfilling the NRC's mission. Additional ongoing and planned events include social media activities and a celebration ceremony to further reinforce the importance of the RI program to the NRC's mission.

The staff will continue to monitor RI program health, take appropriate actions within the staff's authority, and engage with the Commission when necessary. Enclosure 2 contains additional discussion of the program's current state and RI demographics.

Construction Reactor Oversight Process

The cROP is the NRC's primary means of overseeing licensee construction activities to provide reasonable assurance that facilities have been constructed in accordance with the license and will operate safely. The cROP assesses licensee performance and objectively measures quality and safety. The Vogtle Project Office was the Office of Nuclear Reactor Regulation organization responsible for the cROP. The Vogtle Project Office staff was also responsible for the licensing, project management, and oversight of inspections, tests, analyses, and acceptance criteria (ITAAC) for the construction of Vogtle Electric Generating Plant, Unit 4. The Division of Construction Oversight in Region II implemented the cROP inspection program. Together, these organizations provided effective and efficient oversight of construction activities at Vogtle Unit 4.

On July 28, 2023, the NRC found, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) 52.103(g), that the acceptance criteria in the combined license for Vogtle Unit 4 were met and that operation of the facility was allowed in accordance with the terms and conditions of the license (package ML22348A165). The NRC staff issued the finding 7 calendar days following receipt of the "All ITAAC Complete" notification from Southern Nuclear Operating Company, less than the 17-day goal described in Office Instruction NRR-LIC-114, "Title 10 of the Code of Federal Regulations (10 CFR) Section 52.103(g) Finding and Communication Process," dated June 15, 2020 (package ML20055E096). Following the affirmative 10 CFR 52.103(g) finding, the NRC transitioned Vogtle Unit 4 to oversight under the ROP.

In CY 2023, the cROP was effective in meeting its goals consistent with the NRC's Principles of Good Regulation. As discussed in the "Construction Reactor Oversight Process Performance Metric Report for Calendar Year 2023," dated January 8, 2024 (ML24004A219), the staff found that the cROP successfully met the acceptance criteria for all applicable construction self-assessment program metrics for CY 2023. The NRC did not issue any deviations to the cROP Action Matrix during CY 2023.

The Region II Division of Construction Oversight staff effectively implemented the construction inspection program in CY 2023. At the time of the Vogtle Unit 4 10 CFR 52.103(g) finding in 2023, the Division of Construction Oversight had performed approximately 19,100 hours of direct inspection at Vogtle for Unit 4. For transparency, the staff continued to provide updates to the cROP resources expenditure report on the NRC's public website for Vogtle Unit 4. With completion of the cROP for Vogtle Unit 4, the staff no longer inspects ITAAC, as they are no longer applicable. The Division of Construction Oversight staff continues to inspect the operational programs and the quality assurance program for Vogtle Unit 4 under the ROP.

The staff evaluated domestic and international operational events and construction-related issues for applicability to the AP1000 design, the new reactor licensing process, and the construction inspection program. The staff effectively implemented the construction SDP, described in IMC 2519, "Construction Significance Determination Process," dated October 26, 2020 (ML20254A144). The staff did not make any significant changes to the construction assessment and enforcement programs in CY 2023.

The Vogtle Project Office and Division of Construction Oversight staffs continued to promote frequent communications with stakeholders through the Vogtle Readiness Group. Formed to better coordinate NRC activities associated with construction oversight at Vogtle, the staff formed the Vogtle Readiness Group based on lessons learned from the Watts Bar Nuclear Plant, Unit 2, construction project. In CY 2023, the Office of Nuclear Reactor Regulation and Division of Construction Oversight staff held 13 public meetings and continued to have a weekly public meeting placeholder available to discuss emerging issues.

In CY 2023, the staff continued to make progress on the construction lessons-learned initiative, which began in CY 2021. The staff leveraged its internal knowledge management resources to capture the staff's extensive experiences and internally share results of the construction lessons-learned effort. The staff published a publicly available report on its lessons-learned initiative, "10 CFR Part 52 Construction Lessons-Learned Report," dated January 16, 2024 (ML23325A202), and held a public meeting to discuss the report on February 14, 2024 (ML24044A029).

Overall, the Vogtle Project Office and Division of Construction Oversight successfully implemented the cROP to ensure that the licensee met the requirements of the regulations and the combined license. The staff completed the inspection, and ITAAC programs at Vogtle Unit 4 with the issuance of the 103(g) finding. With oversight of Vogtle Units 3 and 4 now under the operating reactor ROP, the staff does not anticipate cROP updates in future ROP self-assessment SECY papers.

Applying the Modified ROP for AP1000 Units at Vogtle

In SRM-SECY-18-0091, "Staff Requirements—SECY-18-0091—Recommendations for Modifying the Reactor Oversight Process for New Large Light Water Reactors with Passive Safety Systems such as the AP1000 (Generation III+ Reactor Designs)," dated February 24, 2020 (ML20055G004), the Commission directed that in the first three annual

self-assessment reports for the ROP after the initial Vogtle AP1000 unit is operating, the staff should include in the self-assessment report (1) a section reporting on any insights, trends, or lessons learned in applying the modified ROP at the Vogtle units, (2) an assessment of utilization of the "larger-than normal complement of inspectors" and the projected workforce plan to arrive at steady-state staffing levels, and (3) an assessment of the appropriate treatment of non-safety-related systems in the baseline inspection program for the AP1000. On August 3, 2022, for Vogtle Unit 3 (ML20191A383) and on July 28, 2023, for Vogtle Unit 4 (ML22348A165) the Commission made its finding under 10 CFR 52.103(g) that the acceptance criteria in the combined licenses were met and that operation of the units was allowed in accordance with the terms and conditions of the license.

The staff has not yet identified any significant insights, trends, or lessons learned during the limited time that the modified ROP has been applied to Vogtle Units 3 and 4. Regarding the use of the "larger than normal complement of inspectors," the staffing levels at Vogtle Units 3 and 4 have actually been less than anticipated due to attrition and the baseline inspection program being sufficient to gain reasonable assurance of safety without additional performance indicator inspections as previously anticipated. The current "larger than normal" complement of inspectors is four resident inspectors total at the Vogtle site, two at Units 1 and 2 and two at Units 3 and 4. The projected workforce plan to arrive at steady-state staffing levels somewhat depends on the licensee's plan to integrate Units 1 through 4. Currently, while security and portions of emergency preparedness at the new and legacy units are integrated, the licensee has communicated that it will not be further integrating operational programs of the new units with those of the legacy units; therefore, the staff currently plans to maintain the existing complement of inspectors until after the first refueling outage for Unit 4. If the licensee's plans to further integrate the new and legacy units change, the staff will re-evaluate the timing for transition to long-term steady-state staffing.

The staff has not yet identified any significant insights, trends, or lessons learned concerning the treatment of non-safety-related systems in the baseline inspection program for the AP1000. Inspectors are implementing a risk-informed process in inspection sampling, consistent with other sites.

Modernizing ROP Inspection and Assessment through Data Improvements

In CY 2023, the staff continued to enhance the capabilities of ROP data processes. The staff developed new and upgraded data visualization dashboards and incorporated more aspects of ROP data into centralized data systems. The staff also began a holistic review of ROP data, the first of its kind, to continue to support the agency's goal of enhancing the public usability and accessibility of ROP data.

As discussed in SECY-22-0029 and SECY-23-0032, "Reactor Oversight Process Self-Assessment for Calendar Year 2022," dated April 7, 2023 (ML23026A346), the staff developed an internal end-of-cycle dashboard. In CY 2023, the staff made several additional changes to the end-of-cycle dashboard to continue to enhance its capabilities. The updated dashboard was used for the CY 2022 end-of-cycle assessment review, with approximately 10 percent less staff time spent as compared to the previous year. Overall, the staff has reduced the level of effort needed to prepare for the end-of-cycle assessment by approximately 40 percent relative to the CY 2020 end-of-cycle assessment. This has allowed regional staff to use that time for inspection activities and other work important to the mission. The end-of-cycle dashboard also provides up-to-date data year-round to inspectors and management on site performance.

In CY 2023, the staff developed a new internal dashboard to complement the end-of-cycle dashboard. Specifically, this fleet-level dashboard allows users to compare site performance more easily within a given fleet. Similar to the end-of-cycle dashboard, the fleet-level dashboard takes several data sources and centralizes key performance and inspection information into a set of easy-to-understand visuals.

In CY 2023, the staff implemented a major enhancement to the Reactor Program System focused on supporting RI activities. The RI sample tracking tool in the Reactor Program System was upgraded to allow additional tracking and planning features typically performed outside of a centralized database. This enhancement allows assignment of specific samples to staff and setting of specific sample readiness states that greatly improve planning activities for the quarter, all within a centralized database system.

In August 2023, the staff chartered an ROP data strategy and implementation working group (ML23216A132). The working group was tasked with reviewing the current status of ROP data, focusing on the following four areas: (1) ROP data sources, storage, quality, and accessibility, (2) ROP data ownership/stewardship and responsibilities, (3) internally facing ROP data visualization and analytical tools, and (4) externally facing ROP data visualization and analytical tools. The working group has completed its evaluation and documented the ROP data evaluation results, along with best practices and specific strategic recommendations, in a report dated March 19, 2024 (ML24059A402).

Additionally, in response to the Chair's Tasking Memorandum, "Advancing Use of Artificial Intelligence at the U.S. Nuclear Regulatory Commission," dated October 30, 2023 (ML23303A143), NRC staff are considering how artificial intelligence (AI) can be used internally to improve the NRC's licensing and oversight processes.

Resident Inspector Demographics and Site Staffing

In CY 2023, the staff continued to monitor RI experience, RI turnover, and permanent site staffing in accordance with IMC 0307, Appendix D, "Resident Inspector Retention and Recruitment Program Monitoring and Assessment," dated January 9, 2024 (ML23318A200). The staff reports this analysis to the Commission on a triennial basis; enclosure 2 to this paper provides a detailed analysis of the CY 2020–2023 RI and senior RI demographics and site staffing.

Planned ROP Self-Assessment Activities in CY 2024

The staff has planned several ROP self-assessment and other related activities for CY 2024, and intends to discuss these activities in next year's annual ROP self-assessment paper:

- The planned assessment of the baseline security SDP, IMC 0609, Appendix E, Part I, dated November 8, 2022 (ML22178A222), is underway and led by staff in the Office of Nuclear Security and Incident Response. This assessment is part of the ROP program area evaluations under Element 1 of the ROP self-assessment program. To date, the staff has (1) sought feedback from internal stakeholders; (2) assembled a working group comprising NRC regional and headquarters security specialists, as well as representatives from the Technical Training Center, Office of Enforcement, and Office of Nuclear Reactor Regulation; (3) developed a charter to outline goals and key milestones for the working group to determine potential modifications, if any, to the baseline security SDP; and (4) conducted a public meeting in March 2024 to obtain external stakeholder feedback. If opportunities for improvement are identified, the working group will update

the Commission on the staff's activities. Any actions to modify the baseline security SDP will be completed in a later phase of the effort and will include appropriate Commission interaction, as directed in MD 8.13.

- The staff plans to perform an ROP implementation audit of Region III under Element 1 of the ROP self-assessment program. The objective of the audit is to appraise regional program performance in terms of an effective and standardized implementation of the ROP.

- The staff plans to perform a triennial, focused assessment of the SDP program area in accordance with IMC 0307. This focused assessment will include the working group assessing the baseline security SDP and a working group tasked with assessing the treatment of radiation monitor issues in the emergency preparedness SDP.

- The staff plans to continue to review any insights, trends, or lessons learned in applying the modified ROP for AP1000 units to Vogtle. The staff plans to continue this review in CY 2025 and include the results in the subsequent annual ROP self-assessment paper. The staff also plans to assess the steady-state NRC inspector staffing at the site.

CONCLUSION:

In CY 2023, the staff completed the ROP self-assessment in accordance with IMC 0307 and its appendices, which consists of ROP performance metrics and data trending, ROP program area evaluations, an ROP implementation audit, effectiveness reviews, the ROP lessons-learned tracker, and baseline inspection program routine monitoring. The results of the ROP self-assessment show that the ROP continues to provide effective oversight of operating reactors by meeting the program goals, achieving its intended outcomes of monitoring and assessing licensee performance and taking appropriate regulatory actions, and identifying areas of the ROP for improvement. The results of the CY 2023 cROP self-assessment also show that the cROP was effective in meeting its goals. The NRC implemented the ROP and cROP in CY 2023 in accordance with the NRC Principles of Good Regulation (independence, clarity, openness, reliability, and efficiency) while supporting the agency's mission and strategic goals.

COORDINATION:

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

Raymond V. Furstenau
Acting Executive Director of Operations

Enclosures:
1. CY 2023 ROP Program Area Evaluations
2. CY 2023 Resident Inspector Demographics (nonpublic)

SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR CALENDAR YEAR 2023 DATED: April 9, 2024

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DATE	1/26/2024	2/1/2024	2/27/2024	2/2/2024	2/16/2024
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NAME	MFerdas	SSmith	AMcCraw	AAgrawal	KBrock
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OFFICE	NSIR/DSO	NSIR	OGC	NRR/DRO	NRR
NAME	TInverso	MGavrilas	IMurphy	RFelts	AVeil (MKing for)
DATE	2/20/2024	2/28/2024	3/13/2024	3/14/2024	3/27/2024
OFFICE	EDO				
NAME	RFurstenau				
DATE	04/09/24				

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