POLICY ISSUE
INFORMATION

March 31, 2006 SECY-06-0074

FOR: The Commissioners

FROM: Luis A. Reyes
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SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT FOR CALENDAR YEAR 2005

PURPOSE:

To present the results of the staff's annual self-assessment of the Reactor Oversight Process (ROP) for calendar year (CY) 2005.

SUMMARY:

The CY 2005 self-assessment results indicate that the ROP has been effective in meeting the program goals and achieving its intended outcomes; however, areas needing further improvement remain. The self-assessment identified the ROP as successful in being objective, risk-informed, understandable, and predictable, and in ensuring safety, openness, and effectiveness. The effective implementation of the various ROP processes demonstrates that the ROP achieved its intended outcomes in CY 2005. The staff continued to focus on stakeholder involvement and to improve various aspects of the ROP as a result of feedback and lessons learned. In particular, the staff implemented several additional ROP improvements advocated by the Commission, and incorporated several changes based on independent reviews by the Davis-Besse Lessons Learned Task Force (DBLLTF) and the Office of the Inspector General (OIG). The staff also made numerous improvements based on feedback from internal and external stakeholders.

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Stakeholder feedback, provided through an external survey and various other mechanisms, was generally positive. Stakeholders raised specific concerns about the effectiveness of the

performance indicator (PI) program and the consistency and timeliness of the significance determination process (SDP), and suggested other improvements to the ROP. The ROP met most of its 54 performance metrics, with the exception of three PI metrics, one inspection metric, two SDP metrics, and one assessment metric.

As part of the self-assessment effort, the staff identified issues and actions in the key ROP program areas of PIs, inspection, SDP, and assessment. The timeliness and efficiency of the process for resolving interpretations in PI guidance has improved, but the staff and many stakeholders remain concerned about the ability of the current set of PIs to contribute to the identification of declining performance in a timely manner. The staff implemented several changes to the inspection program to address recommendations from independent evaluations and from a detailed analysis of the scope and level of effort of each of the inspection procedures. The staff continues to focus on improving SDP timeliness and has made significant progress in implementing the SDP Improvement Plan, though timeliness again fell short of expectations. The staff expects SDP timeliness to further improve based on recent process enhancements. The staff also made additional enhancements in the assessment program during CY 2005, particularly in the area of cross-cutting issues, and expects further improvement in CY 2006 based on program revisions to more fully address safety culture.

Although progress has been made in CY 2005, the staff will continue to improve the ROP based on lessons learned and stakeholder feedback. The staff will actively solicit input from the NRC's internal and external stakeholders and will evaluate potential program improvements via the ongoing self-assessment process.

BACKGROUND:

On February 24, 2000, the staff issued SECY-00-0049, "Results of the Revised Reactor Oversight Process Pilot Program." The resulting staff requirements memorandum (SRM), issued on March 28, 2000, approved initial implementation of the ROP as recommended by the staff. The initial implementation of the ROP began on April 2, 2000. In a followup SRM issued on May 17, 2000, the Commission directed the staff to report on the ROP results after the first year of implementation. The staff did so and documented the results in SECY-01-0114, "Results of the Initial Implementation of the New Reactor Oversight Process," issued June 25, 2001. SECY-01-0114 also noted the staff's intention to continue to perform an annual self-assessment of the ROP. Accordingly, the staff has issued an ROP self-assessment Commission paper each year before the Agency Action Review Meeting (AARM) and has briefed the Commission on the self-assessment results following the AARM. This paper provides the results of the sixth annual self-assessment of the ROP.

The staff performed the CY 2005 self-assessment in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program." As noted in IMC 0307, the ROP is a regulatory framework that includes licensee PI data, NRC inspection activity and determination of inspection finding significance, and licensee performance assessment. The ROP self-assessment program evaluates the overall effectiveness of the ROP through its success in meeting its preestablished goals and intended outcomes. In accordance with IMC 0307 and as noted in SECY-05-0070, "Reactor Oversight Process Self-Assessment for Calendar Year 2004," security and safeguards activities are no longer included in this self-assessment except where specifically noted.

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In response to the staff's briefing on the results of the AARM on May 25, 2005, the Commission directed the staff to take several actions in the SRM dated June 30, 2005. The Commission directed that in addition to efforts described in the ROP self-assessment, the staff should consider further improvements to PIs to provide the NRC with better indicators of performance to help focus inspection resources. The Commission also directed the staff to (1) make further efforts to clarify the guidance on substantive cross-cutting issues, (2) continue to emphasize the importance of effectively implementing a good licensee corrective action program as it participates in conferences, workshops, and meetings with licensees, and (3) ensure that the Mitigating System Performance Index (MSPI) process is as transparent as possible to external and internal stakeholders when it is implemented.

DISCUSSION:

The ROP self-assessment process uses program evaluations and performance metrics to determine its success in meeting the goals and intended outcomes of the ROP. The ROP is considered effective if it meets the program goals and achieves the intended outcomes. The ROP's seven goals include the four specific program goals of being objective, risk-informed, understandable, and predictable, as well as the three applicable performance goals listed in the NRC's Strategic Plan (ensuring safety, openness, and effectiveness).

The intended outcomes of the ROP, which help form its basis and are incorporated into the various ROP processes, include appropriately monitoring and assessing licensee performance, identifying performance issues through NRC inspection and licensee PIs, determining the safety significance of identified performance issues, adjusting resources to focus on significant performance issues, evaluating the adequacy of corrective actions for performance issues, taking necessary regulatory actions for significant performance issues, communicating inspection and assessment results to stakeholders, and making program improvements based on stakeholder feedback and lessons learned.

During the sixth year of ROP implementation (CY 2005), the staff conducted numerous activities and obtained data from many diverse sources to ensure that it performed a comprehensive and robust self-assessment. Data sources included the ROP performance metrics described in IMC 0307, recommendations from independent evaluations, comments from external stakeholders in response to a *Federal Register* notice, insights from internal stakeholders based on the ROP internal feedback process, and feedback received from stakeholders at various meetings, workshops, and conferences. The staff also applied the direction and insight provided by the Commission through several SRMs.

The staff analyzed this information to gain insights regarding the effectiveness of the ROP in fulfilling its program goals and intended outcomes. The staff has concluded that the ROP was effective in CY 2005 based on meeting the seven program goals, although the staff continues to experience challenges in certain ROP areas and recognizes the need for further improvement. The staff further believes that successful implementation of the various ROP processes has demonstrated that the ROP achieved its intended outcomes in CY 2005. As a result, the staff has concluded that the NRC has appropriately monitored operating nuclear power plant activities and focused agency resources on significant performance issues in CY 2005, and that plants continue to receive a level of oversight commensurate with their performance.

The staff identified issues and needed actions in the key program areas of PIs, inspection, SDP, and assessment, as discussed in the following paragraphs. In addition, the staff assessment included discussions of ROP communication and training activities, ROP self-assessment and independent evaluations, ROP resources, and resident inspector (RI) demographics. As noted in the pertinent sections of this paper, the staff has also included several enclosures with additional detail to support the staff's assessment and conclusions.

ROP Program Area Evaluations

The staff performed evaluations in each of the four key program areas of the ROP—PI program, inspection program, SDP, and assessment program. The results are summarized below. Enclosures 1 through 4 to this paper discuss these four ROP program areas in more detail, respectively. Enclosure 5 provides a consolidated listing of implementation issues in each program area with the status of each issue. In addition, the annual ROP performance metric report, available through the Agencywide Documents Access and Management System (ADAMS), provides the data and staff analysis for each of the program area metrics (reference ADAMS Accession No. ML060590135).

PI Program—Although the PI program continues to provide the NRC with objective indicators regarding plant performance, and in some areas has focused licensee attention and contributed to improved performance, the staff and some public stakeholders remain concerned with the capability of the current PIs to contribute to the identification of declining performance. The staff engaged senior industry management to explore possible actions to address issues with the PI program and plans to continue analyzing potential improvements, including adjusting PI thresholds, adding or removing PIs, and clarifying PI definitions.

Three of the seven PI performance metrics failed to meet their established criteria in CY 2005. These metrics failed based on an increase in reporting deficiencies and discrepant PIs, and the negative perception, particularly by public interest groups, regarding the usefulness of the PIs in ensuring plant safety and the existence of an appropriate overlap between the PIs and the inspection program. The staff continued to work with industry in CY 2005 and plans to replace the safety system unavailability PIs with the MSPI in April 2006. The timeliness and efficiency of the frequently asked question process for resolving interpretations in PI guidance has improved over prior years based on effective program changes.

Inspection Program—The inspection program continued to improve during the sixth year of ROP implementation. In particular, the staff implemented several changes to address recommendations from the OIG audit of the baseline inspection program, the DBLLTF, and a detailed analysis of the scope and level of effort of each of the inspection procedures (IPs). In response to the Commission's direction, the staff completed a pilot program to improve the effectiveness of the engineering design inspections. The staff plans to conduct the revised engineering inspections at all plant sites by the end of CY 2007 and to reevaluate the inspections after CY 2007 based on lessons learned during implementation of the revised IP.

The regions completed the required baseline inspection program for CY 2005. Although feedback on the inspection program was generally favorable, the staff's self-assessment of inspection findings, internal and external comments, and other independent reviews of the ROP indicated that additional adjustments may be warranted in the level of resources applied to some of the baseline IPs. The staff plans to further refine and formalize the process to ensure

alignment of inspection resources to include consideration of industry performance. All but one inspection program performance metric met their criteria during CY 2005. The failed temporary instruction (TI) timeliness metric has prompted the staff to review the reasons for untimely completion of TIs and recommend possible solutions in CY 2006.

Significance Determination Process—Improvements in SDP efficiency and effectiveness continued during CY 2005. The staff made significant advances to complete the objectives of the SDP Improvement Plan and improve SDP timeliness, although additional actions are needed. The most notable achievements in CY 2005 included issuing Revision 2 of the risk-informed inspection notebooks and the accompanying pre-solved tables, issuing a new SDP addressing maintenance-related findings, further revising the fire protection SDP, and increasing NRC management attention towards improving SDP timeliness. Recent SDP process changes, including the creation of the new Planning SDP/Enforcement Review Panel (SERP) and the use of best available information, are intended to achieve efficiencies and further improve the process. The planning SERP is expected to improve the early identification and time management of potentially complex and/or moderate to high risk significance issues. The Planning SERP, convened early in the process, will reach consensus on the scope of the evaluation to be performed, the schedule on which the evaluation will be completed, and who will perform the evaluation.

Two of the eight SDP performance metrics failed to meet program expectations. Final significance determinations were not timely, and the SDP was not perceived to yield an appropriate and consistent regulatory response across all ROP cornerstones. The staff continues to believe that relative parity has been achieved among the cornerstones based on the potential impact on public health and safety and the designated NRC response to specific findings. SDP timeliness improved in CY 2005, and the staff expects additional progress from the changes noted above and the enhanced training regimen associated with each new SDP and SDP revision. The staff will continue to monitor planned SDP improvements and developments via the SDP Improvement Plan.

Assessment Program—During CY 2005, the staff made additional improvements to the assessment program, as reflected in revisions to IMC 0305, “Operating Reactor Assessment Program,” and IMC 0350, “Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns.” In particular, the staff revised the guidance to (1) further clarify the development and treatment of substantive cross-cutting issues, (2) provide better definitions of the human performance and problem identification and resolution bins, (3) clarify the exit criteria for substantive cross-cutting issues, and (4) incorporate recommended improvements by the Davis-Besse Oversight Panel.

All but one of the performance metrics in the assessment area met its established criteria or goals in CY 2005. The exception was the increase in the number of Action Matrix deviations. The staff evaluated the deviations for potential program changes and incorporated one. Additional program changes based on deviations may result from the staff’s efforts to more fully integrate safety culture into the ROP. The staff developed an approach, with involvement of internal and external stakeholders, to enhance the treatment of cross-cutting areas in the ROP and in supplemental procedures to more fully address safety culture. The staff expects to complete the safety culture enhancements to the ROP in CY 2006.

ROP Communication and Training Activities

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The staff continued to focus on stakeholder involvement and open communication about the ROP. The staff used a variety of communication vehicles to ensure that all stakeholders have access to ROP information and results, and have an opportunity to participate in the process and provide feedback. The staff continued to conduct monthly public meetings with external stakeholders and conducted a survey of external stakeholders to actively solicit and analyze stakeholder feedback regarding the effectiveness of the ROP. The staff also continued the ongoing internal feedback process, held biweekly telephone conferences and frequent meetings with internal stakeholders, and visited several sites and each region to give regional staff and management the opportunity to discuss ROP implementation and provide feedback.

The responses from the survey of external stakeholders were similar in content to previous years, as were the number and distribution of the responses. Specifically, 9 of the 21 responses were from utilities, while 4 were from State agencies, 7 were from the public, and 1 was from an anonymous respondent. Overall, the responses were generally positive, but they raised specific concerns about the effectiveness of the PI program, the consistency and timeliness of the SDP, and other perceived needed improvements to the ROP. Enclosure 6 provides more detail on the results of the external survey. The applicable portions of the program area evaluations in Enclosures 1 through 4, as well as the annual ROP performance metric report (reference ADAMS Accession No. ML060590135), provide staff analysis of the surveys.

To address a prior concern that the staff had been unresponsive to the external stakeholder survey comments, the staff consolidated the comments by question during CY 2005 and provided a comprehensive response to each question from last year's survey. Since the staff received positive feedback on the consolidated response from several stakeholders, and to ensure openness and the continued positive perception that the NRC is responsive to the public's inputs and comments on the ROP, the staff plans to prepare a similar consolidated response to this year's survey. This paper, the annual ROP performance metric report, and the consolidated response to the CY 2005 external survey will be posted to the ROP Web page and sent along with an acknowledgment letter to each survey respondent.

The staff also continued its efforts to improve inspector training. During CY 2005, the staff developed and distributed the first survey on inspector training effectiveness, and the responses to the survey were favorable. The staff is further reviewing the survey results and will consider and implement program changes based on recommendations and insights gained. The staff developed and implemented Web-based read-and-sign training on substantive cross-cutting issues, documenting findings in inspection reports, and revisions to the SDP guidance.

The staff continued to maintain the ROP Web pages to ensure that they remain useful tools for communicating accurate and timely ROP information to all stakeholders. In an effort to increase inspector efficiency, the staff developed a pocket reference guide that provides field observation best practices, implemented a Web-based knowledge management tool, and continued to issue the inspector newsletter.

In summary, the staff continues to seek and implement improvements to the ROP based on feedback and insights from all stakeholders. Enclosure 6 provides more detailed discussions and analyses of several ROP communication and training activities.

ROP Self-Assessment Metrics and Independent Evaluations

The staff revised the ROP self-assessment program, as defined in IMC 0307, to support the new safety performance measures of the NRC's Strategic Plan, to better define the ROP goals and intended outcomes, and to consolidate and clarify several of the performance metrics. The staff conducted the CY 2005 ROP self-assessment in accordance with the revised IMC 0307 and associated performance goals. In addition to the ROP self-assessment program, several independent evaluations have been performed in the past few years, most notably those by the Office of Management and Budget, OIG, and the DBLLTF. These evaluations have generally provided favorable results, but have also suggested potential areas of improvement. This paper addresses several recommendations from these independent evaluations. In CY 2006, the staff expects to receive a report from the General Accounting Office on ROP implementation and will address any recommendations as necessary.

In order to gain further efficiencies, and because the comments and staff analysis have tended to repeat the same themes from year to year, the staff is considering a change in the frequency of the external survey to every other year, consistent with the internal survey. As such, one year's ROP performance metrics and self-assessment would include survey inputs and analysis from internal stakeholders, and the following year would include external survey inputs and analysis. Regardless, internal and external feedback will be considered each year based on continuous feedback during meetings, the feedback process, and other venues as described in Enclosure 6. The staff plans to solicit feedback from external stakeholders before implementing this proposed change in survey frequency.

Annual ROP Performance Metrics—The staff performed its annual self-assessment of performance metrics for CY 2005 in accordance with the recent revision to IMC 0307. The majority of metrics met their established criteria; however, some metrics in each of the ROP program areas did not. The program area evaluations in Enclosures 1 through 4 discuss the staff's corrective actions to address these issues. In addition to the specific program area metrics, there are 17 overall ROP metrics, each of which met the established criteria. Two of these metrics failed to meet their criteria during last year's evaluation, but, as a result of staff corrective actions and increased positive perception, they met their criteria this year. Specifically, these metrics gauge whether the public perceives the NRC to be responsive to its inputs and comments, and whether the public perceives that the ROP results in unintended consequences. The annual performance metric report is publically available through ADAMS (reference ADAMS Accession No. ML060590135).

DBLLTF Recommendations—In 2005, the staff completed the necessary enhancements to the ROP based on the implementation of DBLLTF action items. These changes will enhance the NRC's ability to detect declining plant performance, including the specific issues that were identified at the Davis-Besse plant. The staff issued its final status report to the Commission on October 4, 2005, detailing the changes made to address the DBLLTF recommendations. On November 1, 2005, the staff conducted the last public Commission briefing on the status of DBLLTF recommendations. As noted in Enclosure 2, three ROP-related items still require effectiveness reviews once the changes have been implemented for a sufficient amount of time to evaluate their effectiveness.

OIG Audit Activity—The staff successfully resolved all 10 recommendations from the OIG audit of the baseline inspection program (OIG-05-A-06, issued December 22, 2004). The staff made changes to the inspection program to close all but three of the recommendations by the end of CY 2005 as discussed further in Enclosure 2. In 2005, OIG also conducted an audit of the

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Reactor Program System (RPS), an information technology tool that provides planning, scheduling, and reporting capabilities. The OIG audit report (OIG-05-A-11, issued April 13, 2005) made 10 recommendations intended to strengthen protection of RPS data and better ensure that the system meets its operational requirements. The staff has revised the ROP guidance documents and RPS software in response to all 10 of these recommendations and all ten recommendations have been closed. As noted in last year's self-assessment, OIG agreed to close all recommendations from its 2003 audit of the SDP based on staff actions and significant progress in improving the SDP.

SDP Task Group Recommendations—The agency established the SDP task group in 2002 to complete an independent and objective review of the SDP. The SDP task group developed 30 recommendations generally aimed at improving the Phase 2 evaluations using the risk-informed inspection notebooks. The staff has revised the SDP guidance or other portions of the ROP to incorporate 27 of the task group's recommendations. The staff is tracking the three remaining recommendations using the SDP Improvement Plan.

Regulatory Impact—The staff receives and evaluates feedback from licensees on an annual basis as part of the regulatory impact process, established in 1991 based on Commission direction to develop a process for obtaining feedback from licensees and reporting the feedback to the Commission. Over the past year, the staff received feedback from 91 reactor licensees on 253 issues. The staff also received feedback from the Regulatory Information Conference in March 2005. Of the comments received, 83 percent were favorable and 17 percent were unfavorable. The comments fell into three main categories—formal communication with licensees, inspector performance, and security and safeguards activities. Enclosure 7 provides a summary of the feedback received, the staff's evaluation, and the proposed improvement actions.

Industry Performance Trends—The NRC collects and monitors industrywide data to assess whether the nuclear industry is maintaining the safety performance of operating plants. The NRC also uses these industry-level indicators to provide feedback on the ROP. In CY 2005, the staff continued to implement and further develop the Industry Trends Program (ITP). The staff added several new indicators based on a consolidation of the data submitted by licensees to support the ROP PIs. The staff also revised the long-term trending methodology to be influenced less by historical plant performance. An annual Commission paper that complements this document reported the results of the ITP, along with any actions taken or planned. The results of the ITP will also be reviewed at the AARM.

ROP Resource Analysis

As in the 2004 inspection cycle, all four regions completed their baseline inspections in CY 2005 with the allocated regional resources without the need for the coping measures experienced in CY 2002 and 2003. The inspection effort expended for the ROP has increased steadily during the 2003, 2004, and 2005 inspection cycles. Overall staff effort in 2005 was 5.4 percent higher than in 2004. The increased inspection effort in 2005 was most likely the result of increased regional inspection activity due to additional requirements that have been imposed on the inspection staff in recent years, including implementation of the DBLLTF and OIG recommendations and other program improvements.

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A recent reevaluation of ROP resource needs indicated that the regional inspection budget should increase by 14 full-time equivalent (FTE) staff members. The FY 2007 and FY 2008 inspection budget requests include these additional resources. The staff recognizes that inspection resources in FY 2006 may be strained. However, the staff anticipates that baseline inspections and other elements of the ROP will be completed as they have been during the past year and will redirect existing resources as necessary.

Although the ROP has resulted in improved inspection effectiveness, any efficiency gains that may have been achieved since ROP implementation have likely been offset by the additional requirements that have been imposed on the inspection staff. As discussed in other sections of this paper, a number of initiatives currently underway may improve program effectiveness. These initiatives include a realignment of resources allocated to the individual baseline IPs, revised engineering design inspections, pilot implementation of the "unique site" budget models, continued SDP improvements, and implementation of the MSPI program. Enclosure 8 provides a detailed discussion of ROP resources.

Resident Inspector Demographics and Site Staffing

As directed in an SRM dated April 8, 1998, the staff developed measures to monitor and trend RI demographics and reports the data and analyses to the Commission on an annual basis. The staff also developed a site staffing metric in response to a DBLLTF recommendation, which has been included with the annual demographics analysis. The 2005 data indicate that the experience levels of both RIs and SRIs are relatively high, the RI and SRI staffing levels are generally good, and the staffing turnover rate was not excessive. Enclosure 9 presents a more detailed analysis of the 2005 RI demographics and site staffing.

COMMITMENTS:

Prior Commitments—The staff made six commitments in the CY 2004 ROP self-assessment Commission paper to improve the efficiency and effectiveness of the ROP. The following summarizes the staff's actions and status to address these commitments:

(1) The staff committed to interact with industry and other stakeholders to address concerns about the ability of the current set of PIs to provide adequate indications of declining performance in a timely manner. The staff engaged senior industry management to address concerns with the PI program as discussed in Enclosure 1.

(2) The staff committed to perform a more detailed analysis of the scope and level of effort of the IPs in CY 2005 and adjust existing resources within the baseline inspection program for CY 2006. The staff completed the analysis and realigned resources as discussed in Enclosure 2.

(3) The staff committed to provide the Commission with an evaluation of the effectiveness of recent changes made to improve the timeliness of the fire protection SDP in the CY 2005 ROP self-assessment Commission paper. The effectiveness evaluation is summarized in Enclosure 3.

(4) The staff committed to further improve existing guidance related to cross-cutting issues in order to support the midcycle review meetings scheduled for August 2005. The

guidance was revised, though further actions are necessary to address safety culture as detailed in Enclosure 4.

(5) The staff committed to assess the results of the pilot engineering design inspections and develop recommendations for Commission consideration in fiscal year (FY) 2005. The staff completed this effort and revised the IP accordingly as detailed in Enclosure 2.

(6) The staff committed to continue to report the results of its annual self-assessment as part of the Commission briefing following the AARM in May 2005. Accordingly, the staff briefed the Commission on the results of its CY 2004 self-assessment on May 25, 2005.

New Commitments—As described in this paper, the staff plans the following significant actions or activities to improve the efficiency and effectiveness of the ROP in CY 2006:

(1) The staff will work with industry to effectively implement MSPI and will continue to explore possible revisions to the PI program to enhance its value.

(2) The staff will refine and formalize the process to align inspection resources to include consideration of industry performance.

(3) The staff will continue to monitor planned SDP improvements and developments via the SDP Improvement Plan.

(4) The staff will enhance the treatment of cross-cutting areas in the ROP and in supplemental procedures to more fully address safety culture.

(5) The staff will prepare and distribute a consolidated response to stakeholder comments from the CY 2005 external survey to ensure the continued positive perception that the NRC is responsive to the public's inputs and comments on the ROP.

The staff will include the status of these commitments and other program improvements noted in this paper in the CY 2006 ROP self-assessment Commission paper.

CONCLUSIONS:

The self-assessment results in CY 2005 indicate that the ROP has been effective in meeting the seven program goals and achieving its intended outcomes, although the staff continues to experience challenges in certain areas and recognizes the need for further improvement. The ROP was successful in being objective, risk-informed, understandable, and predictable, and in ensuring safety, openness, and effectiveness. The ROP achieved its intended outcomes in CY 2005, as demonstrated by the successful implementation of the various ROP processes. The NRC has appropriately monitored operating nuclear power plant activities and focused agency resources on significant performance issues in CY 2005, and plants continue to receive a level of oversight commensurate with their performance. The staff maintained its focus on stakeholder involvement and continued to improve various aspects of the ROP as a result of feedback and lessons learned.

Based on its CY 2005 self-assessment, the staff intends to focus on the following areas during CY 2006:

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(1) working with industry to improve the PI program
(2) refining the process for adjusting baseline inspection resources
(3) improving SDP efficiency and effectiveness
(4) enhancing the ROP to more fully address safety culture

The staff will also continue evolutionary improvements to various aspects of the ROP.

RESOURCES:

This paper describes a number of program improvement activities. The budget requests through FY 2007 include the resources required to maintain the ROP and develop and implement improvements as part of the overall ROP refinement and management effort. These resources include all regional, Office of Nuclear Reactor Regulation, Office of Research, and Office of Nuclear Security and Incident Response efforts for ROP refinement, management, and performance assessment activities within the scope of the current budget requests. Currently, the staff estimates that approximately 60 full-time equivalent (FTE) staff members and $1.8 million will be needed for FY 2006 and 60 FTE and $850,000 will be needed for FY 2007. No additional resources are needed for FY 2006 and FY 2007 for these activities. Planned actions to improve the ROP will be prioritized and scheduled to remain within allocated resources.

COORDINATION:
The Office of the General Counsel has reviewed this Commission paper and has no legal objections to its content.

The Office of the Chief Financial Officer has reviewed this Commission paper for resource implications and has no objections.

/RA/

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for Operations

Enclosures:
1. Performance Indicator Program Evaluation
2. Inspection Program Evaluation
3. Significance Determination Process Evaluation
4. Assessment Program Evaluation
5. Status of Implementation Issues
6. Reactor Oversight Process Communication and Training Activities
7. Regulatory Impact Summary
8. Reactor Oversight Process Resources
9. Resident Inspector Demographics and Site Staffing

Performance Indicator Program Evaluation

Scope and Objectives—The staff of the U.S. Nuclear Regulatory Commission (NRC) evaluated the Reactor Oversight Process (ROP) performance indicator (PI) program in accordance with Inspection Manual Chapter 0307, "Reactor Oversight Process Self-Assessment Program." The staff used self-assessment metrics, external feedback through a *Federal Register* solicitation for comments, and periodic public meetings with industry and other stakeholders to evaluate the effectiveness of the PI program in fulfilling the regulatory principles of being objective, risk-informed, understandable, and predictable, as well as ensuring safety, openness, and effectiveness.

As a result of lessons learned, the staff has identified a number of issues and actions regarding the PI program. Enclosure 5 provides a summary of the status of these ongoing issues and actions, which are discussed in further detail below. The annual ROP performance metric report, available through the Agencywide Documents Access and Management System (ADAMS) provides the data and staff analysis for each of the program area metrics (reference ADAMS Accession No. ML060590135).

Summary of Previous Self-Assessment—In SECY-05-0070, "Reactor Oversight Process Self-Assessment for Calendar Year 2004," issued April 25, 2005, the staff discussed the history of the development of the PI program and provided an analysis of its historical results. The staff concluded that the PI program had not contributed to the early identification of poorly performing plants to the degree envisioned by the staff. The historical results showed that the percentage of greater-than-green PIs was 1.18 percent in calendar year (CY) 2000 and 0.47 percent in CY 2004, and that eight PIs had been all green following the first year of full ROP implementation. The staff discussed process issues that have delayed resolution of many frequently asked questions (FAQs), described the staff's actions to improve several PIs, and documented issues with several other PIs that need simplification or clarification. Overall, the staff stated that although the PI program continues to provide the U.S. Nuclear Regulatory Commission (NRC) with objective indicators regarding plant performance, and in some areas has focused licensee attention, thereby contributing to improved performance, the staff and some public stakeholders had become increasingly concerned with the lack of timeliness and inefficiency of the FAQ process, and with the capability of the current PIs to contribute to the identification of declining performance. Accordingly, the staff committed to engage senior industry management to define actions to address these issues.

PI Results—In CY 2005, the percentage of greater-than-green PIs continued to decline, to a value of 0.34 percent (although the number of PIs that crossed the green-white threshold increased from 8 to 11). The initiating events PIs continue to produce the most greater-than-green PIs (five), followed by four in the mitigating systems area and two in the emergency preparedness area. Nine out of the 15 nonsecurity PIs remained all green throughout CY 2005. Table 1 shows by PI and year the number of times any plant crossed from the green band into the white band.

When the PI program was developed, the green-white thresholds were set using industry performance data from 1995 to 1997 such that about 5 percent of the plants were expected to exceed the green-white threshold—that is, be designated either white, yellow, or red—for each

PI in the mitigating systems and initiating events cornerstones. Data from 1995 to 1997 were used to establish the thresholds because they were the most recent data available and the NRC considered industry performance in that period acceptable for the purposes of establishing ROP thresholds. The green-white thresholds for the barrier integrity PIs were set at 50 percent of the technical specification limit, and expert panels established the thresholds for the other PIs.

TABLE 1
NUMBER OF TIMES EACH PI
CROSSED THE THRESHOLD FROM GREEN TO WHITE

PI *	CY 2000 # Plants	CY 2001 # Plants	CY 2002 # Plants	CY 2003 # Plants	CY 2004 # Plants	CY 2005 # Plants	Total Plants
IE01	3	3	3	9**	4	3	25
IE02	3	0	0	1	1	1	6
IE03	3	1	1	0	0	1	6
MS01	5	1	1	1	1	0	9
MS02	6	1	1	0	0	2	10
MS03	4	2	2	1	0	2	11
MS04	0	0	0	0	0	0	0
MS05	3	0	0	0	0	0	3
BI01	0	0	0	0	0	0	0
BI02	2	2	0	1	1	0	6
EP01	1	0	1	0	0	2	4
EP02	0	0	0	0	0	0	0
EP03	6	0	0	0	1	0	7
OR01	1	0	0	2	0	0	3
PR01	0	0	0	0	0	0	0
	37	10	9	15	8	11	90

* IE01—Unplanned Scrams per 7000 Critical Hours; IE02—Unplanned Scrams with Loss of Normal Heat Removal; IE03—Unplanned Power Changes per 7000 Critical Hours; MS01—Emergency Alternating Current Power Systems Unavailability; MS02—High-Pressure Injection Systems Unavailability; MS03—Heat Removal Systems Unavailability; MS04—Residual Heat Removal Systems Unavailability; MS05—Safety System Functional Failures; BI01—Fuel Cladding Activity; BI02—Reactor Coolant System Integrity; EP01—Drill/Exercise Performance; EP02— Drill Participation; EP03—Alert and Notification System Reliability; OR01—Occupational Exposure Control Effectiveness; PR01—Radiological Effluent Occurrences

** The Northeast blackout in 2003 tripped nine nuclear units, only one of which crossed the white threshold due to that event.

In the first year of the ROP, each of the initiating events and mitigating systems PIs except MS04 (residual heat removal systems unavailability) identified from 3 to 6 percent of the plants

as outliers (those that crossed the green-white threshold), which was close to the expected value. However, in CY 2001, all of the initiating events and mitigating systems PIs except unplanned scrams declined significantly more than expected and have continued to decline. Improved industry performance explains some of this decline, but the staff remains concerned with the capability of the current PIs and PI thresholds to contribute to the identification of declining plant performance.

The PI program is a voluntary program and has no associated regulatory requirements. A standing working group with representatives from both the NRC and industry meets monthly to address issues associated with the program. In general, changes to the program need the agreement of both the industry and the NRC.

As committed to in last year's Commission paper, the staff engaged senior industry management to define actions to address these issues. Although the industry was open to future discussions on changes to the PI program, it made a number of points that the staff acknowledged, including the following:

- Since the staff deemed industry performance from 1995 to 1997 acceptable at the time of ROP development, any changes to PI thresholds could be seen as "ratcheting" industry performance beyond those agreed-upon levels.

- The staff should not rely on PIs as its main tool to detect declining performance; the inspection program considers a wider variety of areas, including operator actions, which provides the staff with better overall performance insights.

- The current PI definitions and thresholds have caused licensee actions that have improved overall safety; PI data and inspection program documentation do not capture many licensee actions.

- New PIs will need thorough review to ensure that they include no unintended consequences.

However, the staff continues to believe that the PI program should provide more input to the inspection program and help to identify declining plant performance. Therefore, the staff will continue to work with the industry to seek improvements to the program. The staff believes that this effort will require continued senior NRC and industry management involvement.

FAQ Process/Interpretation Issues—As discussed in last year's Commission paper, the staff committed to address issues related to the timeliness and efficiency of the FAQ process. FAQs are specific questions raised about the interpretation of PI implementation guidance and often influence the color of a PI at the plant submitting the FAQ. The staff previously noted that many PIs lack clear, concise guidance, which contributed to the timeliness and efficiency issues. The staff also had trouble handling a number of potentially white PIs with interpretation issues. The staff stated that these issues are often caused by different interpretations of the PI guidance document, Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guidelines," and the joint NRC/industry working group had difficulty agreeing on which events or conditions the PI calculation should include. To address issues for

which it is clear that the staff and industry will not reach agreement, the working group established a process to come to a final decision—the issue will be raised to a division director in the Office of Nuclear Reactor Regulation, whose decision will be final.

After implementing the new process in CY 2005, the backlog of FAQs decreased dramatically from 24 open FAQs in April 2005, to 2 open FAQs as of January 1, 2006. This change, and the staff's increased focus on timeliness, has improved overall FAQ efficiency and effectiveness. However, a number of issues remain that impact the effectiveness of the PI program, including the following:

- As a result of the number of revisions to the guidance document to incorporate FAQs, the document now may not be as clear and concise as it should be.

- The staff and the industry disagree about crediting operator actions. The industry wants to credit operator actions for the event as it occurred. The staff believes that, except for a few very simple actions (such as pushing the manual start button when an automatic start fails), operator actions cannot be credited. The objective of the PIs is to measure equipment performance, not human performance.

- NEI 99-02 interpretation issues continue to remain a staff concern. Since the staff conducts PI verification inspections once a year, a potential disagreement might not surface for up to a year or more after the event in question, so that by the time the question reaches the working group as an FAQ, it is already untimely.

- Licensees have performed lengthy engineering evaluations to demonstrate that an event or condition did not render a system unavailable, and at times these have not been timely in accordance with the guidance document.

To address some of the concerns described above, the staff plans to work with the industry to review each PI definition and supporting information in the NEI guidance document. This effort is not intended to change definitions, but rather to make the document more readable, more concise, and not subject to as much interpretation. This effort, however, will not totally address all of the staff concerns mentioned above regarding efficiency and effectiveness. To address these, the staff will continue to work with the industry and advocate for change in PI definitions and guidance as discussed previously.

If the staff believes that a licensee has not appropriately reported a PI, the staff has the option to conduct an inspection of the PI using Inspection Procedure 71150, "Discrepant or Unreported Performance Indicator Data." Under this process, the staff may declare a licensee's PI data report invalid and color the associated PI gray until the staff determines the correct color through inspection. In 2005, the staff implemented the discrepant PI process twice. The Davis-Besse alert and notification system PI data were determined to be discrepant in January 2005. In November 2005, the staff identified the Waterford 3 high-pressure safety injection system PI as potentially discrepant; however, the NRC has not completed the discrepant PI inspection, which is scheduled during the first quarter of 2006. This process takes time to schedule and implement and is relatively costly in resources. It illustrates the value of PI definitions that are clear and predictable and that require little evaluation or analysis to correctly report.

PI Improvements

The following improvements to the PI program were in process during CY 2005 and are listed in the order of priority.

(1) Mitigating Systems Performance Index (MSPI)—The staff and industry developed the MSPI to address known problems with the safety system unavailability PIs. MSPI is a complex, risk-based process that combines component reliability and availability with plant-specific probabilistic risk assessment (PRA) information to arrive at a single performance index for the monitored system. Specific individual plant design influences MSPI significantly. Since conclusion of the MSPI pilot in 2003, the staff and industry have continued to work to finalize the technical guidance needed for implementing MSPI, define and address a minimum level of PRA quality needed for MSPI, develop the databases and software necessary for each licensee to be able to implement MSPI, and resolve issues identified throughout the development and review processes. The staff plans to replace the safety system unavailability PIs with MSPI at the beginning of April 2006, with the first submittal (including three years of data) in July 2006.

NEI has the lead responsibility for working with all operating reactor licensees to prepare them to implement MSPI. NEI has sought to accomplish this goal by hosting several technical workshops over the course of the past several years. The final MSPI workshop was held in early February 2005. One of the principal topics discussed in the later MSPI workshops was PRA quality. In December 2004, a staff/industry MSPI task group recommended a minimum level of PRA quality that each licensee PRA must meet for MSPI purposes. NEI, licensee representatives, and the NRC staff accepted the recommendations of the task group during a public meeting in January 2005. In the March 2005 ROP working group meeting the industry indicated that it could not meet the PRA quality criteria previously agreed upon by the original MSPI implementation date (January 2006). NEI subsequently proposed a change to the PRA quality activities to be completed before MSPI implementation. In the alternate approach, industry would conduct an MSPI component comparison study using predetermined criteria that would identify monitored component outliers in terms of risk significance (primarily pumps and emergency diesel generators). Licensees who were identified as having outliers would need to address why the associated component is an acceptable outlier, or take action to resolve the issue of concern.

Over the past 12 months, the Office of Research, with support from the regions, conducted an independent component risk comparison study using industry data to verify and validate the industry comparison study. The study identified approximately 265 candidate component outliers whose contribution to plant risk was significantly different than the risk value as calculated using the staff's updated standardized plant analysis risk (SPAR) models. The staff has managed to resolve most of these outliers by pinpointing the specific differences and limitations of the SPAR models when compared to the plant PRAs, as well as highlighting a number of accuracy and modeling issues with plant PRAs. In parallel with this effort, the staff reviewed each licensee's MSPI basis document during the fall of 2005. Based on this review, the staff and the industry concluded that a significant number of licensees were not ready to implement MSPI by January 2006. Therefore, the ROP working group decided to delay MSPI implementation until April 2006.

The staff had previously completed its review of the Institute of Nuclear Power Operations (INPO) Consolidated Data Entry (CDE) Program and found that it is consistent with the staff's

needs for licensee data used in various NRC programs. The CDE Program was used successfully in CY 2004 to gather and submit PI data to the NRC. The staff will complete its review of the CDE Program for the MSPI indicators and will test the submittal and posting process prior to MSPI implementation.

(2) Safety System Functional Failures (SSFFs)—The benchmarking analysis of the proposed PIs in 1999 showed that this PI identified all the watch list plants, all the declining trend plants, and some of the below average plants. This PI counts all events or conditions that could have prevented the fulfillment of the safety function of structures or systems needed to shut down the reactor, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident. Title 10, Section 50.73(a)(2)(v), of the *Code of Federal Regulations* (10 CFR 50.73(a)(2)(v)) requires such events to be reported in licensee event reports (LERs). Copies of all LERs received by the NRC are sent to the Idaho National Laboratory (INL), which is under contract to the NRC to read and code all LERs for use in the Industry Trends Program, which includes SSFFs. Every quarter licensees report to the ROP PI program the number of events or conditions that the licensees determine could have prevented the fulfillment of any of the above safety functions. However, the number of events reported by licensees is less than the number of events captured as SSFFs by INL.

To examine this difference, several industry members of the ROP working group volunteered to review licensee event reporting from 1999 to 2003. They determined that there is some confusion regarding the reporting requirements under 10 CFR 50.73 that needs to be addressed. The group recommended a number of possible changes to NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," and the process INL uses to categorize LERs.

The staff generally agrees that there can be differences of opinion on the reporting requirements in NUREG-1022, which states that the standard for reporting is "a reasonable expectation of not fulfilling the safety function." The staff and industry have differing views on what is "reasonable." Secondly, a number of events have occurred that are not explicitly covered in the guidance document, leaving room for interpretation. The staff believes that the NEI 99-02 guidance is clear that the PI includes a wide variety of events or conditions, ranging from actual failures on demand to potential failures attributable to various causes, including environmental qualification, seismic qualification, human error, design or installation errors, etc. Many SSFFs do not involve actual failures of equipment. Because the contribution to risk of the structures and systems included in the SSFF varies considerably, and because potential as well as actual failures are included, it is not possible to assign a risk significance to this indicator.

This differs somewhat from the NUREG guidance, but it is these potential failures that were reported more frequently prior to ROP implementation but have not been reported as consistently since ROP implementation. To address the issues with this PI, the staff plans to review the data in this area further and continue to discuss this PI with the industry. The staff also plans to evaluate the NUREG for possible changes.

(3) Scrams with Loss of Normal Heat Removal—The backlog of FAQs for this PI was cleared in CY 2005. The staff used, for the first time, the dispute resolution process that had the NRC Director of the Division of Inspection Program Management (now the Division of Inspection and Regional Support) make the final determination. The staff used this process for six events. In addition, the NRC/industry task group reached agreement on the definition for a proposed replacement PI for monitoring complicated scrams. Data collection to establish thresholds is

underway. The staff believes that this new PI has the potential to be a leading indicator of declining performance in that a plant that has a history of complicated scrams may be more likely to have a risk-significant scram.

(4) Unplanned Scrams per 7000 Critical Hours—In CY 2005, the staff proposed to change this PI to unplanned scrams per 7950 hours. During PI development in the late 1990s, the PI was defined as unplanned scrams per 7000 critical hours because the industry average plant availability in 1995 through 1997 was 80 percent, or 7000 critical hours in four quarters. The green-white threshold is met if a plant, in any consecutive four quarters, has either four or more scrams, or three scrams and fewer than the industry average number of critical hours, rounded off to the nearest one-tenth of one percent. Today the industry average availability is just under 91 percent, which is equivalent to about 7950 hours per year of operation. To maintain the basis for identifying outliers with four or more scrams in four quarters (and those with three scrams and fewer than the industry average availability), the staff is considering whether the numerator should reflect the industry's current average availability in one year. The industry believes that this change represents an increase in expected plant performance, above that which was deemed adequate in the 1995–1997 timeframe. Therefore, the industry is opposed to the change. The staff also proposed to change the red threshold for this PI to a deterministic value, down from the current risk-based threshold of 25, as recommended by the Advisory Committee on Reactor Safeguards. The staff will discuss these changes further with stakeholders during the monthly ROP meetings.

(5) Unplanned Power Changes per 7000 Critical Hours—In CY 2005, the staff proposed to change this PI to unplanned power changes per 7950 critical hours for the same reason as described for the unplanned scrams PI. The staff is also considering changing the definition of "unplanned" from at least 72 hours in advance to at least 4 weeks in advance to align with the similar indicator used by the World Association of Nuclear Operators (WANO) and to avoid problems with the 72-hour requirement that have resulted in many FAQs.

In addition, in CY 2005 the staff proposed to include in the definition for this PI NRC notices of enforcement discretion (NOEDs) that preclude power changes. This potential change was not discussed in much detail, and, because of the small number of NOEDs currently issued per year, the impact on the PI would be small. However, since both internal stakeholders and members of the public proposed this change, the staff will continue to keep this issue open and engage industry further.

(6) Reactor Coolant System Leakage—The Davis-Besse Lessons Learned Task Force recommended that the staff continue ongoing efforts to review and improve the usefulness of the barrier integrity PIs and evaluate the feasibility of establishing a PI that tracks the number, duration, and rate of primary system leaks that have been identified but not corrected. The NRC/industry task group agreed that this approach was likely not feasible but did, however, agree that this PI should monitor unidentified leakage (instead of identified leakage) averaged over an appropriate time interval to identify baseline values and trends. The Westinghouse and Boiling-Water Reactors Owners Groups have also established a working group to examine leakage monitoring. The owners groups are currently collecting data for a revised PI and expect to have results in the fall of 2006. If these efforts identify a feasible method for improving the PI, it will be presented to the ROP working group for further discussion.

(7) Reactor Coolant System Activity—The staff continues to pursue the use of the WANO fuel reliability indicator. INPO staff members have stated that they have encountered problems with this indicator that are similar to those the NRC staff has had with its PI. Therefore, INPO does not recommend that the NRC adopt the WANO indicator. This issue is currently on hold while the staff addresses higher priority items.

(8) Containment Leakage—The staff removed this PI from the ROP PIs after the pilot program for the following reasons: (1) the test methods used and data collected across the industry lack uniformity because licensees may choose between two methods for performing leak rate tests, only one of which requires recording the as-found leakage, (2) the tests are normally conducted during refueling outages, so the data are end-of-cycle numbers which may or may not be indicative of the worst-case leakage in the previous operating cycle, and (3) licensees are required to restore containment leak rates to within acceptable limits prior to restart.

Nevertheless, this PI may provide some value if it encourages licensees to adopt a more uniform test methodology, and even a backward look at containment integrity could be of value in identifying recurrent issues. For these reasons, the staff plans to discuss the value of this PI with external stakeholders.

(9) Potential New Indicators—The staff will also consider the feasibility of new indicators. One readily available candidate, used in the NRC's Industry Trends Program, is safety system actuations. Safety system actuations are under consideration as a new indicator because the Industry Trends Program has found that their number is increasing and exceeded the short-term prediction limit in fiscal year 2005.

The staff also plans to look for indicators for cross-cutting issues, as recommended by the Advisory Committee on Reactor Safeguards and other stakeholders, but this effort is on hold while the staff addresses higher priority issues.

PI Program Performance Metrics—The four metrics that met their established criteria are (1) effectively responding to questions regarding interpretation of PI guidance, (2) timely indication of declining safety performance, (3) timely PI data reporting and dissemination, and (4) clarity of PI guidance. The three metrics that did not meet their established criteria are (1) achieving consistent results given the same guidance, (2) obtaining insights from the PI program to help ensure plant safety, and (3) stakeholders perceiving appropriate overlap of PIs and the inspection program.

The staff tracks significant discrepancies and discrepant PIs reported in each quarter to determine whether consistent results are achieved given the same guidance. In the second and fourth quarters of CY 2005, the number of significant discrepancies or discrepant PIs increased notably in comparison to previous years; five discrepancies occurred in CY 2005 as compared to two discrepancies in both CY 2001 and CY 2002 and none in CY 2003 and CY 2004. The other two missed PI metrics resulted from the negative public perception noted in the external survey responses as described below. As previously discussed, the staff continues to evaluate several PIs, with inputs from internal and external stakeholders, in an effort to improve their effectiveness at identifying poor performance.

Stakeholder Survey Results—The staff did not conduct an internal survey in CY 2005; therefore, the input to this discussion came solely from the external survey conducted in

October 2005. Participants in the external ROP survey included nine industry representatives, four State or local government agencies, seven private citizens or public interest groups, and one anonymous stakeholder. The external survey revealed a sharp difference in opinion between public interest groups/members of the public and industry groups regarding the effectiveness of the PI program. The public generally believed that the PIs have become less useful and provide little information on plant performance because they are almost always all green, while industry comments concluded that the PIs provide useful indicators of plant safety. Industry groups generally felt that the degree of overlap between the PI program and the inspection program was appropriate, or perhaps somewhat excessive, while public satisfaction in the degree of overlap decreased, largely because the PIs are almost always all green. Enclosure 6 provides more detail on the results of the external survey.

Self-Assessment Conclusions—Based on the metric results, stakeholder feedback, and other lessons learned and evaluations, the staff concludes that the PI program has successfully met the goals and intended outcomes of the ROP. The PI program has generally fulfilled the regulatory principles of being objective, risk-informed, understandable, and predictable, and it has accomplished the three applicable NRC strategic goals (ensuring safety, openness, and effectiveness). The timeliness and efficiency of the FAQ process appears to have improved significantly. Although the PI program continues to provide the NRC with objective indicators regarding plant performance, and in some areas has focused licensee attention and contributed to improved performance, the staff and some public stakeholders remain concerned with the capability of the current PIs to contribute to the identification of declining performance. As a result, the staff are in the process of revising several PIs. The staff plans to continue to work with the industry to revise and/or introduce other PIs to improve the program's effectiveness in contributing to the identification of declining performance. The staff believes that this effort will require continued senior NRC and industry management involvement.

Inspection Program Evaluation

Scope and Objectives—The staff of the U.S. Nuclear Regulatory Commission (NRC) evaluated the inspection program in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program." The staff used self-assessment metrics and other pertinent information to provide insights regarding the effectiveness of the Reactor Oversight Process (ROP) in fulfilling the regulatory principles of being objective, risk-informed, understandable, and predictable, as well as ensuring safety, openness, and effectiveness. The staff also obtained input from internal stakeholders through onsite visits by the inspection program staff, counterpart meetings, focus groups, and the internal feedback process. In addition, the staff obtained external feedback through a *Federal Register* solicitation for comments and through periodic meetings with the industry and other stakeholders.

Based on the metric results, stakeholder feedback, and other lessons learned through ongoing program monitoring, the staff identified certain issues and actions to further improve the inspection program. This enclosure discusses these issues in further detail, and Enclosure 5 summarizes the status of implementation issues. In addition, the annual ROP performance metric report, available through the Agencywide Documents Access and Management System (ADAMS), provides the data and staff analysis for each of the program area metrics (reference ADAMS Accession No. ML060590135).

Summary of Previous Self-Assessment—In SECY-05-0070, "Reactor Oversight Process Self-Assessment for Calendar Year 2004," issued April 25, 2005, the staff noted that the inspection program met its established goals during calendar year (CY) 2004. The staff made several improvements to the program to address Davis-Besse Lessons Learned Task Force (DBLLTF) recommendations. The regions completed the required baseline inspection program for CY 2004, and the increases in the regional inspection budget in 2004 and action by regional offices in filling open inspector positions prevented the staffing shortages experienced in 2002 and 2003 from extending into the 2004 inspection cycle. The annual inspection program evaluation did not result in any significant changes to the inspection procedures (IPs), but as a result of the CY 2004 self-assessment, the staff committed to perform a more detailed analysis of the scope and level of effort of the IPs in CY 2005 and to adjust existing resources within the baseline inspection program for CY 2006. The staff further committed to assess the results of the pilot engineering design inspections and develop recommendations for Commission consideration.

Completion of the Baseline Inspection Program—All four regions completed their baseline inspections in CY 2005 in accordance with IMC 2515, "Light-Water Reactor Inspection Program—Operations Phase." As in the 2004 inspection cycle, all regions completed their baseline inspections in 2005 with the allocated regional resources, without the need for the coping measures experienced in CY 2002 and 2003. Each region documented its completion of the baseline inspection program in CY 2005 in a memorandum to the Division of Inspection and Regional Support in the Office of Nuclear Reactor Regulation (NRR). The NRC approved a delay in the completion of inspection activities associated with the biennial emergency preparedness exercise at Waterford 3, and the inspection is scheduled for completion during

CY 2006. The biennial emergency preparedness exercise and the inspection activities associated with the exercise were initially planned for December 7, 2005. However, because of the impact from Hurricane Katrina, the licensee requested that the exercise be rescheduled to June 2006.

Changes to Inspection Guidance—The staff revised several inspection program guidance documents in CY 2005 to improve their focus and address certain concerns. The staff revised IMC 2515 to address recommendations from the audit by the Office of the Inspector General (OIG) of the NRC's baseline inspection program (OIG-05-A-06, issued December 22, 2004). Some of the changes included providing the basis and rationale for the baseline IP sample size, including a discussion of when, or why, to use more than the minimum samples; additional management guidance for assigning inspectors to perform certain IPs to ensure that inspectors are adequately qualified for their assignments; and clarification on IP deferral.

In addition, the staff revised Appendix D, "Plant Status," to IMC 2515 to require inspectors to monitor and trend reactor coolant system (RCS) leakage indications. The change requires inspectors to review licensee procedures and action plans to identify sources of RCS unidentified leakage. In addition, the staff provided guidance and techniques necessary to assess a potential adverse trend or a change in action levels in response to increasing RCS unidentified leakage.

The staff revised IMC 0612, "Power Reactor Inspection Reports," to clarify definitions for the terms "NRC-identified," "self-revealing," and "licensee-identified" findings; provide additional guidance on documenting cross-cutting issues; improve guidance on closure of licensee event reports; clarify the definition of a performance deficiency; and provide additional examples of cross-cutting aspects of a finding.

The staff performed its annual review of each baseline IP during CY 2005. The period assessed spanned from October 2004 through September 2005. The staff evaluated each IP against the requirements in IMC 0307 and performed additional analyses of inspection findings. Based on this review, the staff did not identify any significant issues that warranted changes to the inspection program; however, the ROP baseline inspection realignment effort discussed below did result in revisions to several inspection procedures.

Additionally, the staff evaluated the number of findings associated with each IP. The variables that influence inspection findings made it difficult to assess the effectiveness of IPs. However, recognizing these uncertainties, the staff's self-assessment of the inspection findings, internal and external feedback forms, and other independent reviews of the ROP indicated the general success of the inspection program in identifying performance deficiencies in many of the areas inspected. The median number of findings per 1000 hours of inspection (4.7) for CY 2005 remained about the same as compared to the results from CY 2004. As in CY 2004, the success of the inspection program in identifying performance deficiencies varied with each IP.

As committed to in the NRR Management Control Plan, the staff evaluated the effectiveness of the revisions to the problem identification and resolution and fire protection IPs and adjustments to several other IPs regarding procedure scope, frequency, and level of effort. The staff also continued to improve major program guidance as a result of stakeholder feedback and lessons learned. The problem identification and resolution focus group reviewed the effectiveness of the changes made in response to the DBLLTF recommendations to IP 71152, "Identification

and Resolution of Problems." The focus group agreed that the changes to IP 71152 have resulted in no unintended consequences, reinforce NRC expectations that inspectors have a questioning attitude, and provide a method for highlighting issues that might indicate a more significant problem. The staff believes that the changes to IP 71152 were effectively implemented and addressed the DBLLTF recommendations. The staff also reviewed and increased the scope of IP 71111.05, "Fire Protection," in two areas during CY 2005.

ROP Baseline Inspection Realignment Effort—In accordance with its commitment in the CY 2004 self-assessment, the staff performed a more detailed analysis of the scope and level of effort of the IPs. The review consisted of an examination of inspection results data from October 2001 through September 2004 to evaluate the effectiveness of each IP to identify inspection findings. Through this review, the staff sought to improve the alignment of inspection resources to inspected areas that had indication of risk-significant performance deficiencies in the past. The working group to support this realignment effort consisted of representatives from the NRR Division of Inspection and Regional Support and the regions. The working group met and reviewed data on each of the IPs in the baseline inspection program. The group reviewed several measures of inspection procedure effectiveness and examined the inspection resources (both estimated hours to perform as well as range of inspection samples) used for each procedure. Based on the working group's efforts, seven IPs were revised, however the net resource impact was zero. The NRC issued the revisions in Change Notice 01-006 for implementation by the inspection staff in CY 2006 (reference ADAMS Accession No. ML060060380).

Review of Inspection Findings—The staff noted an increase in the total number of findings identified during fiscal year (FY) 2005 across all cornerstones. Inspections resulted in 933 green findings and 17 greater-than-green findings, including 16 white and 1 yellow finding. An additional yellow finding was identified a few days after the close of FY 2005. Table 1 compares these results with those of previous years.

TABLE 1
INSPECTION FINDINGS BY COLOR AND PERIOD

	10/01/2001–09/30/2002	**10/01/2002–09/30/2003**	**10/01/2003–09/30/2004**	**10/01/2004–09/30/2005**
Green	696	716	881	933
White	26	14	12	16
Yellow	2	2	0	1
Red	3	1	0	0
Total	727	733	893	950

Engineering Design Inspections—In response to Commission direction to improve the effectiveness of engineering design inspections, the staff committed in the CY 2004 ROP self-assessment to assess the results of the pilot engineering design inspections and develop recommendations for Commission consideration in FY 2005. The staff developed Temporary Instruction (TI) 2515/158, "Functional Review of Low Margin/Risk Significant Components and

Human Actions," and implemented it at one pilot site in each region. SECY-05-0118, "Results of the Pilot Program to Improve the Effectiveness of NRC Inspections of Engineering and Design Issues," issued July 1, 2005, assessed the results of the pilot inspections. As a result of the assessment, the staff changed the title of IP 71111.21 from "Safety System Design and Performance Capability Inspection" to "Component Design Bases Inspection." The staff also revised the inspection details to be consistent with the TI and focus on components rather than systems. The revised IP will be conducted at all plant sites over the CY 2006 and CY 2007 biennial period. The staff plans to develop additional guidance for engineering design inspections after CY 2007 based on lessons learned during initial implementation of IP 71111.21.

Licensee Self-Assessments—As part of its ongoing efforts to improve the effectiveness of the ROP, the staff intends to evaluate whether licensees should receive credit for certain self-assessments. However, the staff has deferred this work until completion of the revised engineering design inspections. After completing the revised design/engineering inspections and assessing the results, the staff will evaluate the proposed policy of granting licensee credit for self-assessment activities.

Safety Culture Inspection—In response to Commission direction and a DBLLTF recommendation to provide more structured and focused inspections to assess a licensee's safety-conscious work environment (SCWE), the staff developed the safety culture working group and has begun revising IPs that will reflect the working group's recommendations and input from external stakeholders. The revised IPs are planned for implementation starting in July 2006. The assessment program evaluation in Enclosure 4 includes additional discussion of the efforts and status of the safety culture working group.

Status of DBLLTF Items for the Inspection Program—Although the staff has addressed and closed all DBLLTF items for the inspection program, the following three items still require effectiveness reviews in CY 2006 once the changes have been implemented for a sufficient amount of time to evaluate their effectiveness:

(1) The staff revised Appendix D to IMC 2515 in January 2005 to provide guidance and techniques necessary for assessing potential adverse trends and action levels in response to increasing levels of RCS unidentified leakage (reference DBLLTF item 3.2.1(2)).

(2) The staff issued TI 2515/150, "Reactor Pressure Vessel Head and Vessel Head Penetration Nozzles," in October 2002 to provide guidance for examining licensees' reactor pressure vessel head inspections pursuant to Order EA-03-009. The TI includes guidance for reviewing findings of boric acid accumulation (reference DBLLTF item 3.2.2(1)). The staff revised IP 71111.08, "Inservice Inspection Activities," in May 2004 to add periodic inspection requirements and guidance for boric acid corrosion control programs. Staff review of inspection results from TI 2515/150 and IP 71111.08 and feedback from inspectors indicate that current licensee programs are generally adequate for locating and evaluating and/or correcting boric acid leaks, and the NRC inspection guidance is adequate and effective for oversight of boric acid corrosion control programs. In CY 2006, the staff will conduct its effectiveness review by evaluating the inspection results from two years of the revised IP 71111.08 implementation.

(3) The staff revised IMC 0305, "Operating Reactor Assessment Program," to require it to consider the conclusions of independent assessments during midcycle and end-of-cycle reviews in order to self-assess the NRC's inspection and assessment processes (reference DBLLTF item 3.3.3(1)).

OIG Audit of the Baseline Inspection Program—The staff successfully resolved all 10 recommendations that resulted from the OIG audit of the baseline inspection program in December 2004 (OIG-05-A-06). The staff made changes to the inspection program to close all but three of the recommendations during CY 2005. The staff will address recommendation 2, which involves the development of guidance on identifying human performance trends and integrating that information into the ROP, following the implementation of the safety culture initiative. The staff changed inspection program documents to address OIG recommendations 3 (develop and implement guidance for documenting, tracking, and trending informal inspection issues) and 4 (define "effectiveness" as it pertains to the ROP and establish performance measures and targets to demonstrate that the baseline inspection program meets that definition). Currently, OIG is evaluating these changes for closure.

Feedback from Site Visits—In accordance with inspection manual guidance, the ROP inspectable area lead staff performed or observed several inspections to (1) assess the adequacy of the IP for possible improvements to its scope, focus, and guidance, (2) assess the adequacy of the ROP program guidance, and (3) collect comments on the ROP from inspectors and licensees. Most resident inspectors (RIs) indicated that the baseline inspection program appropriately looks for and identifies risk-significant issues and provides appropriate coverage of plant activities and operations important to safety. Most RIs agreed that most IPs can be accomplished within the estimated hours for the IP. The only outlier was the plant status IP (Appendix D to IMC 2515), which required more time than estimated. Additionally, the RIs observed that other unanticipated activities (such as completion of TIs and participation in special and team inspections) placed additional challenges on the RIs' ability to complete the baseline inspection program. These comments were consistent with the FY 2005 ROP resource data, and the staff's plans to address these increased resource needs are discussed in Enclosure 8.

The staff also received other comments on the inspection program, suggesting review and adjustment, as appropriate, of the scope and level of effort for some IPs, describing difficulty in determining whether a specific finding is minor, and requesting more time for reviewing plant status. The staff plans to address the issues raised during the site visits through its feedback process and will consider providing additional training, as appropriate.

Inspection Program Performance Metrics—All but one inspection program metric met their established criteria in CY 2005. The successful metrics were (1) percentage of inspection findings documented in accordance with requirements, (2) number of baseline IPs significantly changed, (3) number of feedback forms per document, (4) completion of the baseline inspection program, (5) timeliness of inspection reports, (6) timeliness of public communication, (7) accuracy of public communication, and (8) analysis of inspection hours. The metric regarding the timely completion of TIs was not met. The staff will review the reasons for untimely completion of TIs and recommend possible solutions in CY 2006.

The staff reviewed an integrated inspection report from each regional branch and other selected inspection reports from each region. About 94 percent of the findings were

documented in accordance with program requirements. The staff received 102 feedback forms during CY 2005, comparable to previous years, and has improved responsiveness in answering the forms.

Stakeholder Survey Results—The staff did not conduct an internal survey in CY 2005; therefore, the input to this discussion came solely from the external survey conducted in October 2005. Participants in the external ROP survey included nine industry representatives, four State or local government agencies, seven private citizens or public interest groups, and one anonymous response. The majority of those who provided feedback to the question on the utility of the information in the inspection reports responded that the inspection reports were clearly written and provided a better understanding of plant operations. Comments regarding revisions to IMC 0612 noted that the definition changes to allow more credit for licensee-identified findings and the clarification to Appendix E (adding examples of cross-cutting aspects) are improvements, but licensees are concerned about the expansion of the definition of a performance deficiency. Overall, stakeholder satisfaction was generally favorable and consistent. Enclosure 6 provides more detail on the results of the external survey.

Self-Assessment Conclusions—The inspection program met the goals and intended outcomes of the ROP based on the metric results, stakeholder feedback, and other lessons learned through ongoing program monitoring. The inspection program was objective, risk-informed, understandable, and predictable, and has ensured safety, openness, and effectiveness. The staff made several improvements to the program to address DBLLTF and OIG recommendations. The regions completed the required baseline inspection program for CY 2005. The staff completed its first ROP realignment review and revised seven IPs. The staff plans to evaluate other ways to measure the effectiveness of inspection program and to refine and formalize the process to ensure alignment of inspection resources to include consideration of industry performance.

Significance Determination Process Evaluation

Scope and Objectives—The staff of the U.S. Nuclear Regulatory Commission (NRC) evaluated the significance determination process (SDP) in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program." The staff used self-assessment metrics and other pertinent information to provide insights regarding the effectiveness of the Reactor Oversight Process (ROP) in fulfilling the regulatory principles of being objective, risk-informed, understandable, and predictable, as well as ensuring safety, openness, and effectiveness. The staff also obtained input from internal stakeholders through biweekly conference calls, counterpart meetings, focus groups, and the internal feedback process. In addition, the staff obtained external feedback through a *Federal Register* solicitation for comments and through periodic meetings with the industry and other stakeholders.

Based on the metric results, stakeholder feedback, and other lessons learned through ongoing program monitoring, the staff identified certain issues and actions to improve the SDP. This enclosure discusses the implementation issues, and Enclosure 5 summarizes their status. In addition, the annual ROP performance metric report, available through the Agencywide Documents Access and Management System (ADAMS), provides the data and staff analysis for each of the program area metrics (reference ADAMS Accession No. ML060590135).

Summary of Previous Self-Assessment—The most significant changes to the SDP since initial implementation took place in 2004, as described in SECY-05-0070, "Reactor Oversight Process Self-Assessment for Calendar Year 2004," issued April 25, 2005. During that period, the staff issued two new and two significantly revised SDPs. The staff used the SDP Improvement Plan to address key stakeholder recommendations, including those from the SDP task group, an audit by the Office of the Inspector General (OIG), and internal and external feedback. The timeliness of final significance determinations had improved in fiscal year (FY) 2004 in all areas but fire protection, causing the NRC not to meet the established goal. The staff anticipated continued challenges in FY 2005 with SDP timeliness, particularly with fire protection issues, and committed to provide the Commission with an evaluation of the effectiveness of changes made to improve the timeliness of the fire protection SDP (FPSDP). Additionally, several stakeholders continued to express concern that the SDP results do not translate to the same level of significance across all cornerstones.

Ongoing SDP Improvements—In calendar year (CY) 2005, the staff continued to implement initiatives to improve the SDP process and timeliness in issuing final SDP results. In particular, the staff continued to implement the SDP Improvement Plan. The Office of Nuclear Reactor Regulation (NRR) Director's Quarterly Status Update tracks the status of actions.

The staff evaluated recommendations on improving SDP timeliness submitted by the Nuclear Energy Institute (reference ADAMS Accession No. ML051220253). After careful consideration, the staff determined that the recommendations were either already being addressed, were not feasible, or warranted further discussion during the monthly ROP meetings. The staff's detailed response to the recommendations can be found under ADAMS Accession No. ML051330334.

In 2005, the staff made significant advances to complete the objectives of the SDP Improvement Plan. In particular, the staff issued a new SDP procedure (Appendix K to IMC 0609, "Significance Determination Process") addressing maintenance rule inspection findings in May and completed Revision 2 of the risk-informed inspection notebooks and accompanying pre-solved SDP Phase 2 tables in December.

Three of the plan's objectives were placed under the Risk Assessment Standardization Project (RASP) effort for resolution: (1) develop criteria for early recognition of the need for in-depth risk evaluation, (2) develop criteria for assessing licensee probabilistic risk assessment (PRA) quality, and (3) develop a low-power/shutdown operations model. The staff will continue to track these initiatives in the SDP Improvement Plan.

SDP Timeliness—The timeliness of final significance determinations is one of the critical measures of SDP effectiveness. According to its existing timeliness goal, the NRC will complete the final significance determinations that are of greater-than-green significance within 90 days after the issuance of the first written correspondence to the licensee describing the finding. The percentage of completed findings remained below the associated timeliness metric—the goal for FY 2005 was 85 percent within 90 days. In part, this resulted from the impact of closing several longstanding issues, as detailed in the performance metric discussion. The final metric performance for FY 2005 was 68 percent, although many of the untimely issues missed the 90-day goal by just a few days.

The staff continued to evaluate a new metric for SDP timeliness and proposed a replacement metric of average time combined with a "backstop" approach of no more than a certain time, such as 180 days, to complete all SDP evaluations. The staff revised IMC 0307 accordingly to test the proposed average time and backstop metric in 2006 along with the existing timeliness metric. As noted in IMC 0307 and the NRR operating plan, the metric for FY 2006 remains the completion of 90 percent of all inspection findings that are determined to be of greater-than-green significance within 90 days.

In 2005, the staff completed other SDP program initiatives to improve timeliness. The staff introduced the Planning Significance and Enforcement Review Panel (SERP) aimed at engaging decisionmakers early in the SDP evaluation to more effectively address the scope of the evaluation, the resources needed, and the schedule to complete the evaluation to ensure that potential timeliness issues are minimized. The Planning SERP will allow the regions to identify the following early in the evaluation process:

- findings of such technical complexity that existing SDP evaluation tools are not readily adaptable to the issue, and/or that the region does not have the expertise or resources to consider in terms of risk

- findings that have potentially high safety significance (i.e., yellow or red) that may require more comprehensive examination for potential impact on plant safety and subsequent NRC action

The staff incorporated the Planning SERP process into IMC 0609 in November 2005.

The staff made other enhancements to the program to encourage the use of the best available information when assessing the significance of inspection findings. Specific changes included

guidance on using a simplified versus detailed SDP Phase 3 evaluation, when possible; guidance discouraging the staff from creating new risk tools or performing extensive evaluations during the SDP process, resulting in significant delays; deleting the option for licensees to provide new information once a final SDP decision is made; and specifying to licensees the amount of time they have to complete their review of the preliminary SDP decisions and schedule the subsequent regulatory conference.

As a result of these changes, the staff anticipates improvement in SDP timeliness but recognizes continued challenges. The staff completed three timeliness-enhancing objectives outlined in the SDP Improvement Plan. However, these objectives will remain open for 2006 while the staff continues to assess their impact on the timely completion of the SDP. In 2006, the staff is also addressing the objective to develop a management decisionmaking process that will help finalize issues in areas not covered by SDPs or when significant uncertainty exists, rendering conventional SDP assessment tools less effective towards reaching a final decision.

Fire Protection SDP (FPSDP)—The staff significantly revised the FPSDP in 2004 and expected improvements in the timeliness of finalizing fire protection issues. In 2005, the staff conducted an interim evaluation and determined that timely completion of FPSDP determinations continued to lag behind other areas. Currently, the staff does not have enough experience implementing the revised guidance to determine whether enhancing the FPSDP will significantly contribute to improving the timeliness of fire protection issues.

The staff believes that the FPSDP is a logical and probabilistic process, given the inherent complexities associated with fire-related issues. The evaluation process continues to encounter delays generally associated with initial understanding and implementation and, to some extent, inspection practices. However, the staff believes that the revised FPSDP is a much improved risk-informed approach.

Several initiatives are underway to improve FPSDP implementation, including the following:

- The staff is modifying the FPSDP training course, which will be ready to train inspectors and senior reactor analysts (SRAs) in 2006. The course will incorporate lessons learned and provide the vehicle needed to maintain inspector and SRA expertise in implementing the FPSDP.

- Headquarters staff will continue to directly support the regions as needed to accelerate the closure of old and emerging issues.

- Headquarters staff, with regional input, will enhance the inspection data collection process to assure that most information required to enter the FPSDP is available to the inspectors and SRAs at the conclusion of the inspection.

- The staff has developed an improved Phase 1 screening tool for electrical circuit-related findings and is reviewing it for incorporation into the evaluation process.

The staff believes that the revised FPSDP will result in a significant improvement in SDP timeliness, particularly once the appropriate training and inspection guidance are in place.

Towards the end of 2005, licensees notified the staff that more than 30 plants will adopt National Fire Protection Association (NFPA) Standard 805, "Performance-Based Standard for Fire Protection for Light Water Reactor Electric Generating Plants," as it is endorsed by Title 10, Section 50.48c, of the *Code of Federal Regulations* (10 CFR 50.48c). Plants that have committed to NFPA 805 are covered by an enforcement and assessment discretion during the transition period. In the long term, NFPA 805 has the potential to help focus licensee and NRC attention on those issues of greatest safety significance.

Phase 2 SDP Notebooks—The Phase 2 SDP notebooks provide the guidance on risk-informing reactor inspection findings for at-power situations. Initial versions of the documents failed to adequately capture the individual plant characteristics, and the process was not coordinated with licensee PRAs. This often resulted in under or over estimation of the change in risk associated with inspection findings. Subsequently, the staff revised all 71 notebooks. The NRC issued the notebooks as Revision 1 in 2003 and posted them to the NRR internal Web page for staff use. In retrospect, it became important to further standardize all benchmarked notebooks to match the quality of the last notebooks benchmarked. The staff completed this standardization effort and issued the amended notebooks as Revision 2 in 2005.

Each Revision 2 notebook now includes SDP Phase 2 pre-solved tables. These tables identify the value of each sequence when a particular component or human action is degraded for a certain exposure time. Each spreadsheet contains approximately 40 to 50 plant-specific key components and/or operator actions. The spreadsheet and corresponding pre-solved tables represent the solution and answer key to these items. In addition, the staff incorporated large early release frequency (LERF) risk aspects in both the notebooks and the associated spreadsheets. In December 2005, the NRC posted the Revision 2 SDP inspection notebooks and the new pre-solved spreadsheets on the NRR internal Web page. Since training on the use of the spreadsheets has not yet been provided, users are directed to an instruction file prior to applying the process and are advised to use the spreadsheets only as a verification of the outcome of the existing SDP products. The staff will complete additional guidance on use of the pre-solved spreadsheets and associated training in 2006. Creation of the pre-solved tables was a key outcome of the 2002 SDP task group review.

Standardized Plant Analysis Risk (SPAR) Models—The Office of Nuclear Regulatory Research has completed development of all Revision 3 SPAR models for internal events. Currently, efforts are in progress to further enhance Revision 3 SPAR models for internal events as part of RASP. These efforts involve (1) benchmarking each SPAR model against the licensee's PRA by comparing cut sets generated by each model and (2) incorporating into the Revision 3 SPAR models the resolution of the plant-specific PRA modeling issues that were identified in the onsite reviews of the Revision 3 SPAR models during notebook benchmarking visits, the Mitigating Systems Performance Index program reviews, and feedback from model users. The staff will incorporate accepted differences with the licensee's PRA into the SPAR model to provide a more enhanced Phase 3 SDP analysis tool for at-power internal events.

Development of SPAR models for issues related to low-power/shutdown conditions, calculation of LERF, and external events is also in progress and included in RASP. Currently, the staff has developed 11 low-power/shutdown models, 4 LERF (or Level 2) models, and 6 external events models for trial use. An effort is planned to integrate these models with the enhanced Revision 3 SPAR Level 1 models.

External Event Contribution—The SDP requires consideration of the contribution of external events (fire, high winds, external flooding, etc.) to overall risk for findings that may represent a risk of greater than 1E-7 per year. The staff currently develops the method for performing this portion of the analysis on a case-by-case basis, which poses an additional challenge to meeting SDP timeliness. A task group is considering development of a methodology used to account for the added risk contribution from external events. Based on a pilot program, the task group is evaluating two potentially viable methodologies. An assessment tool incorporating one of the methodologies for use by inspectors and SRAs is several years from completion. A dedicated group is developing a simple screening tool that would help inspectors verify that the risk contribution from external initiators is minimal as part of the reactor safety Phase 1 process. The staff plans to develop a schedule for completion in 2006.

SDP Performance Metrics—The staff maintains eight metrics to monitor the quality of the SDP. Two of the eight SDP metrics failed to meet program expectations, namely (1) timeliness of final significance determinations and (2) appropriateness and consistency in the regulatory response yielded by the SDP across all ROP cornerstones. The CY 2005 metric report did not include one of the eight SDP metrics, based on a survey of internal stakeholders, because the staff did not conduct an internal survey in CY 2005, consistent with its biennial frequency as defined by IMC 0307.

The percentage of final significance determinations completed within 90 days of transmitting the inspection report increased from 48 percent in FY 2004 to 68 percent in FY 2005, but still did not meet the metric of 85 percent set for FY 2005. However, five of the seven late issues missed the limit by 6 or fewer days, and had they been completed on time, then 91 percent of the final significance determinations would have been timely and the metric would have been met.

The continued negative perception by the majority of external survey respondents that the SDP results do not translate to the same level of significance across all cornerstones resulted in a second failed metric. In particular, the emergency preparedness and public radiation safety SDPs were thought to be deterministic and not appropriately characterized by risk insights. Stakeholders have expressed concern about this issue since the early inception of the ROP. The staff continues to believe that relative parity has been achieved among the cornerstones, based on the potential impact on public health and safety and the designated NRC response to specific findings.

Stakeholder Survey Results—The staff did not conduct an internal survey in CY 2005; therefore, the input to this discussion came solely from the external survey conducted in October 2005. Participants in the external ROP survey included nine industry representatives, four State or local government agencies, seven private citizens or public interest groups, and one anonymous stakeholder. The respondents had the opportunity to answer 18 specific questions and provide general comments on the ROP. Only the sixth question, “Does the Significance Determination Process yield an appropriate and consistent regulatory response across all ROP cornerstones,” directly asked respondents to address the SDP, while responses to most other questions also had some SDP aspect. Most responses to the sixth question skewed towards the negative but for varying reasons. Two believed that the NRC’s handling of the Davis-Besse risk evaluation clearly illustrates the lack of equivalency between the cornerstones. Three responses pointed to the inconsistent outcome between the risk-informed and the more deterministic SDP formats. One respondent stated that a lack consistency exists

but was not sure how to assess the question of equivalency between the cornerstones when considering findings for risk. Similar to the previous assessment period, the responses generally held that the SDP did not yield equivalent results for issues of similar significance in all ROP cornerstones.

Responses to 10 of the remaining 17 survey questions included some additional comments related to the SDP. Most were negative and targeted the following areas: (1) final SDP determinations for issues with greater-than-green significance are not timely and require significant resources, (2) some SDPs are too complex to be understood by the public, and the security SDP is not an open process, (3) the process allows licensees to challenge most significant findings to reduce significance, (4) some SDPs are not sufficiently rigorous or robust to provide accurate/consistent results, (5) the 90-day SDP completion goal is too limiting for licensees to provide good information regarding the findings, and (6) the NRC should require standardized licensee PRAs to reduce uncertainty. Enclosure 6 provides more detail on the results of the external survey.

External stakeholders provided a number of negative comments about the SDP in CY 2005, both in writing and verbally in meetings. Industry representatives generally agree that the SDP is a large improvement over the pre-ROP procedure for assigning risk significance to issues. However, they believe that the process takes too long and requires too much effort, except for those licensees responding to potentially greater-than-green findings. Licensees in the latter category are generally not concerned with timeliness and are willing to expend significant resources to respond to the issue. The staff notes that it does not require a licensee to provide information, but rather offers the opportunity to create an open dialogue and gather the best available information. Other external stakeholders criticize the SDP in part because the probabilistic information used in some significance determinations is not available to the public and because understanding the process requires significant knowledge of reactor safety and PRA, thereby making the process difficult for some stakeholders to follow.

Self-Assessment Conclusions—The staff concludes that the SDP has been effective in contributing to the ROP meeting its goals and intended outcomes. The SDP continues to serve as an essential component of the ROP, although continued improvements are needed. Although timeliness in reaching final significance determinations remains a challenge, the revised and new SDPs, with the associated training, the standardized risk-informed inspection notebooks, the Phase 2 pre-solved tables, the enhanced SPAR models, and other SDP process changes, including use of best available information, are all intended to achieve efficiencies and improve the process.

Assessment Program Evaluation

Scope and Objectives—The staff of the U.S. Nuclear Regulatory Commission (NRC) evaluated the assessment program in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program." The staff used self-assessment metrics and other pertinent information to provide insights regarding the effectiveness of the Reactor Oversight Process (ROP) in fulfilling the regulatory principles of being objective, risk-informed, understandable, and predictable, as well as ensuring safety, openness, and effectiveness. The staff also obtained input from internal stakeholders through counterpart meetings, focus groups, and the internal feedback process. In addition, the staff obtained external feedback through a *Federal Register* solicitation for comments and through periodic meetings with the industry and other stakeholders.

Based on the metric results, stakeholder feedback, and other lessons learned through ongoing program monitoring, the staff identified certain issues and actions to further improve the assessment program. Enclosure 5 contains a complete listing of implementation issues and their status. In addition, the annual ROP performance metric report, available through the Agencywide Documents Access and Management System (ADAMS), provides the data and staff analysis for each of the program area metrics (reference ADAMS Accession No. ML060590135).

Summary of Previous Self-Assessment—In SECY-05-0070, "Reactor Oversight Process Self-Assessment for Calendar Year 2004," issued April 25, 2005, the staff described the status of the ROP assessment program and identified issues for staff action during calendar year (CY) 2005. The SECY paper and the subsequent staff requirements memorandum (SRM) identified several significant issues, including (1) the need to monitor and improve the existing guidance with regard to substantive cross-cutting issues, (2) monitor the effectiveness of the revised guidance for staff actions when plants transition out of the increased oversight columns of the Action Matrix, and (3) monitor the effectiveness of the revised guidance for considering the conclusions of independent reviews in order to self-assess the NRC's inspection and assessment processes. As a result of the CY 2004 self-assessment, the staff committed to further improve existing guidance related to cross-cutting issues to support the midcycle review meetings in August 2005.

Substantive Cross-Cutting Issues—In CY 2004, the staff revised the guidance regarding substantive cross-cutting issues in IMC 0305, "Operating Reactor Assessment Program," to address Commission direction and to incorporate lessons learned from implementation during the midcycle and end-of-cycle review meetings. Following the end-of-cycle review meetings in February 2005, the staff concluded that the cross-cutting issue guidance was more consistently implemented across the regions. However, the end-of-cycle review meetings revealed additional lessons learned and the industry showed significant interest in this area during the March 2005 Regulatory Information Conference. Based upon further evaluation and discussions with regional management, the staff revised IMC 0305 in November 2005 to clarify the development and treatment of substantive cross-cutting issues, provide better definitions of the human performance and problem identification and resolution sub-categories, and clarify the exit criteria for substantive cross-cutting issues. Additionally, the staff revised Appendix E to IMC 0612, "Power Reactor Inspection Reports," to include examples of cross-cutting aspects

associated with sample findings. Stakeholders have responded positively to these revisions, as noted in the external survey. The staff will closely couple future revisions regarding cross-cutting issues with the efforts of the safety culture working group.

Evaluating Safety Culture—In SECY-04-0111, "Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscious Work Environment and Safety Culture," issued July 1, 2004, the staff provided the Commission with the status of the staff's efforts to prepare a safety-conscious work environment (SCWE) guidance document discussing best practices and to provide options for enhancing NRC oversight of SCWE issues and the broader area of safety culture. The Commission responded in an SRM on August 30, 2004, and provided further clarification in another SRM on December 21, 2005, that directed the staff to take actions in the SCWE and safety culture areas.

The staff has been working to develop an approach with involvement of internal and external stakeholders to enhance the treatment of cross-cutting areas in the ROP and in supplemental procedures to more fully address safety culture. The planned approach is within the ROP framework and is consistent with ROP basic regulatory principles. The staff expects to accomplish the safety culture enhancements to the cross-cutting areas and selected inspection procedures and manual chapters by May 2006, conduct training for regional inspectors and management by June 2006, and fully implement the enhancements by July 2006.

Evaluation of Action Matrix Deviations—As requested by the Commission and incorporated into the self-assessment program, the staff reviewed the causes of the four Action Matrix deviations during CY 2005 and evaluated them for potential improvements to the program. The following summarizes these evaluations.

(1) The NRC issued a deviation for the Davis-Besse plant in May 2005 to allow for an increased level of oversight as Davis-Besse transitioned out of the process outlined in IMC 0350, "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns," to the normal ROP assessment process on July 1, 2005. Based on a review of this deviation, the staff revised IMC 0305 to allow the regional offices to use additional followup actions for plants that are exiting the IMC 0350 process. This revision allows the regional offices to use some of the actions that are consistent with the multiple/repetitive degraded cornerstone or degraded cornerstone columns of the Action Matrix for a period of 1 year after the original findings have been resolved. These actions, which now do not constitute a deviation from the Action Matrix, include: (1) senior management participation at periodic meetings and site visits that are focused on reviewing the results of licensee improvement initiatives, such as efforts to reduce corrective action backlogs and progress in completing the Performance Improvement Plan; (2) limited Inspection Procedure (IP) 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," activities and confirmatory action letter followup inspections beyond the baseline inspection program; (3) senior management attendance at the annual public meetings; and (4) signature authority for the subsequent assessment letters. These actions were previously made available for plants exiting the multiple/repetitive degraded cornerstone of the Action Matrix. The programmatic changes made as a result of this deviation will prevent the need for similar deviations in the future.

(2) The NRC issued a deviation for the Salem/Hope Creek plants in July 2005 to renew the August 2004 deviation to provide heightened NRC oversight to closely monitor the licensee's

actions to address significant SCWE issues. The actions taken at Salem/Hope Creek were considered in the NRC's safety culture initiative described above. Programmatic changes will be made as a result of that initiative that are expected to prevent the need for similar deviations in the future.

(3) The NRC issued a deviation for the Indian Point 2 plant in October 2005 to closely monitor the utility's performance in addressing issues associated with the spent fuel pool, including onsite tritium contamination, and improving the reliability and availability of the alert and notification system, including implementation of the backup power requirements in the Energy Policy Act of 2005. This deviation addressed a variety of performance issues unique to the site and represented a customized approach as envisioned in IMC 0305. The staff does not anticipate any programmatic changes to the assessment program as a result of this deviation, although on-site tritium issues may be a generic concern that could result in safety issue inspections in the future.

(4) The NRC issued a deviation for the Point Beach plant in December 2005 to waive the requirement for a separate supplemental inspection for a finding of white significance in the emergency preparedness cornerstone. The NRC previously inspected the performance deficiency associated with this finding in accordance with IP 95003 and its attachment 95003.01, "Additional Emergency Preparedness Cornerstone Inspection." Ongoing investigations by the Office of Investigations and the Department of Justice delayed the formal NRC technical resolution for this finding. In addition, the finding related to an old inspection item did not reflect current licensee performance; therefore, this deviation represented a unique situation. The NRC does not anticipate any programmatic changes as a result of this deviation.

Independent Assessments of Plant Performance—The Davis-Besse Lessons Learned Task Force (DBLLTF) recommended that the staff identify alternative mechanisms to independently evaluate plant performance as a means of self-assessing NRC processes (reference DBLLTF item 3.3.3(1)). The staff revised program guidance to address this concern. Specifically, the revision requires that the midcycle and end-of-cycle review meetings consider conclusions of independent evaluations, such as the Institute of Nuclear Power Operations (INPO) and the International Atomic Energy Agency (IAEA) Operational Safety Review Team inspections, in order to self-assess the NRC's inspection and assessment processes. The staff plans to evaluate the effectiveness of this program change in CY 2006.

IMC 0350 Process Improvements and Implementation—As noted in SECY 05-0070, the staff revised IMC 0350 to address DBLLTF recommendations and anticipated making further revisions as a result of recommended improvements developed by the Davis-Besse Oversight Panel. As required by IMC 0350, the Davis-Besse Oversight Panel provided several recommendations and valuable insights in a memorandum in July 2005. The staff incorporated these recommended improvements into the most recent revision to IMC 0350 in December 2005. Regarding process implementation, the staff notified the licensee in a letter dated May 19, 2005, of its intentions to disband the Davis-Besse Oversight Panel and transition from the IMC 0350 process back to the ROP (reference ADAMS Accession No. ML051400049). No additional plants were under the IMC 0350 process in CY 2005.

Assessment Program Performance Metrics—For the period covered by this self-assessment, all of the performance metrics in the assessment area met their established criteria or goals with the exception of the number of Action Matrix deviations, which increased in CY 2005 compared

to the past few years. Completed and planned staff actions to address this metric were discussed above. The other assessment program metrics that met their criteria include (1) the number of significant departures from the requirements of IMC 0305 and IMC 0350, (2) the appropriateness of actions taken for greater-than-green performance indicators and findings, (3) the number and scope of any additional actions recommended at the Agency Action Review Meeting, (4) the number of timeliness goals for the assessment program that are not met, (5) the timeliness and availability of assessment letters in ADAMS and on the NRC's Web site, (6) the number of revisions to IMC 0305 and IMC 0350, (7) the timeliness of completing supplemental inspections for risk-significant performance indicators and inspection findings, and (8) the number of instances in which plants move more than one column to the right in the Action Matrix from one quarter to the next. Two other metrics, discussed below, evaluate feedback received from stakeholders.

Stakeholder Survey Results—The staff did not conduct an internal survey in CY 2005; therefore, the input to this discussion came solely from the external survey conducted in October 2005. Participants in the external ROP survey included seven private citizens or public interest groups, nine industry representatives, four State government agencies, and one anonymous individual. The survey asked participants (1) if the ROP takes appropriate actions to address performance issues for those licensees that are outside of the licensee response column of the Action Matrix and (2) if the information contained in assessment reports is relevant, useful, and written in plain language.

The industry and States generally agreed that the NRC has taken appropriate actions for plants outside of the licensee response column. Some public interest groups criticized NRC actions, expressing specific concerns with NRC actions at plants with significant performance problems, such as Cooper, Davis-Besse, and Perry. Overall, the level of external stakeholder satisfaction in this area was generally favorable and similar to previous years.

The industry and States generally agreed that the information contained in assessment reports is relevant, useful, and written in plain English. One public interest group stated that the assessment letters contained too much boilerplate information that precluded substantive insights about performance at individual sites. The level of external stakeholder satisfaction in this area was generally favorable and similar to previous years. Enclosure 6 provides more detail on the results of the external survey.

Self-Assessment Conclusions—The staff concludes that the assessment program has met the goals and intended outcomes of the ROP based on the metric results, stakeholder feedback, and other lessons learned through ongoing program monitoring. The most significant work on the assessment program in CY 2006 will include implementing the changes associated with Commission's direction on enhancing the ROP to more fully address safety culture. Additionally, the staff plans to closely monitor the effectiveness of (1) staff actions if and when the Point Beach and Perry plants transition out of the increased oversight columns of the Action Matrix and (2) the inclusion of independent reviews such as the INPO and IAEA inspections in order to self-assess the NRC's inspection and assessment processes during the midcycle and end-of-cycle review meetings.

Status of Implementation Issues

This enclosure provides a consolidated summary of Reactor Oversight Process (ROP) actions by program area. Table 1 notes those issues that were closed during calendar year (CY) 2005 and will not be carried forward into next year's self-assessment. The reference column denotes the origin of each issue and/or the last official document that discussed the issue, including SECY documents, staff requirements memoranda (SRMs), Davis-Besse Lessons Learned Task Force (DBLLTF) items, the audit by the Office of the Inspector General (OIG), and others. The respective program area assessments or other areas of the paper discuss the actions by the staff of the U.S. Nuclear Regulatory Commission (NRC) to address the issues listed in the table, as noted in the status column.

TABLE 1
CONSOLIDATED SUMMARY OF ROP ACTIONS BY PROGRAM AREA

Issue	Reference	Status
Performance Indicator (PI) Program		
Continue to work closely with stakeholders to implement the Mitigating Systems Performance Index (MSPI) as a replacement for the safety system unavailability PI	SECY-05-0070	In progress, see Enclosure 1
Consider potential unintended consequences of the unplanned power change PI	SECY-05-0070	In progress, see Enclosure 1
Develop improved barrier integrity PIs, particularly a reactor coolant system leakage PI	SECY-05-0070, DBLLTF item 3.3.3.3	In progress, see Enclosure 1
Clarify the guidance for the safety system functional failure PI	SECY-05-0070	In progress, see Enclosure 1
Reassess the possibility of using deterministic rather than risk-based thresholds for the initiating events PIs	SECY-05-0070, SRM dated 12/20/01	In progress, see Enclosure 1
Pursue the development of PIs for the cross-cutting issues	SECY-05-0070	On hold, see Enclosure 1
Continue to evaluate the scrams with loss of normal heat removal PI	SECY-05-0070	In progress, see Enclosure 1
Continue reassessment of the PI program, including the need to develop new indicators to supplement or replace the existing indicators, enhancements to the frequently asked question process, and whether some PI thresholds should be performance based rather than risk-informed	SECY-05-0070	In progress, see Enclosure 1

Issue	Reference	Status
Work with stakeholders to develop clear requirements for PIs so that they indicate performance within the related cornerstone of safety	SRM dated 05/27/04	In progress, see Enclosure 1
Evaluate potential improvements to the reactor coolant system activity PI	SECY-05-0070	In progress, see Enclosure 1
Reevaluate the containment leakage PI and consider reinstating it	SECY-05-0070	In progress, see Enclosure 1
Interact with the Nuclear Energy Institute and other stakeholders at a senior management level to discuss steps to improve the effectiveness and efficiency of the PI program	SECY-05-0070	In progress, see Enclosure 1
Consider further improvements to PIs, in addition to efforts described in the ROP self-assessment, to give the NRC good indicators of performance in which to focus inspection resources	SRM dated 06/30/05	In progress, see Enclosure 1
Ensure that the MSPI process is as transparent as possible to external and internal stakeholders	SRM dated 06/30/05	In progress, see Enclosure 1
Inspection Program		
Develop inspection guidance to ensure the adequacy of pressurized-water reactor plant boric acid corrosion control programs	SECY-05-0070, DBLLTF item 3.2.2.1	Complete, see Enclosure 2
Conduct pilot program to ascertain feasibility of the licensee self-assessment process	SECY-05-0070	On hold, see Enclosure 2
Report the results of the pilot inspection program used to evaluate the effectiveness of the baseline inspection procedure (IP) consolidation effort	SECY-05-0070	Complete, see Enclosure 8
Perform a program review to understand the reasons for regional differences in expenditure rates and identify best practices for conducting inspections	SECY-05-0070	In progress, see Enclosure 8
Continue to monitor resident inspector demographics and report to the Commission	SECY-05-0070, SRM dated 04/08/98	Ongoing, see Enclosure 9
Assess the results of the pilot engineering design inspections and develop recommendations for Commission consideration in fiscal year (FY) 2005 to improve their effectiveness	SECY-05-0070	Closed, see Enclosure 2

Issue	Reference	Status
Evaluate the effectiveness of the significant revisions to the problem identification and resolution and fire protection IPs and adjustments to several other IPs regarding procedure scope, frequency, and level of effort. Continue to improve major program guidance as a result of stakeholder feedback and lessons learned	Office of Nuclear Reactor Regulation commitment in its management control plan (reference ADAMS Accession No. ML043370410)	Closed, see Enclosure 2
Perform a more detailed analysis of the scope and level of effort of the IPs in CY 2005 and adjust existing resources within the baseline inspection program for CY 2006	SECY-05-0070	Closed, see Enclosure 2
Evaluate the number of inspection findings identified during FY 2005 to determine whether the trend continues to increase and to identify potential contributors	SECY-05-0070	Closed, see Enclosure 2
Incorporate the recommendations made by OIG as a result of its audit of the baseline inspection program	OIG audit of baseline inspection program (OIG-05-A-06)	In progress, see Enclosure 2
Significance Determination Process (SDP)		
Standardize the site-specific risk-informed inspection notebooks and develop the pre-solved Phase 2 tables	SECY-05-0070	Closed, see Enclosure 3
Continue efforts to obtain improved and standardized risk analysis tools	SECY-05-0070	Ongoing, see Enclosure 3
Develop an SDP for maintenance rule implementation	SECY-05-0070	Closed, see Enclosure 3
Develop an SDP for spent fuel storage	SECY-05-0070	In progress, see Enclosure 3
Improve the capability to assess the impact of external events on operating reactor safety-related issues	SECY-05-0070	In progress, see Enclosure 3
Continue to monitor and make planned SDP improvements via the SDP Improvement Plan	SECY-05-0070, Director's Quarterly Status Report	In progress, see Enclosure 3
Perform an evaluation of the effectiveness of the recent changes made to improve the timeliness of the fire protection SDP	SRM dated 12/23/04, SECY-05-0070	In progress, see Enclosure 3

Issue	Reference	Status
Assessment Program		
Continue to assess combination of inputs and length of time for consideration in the Action Matrix to ensure appropriate agency response	SECY-05-0070	Ongoing, see Enclosure 4
Make further effort to clarify the guidance on substantive cross-cutting issues	SRM dated 06/30/05, SECY-05-0070	In progress, see Enclosure 4
Enhance the ROP treatment of cross-cutting issues to more fully address safety culture	SRM dated 08/23/04, SECY-05-0070	In progress, see Enclosure 4
Monitor the effectiveness of the revised guidance for defining the threshold for a substantive cross-cutting issue as well as agency followup actions	SECY-05-0070	Closed, see Enclosure 4
Monitor the effectiveness of the revised guidance for staff actions when plants transition out of increased oversight columns in the Action Matrix	SECY-05-0070	In progress, see Enclosure 4
Monitor the effectiveness of the revised guidance for considering conclusions of independent evaluations such as Institute of Nuclear Power Operations and International Atomic Energy Agency inspections in order to self-assess the NRC's inspection and assessment processes during the midcycle and end-of-cycle review meetings	SECY-05-0070	In progress, see Enclosure 4
Revise IMC 0350 to address the Davis-Besse Oversight Panel report on recommended improvements to the process	SECY-05-0070	Closed, see Enclosure 4
Communication Activities and Other Program Issues		
Continue to emphasize the importance of effective implementation of a good corrective action program in conferences, workshops, and meetings with licensees	SRM dated 06/30/05	Closed, see Enclosure 6
Continue to make enhancements to the ROP feedback process, to include providing users with the ability to easily view open and closed feedback forms	SECY-05-0070	Closed, see Enclosure 6
Develop an electronic support system for inspectors to help them perform their jobs more efficiently	SECY-05-0070	Closed, see Enclosure 6

Issue	Reference	Status
Continue to explore information technologies to gain inspector efficiencies	SECY-05-0070	Closed, see Enclosure 6
Continue to hold monthly working-level public meetings with external stakeholders to discuss the status of and improvements to the ROP	SECY-05-0070	Ongoing, see Enclosure 6
Continue to assess the impact of the NRC's regulatory actions on licensee operations and report any significant concerns to the Commission	SECY-05-0070	Ongoing, see Enclosure 7
Report on the revised site staffing metric, which was redesigned based on data inconsistencies, in the CY 2005 ROP self-assessment SECY paper	SECY-05-0070	Closed, see Enclosure 9
Revise the ROP self-assessment program to support the new safety performance measures	SECY-05-0070	Closed, see main body of paper
Develop a consolidated response to external stakeholder comments, post it to the ROP Web page, and send it to each respondent to the survey	SECY-05-0070	Closed, see Enclosure 6

Reactor Oversight Process Communication and Training Activities

Scope and Objectives—The staff of the U.S. Nuclear Regulatory Commission (NRC) continued to focus on stakeholder involvement and open communication with the Reactor Oversight Process (ROP) in calendar year (CY) 2005. The staff used a variety of communication vehicles to ensure that all stakeholders have access to ROP information and results and have an opportunity to participate in the process and provide feedback. The monthly public meetings with external stakeholders, the internal feedback process, and biweekly telephone conferences and frequent meetings with internal stakeholders provided valuable insights for program improvements. The staff conducted the annual survey of external stakeholders in CY 2005 to actively solicit and analyze stakeholder feedback regarding the effectiveness of the ROP. The staff also continued its efforts to improve the inspector training programs and techniques in CY 2005, continued to maintain the ROP Web pages, and implemented several initiatives to further improve inspector efficiency. The following discusses several highlights from this past year.

Internal Stakeholder Interface—The Office of Nuclear Reactor Regulation (NRR) staff continued to conduct biweekly conference calls with regional division- and branch-level management to discuss current issues associated with the ROP. In addition, NRR staff met periodically with regional managers to discuss more complex ROP topics and issues. NRR staff also participated in each regions' resident counterparts meeting and made site visits to give regional staff and management the opportunity to discuss ROP implementation and provide feedback.

The internal feedback process, as described in Inspection Manual Chapter (IMC) 0801, "Reactor Oversight Process Feedback Program," also provides a useful means for the NRC staff to identify concerns or issues and recommend improvements related to ROP policies, procedures, or guidance. Timeliness in resolving feedback issues has steadily improved over the past few years and remains a focus for NRR staff. Based on discussions with regional feedback coordinators, the regional staff expressed general satisfaction with the feedback process response time and quality of feedback resolutions. The staff implemented enhancements to the feedback process in CY 2005 by providing users with the ability to easily view open and closed feedback forms on the internal Web page. Further potential improvements include electronic submission of feedback forms and a database search capability.

External Stakeholder Interface—The staff conducted monthly public working-level meetings with the Nuclear Energy Institute (NEI), the industry, and other stakeholders to discuss the status of ongoing refinements to the ROP. In particular, the staff made significant progress in addressing issues with Mitigating Systems Performance Index (MSPI) implementation and improving the frequently asked question process. Several public meetings were also held to discuss the staff's progress in enhancing the ROP to more adequately address safety culture. The staff also conducted public meetings in the vicinity of each operating reactor to discuss the results of the NRC's annual assessment of the licensee's performance. These meetings provided an opportunity to engage interested stakeholders on the performance of the plant and the role of the agency in ensuring safe plant operations. The staff also sponsored three breakout sessions at the Regulatory Information Conference (RIC) in March 2005 on the topics of cross-cutting issues, performance indicators, and the ROP in general. Participants

discussed additional ROP topics at the 2006 RIC in March 2006, including the inspection program, the assessment program, and safety culture. The RIC sessions and public meetings have resulted in valuable feedback for the staff. As directed by the Commission, the staff continued to emphasize the importance of the effective implementation of a good corrective action program while participating in conferences, workshops, and meetings with licensees, such as the Corrective Action Program Owners Group meetings. The NRC monitors compliance with this fundamental premise of the ROP via Inspection Procedure (IP) 71152, "Identification and Resolution of Problems," and considers this action closed.

Stakeholder Survey Results—Consistent with the guidelines prescribed by IMC 0307, "Reactor Oversight Process Self-Assessment Program," the staff conducted an external survey during this self-assessment cycle to solicit and analyze stakeholder feedback regarding the effectiveness of the ROP. In accordance with the IMC, the NRC conducts the internal survey every other year; therefore, it was not conducted during this ROP cycle. However, as discussed further in the section on inspector training below, the staff administered an internal survey specifically focused on training effectiveness. The staff plans to conduct the biennial internal survey in CY 2006 and will incorporate relevant questions regarding inspector training.

The following provides a general analysis of the stakeholder responses to the external survey. The annual ROP performance metric report, available through the Agencywide Documents Access and Management System (ADAMS), and the applicable performance area discussions in Enclosures 1 through 4 to this paper provide a more detailed analysis (reference ADAMS Accession No. ML060590135).

The staff published a survey in a *Federal Register* notice on October 21, 2005, to obtain external stakeholder input regarding the effectiveness of the ROP. In addition, the staff (1) mailed approximately 700 surveys directly to stakeholders, (2) placed a direct link to the survey information on the ROP Web page, and (3) issued a press release and posted it on the NRC's external Web site. The survey requested responses to 19 specific questions corresponding to specific ROP performance metrics as defined in IMC 0307.

The survey used this year was very similar to that used in previous years. The survey continued to use multiple-choice answers and made only minor changes to a few questions. In addition, as in the past year, the survey asked participants to elaborate on their multiple-choice ratings with specific thoughts or concerns and to offer their opinions on possible improvements.

The NRC received 21 responses to the external survey. This number of responses is comparable to the 21 received in 2004 and the 18 received in 2003 from individuals and/or organizations. As in previous years, the NRC received responses from three distinct categories of external stakeholders—members of the public or public interest groups (seven responses), state or local agencies (four responses), and the industry or industry organizations (nine responses). One anonymous respondent also provided feedback. The following lists responses in the order received and includes the ADAMS accession number for the comments in parentheses after the respondent's name:

(1)	AMEC Earth & Environmental, Inc.	(ML052990251)
(2)	Senior Nuclear Industry Consultant	(ML053040030)
(3)	Pannell Consulting	(ML053040032)

(4)	T. Gurdziel	(ML053040034 & ML053040036)
(5)	Georgia Environmental Protection Division	(ML053040070)
(6)	Nuclear Management Company	(ML053040072)
(7)	Exelon, Kennett Square, PA	(ML053040062)
(8)	First Selectman of Connecticut	(ML053220250)
(9)	Alabama Emergency Management Agency	(ML053360410)
(10)	Greenpeace	(ML053360474)
(11)	Region IV Utility Group	(ML053430120)
(12)	Nuclear Management Company, LLC	(ML053430121)
(13)	Exelon, Byron Station	(ML053190067)
(14)	Union of Concerned Scientists	(ML053430122)
(15)	Nuclear Energy Institute	(ML053430124)
(16)	Anonymous	(ML053430123)
(17)	Strategic Teaming and Resource Sharing	(ML053430125)
(18)	AmerGen & Exelon	(ML053500119)
(19)	Region 5/6 Emergency Management	(ML053630061)
(20)	Southern California Edison	(ML053640300)
(21)	TMI Alert/EFMR Monitoring	(ML060250245)

Overall respondent satisfaction showed no dramatic improvements or declines between the initial and current ROP implementation. Most respondents provided grades to the multiple-choice questions, and many provided comments on the grades. The survey responses were generally consistent with many comments from previous years, as were the number and distribution of the responses.

In past years, the staff had received feedback indicating that it was unresponsive to survey comments. To address this concern, the staff consolidated the comments by question and provided a comprehensive response to each question in the CY 2004 survey (reference ADAMS Accession No. ML052090158). The staff received positive feedback on the consolidated response from several stakeholders in this year's survey. As in previous years, the staff will acknowledge receipt of each survey response by correspondence indicating that the staff has considered and generally addressed the comments in this paper, as appropriate. In addition, the staff will post this paper, the annual ROP performance metric report, and a consolidated response to the CY 2005 external survey to the ROP Web page and will send them, as well as an acknowledgment letter, to each survey respondent.

In order to gain further efficiencies, and because the comments and staff analysis have tended to repeat the same themes from year to year, the staff is considering a change in the frequency of the external survey to every other year, consistent with the internal survey. As such, one year's ROP performance metrics and self-assessment would include survey inputs and analysis from internal stakeholders, and the following year would include external survey inputs and analysis. Regardless, internal and external feedback will be considered each year based on continuous feedback during meetings, the feedback process, and other venues as described above. The staff plans to solicit feedback from external stakeholders before implementing this proposed change in survey frequency.

Inspector Training—The staff continued its efforts to improve the initial and continuing inspector training programs as described in IMC 1245, "Qualification Program for the Office of Nuclear Reactor Regulation (NRR) Programs." The primary goal of IMC 1245 is to produce and

maintain well-qualified, competent inspectors. During CY 2005, the IMC 1245 working group developed and distributed the first survey on inspector training effectiveness, in part to address a recommendation from the Effectiveness Review of Lessons Learned Task Force report of August 2004 (reference ADAMS Accession No. ML042110287). The biennial internal ROP survey will incorporate the inspector training effectiveness survey. The staff intends the survey to improve the initial and continuing training of inspectors by gathering input from (1) new inspectors on the quality and appropriateness of the inspector training program, (2) managers of qualifying inspectors on the new inspector training, and (3) experienced inspectors on the continuous training provided and the refresher training required by IMC 1245. The IMC 1245 working group will review the results of the inspector training effectiveness survey and will consider and implement, as appropriate, recommendations and insights gained from the survey.

The responses to the 2005 inspector training effectiveness survey highlighted the role regional managers have in creating and maintaining an environment that encourages inspectors to identify issues and improve the inspection program. Of the 143 inspector respondents, 70 percent indicated that their management was very receptive to discussing issues that did not immediately fit into one of the ROP IPs. In addition, comments provided in response to the question, "How does NRC management encourage a questioning attitude," indicated three actions that are instrumental in creating an environment that encourages inspectors to maintain a questioning attitude. These include (1) branch chief engagement through listening to inspectors and asking questions, (2) recognition through awards, performance appraisals, and value-added findings, and (3) discussions of value-added findings during daily branch meetings and inspector counterpart meetings.

In CY 2005, the staff developed and distributed Web-based training courses to inform inspectors about new and revised program documents, including IMCs 0609, "Significance Determination Process," and 0612, "Power Reactor Inspection Reports." The staff also conducted Web-based annual ROP refresher training that focused on substantive cross-cutting issues. The Web-based training courses remain available on the training Web page to be used by new inspectors as part of the initial inspector qualification process and by qualified inspectors as an inspection resource.

The IMC 1245 management steering group and working group annually review the effectiveness of inspector training through feedback forms, results of the inspector oral boards, and regional experience. The groups recommend improvements and revisions and implement them as appropriate. For example, in response to the audit by the Office of the Inspector General (OIG) of the baseline inspection program, Appendix A, "Reactor Operations Inspector Technical Proficiency Training and Qualification Journal," to IMC 1245 was revised to include a postqualification requirement for the reactor operations inspector (resident inspector) to receive vendor-specific training for the assigned facility.

ROP Web Pages—The staff effectively used the ROP Web pages to communicate accurate and timely ROP information to all stakeholders. The staff revised IMC 0306, "Information Technology Support for the Reactor Oversight Process," in 2005 to (1) incorporate recommendations from a recent OIG audit of the Reactor Program System, (2) clarify the uses

and definitions of several terms to ensure consistent application, (3) clarify the process for initiating and updating inspection finding information in the Reactor Program System, and (4) relocate several of the detailed attachments and tables to the internal ROP Web page for easier revision and maintenance.

The staff successfully used the external ROP Web page to post plant assessment results and to disseminate useful information to the public as needed. The internal ROP Web page, known as "ROP Digital City," continued to serve as a hub for inspectors to the various types of available information, including read-and-sign training, the inspector newsletter, reactor operating experience, and draft guidance. Some stakeholders have complained about the difficulty in navigating through the NRC external Web site to find the relevant ROP information. However, the performance metrics and positive feedback from both external and internal stakeholders indicate that the ROP Web pages themselves are useful, accurate, and timely. The staff will consider any specific recommendations to further improve the presentation and organization of the ROP-related information on the Web.

Initiatives to Improve Inspector Efficiency—Led by Region IV, the staff issued NUREG/BR-0326, "NRC Inspector Field Observation Best Practice," as a pocket reference guide in November 2005 to serve as a knowledge management tool in response to an initiative by the NRC Executive Director for Operations. Inspectors developed the booklet to combine the best practices of all four regions. The booklet consists of two parts—guidance on plant inspections and useful inspection tips. The NRC distributed the booklet to all inspectors and posted it on the ROP Digital City Web site.

The NRC implemented the Inspector Community Forum, an electronic Web-based knowledge management tool, in late March 2005 as an information resource for inspection preparation and to broaden inspector communication networks. The Inspector Community Forum enhances the depth and efficiency of inspection preparation by storing current IPs, related generic communications, and other useful inspection-related information. The Inspector Community Forum also functions as a messaging board to facilitate communications between inspectors. At the end of CY 2005, the forum had 109 registered users and 86 posted messages. The program office monitors forum use and looks for ways to incorporate insights gained from the operating experience program.

The inspector newsletter continues to receive positive feedback from inspectors and management. The NRC issues the electronic newsletter bimonthly and posts it on the internal ROP Web page. The staff did not conduct any information technology pilot studies this year. However, the staff will explore additional technologies and pilot programs to further improve inspector efficiency and effectiveness as needs are identified.

Regulatory Impact Summary

Scope and Objectives—In 1989, the U.S. Nuclear Regulatory Commission (NRC) conducted a comprehensive regulatory impact survey and reported the results and corrective actions in SECY-91-172, "Regulatory Impact Survey Report—Final," issued June 7, 1991. On December 20, 1991, the Commission issued a staff requirements memorandum directing the staff to develop a process for obtaining continual feedback from licensees and report the feedback on the process to the Commission each year.

The staff described the continual feedback process in SECY-92-286, "Staff's Progress on Implementing Activities Described in SECY-91-172, Regulatory Impact Survey Report—Final," issued August 18, 1992. The feedback process requires the regional division directors and their deputies to solicit informal feedback from their licensee counterparts during routine visits to reactor sites. The managers record this feedback and forward the feedback forms to the Office of Nuclear Reactor Regulation (NRR). The regions and NRR then evaluate the concerns identified and take any necessary corrective actions. NRR evaluates this feedback along with other comments, such as from limited-scope surveys, to determine appropriate generic followup actions. This process, which was implemented in October 1992, has given licensees frequent opportunities to comment on regulatory impact.

In response to the October 1994 nuclear regulatory review study by Towers Perrin, the NRC implemented two additional feedback paths on July 11, 1995. Specifically, the Office of the Executive Director for Operations (OEDO) established a formal process by which power reactor licensee senior officials could report directly to OEDO regarding any regulatory actions that they considered inappropriate. In addition, each region developed a process for addressing concerns related to inappropriate regulatory actions by the NRC staff. Through this process, the regions receive, act on, resolve, or forward to other authorities (e.g., the NRC's Office of the Inspector General (OIG)) allegations of inappropriate actions by members of the NRC staff who are involved in inspections or other matters related to NRC-licensed activities.

Last year, as part of the "Roles & Responsibilities" initiative directed by the Commission, Region II led a regional effort to better align manager responsibilities during site visits with strategic plan goals. This initiative resulted in revised manager responsibilities and revised reporting of regulatory feedback.

This enclosure reports on feedback received from licensees from September 1, 2004, through August 31, 2005[1]. During this period, the staff received feedback from 91 reactor licensees on 253 issues. The staff also received feedback from the Regulatory Information Conference (RIC) in March 2005. Of the comments received, 83 percent were favorable and 17 percent were unfavorable. The comments fell into three main categories—formal communication with licensees, inspector performance, and security and safeguards activities.

[1]Note that in calendar year 2006, the staff plans to realign the regulatory impact reporting period to coincide with the fiscal year.

The following sections summarize the feedback received, the staff's evaluation, and the proposed improvement actions.

A. Solicited Feedback

(1) Formal Communication with Licensees

Feedback

Almost one-half of the licensees' comments concerned the effectiveness of communication between the NRC staff and licensees, and more than 90 percent of these comments were favorable (up from 83 percent last year). Almost all comments were favorable with regard to communications with inspectors and regional management.

Many licensees said that communication was good or excellent, and others noted that the staff's communication skills have improved. Half of the unfavorable comments related to communication to resolve several complex regulatory issues at a specific site.

Evaluation and Action

The staff concludes that the communication between the NRC and its licensees is effective and that the reported communication problems were isolated instances. The staff based this conclusion on the large number of routine interactions between the NRC and its licensees, combined with the large number of favorable comments and the relatively small number of unfavorable comments received during the past year.

The staff is aware of the importance of prompt and accurate communication and emphasizes this goal in the policy, guidance, and training for the inspection program. Effective communications will remain a challenge and will receive continuing attention from regional and NRR management.

(2) Inspector Performance

Feedback

Over one-third of the licensees' comments concerned inspector performance. This category covers a wide range of inspector practices but excludes issues involving communication with licensees discussed in the previous section. More than 90 percent of the comments praised the NRC's inspection staff, noting the high quality of inspections, the technical competence, and the effective working relationship between the NRC and its licensees.

Licensees viewed inspections performed by resident and region-based inspectors (including team inspections) as professional and of high quality. Licensees had unfavorable comments on a number of different subjects, such as the effectiveness of an inspector exit meeting and the criteria to identify cross-cutting aspects.

Evaluation and Action

The staff concludes that inspectors were generally professional and maintained effective working relationships. The percentage of favorable comments received this year was about the same as reported last year. The negative feedback was reviewed for trends and found to be isolated; therefore, no actions are needed at this time.

NRC management continues to emphasize to the staff the importance of proper behavior and demeanor. The NRC's Organizational Values and Principles of Good Regulation address standards for staff professionalism and behavior. Senior NRC managers reinforce these expectations in inspector counterpart meetings, workshops, and training courses and during site visits conducted in accordance with Inspection Manual Chapter 0102, "Oversight and Objectivity of Inspectors and Examiners at Reactor Facilities." The NRC's ongoing emphasis on proper behavior should result in improved working relationships between inspectors and licensees. The staff will continue to closely monitor inspector performance.

(3) Security and Safeguards Activities

Feedback

Almost 10 percent of the comments received related to the NRC's security and safeguards activities and about three-quarters of those comments were unfavorable. Although some licensees complimented the effectiveness of the force-on-force exercises, the majority of licensees desired more stability and consistency with the process and expressed concerns with the number of regulatory changes in this area. Specifically, licensees stated that the changing regulatory environment for security and safeguards leads to unclear expectations, consistency issues, and higher costs.

Evaluation and Action

The Office of Nuclear Security and Incident Response has placed a high priority on communicating with licensees and other Federal agencies, including the Department of Homeland Security, the Homeland Security Council, the Federal Bureau of Investigation, and the intelligence community. This includes, in part, assessment of and response to the changing elevated threat environment, review and inspection of revised security plans for all 104 nuclear power reactors, and clarification of requirements for orders issued since September 11, 2001. This coordinated effort, lessons learned from program implementation, and ongoing rulemaking activities should help improve consistency and provide for a more stable regulatory environment. The staff also endeavors to continue its outreach efforts with various stakeholders (as appropriate) to help assure timely communication and involvement in regulatory activities.

B. Inappropriate NRC Action Reported to the OEDO or Regional Administrators

As described above, the NRC has a procedure for resolving concerns raised by licensees regarding perceived inappropriate regulatory action by the NRC staff. During this reporting period, OEDO did not receive any reports of inappropriate behavior by NRC employees; however, power reactor licensees reported six cases to the regions.

Feedback

Both cases reported to Region I were substantiated. The one case reported to Region II was referred to OIG, which declined to open a case. No cases were reported to Region III. Of the three cases reported to Region IV, one was substantiated, one was substantiated in part, and one was referred to OIG. The majority of cases involved professional performance issues, such as the inspector's professional skills in conducting inspections or communicating with licensee personnel.

Evaluation and Action

The total number of cases reported in each region has decreased significantly from the 31 cases reported in 1997 and the 26 cases in 1998. For the last 7 years, the number of reported cases has been relatively stable, fluctuating between 6 to 12 cases a year. The staff plans to discontinue future reporting on these cases based on the low and stable number of cases. The regional offices will continue annual assessments in this area in accordance with Management Directive 8.17, "Licensee Complaints Against NRC Employees."

C. Additional Feedback

In addition to soliciting feedback from licensees during site visits, the staff routinely provides opportunities for the industry to report on the impact of NRC programs and processes. During the current reporting period, the staff received feedback at the RIC in March 2005. Topics discussed at the RIC included the reactor oversight process, cross-cutting inspection issues, fire protection issues, safeguards and security issues, grid reliability, and regulatory trends. During an RIC breakout session, licensees from each region discussed issues of interest with the responsible regional administrator. No new issues were identified that this Commission paper has not already discussed.

The staff has made improvements to address regulatory impact concerns and continues to make progress in eliminating activities and practices that inappropriately affect licensee operations. The staff will continue to solicit, evaluate, and address feedback, identify and resolve specific and generic concerns related to the impact of the NRC's regulatory actions on licensee operations, and report any significant concerns to the Commission.

Reactor Oversight Process Resources

Summary of 2005 Resources Used—Table 1[1] provides a summary of staff resources expended for the Reactor Oversight Process (ROP) during the past five annual review periods. The summary includes resources expended for all ROP cornerstones, including security and emergency preparedness activities, in order to maintain continuity and provide a valid comparison with previous years. After a reduction in 2002, inspection effort has increased steadily during the past three inspection cycles.

In SECY-03-0062, "Reactor Oversight Process Self-Assessment for Calendar Year 2002," issued April 21, 2003, the staff reported a significant reduction in the staff hours expended for the ROP in 2002, with the bulk of the reduction in baseline inspection activities. A number of events during the 2002 inspection cycle challenged the ability of the U.S. Nuclear Regulatory Commission (NRC) staff to complete the required baseline inspections. These challenges required regional staff to implement short-term coping strategies that resulted in a reduced baseline inspection effort to complete the program.

The challenges experienced in 2002 continued into 2003; however, assistance from other NRC offices and continuation of the coping measures significantly reduced the impact. Increases in the regional inspection budget in 2004 and beyond and aggressive action by regional offices in filling open inspector positions prevented the difficulties experienced in 2002 and 2003 from extending to the 2004 inspection cycle.

Overall staff effort in 2005 was 5.4 percent higher than in 2004. All areas of the ROP showed an increase, except for performance assessment, which has remained relatively constant during the past few years. The stable level of effort in this area continues to reflect an established process for performance assessment activities.

The baseline inspection effort in 2005 increased 6.1 percent compared with 2004. This increase was generally evenly distributed among all baseline procedures. Plant status activities experienced the largest change because of increased requirements for daily corrective action review and reactor coolant system leakage trend reviews resulting from lessons learned from the Davis-Besse event.

The effort reported for other activities, such as inspection-related travel, is typically a function of that expended for direct baseline inspection and usually tracks the direct baseline inspection effort. In this case, both direct baseline effort and other activities increased 5.4 percent over 2004 levels.

The 2005 inspection effort for generic and safety issues exhibited a significant increase. This increase resulted from the high level of inspection activity associated with temporary

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[1]The ROP is implemented on a calendar-year (CY) basis; however, the staff obtains and reports resource data on a fiscal-year (FY) basis. There is no reason to believe that the results would be appreciably different if resource data were collected and reported on a CY basis.

instructions continuing from 2004 into 2005, primarily in the area of safeguards, grid reliability, and material control and accountability.

The increased inspection effort in 2005 was most likely the result of increased regional inspection activity due to additional requirements that have been imposed on the inspection staff in recent years. These additional requirements include corrective action reviews, activities resulting from Davis-Besse lessons learned, increased generic safety issues inspections, and increased efforts in the areas of safety culture, security, performance indicators, and inspection procedure development. The staff intends to further investigate the reasons for the inspection resource increase over the past few years.

Although the ROP has resulted in improved inspection effectiveness, any efficiency gains that may have been achieved since ROP implementation have been offset by the additional requirements that have been imposed on the inspection staff.

A recent reevaluation of ROP resource needs indicated that the regional inspection budget should increase by 14 full-time equivalent (FTE) staff members. As noted above, this shortage is due to the increased inspection activity and possible unrealized efficiencies that were planned for the regions in previous years. The FY 2007 and FY 2008 inspection budget requests include these additional resources, but the inspection budget for FY 2006 has already been approved. Until the increase in FTE goes into effect in FY 2007, the staff recognizes that inspection resources may be strained. However, the staff anticipates that baseline inspections and other elements of the ROP will be completed as they have been during the past year. The staff will maintain close oversight of resource expenditures during FY 2006 and, if redirection of resources is warranted because of unexpected events, they will be redirected using the planning, budgeting, and performance management (PBPM) process.

2005 Inspection Cycle—The revised resident inspector staffing policy that permits early assignment of new resident and senior resident inspectors to a site and the increased regional inspection budget improved the site staffing levels with experienced and qualified resident inspectors and alleviated the resource burden in completing the baseline inspection program. As in 2004, all four regions completed their baseline inspections in 2005 using existing regional resources without the coping measures that were necessary during the 2002 and 2003 inspection cycles. As a result of these changes and continued aggressive hiring strategies by the regions, the 2005 inspection cycle showed no indication of these previous difficulties.

ROP Resource Model/Regional Inspection Budget—The staff adjusted the ROP resource model in 2004 as a result of experience gained during the 2002 and 2003 inspection cycles. The regional inspection budgets for FY 2004 and beyond reflect these changes. The staff reviews issues related to inspection resources as part of the ongoing ROP self-assessment and adjusts resources as required by program needs.

Current initiatives include a reassessment of the ROP resource model to consider additional plant status activities based on the reactor coolant system leakage review required as a result of the lessons learned from the Davis Besse event and other emerging requirements, and includes a “unique site” designation in addition to single-, dual-, and triple-unit sites. This revised model was used to develop the FY 2008 inspection budget request as described above.

The staff has reviewed the inspection data and model for the Millstone (MILL), Indian Pont (IP), Nine Mile Point (NMP), and Beaver Valley (BV) sites as part of an overall reevaluation of inspection resource requirements for a number of dual-unit sites that are unique because of their design, vintage, or operational differences between the units. For MILL, NMP, and BV, Region I has recommended that the Office of Nuclear Reactor Regulation (NRR) approve a unique site model to account for the additional ROP implementation requirements at these sites. NRR is currently evaluating this model. For IP, Region I recommends maintaining the current two, single-unit site model as site consolidation efforts progress. Region I and NRR will periodically assess efficiencies that could be gained as licensees at unique sites continue to implement integration strategies.

This unique site approach may also apply to Arkansas Nuclear One, Units 1 and 2. The staff is currently piloting and will evaluate the impact of this unique site model on regional inspection resource requirements and the resulting implications for the regional inspection budget at BV, MILL, and NMP during the 2006 inspection cycle. If a mid-cycle review concludes that this approach has merit, the staff will factor it into the ROP resource model for future budget formulation.

Additional ROP Initiatives—During CY 2005, the staff began to review regional inspection practices with the following objectives:

- to understand the reasons for regional differences in resource expenditure rates for the ROP and to identify best practices in conducting inspections

- to ensure that regional policies and practices are consistent with ROP program policy

- to solicit regional feedback regarding the extent of headquarters support provided to the regions and to make recommendations for improvements

NRR staff visited Regions I and II in 2005 and intend to visit the other two regions during the 2006 inspection cycle.

As discussed in other sections of this paper, the staff is currently pursuing a number of initiatives that may improved program effectiveness. These initiatives include a realignment of resources allocated to the individual baseline inspection procedures, revised engineering design inspections, pilot implementation of the “unique site” budget models, continued improvements in the significance determination process, and implementation of the Mitigating Systems Performance Index program.

TABLE 1
RESOURCES EXPENDED
(TOTAL INSPECTION-RELATED STAFF EFFORT EXPENDED AT OPERATING POWER REACTORS)

	52 weeks FY 2001 09/24/00–09/22/01	52 weeks FY 2002 09/23/01–09/21/02	52 weeks FY 2003 09/29/02–09/27/03	52 weeks FY 2004 09/28/03–09/25/04	52 weeks FY 2005 09/26/04–09/24/05	% Δ FY 2004–2005
Baseline/Core						
Direct Inspection Effort	130,330	119,884	123,027	133,028	140,248	5.4%
Inspection Prep/Doc	109,227	91,385	91,230	100,904	106,875	5.9%
Plant Status	46,191	44,228	46,755	51,073	55,378	8.4%
Subtotal	285,748	255,497	261,012	285,005	302,501	6.1%
Plant-Specific Inspections						
Direct Inspection Effort	8,436	9,354	14,647	12,720	13,942	9.6%
Inspection Prep/Doc	6,161	7,715	9,978	9,971	8,832	(11.4)%
Subtotal	14,597	17,069	24,625	22,691	22,774	0.4%
GSI/SI	918	1,718	3,953	7,293	9,980	36.8%
Performance Assessment	19,845	17,293	20,013	21,261	19,284	(9.3)%
Other Activities (Inspection-Related Travel, Routine Communication, Regional Support, Enforcement Support, Significance Determination Process, Review of Technical Documents)	49,471	43,627	48,058	54,040	56,951	5.4%
Total Staff Effort	370,579 h	335,204 h	357,661 h	390,290 h	411,490 h	5.4%
Total Staff Effort/Operating Site	5,531 h/site	5,003 h/site	5,338 h/site	5,825 h/site	6,142 h/site	

Resident Inspector Demographics and Site Staffing

Scope and Objectives—This enclosure provides the annual update on demographic data for inspectors assigned to the resident inspector (RI) program, as the Commission directed in a staff requirements memorandum issued April 8, 1998. This analysis seeks to determine whether the agency's actions associated with the RI program have resulted in a stable or increasing resident experience base and to identify any necessary actions. This enclosure also provides an update on site staffing.

RI Demographic Data—The U.S. Nuclear Regulatory Commission (NRC) staff review of the demographics included analysis of the overall program data for the RI and senior RI (SRI) groups (see Tables 1 and 2, as well as Figures 1 and 2). The staff used median values from the month of November in 2001, 2002, 2003, 2004, and 2005 for statistical comparison.

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

(1) "NRC time" is the total number of years the individual has accumulated as an NRC employee.

(2) "Total resident time" is the total number of years the individual has accumulated as an RI or SRI.

(3) "Qualified total resident time" is the time the individual has been assigned to an RI or SRI position after completing the reactor operations inspector qualification requirements in Inspection Manual Chapter (IMC) 1245, "Inspector Qualification Program for the Office of Nuclear Reactor Regulation Inspection Program."[1]

(4) "Current site time" is the total number of years spent as an RI or SRI at the current site.

(5) "Relevant non-NRC experience" is nuclear power experience acquired outside of the NRC. Examples of relevant non-NRC experience include operation, engineering, maintenance, or construction experience with commercial nuclear power plants, naval shipyards, Department of Energy facilities, and/or the U.S. Navy's nuclear power program.

[1]"Qualified total resident time" does not count time for RIs that are basic certified under IMC 1245. Inspection hours by RIs who are basic certified count against the baseline inspection program. The NRC initially developed data collection to capture fully qualified time, as the basic certification program did not exist until 2002. Data presented under "total resident time" include time spent as basic certified and provide a more accurate accounting of resident time. Additionally, the regions typically do not assign inspectors to the resident program until they are basic certified. For these reasons, the staff is deleting the "qualified total resident time" metric for future updates.

The annual Reactor Oversight Process performance metric report, available through the Agencywide Documents Access and Management System (ADAMS), provides more detailed graphs, data, and analysis for these resident demographic metrics (reference ADAMS Accession No. ML060590135).

Analysis of 2005 RI Group—RI demographic data for 2005 (see Table 1 and Figure 1) reflect a stable population with increases in all areas with the exception of NRC time, which was relatively stable.

During 2005, 23 RIs left the RI program. Of the 23 RIs, 10 were promoted to SRIs, 9 were either promoted or laterally reassigned to a region or to headquarters, and 4 retired or resigned from the NRC.

Data indicate that significantly experienced engineers entered the program as RIs. On average, the new RIs had about 14 years of relevant non-NRC experience, compared to an average of 12 years in 2004. All 16 of the new RIs in 2005 had at least 3 years of relevant non-NRC experience. Table 3 shows the percentage of new RIs with less than 3 years of relevant non-NRC experience from 1997 through 2005. The percentages in this table represent the ratio of those RIs hired in that particular year who had fewer than 3 years of relevant non-NRC experience to the total number of RIs hired.

TABLE 3
PERCENTAGE OF NEW RIs WITH LESS THAN 3 YEARS OF RELEVANT NON-NRC EXPERIENCE

1997	1998	1999	2000	2001	2002	2003	2004	2005
6% (1/18)	12% (2/17)	0% (0/5)	31% (4/13)	6% (1/16)	20% (3/15)	30% (8/27)	21% (3/14)	0% (0/16)

Analysis of 2005 SRI Group—SRI demographic data for 2005 (see Table 2 and Figure 2) reflect a stable population with increases in all areas.

In 2005, 11 SRI positions were filled, an increase of 5 from 2004, when 6 positions were filled. In 2005, 10 SRIs left the program; of those 10, 5 were promoted within the NRC, 4 were laterally reassigned to headquarters or a region, and 1 retired from the NRC.

Site Staffing—The staff developed a site staffing metric in response to a recommendation by the Davis-Besse Lessons Learned Task Force (DBLLTF). The purpose of the metric is to evaluate the agency's ability to provide continuity of regulatory oversight. Specifically, DBLLTF item 3.3.5.3 recommended that the staff establish a measurement for RI staffing, including program expectations to satisfy minimum staffing levels. In 2004, the staff conducted a pilot program that obtained 99 percent collective coverage, but these data did not reflect instances where permanently assigned RIs or SRIs were away from their sites for longer than 6 weeks. Therefore, the staff revised the metric to capture such data in 2005. This enclosure reports these data for the first time.

The metric counts (1) RIs and SRIs who are permanently assigned to the site and (2) inspectors who are on rotational assignments to the site for 6 weeks or longer. Only

inspectors who have attained at least a basic inspector certification status, as defined by IMC 1245, are counted. The metric does not count permanently assigned RIs and SRIs who are away from their sites for longer than 6 weeks. Inspectors who are assigned to sites for less than 6 weeks are not counted towards satisfying the metric.

The success criteria for the metric is 90 percent coverage for each site. This year, the average site coverage for the regions was 98.2 percent, with all regions exceeding 97 percent. However, three sites did not meet the success criteria of 90 percent (their scores were 85 percent and higher), primarily because of the assignment of the SRI to special work. The staff's evaluation determined that oversight continuity was maintained and that these three sites were adequately covered for one or more of the following reasons: (1) the permanent RI was present, (2) an experienced SRI was temporarily assigned, and/or (3) the site was covered with qualified inspectors on assignments for less then 6 weeks. At no time did these sites remain without qualified inspectors. It is important to note that for all three of these sites the permanent SRIs were temporarily assigned for periods of up to 5 months to participate in projects related to nuclear security.

Conclusions—In summary, the staff concluded the following:

- The experience levels of both RIs and SRIs are relatively high.
- The RI and SRI staffing levels are generally good.
- The staffing turnover rate for calendar year 2005 was not excessive.

In conclusion, the program continues to attract and retain quality staff. Therefore, no changes to the RI program are warranted at this time. The staff will continue to monitor the program.

TABLE 1
SUMMARY OF RI GROUP EXPERIENCE LEVELS (IN YEARS)

		Nov. 2001	Nov. 2002	Nov. 2003	Nov. 2004	Nov. 2005
NRC time	average	6.21	6.39	5.34	5.60	5.80
	median	5.13	5.61	4.13	3.42	3.36
Total resident time	average	3.84	3.90	3.28	3.20	3.52
	median	3.87	3.77	1.99	2.00	2.31
Qualified total resident time	average	3.11	3.14	2.50	2.48	2.72
	median	2.92	3.14	0.96	1.30	1.73
Current site time	average	2.74	2.86	1.64	2.18	2.38
	median	3.18	2.30	1.00	1.85	2.25
Relevant non-NRC experience	average	8.80	9.68	10.26	11.01	12.55
	median	8.00	9.29	10.00	10.00	10.63

Resident Inspectors - Figure 1

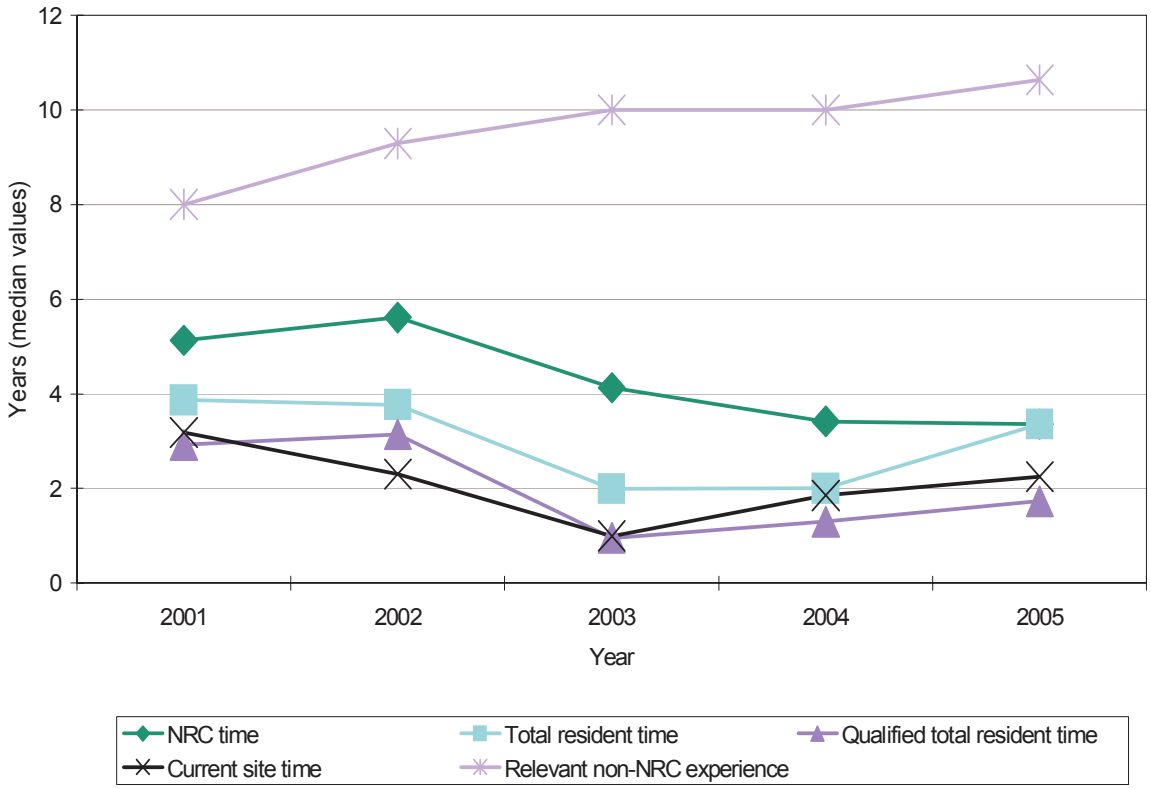

TABLE 2
SUMMARY OF SRI GROUP EXPERIENCE LEVELS (IN YEARS)

		Nov. 2001	Nov. 2002	Nov. 2003	Nov. 2004	Nov. 2005
NRC time	average	12.03	11.85	11.30	11.57	11.30
	median	11.47	12.11	11.00	8.80	8.84
Total resident time	average	8.66	8.17	8.22	8.22	8.16
	median	8.12	7.36	6.82	7.32	7.54
Qualified total resident time	average	7.94	7.36	7.40	7.42	7.39
	median	7.38	6.31	5.95	6.49	6.63
Current site time	average	2.96	2.90	2.44	2.68	2.79
	median	2.98	3.06	1.76	2.31	2.63
Relevant non-NRC experience	average	6.07	7.26	8.37	8.51	8.98
	median	4.25	5.17	6.42	6.55	7.96

Senior Resident Inspectors - Figure 2