

POLICY ISSUE INFORMATION

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FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR
CALENDAR YEAR 2009

PURPOSE:

The purpose of this paper is to present the results of the staff's annual self-assessment of the Reactor Oversight Process (ROP) for calendar year (CY) 2009.

SUMMARY:

The results of the CY 2009 self-assessment indicate that the ROP met its program goals and achieved its intended outcomes. The staff of the U.S. Nuclear Regulatory Commission (NRC) found that the ROP met the agency's strategic goals of ensuring safety and security through objective, risk-informed, understandable, and predictable oversight. The staff implemented several ROP improvements in CY 2009 to address issues raised by the Commission and obtained through feedback from internal and external stakeholders.

The staff continues to improve existing performance indicators (PIs) and explore potential new indicators to ensure that the PI program provides meaningful input to the ROP. The NRC independently verified through its inspection program that plants were operated safely and securely, and the NRC ensured that sites remained staffed with knowledgeable and experienced inspectors. The significance determination process (SDP) remained an effective tool for determining the safety and security significance of identified performance issues in a

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timely manner. The assessment program provided for regulatory oversight in identifying licensee performance issues and determining appropriate regulatory response. The staff will continue to solicit input from the NRC's internal and external stakeholders and further improve the ROP based on stakeholder feedback and lessons learned.

BACKGROUND:

The staff performed the CY 2009 self-assessment in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program." The ROP self-assessment program uses program evaluations and performance metrics to evaluate the overall effectiveness of the ROP in meeting its preestablished goals and intended outcomes.

The ROP includes the four specific program goals of being objective, risk informed, understandable, and predictable, as well as the applicable organizational excellence objectives (openness and effectiveness) from the NRC's Strategic Plan for Fiscal Years (FYs) 2008–2013. Each of these ROP goals supports the NRC's mission and characterizes the manner in which the agency achieves its strategic goals of safety and security. The intended outcomes of the ROP, which help form its basis and are incorporated into the various ROP processes, include the following:

- appropriately monitoring and assessing licensee performance
- identifying performance issues through NRC inspection and licensee PIs
- determining the significance of identified performance issues
- adjusting resources to focus on significant performance issues
- evaluating the adequacy of corrective actions for performance issues
- taking necessary regulatory actions for significant performance issues
- communicating inspection and assessment results to stakeholders
- making program improvements based on stakeholder feedback and lessons learned

DISCUSSION:

During the tenth year of ROP implementation (CY 2009), the staff conducted numerous activities and obtained data from many diverse sources to ensure that it performed a comprehensive and robust self-assessment. Data sources included the ROP performance metrics described in IMC 0307, feedback received from internal and external stakeholders, and direction and insight contained in several Commission staff requirements memoranda (SRM). The staff analyzed the information from these various sources to gain insights regarding ROP effectiveness and potential areas for improvement. The scope of the staff's ROP self-assessment included the key ROP program areas, ROP communication activities, independent evaluations, ROP resources, and resident inspector (RI) demographics and staffing. As noted in the pertinent sections of this paper, the staff has also included several enclosures with additional detail to support its self-assessment and conclusions.

ROP Program Area Evaluations

The staff evaluated each of the four key program areas of the ROP: the PI program, inspection program, SDP, and assessment program. The results are summarized below and are discussed in more detail in Enclosure 1. In addition, the annual ROP performance metric report, available through the Agencywide Documents Access and Management System (ADAMS),

provides the data and staff analysis for each program area metric (ADAMS Accession No. ML100540037).

PI Program—The staff continued to improve existing PIs, reinforce the guidance and expectations governing the reporting of PI data, and explore potential new indicators in CY 2009 to ensure that the PI program provides meaningful inputs to the ROP. The staff met all eight of the PI metrics for CY 2009. The external survey of stakeholders generally found that the PI program gave an objective indication of declining safety performance, contributed useful information in risk-significant areas, was clearly defined and understandable, and provided an appropriate overlap with the inspection program. During CY 2009, the staff improved the effectiveness of the mitigating system performance index (MSPI) as a result of the lessons learned review. The staff also provided safety system functional failure (SSFF) training to the regional inspectors to enhance their awareness of the reporting requirements and governing guidance. The staff evaluated PIs in current use by the industry for their potential efficacy within the ROP. The staff also reviewed PIs already in use by the United States and international nuclear power industries (i.e., non-ROP PIs) for potential applicability to the ROP PI program. The results of the staff's review were documented in a white paper that was shared with external stakeholders. The staff will continue to refine existing PIs and engage stakeholders in a discussion of potential new PIs for ROP implementation.

Inspection Program—NRC inspectors independently verified that plants were operated safely and securely. All inspection program metrics were met, including the completion of the required baseline inspection program for CY 2009. The staff made changes to selected ROP inspection procedures (IPs) based on completion of the third ROP realignment. The staff continued to use operating experience (OpE) information in the baseline inspection program, including the OpE Smart Sample process and several others, and is considering initiatives to further integrate OpE into inspection program processes and activities. An NRC senior-level management working group also developed strategies and initiated actions to address challenges to RI retention issues and reported these enhancements to the Commission. External survey responses were favorable on the quality of inspection reports and the adequacy of the inspection program's coverage of areas important to safety and security.

SDP—The SDP continues to be an effective tool for determining the safety and security significance of identified performance issues. The staff met the SDP timeliness metric for the fourth consecutive year and also met all other SDP metrics. The staff issued several SDP guidance documents in CY 2009, including the new SDP Appendix L for alternative mitigation strategies (B.5.b) and the revised baseline security SDP. The staff continues to develop analytical tools for low-power and shutdown applications, with four models available for use, two being developed, and one planned. A team, comprising staff members from the Office of Nuclear Reactor Regulation (NRR), the Office of Nuclear Regulatory Research (RES), and the Regions, implemented a partnering initiative to review the NRC risk tools to identify areas for enhancement. The responses to the external survey indicated that, overall, the stakeholders thought the SDP resulted in the appropriate regulatory response, although they suggested areas for improvement. The staff plans additional SDP development and training for CY 2010.

Assessment Program—Implementation of the NRC's assessment program ensured that staff and licensees focused on addressing performance issues. The staff revised IMC 0305, "Operating Reactor Assessment Program," to improve usability, incorporate guidance on traditional enforcement, clarify safety culture concepts, incorporate operating experience, and

respond to stakeholder feedback. The staff also enhanced internal and external communications of plant assessment results, including a revision to the action matrix public Web site to provide a more current status of plant assessment, rather than a purely retrospective look at the previous quarter's data. During CY 2009, the staff observed a decline in the number of plants in the degraded cornerstone (Column 3) and the multiple/repetitive degraded cornerstone (Column 4) of the action matrix. At the Commission's request, the staff provided the plans and schedules for satisfying the criteria to return two plants to normal NRC monitoring efforts in SECY-09-0121, "Status of the Deviation from the Reactor Oversight Process Action Matrix for Davis-Besse Nuclear Power Station and Indian Point Energy Center," dated August 24, 2009. As of the end of CY 2009, the staff had closed out both the Davis-Besse and Indian Point deviations, and there are some deviations from the action matrix that are in process in late CY 2009 and CY 2010.

The agency met seven of the eight assessment metrics for CY 2009, including all timeliness goals. In the 2009 external ROP survey, the perception of the assessment program was generally positive. However, the NRC did not meet one metric as a result of negative feedback on safety culture in the external survey from the industry. The staff is aware of the industry's concern with the process for determining substantive cross-cutting issues and will continue to consider industry proposals as noted below. The staff implemented several changes to ROP guidance in CY 2009, including detailed guidance for performing an independent safety culture assessment. The staff also developed training for regional staff on the NRC's ongoing safety culture activities related to the ROP. The staff leveraged ongoing efforts initiated by the Deputy Regional Administrators to improve the reliability of ROP implementation, including the substantive cross-cutting issue process. In addition, the Nuclear Energy Institute (NEI) proposed an alternative industry-owned safety culture oversight process, which the NRC staff is currently observing to become familiar with the initiative and to evaluate associated tools that could possibly be leveraged to gain efficiencies in the ROP.

ROP Communication Activities

The staff continued to emphasize stakeholder involvement and open communications regarding the ROP throughout CY 2009. The staff used a variety of communication methods to ensure that all stakeholders could access ROP information and could both participate in the process and provide feedback. As discussed below, the staff sought and implemented improvements to the ROP, based on feedback and insights from all stakeholders.

Internal Stakeholder Interface—NRR staff and staff from the Office of Nuclear Security and Incident Response (NSIR) continued to conduct monthly conference calls with regional management and staff to discuss current issues associated with the ROP. The staff also met periodically with regional managers to discuss more complex ROP issues. In addition, the staff participated in each region's inspector counterpart meeting to provide specific training and to gather regional feedback on ROP implementation. The staff also conducted periodic counterpart calls among headquarters and regional staff on a variety of topics such as materials engineering, fire protection, and security topics. These counterpart calls ensured that regional staff remains cognizant of emerging technical and policy issues while headquarters staff maintained awareness of plant safety and security issues.

The NRC staff effectively used the ROP feedback process to identify concerns or issues and recommend and implement improvements related to ROP policies, procedures, or guidance.

For CY 2010, the NRR staff plans to improve the communication of information related to this process to internal stakeholders by posting information on the NRC SharePoint portal. The NRC staff frequently updated the ROP Digital City Web site to include recent and useful information for internal stakeholders. The NRC staff continued to issue the inspector newsletter on a quarterly basis to share value-added inspection findings, best practices, inspection guidance, and regulatory issues of interest to inspectors and staff implementing the ROP. The inspector newsletter is also represented as a community of practice on the NRC's knowledge management Web site, which provides a place for inspectors to seek and discuss information that appeared in newsletter articles. The staff continued to improve the initial and continuing inspector training programs to develop and maintain well-qualified, competent inspectors, as discussed in Enclosure 1.

External Stakeholder Interface—The staff continued to conduct monthly public working-level meetings with NEI, the industry, and interested stakeholders to discuss the status of ongoing refinements to the ROP. The staff also held public events in the vicinity of each operating reactor to discuss the results of the NRC's assessment of the licensee's performance and provide an opportunity to engage interested stakeholders on the NRC's role in ensuring safe and secure plant operations. Additionally, regional staff participated in various local community information meetings involving licensed facilities and conducted outreach activities with other federal agencies, state and local officials and private organizations. The staff also worked with external stakeholders on the development of the Force-on-Force (FOF) inspection and SDP enhancements. The staff published the Annual Report to Congress on the Security Inspection Program in July 2009 to continue to communicate information and results related to the security cornerstone. The staff also sponsored a breakout session on ROP initiatives at the Regulatory Information Conference in March 2009 and discussed additional ROP topics during the regional breakout sessions. The staff maintained and enhanced the NRC's Web pages to communicate current ROP-related information and results. For example, based on stakeholder feedback, the staff revised the Web page for the action matrix summary to provide more current information on the level of regulatory oversight being applied to all operating reactor units.

Stakeholder Survey Results— On September 25, 2009, the staff issued its external survey in a *Federal Register* notice (FRN) to evaluate ROP effectiveness and gather stakeholder insights. The survey requested responses to 21 specific questions corresponding to ROP performance metrics as defined in IMC 0307. To maximize awareness of the survey's availability, the staff also (1) mailed more than 500 surveys directly to stakeholders, (2) placed a direct link to the survey information on both the ROP Web page and the "Documents for Comment" page of the NRC's external Web site, and (3) issued a press release. The staff did not conduct an internal survey in CY 2009, consistent with the biennial frequency prescribed by IMC 0307.

The NRC received five responses to the FRN from the individuals or organizations listed below. These responses are available in ADAMS, under the accession numbers in parentheses following the respondent's name:

- Southern Nuclear (ML093140305)
- Nuclear Energy Institute (ML093140556)
- Region IV Utility Group (ML093140557)
- Strategic Teaming and Resource Sharing (ML093140558)
- Respondent from Wolf Creek Nuclear Operating Corporation (ML093290157)

The responses from the survey of external stakeholders were all from utility representatives, and the number of responses continued to decline. The agency received only 5 responses for the CY 2009 survey, down from the 7 responses for the CY 2007 survey, 16 in CY 2006, and 21 in CY 2005. For the first time since ROP implementation, the agency received no responses from interested public representatives or State or local agencies. As a result of the declining number and breadth of survey participants, the staff plans to reconsider the content and frequency of the ROP surveys or potentially explore alternate venues to obtain stakeholder feedback. The responses were generally positive, but some noted concerns and areas for improvement. The staff's analysis of the survey responses appears in the applicable portions of the program area evaluations in Enclosure 1, as well as in the annual ROP performance metrics report. In addition, as for previous external surveys and as formalized in IMC 0307, the staff will prepare a consolidated response to the CY 2009 external survey to more specifically address the comments received.

ROP Performance Metrics and Independent Evaluations

ROP Performance Metrics—Based on the NRC staff's review, all but one of the 45 performance metrics for the ROP met the established criteria as defined in Appendix A to IMC 0307, "Reactor Oversight Process Self-Assessment Program." All 8 metrics in the PI program area, all 7 metrics in the inspection program area, all 6 metrics in the SDP area, 7 of the 8 metrics in the assessment program area, and all 16 overall ROP program metrics met the established criteria. The NRC did not meet the one metric as a result of negative feedback on safety culture in the external survey from the industry. The staff is aware of the industry's concern and will continue to consider industry proposals as previously noted. The staff further discusses the performance metrics in the program area evaluations in Enclosure 1, as well as in the annual performance metric report (ADAMS Accession No. ML100540037).

Independent Evaluations—In addition to the ROP self-assessment program, the staff has received several independent evaluations of ROP effectiveness in the past few years. These evaluations generally provided favorable results, but they also suggested potential areas of improvement. Most recently, the staff hired FocalPoint Consulting Group to perform an independent evaluation of the reactor oversight and incident response programs in late 2008 and develop recommendations for strengthening program performance. While FocalPoint found the programs to be effective in accomplishing their objectives of providing reactor oversight and incident response, it provided a number of findings and recommendations for the staff's consideration. In 2009, the staff reviewed the report and developed a comprehensive table of the staff's response and status for each of the recommendations, many of which the staff had already identified and was implementing. Greater detail on the independent evaluations of the ROP along with the staff's response and resultant program improvements appear on the ROP Web page entitled "ROP Program Evaluations and Stakeholder Feedback."

Regulatory Impact—The staff also received and evaluated feedback from licensees as part of the regulatory impact process. This process, established in 1991, followed the Commission's direction to develop a method for obtaining feedback from licensees and reporting the feedback to the Commission. Over the past year, the staff received and compiled feedback from 95 site visits to 43 reactor sites (68 units) across all four regions. These visits resulted in 178 distinct comments that fell into two main categories—formal communications with licensees and inspector performance. Of the comments compiled, 92 percent were favorable and 8 percent were unfavorable. The number and distribution of comments and the favorable percentage

were similar to previous years. Enclosure 2 provides a summary of the feedback received and the staff's evaluation and actions to address the noted concerns.

Industry Performance Trends—The NRC collects and monitors industrywide data to assess whether the nuclear industry, as a whole, is maintaining the safety performance of operating plants. The NRC also uses these industry indicators as feedback for improving the ROP. The staff is reporting the FY 2009 results of the Industry Trends Program to the Commission in an annual paper that complements this paper. The results of the Industry Trends Program will also be reviewed at the Agency Action Review Meeting.

ROP Resources

Overall staff effort in FY 2009, as reflected in expended hours, increased by 1.4 percent, compared with FY 2008. Baseline inspection hours increased in 2009 primarily as a result of increased effort in performing IP 71152, "Identification and Resolution of Problems," and IP 71130.03, "Contingency Response—Force-on-Force Testing." Although more of these inspections were performed in FY 2009 than in FY 2008, the staff will consider this apparent increase in inspection hours during the next ROP realignment of inspection resources. The hours charged to other baseline procedures remained relatively unchanged.

Total ROP effort during the past three years has remained relatively stable at approximately 6,300 hours per site and is consistent with the budgeted resources. The small annual variances are likely the result of (1) baseline inspection realignment with attendant changes in inspection cycle frequency, (2) year-to-year implementation variations in the first, second and third year of the inspection cycle for procedures with multi-year frequencies, and (3) the annual variation in plant-specific inspections in response to licensee performance and emerging generic safety issues. Enclosure 3 discusses ROP resources in greater detail.

Resident Inspector Demographics and Site Staffing

As directed in an SRM dated April 8, 1998, the staff developed measures to monitor and trend RI demographics and report the results to the Commission annually. The staff later developed a site staffing metric that is included with the annual analysis. The staff concluded that sites continue to be staffed with knowledgeable and experienced RIs and senior resident inspectors (SRIs). Staff turnover within the NRC, whether caused by promotion, reassignment, retirement, or resignation, is an ongoing process from which the RI program is not insulated. The turnover in the RI ranks over the last several years resulted in a decline of onsite inspection experience, but the turnover rates in both RI and SRI ranks have improved from 2007 through 2009. Nonetheless, the NRC has initiated several actions to ensure an experienced and stable RI and SRI program. The staff reported these enhancements to the Commission in SECY-09-0050, "Actions to Enhance Relocation and Retention for Employees," dated March 30, 2009. The staff plans to continue closely monitoring resident demographics and site staffing in 2010. In accordance with the SRM dated June 26, 2009, the staff will report on the effectiveness of the relocation and retention enhancements for SRIs and RIs in a separate paper to the Commission in CY 2011. Enclosure 4 provides detailed analyses of the 2009 RI demographics and site staffing.

COMMITMENTS:

Prior Commitments—The staff made eight commitments in last year's ROP self-assessment to improve the efficiency and effectiveness of the ROP. The following summarizes the actions taken by the staff to address these eight commitments:

- (1) The staff continued to implement improvement initiatives based on its MSPI Lessons learned review and provided training on the SSFF PI to the inspection staff, as described in Enclosure 1.
- (2) The staff revised program guidance to better integrate OpE into the ROP assessment process; and it continues to emphasize the use of OpE and plans to further integrate this emphasis into the inspection program in CY 2010, as described in Enclosure 1.
- (3) The staff provided recommendations in a separate paper to the Commission detailing potential improvements to the relocation and retention practices for RI and SRI staff, as described in Enclosure 4.
- (4) The staff initiated the development of additional SDP training to ensure that inspectors remain efficient and effective in determining the safety and security significance of identified performance issues and will continue these efforts in CY 2010, as described in Enclosure 1.
- (5) The staff developed and implemented several models for low-power and shutdown situations for use in the SDP, and it plans additional models, as described in Enclosure 1.
- (6) The staff revised program guidance to better integrate traditional enforcement outcomes into the assessment process, as described in Enclosure 1.
- (7) The staff will revise program guidance, as necessary, to better align with the Commission's safety culture policy statement, once it has been completed, as described in Enclosure 1. Since a final safety culture policy statement was not established in CY 2009, the staff is carrying this commitment into CY 2010.
- (8) The staff explored ways to use cross-regional experience to further improve the implementation of the substantive cross-cutting issue guidance and other areas of the ROP, as described in Enclosure 1.

New Commitments—As described in this paper, the staff plans the following five significant actions or ongoing activities to improve the efficiency and effectiveness of the ROP in CY 2010:

- (1) The staff will develop a framework for evaluating the efficacy of potential new PIs for use in the ROP.
- (2) The staff will continue to emphasize the availability and use of OpE in the inspection program and plans to further integrate this emphasis into the inspection guidance.

- (3) The staff will conduct additional SDP training based on input from the partnering initiative, which provided valuable insights regarding areas where training was lacking or can be improved.
- (4) In accordance with SRM M100112, "Briefing On Office Of Nuclear Security and Incident Response-Programs, Performance, And Future Plans", dated February 12, 2010, the staff will report back to the Commission on how the proposed enhancements to the FOF physical protection SDP would alter the CY 2009 FOF exercise findings.
- (5) The staff will revise ROP program guidance, as necessary, to align with the Commission's safety culture policy statement, once it has been completed.

The staff will include the status of these commitments and the other program improvements noted in this paper in the CY 2010 ROP self-assessment.

CONCLUSIONS:

The self-assessment results for CY 2009 indicate that the ROP provided effective oversight by meeting the program goals and achieving its intended outcomes. The ROP was successful in being objective, risk informed, understandable, and predictable. The ROP also ensured openness and effectiveness in support of the agency's mission and its strategic goals of safety and security. The NRC appropriately monitored operating nuclear power plant activities and focused agency resources on performance issues in CY 2009, and plants continued to receive a level of oversight commensurate with their performance. The ROP has developed into a mature oversight process over the past 10 years; however, the staff continues to refine it in response to emerging issues, lessons learned, and suggested improvements from internal and external stakeholders.

RESOURCES:

NRC headquarters and regional resources are needed to conduct the periodic assessment and realignment of ROP inspection procedures, ROP annual program assessment, mid-cycle and end-of-cycle licensee performance assessment; to revise and maintain the NRC Inspection Manual; and to perform all ROP management and oversight activities. The staff estimates that 56.5 full-time equivalent (FTE) staff members and \$875,000 will be needed for FY 2010 to conduct these NRR-funded activities. In FY 2011, it will require 64.3 FTE and \$939,000.¹

In addition, NSIR estimates that it will require approximately 43.4 FTE for FY 2010 and 42.6 FTE in FY 2011 for its ROP inspection and support activities and for licensee performance assessments. RES estimates that it will require approximately 1.9 FTE and \$985,000 for FY 2010 and 1.8 FTE and \$908,000 for FY 2011 for its ROP assistance programs. NSIR and RES budget and perform their portion of the work separate from the NRR effort. The staff does not anticipate that it will require any resources beyond those already included in the current budget requests for FY 2010 and FY 2011 for these activities. The staff will address resource

¹ The FY 2011 resource requirements include 8 FTE for inspector development as part of the Resident Inspector recruitment and retention initiative. Other ROP management and oversight activities in FY 2011 remain stable at 56.3 FTE and comparable to FY 2010 requirements.

requirements beyond FY 2011 during the planning, budgeting, and performance management process of the respective year.

COORDINATION:

The Office of the General Counsel has reviewed this Commission paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this Commission paper and determined that there is no financial impact.

/RA by Bruce S. Mallett for/

R. W. Borchardt
Executive Director
for Operations

Enclosures:

1. Reactor Oversight Process Program Area Evaluations
2. Regulatory Impact Summary
3. Reactor Oversight Process Resources
4. Resident Inspector Demographics

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