

POLICY ISSUE  
INFORMATION

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SECY-14-0047

FOR: The Commissioners

FROM: Mark A. Satorius */RA/*  
Executive Director for Operations

SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR  
CALENDAR YEAR 2013

PURPOSE:

The purpose of this paper is to present the results of the U.S. Nuclear Regulatory Commission (NRC) staff's annual self-assessment of the Reactor Oversight Process (ROP) for calendar year (CY) 2013.

SUMMARY:

The results of the CY 2013 self-assessment indicate that the ROP met its program goals and achieved its intended outcomes. The staff 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 2013, and will continue to solicit input from the NRC's internal and external stakeholders and evaluate recommendations from independent evaluations to further improve the ROP based on feedback and lessons learned.

CONTACT: Ronald K. Frahm, Jr., NRR/DIRS  
301-415-2986

**BACKGROUND:**

The staff performed the CY 2013 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 every year since the NRC implemented the ROP in 2000, and staff has briefed the Commission annually on the results following the Agency Action Review Meeting (AARM). The Commission provides the staff with direction in the form of a staff requirements memorandum (SRM) as a result of the briefing. In SRM M130529, "Briefing on the Results of the Agency Action Review Meeting," dated June 13, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13164A337), the Commission directed the staff to review implementation of the Industry Trends Program over its history for lessons learned and inform the Commission of any program enhancements or resource reductions that may be warranted. The staff's response to this request is contained in the fiscal year (FY) 2013 Industry Trends Program results paper that complements this paper. In addition, the Commission directed the staff to pursue an independent review of the ROP's objectives and implementation in its SRM to SECY-12-0081, "Risk-Informed Regulatory Framework for New Reactors," dated October 22, 2012 (ADAMS Accession No. ML12296A158). The staff's response to this request is discussed in this paper.

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 (e.g., openness and effectiveness) from the NRC's Strategic Plan for Fiscal Years (FY) 2008–2013. The program goals and organizational excellence objectives support the NRC's mission and its strategic goals of safety and security. The goals and objectives are also consistent with the NRC's Principles of Good Regulation—to be independent, open, efficient, clear, and reliable. IMC 0307 also specifies the intended outcomes of the ROP, which help form its basis and are incorporated into the ROP processes.

**DISCUSSION:**

The staff conducted numerous activities and obtained data from many sources to ensure that it performed a comprehensive and robust self-assessment for CY 2013. Data sources included the ROP performance metrics described in IMC 0307, internal and external stakeholder feedback, and direction and insight that the Commission has provided in recent years. The staff analyzed this information to gauge ROP effectiveness and identify potential areas for improvement. The scope of the staff's self-assessment included key ROP program areas, ROP communication activities, independent and focused evaluations, ROP resources, and resident inspector (RI) demographics and staffing.

**ROP Program Area Evaluations**

The staff performed evaluations in the four key ROP program areas: the performance indicator (PI) program, inspection program, significance determination process (SDP), and assessment program. The staff noted that the PI program continued to offer insights into ensuring plant safety and security in CY 2013. NRC inspectors independently verified that licensees operated plants safely and securely, and they continued their support of Fukushima-related audit and

inspection activities. The SDP continued to be an effective tool for determining the safety and security significance of inspection findings. The assessment program ensured that the NRC and licensees took appropriate actions to address performance issues in CY 2013, commensurate with their safety significance. The staff made several improvements to the program area guidance documents based on feedback and lessons learned and made significant progress on several initiatives as detailed in Enclosure 1, "Reactor Oversight Process Program Area Evaluations." Many of the significant efforts in CY 2013 and challenges and focus areas in CY 2014 center on the ROP enhancement project, the Commission-directed independent review of the ROP, and other external and independent evaluations discussed in this paper and its enclosures.

### **ROP Communication and Performance Metrics**

The staff continued to improve the ROP based on feedback from internal and external stakeholders. The staff used a variety of communication vehicles to ensure that stakeholders have access to ROP information and have ample opportunity to provide feedback. The staff continued to conduct monthly public meetings with internal and external stakeholders, to use the internal feedback process, and to hold periodic meetings and telephone conferences with internal stakeholders to discuss potential improvements to the ROP. The staff also maintained the ROP Web pages to ensure that they communicate accurate and timely information to all stakeholders. As part of the ROP enhancement initiative to improve ROP communication and openness described below, the staff developed a plain-language brochure on the ROP, NUREG/BR-0508, "Reactor Oversight Process," and hosted a poster session on the ROP during the NRC's Regulatory Information Conference held in March 2013. In addition, the staff revised NUREG-1649, "Reactor Oversight Process," in February 2014 and is developing additional communication tools in CY 2014 to facilitate NRC knowledge management and to improve public awareness and understanding of the ROP. For example, the staff is preparing a Frequently Asked Questions and Answers document about the ROP to provide plain-language answers to basic questions about ROP implementation and to consolidate recurring comments and responses from previous ROP surveys. The staff will consider additional enhancements to improve the effectiveness of NRC messages through more extensive use of plain language consistent with the recommendation from the Commission-directed independent review.

The staff has noted in the past several self-assessments that the level of participation and the number of new insights from the ROP surveys have been limited. Further, the staff has noted its intent to explore ways to improve or replace the survey tool to improve objectivity in the measurement of ROP performance and minimize the reliance on more subjective measures such as stakeholder perception. In addition, the staff has experienced challenges in obtaining the necessary clearance from the Office of Management and Budget to issue the survey to external stakeholders. As a result, the staff did not issue an external survey in CY 2013 and has suspended the use of surveys to assess ROP effectiveness. Those ROP performance metrics that are evaluated based on the survey results have been characterized as not applicable for the CY 2013 self-assessment and will be removed from or replaced in the self-assessment process guidance going forward as discussed below. The staff discussed its intent to discontinue the survey with both external and internal stakeholders, and stakeholders cited both the Commission-directed independent review and the ROP enhancement project as significant opportunities for stakeholder engagement and feedback in CY 2013. The staff continues to value and encourage stakeholder feedback on potential improvements to the ROP and is exploring alternate avenues for obtaining that feedback.

All 23 of the applicable ROP performance metrics met the established criteria in CY 2013 as defined in IMC 0307, Appendix A, "Reactor Oversight Process Self-Assessment Metrics," dated March 27, 2013. There are 19 metrics that are measured based on survey responses and as noted above the survey was not performed. Therefore these metrics were not applicable. Enclosure 1 contains a brief discussion of the performance metric evaluations for each of the program areas, and the annual ROP performance metric report provides data and a staff analysis for each ROP metric (ADAMS Accession No. ML14056A211). As part of its ROP enhancement project, the staff has initiated an effort to evaluate potential improvements to the ROP self-assessment process and explore more objective performance metrics for assessing ROP effectiveness. The staff will also ensure that the metrics measure ROP conformance with the founding ROP goals and objectives and the NRC's Principles of Good Regulation. Insights for new metrics may be gleaned from several recent and ongoing program evaluations as discussed below. The staff also will consider revising the ROP self-assessment process to better solicit and assess both tactical and strategic feedback consistent with the recommendation from the Commission-directed independent review.

### **Independent and Focused Evaluations**

ROP Enhancement Project - In CY 2013, the staff made significant progress in its ROP enhancement efforts that were initiated to take a fresh look at several key areas of the ROP. Focus areas include: (1) enhancing the baseline inspection program to improve its efficiency and effectiveness, (2) improving ROP communication and openness, (3) enhancing assessment areas of the ROP such as substantive cross-cutting issues and supplemental inspections, and (4) enhancing ROP self-assessment program effectiveness. These efforts are being coordinated with the Commission-directed independent review described below, and they are discussed in their respective sections of this paper and its enclosures.

Commission-Directed Independent Review - The Commission directed the staff to pursue an independent review of the ROP's objectives and implementation in its SRM to SECY-12-0081. As a result, the staff created a working group and performed an independent assessment of the program in 2013 to identify potential enhancements or areas for further examination. The working group was composed of NRC staff with no current responsibility for ROP maintenance or implementation, and no substantial involvement in the original development of the program.

The working group report entitled "Reactor Oversight Process Independent Assessment 2013" was completed in February 2014 and assigned to the Office of Nuclear Reactor Regulation for review and action by the Deputy Executive Director for Reactor and Preparedness Programs (ADAMS Accession No. ML14058A231). The working group concluded that the ROP has been effective in accomplishing its objectives of maintaining safety, increasing openness, and making NRC activities and decisions more effective, efficient, and realistic. The working group also provided several recommendations and suggestions to further enhance the ROP structure and program implementation.

The staff will evaluate and consider the report's recommendations and suggestions as part of its ongoing ROP enhancement project or via existing ROP feedback processes. Enclosure 2, "Staff Actions to Address the 2013 Reactor Oversight Process Independent Assessment," summarizes the disposition of each of the recommendations and suggestions from the report. Several of the recommendations and suggestions have previously been raised by stakeholders and are already being considered by the staff as noted in and discussed in the respective

sections of this paper. The staff will report progress on implementing the associated enhancements to the Commission in its annual self-assessments. In addition, the NRC staff and other stakeholders discussed the independent assessment and ROP enhancement project at the March 2014 Regulatory Information Conference.

Government Accountability Office (GAO) Audit - In September 2013, the GAO completed its audit of the NRC's ROP and issued GAO report 13-743, "Nuclear Power: Analysis of Regional Differences and Improved Access to Information Could Strengthen NRC Oversight" (ADAMS Accession No. ML13290A611). This audit involved a review of the NRC's oversight of the U.S. nuclear power industry following the accident at Japan's Fukushima Dai-ichi Nuclear Power Plant in response to a request made by the Senate Committee on Environment and Public Works. The GAO made three recommendations, most notably that the NRC analyze the causes of regional differences in identifying and resolving findings of very low safety significance. The second and third recommendations were to improve database search tools for the public to track inspection findings, and to improve search tools for operating experience for inspectors. As noted in the GAO report, the number of escalated findings, which equate to greater risk significance, were more similar across the regions. The NRC agrees with all three recommendations and is taking action to address them as discussed in the staff's response to Congress dated December 16, 2013 (ADAMS Accession No. ML13305A116). In response, staff has already developed and implemented a tabletop exercise designed to identify the cause of Regional inconsistencies in identification of findings of very low safety significance. Exercise participants from headquarters and all four Regions were challenged to correctly identify performance deficiencies and characterize their safety significance using the current guidance in IMC 0612, Appendix B, "Issue Screening." Staff is currently assessing the data to determine the apparent causes and will revise inspection program guidance, if necessary.

Office of the Inspector General (OIG) Audits - In March 2013, the OIG completed its audit of the NRC's training program and issued OIG report 13-A-14, "Audit of NRC's Safety Training and Development for Technical Staff" (ADAMS Accession No. ML13073A183). This audit involved a review of the NRC's process for identifying safety training needs. The OIG recommended that the NRC develop and implement procedures to systematically assess training needs. In response, the staff will work in CY 2014 to assess training needs for various inspector positions and establish procedures for future assessments.

The OIG also conducted an audit in 2013 to evaluate the effectiveness of NRC support provided to resident inspectors at nuclear power plants, fuel-cycle facilities, and construction sites.

OIG report 14-A-12, "Survey of NRC's Support Provided to Resident Inspectors," (ADAMS Accession No. ML14077A293), was finalized in March 2014. The OIG identified opportunities to improve the agency's support of resident inspectors which include: (1) identifying a formal mechanism for obtaining residents' perspectives regarding support issues, and (2) taking measures to ensure that the roles and responsibilities for existing support systems for residents' needs and concerns are communicated and understood by the appropriate management and staff, and are effectively executed. The NRC staff is in the process of evaluating and responding to these recommendations.

ROP Reliability Initiatives - The staff continued to implement the ROP reliability initiatives in 2013. The Deputy Regional Administrators initiated these activities to improve ROP implementation through sharing inspection resources, conducting benchmarking visits to other NRC regions, assessing inspection report quality, and discussing reliability topics, such as the

distinction between minor and more-than-minor licensee performance issues. In 2013, the staff integrated the effort and resources associated with the ROP reliability initiative with the ROP enhancement project. Given that the ROP enhancement project includes significant participation by headquarters staff, regional inspectors, first-line supervisors and senior managers, the project afforded valuable opportunities for the exchange of ideas and views across all four regions to further ROP reliability while efficiently managing available resources.

Lessons Learned from Browns Ferry Supplemental Inspection - As prescribed in Inspection Procedure (IP) 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," the staff performed an evaluation of the IP 95003 supplemental inspection completed at Browns Ferry in CY 2013. The evaluation yielded the following determinations: (1) based on a review of previous information, the Agency appropriately characterized Brown Ferry's performance; (2) the Agency was provided sufficient warning to identify a significant reduction in safety; and (3) the methodology and approach used to complete the Browns Ferry IP 95003 inspection was thorough and efficient. The evaluation also contained additional insights related to the NRC inspection and assessment processes as well as several recommendations and suggestions for potential program improvements. The staff will consider these recommendations and suggestions as part of the ROP feedback process, or other programs, as appropriate.

Regulatory Impact Summary - The staff received and evaluated feedback from licensees as part of the established regulatory impact process. Over the past year, the staff received and compiled feedback during numerous site visits to reactor sites across all four regions. The favorable percentage remained high, and the distribution of comments was similar to previous years. The few unfavorable comments were concentrated primarily in discreet areas, including the cumulative effects of regulation and the lack of clear guidance for transitioning from operating to decommissioning status. Enclosure 3 "Regulatory Impact Summary," discusses the feedback and the staff's evaluation.

Industry Trends Program - The NRC also collects and analyzes industry-wide data to monitor the overall safety performance of operating plants and to serve as indicators of ROP effectiveness. The staff is reporting the FY 2013 results of the Industry Trends Program to the Commission in an annual paper that complements this paper, which also includes a review of the program implementation and staff conclusions and recommendations for program enhancements and reductions, as directed by the Commission in its SRM dated June 13, 2013. The results of the Industry Trends Program, along with the results of this annual self-assessment, will be reviewed at the AARM.

Transition to New Reactor Oversight - Similar to ROP implementation for operating reactor oversight, the staff implements the Construction Reactor Oversight Process (cROP) for the oversight of new reactors that are under construction. The staff performs an annual self-assessment of the cROP that is forwarded to the Commission in a separate paper. The staff formed a working group to identify gaps and action items needed to ensure that a smooth transition will occur from the cROP to the ROP for new reactors. A report summarizing the group's activities and recommendations will be provided to senior NRC management in 2014. The recommendations will be evaluated for potential enhancements to the cROP, ROP, and the transition between them.

Applicability to New Reactors - In addition, the staff has provided its recommendations to the Commission for risk-informing the ROP for new reactors in SECY-13-0137, "Recommendations for Risk-informing the Reactor Oversight Process for New Reactors," dated December 17, 2013 (ADAMS Accession No. ML13263A351). The purpose of the paper was to respond, in part, to the SRM to SECY-12-0081, "Risk-Informed Regulatory Framework for New Reactors," dated October 22, 2012. The staff recommended that the Commission direct the staff to: (1) develop an integrated risk-informed approach for evaluating the safety significance of inspection findings for new reactor designs that would use qualitative measures to supplement the risk evaluations in a structured manner to ensure an appropriate regulatory response to performance issues; and (2) develop appropriate PIs and thresholds for new reactor applications, specifically those PIs in the Initiating Events and Mitigating Systems cornerstones, or develop additional inspection guidance to address identified shortfalls to ensure that all cornerstone objectives are adequately met.

### **ROP Resource Expenditures**

Overall resource expenditures for ROP implementation decreased in CY 2013 compared to recent years. This can be attributed primarily to the decommissioning of several plants. Enclosure 4, "Reactor Oversight Process Resource Expenditures," further discusses ROP resource expenditures.

### **Resident Inspector Demographics and Site Staffing**

Based on the annual resident inspector demographic and site staffing analysis, the staff concluded that sites continue to be staffed with knowledgeable and experienced resident inspectors (RIs) and senior resident inspectors (SRIs). Staff turnover rates in both the RI and SRI ranks have increased compared to recent years. The staff will continue to closely monitor inspector experience, inspector turnover, and permanent site staffing in 2014. Enclosure 5, "Resident Inspector Demographics," provides details on the 2013 RI and SRI demographics and site staffing.

### **CONCLUSIONS:**

The self-assessment results for CY 2013 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 2013, and plants continued to receive a level of oversight commensurate with their performance. Nevertheless, several program improvements are being evaluated and implemented based on lessons learned and feedback from stakeholders and independent assessments, consistent with the continuous improvement features of the ROP.

### **RESOURCES:**

NRC Headquarters and the Regions use resources for ROP program management, development, and licensee performance assessment activities. These activities include ROP enhancement efforts, the annual ROP program assessment, mid-cycle and end-of-cycle

licensee performance assessments, and revision and maintenance of the inspection manual. The Office of Nuclear Regulatory Research (RES) provides support in the development and enhancement of NRC risk analysis tools. The following table includes estimates for resources to conduct these activities in the Office of Nuclear Reactor Regulation (NRR), the Office of Nuclear Safety and Incident Response (NSIR), RES, and the Regions.

The staff does not anticipate that these activities will utilize any resources beyond those already included in the FY 2014 Current Estimate and the FY 2015 Congressional Budget Justification. Resources required beyond FY 2015 will be addressed during the Planning, Budgeting, and Performance Management process.

	FY 2014		FY 2015	
	FTE	\$K	FTE	\$K
NRR	30.0	1,055	28.2	1,039
NSIR	6.0	--	4.4	--
RES	9.5	3,675	9.5	3,861
Regions	37.7	--	37.3	--
<b>TOTAL</b>	<b>83.2</b>	<b>4,630</b>	<b>79.4</b>	<b>4,900</b>

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 unforeseen financial impact.

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Mark A. Satorius  
Executive Director  
for Operations

Enclosures:

1. [Reactor Oversight Process Program Area Evaluations](#)
2. [Staff Actions to Address the 2013 Reactor Oversight Process Independent Evaluation](#)
3. [Regulatory Impact Summary](#)
4. [Reactor Oversight Process Resource Expenditures](#)
5. [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 U.S. Nuclear Regulatory Commission (NRC) staff evaluated all four key program areas of the Reactor Oversight Process (ROP). The four areas are (1) the performance indicator (PI) program, (2) the inspection program, (3) the significance determination process (SDP), and (4) the assessment program. The annual ROP performance metric report provides data and a staff analysis for all of the program area metrics (Agencywide Documents Access and Management System (ADAMS) Accession No. ML14056A211). Because there were no stakeholder surveys in calendar year (CY) 2013, those metrics in the program areas that are based on stakeholder perception were not applicable in these evaluations. The staff plans to revise the ROP metrics in CY 2014 so that ROP performance will be measured in a more objective manner that is less reliant on the subjective views and perceptions of a limited number of stakeholders. The results of the staff's review are provided below.

### **Performance Indicator Program**

The PI program continued to provide insights into plant safety and security. The staff and industry made several improvements to the PI program guidance in 2013 during ROP Working Group meetings and using feedback from internal stakeholders. The ROP met all of the applicable PI program metrics for CY 2013.

The NRC staff initiated updates to the public PI Web site to support openness and transparency of the PI program. The current assessment period for each specific PI is defined within its respective display graph such that stakeholders can easily identify the assessment period for each PI. The staff presented a white paper that discusses PI validity during and following extended shutdown to industry representatives at a public ROP Working Group meeting. In support of this effort, the industry performed a sensitivity simulation on Mitigating System Performance Index (MSPI) indicators to assist in determining the validity of MSPI during extended shutdowns and subsequent startups. The staff is soliciting feedback from industry on the PI validity proposal. The staff will revise ROP guidance, as necessary, when an approach and infrastructure for determining PI validity is finalized.

NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," Revision 3, was issued in February 2013. The goal of the revision was to clarify current regulatory requirements. Numerous internal and external stakeholders were involved during the revision process. NUREG-1022, Revision 3 reiterated that the inadvertent inoperability of a safety-related structure, system, or component is a reportable event. This has resulted in an increase in event reports in some cases. For example, certain sites have been affected due to the momentary inoperability of the secondary containment. These inoperabilities are primarily due to (1) inner and outer secondary containment doors being inadvertently open at the same time during personnel entry and exit and (2) inadvertent loss of secondary containment vacuum. The safety system functional failure (SSFF) performance indicator (PI) is tied to event reporting. As a result, some staff and industry have expressed a concern regarding clarifications made in NUREG-1022 and its impact on the SSFF PI. In addition, regional staff has expressed a concern with current PI guidance, contained in NEI 99-02, which suggests that all events reportable under NUREG-1022 may not be reportable under the Safety System Functional Failure PI. Specifically, that an engineering analysis may be performed to justify that

a reportable event may not be counted as a SSFF PI provided the system's safety function was maintained. Staff is pursuing several options at this time including internal and external communications, a potential Regulatory Information Summary and Enforcement Guidance Memorandum, and in the longer term, modifications to plant Technical Specifications for the few facilities that do not currently have provisions in their Technical Specifications. The staff will continue to work with stakeholders in CY 2014 to address their concerns through the bi-monthly ROP working group public meetings.

Over the past year, the staff and industry representatives on the ROP Working Group have continued to make significant progress on a white paper regarding probabilistic risk assessment (PRA) technical adequacy to support MSPI indicators. The industry initiated this effort because the guidance in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," needed to be updated to reflect the current American Society of Mechanical Engineers (ASME)/American Nuclear Society (ANS) Standard (ASME/ANS RA-Sa-2009). In addition, this effort will also address the need for guidance on the configuration control program. The staff planned to complete this activity in CY 2013; however, because of its complexity and the need to resolve numerous program issues, the ROP Working Group has not yet finalized the white paper. Upon finalization of this paper, the guidance will be incorporated into NEI 99-02.

The staff and industry representatives of the ROP Working Group discussed the technical basis and the metric for the Reactor Coolant System (RCS) Leakage PI. The staff received feedback through the ROP feedback process that the RCS Leakage PI neither directly nor indirectly supports the PI objective as described in IMC 0308, Attachment 1, "Technical Basis for Performance Indicators." Specifically, the submitter of the feedback recommends changing the data source of the RCS Leakage PI to measure unidentified RCS leakage and consider counting actual RCS pressure boundary leakage occurrences to accurately support the PI technical basis. Currently, the RCS leakage PI uses identified RCS leakage as its data source. The staff submitted a white paper on the topic and proposed several potential resolutions for the ROP Working Group to consider. In response, industry representatives of the ROP Working Group conveyed that changing the data source to unidentified RCS leakage would be problematic and make the PI more susceptible to spuriously crossing the Green-White threshold. The staff and industry representatives of the ROP Working Group plan to continue to discuss this issue in CY 2014.

In CY 2013, the staff identified the potential need for a revision to the PI in the Security Cornerstone. While the current PI still provides staff with data related to the reporting of Intrusion Detection System availability, the staff recognized that the guidance may need to be revised to accurately reflect the advancement of technologies in this area. In the interim, the staff has confidence in the NRC Baseline Inspection Program to ensure safe and secure operations in the Security Cornerstone. Additionally, the staff is considering additional security PIs in the areas of protective strategy implementation and evaluation. The Office of Nuclear Security and Incident Response (NSIR) will discuss this possibility and explore its feasibility with the industry and other key stakeholders in CY 2014 with a projected pilot period to begin in CY 2016.

The staff continued efforts to improve and clarify the PIs within the Emergency Preparedness cornerstone. The Drill/Exercise Performance PI was revised to clarify the difference between offsite notification PI timeliness criteria and offsite notification regulatory compliance criteria.

Additional guidance includes the clarification that when an emergency action level declaration is announced by the licensee's decision maker, the classification is considered complete for the purpose of evaluating PI accuracy and timeliness. The staff and industry are currently working to revise the plant-specific guidance in Appendix D to NEI 99-02 related to the Alert and Notification System (ANS) Reliability PI. The revised guidance will address documenting siren reliability status for sirens that are within the licensee's Emergency Planning Zones but not part of their ANS design report approved by Federal Emergency Management Agency.

The staff evaluated the appropriateness of existing PIs and the related thresholds for new reactors in SECY-13-0137, "Recommendations for Risk-Informing the Reactor Oversight Process for New Reactors," as directed in the staff requirements memorandum (SRM) for SECY-12-0081, "Risk-Informed Regulatory Framework for New Reactors." The staff concluded that many of the PIs are based on regulations or standards that would also apply to new reactor designs and that many of the thresholds are deterministic. The staff noted that for the unplanned scrams with complications indicator in the Initiating Events cornerstone, a complicated scram for new reactor designs would need to be defined. As previously noted in SECY-12-0081, a risk-informed alternative to the MSPI indicators in the Mitigating Systems cornerstone would need to be developed for new reactor applications. The staff concluded that the remaining PIs and related thresholds could apply to new reactors. Pending Commission approval, the staff plans to further analyze the current PIs and thresholds and will attempt to develop appropriate PIs and thresholds for new reactor licensees, particularly in the Mitigating Systems cornerstone. If the staff determines that appropriate PIs and thresholds are not feasible for new reactor licensees, the staff plans to develop additional inspection guidance to address any shortfalls to ensure that all cornerstone objectives are adequately assessed.

Industry's guidance for reporting PI data, NEI 99-02, Revision 7 was issued in CY 2013. Revision 7, which incorporated all approved frequently asked question (FAQ) resolutions through March 2013, became effective October 2013. Industry recommends continuously updating NEI 99-02 with FAQ resolutions going forward to provide more current guidance for licensees and NRC staff. This proposal will be evaluated and considered in CY 2014.

The staff will continue to review PI effectiveness and evaluate whether the PIs are providing meaningful information as part of its monthly ROP Working Group meetings and through the FAQ process, consistent with the suggestion from the Commission-directed independent review in CY 2013. In addition, the staff will continue to develop messages to enhance stakeholder understanding of how the PIs contribute to the NRC's assessment of plant safety and licensee performance as part of its ongoing efforts to improve communication and openness under the ROP enhancement project.

### **Inspection Program**

NRC inspectors independently verified that plants were operated safely and securely. All applicable inspection program metrics were met in CY 2013, including the completion of the required baseline inspection program. Headquarters and regional staff and management initiated the ROP enhancement project to improve ROP effectiveness, including the effectiveness of the baseline inspection program (BIP). The Office of Nuclear Reactor Regulation (NRR) and regional staff continued their support of Fukushima-related audit and inspection activities. Resident and senior resident inspector demographics and site staffing were evaluated as discussed in Enclosure 5, "Resident Inspector Demographics."

Each NRC Region completed the baseline inspection program in CY 2013 and documented its completion in a memorandum available under ADAMS Accession No. ML14041A037 for Region I, ADAMS Accession No. ML14045A362 for Region II, ADAMS Accession No. ML14045A382 for Region III, and ADAMS Accession No. ML14050A152 for Region IV. In addition, the agency completed all security baseline inspections in CY 2013 as documented in a memorandum from NSIR (ADAMS Accession No. ML14016A237), but this memorandum contains security-related information and is not publicly available. Region IV staff deferred completion of two Component Design Bases Inspections from 4<sup>th</sup> quarter 2013 to 1<sup>st</sup> quarter 2014 because of the October 2013 Government shutdown, but the region still satisfied the baseline completion requirement as stipulated in IMC 2515, "Light-Water Reactor Inspection Program – Operations Phase." IMC 2515 allows up to four inspection procedures per Region to not be completed to provide for unanticipated disruptions in inspection scheduling that unavoidably cause a delay in completion. The program is considered complete if at least the minimum inspection requirements will be completed as soon as possible within the quarter immediately following the annual inspection cycle.

The staff initiated the ROP enhancement project in CY 2013 to determine if the ROP is meeting its objectives and to identify areas for improvement. For the inspection portion of the project, headquarters and regional staff and management performed an in-depth review of the baseline inspection program (BIP) and will finalize their report during CY 2014. The goals established for this portion of the project included enhancing the BIP to incorporate the inspection areas for the current environment, eliminate redundant or no longer necessary inspection areas, maximize efficient and effective use of our resources, and incorporate flexibility where appropriate. The baseline inspection procedures were divided into 10 inspection areas. Additionally, special topics were identified as areas that should be included in the enhancement effort (1) based on feedback from stakeholders, (2) because of the potential for these areas to impact the BIP, and (3) as a result of the current regulatory environment. Two public meetings were held to solicit feedback and discuss the BIP portion of the ROP enhancement project.

The BIP portion of the ROP enhancement project has three main phases: (1) analysis of the inspection areas and associated procedures, (2) documentation of recommendations, and (3) actions to address the recommendations including proposing changes to inspection areas and associated procedures. For the analysis phase, the champions and key branch chiefs gathered information from the inspection procedure analysis completed by the inspection procedure owners, inspectors and subject matter experts, special groups and reports, lessons learned, recent events, and inspections to analyze their assigned inspection areas. The analysis included insights from applicable sections of the Commission-directed independent review of the ROP draft report and recent reports from the Office of the Inspector General (OIG) on topics that involved the BIP. The final report will be issued and made publicly available in CY 2014 and it will capture the recommendations from the BIP enhancement team.

The independent review of the ROP was conducted in CY 2013 as directed by the Commission in the SRM for SECY-12-0081. The report identified eight recommendations and ten suggestions for improving the ROP, many of which had already been identified by the staff and put into the scope of the ROP enhancement project. For example, one recommendation was to include a risk-informed periodic review of licensee programs or actions to address generic issues. This recommendation is being addressed in the BIP portion of the ROP enhancement project in the special topic of operating experience. Another recommendation is to clarify ROP

program expectations for instances when performance issues are common to multiple facilities. This recommendation was addressed during the recent revision to Office Instruction COM-106, "Control of Task Interface Agreements." The staff will continue to discuss and assess the NRC's handling of performance issues that are common to multiple facilities as needed through the public ROP Working Group meetings. The suggestion to use periodic inspector counterpart seminars, training, and mentoring as opportunities to ensure that inspectors and managers have a common understanding of the inherent flexibilities in the ROP inspection program is addressed under the BIP portion of the ROP enhancement project. The topic of flexibility was also discussed during a counterpart meeting as part of the internal outreach and information collection for the BIP project. The staff will continue to consider the topic for future counterpart meetings.

As further discussed below in the assessment program evaluation, IMC 2515 was revised to state that additional inspection may be used to evaluate emerging technical issues not related to licensee performance issues, and that this additional inspection is not considered an Action Matrix deviation. One example is the extensive staff resources dedicated to inspection to resolve the Seabrook alkali-silica reaction issue. IMC 2515 was also revised to state that licensees will no longer be subjected to the ROP and will transition to the decommissioning inspection program after a licensee submits a written certification to cease operation in accordance with 10 CFR 50.82(a)(1)(ii).

Additionally, in CY 2014, NRC staff will evaluate the inspection program to address recommendations from several independent evaluations, including: (1) The Government Accounting Office audit report 13-743, "Analysis of Regional Differences and Improved Access to Information Could Strengthen NRC Oversight," dated September 27, 2013 (ADAMS Accession No. ML13290A611); (2) OIG report 13-A-14, "Audit of NRC's Safety Training and Development for Technical Staff," dated March 14, 2013 (ADAMS Accession No. ML13073A183); and (3) the OIG audit report on the effectiveness of NRC support provided to resident inspectors at nuclear power plants, fuel-cycle facilities, and construction sites, which will be issued in early CY 2014.

The inspection staff developed and issued Temporary Instruction (TI) 2515/189, "Inspection To Determine Compliance of Dynamic Restraint (Snubber) Program with 10 CFR 50.55a Regulatory Requirements for Inservice Examination and Testing of Snubbers," and TI 2515/190, "Inspection of the Licensee's Proposed Interim Actions as a Result of the Near-Term Task Force Recommendation 2.1 Flooding Evaluation." The NRC staff conducted seven flooding and six seismic regulatory audits at selected operating reactors to gain a better understanding of the flooding and seismic walkdown methods and associated procedures used by licensees to prepare the flooding and seismic walkdown report and to assist the staff in preparing its safety assessment. These actions follow the March 12, 2012, NRC request for information letter per Title 10 to the *Code of Federal Regulations* (10 CFR), Subpart 50.54(f). The request addressed, in part, that licensees perform flooding and seismic walkdowns to identify and address degraded, non-conforming, or unanalyzed conditions through the corrective action program, and to verify the adequacy of the monitoring and maintenance procedures.

On March 12, 2012, the NRC issued Order EA-12-049, "Mitigation Strategies for Beyond-Design-Basis External Events" (ADAMS Accession No. ML12054A736), requiring holders of operating licenses and construction permits issued under 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," to submit Overall Integrated Plans, including

descriptions of how compliance with the requirements of Attachment 2 of the order will be achieved. NRC staff are conducting onsite audits during CY 2014 to confirm or evaluate mitigating strategies as described in licensee submittals, and to receive and review with site staff, information relative to open items from the interim safety evaluations related to licensee's compliance with NRC Order EA-12-049.

The staff developed and implemented training in CY 2013 to ensure that the inspectors remain efficient and effective in their inspection activities. The staff conducted training on safety culture common language for nuclear power reactors to ensure clearer and more consistent communication between the NRC and industry. The staff developed refresher training on the operability determination process that will be conducted in CY 2014. In response to an OIG audit, a training needs assessment will be conducted in CY 2014 to evaluate the effectiveness of training programs used to certify different types of inspectors. This assessment will be used to improve training and to inform a learning transformation initiative that seeks to identify delivery methods that improve access to learning materials, reduce travel, and shorten time to qualification. The staff plans to conduct training on the use of Standardized Plant Analysis Risk (SPAR) model tools in CY 2014. In addition, NSIR staff conducted training before implementing the newly revised baseline inspection procedures. Training on systems and target sets was also provided to the cyber technical contractors to enhance their support of cyber security inspection activities.

### **Significance Determination Process**

The SDP continues to be an effective tool for determining the safety and security significance of inspection findings. In CY 2013, the staff implemented several improvements to the SDP guidance and made significant progress in other initiatives. The staff met the SDP timeliness metric for an eighth consecutive year and all other applicable SDP performance metrics were met for CY 2013.

NRR staff made significant improvements to IMC 0609, Appendix F, "Fire Protection Significance Determination Process," and issued a revision to both IMC 0609, Appendix F, and IMC 0609, Appendix F, Attachment 1, "Fire Protection Significance Determination Process Worksheet," in September 2013. These revisions expanded the qualitative screening approach to better enable the staff to screen very low safety significant (Green) findings. NRR staff also made progress in revising IMC 0609, Appendix G, "Shutdown Operations Significance Determination Process," and IMC 0609, Appendix G, Attachment 1, "Phase 1 Operational Checklists for Both PWRs and BWRs," and plans to finalize these revisions in CY 2014. These revisions will improve usability and effectiveness of the screening tool for findings involving shutdown operations.

The SDP Business Process Improvement (BPI) project team continued work throughout CY 2013 and completed the Define, Measure, and Analyze phases. The project team has developed recommendations and will brief management in early CY 2014. The recommendations are categorized into four different improvement areas: communications, management, coordination, and policy. After the recommendations are approved by management, the BPI project team will establish an implementation plan and begin incorporating improvements by the end of CY 2014. The suggestion by the independent assessment team that Significance and Enforcement Review Panel (SERP) members should be provided with periodic training or briefings regarding the uncertainties inherent in the agency's

PRA tool outputs and the use of PRA quantitative results in SERP decisionmaking also was identified by the SDP BPI team and is a recommendation in the BPI final report.

The staff continued to address comments and solicit technical support from internal stakeholders regarding a draft SDP for spent fuel pool (SFP) findings. In recent years, many hours of engineering and risk analysis support from both regional and headquarters staff were expended to characterize the safety significance of several SFP findings. The purpose of the draft SDP is to provide an efficient, structured, and predictable process for characterizing the safety significance of SFP findings. In order to proceed, the staff determined that a dedicated working group consisting of expertise from a variety of technical disciplines would be needed to develop an SFP SDP that effectively and efficiently dispositions safety significance. This initiative will likely be deferred pending availability of resources. Alternatively, IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria," may continue to be the preferred tool for characterizing the safety significance of SFP inspection findings.

The staff continued to evaluate the best approach to estimate the safety significance of findings associated with licensed operator performance. The staff proposed adding a new table to IMC 0609, Appendix M, that focuses on qualitative attributes of licensed operator performance issues. After incorporating feedback from internal stakeholders, the staff reconsidered this approach and is now revising the wording in the current table in IMC 0609, Appendix M, to make it more applicable to all types of findings. Additional guidance will be added as well to elaborate on the different types of findings and how each of them can be implemented using a single table in Appendix M. The proposed draft to IMC 0609, Appendix M, will go out for comment in CY 2014.

In January 2013, the staff issued revision 2.0 to the Risk Assessment Standardization Project (RASP) Handbook, Volume 1, "Internal Events." This revision was undertaken as part of ongoing NRC initiatives to provide guidance on PRA methods and best practices for consistency in risk significance assessment of inspection findings and reactor incidents. The staff added several new modules in the areas of common cause failure, initiating event assessment, human reliability analysis, treatment of loss of offsite power initiating events, and support system initiating events assessments. In May 2013, the staff held a public meeting to discuss these new modules with external stakeholders and industry. Industry representatives expressed concerns with the guidance on initiating events analyses and the minimum threshold value on joint human error probabilities. Regarding the guidance on initiating events analyses, there were questions regarding the use of an event assessment conditional core damage probability (CCDP) metric to assess the safety significance of inspection findings that result in initiating events. The specific concern was that the January 2013 revision to the RASP Handbook, Volume 1, described an evaluation method that uses the CCDP metric for assessing risk significance. The explicit use of the CCDP metric in SDP evaluations of inspection findings that result in initiating events is not described in the SDP program guidance in IMC 0308, Attachment 3, "Significance Determination Process Basis Document." The staff discussed the issue at several ROP Working Group public meetings in 2013 and held a separate public meeting to discuss the specific concerns on November 4, 2013. In CY 2014, the staff plans to hold additional public meetings to discuss alternative, viable approaches to the use of event assessment CCDP in the SDP and will propose revisions to applicable guidance based on the outcomes of these discussions. Should proposed revisions involve potential changes in Commission policy, the staff will seek Commission direction before pursuing any changes to ROP program documents.

The staff enhanced IMC 0609, Appendix E, Part II, "Force-on-Force Significance Determination Process," based on lessons learned and to incorporate both internal and external stakeholder input. Staff also revised IMC 0609, Appendix E, Part I, "Baseline Security Significance Determination Process for Power Reactors," to account for revisions to the inspection program such as reducing redundancies and additional programmatic changes to increase efficiencies.

The staff issued a new appendix to IMC 0612, Appendix G, "Emergency Planning Cornerstone-Specific Supplemental Guidance for Appendix B Screening Figures 1 and 2," that provides specific inspection guidance originally located in IMC 0609, Appendix B, "Emergency Preparedness Significance Determination Process." Staff plans to revise IMC 0609, Appendix B, to remove the relocated guidance and to make other enhancements to the document based on stakeholder feedback.

The staff reached out to internal stakeholders to identify any specific training deficiencies in the use and understanding of the SDP guidance. After discussions with regional stakeholders, the inspection staff noted that additional training on the use of SPAR model tools, specifically the SDP workspace and Plant Risk Information eBook, would be beneficial. The staff will develop these additional training materials and work with regional staff to determine the most effective implementation plan.

### **Assessment Program**

The staff's implementation of the assessment program ensured that the staff and licensees took appropriate actions to address performance issues in CY 2013, commensurate with their safety significance. All applicable assessment metrics met their established criteria in CY 2013. The staff opened one new Action Matrix deviation in CY 2013 at the Perry Nuclear Power Plant. The deviation was requested to maintain the plant in the Degraded Cornerstone column of the ROP Action Matrix when licensee performance met the criteria for entry into the Multiple/Repetitive Degraded Cornerstone column. The staff pursued this deviation because the licensee had not exhibited indications of significant performance problems in areas other than the Occupational Radiation Safety Cornerstone. Therefore, the regulatory actions specified for the Degraded Cornerstone column of the Action Matrix were deemed more commensurate with the licensee's safety performance. The staff subsequently completed the supplemental inspection, and the deviation was closed. The staff evaluated the deviation to determine if any program changes were needed. As a result of that review, the staff generated a feedback form to consider revising the definition of "repetitive degraded cornerstone." The staff is evaluating the appropriateness of the criteria for Action Matrix columns under the scope of the ROP enhancement project as discussed below, and will consider this feedback in that effort.

Because of Action Matrix deviations issued in CY 2012, IMC 0305, "Operating Reactor Assessment Program," was revised in CY 2013 to specify that the application of additional resources to evaluate issues not related to licensee performance is not considered a deviation from the Action Matrix. This revision ensured the Action Matrix deviation process is focused on regulatory action that is inconsistent with the range of actions described in the pertinent column of the Action Matrix. Similarly, IMC 2515 was revised to state that additional inspection may be used to evaluate emerging technical issues not related to licensee performance issues, and that this additional inspection is not considered an Action Matrix deviation. These revisions address

the suggestion by the independent assessment team to expand IMC 0305 guidance to allow more efficient management decisions on resources needed to address oversight at plants with unique, ongoing, technical challenges.

The staff initiated the ROP enhancement project in CY 2013 to take a fresh look at the ROP to determine if the ROP is meeting its objectives and to identify areas for improvement. For the assessment portion of the project, the staff is considering issues such as the timeliness of supplemental inspections, long-standing substantive cross-cutting issues (SCCIs), and the criteria for entry into the Regulatory Response and Degraded Cornerstone columns of the Action Matrix. The staff held a public meeting on November 21, 2013, to discuss the scope of the assessment portion of the enhancement project with industry and members of the public. Industry recommended eliminating SCCIs from the ROP in favor of another process to assess safety culture. The staff initiated an effectiveness review of the SCCI process to determine if it has accomplished what it was intended to.

The staff held a public meeting with industry representatives on February 5, 2014, to discuss the basis and the history of the SCCI process, and to listen to industry concerns with the process. According to industry, the SCCI process results in large expenditures of resources without any appreciable safety benefit. During the meeting, industry representatives proposed and discussed an alternative approach to oversight of safety culture. Staff is evaluating the proposed alternative, as well as other options for modifying or replacing the current SCCI process under the scope of the ROP enhancement project, and plans to hold additional public meetings on the subject. The current SCCI process was implemented in response to Commission direction in SRM-SECY-04-0111, "Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscious Work Environment and Safety Culture," to enhance the ROP treatment of cross-cutting issues to more fully address safety culture. Should internal and external stakeholders identify preferred options that involve potential changes in Commission policy, the staff will seek Commission direction before proceeding with program adjustments.

On February 18, 2014, an independent review of the ROP was completed, as directed by the Commission in the SRM for SECY-12-0081. The report identified eight recommendations for improving the ROP. Several of the recommendations had already been identified by the staff and put into the scope of the assessment portion of the ROP enhancement project. For instance, the report made a recommendation to clarify expectations for the timing of supplemental inspections for the Multiple/Repetitive Degraded Cornerstone column (Column 4) of the Action Matrix. Staff has identified several options to address supplemental inspection timeliness as part of the enhancement project. The report also recommended the staff review the criteria for transition to the Degraded Cornerstone column (Column 3) of the Action Matrix. This issue also was identified by staff as the scope of the enhancement project evolved in CY 2013. In addition, the report recommended that the staff perform a comprehensive analysis to determine whether the use of cross-cutting issues and safety culture provides regulatory value in terms of licensee safety performance for the resources expended. Staff is currently finalizing the SCCI effectiveness review and changes or alternatives to the SCCI process as part of the enhancement project. The staff has completed the effectiveness review of the SCCI process, and is completing documentation of the conclusions from that effort. The staff intends to disposition these recommendations and several suggestions from the independent ROP review through the ROP enhancement project. Enclosure 2 summarizes the staff actions to disposition the recommendations and suggestions from the report.

The staff continues to monitor the reintegration of the Security Cornerstone into the assessment program to ensure regulatory response outcomes remain reliable and appropriate. The staff continues to monitor communication with internal and external stakeholders to ensure that security-related information is not publicly released. The staff had reintegrated the Security Cornerstone into the assessment program in July 2012 as described in SECY-11-0073, "Staff Proposal to Reintegrate Security into the Action Matrix of the Reactor Oversight Process Assessment Program," and in accordance with the resultant SRM. The staff believes the reintegration continues to be an effective and appropriate program adjustment, and no additional concerns have been identified. The staff will continue to perform integrated assessments of licensee's performance while ensuring that security-related information is not publicly released.

During CY 2013, Browns Ferry Unit 1 remained in the Multiple/Repetitive Degraded Cornerstone (Column 4), and Fort Calhoun remained under the oversight process of IMC 0350, "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns." In December 2013, the NRC authorized restart of Fort Calhoun; however, the licensee will remain under oversight of the IMC 0350 oversight panel until the plant transitions back to the ROP. The staff will discuss the status of Browns Ferry's and Ft. Calhoun's performance during the Agency Action Review Meeting (AARM) in April 2014 and the subsequent Commission meeting on the results of the AARM.

The staff engaged with the Institute for Nuclear Power Operations (INPO), NEI, and other external stakeholders to develop a common safety culture language for nuclear power reactors. This language, which better aligns the industry's language with the NRC's language to improve clarity and facilitate a mutual understanding of licensee performance, was documented in INPO 12-012, "Traits of a Healthy Nuclear Safety Culture," and the meeting summary from the January 2013 workshop (ADAMS Accession No. ML13038A054). The staff also developed a NUREG to formally document the common language for all NRC programs in CY 2013. NUREG-2165, "Safety Culture Common Language," was published in March 2014.

The staff formed a multi-disciplined working group with representatives from both headquarters and each region to evaluate and incorporate the safety culture common language into the ROP. The resultant changes were reflected in a draft revision to IMC 0310, "Components Within the Cross-Cutting Areas." This draft revision was sent to internal stakeholders for review and comment and was made publicly available. The changes to IMC 0310 simply incorporated the common-language terminology into the ROP and do not affect the process for applying cross-cutting aspects (CCAs) to inspection findings or evaluating cross-cutting themes. The staff discussed the changes and implementation plans and gathered feedback during a focused public meeting in November 2013, and the status of the project was discussed during several ROP working group public meetings and Regional Utility Group meetings.

The staff issued the revised IMC 0310, "Aspects within the Cross-Cutting Areas," on December 19, 2013. The new terminology and CCA codes became effective on January 1, 2014, and will be applied to NRC inspection findings for inspections in 2014 and beyond. Other affected ROP documents have been identified for conforming changes, and the NRC inspection program software has been revised to accommodate the changes. NRC inspectors and management were trained on the revised guidance in December 2013, and the staff described the changes in an article in the January 2014 inspector newsletter. The staff

also posted an NRC blog in January 2014 to communicate with external stakeholders on the safety culture common language changes to the ROP.

The staff noted in the December 2013 training sessions and in other venues that the impact of these changes on the ROP assessment program would include: (1) the CY 2013 End-of-Cycle Meetings will be conducted in accordance with existing guidance using the CCAs that are in effect as of December 2013; (2) the annual assessment letters will reflect the CY 2013 CCAs and mention the planned implementation of common language CCAs for CY 2014 and beyond; (3) annual assessment letters that discuss SCCIs or cross-cutting themes will include a cross reference to the new CCAs for continuity and clarity going forward; (4) the CY 2014 mid-cycle meetings will be conducted in accordance with the revised CCA guidance; and (5) CCA terminology for inspection findings from the 2<sup>nd</sup> half of CY 2013 will be converted to the new terminology such that only the common language CCAs will be considered during the CY 2014 mid-cycle assessments. Although these terminology changes do not affect the process for applying CCAs to findings or evaluating cross-cutting themes, more substantive process changes are being considered as part of the ROP enhancement effort as previously discussed.

**Staff Actions to Address the  
2013 Reactor Oversight Process Independent Assessment**

<b>Recommendation/Suggestion</b>	<b>Staff Action</b>
<p>Recommendation 1: Clarify expectations for the timing of supplemental inspections for Column 4 of the ROP Action Matrix, or portions thereof, to ensure that the NRC's assessment of continued operation and consideration of additional regulatory actions are completed in a timely manner.</p>	<p><b>Accepted.</b> Staff has developed several options to address timeliness of supplemental inspections under the scope of the ROP enhancement project. In practice, staff already completes an initial assessment under IP 95003 to give staff assurance that a licensee in Column 4 is operating safely and to decide whether additional regulatory actions are necessary. Staff can revise IP 95003 or IMC 0305 to formalize this practice.</p>
<p>Recommendation 2: Consider including additional measures in the ROP to minimize abrupt changes in the Action Matrix characterization of plant performance caused by mechanistic relaxation of oversight based on the passage of time and completion of NRC inspections.</p>	<p><b>Accepted.</b> Staff is currently evaluating potential ROP Action Matrix improvements under the ROP enhancement project, specifically the appropriateness of criteria for moving a licensee in the Action Matrix. This recommendation has been added to the scope of the enhancement project. The IMC 0305 working group is evaluating the recommendation and considering adding guidance to IMC 0305 to require licensees to demonstrate improved performance before moving back to the Licensee Response column, or to potentially use a phased approach to moving licensees in the Action Matrix.</p>
<p>Recommendation 3: Include a risk-informed periodic review of licensee programs or actions implemented to address generic issues to enhance the agency's assurance that these measures continue to be effectively implemented.</p>	<p><b>Accepted.</b> This recommendation was examined under the ROP enhancement project - baseline inspection program review. Specifically, recommendations were made to implement an IP operating experience (OpE) update process which would provide a method for linking recent OpE directly to individual IPs. The process would help to inform the selection of inspection samples and provide inspectors with past examples, as well as guidance for probing potential issues based on current OpE analysis. This would also include consideration of licensee responses to relevant generic communications and generic issues, to</p>

	be reviewed during related inspections, e.g., Problem Identification and Resolution inspection.
Recommendation 4: Consider enhancements to improve the effectiveness of NRC messages through more extensive use of plain language, a focus on the desired effect of the communication on stakeholder perceptions, and the use of wording that conveys the significance of issues to the broadest possible audience.	<b>Accepted.</b> Staff has initiated an effort to more fully incorporate plain language into inspection reports, and once alignment is reached, the inspection report template in IMC 0612 will be revised. Staff is also planning to revise the annual licensee assessment letters to incorporate plain language. Staff has already completed revisions to ROP communications tools, such as NUREG-1649 and brochures which describe the ROP.
Recommendation 5: The NRC should review the criteria for transition to Column 3 of the NRC Action Matrix against the original ROP program goals to ensure that the significance of White inspection findings is not being overemphasized and to ensure that agency resources used to process White inspection findings are commensurate with findings that, by definition, are of low to moderate safety significance.	<b>Accepted.</b> This recommendation was already scoped into the ROP enhancement project. The staff agrees that a lot of resources are expended in identifying, assessing, and defending white findings. The IMC 0305 working group is researching the technical basis for two white findings in a cornerstone resulting in a licensee being moved to the Degraded Cornerstone of the Action Matrix. Staff will work with internal and external stakeholders to ensure the criteria for entering Column 3 of the Action Matrix is appropriate. If the criteria are determined to be inappropriate, the working group will make recommendations to revise the Action Matrix.
Recommendation 6: The NRC should perform a comprehensive analysis to determine whether the use of cross-cutting issues and safety culture, as currently incorporated in the ROP, provides regulatory value in terms of licensee safety performance for the resources expended. To support that determination, NRC staff should clarify and document the goals, purposes, uses, and desired outcomes associated with the inclusion of cross-cutting issues and safety culture in the ROP. If program changes are needed, the staff should determine whether Commission approval is required for implementation.	<b>Accepted.</b> The staff has completed an effectiveness review of the SCCI process, which was initiated in November 2013. As part of that review, staff also examined the question of resources expended versus regulatory value associated with SCCIs. In documenting the results and conclusions from that review, staff will also document the goals and desired outcomes for the SCCI process. The memo transmitting the results of that review will be issued by the end of April 2014.

<p>Recommendation 7: Clarify ROP program expectations for when performance issues that are common to multiple facilities should be considered for resolution through a generic issues process in order to improve the use of NRC inspection resources and ensure a thorough and consistent industry response.</p>	<p><b>Accepted.</b> This recommendation was considered during the recent revision to Office Instruction COM-106, “Control of Task Interface Agreements.” Issues identified in a TIA as potentially generic are communicated to appropriate processes (e.g., Generic Communications branch, enforcement coordinator, Operating Experience branch, Inspection Programs branch for possible inspection under a Temporary instruction). Additionally, LIC-504, “Integrated Risk-Informed Decision-Making Process for Emergent Issues,” is being revised to clarify expectations for communications between the Regional managers who identify potential generic issues and headquarters staff under the coordination of the licensing project manager.</p>
<p>Recommendation 8: Consider revising the ROP self-assessment process to better solicit and assess both tactical and strategic feedback. Reexamine how internal and external feedback is collected, analyzed, and used to improve oversight approaches to and the implementation of the ROP.</p>	<p><b>Accepted.</b> Staff has assembled a working group to review the ROP self-assessment metrics to identify metrics that are more objective than those based on subjective perceptions identified through the external survey. The working group will identify options for soliciting feedback from all stakeholders to inform the ROP self-assessment process. The target is to incorporate the new metrics into the ROP self-assessment process for CY 2015.</p>
<p>Suggestion 1: Review current PIs to evaluate whether they are providing meaningful information on licensee performance. If the PIs are validated as being appropriate and not needing adjustment, develop messages to enhance stakeholder understanding of how the PIs continue to contribute to the NRC’s assessment of plant safety and licensee performance.</p>	<p><b>Accepted.</b> Staff continuously reviews the usefulness of PIs and refines or revises them through the Frequently Asked Questions process. The staff will consider developing messages in ROP communication tools to ensure stakeholders understand the significance of the PI process in the oversight of nuclear reactor licensees.</p>
<p>Suggestion 2: Enhance the Operating Reactor Assessment Program to ensure that plant performance assessment decisions fully and consistently consider “other” relevant performance perspectives discussed in Inspection Manual Chapter (IMC 0305), including traditional enforcement, allegations, substantive cross-cutting issues, and safety culture in addition to the Action Matrix outcomes.</p>	<p><b>Accepted.</b> Staff initiated feedback form 0305-2004 to address this suggestion. IMC 0305 already allows for consideration of “other” relevant performance perspectives, such as traditional enforcement, allegations, etc. The suggestion was for staff to more clearly explain how or when to factor these considerations into the assessment process. Staff will develop language in a future revision to IMC 0305 to provide that clarity.</p>

<p>Suggestion 3: Consider expanding the list of relevant indicators of licensee performance in the Operating Reactor Assessment Program description in IMC 0305 to include significant performance concerns that may come to light through 10 CFR 2.206 petitions, licensing issues, or financial issues that are within the scope of NRC regulations.</p>	<p><b>Accepted.</b> Staff initiated feedback form 0305-2005 to address this suggestion. Regions currently solicit input from licensing project managers during mid-cycle and end-of-cycle meetings on licensee performance related to licensing actions to provide more complete picture of licensee performance. However, that practice has not been formalized in guidance documents. Staff will develop language in a future revision to IMC 0305 to provide that guidance.</p>
<p>Suggestion 4: Consider including additional guidance in Inspection Manual Chapter (IMC) 0305 to enable the use of management discretion in determining whether to accelerate the timing of supplemental inspection activities particularly for cases in which it is determined that a licensee is not making reasonable progress in preparing for these inspection activities.</p>	<p><b>Accepted.</b> Staff initiated feedback form 0305-2006 to address this suggestion. Timeliness of supplemental inspections was included within the scope of the ROP enhancement project. Staff has already developed several options to address the timeliness concern. Providing guidance for the use of management discretion is one possible option to ensure timeliness of regulatory actions. When the working group identifies a recommended option, headquarters and regional management will be consulted for a final decision.</p>
<p>Suggestion 5: The criteria for discussion of licensee performance issues during the Agency Action Review Meeting and End-of-Cycle Summary Meeting should allow senior management the opportunity to discuss plants with performance issues considered to be at the threshold for additional regulatory action particularly those considered to be at risk of moving into Column 3 or 4 of the NRC Action Matrix.</p>	<p><b>Accepted.</b> Staff initiated feedback form 0305-2007 to address this suggestion. Staff recognizes the value in providing some discretion to discuss licensee performance concerns that may not meet the criteria for discussion at the End-of-Cycle Summary meeting. Language will be incorporated into the next revision to IMC 0305 to provide that discretion.</p>
<p>Suggestion 6: The list of activities that do not constitute Action Matrix deviations provided in Inspection Manual Chapter (IMC) 0305 could be expanded to allow more efficient management decisions on resources needed to address oversight at plants with unique, ongoing, technical challenges or with ongoing safety culture or substantive cross-cutting issues.</p>	<p><b>Completed.</b> This suggestion was already incorporated into the most recent revision of IMC 0305 and IMC 2515 to allow additional inspection to evaluate emerging technical issues unrelated to licensee performance, e.g., Seabrook alkali-silica reaction, without being considered a deviation from the Action Matrix.</p>

<p>Suggestion 7: Periodic inspector counterpart seminars, training, and mentoring should be used as opportunities to ensure that inspectors and managers have a common understanding of the inherent flexibilities in the ROP inspection program. Best practices in using the ROP flexibilities should continue to be highlighted, and a similar approach should be used to communicate the importance of indirect inspection activities and how to effectively and efficiently manage these activities.</p>	<p><b>Accepted.</b> The staff will leverage opportunities such as inspector counterpart meetings and training to reinforce the message that the ROP has inherent flexibilities. Training on inspection procedures, including flexibilities in sample selection, is also a recommendation from the ROP enhancement project - baseline inspection program.</p>
<p>Suggestion 8: Significance and Enforcement Review Panel (SERP) members should be provided with periodic training or briefings regarding the uncertainties inherent in the agency's PRA tool outputs and the use of PRA quantitative results in SERP decision-making.</p>	<p><b>Accepted.</b> This suggestion was also identified by the Significance Determination Process (SDP) Business Process Improvement Project. There is a course available for decision-makers, P-109, "Assessing the Adequacy of Models for Risk-Informed Decision," regularly offered at the Professional Development Center. This course would sensitize SERP members to uncertainties in PRA models. Consideration is also being given to have Regional Senior Reactor Analysts brief Regional SERP participants, potentially during an inspector counterpart meeting.</p>
<p>Suggestion 9: To the extent practicable, steps should be taken to better understand stakeholder concerns with the documentation of SDP results and to enhance the communication of SDP results to improve the transparency of the process for the broad audience of stakeholders.</p>	<p><b>Accepted.</b> Staff had previously initiated feedback form 0609-1923 to address this concern, raised in responses to ROP surveys. One option being explored is to revise the template for SDP letters describing preliminary or final significance to have a dedicated paragraph in plain language to describe the safety significance of inspection findings.</p>
<p>Suggestion 10: Consider replacing the use of substantive cross-cutting issues and the current cross-cutting aspects, components, and areas with a process that uses the recently developed Nuclear Safety Culture Common Language traits and attributes in a graded regulatory response aligned with the overall ROP philosophy. Further, a more graded regulatory response could be established to allow licensees to address safety culture issues when performance is in the Licensee Response column and would escalate the NRC's level of engagement as the significance of findings increase.</p>	<p><b>Accepted.</b> This suggestion falls within the scope of the ROP enhancement project. A working group has been formed to evaluate an industry proposed model to assess licensee safety culture in lieu of the SCCI process. Staff has held one public meeting on the SCCI process, and plans to hold another meeting in May 2014. Options have been developed to revise the SCCI process in the event the industry proposal is not acceptable to staff. A graded regulatory response to safety culture issues is being considered.</p>

## 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 it 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 and take any necessary corrective actions. This process has provided licensees with frequent opportunities to provide feedback on the NRC's regulatory impact to senior NRC management. The site visits are also conducted to ensure inspector objectivity in accordance with IMC 0102, "Oversight and Objectivity of Inspectors and Examiners at Reactor Facilities," dated April 24, 2013.

This enclosure reports on feedback received from licensees during fiscal year 2013. During this period, the staff received and compiled feedback from 76 site visits to 38 operating reactor sites across all four NRC regions. These visits resulted in 167 distinct feedback observations that fell into two main categories: (1) inspector performance and (2) formal communications with licensees. Of the comments compiled, 89 percent were favorable and 11 percent were unfavorable. The favorable percentage and distribution of comments were similar to previous years, and the unfavorable comments were focused primarily in discreet areas as discussed below. The sections below summarize the feedback received, the staff's evaluation, and the proposed improvement actions.

### Inspector Performance

#### Feedback

Over half of the licensees' comments related to inspector performance. This category covers a wide range of inspector practices, but it excludes issues involving communication with licensees discussed in the following section. Over 95 percent of the comments were positive with respect to the NRC's inspection staff, noting the high quality of its inspections, its technical competence, and the effective working relationship between the NRC and its licensees. Licensees generally described inspectors as tough but fair, professional, and focused on the issues of greatest significance. A few licensees had unfavorable comments expressing concerns with the inspector's characterization of an inspection issue and interactions with inspection teams.

## Evaluation

The staff concludes that inspectors were professional, knowledgeable, maintained effective working relationships, and appropriately maintained their objectivity. Almost all of the comments received this year regarding inspector performance were favorable. The staff reviewed the negative feedback and found that each concern related to an isolated incident or a difference in professional opinion.

NRC management continues to emphasize to the staff the importance of professional conduct during routine interactions, inspector counterpart meetings, workshops, training courses, and site visits. The staff will continue to closely monitor the regulatory impact of inspector performance.

## **Formal Communications with Licensees**

### Feedback

Almost one third of the licensees' comments related to the effectiveness of communications between the NRC staff and licensees. Almost all comments were favorable on communications with resident and region-based inspectors as well as regional and headquarters staff and management. Many licensees noted that communications were good or excellent, with only a single licensee noting communication concerns with an individual inspector.

### 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. All but one of the comments received this year about NRC communications were favorable; the reported communication problem was isolated, and subsequent feedback indicated that the concerns had been alleviated.

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

## **Other Notable Comments**

### Feedback

As previously noted, almost 90 percent of comments were favorable, although some additional concerns were noted outside the inspector performance or formal communications areas previously discussed. For example, a few licensees raised concerns with (1) the cumulative effects of regulation (CER), (2) the impact of recent changes to NUREG-1022, "Event Reporting Guidelines: 10 CFR 50.72 and 50.73," and (3) the lack of clear guidance for transitioning reactors from operating to decommissioning status. Other isolated concerns were shared with senior NRC management during their site visits.

## Evaluation and Action

The staff acknowledges the industry's concern regarding CER, and notes that CER is a priority to the NRC staff. Beginning in 2009, the staff began to investigate CER and to develop rulemaking process enhancements that aim to mitigate CER. The NRC's effort to address CER, including the rulemaking process enhancements, is described in SECY-11-0032, "Consideration of the Cumulative Effects of Regulation in the Rulemaking Process," (ADAMS Accession No. ML110190027) and SECY-12-0137, "Implementation of the Cumulative Effects of Regulation Process Changes," (ADAMS Accession No. ML12223A162). Currently, the NRC staff is responding to Commission direction provided in SRM-SECY-12-0137 (ADAMS Accession No. ML13071A635). Specifically, the staff is: (1) working with industry participants to develop case studies on the accuracy of the cost and schedule estimates in NRC's regulatory analyses; (2) exploring whether to expand CER to other regulatory actions beyond rulemaking; and (3) developing a Commission paper by March 2015 describing any lessons learned on CER. A separate effort is ongoing to respond to SRM-COMGEA-12-0001/COMWDM-12-0002, "Proposed Initiative to Improve Nuclear Safety and Regulatory Efficiency," (ADAMS Accession No. ML13037A541). To respond to this SRM, the staff is exploring whether risk information could be used to prioritize regulatory actions on a plant-specific basis. If approved by the Commission and implemented, such a prioritization could be a tool to further address CER.

The staff is aware of industry's concerns with the February 2013 revision to NUREG-1022 as discussed in the performance indicator program evaluation in Enclosure 1. The staff will continue to work with stakeholders in calendar year 2014 to address their concerns in this area.

The staff also recognized the need for improved guidance regarding the transition of power reactors from an operating to decommissioning status. The staff added guidance in IMC 2515, "Light-Water Reactor Inspection Program – Operations Phase," and discussed this topic at the March 2014 Regulatory Information Conference. The staff acknowledges these and other noted concerns and has forwarded the specific feedback to the responsible offices for their consideration. The staff plans to enhance communications about the process with all stakeholders.

## Reactor Oversight Process Resource Expenditures

Table 1, “Resources Expended (Inspection-Related Staff Effort Expended at Operating Power Reactors),” summarizes the U.S. Nuclear Regulatory Commission (NRC) staff resources expended, in hours, for the Reactor Oversight Process during the past three calendar year (CY) inspection cycles. In CY 2013, the overall resource expenditures decreased, when compared to CY 2011 and CY 2012. This can be primarily attributed to the decommissioning of the San Onofre, Kewaunee, and Crystal River plants and Indian Point Unit 2 and 3 transitioning from two single-unit site staffing with four resident inspectors to a dual-unit unique site budget model with three resident inspectors. With respect to Indian Point, based on a number of years of inspection results and assessment insights, and the fact that Entergy has implemented site-wide processes and integrated their staff into a common organization, Region I concluded that an integrated site inspection and oversight program provided by a unique site budget model and informed by remaining site differences and stakeholder involvement was warranted.

Baseline inspection hours include direct inspection effort, baseline inspection preparation and documentation, and plant status activity. Baseline inspection hours decreased commensurate with the overall reduction in resource expenditures discussed above. The extended shutdowns at Fort Calhoun and Arkansas Nuclear One further contributed to reductions in this area. The extended shutdowns effectively reduce the number of appropriate baseline inspection sample opportunities that can be completed under certain baseline inspection areas. Additionally, the Government shutdown and the corresponding government employee furlough resulted in cancelling and rescheduling some long-lead resource intensive team inspections, such as Component Design Bases Inspections.

Plant-specific inspections include supplemental inspections conducted in response to greater-than-green inspection findings and performance indicators, reactive inspections 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 in 2013 when compared to 2011 and 2012. This can be primarily attributed to inspection procedure 95003, “Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input,” being performed at Browns Ferry and Fort Calhoun, which are highly resource intensive.

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. Resource expenditures for generic safety issue inspections remain relatively high, primarily due to inspections related to potential aircraft threats, the industry initiative to control degradation of underground piping and tanks, and the Near-Term Task Force recommendation reviews in response to the Fukushima Dai-Ichi Accident. 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.

Regional effort for licensee performance assessment decreased commensurate with the overall reduction in resource expenditures discussed above, particularly the decommissioning of three plants.

The effort reported for other activities includes inspection-related travel, the significance determination process (SDP), and routine communications necessary for regional support, enforcement support, and the review of technical documents. Resource expenditures for other activities decreased primarily due to the decommissioned reactors and government employee furloughs.

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

	<u>CY 2011 hrs</u>	<u>CY 2012 hrs</u>	<u>CY 2013 hrs</u>
<b>Baseline Inspections</b>	<b>316,297</b>	<b>311,376</b>	<b>288,790</b>
<i>Direct Inspection Effort</i>	156,871	154,221	141,562
<i>Inspection Prep/Doc</i>	111,194	110,825	102,107
<i>Plant Status</i>	48,232	46,330	44,120
<b>Plant-Specific Inspections</b>	<b>21,670</b>	<b>27,382</b>	<b>35,805</b>
<i>Direct Inspection Effort</i>	11,700	13,974	16,081
<i>Inspection Prep/Doc</i>	9,970	13,408	19,724
<b>Generic Safety Issue Inspections</b>	<b>11,868</b>	<b>9,665</b>	<b>13,081</b>
<i>Direct Inspection Effort</i>	6,302	5,696	5,102
<i>Inspection Prep/Doc</i>	5,566	3,969	7,979
<b>Performance Assessment (Regional Effort Only)</b>	<b>10,247</b>	<b>10,417</b>	<b>9,227</b>
<b>Other Activities<sup>2</sup></b>	<b>78,918</b>	<b>77,465</b>	<b>73,589</b>
<b>Total Staff Effort</b>	<b>439,000</b>	<b>436,377</b>	<b>420,492</b>
<b>Total Staff Effort/Operating Site</b>	<b>6,652</b>	<b>6,612</b>	<b>6,782</b>

<sup>1</sup> Resources expended include regional, Office of Nuclear Reactor Regulation, and Office of Nuclear Security and Incident Response hours.

<sup>2</sup> Other activities consist of inspection-related travel, the SDP, enforcement support, communications, regional support, and technical reviews

## ROP Resident Inspector Demographics

### Scope and Objectives

This enclosure is the annual update on demographic data for resident inspectors (RI) assigned to the reactor oversight process (ROP) resident inspector program in connection with those sites in the ROP at the close of the 2013 demographic year which ended with four fewer sites in the ROP than at the start of the year. This reflected a reduction in ROP resident program staffing over 2012 caused, in part, by:

- Region I Indian Point Units 2 and 3 staffing being consolidated from two one-unit sites, each with its own senior resident inspector (SRI) and RI, into a dual-unit unique site budget model with one SRI and two RIs
- Permanent shutdown and removal of sites from the ROP include:
  - Region II: Crystal River
  - Region III: Kewaunee
  - Region IV: San Onofre

There are currently 62 power reactor sites operating under the ROP. Each is nominally staffed with one SRI each. Three of the sites operate three units. Each three-unit site is nominally staffed with two RIs in addition to the SRI. Each of the remaining sites, whether operating with one or two-units, is nominally staffed with one RI in addition to the SRI.

The ROP resident inspector annual demographic update was originally requested by the Commission in its non-publicly available Staff Requirements Memorandum (SRM) for COMGJD-98-001/ COMEXM-98-002, "Discussion of Resident Inspector Demographics and the Balance between Expertise and Objectivity," dated April 8, 1998 (Agencywide Documents Access and Management System Accession No. [ML003753515](#)).

The scope and breadth of this annual update have evolved over the years to address requests from the Commission in subsequent SRMs, recommendations from the Davis-Besse Lessons Learned Task Force (DBLLTF), and other enhancements to provide a more focused review. The ROP RI program demographic analyses examine three primary functional areas and are organized in this report as follows:

- Section I. ROP Resident Inspector Program Experience,
- Section II. ROP Resident Inspector Program Turnover and Losses,
- Section III. ROP Resident Inspector Program Permanent Site Staffing, and
- Section IV. Conclusions and Recommendations

The results are illustrated in Figures 1a through 7. Several of the analyses separately examine data from the RI and SRI groups, while other analyses combine data from these groups into region-based or national analyses and trends. Section IV of this enclosure provides conclusions.

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## I. ROP Resident Inspector Program Experience

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Under [Appendix A, "Reactor Oversight Process Self-Assessment Metrics,"](#) dated March 27, 2013, to [Inspection Manual Chapter \(IMC\) 0307, "Reactor Oversight Process Self-Assessment Program,"](#) dated March 23, 2009, analysis of RI demographics and experience (Metric O-13) examines the following four data sets:

- (1) "NRC time" is the total number of years the individual has accumulated as a U.S. Nuclear Regulatory Commission (NRC) employee from hire date through November of the reported year.
- (2) "Total Resident Time" is the total number of years the individual has accumulated as an RI or SRI through November of the reported year.
- (3) "Current Site Time" is the total number of years spent as an RI or SRI at the current site through November of the reported year.
- (4) "Relevant Non-NRC Experience" is relevant nuclear power experience acquired outside of the NRC. Examples 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.

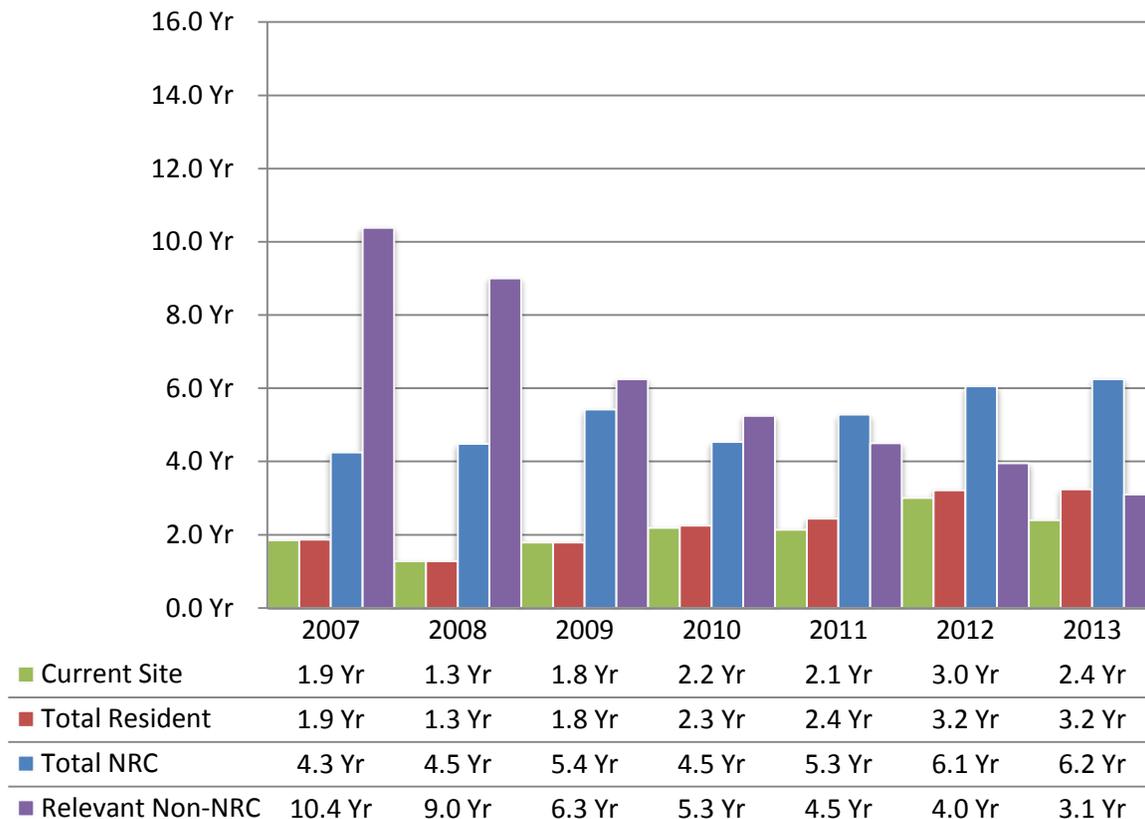
Median and average statistical descriptors of the above data sets are plotted below for both RI and SRI groups in Figures 1a, 1b, 2a, 2b, 3a, 3b, 4a, and 4b. Figures 1a, 1b, 3a, and 3b depict national trend data from 2007 through 2013 while Figures 2a, 2b, 4a, and 4b depict 2013 data by region and nationally. Plotted data is presented in fractional years. Analysis of the plots describes (a) percent change over time in national trend analyses or (b) percent plus or minus regional variance from national data in regional comparison analysis. The use of percent change and percent plus or minus regional variance provides a more intuitive and objective sense of the magnitude of the respective trend or regional variation.

## Resident Inspector Experience Analysis

The following analysis supports IMC 0307 Metric O-13 “Analysis of Resident Inspector Demographics and Experience,” which is a trend-only metric. The results are used to make any modifications to the RI program that might be necessary to attract and retain highly qualified inspectors to the program. Conclusions are discussed in Section IV of this enclosure.

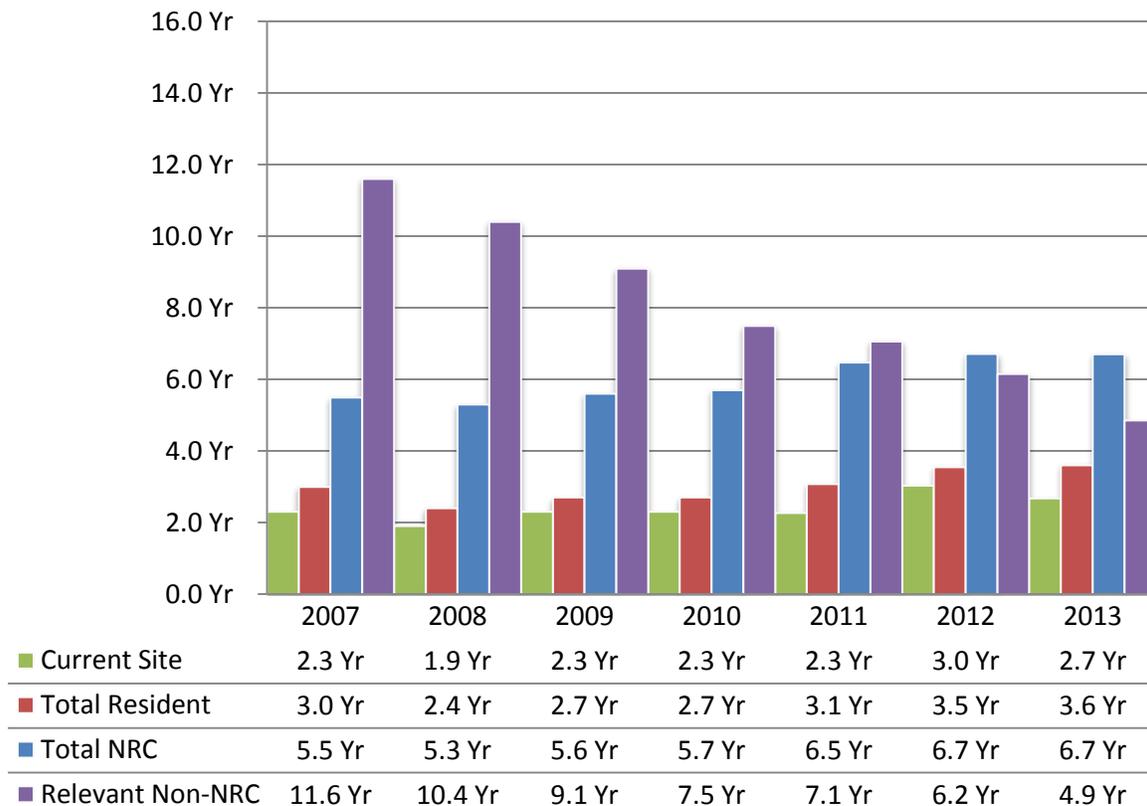
Analysis of Figure 1a, “Median Resident Inspector Experience Trend (Metric O-13)” reflecting median RI experience trends from 2007 to 2013, reveals increasing trends in Total Resident (up 1.3 years / 73 percent) and Total NRC (up 1.9 years / 47 percent). However, it also reveals a declining trend in Relevant Non-NRC Experience (down 7.3 years / 70 percent). In terms of the change, in years, of median resident experience from 2007 to 2013, the decline in Relevant Non-NRC Experience, at 7.3 years, is dominant, almost twice the other experience changes combined and continuing to decline. The steady decline in Relevant Non-NRC Experience from 2007 to 2013 is attributed to a number of factors, including an emphasis on college recruitment (which generally produces RI’s with no Relevant Non-NRC Experience). Additionally, recent clarifications in reporting requirements explicitly excluded demographic data from a small population of non-ROP residents (e.g. new construction and fuel facility inspectors) with higher levels of Relevant Non-NRC Experience.

**Figure 1a Median Resident Inspector Experience Trend (Metric O-13)**



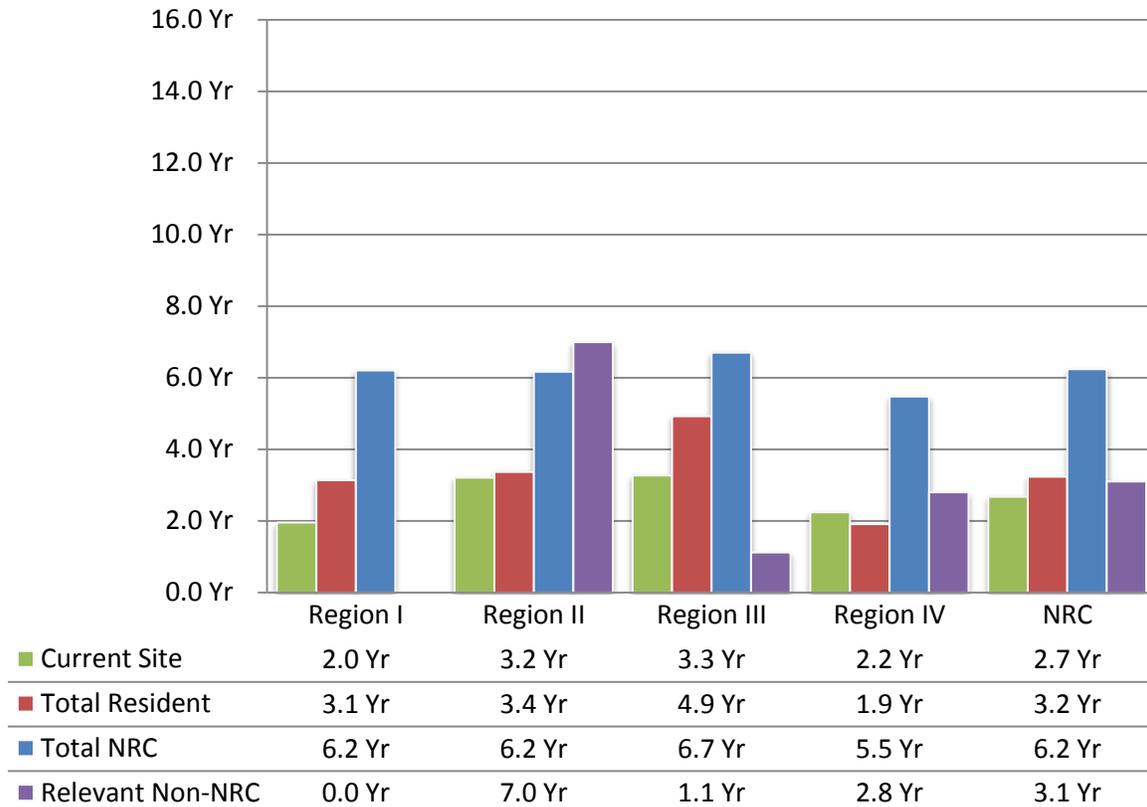
Analysis of Figure 1b, “Average Resident Inspector Experience Trend (Metric O-13),” reflecting average RI experience trends from 2007 to 2013, reveals (in a way similar to Figure 1a) moderately increasing trends in Total NRC (up 1.2 years / 22 percent) and Total Resident (up 0.6 years / 20 percent). However, it also reveals a declining trend in Relevant Non-NRC Experience (down 6.7 years / 58 percent). In terms of the change, in years, of average resident experience from 2007 to 2013, the decline in Relevant Non-NRC Experience, at 6.7 years, is dominant, more than three times the other experience changes combined and continuing to decline.

**Figure 1b Average Resident Inspector Experience Trend (Metric O-13)**



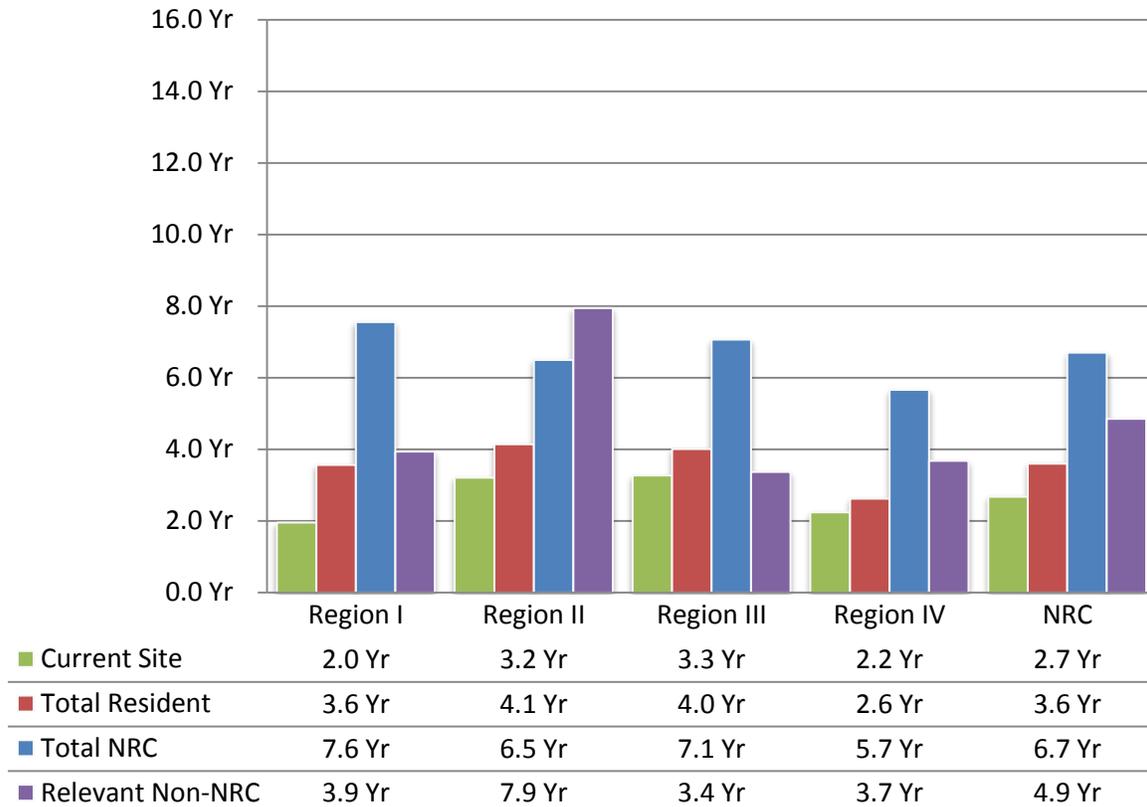
Analysis of Figure 2a, “2013 Median Resident Inspector Experience by Region (Metric O-13),” reflecting 2013 median RI experience by region, reveals the least regional variance in Total NRC (from minus-12 to plus-7 percent of the NRC value). The greatest regional variance was observed in Relevant Non-NRC (from minus-100 to plus-126 percent). Regional variance for Total Resident and Current Site fell in between.

**Figure 2a 2013 Median Resident Inspector Experience by Region (Metric O-13)**



Analysis of Figure 2b, “2013 Average Resident Inspector Experience by Region,” reflecting the 2013 average RI experience by region, reveals (in a way similar to Figure 2a, above) the least regional variance in Total NRC (from minus-15 to plus-13 percent). Also similar to Figure 2a: The greatest regional variance was observed in Relevant Non-NRC (from minus-30 to plus-64 percent). Regional variance for Total Resident and Current Site fell in between.

**Figure 2b 2013 Average Resident Inspector Experience by Region (Metric O-13)**



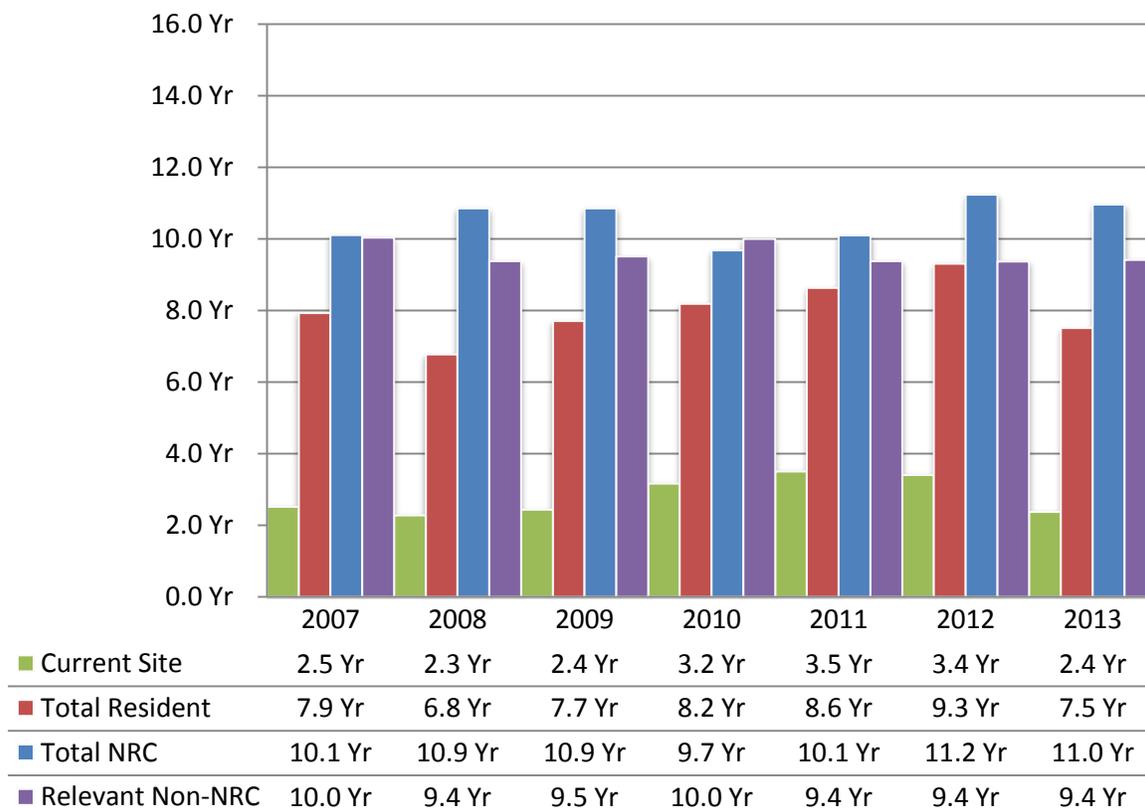
Overall, the RI experience analysis reveals a 2007 to 2013 increasing trend in Total NRC Time and Total Resident Time but a declining trend in Relevant Non-NRC experience. Likewise, the 2013 regional comparison analysis revealed substantially higher regional variation in RI Relevant Non-NRC experience than in any of the other RI experience parameters.

## Senior Resident Experience Analysis

The following analysis supports IMC 0307 Metric O-13, "Analysis of Resident Inspector Demographics and Experience," which is a trend-only metric. The results are used to make any modifications to the SRI program that might be necessary to attract and retain highly qualified inspectors to the program. Conclusions are discussed in Section IV of this enclosure.

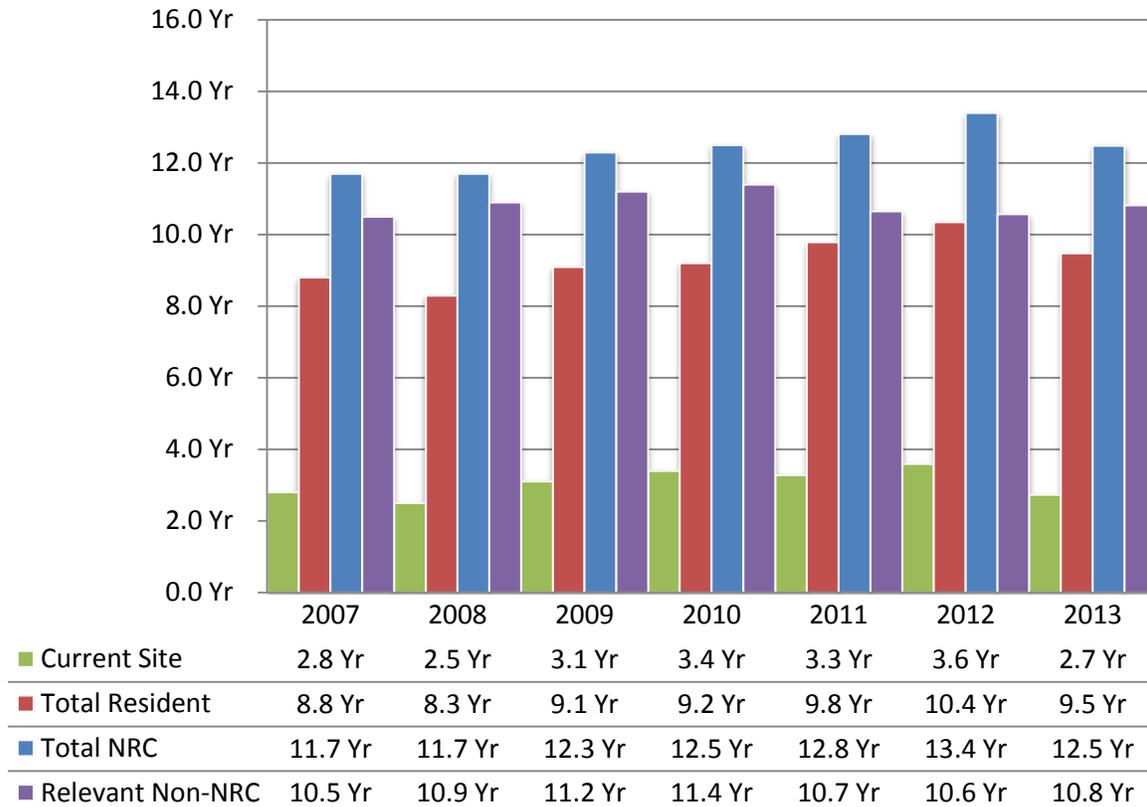
Analysis of Figure 3a, "Median Senior Resident Experience Trend (Metric O-13)," reflecting median SRI experience trends from 2007 to 2012, reveals minimal change. Unlike in analysis of Figure 2a, the declining trend in median Relevant Non-NRC Experience has not emerged, but it is expected to mirror the RI experience trend as RIs are promoted to SRI positions in the future.

**Figure 3a Median Senior Resident Experience Trend (Metric O-13)**



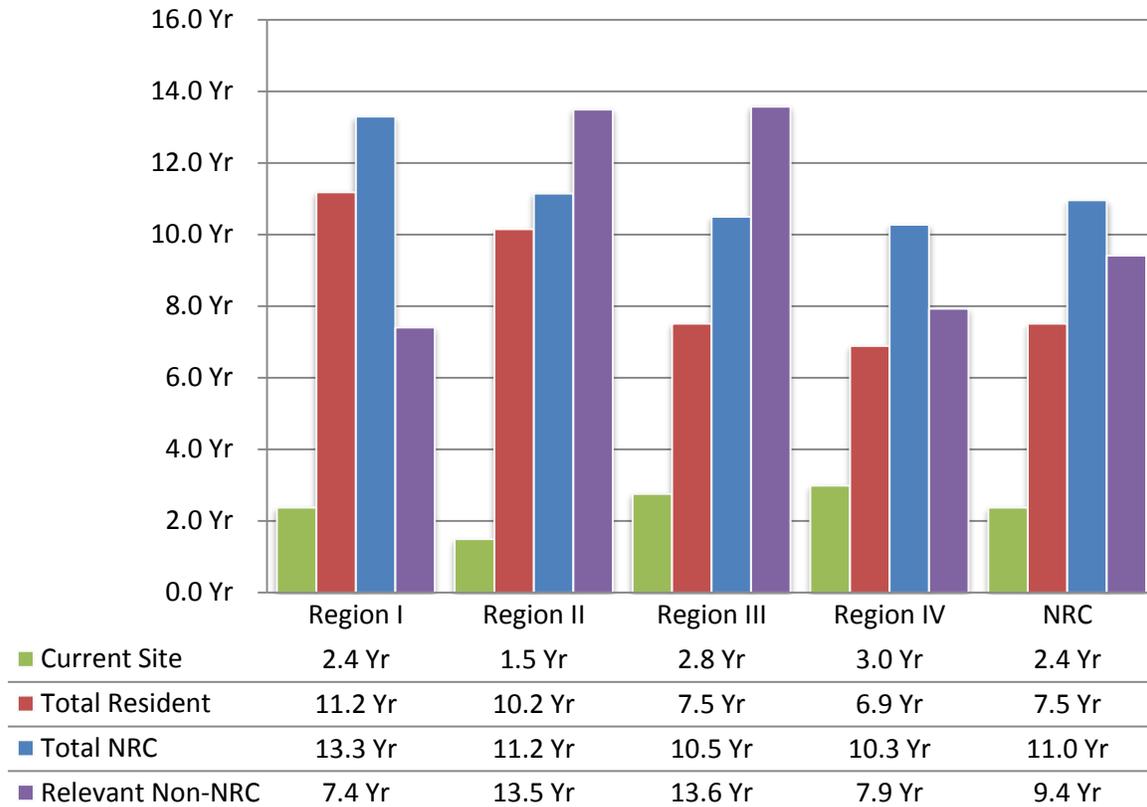
Analysis of Figure 3b, “Average Senior Resident Experience Trend (Metric O-13),” reflecting average SRI experience trends from 2007 to 2013 reveals (like Figure 3a above) minimal change. Unlike in analysis of Figure 2b, the declining trend in average Relevant Non-NRC Experience has not emerged but it is expected to mirror the RI experience trend as RI’s are promoted to SRI positions in the future.

**Figure 3b Average Senior Resident Experience Trend (Metric O-13)**



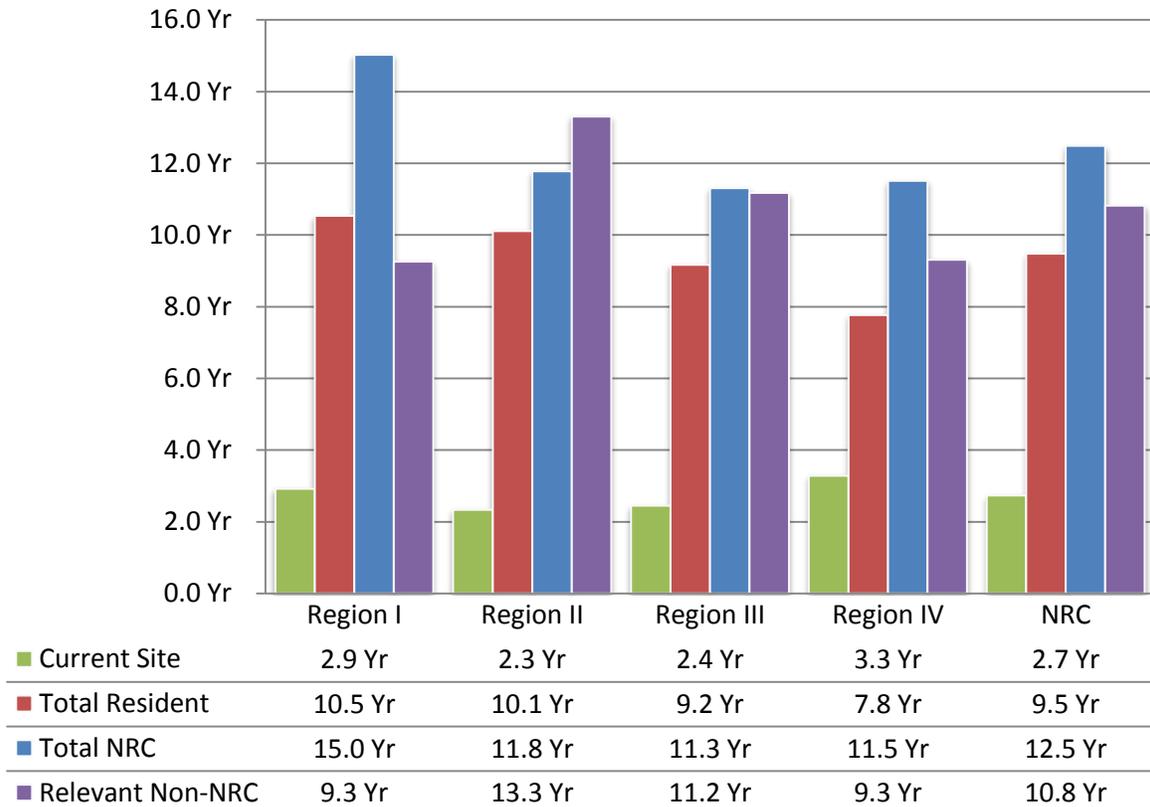
Analysis of Figure 4a, “2013 Median Senior Resident Experience by Region (Metric O-13),” reflecting the 2013 median SRI experience by region, reveals the least regional variance in Total NRC (from minus-6 to plus-21 percent). The greatest regional variance was observed in Relevant Non-NRC (from minus-21 to plus-44 percent). Regional variance for Total Resident and Current Site fell in between.

**Figure 4a 2013 Median Senior Resident Experience by Region (Metric O-13)**



Analysis of Figure 4b, “2013 Average Senior Resident Experience by Region (Metric O-13),” reflecting the 2013 average SRI experience by region, reveals the least regional variance in Total Resident (from minus-18 to plus-11 percent). In a way similar to Figure 4a, it reveals the greatest regional variance in Relevant Non-NRC (from minus-14 to plus-23 percent). Regional variance for Total NRC and Current Site fell in between.

**Figure 4b 2013 Average Senior Resident Experience by Region (Metric O-13)**



Overall, the SRI experience analysis reveals relatively stable levels during the period from 2007 to 2013. A relatively high 2013 SRI turnover rate appears to have contributed to a slight reduction in 2013 Current Site Time to the lowest level in four years. The remaining SRI experience measures have remained relatively constant.

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## II. ROP Resident Inspector Program Turnover and Losses

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ROP resident inspector program turnover and loss analysis supports the identification and evaluation of agency actions to manage program stability. This section trends resident program site turnover and program loss trending for both the RI and SRI groups.

“Turnover” occurs when an ROP RI or SR permanently departs a site for any reason, regardless of destination. “Loss” occurs when an RI or SRI permanently departs a site for a destination not within the same ROP program group. Thus, an RI, upon promotion to SRI, represents a loss to the RI group. Loss destinations are listed below. Military recall is, by design, temporary in nature and is thus not reflected in either the turnover percentage rate line plot or stacked columns and associated tabular data.

Sixty-nine RI and 62 SRI positions were examined in the 2013 turnover analysis, a reduction of three RI positions and four SRI positions compared to the 72 RI and 66 SRI positions evaluated in 2012. These reductions were caused, in part, by the reduced number of power reactor sites in the ROP at the end of the 2013 demographics year. As discussed on the first page of this enclosure, ROP resident staffing was eliminated for Crystal River (Region II), Kewaunee (Region III), and San Onofree (Region IV), and reduced at Indian Point (Region I).

Figures 5, “Resident Inspector Turnover and Loss Trend,” and 6 “Senior Resident Turnover and Loss Trend,” depict trends in both ROP resident inspector program turnover and loss by RI and SRI groups, respectively. Trend data reflects the period from 2007 through 2013. The overlying line- and stacked column charts are similar because most turnovers reflect losses to the ROP RI or SRI groups. However, they are not identical nor are they intended to be.

RI loss destinations include:

- (1) Resigned,
- (2) Retired,
- (3) Moved to non-RI, and
- (4) Promoted to SRI.

SRI loss destinations include:

- (1) Resigned,
- (2) Retired,
- (3) Moved to non-SRI, and
- (4) Promoted to non-SRI.

Inspector turnover analysis is reported at the national level.

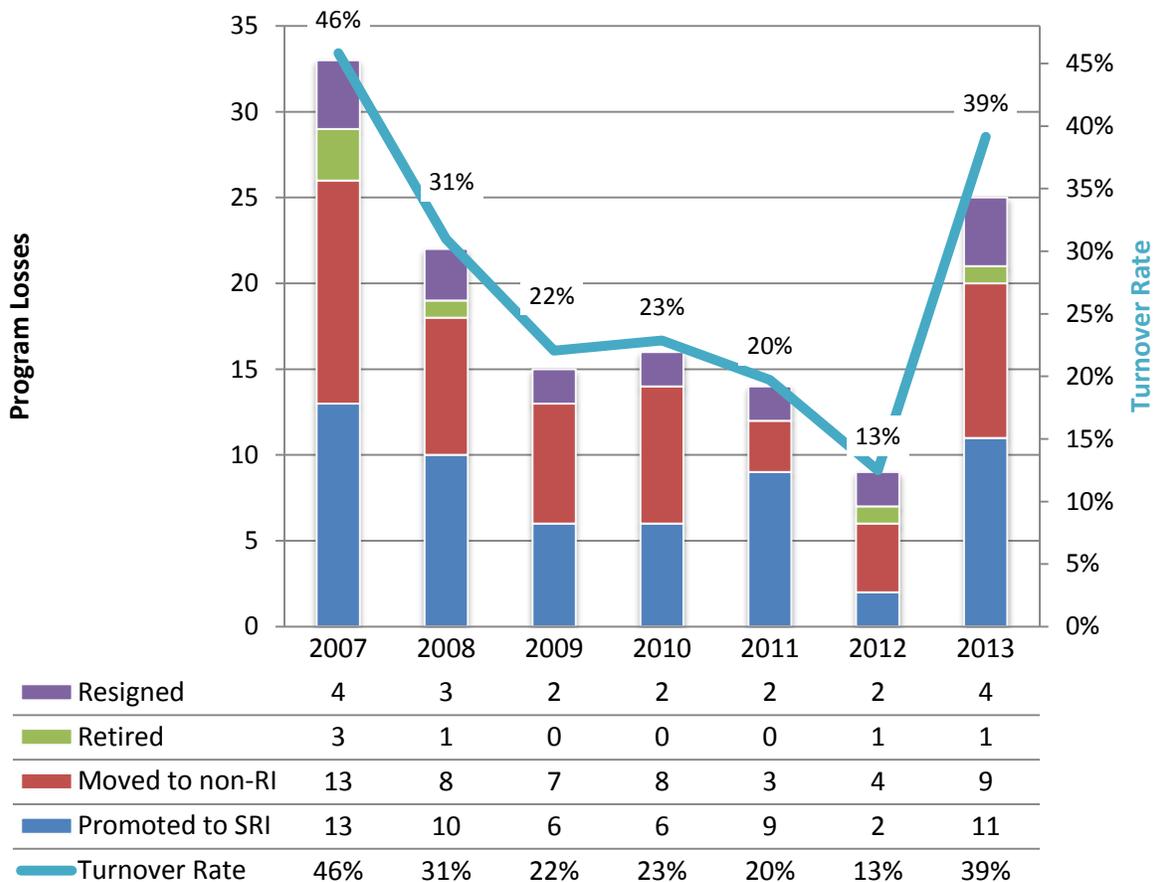
### RI Group Turnover and Loss Trend

Analysis of Figure 5, “Resident Inspector Turnover and Loss Trend,” below, reveals that, after a period of relative stability from 2009 to 2011 during which the RI turnover rate remained between 20 and 23 percent, it dipped to 13 percent in 2012 then increased to 39 percent in 2013 – a high value reflecting a turnover of more than one-third of the RI population in one year. The turnover rate for a 7-year rotation cycle typically varies between 17 percent and 25 percent, consistent with of 4- to 6-year RI tours.

The increase in turnover rate was dominated by an increase in promotions to SRI from 2 promotions in 2012 to 11 in 2013. A significant increase in movement to non-RI positions was also observed, from 4 in 2012 to 9 in 2013. The majority of the non-RI turnovers were the result of RI promotions to regional or headquarters positions. Finally, RI resignation rate also increased from a stable value of 2 during a four-year period from 2009 to 2012 to 4 in 2013, an RI resignation rate not observed since 2007.

A turnover rate of more than one third of the RI population in a single year is significant. RI turnover rate increased from 13 percent in 2012 to 39 percent in 2013, reflecting a turnover of more than one-third of the RI population in one year compared to a turnover rate between 1/7 (14 percent) and 1/5 (20 percent), more typical of a 7-year rotation cycle. It coincides with a 20 percent reduction in RI median Current Site Time from 3.0 to 2.4 years. Other changes in associated RI experience demographics were less significant.

**Figure 5 - Resident Inspector Turnover and Loss Trend**

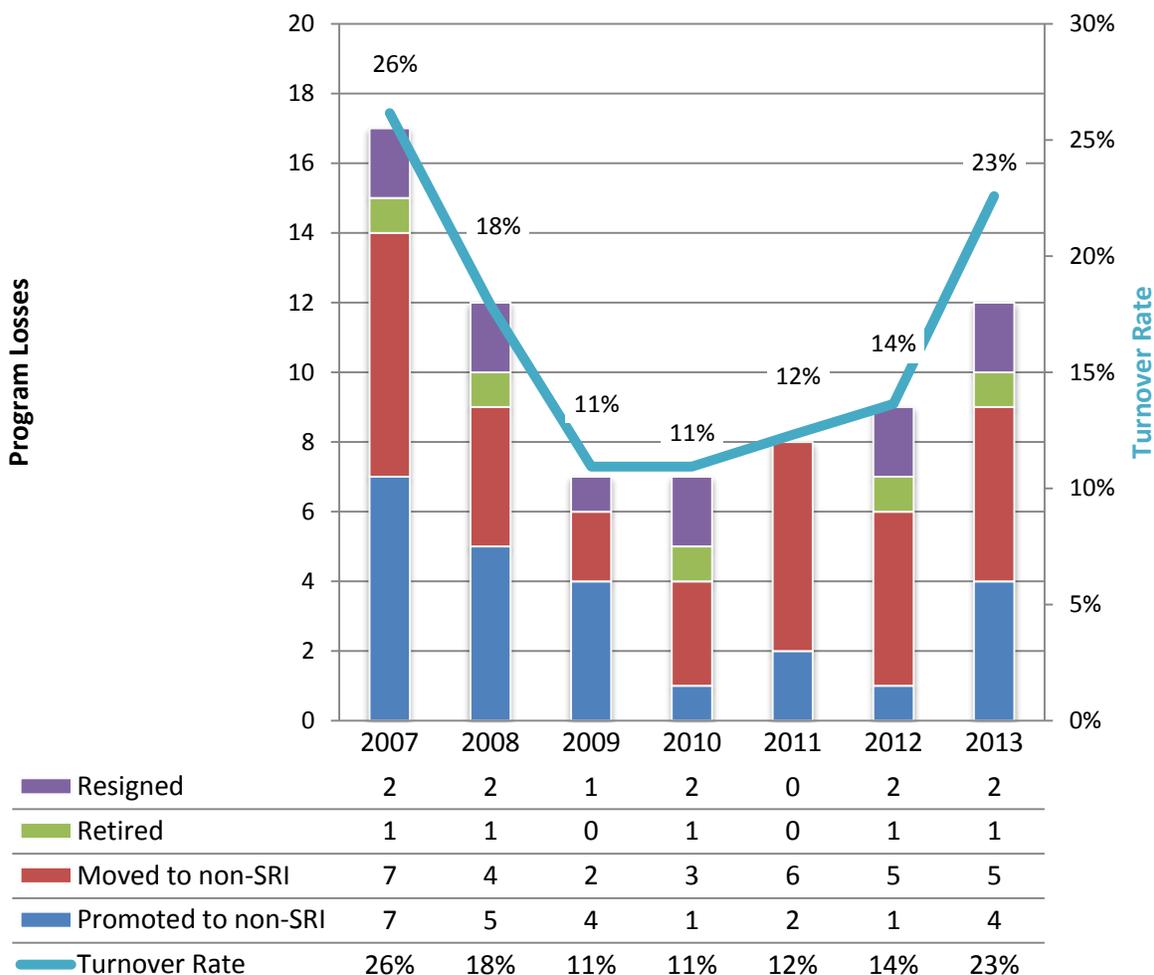


## SRI Group Turnover and Loss Trend

Analysis of Figure 6, “Senior Resident Turnover and Loss Trend,” below, reveals a 2007 peak in SRI turnover rate at 26 percent, followed by a two-year decline to 11 percent in 2009 and 2010, by a gradual two-year increase to 14 percent in 2012 and a step increase to 23 percent in 2013.

Analysis of the associated SRI turnover destination data reveals stable rates of resignation at 2 per year for five of the last seven years (1 or 0 in the other two years), retirement varying between 0 and 1 per year and movement to non-SRI positions stable at 5, while promotion to non-SRI increased from 1 in 2012 to 4 in 2013, the highest since 2009.

**Figure 6 - Senior Resident Turnover and Loss Trend**



From 2007 to 2013, the rate of turnover for RI and SRI groups both declined from 7-year highs to relatively low and stable rates. As of 2013, both RI and SRI turnover rates are rising. This appears to be an echo of the higher turnover rates observed in 2007 as SRI's remaining, from those who relieved in 2007, approach the end of their 7-year assignments and must turnover.

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### III. ROP Resident Inspector Program Permanent Site Staffing

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Permanent<sup>1</sup> site staffing analysis supports IMC 0307 Metric O-14 “Analysis of Site Staffing,” in measuring the permanent inspector staffing levels at each of the reactor sites for both RIs and SRIs in order to evaluate the agency’s ability to provide continuity of regulatory oversight in response to DBLLTF Recommendation 3.3.5.3 that staff establish a measurement for RI and SRI staffing, including program expectations to satisfy minimum staffing levels of at least 90 percent program-wide.

Permanent inspector staffing levels at each reactor site were analyzed for both RIs and SRIs. Only those inspectors who have attained at least a basic inspector certification status, as defined in [Appendix A, “Basic-Level Training and Qualification Journal,”](#) dated December 19, 2012, to [IMC 1245, “Qualification Program for Operating Reactor Programs.”](#) dated December 29, 2011, are counted.

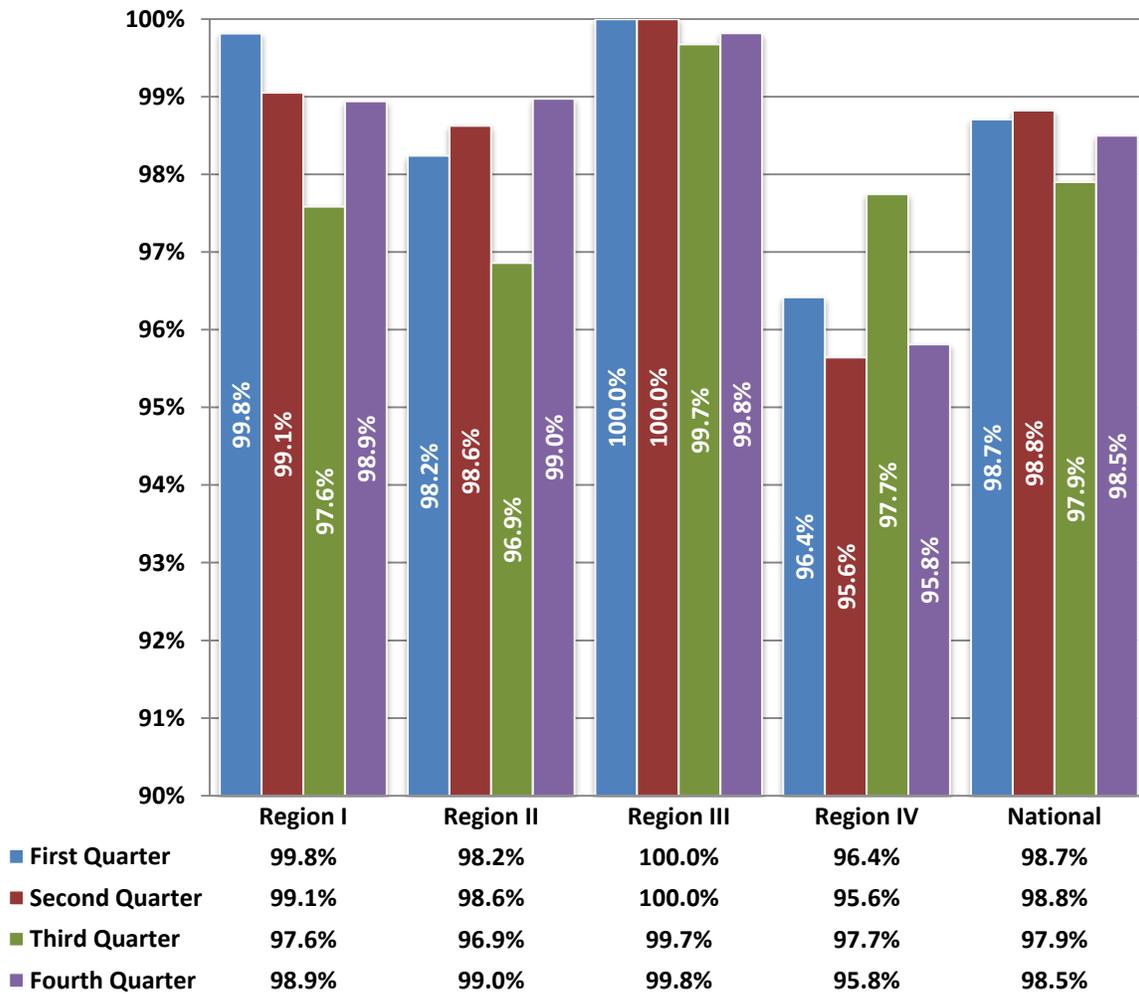
The data reflect the number of days a qualified RI and SRI were permanently assigned to the site divided by the number of days in the period. In accordance with the metric criterion in Appendix A to IMC 0307, any site that falls below 90 percent is individually evaluated. Reasons for any meaningful increase or decrease in the inspector staffing level are provided. IMC 0307 provides further details on the site staffing goal.

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<sup>1</sup> “Permanent” in this context refers to inspectors assigned to the site permanently or through a rotation with a minimum duration of 6 weeks. Sites where permanently assigned RIs or SRIs are away from the site for a continuous period longer than 6 weeks will be considered gapped unless the positions are filled through a rotation with a minimum duration of 6 weeks. Away periods for training, meetings, team inspections, leave, or other temporary duties are not counted against the goal unless the absence exceeds 6 continuous weeks.

Analysis of the data summarized in Figure 7, “2013 Resident Program Permanent Staffing Levels,” below, confirms that all regions exceeded the 90 percent criteria by at least five percent with a national annual average of 98.5 percent for 2013. This reflects very slight decline over 2012 in which the national annual average was 99.4 percent. In 2013, national quarterly averages ranged from 98.0 to 98.6 percent while regional quarterly averages ranged from 95.5 percent to 100 percent.

**Figure 7 - 2013 Resident Program Permanent Site Staffing Levels**



Analysis of the data summarized in Table 1, “Individual Permanent Site Staffing Performance Trend,” below reveals that, in 2013, all sites satisfied the 90 percent permanent annual site staffing metric criteria.

**Table 1 Individual Permanent Site Staffing Performance Trend**

<i>Instances of Annual Site-Specific Staffing &lt; 90 percent</i>	<i>2007</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>	<i>2012</i>	<i>2013</i>
Number of Sites with < 90 percent annual site staffing	9	5	5	3	3	0	0

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#### **IV. Conclusions and Recommendations**

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##### **Section I – Inspector Experience Conclusions (Metric O-13)**

- Analysis of 2007 through 2013 experience trends in Figures 1a, 1b, 3a, and 3b revealed:
  - A declining trend in RI Relevant Non-NRC Experience;
  - A 2013 reduction in SRI Current Site Time to the lowest level in four years—attributed, in part, to a high 2013 SRI turnover rate (see Section II, “Inspector Turnover”);
  - An increasing trend in RI Total NRC Time and Total Resident Time; and
  - Relatively stable SRI experience levels elsewhere
- Analysis of 2013 experience by region comparing Figures 2a, 2b, 4a, and 4b revealed:
  - The greatest regional variance in both RI and SRI experience was in Relevant Non-NRC Experience
  - The least regional variance in RI experience was in Total NRC Time.
  - The least regional variance in SRI experience was in Total NRC and Total Resident Experience
- The dominant declining trend and the high regional variance observed in RI Relevant Non-NRC Experience have not yet emerged in the SRI demographic. They could be expected to do so in the future as SRI’s with higher non-NRC experience levels and lower regional variance depart and current RI’s, which have lower levels of non-experience, are promoted to SRI positions

##### **Section II – Inspector Turnover and Loss Conclusions**

- Following a period of relative stability from 2009 to 2011 during which the RI turnover rate remained between 20 and 23 percent, it dipped to 13 percent in 2012 then increased sharply to 39 percent in 2013 – a high value reflecting a turnover of more than one-third of the RI population in one year. The RI turnover rate increase was dominated by:
  - An increase in promotions to SRI from 2 in 2012 to 11 in 2013;
  - An increase in movement to non-RI positions from 4 in 2012 to 9 in 2013; and
- The step increase in RI turnover rate coincided with a 21 percent reduction in RI average Relevant Non-NRC Experience from 6.2 to 4.9 years (see Section I, “Inspector Experience Conclusions”).

- SRI turnover rate increased from 14 percent in 2012 to 23 percent in 2013 following a two-year decline to 11 percent in 2009 and 2010 and a gradual two-year increase to 14 percent in 2012. The increase in SRI turnover rate coincided with an increase in promotions to non-SRI positions from 1 in 2012 to 4 in 2013, the highest since 2009.
- From 2007 to 2013, the rate of turnover for both RI and SRI groups declined from 7-year highs to relatively low and stable rates. As of 2013, both RI and SRI turnover rates appear to be rising sharply again. This may signal a 6-or-7-year repeat of the higher turnover rates observed in 2007 and 2008.

### **Section III – Permanent Site Staffing Conclusions (Metric O-14)**

- During the period from 2007 through 2013, inspector permanent site staffing trends remained relatively stable or improving.
  - Permanent Site Staffing, at the regional quarterly and annual level, remains stable and well above the 90 percent staffing goal.
  - Individually, all sites satisfied the 90 percent staffing goal established by metric.

### **Recommendations**

Staff recommends no changes to the RI program at this time.