

POLICY ISSUE INFORMATION

April 7, 2010

SECY-10-0042

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

Reactor Oversight Process Program Area Evaluations

In accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," the staff of the U.S. Nuclear Regulatory Commission (NRC) performed program evaluations in each of the four key program areas of the Reactor Oversight Process (ROP), including performance indicators (PIs), inspection, significance determination process (SDP), and assessment. The staff used self-assessment metrics, feedback from internal and external stakeholders, and other information to gain insights into the effectiveness of the ROP in meeting its goals and intended outcomes. Based on the metric results, stakeholder comments, and other lessons learned through ongoing program monitoring, the staff identified certain issues and actions in each of the four key program areas, as described below. The annual ROP performance metric report provides the data and staff analysis for each of the program area metrics (Agencywide Documents Access and Management System (ADAMS) Accession No. ML100540037).

Performance Indicator Program

During calendar year (CY) 2009, the staff continued to look for ways to improve the effectiveness of the PI program. The staff reinforced the guidance and expectations governing the gathering and submittal of data for existing PIs through the frequently asked question (FAQ) process. For example, the staff reinforced the reporting requirements and governing guidance for the safety system functional failure (SSFF) PI to the NRC inspection staff and industry. In December 2009, the staff provided training on the SSFF PI to the regional inspectors at the semi-annual counterpart meetings, as it committed to do in the CY 2008 self-assessment. As evidenced by audience feedback, the SSFF training was generally well received and was noted for its direct applicability to both the inspection and PI programs.

The staff continually looks for ways to modify and improve existing PIs to ensure their effectiveness. As it committed to do in last year's self-assessment, the staff improved the mitigating system performance index (MSPI) as a result of the recently completed lessons learned review. This review generated several staff white papers, PI guidance changes, and other activities to improve the effectiveness of the MSPI. Two staff MSPI white papers have been resolved, and two others will be resolved by end of CY 2010. The two issues that were resolved concerned properly accounting for rounding errors when computing the final MSPI values and changing the MSPI planned train unavailability baseline. The two staff white papers not yet resolved concern monitoring emergency diesel generator (EDG) fuel oil transfer pumps as part of the MSPI and revising the component failure mode definitions for EDGs. The staff has formally developed additional initiatives regarding certain component boundaries and failure mode definitions. The NRC will continue to discuss these initiatives, along with any future efforts for MSPI improvement, in the ROP Working Group monthly public meetings.

In addition, the staff reviews and assesses the effectiveness of the security PI on an annual basis as part of its self-assessment. Based on this review, the staff discussed its self-assessment with stakeholders from the NRC, industry, state governments, and the public. The stakeholders discussed the publication of the new requirements of 10 CFR Part 26 and 73 and resultant changes to the baseline inspection program. It was concluded by all stakeholders at this meeting that, in light of the publication of the new requirements, any discussion of potential changes to the security cornerstone PI would be better informed after completion of one complete cycle of the baseline inspection program. Therefore, the staff plans to reassess the effectiveness of the security PI in 2013 as informed by the experience gained during the completion of one full security baseline inspection cycle.

The staff has also continued its efforts to improve the Emergency Preparedness PIs, specifically the Drill and Exercise Performance (DEP) PI. Data collection for Temporary Instruction (TI) 2515/175, "Emergency Response Organization, Drill/Exercise Performance Indicator, Program Review," issued June 5, 2008, has been completed. The staff's review of the collected raw DEP PI data is ongoing.

In addition to reinforcing the current PI guidance and improving existing PIs, the staff has made progress in exploring potential new PIs. The staff gained experience in the use of PIs outside the United States by participating as a consultant in a meeting of international regulators that completed a draft International Atomic Energy Agency safety guide titled "Development of Nuclear Power Plant Safety Performance Indicators for Use by a Regulatory Body." The staff also evaluated whether PIs already in use by the industry (i.e., non-ROP PIs) would provide meaningful regulatory insights that could be included in the ROP. A group of senior NRC inspection program managers reviewed the corporate and plant-specific indicators used by a licensee. The staff found that this licensee uses a large number of internal PIs, many of which involve information associated with NRC regulatory functions and activities. One area of interest was the use of MSPI insights to evaluate and plan potential plant modifications that, if implemented, would improve individual plant-risk profiles. Other than the MSPI, which the ROP already uses, the staff concluded that the other internal PIs either involved information and data that were too subjective for effective use as a regulatory tool or were not directly linked to regulated activities.

In December 2009, the staff introduced a white paper at the monthly public meeting of the industry-staff ROP Working Group that captured a broad spectrum of plant performance attributes, including those of PIs used by the international community, the United States nuclear power industry, and other organizations. The staff plans to host a separate public meeting to discuss the white paper in detail, with the goal of obtaining stakeholder input to develop a framework and establish a process for evaluating the efficacy of potential new PIs for use in the ROP.

Based on Commission direction in the staff requirements memorandum (SRM) dated June 30, 2008, the staff reviewed the metrics for assessing the effectiveness of the PI program and made revisions in CY 2008. The staff revised the wording to two metric definitions, as well as to the internal and external survey questions associated with them, to emphasize that the PI program is used in conjunction with the inspection program to provide useful insights (PI-4) and that the PI program contributes to the identification of performance outliers (PI-8). The results of the 2008 internal survey and recent 2009 external stakeholder survey indicate that the revisions to PI-4 and PI-8 helped to emphasize the role of the PI program, and the more accurate metric definition should ensure objective, open, and predictable future survey results. The staff is satisfied with the changes made to the PI metrics as a result of the CY 2008 review and considers the action complete to address the Commission SRM. In addition, the staff will continue to reinforce the message, through ongoing communications with both internal and external stakeholders, that the PI program is only a contributor to the identification of performance outliers and is used in conjunction with the inspection program to provide useful insights on licensee performance.

The staff met all eight of the PI metrics for CY 2009. This year, only industry stakeholders participated in the external survey though the survey was made available to all external stakeholders. This survey generally found that the PI program met the ROP goals of providing useful information on risk-significant areas. Most survey respondents found the PIs to be clearly

defined and understandable and to provide an appropriate overlap with the inspection program. In addition, the majority of the respondents stated that the PIs provide an objective indication of declining safety performance and contribute to the identification of outliers. Several respondents asserted that the MSPI is too complex, labor intensive, and difficult to understand. The NRC will endeavor to minimize the complexity of the MSPI when considering any future MSPI improvements. The staff will consolidate all responses to the external survey feedback in a separate document.

Inspection Program

The inspection program independently verified that licensees operated plants safely and securely in CY 2009 and identified and corrected performance issues in a timely manner in accordance with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program—Operations Phase," and IMC 2201, "Security and Safeguards Inspection Program for Commercial Nuclear Power Reactors." Each region documented its CY 2009 completion of the baseline inspection program in a memorandum available in ADAMS (Accession No. ML100390084 for Region I, ML100550802 for Region II, ML100560313 for Region III, and ML100601032 for Region IV). Additionally, the Office of Nuclear Security and Incident Response (NSIR) completed all security baseline inspections in CY 2009.

The staff completed its third biennial ROP realignment review during CY 2009, in accordance with Appendix B to IMC 0307, "Reactor Oversight Process Self-Assessment Program." This review assesses the effectiveness of each ROP baseline inspection procedure (IP) by determining whether appropriate inspection resources were applied in each of the inspectable areas. The working group consisted of staff from the Office of Nuclear Reactor Regulation (NRR), NSIR, and each of the four Regions. Modifications and adjustments to the inspection effort were made across the baseline inspection program, but overall inspection resources for CY 2010 remain at CY 2009 levels. The 2009 ROP realignment also added new inspection requirements to accommodate inspections related to the new requirements under Title 10 of the *Code of Federal Regulations* (10 CFR) Part 26, "Fitness-for-Duty Programs," 10 CFR 50.54(hh), "Conditions of Licenses," and lessons learned from Peach Bottom regarding inattentive security officers. Additionally, the staff adjusted some IPs in the reactor safety area to better align budgeted and expended inspection resources. The staff revised all radiation safety inspection procedures to provide a more performance-based inspection for each of the functional areas of a radiation safety program. It also made inspection resource adjustments to all security-related IPs, based on regional feedback and past inspection resources expended for each IP. Additional details on the results of the 2009 ROP realignment process appear under ADAMS Accession No. ML092090312.

In addition, the NRC revised several inspection program documents and created one new IP to address Subpart I, "Managing Fatigue," of the new requirements contained in 10 CFR Part 26. For example, the staff added guidance to Appendix D, "Plant Status," to IMC 2515 for inspectors to look for indications of fatigue when performing plant status reviews, and created IP 93002, "Managing Fatigue," to provide guidance to inspectors for fatigue-related issues. In addition, the staff added an inspection requirement to IP 71111.20, "Refueling and Other Outage Activities," to determine how licensees manage fatigue during outages. The staff also revised the Security Baseline Inspection Program to address the new requirements of 10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage," and is developing a new inspection program to address the new requirements of 10 CFR 73.54, "Protection of Digital Computer and Communication Systems and Networks."

The staff is developing a new engineering inspection to potentially replace the current component design-bases inspection. The new inspection will focus on improved component sample selection by reviewing various licensee programs and using operating experience (OpE). The staff plans an initial inspection during CY 2010, with full implementation of the new engineering inspection in CY 2011 if it is determined to be effective.

The inspection staff continued to review and consider OpE in planning their inspection activities. The Operating Experience Smart Sample (OpESS) Program provides inspectors with concise information related to selected industry operating events that have generic applicability and potential risk significance and can be readily inspected through the baseline inspection program. Since the program's inception in fiscal year (FY) 2007, the staff has issued seven OpESS documents and one update. The staff compiles and communicates operating experience using single Web page summaries called OpE COMMS, daily OpE Screening Summaries, OpE summary inputs and discussions during the monthly ROP call with the Regions, and the quarterly inspector newsletters. In addition, the Reactor OpE Gateway contains a wealth of OpE information for all internal stakeholders. This internal Web page includes numerous OpE data bases and search engines for all agency employees to use. The staff incorporated OpE into the assessment process for use during the mid-cycle and end-of-cycle reviews, as noted in the assessment program discussion below. The staff continues to emphasize the use of OpE and plans to further integrate this emphasis into the inspection program in CY 2010, through the development of a new IMC or incorporation into existing IMC guidance.

Although the resident inspector (RI) and senior resident inspector (SRI) turnover rates have declined for three consecutive years, the staff continues to closely monitor the attraction and retention of RIs and SRIs to ensure an experienced and stable RI and SRI program. An NRC senior-level management working group developed strategies and initiatives to address these retention issues and reported them to the Commission in SECY-09-0050, "Actions to Enhance Relocation and Retention for Employees," dated March 30, 2009. Enclosure 4 of this SECY paper offers additional discussion and analysis of resident inspector demographics and issues.

The staff continued to improve the initial and continuing inspector training programs to develop and maintain well-qualified, competent inspectors. The staff made recommendations, reviewed them in accordance with the ROP feedback process, and incorporated the improvements into inspection standards, as appropriate. The staff also developed three new inspector qualification standards, one for fire protection inspectors and two advanced-level standards for inservice inspection and fire protection inspectors. The staff conducted regional training on the integration of traditional enforcement into the assessment process, documenting issues in inspection reports, and licensee reporting requirements associated with the SSFF PI. In addition, the staff initiated periodic knowledge management seminars to improve the NRC's understanding of the concept of safety culture and its aspects. The staff also developed and implemented industrial safety training as well as a comprehensive training curriculum to support security inspections, including Force-on-Force inspections.

All inspection program metrics met their established criteria during CY 2009, including all timeliness goals. In general, respondents to the external survey believed the inspection program was effective in ensuring areas important to safety are appropriately addressed and that the information contained in inspection reports is relevant, useful, and clearly written. The agency received some feedback on potential areas for improvement which are addressed in this self-assessment and will be further addressed in the consolidated response to the CY 2009 external survey.

Significance Determination Process

The SDP continues to be an effective tool for determining the safety significance of identified performance issues. Oversight focuses on process improvements, based on feedback from internal and external stakeholders. The staff met the SDP timeliness metric for a fourth consecutive year. The staff received only one appeal letter, which was rejected because it failed to meet the criteria for invoking the appeal process. The goals met by the staff for other metrics included the amount of expended resources applied to SDP evaluations, compared to direct inspection hours, and ensuring that the SDP results are repeatable and predictable.

In CY 2009, the staff issued the new SDP for alternative mitigation strategies (Appendix L, "B.5.b Significance Determination Process," to IMC 0609, "Significance Determination Process.") The staff developed the appendix to support its commitment to the Commission to incorporate the lessons learned from the performance of Temporary Instruction 2515/171, "Verification of Site Specific Implementation of B.5.b Phase 2 & 3 Mitigating Strategies," into the ROP baseline inspection program. In a memorandum to the Commission, dated April 30, 2009 (ADAMS Accession No. ML090771056), the staff documented its fulfillment of this commitment. The staff revised and issued the baseline security SDP, Appendix E, Part 1, to enhance the process. The staff also updated the baseline security SDP to reflect the new requirements of 10 CFR 73.55, "Requirements for Physical Protection of Licensed Activities in Nuclear Power Reactors Against Radiological Sabotage," and is working with stakeholders to revise the Force-on-Force (FOF) SDP to improve its effectiveness. 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 evaluate and report back to the Commission on how the proposed enhancements to the FOF physical protection SDP would alter the CY 2009 FOF exercise findings.

A team composed of staff members from NRR, the Office of Nuclear Regulatory Research (RES), and the Regions reviewed the NRC risk tools to identify areas for enhancement; this effort was called the partnering initiative. The team solicited feedback from internal stakeholders and end-users in the regional offices and Headquarters for improving the NRC risk tools used in everyday regulatory activities for nuclear reactors, such as the SDP, standardized plant analysis risk (SPAR) models, and the Incident Investigation Program, as well as staff training needs and interests. The team intends to use the data collected to (1) ensure the suite of risk tools is used efficiently, (2) provide clarity through improving documentation, methods, and training, (3) use the best available knowledge from research and operational experience to improve the suite of risk tools and thus improve the reliability and predictability of the NRC's performance assessment activities, and (4) provide better tools for all NRC staff engaged in probabilistic risk assessment (PRA) regulatory activities. The staff is currently working to implement many of these enhancements.

In the CY 2008 self-assessment, the staff agreed to develop and implement additional SDP training to ensure the inspectors remain efficient and effective in determining the safety and security significance of identified performance issues. Although the staff began to develop additional SDP training, it deferred implementation to incorporate input from the partnering initiative, which provided valuable insights regarding areas where training was lacking or can be improved. These areas include fundamental and overview training for certifying inspectors, as well as risk-informed decision making fundamentals and techniques for managers. The staff will resume its efforts to implement SDP training in CY 2010.

The staff continues to develop analytical tools that complement the NRC's deterministic approach and support its traditional defense-in-depth philosophy. Work on developing low power/shutdown (LPSD) SPAR models continues with a commitment of two models per year. Four LPSD models are currently available, with two more being developed and another one planned. Guidance for using the models appears in Volume 4 of the Risk Assessment of Operational Events (RASP) Handbook, which will be issued in CY 2010 for trial use and comment. Enclosure 2 of SECY-09-143, "Status of the Accident Sequence Precursor Program and the Standardized Plant Analysis Risk Models," dated September 29, 2009, provides the status of these and other SPAR model enhancements.

Based on the Commission's direction in the SRM dated June 30, 2008, the staff reviewed the SDP metrics and made several changes, including the wording for the metric and the corresponding survey question regarding stakeholder perception (SDP-4), to emphasize that the SDP should result in an "appropriate" regulatory response across all cornerstones. The responses to this question in the external survey indicated that the stakeholders thought the SDP generally resulted in the appropriate regulatory response. The staff believes the changes made to the SDP metrics as a result of the CY 2008 review clarified the metric definition and intent of the SDP, and considers the action complete to address the Commission SRM.

Although the external survey responses were generally favorable, some stakeholders indicated that the SDP was not consistent and sometimes resulted in attributing higher risk significance to an issue than was warranted, that too much time was spent challenging NRC assumptions, and that the NRC should use licensee PRA models. The staff is considering these comments but fails to see evidence that the NRC's SDP results overestimate risk significance or that NRC assumptions are subjective having received only one appeal letter for findings of greater than Green significance, which was rejected because it failed to meet the criteria for invoking the appeal process. The staff will further address the survey responses in its consolidated response to stakeholder comments. The staff will continue to streamline the SDP program, implement effective staff training, and monitor SDP timeliness.

Assessment Program

Staff implementation of the assessment program ensured that staff and licensees took necessary actions to address performance issues in CY 2009. The staff revised IMC 0305, "Operating Reactor Assessment Program," to improve usability and incorporate added guidance on traditional enforcement and safety culture, as well as other clarifications and enhancements. In addition, to address its commitment in the 2009 ROP self-assessment, the staff incorporated into IMC 0305 consideration of operating experience during mid-cycle and end-of-cycle reviews to note trends in performance or the emergence of technical issues that can be considered for incorporation into ROP inspection guidance.

In addition to the changes to the IMC 0305 guidance, the staff enhanced the internal and external communication of plant assessment results. Part of this effort included a revision to the action matrix public Web site to support program changes included in the December 24, 2009, revision. Starting in CY 2010, the action matrix Web site will provide a more current status of plant assessment, rather than a purely retrospective look at the previous quarter's data. This change promotes clarity and openness with members of the public.

In its SRM M090514, "Briefing on the Results of the Agency Action Review Meeting," dated June 1, 2009, the Commission asked the staff to provide the status of the two facilities

(Davis-Besse and Indian Point) that were currently receiving increased NRC oversight as a result of deviations from the action matrix. 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, the staff provided the plans and schedules for satisfying the criteria for these plants to return to normal NRC monitoring efforts. 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 in process in late CY 2009 and CY 2010.

As noted in the CY 2008 ROP self-assessment, the number of plants in the degraded cornerstone (column 3) and multiple/repetitive degraded cornerstone (column 4) was consistent with previous levels, and the industry's safety performance, as evidenced by the ROP, was consistent with the Industry Trends Program results. During CY 2009, the staff observed a decline in the number of plants in columns 3 and 4 of the action matrix. The staff will continue to closely monitor plant performance to ensure appropriate oversight.

In the CY 2008 ROP self-assessment, the staff committed to revising program documents to incorporate guidance for integrating traditional enforcement outcomes into the assessment process. During CY 2009, the staff completed efforts to integrate certain traditional enforcement items into the assessment program by changing inspection and assessment guidance documents. The staff changed Appendix B, "Issue Screening," to IMC 0612, "Power Reactor Inspection Reports," to allow performance deficiencies to be processed separately from the violation, so that the technical aspect can become a timely input into the action matrix. IMC 0305 and supporting inspection guidance were changed to allow follow up inspection on all levels of traditional enforcement outcomes. Using an escalating approach similar to that in the action matrix, the number, severity level, and similarities among the violations will allow one of three levels of inspection response to be used, as appropriate.

The staff committed, in the CY 2008 ROP self-assessment, to explore ways to use cross-regional experience to further improve the implementation of guidance on substantive cross-cutting issues (SCCIs). In response to this commitment, the staff leveraged ongoing efforts initiated by the Deputy Regional Administrators to improve the reliability of ROP implementation, including the SCCI process. Regional management developed the following four ROP reliability initiatives: (1) Enhanced Inspection Resource Sharing Among Regions, (2) Branch Chief Benchmarking Visits to Other Regions, (3) Periodic Discussion of Reliability Topics, and (4) ROP Self-Assessments of Inspection Report Quality. The regions are continuing to implement these initiatives, with NRR support.

The staff also committed, in the CY 2008 ROP self-assessment, to revising program guidance, as necessary, to better align with the Commission's safety culture policy statement once it has been completed. While the Commission safety culture policy statement is being developed, staff continues to be engaged with internal and external stakeholders. In addition, the Nuclear Energy Institute (NEI) has proposed an alternative industry-owned safety culture oversight process, aspects of which the NRC staff is observing at the request of NEI. The staff will continue to become familiar with the initiative and to evaluate associated tools that could possibly be leveraged to gain efficiencies in the ROP.

The staff implemented several changes to ROP guidance in CY 2009 regarding safety culture and the use of SCCIs. It revised IP 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input," in January 2009. This revision incorporated a graded approach for assessing a licensee's safety culture and detailed guidance for performing an independent safety culture assessment. Based

on regional experience and feedback, the staff revised the IMC 0305 guidance to create a cross cutting theme for the area of safety-conscious work environment (SCWE). In addition, to improve program document usability, guidance related to screening inspection findings for cross-cutting aspects was relocated from IMC 0305 to IMC 0612, Appendix B, and the descriptions of the safety culture components and aspects were relocated to the new IMC 0310, "Components Within the Cross-Cutting Areas." While guidance for screening inspection findings and the component descriptions were relocated, IMC 0305 retained all guidance related to the SCCI process. The staff also developed training for regional staff on the NRC's safety culture activities related to the ROP.

The staff believes that the current process of considering cross-cutting aspects of inspection findings is effective because it offers insights into a licensee's safety culture, while maintaining consistency with the ROP objectives of being transparent, objective, understandable, predictable, risk-informed, and performance-based. The process enables the NRC staff to identify concerns about a licensee's performance in a cross-cutting area, with the expectation that the licensee will address the performance issue before it results in a more significant safety concern.

The agency met seven of the eight assessment metrics for CY 2009, including all timeliness goals. The metric regarding perceived effectiveness of the safety culture enhancements to the ROP was not met, based on the negative feedback from external stakeholders, which included only five responses, all from industry representatives. The staff is aware of the industry's concerns with the process for determining substantive cross-cutting issues and will continue to consider industry proposals as noted above. The staff also recognizes that there was a significant decrease in the number of external survey responses and notes that it would be prudent to obtain a broader perspective before drawing specific conclusions on the process. Other feedback from the external survey regarding the assessment program was generally favorable. Respondents confirmed that actions taken to address performance issues at plants are predictable and appropriate, and that information contained in assessment reports is, for the most part, relevant, useful, and well written. Some respondents questioned whether multiple White inputs should move a plant to column 3 and encouraged greater consistency and clarity on substantive cross-cutting issues. The staff will respond to specific comments as part of its consolidated response to the external survey.

Regulatory Impact Summary

Scope and Objectives

On December 20, 1991, the Commission issued a staff requirements memorandum directing the staff of the U.S. Nuclear Regulatory Commission (NRC) to develop a process for obtaining continual feedback from licensees and to report the feedback on the process to the Commission each year. The staff described the continual feedback process in SECY-92-286, "Staff's Progress on Implementing Activities Described in SECY-91-172, 'Regulatory Impact Survey Report—Final,'" issued August 18, 1992.

The feedback process requires regional management to solicit informal feedback from its licensees during routine visits to reactor sites. The managers record this feedback on forms that they forward to the Office of Nuclear Reactor Regulation (NRR) and the Office of Nuclear Security and Incident Response (NSIR). The Regions, NRR, and NSIR then evaluate the concerns identified and take any necessary corrective actions. This process, first implemented in October 1992, has given licensees frequent opportunities to comment on the NRC's regulatory impact.

This enclosure reports on feedback received from licensees during the previous fiscal year. During this period, 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 (163/178) were favorable and 8 percent (15/178) were unfavorable. The number and distribution of comments and the favorable percentage were similar to previous years. The following sections summarize the feedback received, the staff's evaluation, and the proposed improvement actions.

(1) Formal Communications with Licensees

Feedback

Almost half of the licensees' comments concerned the effectiveness of communications between the NRC staff and licensees. Almost all comments were favorable with regard to communications with inspectors and regional management. Many licensees said that communications were good or excellent, and others noted that the staff's communication skills have improved. A few licensees noted communication concerns with inspection staff, one noted that the NRC did not respond well to questions during a public meeting with the licensee, and another licensee noted that the NRC's preliminary determination letter provided before an enforcement conference was not properly characterized.

Evaluation and Action

The staff concludes that communication between the NRC and its licensees is effective and that the reported communication problems were isolated instances. The staff bases this conclusion on the large number of routine interactions between the NRC and its licensees, combined with the many favorable comments and the relatively few negative comments received during the past year. Nearly 95 percent of the comments received this year were favorable.

The staff is aware of the importance of prompt and clear communication and emphasizes this goal in the policy, guidance, and training provided for the inspection program. Effective

communications will remain a priority and will receive continued monitoring and attention from regional and headquarters management.

(2) Inspector Performance

Feedback

Almost half of the licensees' comments concerned inspector performance. This category covers a wide range of inspector practices but excludes issues involving communication with licensees discussed in the previous section. Nearly all of the comments were complimentary of the NRC's inspection staff, noting the high quality of inspections and the effective and professional working relationship between the NRC and its licensees. Most licensees noted that NRC inspections were effective, and the associated inspection reports correctly characterized the licensee's performance. However, a few licensees questioned the NRC's basis for specific violations related to three distinct inspections (fire protection; modifications under Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.59, "Changes, Tests, and Experiments"; and keeping exposures as low as reasonably achievable), and another licensee questioned the staff's timeliness in dispositioning a piping issue.

Evaluation and Action

The staff concludes that inspectors were professional, maintained effective working relationships, and appropriately characterized licensee performance. Over 95 percent of the comments received this year were favorable. The staff reviewed the negative feedback for trends and found that each concern related to an isolated incident or a difference in professional opinion. As stipulated in Attachment 2, "Process for Appealing NRC Characterization of Inspection Findings (SDP Appeal Process)," to Inspection Manual Chapter 0609, "Significance Determination Process," the significance determination process has a formal venue for a licensee to appeal the staff's final significance determination of an inspection finding. This process was invoked only once in 2009, and that appeal letter was rejected because it failed to meet the criteria for invoking the appeal process.

The NRC management continues to emphasize to the staff the importance of professional conduct. Senior NRC managers reinforce these expectations in inspector counterpart meetings, workshops, and training courses, as well as during site visits conducted in accordance with Inspection Manual Chapter 0102, "Oversight and Objectivity of Inspectors and Examiners at Reactor Facilities." The staff will continue to closely monitor the regulatory impact of inspector performance.

Reactor Oversight Process Resources

Summary of 2009 Reactor Oversight Process Resources

Table 1 summarizes the U.S. Nuclear Regulatory Commission (NRC) staff resources expended, in hours, for the Reactor Oversight Process (ROP) during the past three fiscal years (FYs).¹ Overall staff effort in FY 2009 increased by 1.4 percent, compared with FY 2008, for the activities listed in Table 1.

Baseline inspection hours include direct inspection effort, baseline inspection preparation and documentation, and plant status activity. Baseline inspection hours increased in 2009, primarily as a result of increased effort in performing Inspection Procedure (IP) 71152, "Identification and Resolution of Problems," and IP 71130.03, "Contingency Response—Force-on-Force Testing." The hours charged to other baseline procedures remained relatively unchanged. As in previous years, all four Regions completed the required baseline inspections in 2009.

Plant-specific inspections include: (1) supplemental inspections conducted in response to greater-than-Green inspection findings and performance indicators, (2) reactive inspections, such as augmented inspection teams and special inspections performed in response to events, and (3) the infrequently performed inspections listed in Appendix C, "Special and Infrequently Performed Inspections," to NRC Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program—Operations Phase," and Appendix C, "Generic, Special, and Infrequent Inspections," to IMC 2201, "Security Inspection Program for Commercial Nuclear Power Reactors," which are not part of the baseline or supplemental inspection programs.

Plant-specific inspection effort decreased in FY 2009, compared with FY 2008, caused, in part, by completion of IP 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," at the Palo Verde site. There was also a decrease in event response and in supplemental inspections in FY 2009, with a corresponding decrease in preparation and documentation effort for these inspections. The decrease in supplemental inspections reflects the decrease in the number of plants in columns 3 and 4 of the ROP action matrix in FY 2009, compared with FY 2008.

Generic safety issue inspections are typically one-time inspections of specific safety and security issues, with significant variability in effort possible from year to year. The decreased effort in generic safety issue inspections reflects reduced activity in this area in FY 2009 and the completion, in December 2008, of inspections related to "Verification of Site Specific Implementation of B.5.b Phase 2 & 3 Mitigating Strategies."

The effort reported for "other activities," including inspection-related travel, significance determination process (SDP), and routine communications (which now encompasses regional support, enforcement support, and review of technical documents), increased slightly in 2009. The effort for these activities typically corresponds to the baseline inspection effort. The regional effort for licensee performance assessments has remained relatively steady during the past three FYs and suggests that the performance assessment effort has reached a steady state.

¹ The staff implements the ROP on a calendar year basis; however, it obtains and reports resource data on an FY basis.

ROP Resource Improvement Initiatives

The staff continued to implement a number of initiatives to improve program efficiency and effectiveness to reduce inspection resource requirements. These initiatives include a realignment of resources allocated to the individual baseline IPs (including design engineering inspections), regional best practice initiatives (including the ROP reliability initiatives), continued SDP improvements, and implementation of the performance indicator improvements. Enclosure 1 of this paper discusses these initiatives.

Table 1 Resources Expended¹
(Inspection-Related Staff Effort Expended at Operating Power Reactors)

	52 weeks FY 2007 <u>09/24/06–09/22/07</u>	52 weeks FY 2008 <u>09/23/07–09/20/08</u>	52 weeks FY 2009 <u>09/21/08–09/19/09</u>
Baseline Inspections			
Direct Inspection Effort	156,547	147,396	156,348
Inspection Prep/Doc	111,770	99,522	104,825
Plant Status	<u>48,804</u>	<u>49,481</u>	<u>50,192</u>
Subtotal	317,121 hr	296,399 hr	311,365 hr
Plant-Specific Inspections			
Direct Inspection Effort	12,278	14,063	9,149
Inspection Prep/Doc	<u>8,174</u>	<u>9,909</u>	<u>6,338</u>
Subtotal	20,452 hr	23,972 hr	15,487 hr
Generic Safety Issues Inspections	11,212 hr	13,492 hr	8,619 hr
Performance Assessment (Regional Effort Only)	14,349 hr	13,517 hr	15,478 hr
Other Activities ²	68,493 hr	65,754 hr	67,972 hr
Total Staff Effort	431,627 hr	413,134 hr	418,921 hr
Total Staff Effort/Operating Site	6,540 hr/site	6,260 hr/site	6,347 hr/site

¹ Resources expended include regional, NRR, and NSIR hours.

² Other activities consist of inspection-related travel, SDP, and routine communications (which include regional support, enforcement support, and review of technical documents).

Resident Inspector Demographics

Scope and Objectives

This enclosure is the annual update on demographic data for inspectors assigned to the resident inspector (RI) program, requested by the Commission in its staff requirements memorandum (SRM) for COMGJD-98-001/COMEXM-98-002, "Discussion of Resident Inspector Demographics and the Balance Between Expertise and Objectivity," issued April 8, 1998. This analysis seeks to determine whether the actions of the U.S. Nuclear Regulatory Commission (NRC) associated with the RI program have resulted in a stable or increasing RI experience base and to identify any necessary improvements. This enclosure also provides an update on site staffing.

Resident Inspector Demographic Data

The NRC's staff review of the demographics included an analysis of the overall program data for the RI and senior resident inspector (SRI) groups (see Tables 1–7 and Figures 1–10). Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," includes details regarding the RI program demographic data analysis. The staff used median values from the month of November in 2005 for each year through 2009 for statistical comparison.

The demographic analysis consists of the following four distinct data sets:

- (1) "NRC time" is the total number of years the individual has accumulated as an NRC employee.
- (2) "Total resident time" is the total number of years the individual has accumulated as an RI or SRI.
- (3) "Current site time" is the total number of years spent as an RI or SRI at the current site.
- (4) "Relevant non-NRC experience" is nuclear power experience acquired outside the NRC. Examples of relevant non-NRC experience include operation, engineering, maintenance, or construction experience with commercial nuclear power plants, naval shipyards, U.S. Department of Energy facilities, or the U.S. Navy's nuclear power program.

Analysis of the 2009 Resident Inspector Group

The RI demographic data for 2009 (see Table 1) indicates that the RI turnover rate has been on a downward trend from 2007 through 2009 (46 percent, 31 percent, and 22 percent). This is significant, given the 46-percent turnover rate in 2007, compared with 20 percent for 2006. Of the 15 RIs who left during 2009, 6 were promoted to SRI positions, 7 were either promoted or laterally reassigned to a regional office or Headquarters, and 2 resigned from the NRC.

The high turnover in 2007 resulted in about half of the RIs being in new assignments, which likely contributed to the reduced turnover in the following two years. In addition, the current real estate market has been a negative incentive for turnover, and caused several SRIs and RIs to apply for extensions beyond seven years. Finally, as discussed later in this enclosure, the staff has implemented a number of initiatives to attract and retain resident inspectors which may also

have contributed to the reduction in turnover. The staff will continue to monitor the affect of these initiatives on resident staff turnover.

Concurrent with the reduction in 2007 through 2009, NRC time (nationally) has steadily increased, and relevant non-NRC experience has steadily decreased (Table 2). Both of these trends may have resulted from the 2007–2009 turnover reduction. Table 6 shows a breakdown of experience data for RIs by region. This table shows that Region II has significantly greater relevant non-NRC experience than the other regions.

Table 1 RI Turnover

	2005	2006	2007	2008	2009
Promoted to SRI	10	11	13	10	6
Promoted/ Reassigned	9	2	13	8	7
Retired	2	1	3	1	0
Resigned	2	0	4	3	2
Total	23	14	33	22	15
Turnover Rate	32%	20%	46%	31%	22%

**Table 2 RIs
(Median Values in Years)**

	2005	2006	2007	2008	2009
NRC Time	3.36	4.04	4.25	4.48	5.42
Total Resident Time	2.31	2.39	1.87	1.28	1.79
Current Site Time	2.25	2.23	1.85	1.28	1.79
Relevant Non-NRC Experience	10.63	10.75	10.38	9.00	6.25

Analysis of the 2009 Senior Resident Inspector Group

SRI demographic data for 2009 (see Tables 3 and 4) indicate that the SRI turnover rate for 2007 through 2009 steadily declined (26 percent, 18 percent, and 11 percent). The factors that influenced the reduction in RI turnover discussed previously also likely influenced the reduction in SRI turnover. In 2009, 7 of 66 SRIs left their SRI position at a specific site. Of these, 4 were promoted, 2 were reassigned (including SRIs who were laterally reassigned to another site),

and 1 resigned from the NRC. Table 4 indicates little variation nationally for the experience criteria. However, Table 7 indicates wide variance among regions for all but current site time.

Table 3 SRI Turnover

	2005	2006	2007	2008	2009
Promoted	5	7	7	5	4
Reassigned	4	7	7	4	2
Retired	1	1	1	1	0
Resigned	0	1	2	2	1
Total	10	16	17	12	7
Turnover Rate	15%	24%	26%	18%	11%

**Table 4 SRIs
(Median Values in Years)**

	2005	2006	2007	2008	2009
NRC Time	8.84	9.28	10.11	10.86	10.06
Total Resident Time	7.54	7.77	7.93	6.78	7.71
Current Site Time	2.63	3.21	2.52	2.28	2.44
Relevant Non- NRC Experience	7.96	9.08	10.04	9.38	9.51

Resident Inspector Attraction and Retention

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. To ensure that the RI program can continue to fulfill its mission, the Commission directed the staff in SRM M070531, "Briefing on the Results of the Agency Action Review Meeting (AARM)," dated June 14, 2007, to evaluate recruitment, training, and development to confirm that there are adequate human resources to meet changing needs. Therefore, because of the importance of maintaining an experienced and stable onsite inspection presence, the NRC initiated several actions to help alleviate the burden associated with the transient nature of the RI program.

SECY-09-0050, "Actions to Enhance Relocation and Retention for Employees," dated March 30, 2009, informed the Commission of staff actions to enhance the relocation and

retention of employees. The staff identified existing authorities and flexibilities that could be further developed and appropriately used to enhance the agency’s current relocation and retention processes. Some of the enhancements, initially considered in connection with the RI program, may apply to other agency positions for which the agency might need to enhance its efforts to relocate or retain employees in the future.

In its SRM dated June 26, 2009, the Commission reaffirmed the 7-year rotation policy for SRIs and RIs and approved the staff’s proposals to use existing authorities to enhance the agency’s current relocation and retention processes to address the turnover in SRI and RI positions. The SRM asked the staff to report to the Commission within 2 years on the effectiveness of these changes.

Site Staffing

The staff developed a site staffing metric of 90 percent programwide, in response to a recommendation by the Davis-Besse Lessons Learned Task Force (DBLLTF). The purpose of the metric is to evaluate the agency’s ability to provide continuity of regulatory oversight through the timely assignment of permanent RI staff. Specifically, DBLLTF Item 3.3.5.3 recommended that the staff establish a measurement for RI staffing, including program expectations, to satisfy minimum staffing levels. IMC 0307 provides details regarding the site staffing metric and criterion.

Despite the turnover rates in the RI and SRI positions, the regions succeeded in meeting their site staffing metric of 90 percent. The average site staffing for all regions was 97.55 percent in calendar year 2009. However, five sites fell below the 90-percent site staffing requirement, though these sites were not recurrences from the previous year. All five sites were staffed above 76 percent and were supplemented by region-based inspectors to assist in completing the baseline inspection program. Meeting this metric was challenging and had a significant impact on inspectors and management, but the recent relocation and retention enhancements may improve future site staffing metric results. Table 5 tracks the number of sites since 2005 that did not meet the 90-percent site staffing goal.

Table 5 Number of Sites Under 90-Percent Site Staffing

	2005	2006	2007	2008	2009
Number of Sites	3	1	9	5	5

**Table 6 RIs 2009 by Region
(Median Values)**

2009	NRC Time (years)	Total Resident Time (years)	Current Site Time (years)	Relevant Non- NRC Experience (years)
Region I	5.45	1.63	1.63	6.42
Region II	5.18	2.34	2.34	11.46
Region III	5.24	1.65	1.65	5.96
Region IV	5.27	1.79	1.79	6.00
All Regions	5.42	1.79	1.79	6.25

**Table 7 SRIs 2009 by Region
(Median Values)**

2009	NRC Time (years)	Total Resident Time (years)	Current Site Time (years)	Relevant Non- NRC Experience (years)
Region I	14.47	7.19	2.55	7.41
Region II	8.53	7.9	2.26	12.83
Region III	12.08	11.16	3.51	7.0
Region IV	7.42	5.31	2.28	9.42
All Regions	10.06	7.71	2.44	9.51

Conclusions

The staff has concluded that sites continue to be staffed with knowledgeable and experienced RIs and senior resident inspectors (SRIs). The demographic data indicate that:

- there is an improving trend in the turnover rate for both SRIs and RIs as indicated in Tables 1 and 3.
- regional training efforts (“inspector pipelines”) are having a positive impact on the NRC experience level for RIs as indicated in Figure 1.

In addition, feedback from licensees noted that the inspectors performed high quality and effective inspections that correctly characterized the licensee's performance (as discussed in Enclosure 2, "Regulatory Impact Summary").

Many of the RI program incentives described in SECY-09-0050 have only recently been implemented or are in the process of being implemented. Therefore, improvements in the RI demographics are expected to continue. Notwithstanding, the NRC will continue to monitor SRI and RI staffing and retention to identify any adverse trends early.

The effectiveness of the enhancements to the relocation and retention initiatives described in SECY-09-0050 will be discussed in a separate paper to the Commission in CY 2011 in accordance with its associated SRM dated June 26, 2009.

- (1) **NRC Time:** NRC time for the RIs increased about the same for all regions from 2008 to 2009, as indicated by parallel lines on the graph. NRC time for the SRIs increased in Regions I and III, decreased in Region II, and remained relatively constant in Region IV.

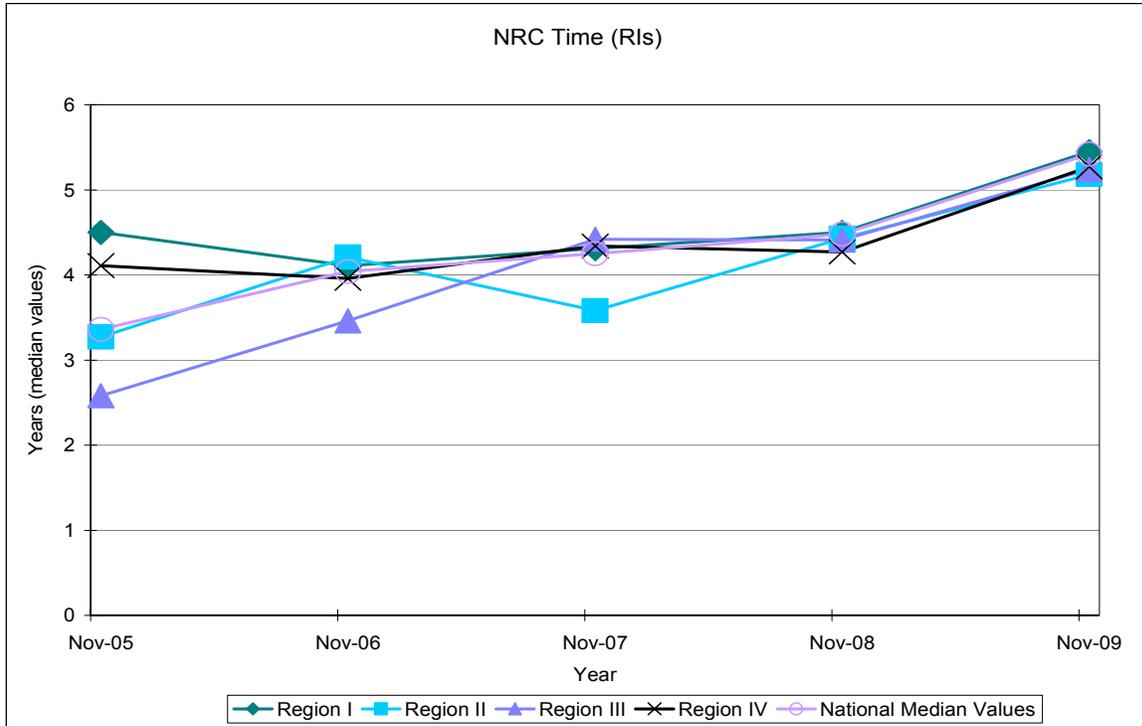


Figure 1

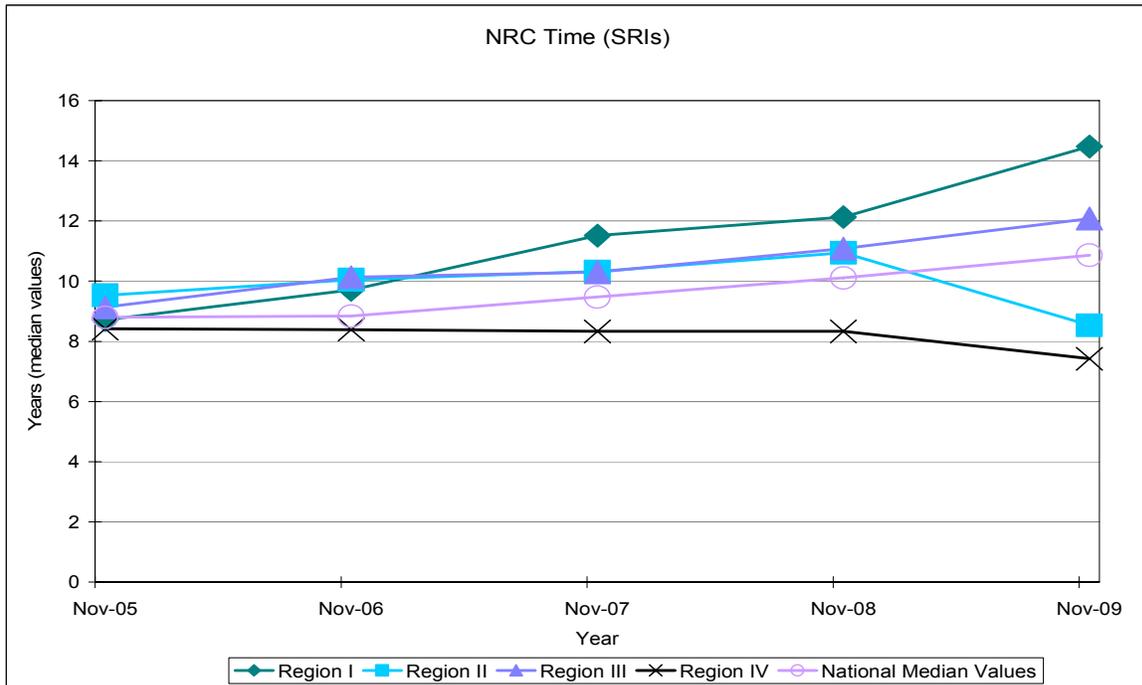


Figure 2

- (2) **Total Resident Time:** From 2008 to 2009, total resident time for the RIs increased in all regions. Total resident time for the SRIs decreased in Region II and increased in the other regions.

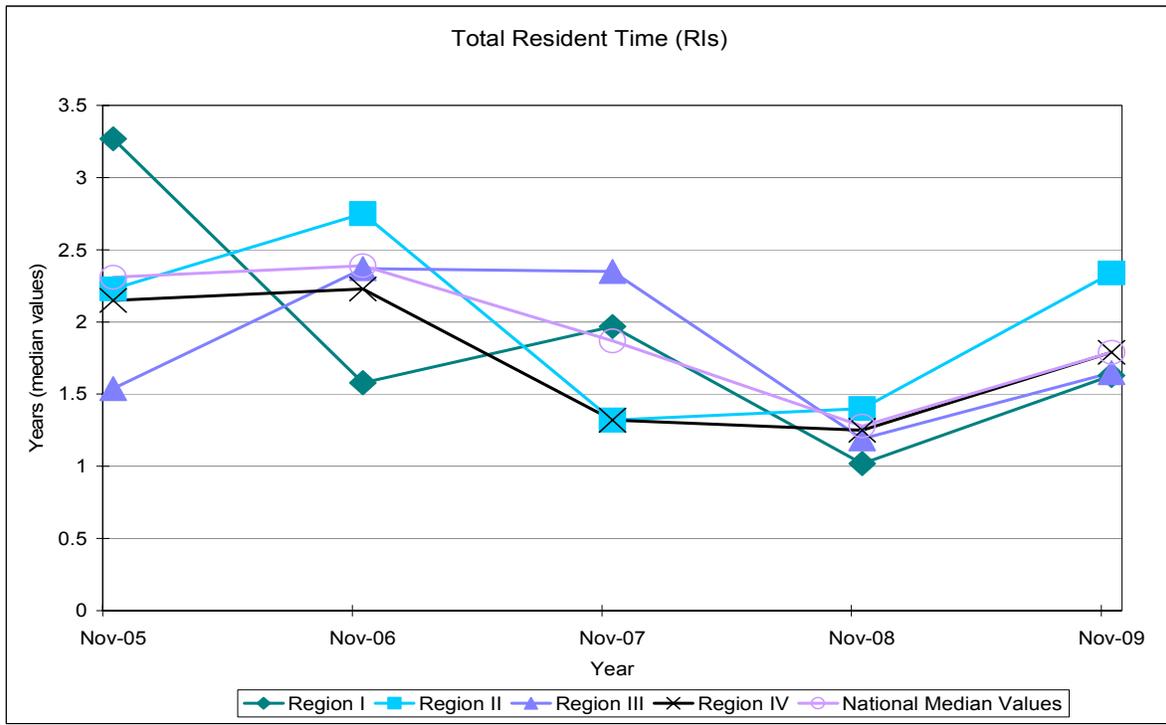


Figure 3

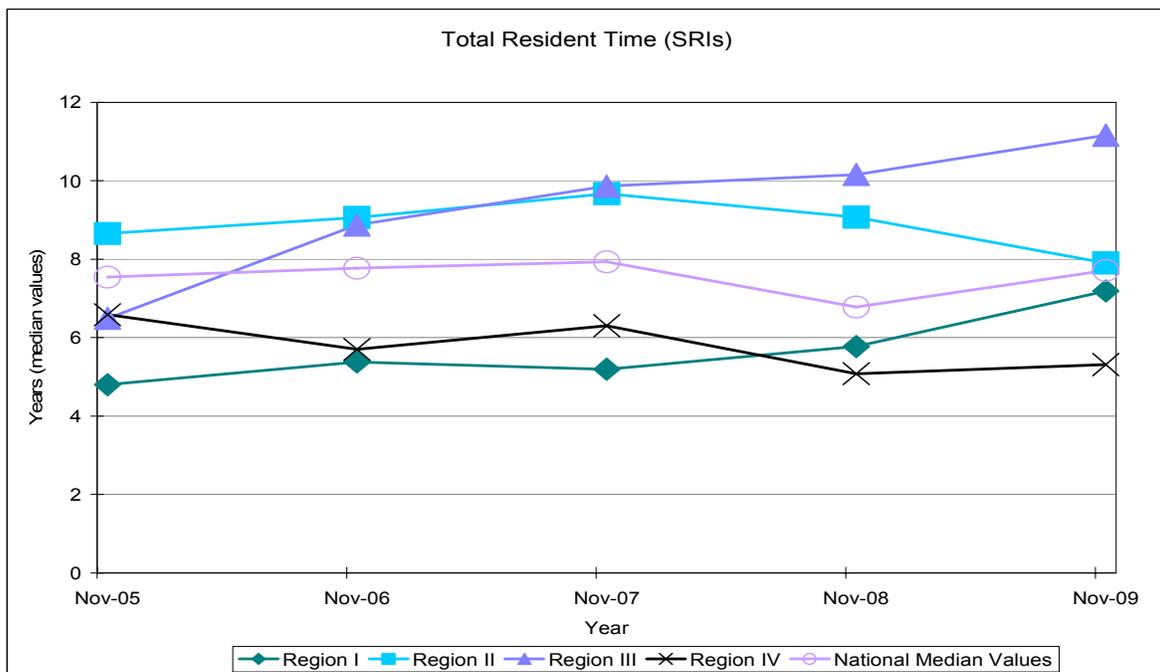


Figure 4

- (3) **Current Site Time:** From 2008 to 2009, current site time for the RIs increased in all regions. Current site time for the SRIs increased in Regions I, III, and IV, and decreased in Region II.

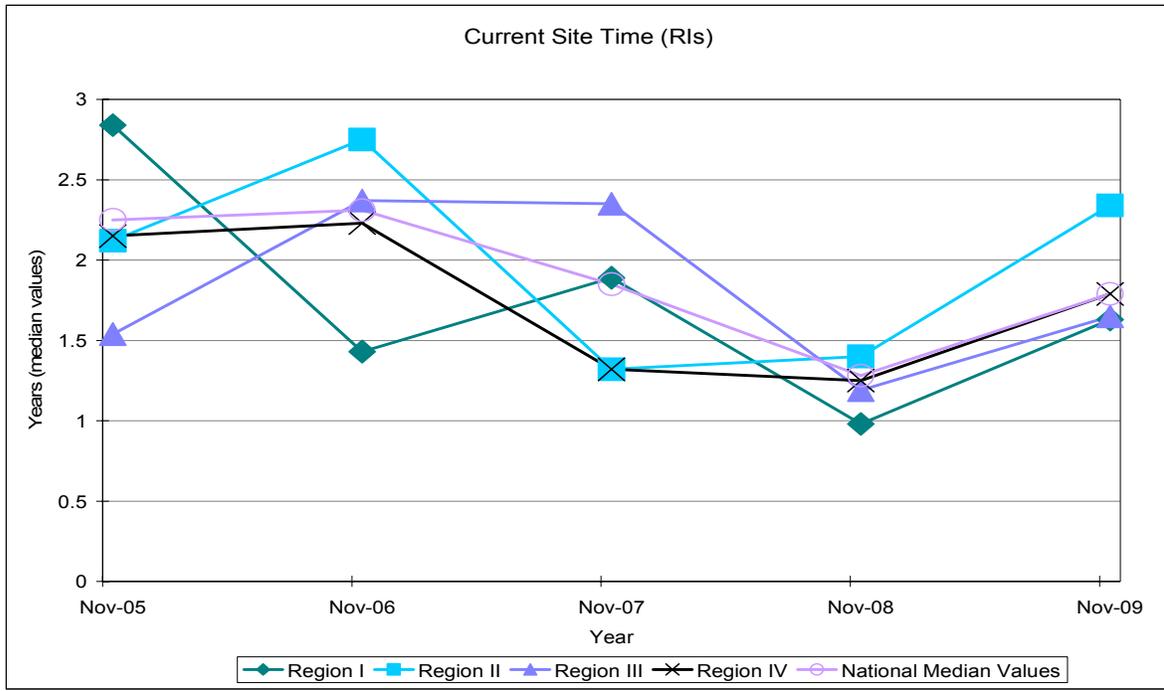


Figure 5

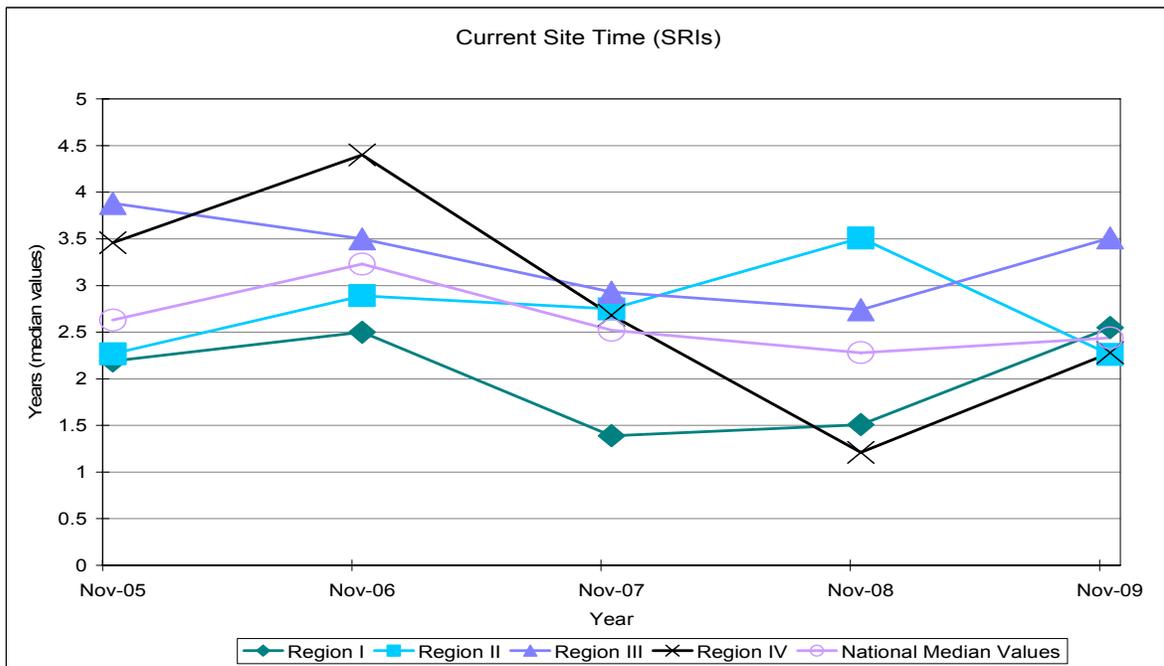


Figure 6

- (4) **Relevant Non-NRC Experience:** From 2008 to 2009, relevant non-NRC experience for the RIs decreased in Regions I, II and III, and remained relatively constant in Region IV. Relevant non-NRC experience for the SRIs decreased in Region III and remained relatively constant in the other regions.

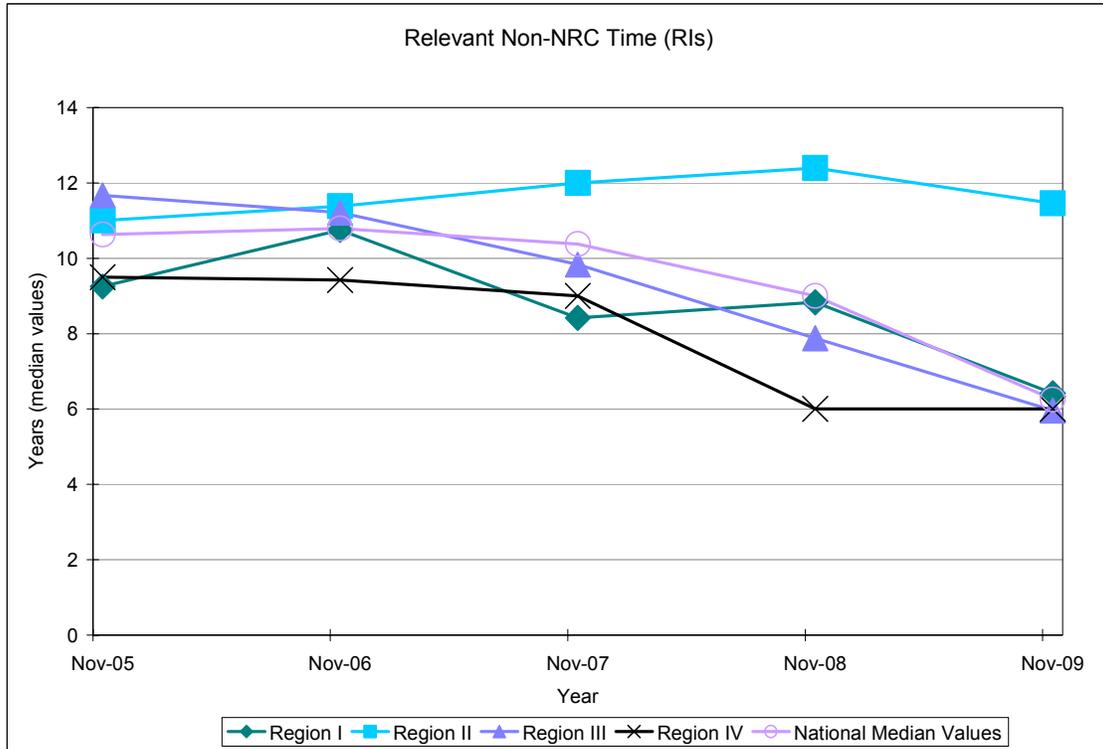


Figure 7

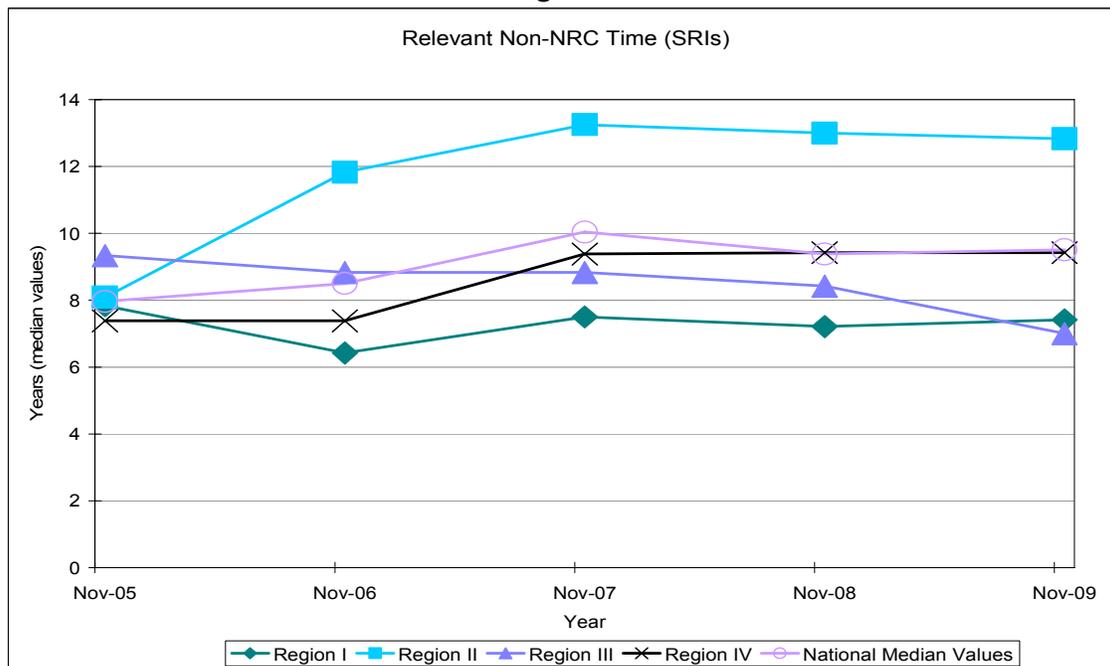


Figure 8

- (5) **Summary:** Figures 9 and 10 graphically portray the average national demographic data for the RIs and SRIs shown in Tables 2 and 4.

Resident Inspectors

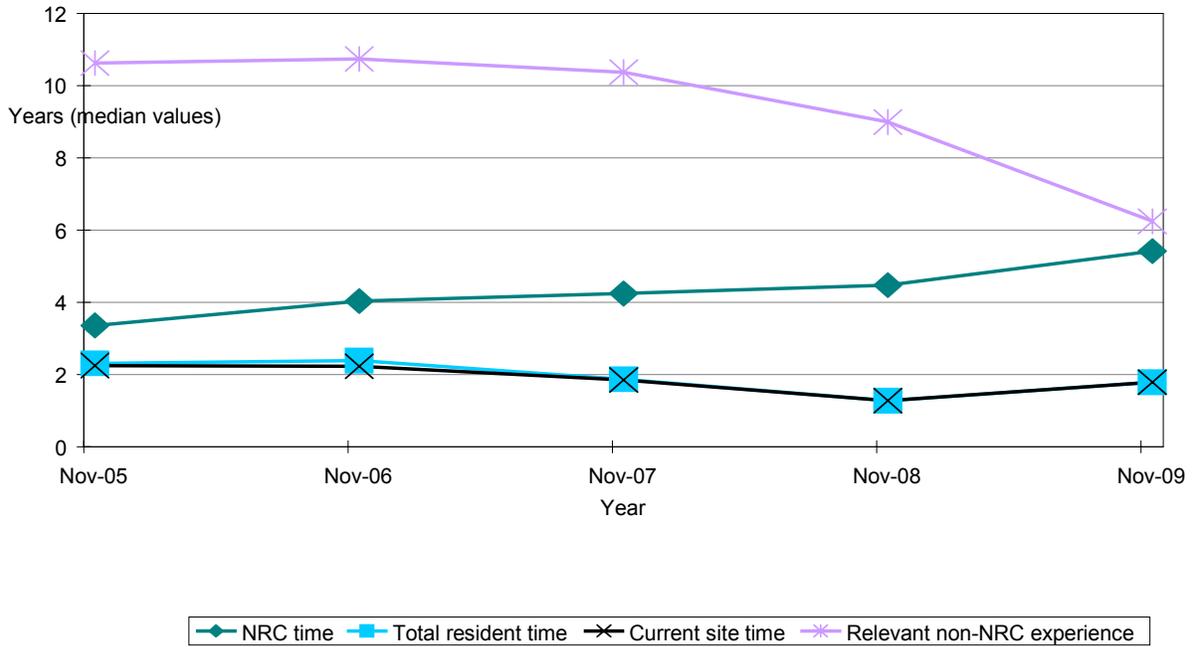


Figure 9

Senior Resident Inspectors

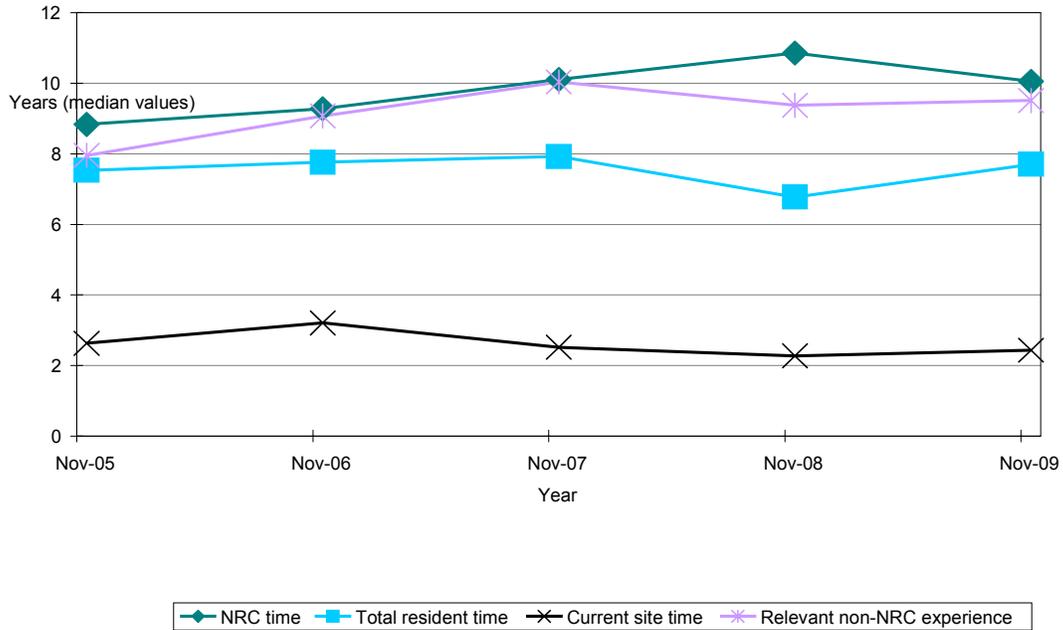


Figure 10