

Status of Reactor Oversight Process Improvements

In accordance with Element 2 of the revised self-assessment process, as governed by Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15307A023), dated November 23, 2015, the U.S. Nuclear Regulatory Commission (NRC) staff is reporting on the status of the longer-term program changes resulting from more complex Reactor Oversight Process (ROP) feedback, including recommendations from independent evaluations and lessons-learned reports. These comprehensive efforts often involve multiple internal and external stakeholders to evaluate and resolve and may require Commission approval to revise the policy and implement the changes, as appropriate. The ROP feedback form process and supplemental database ensure that ROP recommendations are gathered, assessed, and tracked to completion.

The NRC staff initiated the ROP Enhancement Project in calendar year (CY) 2012 to take a fresh look at several key areas of the ROP, including the baseline inspection program, ROP communications, the assessment process, and the self-assessment program. The staff also initiated a business process improvement (BPI) project late in 2012 to identify opportunities to improve the significance determination process (SDP). In addition, in CY 2013, the ROP benefited from independent evaluations by the Government Accountability Office (GAO), the Office of the Inspector General (OIG), and a Commission-directed internal independent review. As directed by the ROP, the staff also performed lessons-learned assessments following the implementation of the supplemental inspection at the Browns Ferry Nuclear Power Plant, in accordance with Inspection Procedure 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input"; the enhanced oversight of the Fort Calhoun Station in accordance with IMC 0350, "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns"; and the steam generator degradation event at the San Onofre Nuclear Generating Station. The staff briefed the Advisory Committee on Reactor Safeguards (ACRS) on ongoing enhancements to the ROP in the areas of baseline inspection, licensee assessment, SDP, communications, and the self-assessment program in 2015, which resulted in a letter to the Chairman. These efforts collectively produced numerous recommendations and suggestions for further ROP improvements, as discussed below.

ROP Enhancement Project – In CY 2015, the staff made significant progress in the ROP enhancement efforts that were initiated to take a fresh look at several key areas of the ROP. Focus areas included: (1) enhancing the baseline inspection program to improve its efficiency and effectiveness; (2) improving ROP communications and openness; (3) enhancing assessment areas of the ROP, such as substantive cross-cutting issues and supplemental inspection timeliness; (4) enhancing SDP implementation and timeliness; and (5) enhancing ROP self-assessment program effectiveness. These efforts incorporated the evaluation of recommendations from the Commission-directed independent review and other independent evaluations as described below, and they are discussed in their respective sections of this paper and its enclosures.

The staff performed a significant baseline inspection program review and developed 45 recommended program improvements, as documented in "Reactor Oversight Process Enhancement Effort—Baseline Inspection Program," dated April 4, 2014 (ADAMS Accession No. ML14017A338), and discussed in the program evaluation of the inspection program in

Enclosure 1 to this paper. All items and recommendations have been implemented directly or will be tracked to completion under the ROP feedback form or other processes. The staff improved ROP communications and openness and continued to emphasize stakeholder participation, as discussed in the ROP Communications section of this paper. The staff enhanced the ROP assessment program, as documented in IMC 0305, "Operating Reactor Assessment Program," and discussed in the program evaluation of the assessment program in Enclosure 1 to this paper. The ROP self-assessment process was enhanced in CY 2015, as summarized in SECY-15-0156, "Improvements to the Reactor Oversight Process Self-Assessment Program," dated December 11, 2015 (ADAMS Accession No. ML15310A086), as discussed in the background section of this paper.

Commission-Directed Independent Review – The Commission directed the staff to pursue an independent review of the ROP's objectives and implementation in its staff requirements memorandum to SECY-12-0081, "Risk-Informed Regulatory Framework for New Reactors," dated October 22, 2012 (ADAMS Accession No. ML12296A158). As a result, the staff created a working group and performed an independent assessment of the program in 2013 to identify potential enhancements or areas for further examination. The working group report, entitled "Reactor Oversight Process Independent Assessment 2013," was completed in February 2014 and assigned to the Office of Nuclear Reactor Regulation (NRR) for review and action (ADAMS Accession No. ML14058A231). The working group concluded that the ROP has been effective in accomplishing its objectives of maintaining safety, increasing openness, and making NRC activities and decisions more effective, efficient, and realistic. The working group also provided 8 recommendations and 10 suggestions to further enhance the ROP structure and program implementation.

As noted in the memorandum to the Director of NRR, entitled "Completion of Staff Actions on the Reactor Oversight Process Independent Assessment Report Recommendations and Suggestions," dated December 15, 2015 (ADAMS Accession No. ML15264A171), the staff has evaluated and dispositioned the 18 recommendations and suggestions. Actions determined from the evaluations are either ongoing or have been implemented, although the staff provided justification for rejecting one recommendation and one suggestion. Enclosures 2 and 3 of the December 15 memorandum contain descriptions of the recommendations and suggestions and the actions by the staff to address them. As noted in the memorandum, the staff's efforts on these specific actions are considered complete.

Government Accountability Office Audit – In September 2013, GAO completed its audit of the NRC's ROP and issued GAO Report 13-743, "Nuclear Power: Analysis of Regional Differences and Improved Access to Information Could Strengthen NRC Oversight" (ADAMS Accession No. ML13290A611). GAO made three recommendations, most notably that the NRC analyze the causes of regional differences in identifying and resolving findings of very low safety significance. The second and third recommendations were to improve database search tools for the public to track inspection findings and to improve search tools for operating experience for inspectors. As noted in the GAO report, the number of escalated findings, which equate to greater risk significance, were more similar across the regions. The NRC completed and closed two of the three recommendations, as discussed in the staff's status report to Congress dated March 2, 2015 (ADAMS Accession No. ML15036A420), and summarized in the program evaluation of the inspection program in Enclosure 1 and the ROP Communications section of this paper, respectively. The remaining open item is to make plant performance and oversight

information more readily available to the inspection staff. Although progress has been made in this area, as discussed in the ROP Communications section of this paper, the staff continues to implement a major upgrade to the Reactor Program System software and to improve staff access to ROP-related information and anticipates full implementation in CY 2017.

Office of the Inspector General Audit – OIG conducted an audit in 2013 to evaluate the effectiveness of NRC support provided to resident inspectors at nuclear power plants, fuel-cycle facilities, and construction sites. OIG Report 14-A-12, “Survey of NRC’s Support Provided to Resident Inspectors” (ADAMS Accession No. ML14077A293), was completed in March 2014. OIG identified opportunities to improve the agency’s support of resident inspectors, which include: (1) identifying a formal mechanism for obtaining resident inspectors’ perspectives regarding support issues and (2) taking measures to ensure that the roles and responsibilities for existing support systems for resident inspectors’ needs and concerns are communicated and understood by the appropriate management and staff and are effectively executed. In its latest correspondence with OIG, dated December 28, 2015, “Response to Survey of NRC’s Support Provided to Resident Inspectors (OIG-14-A-12)” (ADAMS Accession No. ML15272A257), the staff noted its plans to implement and close the two recommendations and did so by the end of January 2016. In OIG’s letter dated February 4, 2016 (ADAMS Accession No. ML16035A107), the OIG closed the two recommendations based on the staff’s response.

Significance Determination Process Business Process Improvement Initiative – The staff initiated a BPI project late in 2012 to identify opportunities to improve the existing SDP. The team identified 15 recommendations to improve communications, management, coordination, and policy throughout the SDP, as noted in the 2014 SDP BPI Report (ADAMS Accession No. ML14318A512). The staff has implemented all but 2 of the 15 recommendations and incorporated them into program documents. The remaining open recommendations are to (1) clarify the causal threshold in developing a performance deficiency, and (2) form a working group to revise the SDP process to improve how the staff makes integrated risk-informed decisions using both quantitative and qualitative information. These two recommendations have been incorporated into the longer term SDP streamlining effort. Additional details on the SDP BPI efforts and results, as well as the SDP streamlining effort, are in the program evaluation of the SDP in Enclosure 1 to this paper.

Lessons Learned from Fort Calhoun IMC 0350 Implementation – In accordance with IMC 0350, the staff conducted a lessons-learned assessment to evaluate the effectiveness of agency oversight activities at Fort Calhoun Station. The team concluded that, overall, the ROP and the increased oversight during IMC 0350 implementation were effective in assessing Fort Calhoun Station performance and placing appropriate agency focus on the station to ensure that performance problems were being identified and addressed. The team also identified 11 lessons-learned items that would enhance NRC programs and processes to further ensure that performance issues at nuclear facilities are identified, assessed, and addressed in a timely, transparent, and thorough manner, with the focus on safety. The staff entered each of these recommended improvements into the ROP feedback form process, and they have been addressed and closed. In addition, the staff plans to revise IMC 0350 in CY 2016 to incorporate other lessons learned and suggestions regarding the IMC 0350 process.

Lessons Learned from Browns Ferry Supplemental Inspection – As prescribed in IP 95003, the staff evaluated the IP 95003 supplemental inspection completed at Browns Ferry in

CY 2013. The evaluation yielded the following determinations: (1) based on a review of previous information, the agency appropriately characterized Browns Ferry's performance; (2) the agency was provided sufficient warning to identify a significant reduction in safety; and (3) the methodology and approach used to complete the Browns Ferry IP 95003 inspection was thorough and efficient. The evaluation contained additional insights related to the NRC inspection and assessment processes, as well as 24 recommendations and suggestions for potential program improvements. The staff has evaluated these recommendations and suggestions, and 19 of the items have been addressed and closed. The five remaining open items are being further evaluated as part of the ROP feedback process, or other programs, as appropriate.

Lessons Learned from San Onofre Event – On March 6, 2015, the staff issued “Review of Lessons Learned from the San Onofre Steam Generator Tube Degradation Event” (ADAMS Accession No. ML15015A419), in response to the tasking memorandum from the Office of the Executive Director for Operations dated March 20, 2014 (ADAMS Accession No. ML14028A028). The report evaluated the NRC’s response to the event and identified possible improvements to NRC programs and processes. As a result of the comprehensive review, the staff identified 17 actions across 8 topics, several of which were related to improvements to the ROP. A few of the more significant action items that have been completed include: (1) revising IMC 0375, “Implementation of the Reactor Oversight Process at Reactor Facilities in an Extended Shutdown Condition for Reasons Not Related to Performance” (formally known as IMC 0351 but renumbered, based on feedback), to incorporate several San Onofre lessons-learned recommendations (ADAMS Accession No. ML15247A274); (2) developing a screening and evaluation process to determine if a plant change is a major plant modification, and whether such a modification should be subject to a vendor inspection; and (3) incorporating an enhancement to the Enforcement Manual to clarify that confirmatory action letters (CALs), or actions related to a CAL, are not license amendments and should not be treated as such. Open ROP-related action items include: (1) to issue a regulatory issue summary to all stakeholders regarding the NRC’s application of the Enforcement Manual as it relates to the continued use of the CAL process, and (2) to coordinate with the Nuclear Energy Institute (NEI) to request an update to NEI 99-02, “Regulatory Assessment Performance Indicator Guideline,” to include generic guidance for determining the validity of ROP performance indicators for plants in an extended shutdown.

Advisory Committee on Reactor Safeguards – The staff briefed the ACRS on the ongoing ROP Enhancement Project on September 24, 2015 (subcommittee), and October 7, 2015 (full committee). In the ACRS letter to the NRC Chairman dated October 16, 2015, “Reactor Oversight Process Enhancements” (ADAMS Accession No. ML15289A144), ACRS concluded that: (1) the ROP enhancement actions proposed by the staff are timely and beneficial, and should be implemented; (2) the proposed enhancements to the Baseline Inspection Program, which include changes to the component design-basis inspection process and the problem identification and resolution process, should increase the effectiveness of the licensees’ overall engineering programs; (3) it has no objection to the change in the definition of a degraded cornerstone, whereby the equivalence relationship between White-to-Yellow findings is changed from two to three; and (4) the action to make the SDP more timely is beneficial. These items align with, and are being monitored under, the ROP enhancement efforts and SDP business process improvement efforts previously discussed.