

# 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/***

R. W. Borchardt  
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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](#)

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

In accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," dated March 23, 2009, 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. ML110740073).

### **Performance Indicator Program**

The staff furthered its ongoing efforts to improve the ROP PI program in calendar year (CY) 2010. As committed to in last year's self-assessment, the staff developed a framework for evaluating the efficacy of potential new PIs for use in the ROP and held a public meeting in April 2010 to discuss this concept. The initial approach focused on potential new PIs that would supplement the existing suite of indicators. After that meeting, the NRC and industry agreed to defer further application of resources to this endeavor until a problem statement could be defined to guide the effort in a focused, efficient manner. As such, the NRC agreed to perform a gap analysis to reveal potential areas of the ROP that may warrant additional oversight through PIs or inspection. Only one area, under the Public Radiation Safety Cornerstone, indicated the potential need for near-term changes to the ROP. The staff will consider the views of external stakeholders, reflect those views in the gap analysis, and finalize the document early in 2011. In addition, the staff revised IMC 0608, "Performance Indicator Program," to add guidance on attributes to consider when developing a new PI, and disseminated it to internal stakeholders for review and comment.

Over the past year, 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 staff planned to complete both activities in CY 2010; however, because of their complexity and the need for extensive data gathering and analysis, the ROP Working Group has not yet finalized these two white papers. Upon completion of these papers in 2011, attendant modifications will be made to the industry PI guidance document, Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline."

The staff continued efforts to improve and enhance the Emergency Preparedness (EP) PIs. Specifically, the staff reviewed the data collected from the performance of Temporary Instruction (TI) 2515/175, "Emergency Response Organization, Drill/Exercise Performance Indicator, Program Review." The staff's review of the data concluded that EP Cornerstone oversight activities could be enhanced with regard to assessment of the elements, which collectively comprise the EP Drill/Exercise Performance (DEP) PI of classification, notification and protective action recommendation development. EP inspection procedure enhancements have

been identified that will use the results of the DEP PI as an aid in determining the most effective use of EP inspection resources. These enhancements were informed by the TI results and regional feedback.

In addition, based on the staff's ongoing review of the effectiveness of security PIs, the staff discussed its CY 2010 self-assessment and analysis with stakeholders from the NRC, industry, state governments, and the public. The stakeholders discussed the publication of the new requirements of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 73, "Physical Protection of Plants and Materials," and 10 CFR Part 26, "Fitness for Duty Programs," and resultant changes to the baseline inspection program. All involved stakeholders agreed at this meeting that, in light of the publication of the new requirements, any discussion of potential changes to the security cornerstone PIs would be better informed after completion of one complete cycle of the baseline inspection program. In addition, the staff is currently conducting a biannual ROP realignment review of the security inspection program. Therefore, the staff plans to reassess the effectiveness of the security PIs in 2013 as informed by the experience gained during these reviews and the completion of one full security baseline inspection cycle.

The staff met all of the PI metrics for CY 2010. The internal survey of stakeholders generally found the PI program to be meeting 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. They also indicated that the PIs provide an objective indication of declining safety performance and can effectively reveal outliers. Some internal survey respondents, however, wrote that the MSPI portion of the PI program is not easily understandable and lacks clarity. Other internal stakeholder comments also indicated concern that several of the indicator thresholds are not set at a meaningful level, thus contributing to a decrease in the number of greater-than-green PIs.

In an effort to make the MSPI more understandable, the staff plans to clarify and augment the MSPI inspection guidance in Inspection Procedure 71151, "Performance Indicator Verification." The staff will also evaluate the need to improve MSPI training. The staff will continue to reinforce the message that a green PI represents performance that does not require additional NRC oversight, that inspectors should continue to ensure that licensees are reporting accurately in accordance with the NEI 99-02 guidance, and that PIs provide useful trending information and are only one contributor to the identification of performance outliers. In addition, the staff will continue to refine existing PIs and explore options for introducing new PIs to ensure that the PI program continues to provide useful insights and contribute to the identification of declining performance.

## **Inspection Program**

The inspection program independently verified that licensees operated plants safely and securely in CY 2010 and identified and corrected performance issues in a timely manner in accordance with IMC 2515, "Light-Water Reactor Inspection Program—Operations Phase," dated September 24, 2009, and IMC 2201, "Security and Safeguards Inspection Program for Commercial Nuclear Power Reactors." Each NRC Region documented its CY 2010 completion of the baseline inspection program in a memorandum available under ADAMS Accession No. ML110450581 for Region I, ADAMS Accession No. ML110530471 for Region II, ADAMS

Accession No. ML110480368 for Region III, and ADAMS Accession No. ML110460590 for Region IV. In addition, the agency completed all security baseline inspections in CY 2010 as required, as documented in a memorandum from the Office of Nuclear Security and Incident Response (NSIR) (ADAMS Accession No. ML110320010), but this memorandum contains security-related information and is not publicly available.

The staff performed its annual review of each baseline inspection procedure for CY 2010 in preparation for the biennial ROP realignment review that is scheduled to be completed during CY 2011. This in-depth baseline inspection program effectiveness review encompasses all baseline inspection procedures in all ROP cornerstone areas (Initiating Events, Mitigation Systems, Barrier Integrity, Occupational Radiation Safety, Public Radiation Safety, Emergency Preparedness, and Security) in CY 2011. Appendix B to IMC 0307 describes the ROP realignment process. The review will consider inspection results over a 3-year period from CY 2008 through CY 2010. For CY 2011, the staff improved the inspection procedure review criteria to obtain increased inspection flexibility, where warranted; improved efficiency; continued integration of operating experience into the baseline inspection program; and improved inspection resource alignment based on recent industry events and feedback from the regions. Some focus areas for the CY 2011 ROP realignment include security and operator requalification inspections. During the last ROP realignment review performed in CY 2009, the NRC revised several inspection procedures associated with reactor safety and security areas to address new regulatory requirements. The staff of the Office of Nuclear Reactor Regulation (NRR) and regional staff completed their review and made changes to the component design bases inspection (CDBI) in order to enhance the identification of more risk-significant engineering performance deficiencies through improved component selection. The revised CDBI engineering inspection became effective starting in CY 2011.

The inspection staff made improvements to the baseline inspection program based on operating experience information developed during CY 2010. For example, the staff incorporated additional guidance on preventive maintenance issues identified through operating experience into the most recent revision of the CDBI inspection procedure. Additionally, the staff issued two Operating Experience Smart Samples (OpESS)—OpESS [FY2010-01](#), “Recent Inspection Experience for Components Installed Beyond Vendor Recommended Service Life,” and OpESS [FY2010-02](#), “Sample Selections for Reviewing Licensed Operator Examinations and Training Conducted on the Plant-Referenced Simulator.” The OpESS program provides inspectors with information related to selected industry operating events that have generic applicability and potential risk significance and that can be inspected readily through the baseline inspection program. In addition, the Operating Experience Branch has routinely provided a cogent summary of operating experience to the monthly ROP teleconference with the regional offices and prepares a summary of notable operating experience (with a focus on the most recent 6 months of operating experience) to inform the regional midcycle and end-of-cycle reviews of licensee performance.

The resident inspector (RI) and senior resident inspector (SRI) turnover rates have stabilized since 2008. RI and SRI turnover rates during CY 2010 were 23 percent and 11 percent, respectively, and these rates represent improvements over those observed during CY 2007. The NRC implemented the recommendations resulting from the CY 2009 senior-level management working group, which developed strategies and initiatives to address RI and SRI retention issues. 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 the relocation and retention enhancements for SRIs and RIs in a separate paper to the Commission in CY 2011. The staff also reported the status of actions to enhance the relocation and retention of employees to the Commission in a memorandum dated March 14, 2010. The staff continues to monitor the attraction and retention of RIs and SRIs to ensure an experienced and stable RI and SRI program.

The staff continued to improve the initial and continuing inspector training programs in order to produce and maintain well-qualified, competent inspectors. The NRC reviewed recommendations identified by the staff in accordance with the ROP feedback process and incorporated the improvements into inspector training standards, as appropriate. As described further in the SDP evaluation, the staff developed and implemented additional SDP training in CY 2010 to ensure that the inspectors remain efficient and effective in determining the safety and security significance of identified performance issues. In addition, NSIR staff completed the development of the first (pilot) cyber security training course for inspectors.

The data and comments from the internal survey reflected a generally positive perception of inspector training. Although inspectors were generally satisfied with the training to implement the ROP, the effectiveness of safety culture training received relatively low ratings. NRR has created an internal working group chartered with developing options to implement the agency’s safety culture policy statement. As part of this effort, the working group will propose additional enhancements and updates to the inspector qualification training program and related guidance documents. In addition, the staff is continuing efforts to develop safety culture training as part of a larger effort to create a safety culture assessor qualification program.

All inspection program metrics met their established criteria during CY 2010. The internal feedback received was generally positive. In general, the internal stakeholders believed that the inspection program was effective in ensuring that areas important to safety and security are addressed appropriately. Some respondents commented on the need to make the information contained in the inspection report more useful and stated that the information contained in the security inspection reports and their cover letters is not sufficient to make these reports useful to members of the public. The staff will address these insights and other comments in the consolidated response to the internal survey.

### **Significance Determination Process**

The SDP continues to be an effective tool for determining the safety and security significance of identified performance issues, although process improvements continue based on lessons learned and feedback from stakeholders. The staff met the SDP timeliness metric for a fifth consecutive year, although one finding exceeded the 90-day goal. All other SDP performance metrics were met.

In response to ROP feedback and suggestions collected through the Risk Tools Enhancement (RTE) Project, the staff revised IMC 0609, “Significance Determination Process,” its attachments, and several SDP appendices. These draft revisions were issued for internal comment in October 2010 and should be finalized in early 2011. The RTE Project considered

suggestions from internal stakeholders in the NRC Regions and Headquarters for improving the NRC risk tools used in regulatory activities for nuclear reactors. These risk tools include the SDP and simplified plant analysis risk models as well as staff training in risk-informed regulation and decision making. The SDP revisions focused on incorporating the feedback, improving and clarifying the process where needed, and aligning the guidance documents to reduce redundancy. The staff also updated and revised the technical basis documents for the occupational and public radiation safety SDPs. Further, because of two white findings involving degraded neutron absorbing material in the spent fuel pool at two separate facilities, the staff began to develop a new SDP for spent fuel pool findings. The SDP will focus on findings involving fuel handling errors, decay heat removal, and reactivity control. In addition, the Baseline Security SDP was enhanced to create a more effective tool for achieving the appropriate significance with predictable and repeatable results.

The NSIR staff continues to review and compare the CY 2009 force-on-force (FOF) exercise findings against the proposed enhancements to the FOF physical protection significance determination process (PPSDP) in response to Staff Requirements Memorandum (SRM)-M100112, "Briefing on Office of Nuclear Security and Incident Response Programs, Performance, and Future Plans," dated February 12, 2010. In the SRM, the Commission requested an update on how the proposed enhancements to the FOF PPSDP would alter the CY 2009 FOF exercise findings. The staff conducted numerous internal and external public and closed industry meetings during CY 2009, CY 2010, and the first quarter of CY 2011 to discuss the proposed enhancements to the FOF PPSDP. The staff will report its final results to the Commission, in accordance with SRM-M100112, by the end of May 2011.

In the CY 2009 self-assessment, the staff described its intent to improve SDP training for qualifying inspectors and to develop and implement additional SDP training to ensure that the inspectors remain efficient and effective in determining the safety and security significance of identified performance issues. In CY 2010, the staff updated and improved the existing SDP fundamental and overview training, which was part of the advanced reactor series training, and incorporated it with another training course required for certifying inspectors. These efforts dovetailed with training initiatives associated with the RTE Project and resulted in two new courses related to the risk-informed regulation. The first course covers risk-informed decision making fundamentals and techniques for managers. The second course provides an overview of the requirements and guidance related to risk-informed fire protection at nuclear power plants. Both new courses are available in a self-study format. Finally, the staff will consider developing additional courses in CYs 2011 and 2012 as part of the RTE Project to improve the training available for inspectors and regional staff.

The responses to the internal survey indicated that the staff has an increasingly positive perception of the SDP overall. More than 70 percent of the staff members indicated that they are proficient using the reactor-safety and non-reactor-safety SDPs. The staff indicated that training is effective, that program guidance is adequate in helping the staff to understand and use the SDP, and that the SDP results in an appropriate regulatory response. This is an improvement over responses to the CY 2008 internal ROP survey. The staff continues to believe that the SDP focuses on safety issues, contributes to effective communications with the licensee and the public, and expends an appropriate level of resources.

## Assessment Program

Staff implementation of the assessment program ensured that staff and licensees took appropriate actions to address performance issues in CY 2010 commensurate with their safety significance. The staff issued a draft revision to IMC 0305, "Operating Reactor Assessment Program," for comment in late 2010 with the intent to improve its usability, incorporate stakeholder feedback and lessons learned from implementation issues, and simplify guidance for cross-cutting areas. The agency will issue and begin implementing this revised guidance in CY 2011. The staff also enhanced the infrastructure for communicating assessment program information and more current plant assessment results. Part of this effort included developing an assessment program SharePoint Web site that contains schedules, assessment-related documents and Website links, and announcements. The staff also created a common Microsoft Outlook resource to serve as a repository for receiving assessment-related information from the regional offices.

The staff reviewed the causes of the three Action Matrix deviations issued during CY 2010 and evaluated them for potential program improvements. The Executive Director for Operations (EDO) approved an Action Matrix deviation for increased oversight of the Vermont Yankee Nuclear Power Station related to onsite ground water contamination because it represented a customized approach that considered unique factors beyond the plant's Action Matrix column categorization. The staff considered this deviation in the ROP gap analysis and is preparing a separate Commission paper to seek Commission approval to evaluate the Public Radiation Safety Cornerstone to determine whether changes to the ROP are necessary to address ground water contamination issues and associated public confidence challenges. The EDO approved an Action Matrix deviation for increased oversight of the San Onofre Nuclear Generating Station to address longstanding human performance issues, protracted challenges in problem identification and resolution, and a significant increase in allegations. Based on the lessons learned from the San Onofre deviation, the staff is creating an inspection procedure for reviewing long-standing substantive cross-cutting issues. Lastly, the EDO approved an Action Matrix deviation for Browns Ferry Units 1, 2, and 3 to permit the plants to remain in Column 3 because the supplemental inspection was not completed within four quarters. As a result of the Browns Ferry deviation, the staff is clarifying the guidance in IMC 0305 regarding the definition of a repetitive degraded cornerstone to ensure consistent implementation.

The staff observed an increase in the number of plants in the Degraded Cornerstone Column (Column 3) of the ROP Action Matrix in CY 2010 when compared with CY 2008 and CY 2009. The numbers were, however, more in line with those from previous years. Twelve plants (eight sites) were in Column 3, and nine of those 12 had returned to the Licensee Response Column (Column 1) by the end of CY 2010. The staff evaluated the inputs and circumstances associated with each of the plants that entered Column 3 in CY 2010 to determine whether commonalities exist. After reviewing the events, cornerstones affected, supplemental inspections performed, Significance and Enforcement Review Panel documentation, and cross-cutting aspects, the staff concluded that no commonalities exist, nor did the staff identify the need to adjust ROP guidance.

The staff also noted that a number of plants entered Column 3 of the Security Action Matrix in CY 2010. In addition, security inspection findings were preliminarily identified as having greater-than-green significance at sites that also had greater-than-green inputs in a safety cornerstone. Although the final significance of the security findings was green, the staff recognized that, had they been white or yellow, considering these inputs in separate assessment processes would yield a regulatory response that was not commensurate with an integrated, holistic assessment of licensee performance. The current separation of safety and security inputs to the Action Matrix prevents the staff from fully leveraging (unless an Action Matrix deviation is authorized) supplemental inspection procedures and resources to detect the potential existence of more systemic, organizational issues that can manifest themselves across multiple safety cornerstones of the ROP. While the NRC modified the ROP to apply separate assessment processes in an effort to protect security-related information following the events of September 11, 2001, the bifurcation of the assessment process may programmatically constrain the NRC's regulatory response. 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 committed in last year's ROP self-assessment to revising program guidance, as necessary, to better align with the Commission's safety culture policy statement once it is finalized. The staff has continued to consider insights from ongoing industry initiatives on safety culture. In addition, the staff has created an internal working group to work closely with the regional offices and other stakeholders to revise ROP program guidance and training, as necessary, to ensure alignment with the final Commission safety culture policy statement.

The Nuclear Energy Institute (NEI), in partnership with the Institute for Nuclear Power Operations (INPO), has tested a broad initiative to monitor and improve its nuclear safety culture through an industry pilot program. The NRC staff has observed these pilot applications to become familiar with the initiative and to evaluate associated tools that could possibly be leveraged to gain efficiencies in the ROP. The staff will also continue to work with stakeholders to develop a common terminology of safety culture, where appropriate, during the implementation phase of the policy statement.

Six of the eight assessment metrics met their established criteria during CY 2010. The ROP missed the AS-1 metric because of an increase in the number of Action Matrix deviations issued in CY 2010. Although the spike did not constitute a trend, staff considers this metric not met consistent with metric determinations in prior years. The staff reviewed the causes of the three Action Matrix deviations and evaluated them for potential program improvements as previously discussed. Additionally, the ROP did not meet metric AS-4 based on an increase in the average number of days between issuance of the assessment letters and the completion of the supplemental inspection. However, the delays in performing the followup inspections were often a result of the licensee not being ready for the inspection. The staff continues to emphasize that licensee readiness needs to be considered for planning purposes, but also needs to be balanced with the ROP objective to address performance issues in a timely manner.

Based on the results from the 2010 internal survey, the perception of the assessment program was generally positive. The majority of respondents indicated that the assessment program is objective and predictable, and that the information contained in assessment reports is relevant, useful, and written in plain English. Although more than 65 percent of the responses indicate that the substantive cross-cutting issue (SCCI) process supports the ROP objectives and provides insight into licensee safety culture, the survey comments continue to indicate the need for improvements in the SCCI process. The staff plans to continue the ROP reliability initiatives and the efforts of the safety culture working group to further improve the SCCI process and its implementation.

## 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,'" dated 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 NRC 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 105 site 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 (214/229) were favorable and 7 percent (15/229) were unfavorable. The number of comments increased moderately in 2010, while the distribution of comments and the favorable percentage were similar to previous years. The sections below summarize the feedback received, the staff's evaluation, and the proposed improvement actions.

### 1. Inspector Performance

#### Feedback

Almost half of the licensee comments concerned inspector performance. This category covers a wide range of inspector practices but excludes issues specifically involving communication with licensees, which are discussed in the Section 2 below. 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 staff 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 expressed disagreement with the NRC's conclusion or characterization of specific findings.

#### Evaluation and Action

The staff concludes that inspectors were professional, maintained effective working relationships, and appropriately characterized licensee performance. Over 97 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.

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," dated August 22, 2005. The staff will continue to closely monitor the regulatory impact of inspector performance.

## **2. 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, but a few licensees noted communication concerns with inspection staff.

### Evaluation and Action

The staff concludes that communications between the NRC and its licensees are effective. 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. More than 97 percent of the comments received this year regarding NRC communications were favorable, and the few reported communication problems were isolated instances that have been addressed.

The staff is aware of the importance of prompt and clear communication and emphasizes this goal in the policy, guidance, and training provided for inspection program staff. Effective communications will remain a priority and will receive continued monitoring and attention from regional and headquarters management.

## **3. Other Notable Comments**

### Feedback

As previously noted, the preponderance of comments was favorable, though some concerns were noted that did not involve inspector performance or formal communications with licensees. For example, a few licensees noted concerns with the potential negative impacts and costs of implementing recent revisions to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 73, "Physical Protection of Plants and Materials," and 10 CFR Part 26, "Fitness for Duty Programs," Subpart I, "Managing Fatigue."

### Evaluation and Action

The staff is aware of these concerns, and this specific feedback has been forwarded to the responsible offices for their consideration.

## 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 calendar year (CY) inspection cycles. Overall staff effort in CY 2010 increased by 4.2 percent compared with CY 2009 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 remained essentially unchanged in 2010 compared with 2009. As in previous years, all four NRC Regions completed the required baseline inspections in 2010.

Plant-specific inspections include supplemental inspections conducted in response to greater-than-green inspection findings and performance indicators, reactive inspections such as augmented team inspections and special inspections performed in response to events, and 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 increased noticeably in 2010 compared with 2009 as a result of several significant special inspections at the Crystal River and Davis-Besse sites and an augmented team inspection at Robinson. Significant plant-specific inspection activity was also reported at the Byron, Fermi, LaSalle, Perry, and Vermont Yankee sites. The overwhelming majority of plant-specific inspections in 2010 were not supplemental inspections in response to inspection findings or performance indicators but were related to operational events and other plant issues, including inspections of Independent Spent Fuel Storage Installations.

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 hours expended for generic safety issue inspections in 2010 are unremarkable and reflect increased activity in this area compared with 2009. The hours expended during the 3-year period shown in Table 1 demonstrate the variation in the level of effort that is possible in this area from year to year.

The effort reported for other activities, including inspection-related travel, the significance determination process (SDP), and routine communication (which encompasses regional support, enforcement support, and review of technical documents), increased in 2010. The increase was primarily in routine communication activities and inspection-related travel.

The regional effort for licensee performance assessment continues to remain relatively level, comparable to that for recent years.

The staff continued to implement a number of initiatives to improve program efficiency and effectiveness and to reduce inspection resource requirements. These initiatives include a realignment of resources allocated to the individual baseline inspection procedures (including design engineering inspections), regional best practice initiatives, continued SDP improvements, and performance indicator improvements. Other sections of this SECY discuss these initiatives.

**Table 1 Resources Expended<sup>1</sup>  
(Inspection-Related Staff Effort Expended at Operating Power Reactors)**

	CY 2008	CY 2009	CY 2010
<b>Baseline Inspections</b>			
Direct Inspection Effort	148,455	156,452	155,938
Inspection Prep/Doc	99,176	107,566	108,973
Plant Status	<u>49,492</u>	<u>50,959</u>	<u>48,972</u>
Subtotal	297,123 hr	314,977 hr	313,883 hr
<b>Plant-Specific Inspections</b>			
Direct Inspection Effort	11,097	9,783	16,732
Inspection Prep/Doc	<u>8,056</u>	<u>6,172</u>	<u>9,641</u>
Subtotal	19,153 hr	15,955 hr	26,373 hr
Generic Safety Issue Inspections	19,100 hr	3,097 hr	6,532 hr
Performance Assessment (Regional Effort Only)	13,688 hr	16,010 hr	13,797 hr
Other Activities <sup>2</sup>	65,259 hr	69,365 hr	76,342 hr
Total Staff Effort	414,323 hr	419,404 hr	436,927 hr
Total Staff Effort/Operating Site	6,277 hr/site	6,355 hr/site	6,620 hr/site

<sup>1</sup> Resources expended include regional, NRR, and NSIR hours. Previous SECYs reported expended resources on a fiscal year basis. Reporting expended resources by CY aligns the resources spent with the ROP inspection and self-assessment cycles.

<sup>2</sup> Other activities consist of inspection-related travel, the SDP, and routine communication (which includes 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). The staff used median values from November 2006 for statistical comparison with those from November of each year through 2010.

In accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," the demographic analysis consists of the following four 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 2010 Resident Inspector Group**

The RI demographic data (see Table 1) indicate that the RI turnover rate had been on a downward trend from 2007 through 2009 (46 percent, 31 percent, and 22 percent). It stabilized at 23 percent in 2010. Of the 71 RI positions, 16 RIs left their sites during 2010; 6 were promoted to SRI positions, 8 were either promoted or laterally reassigned to a regional office or Headquarters, and 2 resigned from the NRC.

As a result of the high turnover in 2007 (46 percent), about half of the RIs were in new assignments, which likely contributed to the reduced turnover in the following 3 years. In addition, the current real estate market has been a negative incentive for turnover and has caused several SRIs and RIs to apply for extensions beyond 7 years. Finally, as discussed later in this enclosure, the staff has implemented a number of initiatives to enhance relocation and retention of employees that may also have contributed to the reduction in turnover. The staff will continue to monitor the affect of these initiatives on resident staff turnover.

**Table 1 RI Turnover**

	2006	2007	2008	2009	2010
<b>Promoted to SRI</b>	11 13		10	6	6
<b>Promoted/ Reassigned</b>	2	13	8	7	8
<b>Retired</b>	1	3	1	0	0
<b>Resigned</b>	0	4	3	2	2
<b>Total</b>	<b>14</b>	<b>33</b>	<b>22</b>	<b>15</b>	<b>16</b>
<b>Turnover Rate</b>	20%	46%	31%	22%	23%

NRC time (nationally) had steadily increased and then decreased in 2010. Relevant non-NRC experience has steadily decreased, especially in 2009 and 2010 (see Table 2). Table 6 shows a breakdown of data on RI experience by region. This table shows that Region I has significantly lower levels of relevant non-NRC experience than the other regions. The majority of Region I RIs began their careers with the NRC which has resulted in a median value of zero. However, Region I has a greater median NRC time than the other regions.

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

	2006	2007	2008	2009	2010
<b>NRC Time</b>	4.04 4.	25 4.	48	5.42 4.	53
<b>Total Resident Time</b>	2.39 1.	87 1.	28	1.79 2.	25
<b>Current Site Time</b>	2.23 1.	85 1.	28	1.79 2.	19
<b>Relevant Non-NRC Experience</b>	10.75 10.	38	9.00	6.25	5.25

**Analysis of the 2010 Senior Resident Inspector Group**

Table 3 indicates that the SRI turnover rate for 2007 through 2009 steadily declined (26 percent, 18 percent, and 11 percent) and stabilized in 2010 at 11 percent. The factors that influenced

the reduction in RI turnover discussed previously also influenced the reduction in SRI turnover. In 2010, 7 of 66 SRIs left their SRI position at a specific site. Of these seven, one was promoted, three were reassigned (including SRIs who were laterally reassigned to another site), one retired, and two resigned from the NRC.

**Table 3 SRI Turnover**

	2006	2007	2008	2009	2010
<b>Promoted</b>	7	7 5 4			1
<b>Reassigned</b>	7	7	4	2	3
<b>Retired</b>	1	1 1 0			1
<b>Resigned</b>	1	2 2 1			2
<b>Total</b>	<b>16</b>	<b>17</b>	<b>12</b>	<b>7</b>	<b>7</b>
<b>Turnover Rate</b>	24%	26% 18%	11%		11%

Table 4 shows national trends for experience criteria from 2006 through 2010 and indicates little variation nationally. Table 7 indicates wide variance from the national average for Region I regarding NRC time and relevant non-NRC experience. As noted for RIs above, Region I SRIs have less relevant non-NRC experience but more NRC time than other regions. For RIs and SRIs combined, Region I NRC time and relevant non-NRC experience are close to the national median (27.42 vs. 29.46 years).

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

	2006	2007	2008	2009	2010
<b>NRC Time</b>	9.28 10.	11	10.86	10.86	9.68
<b>Total Resident Time</b>	7.77 7.	93 6.	78	7.71 8.	19
<b>Current Site Time</b>	3.21 2.	52 2.	28	2.44 3.	17
<b>Relevant Non-NRC Experience</b>	9.08 10.	04	9.38	9.51 10.	00

### **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. Additionally, 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 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 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.

On December 1, 2009, the Executive Director for Operations (EDO) and the Chief Financial Officer issued the Relocation and Retention Initiative Action Plan, which implements additional agency retention and relocation improvements made by the 2008 Working Group and the Resident Inspector Attraction and Relocation Focus Group.

The staff has made advances and, in many cases, completed additional recommendations intended to stress the importance of greater communication about and use of program and management flexibilities. A memorandum from the Deputy Executive Director for Reactor and Preparedness Programs, Office of the EDO, dated March 14, 2010, documents the status of the Action Plan items. 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 calendar year (CY) 2011.

### **Site Staffing**

The staff developed a site staffing metric of 90 percent program-wide, in response to a recommendation by the Davis-Besse Lessons Learned Task Force, to satisfy minimum staffing levels. 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. IMC 0307 provides details regarding the site staffing metric and criterion.

Despite the rates of turnover 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 98.53 percent in CY 2010. Only three sites fell below the 90-percent site staffing requirement, the lowest number since 2006. All three sites were staffed at or above 80.5 percent and were supplemented by region-based inspectors to assist in completing the baseline inspection program. However, these inspectors were not counted toward the metric because they were in place for less than 6 weeks. Meeting this metric was challenging, and attempting to do so 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 2006 that did not meet the 90-percent site staffing goal.

**Table 5 Number of Sites Under 90-Percent Site Staffing**

	2006	2007	2008	2009	2010
<b>Number of Sites</b>	19		5	5	3

**Table 6 RIs by Region (2010)  
(Median Values)**

2010	NRC Time (years)	Total Resident Time (years)	Current Site Time (years)	Relevant Non-NRC Experience (years)
Region I	5.89 1.	14	1.14	0.00 <sup>1</sup>
Region II	4.24 2.	17	1.21 5.	00
Region III	4.58 2.	63	2.63 7.	42
Region IV	5.85 2.	67	2.67 6.	00
<b>All Regions</b>	<b>4.53</b>	<b>2.25</b>	<b>2.19</b>	<b>5.25</b>

<sup>1</sup> The median relevant experience is zero because more than half of the RIs have no prior relevant non-NRC experience.

**Table 7 SRIs by Region (2010)  
(Median Values)**

2010	NRC Time (years)	Total Resident Time (years)	Current Site Time (years)	Relevant Non-NRC Experience (years)
Region I	14.07 7.	12	3.26	7.46
Region II	9.28 8.	73	3.17	12.58
Region III	10.45 9.	30	2.75	10.08
Region IV	8.34 6.	27	3.24	10.62
<b>All Regions</b>	<b>9.68</b>	<b>8.19</b>	<b>3.17</b>	<b>10.00</b>

## Conclusions

The staff has concluded that sites continue to be staffed with knowledgeable and experienced RIs and SRIs. The demographic data indicate an improving trend in lowering turnover rates for both SRIs and RIs from 2006 through 2009; turnover rates for 2010 are about equal to those in 2009.

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).

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

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

- (1) **NRC Time:** NRC time for RIs increased in 2010 for Regions I and IV and decreased for Regions II and III and the national median value (Figure 1). NRC time for SRIs increased in Regions II and IV and decreased in Regions I and III and the national median value (Figure 2).

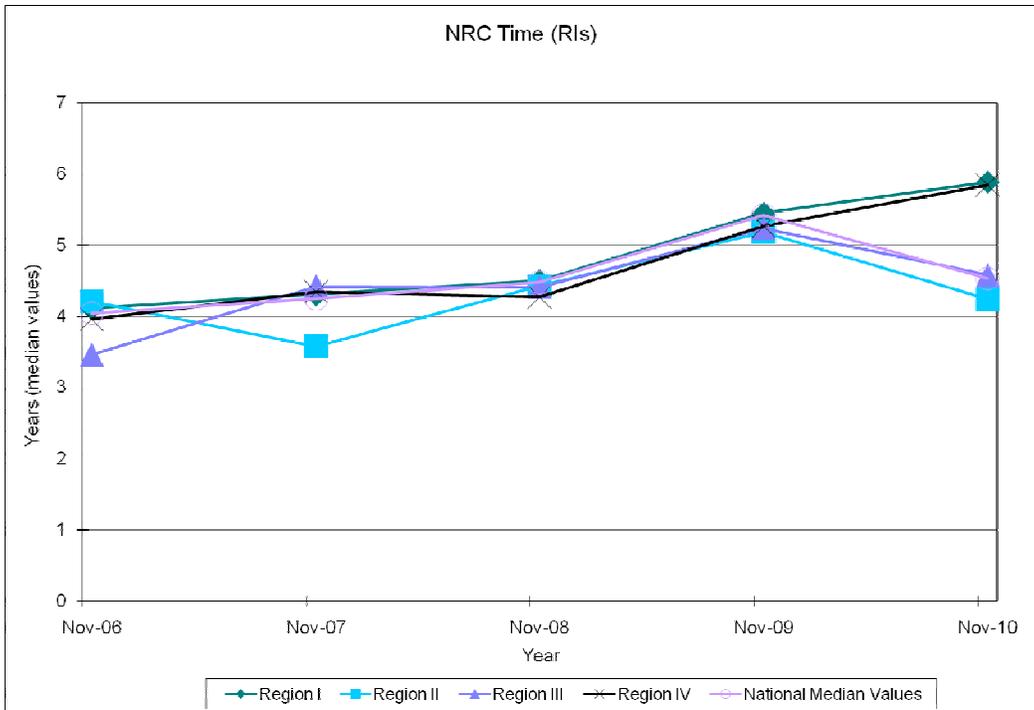
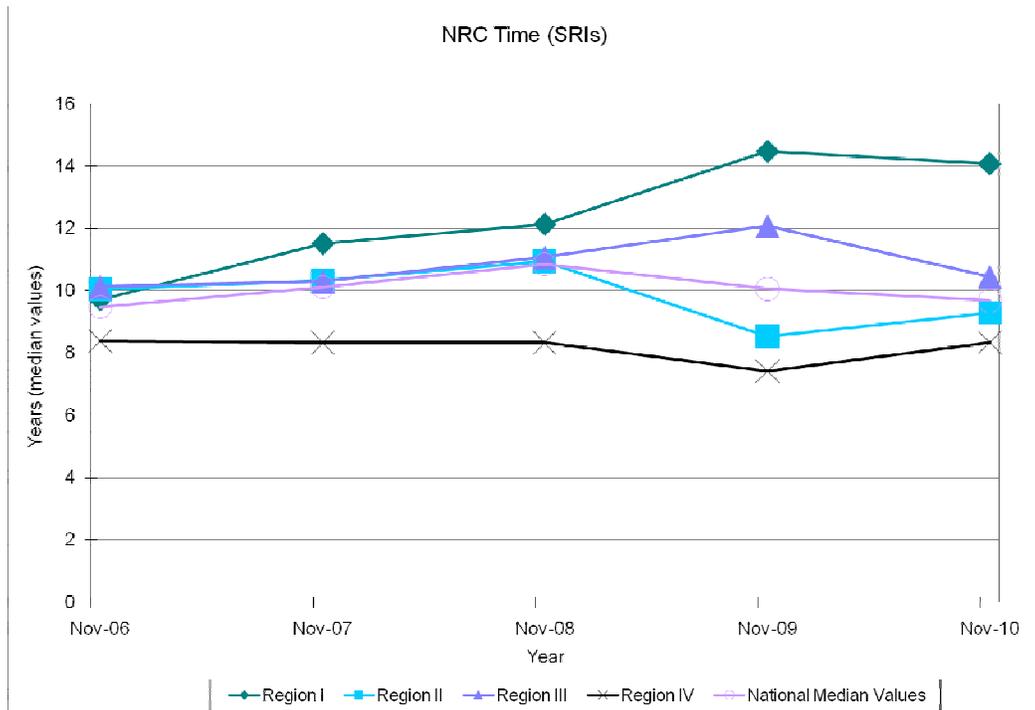
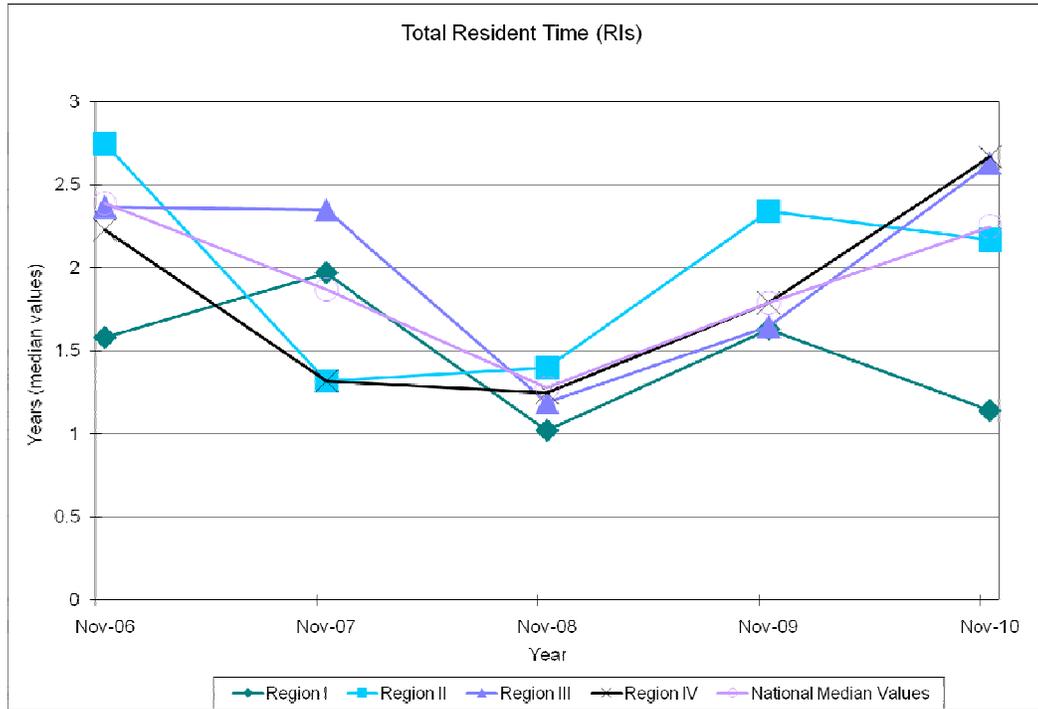


Figure 1 NRC time (RIs)

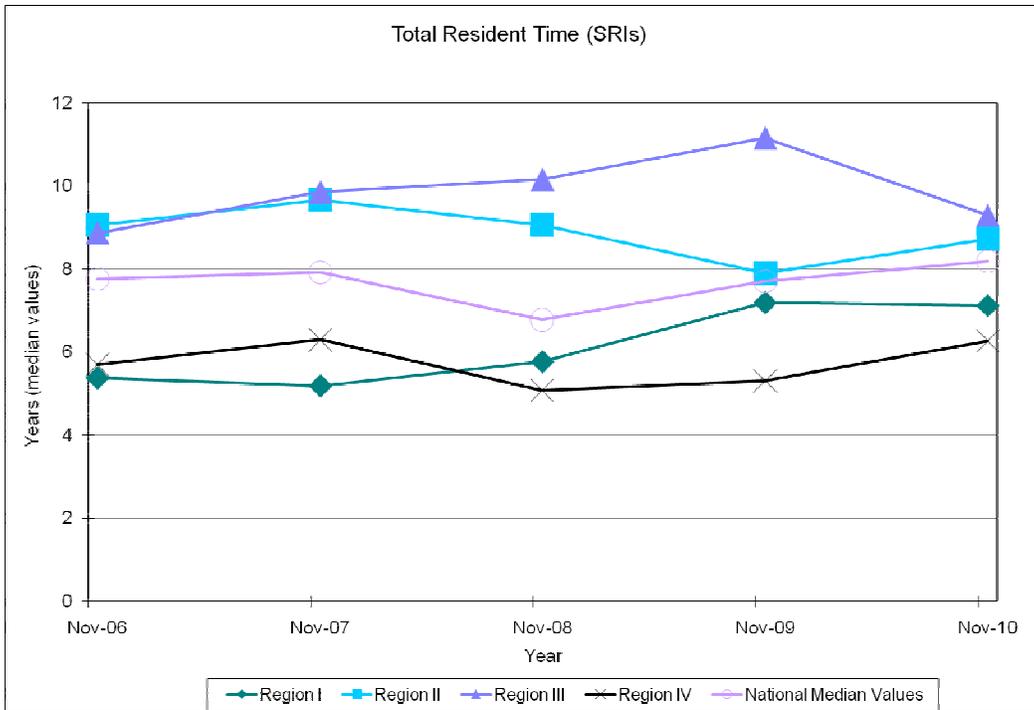


**Figure 2 NRC time (SRIs)**

(2) **Total Resident Time:** From 2008 to 2010, total resident time for RIs significantly increased in Regions II, III, and IV, and marginally increased in Region I (Figure 3). This indicates an increased resident experience level. For 2006 through 2010, total resident time for SRIs remained about the same for the national median value (Figure 4).

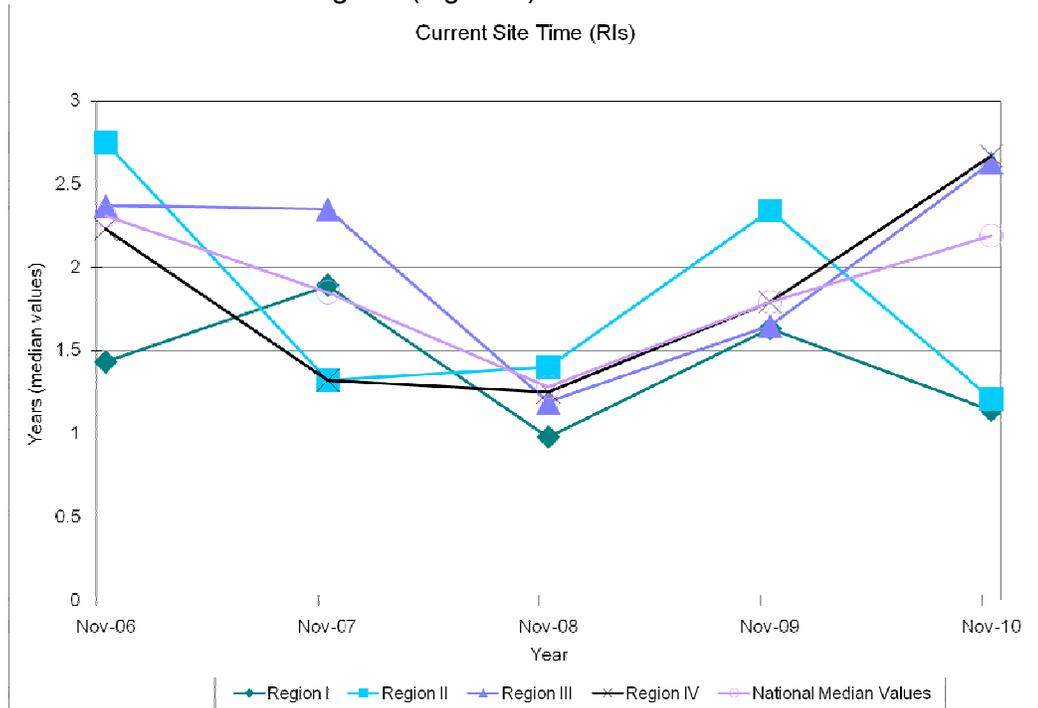


**Figure 3 Total resident time (RIs)**

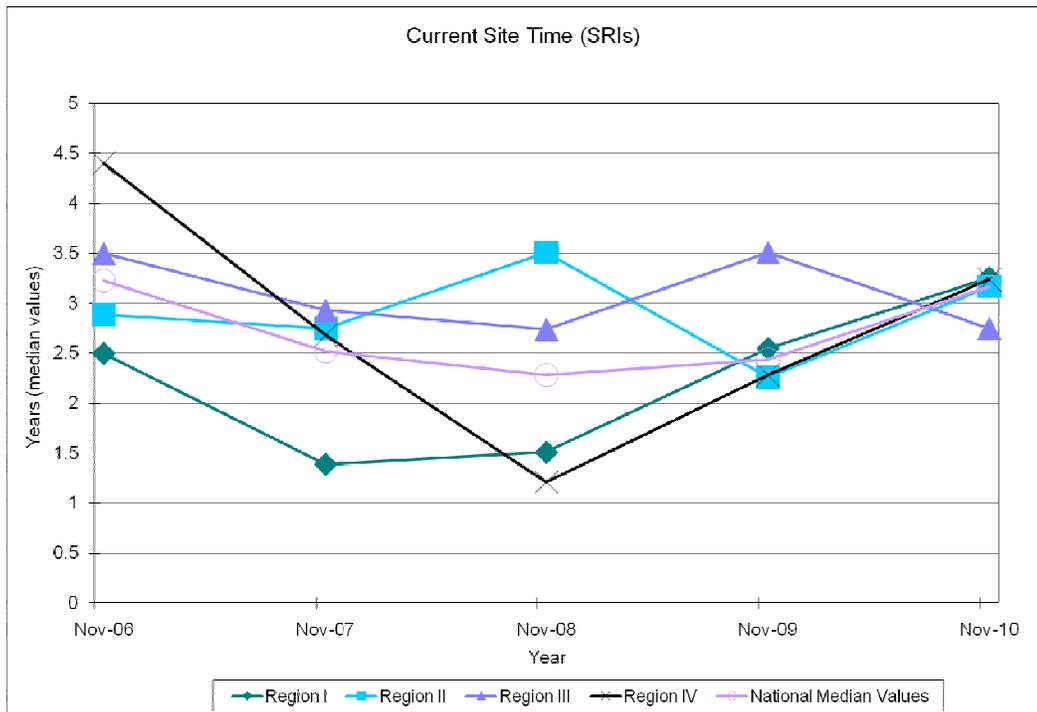


**Figure 4 Total resident time (SRIs)**

- (3) **Current Site Time:** From 2008 to 2010, the current site time for the RIs significantly increased in Regions III and IV and the national median value, and remained about the same in Regions I and II (Figure 5). Current site time for the SRIs has been fairly steady from 2006 through 2010, as indicated by the national median value, notwithstanding fluctuations for individual regions (Figure 6).

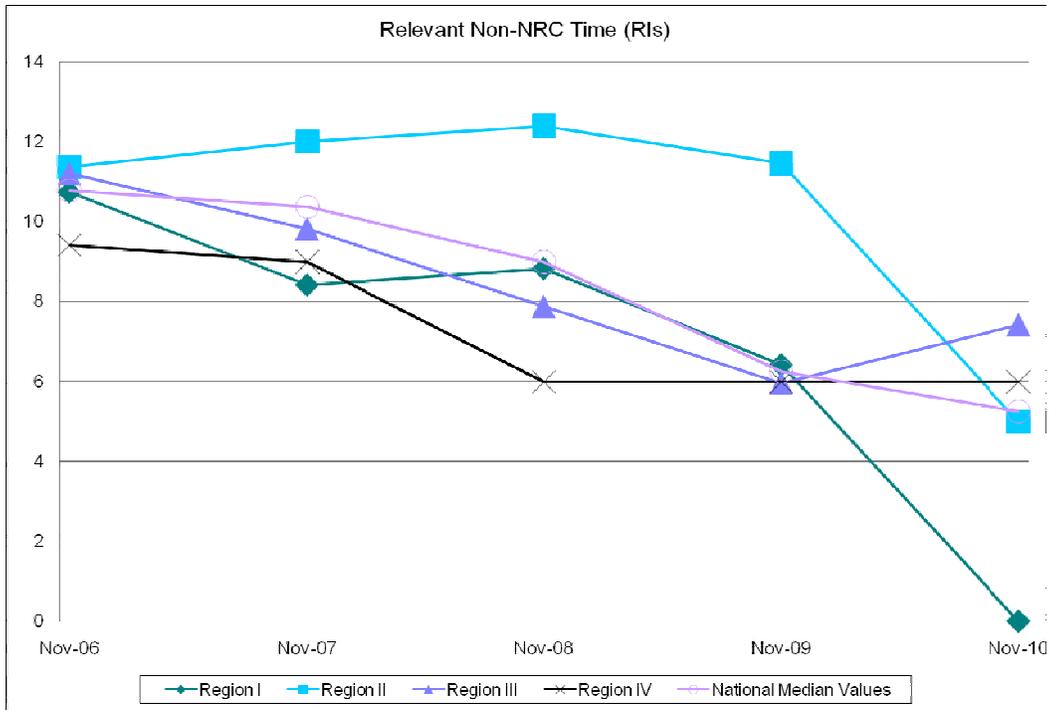


**Figure 5 Current site time (RIs)**

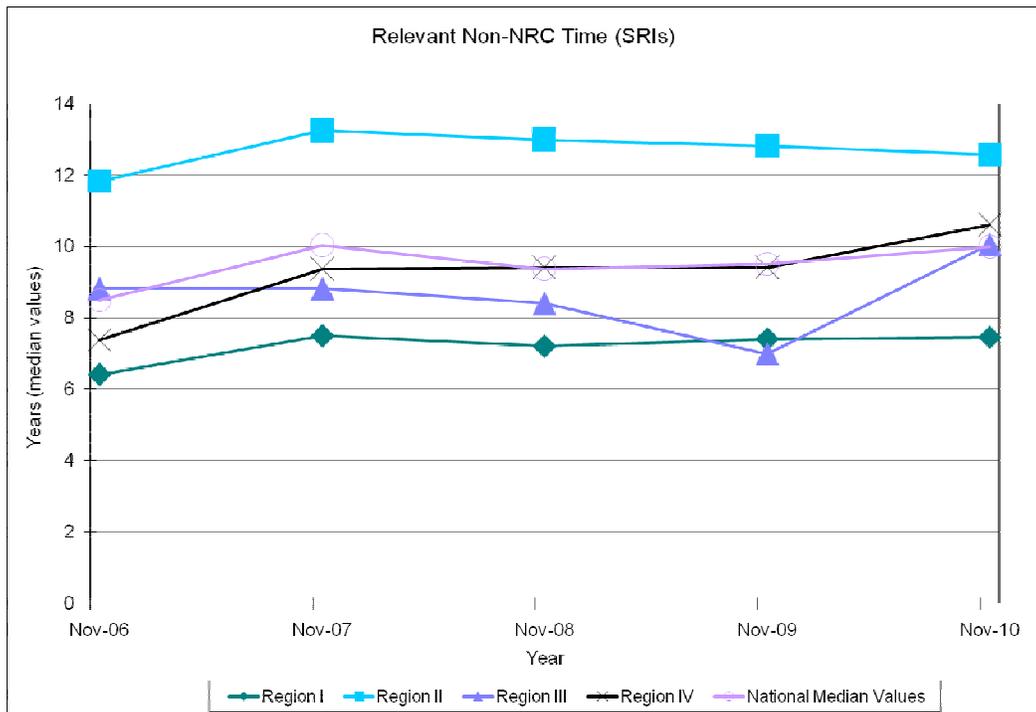


**Figure 6 Current site time (SRIs)**

- (4) **Relevant Non-NRC Time:** From 2006 to 2010, relevant non-NRC experience for the RIs decreased significantly in all regions and the national median value (Figure 7). Non-NRC experience for the SRIs remained relatively constant in the other regions (Figure 8), with a higher value in Region II and a lower value in Region I.

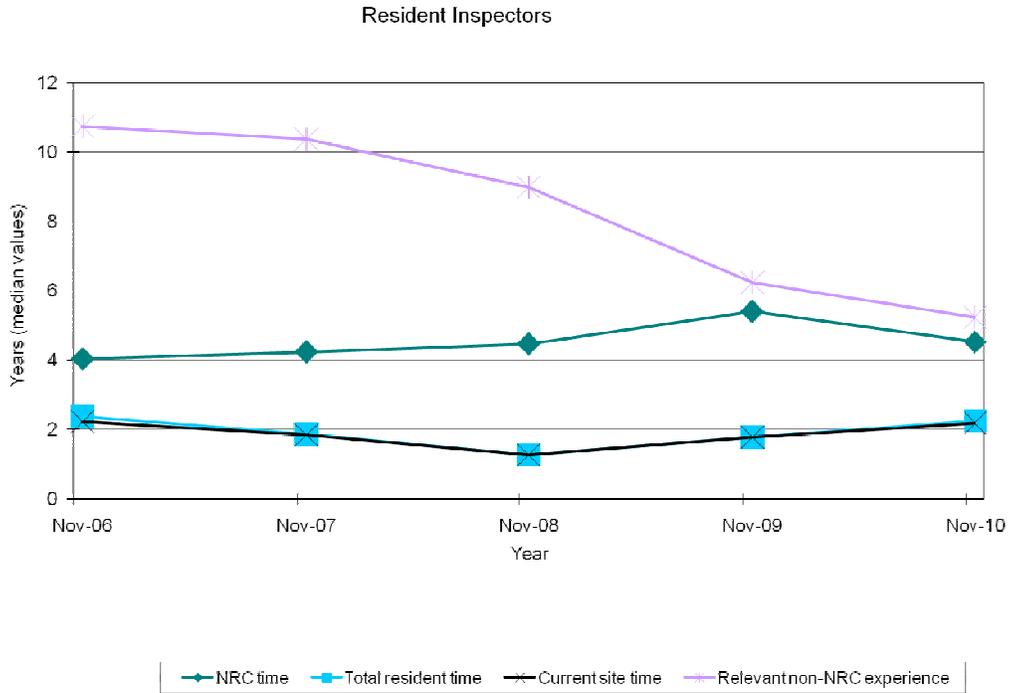


**Figure 7 Relevant non-NRC time (RIs)**

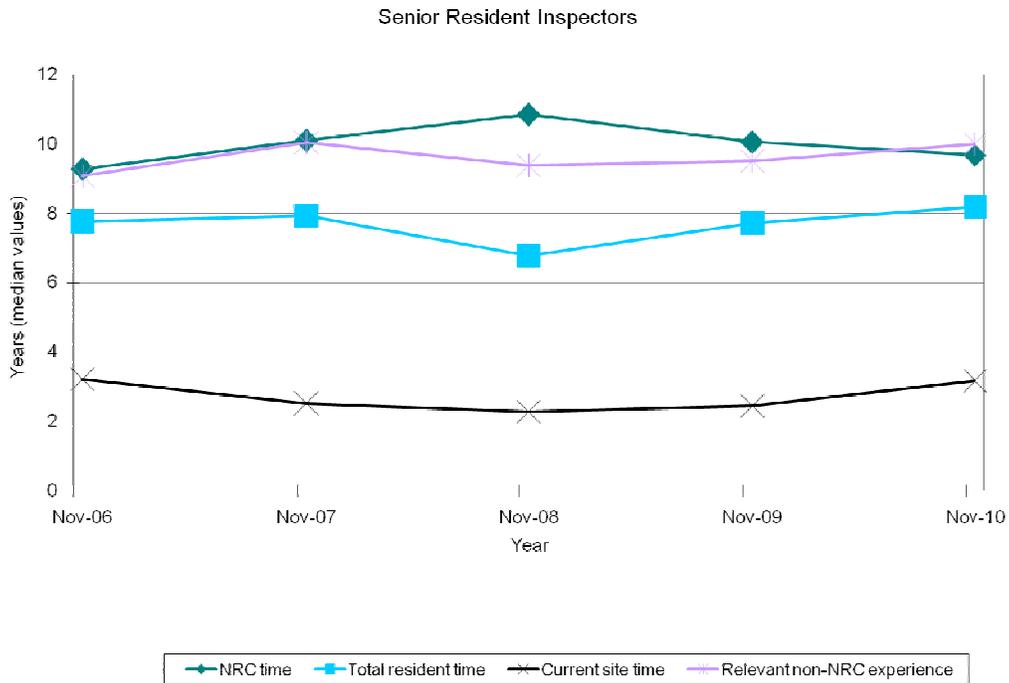


**Figure 8 Relevant non-NRC time (SRIs)**

- (5) **Summary:** Figures 9 and 10 graphically portray the average national demographic data for the RIs and SRIs shown in Tables 2 and 4. For RIs and SRIs, the data indicate steady national values from 2006 through 2010, except for decreasing relevant non-NRC time for RIs.



**Figure 9 Average national demographic data for RIs**



**Figure 10 Average national demographic data for SRIs**