

## **Reactor Oversight Process Program Area Evaluations**

The U.S. Nuclear Regulatory Commission (NRC) staff evaluated the key program areas of the Reactor Oversight Process (ROP) in accordance with Element 1 of the revised self-assessment process, as governed by Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," dated November 23, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15307A023). The annual ROP performance metrics report, which also was produced in accordance with Element 1 of the revised process, provides data and a staff analysis for all of the objective performance metrics (ADAMS Accession No. ML16053A326).

Based on the objective metrics and other relevant feedback, the staff evaluated the effectiveness of each of the four major program areas: the performance indicator (PI) program, the inspection program, the significance determination process (SDP), and the assessment program. The program area evaluations also summarize changes to the program, current and future focus areas, and potential 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 NUREG-1614, Volume 6, "Strategic Plan: Fiscal Years [FY] 2014-2018," dated August 2014 (ADAMS Accession No. ML14246A439). The results of the staff's review are provided below.

### **Performance Indicator Program**

The PI program continued to provide insights into plant safety and security. 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 metrics report referenced above, the ROP metrics for calendar year (CY) 2015 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 external Web pages.

In SECY-14-0047, "Reactor Oversight Process Self-Assessment for Calendar Year 2013" (ADAMS Accession No. ML14066A365), the staff noted that it had been working with industry on how best to address PI validity during and following extended shutdowns and had developed an approach for such a transition. The staff is using this approach for the initial startup of Watts Bar Unit 2 (WB2) during its transition to the ROP. Lessons learned can then be applied to other new reactor startups and extended shutdowns. The staff intends to coordinate with the Nuclear Energy Institute (NEI) to update NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," after WB2 startup and as part of the implementation of any changes to new-reactor PIs, to incorporate these lessons learned.

The issues raised in a 2013 industry white paper regarding the adequacy of probabilistic risk assessment (PRA) were addressed through a Frequently Asked Question in 2014, with an implementation scheduled to take effect in March 2016. These changes will update the Mitigating Systems Performance Index (MSPI) PRA implementation guidance to align with current American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) Standards (ASME/ANS RA-Sa-2009), "Standard for Level I/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications."

The staff is evaluating feedback received through the ROP feedback process that the reactor coolant system (RCS) Leakage PI neither directly nor indirectly supports the PI objective as described in IMC 0308, Attachment 1, "Technical Basis for Performance Indicators." Specifically, the technical basis describes the objective as monitoring the RCS pressure boundary; however, the PI measures identified leakage, which includes leakage not defined as pressure boundary leakage, such as valve packing or pump seals. After discussions with the industry, the staff will coordinate with NEI to clarify the NEI 99-02 guidance and/or update IMC 0308 later this year to more accurately reflect the intent of the PI.

In 2014, the industry submitted a white paper to the ROP Working Group on the possible exclusion of low-risk trains from unavailability monitoring for the MSPI PI. Previously, MSPI excluded low-risk components from unreliability monitoring calculations, due to their negligible effect on the PI; however, low-risk trains were still included in unavailability monitoring calculations. The white paper demonstrated that a significant number of licensees could exclude low-risk trains from unavailability monitoring and have a similarly negligible effect. The staff independently reviewed the industry's calculations and concurred that both licensees and inspectors could save time and effort by excluding these trains from unavailability monitoring, since they have no appreciable effect on the reported indicators. This change to MSPI reporting took effect in November 2015.

One of the suggestions from the 2013 ROP independent assessment was to review current PIs to evaluate whether they are providing meaningful information on licensee performance. Specifically, the team's concern was with "always Green" PIs and whether they are providing any benefit. The staff reviewed several PIs that infrequently or never have crossed a threshold, usually those associated with the barrier integrity and public radiation cornerstones. The staff reviewed inspection findings in these cornerstones and determined that they were also relatively low compared to others. With one exception, the areas of performance within the barrier integrity and public radiation safety cornerstones monitored by PIs did not have safety-significant findings associated with them. Based on this, the staff determined that, while PIs that are always Green may not result in increased oversight, they are generally reflective of licensee performance and do not currently warrant change. A look at Column 3 and Column 4 plants since the inception of the ROP shows that, in most cases, PIs have contributed in some part to the assessment process of poor performing licensees. The staff is communicating this message to internal and external stakeholders through updates to the public ROP Web site and through inspector training.

As part of the ROP Baseline Inspection Enhancement Project, the staff reviewed Inspection Procedure (IP) 71151, "Performance Indicator Verification," and provided recommendations to enhance resident inspectors' capability to evaluate a licensee's MSPI values, specifically the PRA aspects. To help resident inspectors, the staff is providing training at regional counterpart meetings that will also be available for future reference on SharePoint. This training will provide a clearer understanding of the intent and scope of inspection for MSPI values and when and how resident inspectors can engage regional senior risk analysts when they have questions regarding a licensee's PRA. The staff is also evaluating possible changes to IP 71151 and the inspector qualification process to ensure corrective actions for these issues are permanently captured. These changes will be incorporated along with other changes to sample frequencies recommended by the 2015 rebaselining effort.

The staff continued efforts to improve and clarify the emergency preparedness PIs. The Emergency Response Organization Drill Participation PI was revised to clarify drill/exercise criteria to grant participation credit for hostile-action-based drills and exercises. The Alert and Notification System (ANS) Reliability PI was revised to add site-specific detail for how a site is to initially report ANS reliability PI data for a new siren system installation where no siren system previously existed. This was consistent with the approach for new plants located at a new site, as discussed at the December 1, 2011, ROP Working Group public meeting.

Consistent with the staff requirements memorandum (SRM) dated September 17, 2007, associated with SECY-07-0136, "Recommendation to Discontinue Two of Three Performance Indicators Associated with the Security Reactor Oversight Process," the staff continued evaluating possible additional PIs for the security cornerstone.<sup>1</sup> The staff has been working with industry to develop additional security PIs in the areas of protective strategy implementation and evaluation. By letter dated February 24, 2015, NEI submitted a White Paper regarding the potential use of "performance metrics" in lieu of performance indicators by power reactor licensees to inform NRC's triennial force-on-force (FOF) inspection program. This letter detailed NEI's plan to implement a phased pilot program with some licensees, using the performance metrics. The staff plans to continue discussions and evaluation of NEI's performance metrics proposal, which will inform its consideration of potential performance indicators that would serve to adjust NRC inspection activities within the ROP.

In the SRM for SECY-13-0137, "Recommendations for Risk-Informing the Reactor Oversight Process for New Reactors" (ADAMS Accession No. ML14181B398), 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. Alternatively, if it is not necessary to develop appropriate PIs, the staff will develop additional inspection guidance to address any identified shortfalls to ensure that all cornerstone objectives are adequately met. The staff will submit any changes to the PI and inspection program to the Commission for approval before power operation for the first new reactor units. With this direction, the staff has begun discussions with internal and external stakeholders to either develop new PIs or significantly modify MSPI to be able to monitor new reactor designs.

## **Inspection Program**

NRC inspectors independently verified that plants were operated safely and securely. All inspection program metrics met or exceeded performance expectations for CY 2015, 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, based on feedback, and continued to integrate operating experience (OpE) information into the baseline inspection program.

For CY 2015, all regions and the Office of Nuclear Security and Incident Response (NSIR) completed 100 percent of their baseline inspections within the allocated resources. The inspection program independently verified that licensees operated plants safely and securely and identified and corrected performance issues in a timely manner, all in accordance with IMC 2515, "Light-Water Reactor Inspection Program—Operations Phase," and IMC 2201,

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1 SECY-07-0136 and the associated SRM are withheld from public disclosure because they contain sensitive unclassified non-safeguards information.

“Security and Safeguards Inspection Program for Commercial Power Reactors.” Each region documented completion of the baseline inspection program in a memorandum available at ADAMS Accession Nos. ML16047A029 for Region I, ML16043A467 for Region II, ML16049A387 for Region III, and ML16057A123 for Region IV. Additionally, NSIR completed all security baseline inspections, as documented in ADAMS Accession No. ML16034A465, a memorandum that is not publically available.

As part of the ROP Enhancement Project, the staff performed a significant baseline inspection program review and developed 45 recommended improvements, as documented in “Reactor Oversight Process Enhancement Effort—Baseline Inspection Program,” dated April 4, 2014 (ADAMS Accession No. ML14017A338). While many recommendations could be readily adopted during the periodic review of inspection program documents, some (i.e., in the areas of problem identification and resolution, engineering, maintenance, OpE, and independent spent fuel storage installation) required additional development before they could be implemented. The staff has made substantial progress in implementing the remaining ROP Enhancement Project recommendations for improving the baseline inspection program. All items and recommendations have been implemented directly or will be tracked to completion under the ROP feedback form or other processes.

Some of the more substantive changes include those made to the component design-bases inspection (CDBI) program, which are intended to result in more effective and less resource intensive inspections for the NRC and the industry. An additional change to the CDBI program is the inclusion of periodic inspections of major licensees’ engineering programs, such as environmental qualification. During CY 2016, the NRC inspection staff is conducting CDBI pilots at eight operating reactor sites. Lessons learned from these pilots will be incorporated into revisions of the CDBI procedures. The revised CDBI program is planned to be implemented at all operating reactor sites starting in CY 2017.

In CY 2015, the staff completed a comprehensive rewrite of IMC 0307, Appendix B, “Reactor Oversight Process Baseline Inspection Procedure Assessments and Reviews.” The revision incorporated lessons learned from the previous realignment, the Baseline Inspection Program enhancement effort, and the ROP self-assessment process. The most significant changes included incorporating the annual assessment of the baseline inspection program, which was previously addressed in IMC 0307; addressing resource changes as part of the annual assessment; conducting focus and effectiveness reviews in lieu of a separate realignment; and adding details to the process to aid the inspection procedure leads. The first baseline inspection program effectiveness review began in December 2015, and the first annual assessment of the baseline inspection program will take place in CY 2016.

In response to the SRM dated August 29, 2014 (ADAMS Accession No. ML14241A578), associated with SECY-14-0016, “Ongoing Staff Activities to Assess Regulatory Considerations for Power Reactor Subsequent License Renewal” (ADAMS Accession No. ML13210A206), the staff has integrated appropriate aging management inspection and guidance into existing baseline inspection procedures. In addition, a one-time inspection to assess the effectiveness of aging management programs 5-10 years into the period of extended operation is being incorporated into license renewal IP 71003, “Post-Approval Site Inspection for License Renewal.” The staff is also continuing to evaluate and incorporate feedback from the regions on age-related performance deficiencies being identified in the field. A memorandum dated December 2, 2015 (ADAMS Accession No. ML15309A306) contains additional information on

integrating aging management inspections into the inspection program. The staff plans to include a discussion of the aging management inspection and guidance updates in an upcoming Inspector Newsletter to ensure that internal stakeholders are informed of these recent improvements. Formal training on the aging management inspection and guidance updates will be performed on an as-needed basis.

As part of the baseline inspection procedure review conducted under the ROP Enhancement Project, the staff proposed to pilot an initiative referred to as OpE Updates (Enclosure 15 – ADAMS Accession No. ML14023A031). The objective of the OpE Updates is to provide a publicly available summary of operating experience related to individual inspection procedures that could be used to inform the selection of inspection samples and provide guidance for reviewing relevant issues. The staff developed a pilot OpE Update for IP 71111.04, “Equipment Alignment,” which the staff plans to implement in CY 2016 or as soon as adequate resources are available to deploy the pilot and effectively analyze the results to determine the feasibility of expanding the OpE Updates within the baseline inspection process.

In accordance with the SRM for SECY-15-0065, “Proposed Rulemaking: Mitigation of Beyond-Design-Basis Events” (ADAMS Accession No. ML15049A213), the staff is updating the ROP to explicitly provide periodic oversight of the industry’s implementation of the severe accident management guidelines (SAMG). On October 25, 2015, NEI submitted a letter to the NRC indicating the industry’s intent to adopt new SAMG commitments (ADAMS Accession No. ML15335A442). All licensees have submitted commitment letters consistent with the NEI letter. A commitment that SAMG will be considered within plant configuration management processes will be in place by the end of 2016. Another commitment is to update the site SAMG within 3 years of the owner’s groups developing new SAMG guidance. The Pressurized Water Reactor Owner’s Group is expected to develop new guidance in early 2016 (with site updates by 2019), while the Boiling Water Reactor Owner’s Group is expected to develop new guidance in 2017 (with site updates by 2020). As a result of the new commitments, the NRC plans to incorporate oversight of the SAMG into the ROP in a phased approach. The ROP will initially be updated by December 31, 2016, to allow for oversight of the SAMG plant configuration management process. The ROP will be updated again by December 31, 2020, to allow for oversight of the site-specific updating of generic guidance revisions.

The NRC staff completed its evaluation of the inspection program to address a recommendation from Government Accountability Office audit report 13-743, “Analysis of Regional Differences and Improved Access to Information Could Strengthen NRC Oversight,” dated September 27, 2013 (ADAMS Accession No. ML13290A611). Specifically, the staff completed a comprehensive analysis of the causes of the differences in the identification and resolution of findings and documented this analysis in a report entitled, “Analysis of the Causes of Regional Differences in the Number of Inspection Findings of Very Low Significance (Green) and Non-Escalated Violations,” dated January 5, 2016 (ADAMS Accession No. ML14252A049). The two top influencing causes were (1) some ROP requirements and guidance can be followed and interpreted differently to produce different outcomes, and (2) different regional practices affect ROP implementation methods and outcomes. In response to this analysis, the staff has taken steps to clarify the inspection guidance and train inspectors to increase predictability and consistency in identifying and resolving inspection findings.

Also, the NRC staff completed changes to the inspection program to address the Office of Inspector General’s (OIG) audits OIG 14-A-12, “Survey of NRC’s Support Provided to Resident

Inspectors” (ADAMS Accession No. ML14077A293), and OIG 15-A-06, “Audit of NRC’s Oversight of Spent Fuel Pools” (ADAMS Accession No. ML15041A567). Specifically, the staff issued a revision to IMC 2515, “Light-Water Reactor Inspection Program—Operations Phase,” to ensure that management provides appropriate venues for resident inspectors to communicate support needs or concerns, and a new inspection procedure, IP 60715, “Spent Fuel Safety at Operating Reactors,” to verify the safe wet storage of spent fuel at operating reactors.

Finally, in CY 2015, the staff resumed implementation of Temporary Instruction (TI) 2800/041, “10 CFR Part 37 Physical Protection of Category 1 and Category 2 Quantities of Radioactive Material at Facilities with a 10 CFR Part 73 Physical Protection Program,” which had been temporarily suspended for operating reactors in April 2015. The suspension provided NRC management with an opportunity to review preliminary inspection results and assess early indications of implementation challenges at some sites. During this temporary suspension period, TI 2800/041 was revised to further clarify the application of 10 CFR Part 37 requirements at facilities with 10 CFR Part 73 security plans, including treatment of Category 1 and Category 2 material inside protected areas at nuclear reactor sites. In addition, inspector training sessions were held to ensure consistent implementation of the revised TI across the Regions.

### **Significance Determination Process**

The SDP continued to be a generally effective tool for determining the safety and security significance of inspection findings. However, the staff found that the SDP needed improvement in several areas. In CY 2015, the staff implemented several improvements to the SDP guidance and made notable progress in other initiatives. The staff did not meet the SDP timeliness metric for CY 2015. The final result was 88 percent versus the goal of 90 percent, with two determinations exceeding the 90-day goal, one by only a matter of days. An SDP streamlining initiative, discussed below, is expected to improve timeliness. All other applicable SDP performance metrics met or exceeded performance expectations for CY 2015, including the traceability of greater-than-green findings and the predictability and repeatability of significance determination results.

The SDP business process improvement (BPI) project team, initiated in 2012 and reported in the 2013 annual assessment, completed its work in February 2014, making 14 recommendations (ADAMS Accession No. ML14318A512). These recommendations were grouped into four areas: communications, management, coordination, and policy. The recommendations were approved and a number of program enhancements were made in April 2015. Of the 14 recommendations, the more significant ones include: (1) improving IMC 0609, Appendix M, “Significance Determination Process Using Qualitative Criteria,” which is further discussed below, (2) conducting PRA training for the Significance and Enforcement Review Panel decisionmakers, (3) using the proximate cause versus the root cause to assess the significance of performance deficiencies, and (4) developing a more inclusive performance metric to cover the period between when the NRC becomes aware of an issue and when a decision is made regarding an associated performance deficiency.

The staff also began extensive efforts to examine the SDP from a more holistic view, known as “Phase 2” of the SDP improvements, as suggested by the BPI initiative. The NRC formed a multidisciplinary streamlining team to identify ways to further improve the efficiency and

effectiveness of the SDP. This was, in part, due to NRC Commission direction to the staff to develop a plan to streamline the SDP (ADAMS Accession No. ML14262A078) and subsequent Commission direction to pilot proposed revisions to the SDP by holding public meetings or workshops regarding the recommended changes (ADAMS Accession No. ML15231A108). Towards the end of 2015, the team identified four main focus areas to streamline the SDP: (1) improving management oversight of inspection findings of potentially greater-than-very-low significance, (2) modifying the SDP timeliness metric to better track the time when the staff actually performs SDP assessments, (3) improving interactions with licensees on the exchange of significance information associated with the performance deficiency, and (4) improving the use of integrated risk-informed decisionmaking. During CY 2016, the staff will identify proposed changes to program documents in preparation for a pilot, and intends to keep the Commission informed of its progress.

In January 2013, the staff issued Revision 2.0 of the Risk Assessment Standardization Project (RASP) Handbook, Volume 1, "Internal Events." This revision was undertaken as part of ongoing NRC initiatives to provide guidance on PRA methods and best practices for consistency in assessing the risk significance of inspection findings and reactor incidents. The staff has continued to enhance the guidance in the RASP Handbook volumes in the following areas: (1) use of the incremental conditional core damage probability (ICCDP) metric to assess the safety significance of performance deficiencies that cause initiating events, (2) external flooding risk assessments, and (3) seismic risk assessments. In parallel, the staff completed a draft revision to IMC 0308, Attachment 3, "Significance Determination Process Basis Document," to address the technical basis for the explicit use of the ICCDP metric in SDP evaluations of performance deficiencies that cause initiating events. The staff held several public meetings with external stakeholders and industry to discuss specific concerns on the use of the ICCDP metric in SDP assessments. In CY 2016, the staff plans to conduct a final public meeting to bring closure to this issue and then publish the document. The staff will continue efforts to revise the RASP Handbook volumes, based on feedback from the NRC staff and other end users.

The staff made significant improvements to IMC 0609, Appendix F, "Fire Protection Significance Determination Process." The staff issued a revision to both IMC 0609, Appendix F, and Attachment 1, "Fire Protection Significance Determination Process Worksheet," in September 2013, and continued to enhance IMC 0609, Appendix F, with contractor support, beginning in June 2015. This initiative focuses on simplifying the qualitative and quantitative screening process with updated fire-protection-related information to improve the staff's ability to make significance determinations in a timelier manner. The staff expects to complete additional revisions to IMC 0609, Appendix F, by the end of CY 2016 and to publish a revised technical-basis document in CY 2017.

In January 2014, the staff issued a revision to IMC 0609 Appendix E, Part II, "Force-on-Force Security SDP for Power Reactors." The staff revised the SDP to address FOF program changes and to implement a more predictable and repeatable FOF SDP. In the SRM dated December 19, 2014 (ADAMS Accession No. ML14353A433), associated with SECY-14-0088, "Proposed Options to Address Lessons Learned Review of the NRC's Force-on-Force Inspection Program in Response to Staff Requirements – COMGEA/COMWCO-14-0001," the Commission directed the staff to address unattended openings (UAOs) and take into account the realistic ability for an adversary to exploit specific opening configurations when evaluating inspection findings and assessing licensee corrective actions. In the longer term, the

Commission directed the staff to evaluate the NRC requirements for UAOs through the NRC working group established to evaluate tactics and to evaluate any changes through a formal change control process with stakeholder input. The working group reviewed the NRC's requirements for UAOs taking into consideration information that the staff had developed on the training and capabilities of real-world terrorists. The working group did not find a technical basis that would support changing the NRC's requirements for UAOs and reaffirmed the staff's conclusion in SECY-14-0088 that the NRC's requirements for UAOs are consistent with the standards used by other Federal agencies and private industry. Additionally, the working group found that the NRC's requirements and guidance for UAOs are realistic because they only require protection of those UAOs that could reasonably be exploited by the design basis threat adversary. Rather than change the NRC's requirements for UAOs, the working group recommended that the staff update the SDP for UAOs to better account for the realistic ability for an adversary to exploit specific opening configurations. In response to this recommendation, the staff revised and issued IMC 0609, Appendix E, Part I, "Baseline Security SDP for Power Reactors," to enable inspectors to appropriately characterize findings related to unattended openings in a predictable and repeatable manner with reduced subjectivity. Specifically, inspectors will evaluate whether defined aspects of the licensee's physical protection system (e.g., barriers and intrusion detection) were appropriately functioning in given scenarios. Currently, the staff is reviewing all of the SDPs that support the security baseline inspection program, such as physical protection, the safeguards information decision tree, and target sets. The staff plans to continue to solicit the input of NRC stakeholders in CY 2016, particularly if it anticipates significant revisions to any of the security SDPs.

In June 2014, the NRC issued an update to the technical basis document for IMC 0609, Appendix M, entitled "Technical Basis for the Significance Determination Process (SDP) Using Qualitative Criteria," which had not been updated since its issuance in December 2006. Further, in response to the recommendations of the SDP BPI initiative, the staff began enhancing IMC 0609, Appendix M. This guidance is used for decisionmaking when existing SDP tools are not available or are not adequate, due to a large uncertainty in the input information. The initiative is focused on improving guidance for its usage (e.g., its entry conditions) with other SDP tools to support integrated risk-informed decision making, and developing a holistic framework to make a balanced and objective regulatory decision. The development of an enhanced IMC 0609, Appendix M, is a key activity to support the objectives of the current SDP streamlining initiative. The staff expects to issue IMC 0609, Appendix M, and its associated technical basis document in CY 2016.

In addition to the improvements made to the above SDPs, the staff also revised IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process." This revision addressed a performance deficiency associated with a site procedure that could result in an overly conservative public protective action recommendation. For this particular performance deficiency, the emergency preparedness SDP led to a significance outcome that was greater than appropriate. This revision ensures such performance deficiencies are appropriately characterized in the future.

The staff continued to evaluate the best approach to determining the safety significance of inspection findings associated with dry cask storage activities at operating reactors. The staff proposed a new draft SDP to IMC 0609, Appendix N, "Independent Spent Fuel Storage Installation (ISFSI) Significance Determination Process." The draft SDP was a recommendation from one of the special topics identified in the ROP enhancement project in CY 2013. The



purpose of the new draft SDP was to include aspects of the ISFSI operation at operating plants in the ROP, to include these activities in the overall assessment of licensee performance. The staff is considering this recommendation and expects to determine in CY 2016 whether this should be included as part of the ROP.

As a result of the Fukushima accident and associated Order EA-12-049, the staff began to develop a new SDP for mitigating strategies and the use of FLEX equipment and associated strategies. The envisioned SDP would involve questions that would either screen inspection findings to Green or redirect significance determinations to IMC 0609, Appendix M, for findings that do not screen to Green. While the draft guidance is currently being used, the NRC will discuss the draft SDP with the industry in CY 2016 and expects to issue and implement the final guidance later in 2016.

In the SRM for SECY-13-0137, "Recommendations for Risk-Informing the Reactor Oversight Process for New Reactors" (ADAMS Accession No. ML14181B398), the Commission directed the staff to enhance the SDP by developing a structured qualitative assessment for events or conditions that are not evaluated in the supporting plant risk models. The Commission further noted that the SDP should continue to emphasize the use of existing quantitative measures of the change in plant risk for both operating and new reactors, and the staff should develop guidance to address circumstances that are unique to new reactors. With this direction, the staff has begun discussions with internal and external stakeholders regarding the ROP for new reactors, to include necessary changes to the PI and inspection programs as well as the SDP. The SDP streamlining efforts discussed above for the current fleet may affect new reactors and be considered concurrently when developing an appropriate SDP for them.

### **Assessment Program**

The NRC's implementation of the assessment program ensured that the staff and licensees took appropriate actions to address performance issues in CY 2015, commensurate with their safety significance, and the staff incorporated several improvements to the assessment program based on staff initiatives and stakeholder feedback. All applicable assessment metrics met or exceeded performance expectations for CY 2015, including the timely issuance of assessment letters, conduct of annual assessment meetings, and the predictability of Agency actions and response.

The staff opened one new deviation from the ROP Action Matrix in CY 2015 for the Monticello Nuclear Generating Plant. The deviation was requested to move Monticello to the Regulatory Response Column (Column 2) rather than to the Multiple/Repetitive Degraded Cornerstone Column (Column 4). Because of the successful completion of both the Inspection Procedure (IP) 95002 supplemental inspection and the biennial IP 71152 Problem Identification and Resolution inspection, and the lack of evidence of broad or systemic performance issues across plant organizational areas, the staff concluded that placement of Monticello in Column 4 of the Action Matrix and the subsequent regulatory actions were not warranted. The deviation remains open pending the NRC staff review of the licensee's safety culture assessment. The staff evaluated the deviation and determined that no programmatic changes to the ROP were needed.

During CY 2015, Arkansas Nuclear One, Units 1 and 2 remained in the Multiple/Repetitive Degraded Cornerstone (Column 4), and Pilgrim transitioned to Column 4 of the ROP Action

Matrix. The staff will discuss the status of Arkansas Nuclear One's and Pilgrim's performance during the Agency Action Review Meeting in April 2015 and the subsequent Commission meeting.

The staff initiated the ROP Enhancement Project in 2013 to take a fresh look at the ROP to determine if it was adequate for the current environment and to recommend improvements. Under the scope of the project, the staff incorporated several recommendations and suggestions from the Reactor Oversight Process Independent Assessment Report of 2013 (ADAMS Accession No. ML14035A571). The report recommended that the staff determine whether the use of the substantive cross-cutting issue (SCCI) process provided regulatory value in terms of licensee safety performance. The report also suggested that the staff consider replacing the SCCIs with a process that uses the Nuclear Safety Culture Common Language traits and attributes in a graded regulatory response. A working group was formed to evaluate the effectiveness of the SCCI process and to develop recommendations to replace or revise it. The working group made several recommendations to revise the SCCI process (ADAMS Accession No. ML14309A612). The recommendations included: changing the threshold for a cross-cutting theme, creating a new cross-cutting theme at the cross-cutting area level, eliminating the subjective questions to determine if an SCCI existed, and changing the name of SCCIs to Cross-Cutting Issues. The recommendations were adopted and incorporated in the April 2015 revision to IMC 0305. The revisions to the program are expected to remove some of the subjectivity in the process, make the process more predictable, and align resource expenditures more closely to the safety significance of the issues. The staff will evaluate the effectiveness of these revisions and report on them in a future self-assessment.

The ROP Independent Assessment Report also recommended reviewing the criteria for transition to Column 3 of the Action Matrix against the original ROP program goals to ensure that the significance of White inspection findings was not being overemphasized and that agency resources used to process White inspection findings were commensurate with findings that, by definition, are of low-to-moderate safety significance. A working group was formed to evaluate the criteria for transition to Column 3. The review resulted in the issuance of SECY-15-0108, "Recommendation to Revise the Definition of Degraded Cornerstone as Used in the Reactor Oversight Process," dated August 28, 2015 (ADAMS Accession No. ML15076A066), in which the staff recommended changing the definition of a Degraded Cornerstone from two White inputs to three White inputs in the same cornerstone. The Commission approved the staff recommendation in the SRM to SECY-15-0108, "Recommendation to Revise the Definition of Degraded Cornerstone as Used in the Reactor Oversight Process" (ADAMS Accession No. ML15335A559). The staff revised the definition of a Degraded Cornerstone in a revision to IMC 0305, dated December 23, 2015, with the new guidance becoming effective January 1, 2016.

In a memorandum to the Director, Office of Nuclear Reactor Regulation, "Differing Professional Opinion [DPO] Panel Report on the Change in the Definition of Repetitive Degraded Cornerstone (DPO-2014-003)," dated May 5, 2015 (ADAMS Accession No. ML15194A444), the DPO panel recommended that the staff assess the potential unintended consequences of changing the definition of a repetitive degraded cornerstone from a cornerstone that is degraded for more than four quarters to one that is degraded for more than five quarters. The staff completed that analysis and documented the results in a memorandum to the Director, Division of Inspection and Regional Support, "Analysis of Unintended Consequences of the Change to

the Definition of Repetitive Degraded Cornerstone,” dated September 4, 2015 (ADAMS Accession No. ML15232A269). The staff concluded that all licensees that met the original criteria for a Repetitive Degraded Cornerstone would have still met the new criteria, that the unintended consequences of the change were minimal, and that the ROP was sufficiently robust with processes in place to mitigate those consequences.

The DPO panel also recommended that the staff create a set of guidelines for what constitutes a substantive change and when and how to engage the Commission for major ROP changes. The staff is developing a set of criteria defining when Commission approval should be obtained for a change to the ROP. Those criteria have been incorporated in a draft revision to Management Directive 8.13, “Reactor Oversight Process.” The draft criteria are only guidelines for staff consideration, and are not intended to be all-inclusive. The staff will coordinate with senior management in determining how to engage the Commission on changes to the ROP.

In SECY-15-0108, the staff also committed to evaluating the efficacy of the cumulative changes to the ROP during recent years to ensure they have not created an unacceptable relaxation of regulatory oversight. In a memorandum dated February 22, 2016 (ADAMS Accession No. ML16034A346), the staff reported on its analysis of changes made to the ROP between 2013 and 2015. The staff concluded that 24 reactor units since the inception of the ROP would not have transitioned to Column 3 and been subject to additional oversight resulting from an IP 95002 supplemental inspection because of the changes to the ROP. However, the staff concluded that there was no further decline in performance for those units, in part because the licensees adequately identified the root causes and implemented corrective actions to address their safety-significant issues. In addition, while the staff concluded that there would have been no impact to the licensees that transitioned to Column 4 because of a Repetitive Degraded Cornerstone, there were two licensees that would not have met the criteria for Column 4 when taking into consideration the change in the definition of a Degraded Cornerstone. In both cases, the licensees would have still been subject to increased regulatory oversight from being in Column 3 of the Action Matrix, and the adequate margin in the assessment of licensee performance ensured that appropriate licensee and NRC actions were taken before unacceptable performance occurred. The staff will continue to evaluate the cumulative changes of recently implemented changes to the ROP and provide related insights in the ROP self-assessments for future years.