

# POLICY ISSUE INFORMATION

April 8, 2011

SECY-11-0054

FOR: The Commissioners

FROM: R. W. Borchardt  
Executive Director for Operations

SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR  
CALENDAR YEAR 2010

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) 2010.

SUMMARY:

The results of the CY 2010 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 2010 based on lessons learned and feedback from internal and external stakeholders.

The staff noted that safety and security inputs to the ROP Action Matrix are currently evaluated separately and consideration of a more holistic approach may help address potential issues that may exist across multiple cornerstones of the ROP. As a result, the staff is preparing a separate Commission paper to seek Commission approval to better integrate issues that may exist across multiple cornerstones, including security. The staff also identified one area of potential near-term change in the Public Radiation Safety Cornerstone, and is preparing a separate Commission paper to request Commission policy direction on possible changes to the

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ROP in this cornerstone. The staff will continue to actively 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 2010 self-assessment in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," dated March 23, 2009. The staff has issued an ROP self-assessment Commission paper each year before the Agency Action Review Meeting and has briefed the Commission on the self-assessment results following the meeting. The Commission provides the staff with direction as a result of this briefing in the form of a staff requirements memorandum (SRM). In SRM M100527, "Briefing on Results of the Agency Action Review Meeting, May 27, 2010," dated June 8, 2010, the Commission did not identify any new requirements for staff action.

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 goals of the ROP include the four specific program goals of being objective, risk-informed, understandable, and predictable, as well as the applicable organizational excellence objectives (e.g., openness and effectiveness) from the NRC's Strategic Plan for Fiscal Years 2008–2013. Each of these ROP goals supports the NRC's mission and characterizes the manner in which the agency intends to achieve its strategic goals of safety and security. IMC 0307 specifies the intended outcomes of the ROP, which help form its basis and are incorporated into the various ROP processes.

#### DISCUSSION:

The staff conducted numerous activities and obtained data from many diverse sources to ensure that it performed a comprehensive and robust self-assessment for CY 2010. Data sources included the ROP performance metrics described in IMC 0307, recommendations from independent evaluations, insights from internal stakeholders based on the biennial survey and the ROP internal feedback process, and feedback received from stakeholders at various meetings, workshops, and conferences. The staff also applied the direction and perspective provided by the Commission in recent years. The staff analyzed this information to gain insights regarding ROP effectiveness and potential areas for improvement. The scope of the staff's self-assessment included the key ROP program areas, ROP communication activities, independent and focused 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 performed evaluations in each of the four key program areas of the ROP: performance indicator (PI) program, inspection program, significance determination process (SDP), and assessment program. The results are summarized below and are discussed in more detail in Enclosure 1. The NRC also performed a gap analysis with the goal of revealing potential areas of the ROP that may warrant additional oversight through PIs or inspection tools. 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. ML110740073).

PI Program — The staff furthered its ongoing efforts to improve the PI program by revising the ROP guidance document to expand on the framework for considering new PIs. The staff and industry representatives on the ROP Working Group have continued to make significant progress on two Mitigating System Performance Index (MSPI) white papers—one involving emergency diesel generator fuel oil transfer pump component modeling and the other involving emergency diesel generator failure mode definitions. The ROP met all of the PI metrics for CY 2010. The survey of internal stakeholders indicated that they generally found the PI program to be meeting the ROP goals in that the program provides useful information on risk-significant areas; includes PIs that are clearly defined and understandable; overlaps appropriately with the inspection program; objectively indicates declining safety performance; and can be used effectively to identify outliers. However, several internal survey respondents wrote that the MSPI portion of the PI program is not easily understandable and lacks clarity. In an effort to make the MSPI more understandable, the staff plans to revise the MSPI guidance in Inspection Procedure 71151, “Performance Indicator Verification.”

Inspection Program — NRC inspectors independently verified that licensees operated plants safely and securely and identified and corrected performance issues in a timely manner. The ROP met all inspection program metrics, including completion of the required baseline inspection program for CY 2010. During CY 2010, the staff completed improvements to the component design bases inspection procedure to select risk significant components using operating experience and other risk-informed methods and issued the revised procedure for use starting in CY 2011. The staff also used operating experience to inform and make improvements to the baseline inspection program. The staff performed its annual review of each baseline inspection procedure for CY 2010 as part of the biennial ROP realignment review that is scheduled to be completed during CY 2011. Some focus areas for the CY 2011 ROP realignment include security, operator requalification inspections, and the use of operating experience. Internal survey responses were mostly 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 significance of identified performance issues. The ROP met the SDP timeliness metric for the fifth consecutive year and met all other SDP metrics. The staff revised several SDP guidance documents, incorporating many suggested improvements from the Risk Tool Enhancement Project and ROP feedback process. The staff began developing new SDPs for inspection findings associated with spent fuel pool issues and force-on-force inspection issues. The staff updated and improved the training for qualifying inspectors and incorporated it with another required course for inspector training. As part of the Risk Tool Enhancement Project, the staff developed two new courses related to risk-informed regulation. The responses to the internal survey on the ROP indicated that, overall, the NRC staff members thought that they were proficient in using the SDP, guidance governing the SDP was adequate, and application of the SDP resulted in the appropriate regulatory response.

Assessment Program — Implementation of the NRC’s assessment program ensured that staff and licensees focused on performance issues commensurate with their safety significance. The

staff issued a draft revision of IMC 0305, "Operating Reactor Assessment Program," to improve usability, incorporate internal and stakeholder feedback and lessons learned from implementation issues, and simplify the guidance for cross-cutting areas. The staff reviewed the causes of three Action Matrix deviations issued in CY 2010 and has initiated resultant program improvements as discussed in Enclosure 1. After a decrease in the number of plants in the Degraded Cornerstone Column (Column 3) of the ROP Action Matrix in the last 2 years, the staff observed an increase in CY 2010 that made the numbers more in line with those from previous years. The staff also noted that a number of plants entered Column 3 of the Security Action Matrix in CY 2010. The staff further noted that since the safety and security inputs to the ROP Action Matrix are currently evaluated separately, consideration of a more holistic approach may help address potential issues that may exist across multiple cornerstones of the ROP. As a result, the staff is preparing a separate Commission paper to seek Commission approval to better integrate issues that may exist across multiple cornerstones, including security. The staff has created an internal working group to develop options for implementing the safety culture policy statement in the ROP. The 2010 internal ROP survey found that perceptions of the assessment program were generally positive. However, two of the eight assessment metrics were not met as a result of the number of new deviations and the timeliness of response to performance issues. Staff actions to address these missed metrics are further discussed in Enclosure 1.

### **ROP Communication Activities**

The staff continued to emphasize stakeholder involvement and open communications regarding the ROP in CY 2010. External stakeholder engagement consisted of monthly ROP meetings, workshops to discuss changes to guidance governing reporting of events, annual assessment meetings and open houses, the Regulatory Information Conference, use of the NRC's public website, and other methods to address plant and program issues as needed. The staff also communicated information and results related to the Security Cornerstone in its Annual Report to Congress on the Security Inspection Program in July 2010. Internal stakeholders participated in periodic counterpart meetings and calls, at all management levels, to discuss current issues, provided feedback through the established ROP Feedback Form process, accessed ROP guidance and information through the ROP Digital City Web site, and shared best practices through the inspector newsletter and various online forums.

The staff gathered direct feedback from NRC inspectors and management responsible for ROP implementation through the biennial internal survey in CY 2010. The responses were generally positive, with stable or improving trends in most areas. Some respondents noted concerns and areas for improvement, and the staff has considered or will evaluate them for possible opportunities to improve the ROP. Most of the internal survey questions and responses contributed directly to the annual ROP performance metrics and self-assessment. The staff's analysis of the survey responses appears in Enclosure 1 in the applicable portions of the program area evaluations as well as in the annual ROP performance metric report. The staff will also develop a more comprehensive discussion of the survey data and associated comments and make this document available to internal stakeholders. The staff plans to issue its next external survey to evaluate ROP effectiveness and gather stakeholder insights in October 2011, and it will explore additional alternatives to further encourage external stakeholder participation and interest in the survey.

## **ROP Performance Metrics and Independent and Focused Evaluations**

ROP Performance Metrics — Based on the staff's review, all but 2 of the 45 performance metrics for the ROP met the established criteria as defined in Appendix A to IMC 0307. The two metrics that were not met were in the assessment program area. The staff's analysis of these performance metrics is discussed in the program area evaluations in Enclosure 1 as well as in the annual performance metric report (ADAMS Accession No. ML110740073).

Independent Evaluations — An international team of 20 senior safety experts visited the NRC in October 2010 to conduct an Integrated Regulatory Review Service (IRRS) mission. The IRRS Review Team identified a number of good practices but also made recommendations and suggestions where improvements were necessary or desirable to continue enhancing the effectiveness of regulatory functions consistent with the International Atomic Energy Agency safety standards and best practices. The final report was issued on March 1, 2011.

ROP Gap Analysis — The staff performed a gap analysis in CY 2010 with the goal of revealing potential areas of the ROP that may warrant PI or inspection program changes. In its gap analysis, the staff identified one area of potential near-term change in the Public Radiation Safety Cornerstone. Two action matrix deviations at Vermont Yankee and Indian Point, internal feedback, industry initiatives in groundwater monitoring, and the groundwater task force collectively indicate that the ROP's ability to address licensee initiatives in monitoring and controlling releases to groundwater could be enhanced. The ROP could be leveraged to affirm licensees' efforts to ensure adequate protection of public health and safety through implementation of industry initiatives. Enhanced focus on this area could also increase public confidence in NRC's oversight activities under the Public Radiation Safety Cornerstone of the ROP. ROP tools [inspection guidance, significance determination process, PIs, etc.] could be changed or developed to acknowledge industry activities and performance in meeting voluntary commitments to the industry initiatives. The staff is preparing a separate Commission paper to request Commission policy direction on possible changes to the ROP in this cornerstone.

ROP Reliability Initiatives — The staff continued to implement the ROP reliability initiatives effectively in 2010. The Deputy Regional Administrators began these activities to improve the reliability of ROP implementation by sharing inspection resources, conducting Branch Chief benchmarking visits to other regions, discussing reliability topics, and assessing inspection report quality.

Regulatory Impact — The staff also received and evaluated feedback from licensees as part of the regulatory impact process. Over the past year, the staff received and compiled feedback from 105 visits to 45 reactor sites across all four regions. These visits resulted in 229 distinct comments that fell into two main categories—inspector performance and formal communications with licensees. Of the comments compiled, 93 percent were favorable and 7 percent were unfavorable. The number of comments increased moderately in 2010 while the distribution of comments and the favorable percentage were similar to previous years. Enclosure 2 summarizes the feedback received and the staff's evaluation and actions to address the noted concerns.

Industry Performance Trends — The NRC collects industry-wide data to monitor the overall safety performance of operating plants. These industry-level data also serve as indicators of ROP effectiveness. The staff is reporting the FY 2010 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 2010, as reflected in expended hours, increased by 4.2 percent compared with 2009. Baseline inspection hours remained essentially unchanged in 2010 compared with 2009. Plant-specific inspection effort increased noticeably in 2010 compared with 2009 as a result of several significant special inspections, an augmented team inspection, and significant plant-specific inspection activity at several sites. The generic safety issue inspection effort reported in 2010 increased compared with 2009, demonstrating the variation in the level of effort that is possible in this area from year to year. The regional effort for licensee performance assessment continues to remain relatively unchanged and at expected levels. 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 rates in both the RI and SRI ranks have improved from 2007 through 2009; 2010 rates were essentially unchanged from those for 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. In accordance with the SRM dated June 26, 2009, the staff will report on the effectiveness of these enhancements in a separate paper to the Commission in CY 2011. The staff plans to continue closely monitoring RI and SRI demographics and site staffing in 2011. Enclosure 4 provides detailed analyses of the 2010 RI and SRI demographics and site staffing.

### **COMMITMENTS:**

Prior Commitments — The staff made five 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 five commitments; greater detail on specific staff actions and plans appears in Enclosure 1:

- (1) The staff developed a framework for evaluating the efficacy of potential new PIs for use in the ROP.
- (2) The staff continued to emphasize the availability and use of operating experience in the inspection program and further integrated this emphasis into inspection guidance.
- (3) The staff conducted 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, by the end of May 2011, the staff will report its final results to the Commission on how the proposed enhancements to the force-on-force physical protection SDP would improve on the CY 2009 force-on-force exercise findings.

- (5) The staff will revise program guidance, as necessary, to better align with the Commission’s safety culture policy statement, once it is finalized. Since the agency did not establish a final safety culture policy statement in CY 2010, the staff is carrying this commitment into CY 2011.

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 2011:

- (1) The staff will prepare a separate paper to request Commission policy direction on possible changes to the ROP in the Public Radiation Safety Cornerstone.
- (2) The staff will report on the effectiveness of the relocation and retention enhancements for SRIs and RIs in a separate paper to the Commission.
- (3) The staff will prepare a separate paper to seek Commission approval to reintegrate the Security Cornerstone into the ROP Action Matrix for assessment purposes.
- (4) The staff will report its final results to the Commission on how the proposed enhancements to the force-on-force physical protection SDP would improve on the CY 2009 force-on-force exercise findings.
- (5) As noted above, the staff will revise program guidance, as necessary, to better align with the Commission’s safety culture policy statement.

The staff will include the status of these commitments and the other program improvements noted in this paper in the CY 2011 ROP self-assessment.

#### CONCLUSIONS:

The self-assessment results for CY 2010 indicate that the ROP provided effective oversight by meeting the program goals and achieving its intended outcomes. The ROP ensured openness and effectiveness in supporting the agency’s mission and its strategic goals of safety and security. The program was successful in being objective, risk-informed, understandable, and predictable. The NRC appropriately monitored operating nuclear power plant activities and focused agency resources on performance issues in CY 2010, and plants continued to receive a level of oversight commensurate with their performance. The staff recognizes the value of continuous improvement and actively solicits stakeholder feedback to apply lessons learned and improve various aspects of the ROP.

#### RESOURCES:

NRC headquarters and regional resources are needed to conduct the periodic assessment and realignment of ROP inspection procedures, the ROP annual program assessment, and the midcycle and end-of-cycle licensee performance assessments; to revise and maintain the NRC

Inspection Manual; and to perform all ROP management and oversight activities. The staff estimates to conduct these NRR-funded activities, which include NRR and the regions, are included in the table below. The table also includes the Office of Nuclear Safety and Incident Response (NSIR) estimates for its ROP management, development, oversight activities, and licensee performance assessment. In addition, the NRC Office of Nuclear Regulatory Research (RES) provides assistance to the ROP in the development and enhancement of NRC risk analysis tools such as the standardized plant analysis risk model and enhanced probabilistic risk assessment analysis tools such as the SAPHIRE code. It also provides enhanced risk analysis methods for risk assessment of operational events.

	FY 2011		FY 2012	
	FTE	\$K	FTE	\$K
NRR	30.8	1,020	30.8	1,055
NSIR	7.8	--	7.8	--
RES	9.3	3,585	8.2	2,850
Regions	33.5	--	37.7	--

The staff does not anticipate that these activities will need any resources beyond those already included in the current budget requests for FY 2011. Resources required in future years beyond FY 2012 would be addressed 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 Martin J. Virgilio for/*

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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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***/RA by Martin J. Virgilio for/***  
 R. W. Borchardt  
 Executive Director  
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**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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