

Calendar Year 2022 Reactor Oversight Process Program Area Evaluations

The U.S. Nuclear Regulatory Commission (NRC) staff completed calendar year (CY) 2022 Reactor Oversight Process (ROP) program area evaluations in accordance with the ROP self-assessment program as described in Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," dated May 3, 2022 (Agencywide Documents Access and Management System Accession No. ML21341B399). The staff evaluated the four ROP program areas: the performance indicator (PI) program, the inspection program, the significance determination process (SDP), and the assessment program and those program area evaluations are contained in this enclosure below.

In each program area evaluation, the staff evaluated the overall effectiveness of that program area, included any recommendations for improvement, included any current or future focus areas, and summarized any significant changes to that program area in CY 2022. In accordance with IMC 0307, each ROP program area lead used related ROP performance metrics, ROP data trending, internal and external stakeholder feedback, and other relevant information to perform their respective program area evaluation.

Performance Indicator Program

The staff has concluded through the annual evaluation of the PI program area that the PI program is effective. Recommendations for improvement for the PI program are also discussed below.

The PI program continued to provide insights into plant safety and security performance in CY 2022. The staff and industry continued to improve the PI program guidance through ROP public meetings and feedback from stakeholders. As noted in the annual ROP performance metric report, dated March 9, 2023 (package ML23066A204), due to the overall improvements in the PI data posting process, and the subsequent issues identified with the ROP metric related to the PI program, O-4, the staff did not evaluate this metric in CY 2022. In CY 2023, the staff plans to reconsider ROP metric O-4 in the context of the current PI data posting process and determine whether the staff should revise or eliminate this metric or its criteria in the next revision to IMC 0307, Appendix A, "Reactor Oversight Process Self-Assessment Metrics and Data Trending." The staff does not have any concerns about its current ability to post accurate and timely PI data for use by both internal and external stakeholders.

Emergency Preparedness Performance Indicator

In CY 2022, the staff developed a Commission paper, SECY-23-0010, "Recommendation for Approval to Retire the Reactor Oversight Process Performance Indicator for Licensee Alert and Notification System Availability and to Develop a Performance Indicator for Emergency Response Facility and Equipment Readiness Availability," dated January 30, 2023 (package ML23004A013). The staff engaged in numerous discussions with industry on phasing out the traditional emergency preparedness (EP) siren-based alert and notification system with the national implementation of the Integrated Public Alert & Warning System, which makes tracking siren maintenance less relevant. Licensees using siren-based or non-siren-based alert and notification systems will continue to have these systems inspected under the baseline inspection program using Inspection Procedure (IP) 71114, Attachment 02, "Alert and Notification System Evaluation," dated July 21, 2016 (ML15253A596). The inspection of alert and notification systems will consist of ensuring the licensees maintain their applicable responsibilities for alert and notification systems as approved by the Federal Emergency Management Agency in the

Enclosure

Alert and Notification System Design Report regardless of whether sirens are part of the primary alert and notification method or not.

Security Performance Indicator

In CY 2022, the staff continued to assess the physical security program for enhancements and efficiencies by evaluating security inspection procedures and inspection manual chapters as well as feedback received from the regions both during the security counterparts meeting and through inspections findings. The staff determined that ongoing changes to, and the continuous evaluation of, the physical security inspection program did not result in the need for PI changes during this reporting period. The staff will continue to review any enhancements to the physical security inspection program to determine whether new PIs may be warranted.

Inspection Program

The staff has concluded through the annual evaluation of the inspection program area that the inspection program is effective. Recommendations for improvement, current and future focus areas, and significant changes to the inspection program area are also discussed below.

Throughout CY 2022, NRC inspectors used the baseline inspection program to independently verify that commercial nuclear plants were operated safely and securely.

Baseline Inspection Program Completion

In CY 2022, the staff successfully completed the baseline inspection program. To accomplish this, the regions and the Office of Nuclear Security and Incident Response (NSIR) performed inspection activities primarily on site and, in some cases, completed inspections using a hybrid method in which some inspection activities were performed remotely. The Coronavirus Disease 2019 (COVID-19) public health emergency had a limited effect on the implementation of the baseline inspection program in CY 2022. Each region and NSIR documented in detail the implementation of the baseline inspection program for CY 2022 in several memoranda (ML23039A134 for Region I, ML23045A087 for Region II, ML23044A366 for Region III, ML23037A960 for Region IV, and package ML23031A294 for NSIR).

Combination of IP 711111.19 and IP 71111.22

On August 1, 2022, the staff issued IP 71111.24, "Testing and Maintenance of Equipment Important to Risk," effective January 1, 2023 (ML22115A187). This IP is a consolidation of two previous baseline procedures, IP 71111.19, "Post-Maintenance Testing," dated October 6, 2020, effective January 1, 2021 (ML19291A213), and IP 71111.22, "Surveillance Testing," dated March 29, 2021, effective July 1, 2021 (ML21033A557). This is the completion of a staff recommendation for enhancing the ROP, as discussed in SECY-19-0067, enclosure 2, "Inspection Area," dated June 28, 2019 (package ML19070A036). On March 7, 2023, in response to the Commission direction in SRM-SECY-22-0087, dated March 3, 2023 (ML23062A686), the inspection sample and hour requirements of the combined procedure were restored to their 2022 levels (ML23062A724).

Problem Identification and Resolution Inspection

In CY 2020, the staff completed a comprehensive review of the problem identification and resolution (PI&R) inspection program and identified several enhancements that could improve the overall effectiveness of the program. The report and supporting documents are publicly

available (package ML20247J590). More recently, the staff provided the Commission with SECY-22-0087, "Recommendation for Problem Identification and Resolution Team Inspection Frequency," dated September 20, 2022 (ML22145A448), a vote paper on the frequency of PI&R team inspections.

The staff revised IP 71152, "Problem Identification and Resolution," dated December 14, 2021, effective January 1, 2022 (ML21281A181), to transfer inspector review of licensee PI&R documents to IMC 2515, Appendix D, "Plant Status," as previously discussed by the staff in SECY-19-0067 and recommended by the PI&R comprehensive review. The staff plans to update IP 71152 in CY 2023 to incorporate additional recommendations from the PI&R comprehensive review report as well as the Commission direction in SRM-SECY-22-0087.

Completion of Temporary Instruction 2515/194

As of January 26, 2023, the staff has verified that all licensees have appropriately implemented the voluntary industry initiative associated with the open phase condition. For each licensee, the staff performed one or more inspections using Temporary Instruction 2515/194, Revision 2, "Inspection of the Licensees' Implementation of Industry Initiative Associated with the Open Phase Condition Design Vulnerabilities in Electric Power Systems (NRC Bulletin 2012-01)," dated August 18, 2020 (ML20230A328), or prior revisions of Temporary Instruction 2515/194. The staff issued a closure letter to each licensee stating that the NRC had verified appropriate implementation of the open phase condition voluntary industry initiative as part of the close out of NRC Bulletin 2012-01, "Design Vulnerability in Electric Power System," dated July 27, 2012 (ML12074A115) for that licensee. The staff has also documented the overall closure of Bulletin 2012-01 and published a notice in the *Federal Register*, "NRC Bulletin 2012-01: Design Vulnerability in Electric Power System," dated March 6, 2023 (88 FR 13855).

Emergency Preparedness Inspection Program

In addition to submitting SECY-23-0010 to recommend replacing the alert and notification system PI with an emergency response facility and equipment readiness PI, the staff also submitted SECY-22-0089, "Recommendation for Enhancing the Emergency Preparedness Significance Determination Process for the Reactor Oversight Process," dated September 22, 2022 (ML22189A201), to the Commission to recommend a change to the ROP that would enhance the EP SDP by focusing greater-than-green (GTG) significance determination evaluations on only 6 of the 16 planning standards in Title 10 of the *Code of Federal Regulations* 50.47(b)(1) through (16) and would risk-inform and focus resources on the most significant planning standards. The Commission approved the staff's recommendation for the EP SDP in SRM-SECY-22-0089, "Staff Requirements – SECY-22-0089 – Recommendation for Enhancing the Emergency Preparedness Significance Determination Process for the Reactor Oversight Process," dated February 9, 2023 (ML23040A378). Both the proposed PI change and the EP SDP change will require conforming changes to EP ROP procedures.

Security Baseline Inspection Program

The security inspection staff was able to conduct all security baseline inspection activities scheduled during CY 2022.

With regard to the security baseline inspections associated with cybersecurity, the staff completed the first year of biennial ROP cycle inspections. The staff are working on an assessment of lessons learned from these inspections to review the effectiveness of the newly revised cybersecurity baseline IP 71130.10, "Cybersecurity," dated December 14, 2021,

effective January 1, 2022 (ML21271A106). On October 13, 2022, the staff held an initial public meeting to discuss lessons learned and potential areas for further review (package ML22327A119).

With regard to the NRC-evaluated triennial force-on-force (FOF) inspection program, the staff planned to use a tiered approach to conduct FOF inspections in CY 2022 to maintain the balance of protecting the health and safety of inspectors and site personnel from the risks of exposure to COVID-19 with the need to conduct effective oversight. The staff used IP 71130, Attachment 03, "Contingency Response—Force-On-Force Testing," dated February 8, 2021 (ML21012A329, non-public), without addendum 5 as the primary approach. The staff transitioned to using addendum 5 as the second tier when the licensee could not conduct two exercises safely. Addendum 5 emphasizes safety protocols related to COVID-19 mitigation, when necessary, and uses only the minimum number of personnel from both the licensee and the NRC staff during the conduct of inspection activities. When a hardship was declared by the licensee and approved by the staff, the staff transitioned to using IP 92707, "Security Inspection of Facilities Impacted by a Local, State, or Federal Emergency where the U.S. Nuclear Regulatory Commission's Ability to Conduct Triennial Force-On-Force Exercises is Limited," dated February 8, 2021 (ML21019A452, non-public). During CY 2022, the staff completed a total of 19 FOF inspections. Seventeen inspections were conducted using IP 71130, Attachment 03, without addendum 5, and two were conducted using IP 92707. The staff did not use IP 71130, Attachment 03, with addendum 5 in CY 2022.

Review of ROP Metric I-5: Continuity of Resident Inspector/Senior Resident Inspector Site Staffing

In August 2022, the staff chartered a working group led by the Division of Reactor Oversight with representation from all four regions to review the basis for the current ROP performance metric I-5 and to determine whether any changes would be recommended based on experience with the resident inspector (RI) program. The working group documented the evaluations and recommendation in "Review of Metric on Continuity of Resident Inspector/Senior Resident Inspector Site Staffing," dated December 13, 2022 (ML22332A460).

The working group recommendation (Option 3) included renaming the metric, eliminating the requirement for acting RIs to be on site for a minimum of 6 weeks to count for the metric, maintaining the existing criterion for permanently assigned RIs to be absent a minimum of 6 weeks before counting against the metric, and potentially adding guidance for hybrid inspection. Management in the Office of Nuclear Reactor Regulation evaluated the working group options and decided to implement Option 3. This is documented in "Revision of Metric on Continuity of Resident Inspector/Senior Resident Inspector Site Staffing," dated January 26, 2023 (ML23024A162).

Significance Determination Process

The staff has concluded through the annual evaluation of the SDP program area that the SDP program is effective. Recommendations for improvement, current and future focus areas, and significant changes to the SDP program area are also discussed below.

The SDP continued to be effective by providing inspectors with a risk-informed method for determining the safety and security significance of inspection findings. Nationwide, for CY 2022 inspections, the NRC issued 376 inspection findings that were determined to be of very low safety or security significance (green). The NRC also finalized seven GTG findings in CY 2022.

In this respect, the risk-informed SDP continues to focus staff resources on those issues that are potentially more risk significant.

Finalized, Ongoing, and Planned Revisions to the Significance Determination Process Guidance

This section provides the status of revisions to IMC 0609, "Significance Determination Process," dated November 9, 2020 (ML20267A146), and its attachments and appendices.

As discussed in the section "Emergency Preparedness Inspection Program," the staff has submitted a Commission vote paper, SECY-22-0089. Since the Commission has approved the staff's recommendation in this paper, the staff plans to revise IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process," dated September 22, 2015 (ML15128A462), and IMC 0308, Attachment 3, Appendix B, "Technical Basis for Emergency Preparedness Significance Determination Process," dated December 19, 2012 (ML12284A512), as well as other EP ROP-related procedures, as necessary.

The staff continued to engage regularly with both internal and external stakeholders. Internally, the staff revised SDP guidance to address ROP feedback forms submitted by the NRC staff. To address the suggestions in ROP feedback forms in a timely manner and to adhere to the 5-year periodic review requirement in section 07.01 of IMC 0040, "Preparation, Revision, Issuance, and Ongoing Oversight of NRC Inspection Manual Documents," dated January 17, 2023 (ML22075A386), the staff revised the following IMCs in CY 2022:

- IMC 0308, Attachment 3, Appendix E, "Technical Basis for the Baseline Security Significance Determination Process," dated January 31, 2022 (ML21312A432)
- IMC 0609, Appendix E, Part I, "Baseline Security Significance Determination Process for Power Reactors," dated November 8, 2022 (ML22178A222)
- IMC 0308, Attachment 3, Appendix G, "Technical Basis for Shutdown Operations Significance Determination Process," dated January 11, 2022 (ML20246G438)
- IMC 0609, Appendix G, Attachment 1, "Shutdown Operations Significance Determination Process Phase 1 Initial Screening and Characterization of Findings," dated May 20, 2022 (ML22096A212)

The staff's external engagement activities included communicating proposed SDP changes and revisions to the public, industry, and any other interested external organizations through periodic ROP public meetings.

Significance Determination Process Metrics

Two ROP metrics associated with the SDP apply to GTG inspection findings. Efficiency performance metric E-3, "SDP Completion Timeliness for Potentially Greater-than-Green Findings," measures whether the staff reaches a final significance determination for potentially GTG findings within 255 days from the date the issue was first identified. Reliability performance metric R-1, "Predictability and Repeatability of Significance Determination Results," measures the repeatability and predictability of the SDP in processing GTG inspection findings.

In CY 2022, metric R-1 was evaluated as green. Metric E-3 was determined to be yellow because the timeliness threshold for the final determination was exceeded in the following determinations: Davis-Besse Nuclear Power Station EA-21-105, dated January 31, 2022

(ML22031A171); Davis-Besse Nuclear Power Station EA-21-155, dated March 1, 2022 (ML21356A058); and Davis-Besse Nuclear Power Station EA-21-176, dated April 19, 2022 (ML22109A157). The “ROP Performance Metrics” section of the paper “Reactor Oversight Process Self-Assessment for Calendar Year 2022” includes more information on this metric.

E-3 SDP Timeliness Review

As part of the CY 2022 SDP program area evaluation, the staff performed a review of SDP timeliness with the objective of identifying any common causal factors affecting timeliness and developing recommendations to improve the SDP. The staff issued the results of this review on December 22, 2022 (ML22335A003). The scope of the review included potentially GTG findings that entered the SDP since the beginning of CY 2018. The data analysis did not include several findings that were issued late in CY 2022; however, these findings were all issued timely. In total, the staff analyzed 17 findings as part of this review. The staff analyzed a combination of findings that both met and missed the 255-day timeliness goal as defined by metric E-3 in IMC 0307, Appendix A; of the 17 total findings analyzed by staff, 11 findings exceeded the metric.

In this evaluation, the review team identified the following contributing causes to SDP timeliness impacts: additional time necessary to develop the performance deficiency, investigations outside of the SDP, first-of-a-kind issues, attaining consensus on interpretations of deterministic SDP flowcharts, and time required to review additional licensee-provided information. The review team did not identify a single common causal factor; however, the review team made the following five recommendations for improvements:

- (1) Revise ROP self-assessment metric E-3 (255-day timeliness metric) to exclude time when the processing of a potentially GTG finding must be paused for a non-ROP regulatory reason.
- (2) Improve guidance related to the Inspection Finding Resolution Management process to make it clear that it is required for all ROP cornerstones.
- (3) Expand sections of the Inspection Finding Review Board and Significance and Enforcement Review Panel forms related to timeliness.
- (4) Enhance the internal SDP tracking tool with a “timeliness challenged” category for potentially GTG findings.
- (5) Reinforce existing program guidance on the use of best available information at each process stage in the SDP.

The review team communicated the status of this review with both internal and external stakeholders throughout the course of the review. The review team considered input and feedback from stakeholders in developing the final recommendations. The staff plans to revise applicable SDP and ROP self-assessment program documents in CY 2023 to address these recommendations.

Assessment Program

The staff has concluded through the annual evaluation of the assessment program area that the assessment program is effective. Recommendations for improvement and significant changes to the assessment program area are also discussed below.

The staff's implementation of the assessment program ensures that the staff and licensees took appropriate actions to address performance issues in CY 2022, commensurate with their safety and security significance. All applicable assessment ROP metrics met their established criteria in CY 2022, including the timely issuance of assessment letters (ROP metric O-2) and the conduct of annual assessment meetings (ROP metric O-3). There were no ROP Action Matrix deviations during CY 2022 (ROP metric R-2). There were no reactor units in Column 3 or Column 4 of the ROP Action Matrix during the year.

In CY 2022, the staff revised IMC 0308, Attachment 4, "Technical Basis for Assessment," dated June 1, 2022 (ML22080A203), to include the transition of new plants from construction oversight to the ROP.

The staff submitted SECY-22-0086, "Recommendations for Revising the Reactor Oversight Process Assessment Program," dated September 16, 2022 (ML22188A221), for Commission consideration. The staff recommended (1) eliminating the requirement for GTG inspection findings to remain Action Matrix inputs for four full quarters (i.e., they would be closed upon satisfactory completion of the appropriate supplemental inspection) and (2) revising the treatment of GTG PIs such that they remain Action Matrix inputs until satisfactory completion of the appropriate supplemental inspection, even if the PI returns to green before the supplemental inspection. In SRM-SECY-22-0086, "Staff Requirements – SECY-22-0086 – Recommendations for Revising the Reactor Oversight Process Assessment Program," dated March 10, 2023 (ML23069A093), the Commission approved the staff's recommended changes.