Reactor Oversight Process Program Area Evaluations

This enclosure provides the program area evaluations completed by staff in the four Reactor Oversight Process (ROP) program areas of inspection, assessment, performance indicators (PIs), and the significance determination process (SDP) in accordance with Element 1 of the ROP self-assessment program. The staff conducted the ROP program area evaluations using the objective performance metrics data and other relevant feedback from both internal and external stakeholders. The staff provided its data and analysis for all the objective performance metrics in a memorandum, "ROP Performance Metric Report for CY 2018," dated March 19, 2019 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML19044A565). In each program area evaluation discussed below, the staff also summarizes changes to each program, current and future focus areas, and potential recommendations for improvement.

Performance Indicator Program

The PI program continued to provide insights into plant safety and security performance in calendar year (CY) 2018. The staff and industry continue to improve the PI program guidance through ROP Working Group meetings and feedback from stakeholders. As noted in the annual ROP performance metric report referenced above, the ROP metrics related to the PI program met or exceeded performance expectations, including the timeliness of the reporting, dissemination, and accurate posting of the PI data to the U.S. Nuclear Regulatory Commission (NRC's) public Web site. PI updates for new reactors are discussed in the "Construction ROP and Transition to New Reactor Oversight" section of SECY-19-0037.

Security Performance Indicator

Currently, the staff provides information to the Commission related to the evaluation, assessment, and development of security PIs in (1) the annual ROP self-assessment SECY and (2) in reporting to comply with Staff Requirements Memorandum (SRM)-SECY-07-0136, "Recommendation to Discontinue Two of Three Performance Indicators Associated with the Security Reactor Oversight Process," dated September 13, 2007 (ADAMS Accession No. ML072560811, non-public). The staff is currently exploring ways to synchronize these efforts to reduce redundant reporting.

The Protected Area Security Equipment Performance Index is the only PI for the security cornerstone. This PI serves as a measure of the unavailability of security equipment to perform its intended function. The staff continues to assess the physical security program for enhancements and efficiencies based on physical security operating experience, inspection results, oversight visits and periodic reviews of inspection procedures. Any enhancements to the physical security inspection program may initiate the need to develop new PIs. Moreover, the current security PI related to intrusion detection system availability, along with the conduct of the NRC baseline inspection program, continues to provide assurance that regulatory oversight and performance assessment of power reactor licensees remains effective and efficient, ensuring safe and secure operations.

Inspection Program

Throughout CY 2018, NRC inspectors independently verified that commercial nuclear plants were operated safely and securely. As documented in the annual ROP performance metric report (ADAMS Accession No. ML19044A565), metrics associated with completion of the baseline inspection program, inspector objectivity, inspector qualifications, and site staffing were determined to be Green for CY 2018. One inspection-related metric was determined to be Red for CY 2018: "Responsiveness to ROP Feedback Forms," which monitors the disposition timeliness of ROP feedback forms. Throughout the year, the staff made changes to various ROP inspection procedures (IPs) based on ROP feedback forms and other internal and external feedback. The engineering inspection working group continued its work through CY 2018, summarized in the "Engineering Inspection Focused Assessment Update" section of SECY-19-0037. The staff discusses inspection program readiness for AP1000 reactors in the "Construction ROP and Transition to New Reactor Oversight" section of SECY-19-0037.

Baseline Inspection Program Completion

All four NRC regions and the Office of Nuclear Security and Incident Response (NSIR) documented completion of the baseline inspection program for CY 2018 (ADAMS Accession Nos. ML19046A075 for Region I, ML19052A388 for Region II, ML19051A048 for Region III, ML19065A122 for Region IV, and ML19007A122 for NSIR (non-public)).

Security Baseline Inspection Program

In May 2017, the Cyber Security Branch in NSIR issued IP 71130.10 Pilot (P), "Cyber Security." The objective of this security baseline IP is to inspect operating nuclear power plants that have completed full implementation of the requirements in Title 10 of the *Code of Federal Regulations* (10 CFR) 73.54, "Protection of Digital Computer and Communication Systems and Networks." These pilot inspections were completed as scheduled in CY 2018, are on-going in CY 2019, and will be completed in CY 2020.

In SECY-17-0100, "Security Baseline Inspection Program Assessment Results and Recommendations for Program Efficiencies," dated October 4, 2017 (ADAMS Accession No. ML17223A279), the staff provided recommendations and options for efficiencies that could be applied throughout the security baseline inspection program, including in the force-on-force (FOF) program. The staff continues to develop a framework for a revised security inspection program to incorporate the Commission direction in the SRM associated with SECY-17-0100, dated October 9, 2018 (ADAMS Accession No. ML18283A072). Among other things, the framework will modify the security inspection program to include one NRC-conducted FOF exercise and an enhanced NRC inspection of a licensee-conducted annual FOF exercise, rather than two NRC-conducted exercises. The staff will also provide the Commission options to provide credit for a broader set of operator actions, including the use of FLEX equipment, and response by local, State, and Federal law enforcement in NRC's security inspection program.

Significance Determination Process

The SDP continued to be effective. It provided the inspectors with a risk-informed method for determining the safety and security significance of inspection findings. In CY 2018, the NRC identified 475 inspection findings nationwide, with more than 99 percent determined to be of very low safety or security significance (Green). In this respect, the SDP is an effective and efficient risk-informed process for focusing staff resources on issues that are potentially more

risk-significant. Nevertheless, the staff is always open to opportunities to further improve the SDP. The text below summarizes a number of such efforts underway or completed in CY 2018.

Significance Determination Process Metrics

Four ROP metrics are associated with the SDP and apply to Greater-than-Green inspection findings. Efficiency Metric (E)-4 measures whether the staff completes performance deficiency determinations within 120 days of initial identification. Metric E-5 measures whether the staff finalizes inspection finding signficance within 90 days from the date the licensee was notified of the preliminary significance. Clarity Metric-3 measures the traceability of Greater-than-Green inspection findings. Reliability Metric-2 measures the repeatability and predictability of the significance determination process in processing Greater-than-Green inspection findings. In CY 2018, all four metrics related to the SDP were Green.

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

This section provides the status of significant updates to IMC 0609, "Significance Determination Process," dated October 23, 2018 (ADAMS Accession No. ML18187A187), and its attachments and appendices, including those changes for new reactors. The staff will follow Management Directive 8.13, "Reactor Oversight Process," dated January 16, 2018 (ADAMS Accession No. ML17347B670), to either notify the Commission or obtain Commission approval before implementing the planned changes described below. The staff expects to make conforming revisions to IMC 0308, "Reactor Oversight Process Basis Document," dated October 4, 2017 (ADAMS Accession No. ML16306A386), and its attachments and appendices, following major revisions to SDP program documents.

The staff plans to revise IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings At-Power," dated June 19, 2012 (ADAMS Accession No. ML101400574), in CY 2019. This revision will clarify issues related to exposure time, functionality, and specific screening questions with the goal of improving efficiency and predictability in the ROP. Additionally, this revision will include enhancements needed to accommodate new reactor designs. The staff plans to eliminate IMC 0609, Appendix O, "Significance Determination Process for Mitigating Strategies and Spent Fuel Instrumentation," dated October 7, 2016 (ADAMS Accession No. ML16277A415), moving relevant guidance to IMC 0609, Appendix A. The staff informed external stakeholders of the planned elimination of Appendix O at a public meeting on September 20, 2018, which is summarized in a memorandum dated October 1, 2018 (ADAMS Accession No. ML18271A089). The staff plans to make conforming changes to IMC 0609, Attachment 4, "Initial Characterization of Findings." Overall, these changes will improve efficiency in screening findings in the SDP.

As part of its efforts to address Commission direction in SRM-SECY-17-0100, the staff is revising IMC 0609, Appendix E, Part II, "Force-on-Force Significance Determination Process," dated January 15, 2014 (ADAMS Accession No. ML13350A408, non-public). In its revision, the staff plans to simplify the FOF SDP model, which addresses ineffective and indeterminate exercise outcomes.

The staff revised IMC 0609, Appendix H, "Containment Integrity Significance Determination Process," on February 25, 2019 (ADAMS Accession No. ML18243A521). This revision expanded guidance for using quantitative models to estimate large early release frequency, added definitions for close-in population and effective evacuation, and established new guidance for assessing the timing of protective actions in detailed risk evaluations.

The staff revised IMC 0609, Appendix I, “Licensed Operator Requalification Significance Determination Process,” on January 10, 2019 (ADAMS Accession No. ML18178A571), to quantify the risk increase from simulator training that negatively impacts operator performance. The revision also transfers requalification examination security findings that have an actual effect on an examination to IMC 0609, Appendix M, “Significance Determination Process Using Qualitative Criteria,” dated January 10, 2019 (ADAMS Accession No. ML18183A043).

Assessment Program

The staff’s implementation of the assessment program ensures that the staff and licensees took appropriate actions to address performance issues in CY 2018, commensurate with their safety significance. All applicable assessment ROP metrics met their established criteria in CY 2018, including timely issuance of assessment letters and the conduct of annual assessment meetings. There were no new ROP Action Matrix deviations in CY 2018.

Plants in Column 4 during the Self-Assessment Period

During CY 2018, Pilgrim Station (Pilgrim) remained in the Multiple/Repetitive Degraded Cornerstone (Column 4) of the ROP Action Matrix, while Arkansas Nuclear One, Units 1 and 2, transitioned from Column 4 to the Licensee Response Column (Column 1).

Pilgrim IP 95003 Evaluation

As required by IP 95003, “Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input,” dated December 18, 2015 (ADAMS Accession No. ML15188A400), after completion of the IP 95003 inspection at Pilgrim, Region I conducted an evaluation of whether the NRC's inspection and assessment processes appropriately characterized licensee performance, based on previous inspection information, and whether the assessment process provided sufficient warning to identify a significant reduction in safety.

As documented in a memorandum dated June 7, 2018 (ADAMS Package Accession No. ML18158A104), the Pilgrim 95003 evaluation team concluded that the ROP inspection and assessment processes would provide sufficient warning of degraded and declining performance at Pilgrim. However, the team found that one observation regarding documentation of licensee event reports (LERs) required additional review. Specifically, upon review of historic LERs, the team identified that some LERs that were documented as licensee-identified findings may have been more appropriately documented as self-revealing findings. Subsequently, the team performed a comprehensive assessment to determine whether any of the LERs in question would have resulted in Greater-than-Green inspection findings, and therefore, would have impacted ROP decision-making and oversight at Pilgrim. The team concluded that none of the LERs in question would have resulted in Greater-than-Green findings. The team also conducted an extent-of-condition review, which verified that a systemic issue did not exist within Region 1 associated with the review and closeout of LERs.