

POLICY ISSUE
(Information)

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SECY-07-0069

FOR: The Commissioners

FROM: Luis A. Reyes
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SUBJECT: REACTOR OVERSIGHT PROCESS SELF-ASSESSMENT
FOR CALENDAR YEAR 2006

PURPOSE:

To present the results of the staff's annual self-assessment of the Reactor Oversight Process (ROP) for calendar year (CY) 2006.

SUMMARY:

The CY 2006 self-assessment results indicate that the ROP has been successful in meeting its program goals and achieving its intended outcomes. The ROP was deemed to be objective, risk-informed, understandable, and predictable, and the ROP met the agency goals of ensuring safety, openness, and effectiveness. The U.S. Nuclear Regulatory Commission (NRC) staff maintained its focus on stakeholder involvement and continued to improve various aspects of the ROP as a result of feedback and lessons learned. The staff implemented several ROP improvements in CY 2006 to address issues raised by the Commission, recommended by independent reviews, and obtained from internal and external stakeholder feedback. Most notably, the staff made significant enhancements to the assessment and inspection programs in CY 2006 to more fully address safety culture.

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The staff continues to improve the performance indicator (PI) program to better identify declining plant performance in a timely manner, but the staff recognizes the need for further improvement. The inspection program independently verified that plants were operated safely, appropriately identified performance issues, and ensured the adequacy of licensee corrective actions to address the noted performance issues. Further improvements in the significance determination process (SDP) resulted in the SDP timeliness goal being met in CY 2006 for the first time since ROP implementation. The assessment program ensured the staff and licensees took necessary actions to address identified performance issues. The staff will continue to actively solicit input from the NRC's internal and external stakeholders and further improve the ROP based on stakeholder feedback and lessons learned.

BACKGROUND:

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. SECY-01-0114, "Results of the Initial Implementation of the New Reactor Oversight Process," issued June 25, 2001, noted the staff's intention 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 ROP self-assessment for CY 2006.

The staff performed the CY 2006 self-assessment in accordance with Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program." 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. On January 9, 2007 the staff issued SECY-07-0008, "Evaluation of Revised Security Oversight Process for Nuclear Power Plants" that evaluated the implementation of the security ROP during the 2006 ROP inspection cycle.

In response to the staff's briefing on the results of the AARM on May 16, 2006, the Commission directed the staff to take the actions specified in SRM M060516B, dated June 14, 2006. The Commission directed that, in addition to efforts described in the ROP self-assessment, the staff should continue working with stakeholders to improve the PI program to better identify those plants with declining performance. The Commission also directed the staff to continue improving the timeliness and efficiency of the SDP, and reconsider when licensee senior management should be requested to meet with the Commission to discuss actions being taken to improve performance.

DISCUSSION:

The staff uses program evaluations and performance metrics to determine the effectiveness (i.e., success) of the ROP in meeting its seven program goals and intended outcomes. The seven goals include the four program-specific 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 seventh year of ROP implementation (CY 2006), 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 biennial survey and 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 evaluated the key program areas of PIs, inspection, SDP, and assessment, as discussed in the following paragraphs. In addition, the staff assessment included ROP communication activities, ROP self-assessment and independent evaluations, ROP resources, and resident inspector (RI) demographics and staffing. As noted in the pertinent sections of this paper, the staff has also included several enclosures with additional detail to support 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: the PI program, inspection program, SDP, and assessment program. The results are summarized below and are discussed in more detail in Enclosure 1. Enclosure 2 provides a consolidated list 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 program area metric (reference ADAMS Accession No. ML070720085).

PI Program — The staff and many stakeholders remain concerned that the current set of PIs and thresholds do not provide adequate information to identify outliers and detect declining plant performance. The Mitigating Systems Performance Index (MSPI) was implemented in April 2006, and the staff continues to monitor MSPI implementation and address implementation issues through the monthly public ROP meetings and through the ROP PI frequently asked question (FAQ) process. The staff is reviewing and revising several PIs, including unplanned scrams with loss of normal heat removal, reactor coolant system leakage, safety system

functional failures, and PIs in the emergency preparedness cornerstone. As a result of the internal and external survey responses, two of the PI self-assessment metrics were not met: whether the PI program provides useful insights to help ensure plant safety and whether the PI program identifies performance outliers in an objective and predictable manner. As noted above and in last year's self-assessment, the staff recognizes the need to improve the PI program to better identify outliers and provide more meaningful indications of declining plant performance.

Inspection Program — NRC inspectors independently verified that plants were operated safely, appropriately identified performance issues, and ensured the adequacy of licensee corrective actions to address the noted performance issues. The staff completed its development of the ROP realignment process, that involves a biennial evaluation of the baseline inspection procedures as described in Appendix B to IMC 0307 to more efficiently allocate inspection resources, and will implement the realignment review in CY 2007. In CY 2006 the staff closed the remaining recommendations from the December 2004 Office of the Inspector General (OIG) audit of the baseline inspection program and the Davis-Besse Lessons Learned Task Force (DBLLTF). The staff continues to perform the engineering design inspections and will re-evaluate these inspections for potential improvements based on lessons learned. The staff also made substantive changes to the inspection and assessment program documents to more fully incorporate safety culture in CY 2006. The regions completed the required baseline inspection program for CY 2006, and all inspection program performance metrics met their criteria.

Significance Determination Process — During this assessment period, the remaining objectives of the SDP Improvement Plan were completed, and the program improvements resulted in the SDP timeliness goal being met for the first time. The staff instituted several significant enhancements including implementing the Phase 2 Pre-Solved Tables, issuing the Risk Assessment Standardization Project (RASP) Handbook, and providing additional guidance regarding the quality of licensee probabilistic risk assessments (PRAs). One SDP performance metric failed to meet program expectations; stakeholders did not perceive the SDP to yield an appropriate and consistent regulatory response across all ROP cornerstones. The staff believes that relative parity has been achieved among the cornerstones, but will continue to review findings to determine the need for adjustments, particularly in the emergency preparedness and public radiation safety cornerstones.

Assessment Program — Staff implementation of the assessment program ensured that staff and licensees took necessary actions to address performance issues and adjusted resources to focus on significant performance issues. The staff made significant enhancements to the program guidance to more fully address safety culture and implemented the revised program in July 2006. The staff is compiling lessons learned during the initial 18-month implementation phase of the enhanced ROP and will present the evaluation to the Commission in the CY 2007 ROP self-assessment. The staff evaluated and recommended when licensee senior management should be requested to meet with the Commission to discuss actions being taken to improve performance. The staff evaluated the three Action Matrix deviations from CY 2006 for potential program changes, but none were deemed necessary. All performance metrics in the assessment program met their criteria in CY 2006.

ROP Communication Activities

The staff continued to emphasize stakeholder involvement and open communication regarding the ROP. The staff used a variety of communication methods to ensure that all stakeholders could access ROP information and were given an opportunity to participate in the process and provide feedback. As discussed below, the staff sought and implemented improvements to the ROP based on feedback and insights from all stakeholders.

External Stakeholder Interface — The staff conducted monthly public working-level meetings with the Nuclear Energy Institute (NEI), the industry, and interested stakeholders to discuss ongoing refinements to the ROP. The staff conducted a number of public meetings prior to implementing the safety culture enhancements. 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 interested stakeholders an opportunity to engage NRC on plant performance 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 2006 on the inspection program, the assessment program, and safety culture, and discussed additional ROP topics during the regional breakout sessions. The staff also issued its annual external survey through the *Federal Register* in October 2006 to evaluate ROP effectiveness and gather stakeholder insights. The staff maintained and enhanced the NRC's Web pages to communicate current ROP-related information and results. These outreach efforts have resulted in valuable feedback and ROP improvements.

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, the NRR staff met periodically with regional managers to discuss more complex ROP topics and issues. The NRR staff participated in each region's inspector counterpart meeting so that regional staff and management could provide feedback on ROP implementation. The NRR staff also administered its biennial internal survey in October 2006 to evaluate program effectiveness and gather direct feedback from the staff responsible for implementing the ROP. The ROP Digital City Web page was updated frequently to include recent and useful information specifically for our internal stakeholders. The staff issued several editions of the inspector newsletter to share inspection tips and lessons learned. In addition, the staff initiated the Operating Experience Smart Sample pilot program to further integrate operating experience with the ROP. The staff continued its efforts to improve the initial and continuing inspector training programs in order to produce and maintain well-qualified, competent inspectors.

The ROP feedback process allows the NRC staff to identify concerns or issues and recommend improvements related to ROP policies, procedures, or guidance. Over the past few years, the staff has steadily improved the timeliness in resolving feedback issues. In CY 2006, the staff further enhanced the ROP feedback process to improve the timeliness, efficiency, and effectiveness of feedback resolution. Specifically, the NRR Work Planning and Control Center now assigns feedback review to the staff to account for resource usage and track the timeliness of the response.

Stakeholder Survey Results — The staff conducted both internal and external surveys on the ROP in CY 2006. The responses from the survey of external stakeholders were similar in number, distribution, and content to previous years. Specifically, 8 of the 16 responses were from utilities or their representatives, 3 were from State or other government entities, and 5 were

from the public. Overall, the responses from utilities were generally positive, whereas responses from the public were less positive and raised specific concerns about the effectiveness of the ROP. The responses to the internal survey were similar in distribution to previous years, but the participation and number of comments increased in 2006. The responses were generally positive and showed increased satisfaction when compared with the previous internal survey in CY 2004.

Enclosure 3 provides more detail on the results of the internal and external surveys. The staff analysis of the survey responses can be found in Enclosure 1 in the applicable portions of the program area evaluations as well as the annual ROP performance metric report (reference ADAMS Accession No. ML070720085). In addition, the staff will prepare a consolidated response to the CY 2006 external survey as was prepared for the CY 2004 and CY 2005 external surveys. The staff will post this paper, the annual ROP performance metric report, and the consolidated response to the CY 2006 external survey to the ROP Web page and each survey respondent will receive an acknowledgment letter with these documents attached. A consolidated table including all internal and external survey results since inception of the ROP, along with the staff's evaluation and response, is available on the recently developed ROP Web page entitled "ROP Program Evaluations and Stakeholder Feedback."

ROP Web Page Enhancements — The staff continued to maintain the ROP Web pages to ensure that they communicate accurate and timely ROP information. Based on stakeholder feedback, the staff revamped the external ROP Web page in fall 2006. The more notable enhancements include —

- The new "ROP Program Evaluations and Stakeholder Feedback" Web page presents a consolidated reference of all ROP self-assessments (including metric reports), independent evaluations, and responses to external stakeholder feedback.
- The new "Substantive Cross Cutting Issues Summary" Web page provides a comprehensive list of plants that have an open, substantive cross cutting issue.
- The new "List of Security Inspection Reports" Web page is a subset of the complete list of inspection reports that consolidates all security-related reports. As of May 8, 2006, the NRC made the cover letters for security-related inspection reports publicly available in response to Commission direction in the SRM issued on April 4, 2006 for SECY-06-0036.
- There are now three distinct Web pages that include greater detail regarding Action Matrix deviations, MSPI implementation, and the proposed Unplanned Scrams with Complications PI.

ROP Self-Assessment Metrics and Independent Evaluations

The objectives and details of the ROP self-assessment program are contained in IMC 0307. This paper, supplemented by the annual report of performance metrics, provides the results of the staff's self-assessment for CY 2006. In addition to the ROP self-assessment program, several independent evaluations have been performed in the past few years, most notably by the Government Accountability Office (GAO), Office of Management and Budget (OMB), the OIG, and the DBLLTF. These evaluations generally provided favorable results, but also suggested potential areas of improvement. The staff addresses several recommendations from these independent evaluations in the enclosures to this paper.

ROP Performance Metrics — The staff's annual report of self-assessment performance metrics was completed for CY 2006 and is publically available through ADAMS (reference ADAMS Accession No. ML070720085). The ROP met 50 of its 53 performance metrics. The only exceptions were two PI metrics and one SDP metric, all related to stakeholder feedback. The staff discusses its corrective actions in the metric report as well as the program area evaluations in Enclosure 1.

Independent Evaluations — The GAO completed an independent evaluation of the ROP and issued its report on September 27, 2006 (reference ADAMS Accession No. ML062720030). The report, entitled "Nuclear Regulatory Commission: Oversight of Nuclear Power Plant Safety Has Improved, but Refinements Are Needed (GAO-06-1029)," included three recommendations. The NRC formally responded to the GAO report on November 27, 2006 (reference ADAMS Accession No. ML062910527). The staff is addressing the GAO recommendations as discussed in further detail in Enclosure 1.

The staff also resolved and closed all recommendations from the OIG audit of the baseline inspection program (OIG-05-A-06, issued December 22, 2004). In addition, the staff addressed all items from the previous audits of the Reactor Program System (OIG-05-A-11, issued April 13, 2005) and SDP (OIG-02-A-15, issued August 21, 2002). The staff improved the ROP as a result of these recommendations. A number of enhancements were also made to the ROP based on recommendations from the DBLLTF. The staff completed the last few effectiveness reviews in CY 2006, and the staff considers all DBLLTF action items to be closed.

All of the independent evaluations of the ROP, along with the staff's response and resultant program improvements, are available on the recently developed ROP Web page entitled "ROP Program Evaluations and Stakeholder Feedback."

Regulatory Impact — The staff also received and evaluated feedback from licensees as part of the regulatory impact process. The regulatory impact process was 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 68 reactor licensees on 191 issues. Of the comments received, 84 percent were favorable, and 16 percent were unfavorable. The comments fell into three main categories: formal communication with licensees, inspector performance, and security and safeguards activities. Enclosure 4 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 to improve the ROP. In CY 2006, the staff completed the development of the baseline risk index for initiating events (BRIIE), a performance indicator that monitors risk-significant initiating events and assigns an importance value to each initiating event according to its relative contribution to industry core damage frequency. The staff is in the process of incorporating BRIIE into the Industry Trends Program (ITP), and data collection started in January 2007. The staff will report the initial results of this new ITP indicator in a Commission paper on the fiscal year (FY) 2007 Industry Trends Program (issued in early CY 2008). The FY 2006 results of the ITP have been reported to the Commission in an annual paper that complements this paper. The results of the ITP will also be reviewed at the AARM.

ROP Resources

Overall staff effort in CY 2006 was essentially unchanged compared with CY 2005, although the distribution of effort varied among the various elements of the ROP. As in the CY 2005 inspection cycle, the staff completed all required CY 2006 baseline inspections with the allocated regional resources. A decrease in supplemental inspections in 2006 was offset by an increase in plant-specific inspections. The plant-specific effort includes inspection activity at sites with approved deviations for additional inspection, and inspection activity at Browns Ferry Unit 1. Enclosure 5 provides a detailed discussion of ROP resources.

Resident Inspector (RI) Demographics and Site Staffing

As directed in an SRM dated April 8, 1998, the staff developed measures to monitor and trend RI demographics and report the results to the Commission on an annual basis. The staff also developed a site staffing metric in response to a DBLLTF recommendation, now included with the annual analysis. The 2006 data indicate that the experience levels of both RIs and Senior Resident Inspectors (SRIs) are relatively high, the RI and SRI staffing levels are generally good, and the staffing turnover rate was not excessive. However, the staff plans to closely monitor resident demographics and site staffing in 2007 due to anticipated influences on the program as a result of the projected expansion of the nuclear industry and our own growth to support the formation of the New Reactors Office. Detailed analyses of the 2006 RI demographics and site staffing are included as metrics O-14 and O-15, respectively, in the annual ROP performance metric report (reference ADAMS Accession No. ML070720085).

COMMITMENTS:

Prior Commitments — The staff made five commitments in the CY 2005 ROP self-assessment to improve the efficiency and effectiveness of the ROP. The following summarizes the staff's actions to address these commitments:

1. The staff has been working with the industry to effectively implement MSPI and enhance the value of the PI program.
2. The staff refined and formalized the process to realign inspection resources to include consideration of industry performance. The staff has incorporated the improvements into the ROP self-assessment program.
3. The staff monitored the planned SDP improvements and developments through the SDP Improvement Plan. Significant progress has been made, and the staff has met and completed all objectives of the SDP Improvement Plan.
4. The staff enhanced the treatment of cross-cutting areas in the ROP and in supplemental procedures to more fully address safety culture. The staff implemented the revised guidance in July 2006.
5. The staff prepared and distributed 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 input and comments on the ROP. The staff completed this effort and revised the program guidance to institutionalize the process.

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 2007:

1. The staff will continue to monitor MSPI implementation and address additional improvements to the PI program to better identify those plants with declining performance.
2. The staff will implement the ROP realignment process and adjust inspection resources accordingly.
3. The staff will continue to monitor implementation of the safety culture enhancements and address related GAO's recommendations in this area.
4. In accordance with Commission guidance to be provided in response to COMSECY-07-0005, "Discussion of Plants in the Multiple Repetitive Degraded Cornerstone Column of the Reactor Oversight Process Action Matrix," the staff will implement adjustments/changes to the process related to the point at which licensee senior management will be requested to meet with the Commission to discuss actions being taken to improve performance.

The staff will include the status of these commitments and other program improvements noted in this paper in the CY 2007 ROP self-assessment.

CONCLUSIONS:

The self-assessment results for CY 2006 indicate that the ROP provided effective safety oversight as demonstrated by meeting the seven program goals and achieving its intended outcomes. 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 ensuring safety, openness, and effectiveness. The NRC has appropriately monitored operating nuclear power plant activities and focused agency resources on performance issues in CY 2006, and plants continue to receive a level of oversight commensurate with their performance. The staff continues to emphasize stakeholder involvement and improve various aspects of the ROP as a result of feedback and lessons learned. Based on its CY 2006 self-assessment, the staff intends to focus on the action presented in the commitments to the Commission discussed above.

RESOURCES:

The staff estimates that approximately 57 full-time equivalent (FTE) staff members and \$680,000 will be needed for FY 2007, and 60 FTE and \$860,000 will be needed for FY 2008. These resources include regional, Office of Nuclear Reactor Regulation, Office of Nuclear Regulatory 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. No resources beyond those already included in the current budget requests for FY 2007 and FY 2008 are needed for these activities.

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 Martin J. Virgilio Acting For/

Luis A. Reyes
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Enclosures:

1. ROP Program Area Evaluations
2. Status of Implementation Issues
3. Internal and External Survey Results
4. Regulatory Impact Summary
5. ROP Resources

ROP Program Area Evaluations

The staff of the U.S. Nuclear Regulatory Commission (NRC) performed program evaluations in each of the four key program areas of the Reactor Oversight Process (ROP), including performance indicators (PIs), the inspection program, the significance determination process (SDP), and the assessment program. The staff used self-assessment metrics, internal and external stakeholder feedback, and other information to provide insights regarding the effectiveness of the ROP in meeting its goals and intended outcomes as described in Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program." The goals of the ROP include fulfilling the regulatory principles of being predictable, understandable, objective, and risk-informed, and supporting the NRC's strategic goals of ensuring safety, openness, and effectiveness.

Based on the metric results, stakeholder insights, and other lessons learned through ongoing program monitoring, the staff identified certain issues and actions in each of the four key program areas. Enclosure 2 provides a summary of the status of these ongoing issues and actions, which are discussed in 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. ML070720085). Enclosure 3, as well as applicable portions of the ROP performance metric report, provides more detail on the results and analysis of the internal and external stakeholder surveys.

Performance Indicator Program

The staff and many stakeholders remain concerned that the current set of PIs and thresholds do not provide adequate information to identify outliers and detect declining plant performance. The staff had concluded in the CY 2004 self-assessment (SECY-05-0070) that the PI Program had not contributed to the early identification of poorly performing plants to the degree envisioned by the staff. As a result, in a staff requirements memorandum (SRM) dated June 30, 2005, the Commission directed the staff to consider further improvements to PIs, in addition to efforts described in the ROP self-assessment, to give the NRC good indicators of performance in order to focus inspection resources. As committed to in SECY-06-0074, "Reactor Oversight Process Self-Assessment for Calendar Year 2005," and reemphasized by the Commission in an SRM dated June 14, 2006, the staff continued to work with stakeholders to improve the PI program in order to better identify those plants with declining safety performance. As a result, the staff is in the process of reviewing and revising several of the indicators as noted below.

The Mitigating Systems Performance Index (MSPI) was implemented as part of the ROP on April 1, 2006. As directed by the Commission in an SRM dated June 30, 2005, the staff has ensured that MSPI is as transparent as possible. The staff has continued to discuss MSPI during the routine public meetings and address the complexity inherent in MSPI. To further ensure transparency, the staff worked with industry to clarify and revise the guidance in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline;" trained regional inspection staff in the inspection guidance of the MSPI Temporary Instruction (TI); and developed a Web page to provide guidance and inspection-related documents, white

papers, and issues of public interest. The staff also issued a press release and Regulatory Issue Summary (RIS) 2006-07 to coincide with the April 2006 implementation of MSPI.

Since inception, the industry has reported three quarters of the MSPI data. Tabulation of industry MSPI data revealed an increase in the number of white PIs reported with MSPI when compared to its predecessor, the Safety System Unavailability (SSU) PI. The increased number of plants that crossed MSPI performance thresholds could be due to various reasons, and it is too early to draw conclusions on the MSPI impact and performance. The increase may result from simple differences between the two sets of indicators, not attributable to an actual change in plant performance, or the different technical guidance for MSPI and SSU.

A preliminary assessment of the effectiveness of MSPI has confirmed that the definition of component failures and the use of probabilistic risk assessment (PRA) are critical elements of MSPI. Additional guidance is needed in these areas to stabilize the technical guidance. The staff has recently completed TI 2515/169, "Mitigating Systems Performance Index Verification," which was conducted at all operating reactor facilities. Industry and the staff plan to prepare white papers to address specific issues as a result of lessons learned from the TI. These papers will address the continuing challenges in managing planned and unplanned unavailability, PRA updates, and actual engineered safety feature (ESF) demands. The staff plans to monitor MSPI over the course of CY 2007, continue to engage industry through the monthly ROP public meetings, and make any necessary changes to the MSPI based on lessons learned.

Late in CY 2005, the staff convened a working group composed of three representatives from the industry and three from the NRC to address the industry's concern with the Unplanned Scrams with Loss of Normal Heat Removal (SwLONHR) PI. The working group developed and defined a replacement PI entitled Unplanned Scrams with Complications (USwC). In CY 2006, the working group collected historical data to establish a green-white threshold. (There are no higher thresholds because this PI is not risk-informed.) A table top exercise was then completed to validate the PI. The staff expects to replace the SwLONHR PI with the USwC PI beginning July 1, 2007.

During development of the ROP, the industry proposed the reactor coolant system (RCS) leakage PI. The RCS leakage PI would measure identified leakage with a green-white threshold of 50 percent of the allowable limit of the technical specifications (TS) and a white-yellow threshold of 100 percent of the allowable limit. There is no yellow-red limit since plants are required to shut down if RCS leakage exceeds the allowable limit. In response to the Davis-Besse event, the staff was tasked to evaluate certain PI improvements for RCS leakage. The staff convened an RCS leakage working group composed of three utility representatives and three NRC staff. The working group first agreed upon the need to monitor unidentified leakage rather than identified leakage. For a few months, the staff collected leakage data and explored options for the new RCS leakage PI. Shortly after that effort began, the Westinghouse Owners Group (WOG) began a similar project. The working group decided to hold its efforts and wait for the results of the WOG program. The results of the WOG effort have recently been released, and the staff has reconvened the working group. Using the data developed by the WOG, the staff will attempt to develop a new and improved RCS leakage PI in CY 2007 and CY 2008.

As part of the development of the ROP in the late 1990's, all of the proposed PIs were compared against the then existing measure of licensee performance, the Systematic Assessment of Licensee Performance, or SALP. By this measure, the Safety System Functional Failure (SSFF) PI was the best indicator of declining licensee performance. The SSFF 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. It captured all 14 of the SALP watch list plants, 4 of the 7 declining trend plants, 2 of the 6 average plants, and none of the superior or excellent plants. It is also considered to be a leading indicator because it counts potential as well as actual failures of safety systems as a measure of how well licensees maintain their most risk-significant equipment. However, since the inception of the ROP, SSFF reporting has declined over 70% which has made the PI less effective in identifying declining performance. The staff has recently begun evaluating the SSFF PI to review why reporting is significantly down. The staff will coordinate with the industry in CY 2007 to make possible improvements to the SSFF PI.

The Emergency Preparedness (EP) cornerstone comprises three PIs: Drill/Exercise Performance (DEP), Drill Participation (DP), and Alert and Notification System (ANS). The staff has discovered situations in which the DEP PI can mask problems in one or more of its components, which include classification, notification, and protective action recommendations. The DEP PI is measured by a combined success rate of all three components. Since licensees are not required to perform a specific number (or minimum) of drills for each of the three components, this could result in inadequate indication of declining or deficient performance. Many stakeholders also believe that the ANS PI provides inadequate indication of declining or deficient performance. The staff will discuss these PI concerns with the industry during ROP monthly meetings in CY 2007.

As discussed in SECY-06-0074, the staff continues to believe that NEI 99-02, the PI guidance document, can be improved. This document has been revised 4 times since ROP implementation, mostly to incorporate new guidance in response to more than 425 frequently asked questions (FAQs) from licensees. The lack of clear, concise guidance has contributed to timeliness and efficiency problems, which were often due to differing interpretations of the PI guidance document by the staff and industry. Clearer and more concise guidance would significantly reduce the differing interpretations (e.g., the meaning of words, phrases, and paragraphs) and would expedite the resolution of FAQs. To address these concerns, the staff will work with industry to review each PI definition and supporting information in NEI 99-02.

The responses to the internal and external survey indicated that stakeholders have varying views on the efficiency and effectiveness of the PI program. The industry generally believed that the PI program was working well, while the public and many internal stakeholders remained concerned that the PIs do not provide an adequate indication of declining safety performance and do not effectively identify performance outliers. As a result of the internal and external survey responses, two of the PI self-assessment metrics were not met: whether the PI program provides useful insights to help ensure plant safety (PI-4) and whether the PI program identifies performance outliers in an objective and predictable manner (PI-8). The other six PI self-assessment metrics met their criteria and staff expectations for CY 2006.

Although the PI program provides objective indicators regarding plant performance and has focused licensee attention in some cases, 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 is in the process of improving those PIs discussed above, and continues 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.

Inspection Program

The inspection program met all of its established goals during CY 2006 while continuing to incorporate program improvements. The staff's annual evaluation of the inspection program indicated that the inspection program verified that plants were operated safely, appropriately identified performance issues, and ensured the adequacy of licensee corrective actions to address the noted performance issues. As committed to in SECY-06-0074, the staff refined and formalized the process to realign inspection resources to include consideration of industry performance. This ROP realignment process, a biennial detailed analysis of the scope and level of effort of each baseline inspection procedure, has been incorporated into the formal self-assessment program as Appendix B to IMC 0307. The staff plans to perform the second ROP realignment effort in CY 2007, and any changes resulting from this review will be reflected in the baseline inspection program for CY 2008.

All four regions completed their baseline inspections in CY 2006 in accordance with IMC 2515, "Light-Water Reactor Inspection Program — Operations Phase." Each region documented its CY 2006 completion of the baseline inspection program in a memorandum. These memoranda can be found in ADAMS under ML070430041 (Region I), ML070330047 (Region II), ML070470661 (Region III), and ML070470659 (Region IV).

In CY 2006, the staff made substantive changes to numerous inspection program documents to incorporate safety culture improvements, including IMC 0612, "Power Reactor Inspection Reports," and its appendices; IMC 0305, "Operating Reactor Assessment Program;" Inspection Procedure (IP) 71152, "Identification and Resolution of Problems;" all three supplemental inspection procedures; and other inspection procedures as noted in Change Notice 06-015 dated June 22, 2006. The staff plans to review the effectiveness of these changes during CY 2007 and report the results in the annual ROP Self-Assessment Commission paper.

Component Design Bases Inspections (CDBIs) were developed to improve the effectiveness of NRC design/engineering inspections based on lessons learned from past inspections and events. The intent of these inspections, as described in IP 71111.21, is to focus on risk-significant, low-margin components and operator actions that could potentially affect risk-significant structures, systems, and components. Thirty-seven CDBIs have been completed or are underway, and 29 remain for the current ROP cycle. There have been 89 Green inspection findings to date. These CDBI findings are being evaluated to identify generic issues and areas of emphasis for future ROP inspections. In addition, the staff plans to evaluate potential revisions to the scope and frequency of the CDBI during CY 2007.

The staff completed the remaining two effectiveness reviews of the Davis-Besse Lessons Learned Task Force (DBLLTF) action items in CY 2006. The staff found that the changes made to Appendix D to IMC 2515 were effective for assessing potential adverse trends and action levels in response to increasing levels of reactor coolant system (RCS) unidentified leakage. The staff also found that the results of TI 2515/150, "Reactor Pressure Vessel Head

and Vessel Head Penetration Nozzles,” and the revised IP 71111.08, “Inservice Inspection Activities,” were effective for oversight of boric acid corrosion control programs based on feedback from the regions and evaluations of the inspection results from 2 years of implementation of the revised guidance.

In CY 2006, the staff successfully incorporated the remaining three recommendations made by the Office of the Inspector General (OIG) as a result of its audit of the baseline inspection program (OIG-05-A-06, issued December 22, 2004). These recommendations involved (1) the development of guidance on identifying human performance trends and integrating that information into the ROP, (2) the development and implementation of guidance for documenting, tracking, and trending informal inspection issues, and (3) the need to define “effectiveness” as it pertains to the ROP and the subsequent establishment of performance measures and targets to demonstrate that the baseline inspection program meets that definition. All recommendations from the OIG audit of the baseline inspection program have been closed.

The staff continued to improve the initial and continuing inspector training programs in order to produce and maintain well-qualified, competent inspectors. The staff administered an inspector training effectiveness survey during CY 2005, and again solicited inspector feedback regarding training effectiveness by incorporating relevant training questions into the biennial internal staff survey conducted in CY 2006.

While the overall biennial survey results indicated that respondents generally agreed that training was effective, the relatively new and broad area of evaluating safety culture received the most negative comments. This was the first time that the internal survey has included a question related to safety culture training as the implementing documents had been effective only as of July 1, 2006. Although 59 percent of the respondents agreed that safety culture training was adequate, a number of respondents expressed concerns about the quality and quantity of safety culture training.

To support the safety culture initiative, the staff prepared computer-based training for all inspectors and performed training at the regional counterpart meetings. In addition, the staff took several steps to augment the initial safety culture training in parallel with the implementation of the safety culture initiative. Because many of the training aspects have been enhanced only recently, the staff needs additional time to assess the adequacy of all of the safety culture related training and qualification activities. The staff will assess the lessons learned during the initial 18-month implementation phase to identify how to further enhance the ROP program and the supporting safety culture training elements.

The staff issued several editions of the inspector newsletter to share inspection tips and lessons learned. The newsletter continued to serve as an effective communication and knowledge transfer tool. The NRC also monitored the Inspector Community Forum (ICF), an electronic web-based knowledge management tool, as an information resource for inspection preparation and to broaden inspector communication networks. The ICF was designed to enhance the depth and efficiency of inspection preparation by storing current IPs, related generic communications, and other useful inspection-related information. The ICF also functions as a messaging board to facilitate communications between inspectors. At the end of CY 2005, the ICF had 109 registered users and 86 posted messages. At the end of CY 2006, the ICF had 119 registered users and 100 posted messages, and forum use had noticeably diminished

since August 2005. Only 15 messages were posted in CY 2006, and 12 messages were associated with the introduction of the Operating Experience Smart Sample (OpESS) pilot program. The OpESS pilot program was recently initiated to support integration of operating experience with the ROP. The OpESS program provides inspectors with concise information related to selected industry operating events that have generic applicability and potential risk-significance, and can be readily inspected utilizing the baseline inspection program. Although it is a voluntary program, inspectors are encouraged to review and utilize OpESS information for planning future inspection activities. The staff plans to monitor implementation of the ICF and OpESS in CY 2007 and continue to look for ways to incorporate insights gained from the operating experience program.

All of the 10 inspection program metrics met their established criteria in CY 2006. Timeliness in completing TIs (metric IP-5) improved in CY 2006 as all were completed on time. The staff reviewed an integrated inspection report from each regional branch and team inspection reports from each region. About 97 percent of the inspection reports reviewed were documented in accordance with IMC 0612 requirements, and 99 percent of the inspection reports were issued within timeliness goals. The staff received 99 feedback forms during CY 2006, comparable to previous years, and has revised the process to improve the timeliness of feedback resolution.

The staff also performed its annual analysis of resident inspector demographics and concluded that the program continues to attract and retain quality inspectors. In addition, the staff collected and analyzed data in order to measure the permanent inspector staffing levels at each of the reactor sites for both resident and senior resident inspectors in order to evaluate the agency's ability to provide continuity of regulatory oversight. Both of these metrics met expectations, and no programmatic changes are planned at this time.

The internal and external survey resulted in favorable feedback regarding whether information contained in inspection reports was relevant, useful, and written in plain English. Additionally, most internal and external stakeholders believed that the inspection program adequately covers areas that are important to safety and is effective in identifying and ensuring the prompt correction of performance deficiencies. Although internal and external comments were generally favorable, there were specific recommendations for improvements, such as the ability to complete the inspections within the resources estimated in inspection procedures, inspection report length and format, and how cross-cutting aspects are being documented. The staff will review and address these recommendations in CY 2007.

The inspection program met the goals and intended outcomes of the ROP based on the metric results, stakeholder feedback, and other lessons learned. The inspection program verified that plants were operated safely, appropriately identified performance issues, and ensured the adequacy of licensee corrective actions to address the noted performance issues. Focus areas for CY 2007 include monitoring the changes made to incorporate safety culture and successfully implementing the ROP realignment process.

Significance Determination Process

Process improvements in the SDP resulted in efficiency gains in determining the safety significance of identified performance issues. The SDP continues to mature and is now considered a fully developed process that meets the objectives outlined in SECY-99-007,

“Recommendations for Reactor Oversight Process Improvements,” and SECY-99-007A, “Recommendations for Reactor Oversight Process Improvements (Follow-up to SECY-99-007).” Since implementation in April 2000, the SDP has gone through several significant changes based on feedback from internal and external stakeholders and the recommendations of two independent audits. As a result, SDP timeliness has improved significantly, meeting its goal for the first time since the implementation of the ROP.

Enhancements to the process continue, such as the current implementation of the SDP Phase 2 pre-solved tables (from here on referred to as the Tables) to complement the plant specific risk-informed inspection notebooks (from here on referred to as the Notebooks). The staff has addressed several significant issues during this assessment period, including implementing the Tables; issuing Appendix M to IMC 0609, “Significance Determination Process Using Qualitative Attributes;” and addressing the need for risk-informing findings that do not fit a previously developed SDP.

The staff streamlined the process and simplified the procedure for inspectors to implement the Phase 2 tools by benchmarking and updating the Notebooks and developing the associated Tables. The Tables were added to the SDP Phase 2 process for Appendix A to IMC 0609, “Determining the Significance of Inspection Findings for At-Power Situations.” Training of inspectors in the use of the revised Notebooks and Tables is being accomplished in two steps. The staff completed training of the Senior Reactor Analysts (SRAs) at the two SRA counterpart meetings held during the assessment period. In turn, the SRAs will train the inspectors at the inspector counterpart meetings. Once this training is completed, the Phase 2 tools with the increased use of the Tables will reduce the burden on inspectors, allowing for additional improvement in the timely assessment of SDP findings.

Initially, the Notebooks did not provide guidance on how to account for risk contributions from fire, seismic, flood, severe weather, or other external events evaluated in the licensee’s Individual Plant Examination for External Events (IPEEE) analysis. Therefore, the increase in risk significance of inspection findings due to external event contribution was not routinely accounted for in the reactor safety Phase 2 SDP results. To address this concern, the staff completed SDP guidance in 2006 that allows inspectors to screen external event contribution. This guidance will be issued as part of the next revision of IMC 0609 as an attachment to the Notebooks. Additionally, the Office of Nuclear Regulatory Research (RES) issued guidance as part of Risk Assessment Standardization Project (RASP) for evaluating the risk contribution from external events for SDP Phase 3 evaluations.

The RASP is an interoffice effort designed to provide improved methods and formats to standardize risk analyses performed by the NRC. These methods for risk assessment should result in more consistent outcomes, improve internal and external risk communications, reduce the time required to perform risk analyses, and provide guidelines for resolving technical issues. The first product of the RASP is a handbook, “Risk Assessment of Operating Events Handbook,” currently available only to NRC staff. The handbook provides supplemental Phase 3 guidance for use by NRC risk analysts and SRAs, and is applicable to plant conditions and events occurring during full power operations. The RASP is in the process of incorporating external initiating events into the Revision 3 Standardized Plant Analysis Risk (SPAR) models. Thirteen of the 72 SPAR models have had the external initiating events incorporated. The staff is also developing methods and guidelines applicable to the assessment of risk contribution during low power and shutdown operation and large early release frequency.

Other enhancements to Revision 3 SPAR models are also in process. A total of 41 out of 72 plant models have been enhanced. This effort involves a detailed individual accident scenario level (i.e., cutset) review against the respective licensee's plant probabilistic risk assessment (PRA). In addition, the SPAR model enhancement includes the resolution of the PRA modeling issues that were previously identified during the onsite quality reviews of the SPAR models as part of MSPI implementation.

Licensee PRA quality continues to be enhanced through the benchmarking of the Notebooks, by the improvements of the SPAR models, and by the availability of additional guidance (e.g., Regulatory Guide 1.200, "An Approach for Determining the Technical Adequacy of Probabilistic Risk Assessment Results for Risk-Informed Activities;" NUREG CR-6823, "The Handbook of Parameter Estimation for Probabilistic Risk Assessment;" and NUREG-1792, "HRA Good Practices").

As noted in an SRM dated June 14, 2006, the Commission directed the staff to continue to focus on improving the timeliness and efficiency of the SDP. In addition, the staff committed in SECY-06-0074 to monitor and make planned SDP improvements through the SDP Improvement Plan. All objectives of the SDP Improvement Plan have been completed. The staff closed the following SDP Improvement Plan Objectives during the assessment period:

- Objective 3.3.f, the Spent Fuel Storage SDP, was determined not to be essential to the SDP. However, the staff continues to evaluate potential issues for both wet and dry spent fuel storage to determine if any would rise above the minor or very low safety significance level. No such examples have been identified thus far. In addition, Appendix M to IMC 0609 provides guidance for evaluating spent fuel storage issues.
- Objective 3.4, to improve the physical protection SDP, was completed. In October 2006, NEI agreed to accept the NRC proposed security SDP, Part 1, "Baseline Inspection Program," and Part 2, "Force on Force Assessment." In a Commission paper issued January 22, 2007, the staff summarizes the history of the development of the process, including the results of the pilot period.
- Objective 5.3, to provide guidance to management for risk-informing findings where no other SDP is applicable, was addressed by a new methodology identified in Appendix M to IMC 0609, issued in December 2006. Additional guidance may be generated based on lessons learned during implementation.

Objectives 1.2 and 1.8, involving the managing of SDP timeliness, have been addressed through a Region IV effort. The region conducted a detailed evaluation of the existing process, developed a list of "Best Practices," and made seven recommendations to improve SDP timeliness. Once completed, the staff will have addressed all relevant recommendations by the Office of the Inspector General (OIG-02-A-15, issued August 21, 2002) and the SDP Task Group.

As stated in an SRM dated December 23, 2004, the Commission directed the staff to evaluate the effectiveness of the changes made to improve the timeliness of the fire protection SDP. Since these changes were implemented, all findings related to fire protection have been finalized within the SDP timeliness goals.

The results of the internal survey were generally favorable for the SDP. The level of satisfaction notably increased from previous years, as shown in the multiple choice responses. However, in addition to the multiple choice responses, there were over 100 comments on the SDP, primarily focused in the following areas:

- Complexity and training. Survey comments noted that SDPs in general, and the fire protection SDP in particular, remain complicated requiring the investment of extensive resources to arrive mostly at Green findings. Lack of effective training and limited usage of the revised Phase 2 process were noted as contributors to the frustration experienced by the commenting inspectors. The additional scheduled training and increased use of the Phase 2 tools should reduce the burden on inspectors and further improve SDP effectiveness.
- The management of SDP timeliness. Several comments expressed concerns with managing the inspection process to meet SDP timeliness goals. According to the comments this included timing of exit meetings, carrying findings as unresolved items (URIs), extending the inspection process, and other means. These concerns should be addressed by the recommendations from the recently completed "Regional Best Practices for Managing SDP Timeliness," scheduled to be implemented during the 2007 assessment period. In addition, the staff will continue to monitor SDP timeliness and make any necessary changes to the timeliness metric to address these concerns.

The responses to the external survey were generally unfavorable for the SDP, but appeared to be less critical than in previous years. Several respondents stated that the SDP is too complex, is inconsistent, and did not yield equivalent results for issues of similar significance in all ROP cornerstones.

The staff maintains seven performance metrics to monitor the effectiveness of the SDP. Overall, the metrics indicated the implementation of the SDP had improved over the previous assessment period. Most notably, the SDP timeliness metric (SDP-6a) increased from 68 percent in FY 2005 to 96 percent in FY 2006. This is the first time since the implementation of the ROP that the timeliness metric met its 90-day goal.

During this assessment period the staff introduced a new metric (SDP-6b), on a trial basis, that also examined the timely issuance of final SDP results. This metric addressed all issues that were brought to the Significance Determination Process/Enforcement Review Panel (SERP), not just issues finalized as white, yellow, or red. The criteria are that 90 percent of all SDP results be finalized within 90 days on average and 100 percent in 180 days. The average age of all the SDP findings that were presented to the SERP during FY 2006 was 119 days, exceeding the 90-day goal. Of the 35 findings (1 yellow, 24 whites, and 10 greens), 4 took more than 180 days to finalize. The staff will continue to monitor this metric during the CY 2007 assessment period to evaluate future enhancements to the timeliness metric.

One of the seven SDP metrics evaluated during this assessment period failed to meet program expectations. For metric SDP-4, "Results of the Same Color are Perceived by the Public to Warrant the Same Level of Regulatory Attention for All Cornerstones," many of the stakeholders expressed a negative perception that the SDP did not yield an appropriate and consistent regulatory response across all seven ROP cornerstones. In particular, stakeholders believed that SDPs for emergency preparedness and public radiation safety were deterministic

and not appropriately characterized by risk insights. Stakeholders have expressed concern about this issue since the inception of the ROP. However, 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. The staff continuously reviews findings to determine the need for adjustments to the SDPs in this area. For example, based on a finding identified during this assessment period, the staff is scrutinizing the outcome of the Public Radiation Safety SDP to confirm that the SDP results reflect the expected outcome in terms of licensee assessment and staff response. This review will also consider the results of the Liquid Radioactive Release Lessons Learned Task Force.

Further improvements in the SDP resulted in improved staff efficiency and effectiveness in determining the safety significance of identified performance issues. The SDP continues to serve as an essential component of the ROP, although ongoing enhancements are still warranted and will be incorporated into the program based on lessons learned and feedback.

Assessment Program

Implementation of the assessment program ensured that staff and licensees took necessary actions to address performance issues and adjusted resources to focus on significant performance issues. The most significant changes in the assessment program in CY 2006 resulted from the Commission SRM dated December 21, 2005, which directed the staff to work extensively with internal and external stakeholders to enhance the ROP to more fully address safety culture. The staff's efforts are described in SECY-06-0122, "Safety Culture Initiative Activities to Enhance the Reactor Oversight Process and Outcomes of the Initiatives," and RIS 2006-13, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture." The staff implemented the enhanced inspection procedures and inspection manual chapters on July 1, 2006, and implemented the revised guidance during the CY 2006 mid-cycle plant assessments. The final supplemental inspection procedure (IP) that was enhanced as part of the safety culture initiative, IP 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," was issued on October 26, 2006. The staff will compile lessons learned during the initial 18-month implementation phase of the enhanced ROP. The staff plans to report to the Commission on the program enhancements in the CY 2007 ROP self-assessment.

In CY 2006, the staff issued revised guidance regarding substantive cross-cutting issues in IMC 0305 to incorporate recommended improvements by internal and external stakeholders. Implementation of the revised guidance for the mid and end-of-cycle assessments, as compared to previous assessment results, did not result in any unintended consequences or overall change in the number or types of substantive cross-cutting issues. The staff will closely couple future revisions regarding cross-cutting issues with the efforts of the safety culture working group.

The Commission directed the staff, in an SRM dated June 14, 2006, to reconsider and recommend the point at which licensee senior management should be requested to meet with the Commission to discuss actions being taken to improve performance (e.g., plants remaining in Column IV for a protracted period). The staff prepared COMSECY-07-0005, "Discussion of Plants in the Multiple Repetitive Degraded Cornerstone Column of the Reactor Oversight Process Action Matrix," to provide its recommendation to the Commission for consideration.

The staff will implement necessary program improvements to address Commission direction as noted in their pending response to the COMSECY.

In a recent report, GAO-06-1029, "Nuclear Regulatory Commission: Oversight of Nuclear Power Plant Safety Has Improved, but Refinements are Needed," GAO made three recommendations for the NRC to improve its ability to identify declining plant safety performance. The first recommendation was for the NRC to evaluate and implement additional methods to assess nuclear plant safety culture, if needed. The second recommendation was that the NRC consider developing PIs for safety culture. The staff will evaluate these recommendations and the lessons learned during the initial 18-month implementation period of the enhanced ROP, and will implement additional methods as warranted. In addition, the staff believes the annual ROP self-assessment process and performance metric report are effective tools for gathering and assessing feedback on the safety culture enhancements. After completing the 18-month implementation period and evaluating the lessons learned, the staff plans to consider additional performance metrics in the annual ROP self-assessment process. The third recommendation was for the staff to provide more information about plant safety culture on the ROP Web site. The staff considers this recommendation closed as more detailed information on plants with substantive cross-cutting issues, with links to the related plant assessment letters, is now available on the ROP Web site.

Based on feedback from internal stakeholders, the staff has begun evaluating potential program changes that would enhance the level of integration between the ROP and the traditional enforcement program regarding the inspection, assessment, and enforcement of findings and violations. Once completed, the staff plans to recommend proposed changes to the Enforcement Policy and ROP program documents that would provide a single integrated Agency assessment of licensee performance that may more directly incorporate traditional enforcement issues into the ROP Action Matrix.

As requested by the Commission and incorporated into the self-assessment program, the staff reviewed the causes of the three Action Matrix deviations during CY 2006 and evaluated them for potential improvements to the program. The following summarizes these evaluations.

- The NRC issued a deviation for Indian Point in December 2006 to allow for an increased level of oversight for two issues: groundwater contamination from cracks in the Unit 2 spent fuel pool and problems with the alert and notification system. The Indian Point deviation was an extension of the previous deviation in CY 2005. To date, Entergy has completed well drilling and testing, is in the process of evaluating groundwater contamination and migration hydrology, and is testing a mitigation strategy. Region I continues to monitor Entergy's activities on this issue to ensure NRC regulations are satisfied. With respect to Indian Point's alert and notification system, the NRC granted Entergy's request for an extension for completing a project at the Indian Point Energy Center that was required by a January 2006 confirmatory Order to meet specifications in the 2005 Energy Policy Act. Entergy now has until April 15, 2007, to complete installation of back-up power for its alert and notification system. As noted in last year's self-assessment, the staff does not anticipate any programmatic changes to the assessment program as a result of this deviation.
- The NRC issued a deviation for Davis-Besse in August 2006 in order to continue heightened NRC oversight for the time period of August 2006 through July 2007. The

Davis-Besse deviation was an extension of the previous deviation in CY 2005. Davis-Besse was placed under the IMC 0350 process for about 3 years. While the plant transitioned from the IMC 0350 process, the NRC authorized a deviation from the ROP on May 16, 2005, for the period of July 2005 through June 2006. The extension is necessary for continued monitoring of the licensee's efforts to sustain improved plant performance following resolution of the long-standing underlying problems that culminated in a Red finding associated with the severe wastage that was discovered on the reactor vessel head. As noted in last year's self-assessment, the staff revised IMC 0305 to allow the regional offices to use additional followup actions for plants that are exiting the IMC 0350 process. The programmatic changes made as a result of this deviation will prevent the need for similar deviations in the future.

- The NRC issued a one-time deviation for Waterford Unit 3 in June 2006 from the multiple/repetitive degraded cornerstone column for a red SSU PI for high-pressure safety injection (HPSI) and a yellow PI for residual heat removal (RHR). The staff determined that these PIs were red and yellow following the conduct of a discrepant PI inspection due to excessive fault exposure hours. However, using the same set of circumstances applied to the MSPI PIs would have resulted in a green outcome due to the differences in the way fault exposure is treated. The deviation was requested because the actions outlined in the licensee response column of the Action Matrix are more appropriate for the situation at Waterford 3 than those of the multiple/repetitive degraded cornerstone column. This situation is not likely to recur because the SSU PIs were replaced by MSPI in April 2006.

As noted in last year's self-assessment, the staff revised program guidance to address the inclusion of independent reviews, such as the Institute of Nuclear Power Operations (INPO) and the International Atomic Energy Agency (IAEA) Operational Safety Review Team inspections, during the mid-cycle and end-of-cycle review meetings in order to self-assess the NRC's inspection and assessment processes. This was first implemented in CY 2006 during the end-of-cycle and mid-cycle assessment meetings and was deemed to be insightful into plant performance. The staff will continue to consider independent assessments in future end-of-cycle and mid-cycle assessment meetings.

In CY 2006, all 11 of the performance metrics in the assessment program were met. The metric regarding the number of Action Matrix deviations failed to meet its criteria in CY 2005; however, the trend was reversed in CY 2006 and the metric was met. The staff established a new performance metric for safety culture in parallel with the implementation of the enhanced ROP in CY 2006. This was the first time that the internal and external surveys have included safety culture questions. A trend has not yet been established given the relatively short period of time that the enhanced ROP has been in effect.

Participants in the external survey were asked (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, (2) if the information contained in assessment reports is relevant, useful, and written in plain language, and (3) whether the ROP safety culture enhancements help identify licensee safety culture weaknesses and focus licensee and NRC attention appropriately. While responses were generally favorable, some stakeholders expressed concerns that the ROP lacks clear exit criteria for plants in columns other than the licensee response column of the Action Matrix, that NRC actions are too narrow in scope to ensure that

larger issues are corrected, and that the ROP does not effectively deal with plants with long-standing issues. External stakeholders generally agreed that the information contained in assessment reports is relevant, useful, and written in plain English, but some expressed concern that the excessive use of boilerplate language in the assessment letters provides little substantive insights about performance at individual sites, and others that the substantive cross cutting issue decisions are not transparent. Most participants noted that it is too soon to tell whether the safety culture changes have been effective given the short time that the revised ROP has been in place.

In the 2006 internal survey, the perception of the assessment program was generally positive, though some stakeholders noted that cross-cutting issues and safety culture guidance were too complex and not worth the effort expended. Internal stakeholders expressed a diversity of opinions as to whether the program changes made as a result of the safety culture initiative were beneficial or not. Notwithstanding the written comments, even at this early point in the implementation of the enhanced program, more than one-half of the internal respondents indicated that the changes to the ROP will help to identify licensee safety culture weaknesses and to focus both licensee and NRC resources accordingly. Responses to related questions about the adequacy of the supporting ROP infrastructure (process, procedures and training) again indicate that more than one-half of the respondents consider that an adequate infrastructure is currently in place.

The assessment 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. Implementation of the assessment program ensured that staff and licensees took necessary actions to address performance issues and adjusted resources to focus on significant performance issues. The most significant work for the assessment program in CY 2007 will include monitoring the changes associated with substantive cross-cutting issues and the Commission's direction on enhancing the ROP to more fully address safety culture.

Overall Conclusions

Each of the four program areas of the ROP has contributed to the ROP's success in meeting the seven program goals of being objective, risk-informed, understandable, and predictable, and in ensuring safety, openness, and effectiveness. The ROP achieved its intended outcomes as demonstrated by the successful implementation of the various ROP processes. Stakeholder feedback and several independent evaluations have resulted in significant program enhancements, but the staff continues to experience challenges in certain areas and recognizes the need for further improvement.

Status of Implementation Issues

This enclosure provides a consolidated summary of Reactor Oversight Process (ROP) actions by program area. The reference column denotes the origin of each issue and/or the last official document that discussed the issue, including staff requirements memoranda (SRMs), audit reports by the Office of the Inspector General (OIG) and the Government Accountability Office (GAO), and others. The last column indicates the status of each issue. Those issues that were closed during calendar year (CY) 2006 will not be carried forward into next year's self-assessment. The respective program area assessments or other areas of the paper discuss the actions by the staff to address the issues listed in the table.

**TABLE 1
CONSOLIDATED SUMMARY OF ROP ACTIONS BY PROGRAM AREA**

Issue	Reference	Status
Performance Indicator (PI) Program		
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	Ongoing/ Closed 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	Ongoing/ Closed ¹
Ensure that the MSPI process is as transparent as possible to external and internal stakeholders	SRM dated 06/30/05	Closed
Continue to work with stakeholders to improve the performance indicator program in order to better identify those plants with declining safety performance	SRM dated 06/14/06	Ongoing/ Closed ¹
Work with industry to effectively implement MSPI and continue to explore possible revisions to the PI program to enhance its value	SECY-06-0074, Commitment 1	Ongoing/ Closed ¹
Inspection Program		
Continue to monitor resident inspector demographics and report to the Commission	SRM dated 04/08/98	Ongoing
Incorporate the recommendations made by OIG as a result of its audit of the baseline inspection program	OIG audit (OIG-05-A-06)	Closed

¹These items are being closed since they will be tracked under Commitment 1 of this Commission paper and will be reported on in the next Commission paper.

Issue	Reference	Status
Perform an effectiveness review of the revised Appendix D to IMC 2515 for assessing potential adverse trends and action levels in response to increasing levels of RCS unidentified leakage	DBLLTF action item 3.2.1(2)	Closed
Perform an effectiveness review of the revised IP 71111.08 by evaluating the inspection results from two years of implementation	DBLLTF action item 3.2.2(1)	Closed
Refine and formalize the process to align inspection resources to include consideration of industry performance	SECY-06-0074, Commitment 2	Closed
Significance Determination Process (SDP)		
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	Closed
Continue to focus on improving the timeliness and efficiency of the SDP	SRM dated 06/14/06	Closed
Continue to monitor and make planned SDP improvements via the SDP Improvement Plan	SECY-06-0074, Commitment 3	Closed
Assessment Program		
Enhance the ROP treatment of cross-cutting issues to more fully address safety culture, to include revising selected inspection procedures and manual chapters and training regional inspectors and management by July 2006	SRM dated 08/23/04 & SRM dated 12/21/2005	Closed
Make further effort to clarify the guidance on substantive cross-cutting issues	SRM dated 06/30/05	Closed
Monitor the effectiveness of the revised guidance for considering conclusions of independent evaluations in order to self-assess the NRC's inspection and assessment processes during the midcycle and end-of-cycle review meetings	DBLLTF action item 3.3.3(1)	Closed
Enhance the treatment of cross-cutting areas in the ROP and in supplemental procedures to more fully address safety culture	SECY-06-0074, Commitment 4	Closed
Reconsider the point at which licensee senior management should be requested to meet with the Commission to discuss actions being taken to improve performance (e.g., plants remaining in Column IV for a protracted period) and make a recommendation to the Commission	SRM dated 06/14/06	In progress

Issue	Reference	Status
Aggressively monitor; evaluate; and, if needed, implement additional methods or processes to increase the effectiveness of its efforts under the reactor oversight process (ROP) to assess safety culture at plants	GAO Report GAO-06-1029	In progress
In addition to periodically evaluating the effectiveness of its safety culture efforts, NRC may also be able, through its performance indicator program, to develop specific indicators to measure important aspects of plants' safety culture. Trends in these performance indicators could be useful feedback to NRC on its safety culture activities. The indicators could also provide useful information to the public and other NRC stakeholders on the safety culture at plants	GAO Report GAO-06-1029	In progress
In the absence of performance indicators or other performance metrics for plants' safety culture, make publicly available, through the ROP Web site, consolidated and comprehensive data on the plants that have substantive, open cross-cutting issues to provide a more comprehensive picture of plant performance and provide insights into aspects of the plants' safety culture that otherwise are not readily available on the Web site	GAO Report GAO-06-1029	Closed
Other Program Issues		
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	SECY-06-0074, Commitment 5	Closed

Stakeholder Survey Results

Consistent with the guidelines prescribed by Inspection Manual Chapter (IMC) 0307, "Reactor Oversight Process Self-Assessment Program," the staff conducted both an external and an internal survey during this self-assessment cycle to solicit and analyze stakeholder feedback regarding the effectiveness of the Reactor Oversight Process (ROP). All of the external survey questions and resultant responses, and most of the internal survey questions and responses, contributed directly to the annual ROP performance metrics.

A general analysis of the stakeholder responses is summarized below, while a more detailed analysis is available in the annual ROP performance metric report (reference ADAMS accession number ML070720085) and the applicable performance area discussions in Enclosure 1 to this paper.

External Survey

The staff published a survey in a *Federal Register* notice on October 10, 2006, to seek external stakeholder input regarding the implementation of the ROP. The survey requested responses to 21 specific questions corresponding to specific ROP performance metrics as defined in IMC 0307. This solicitation of public comments has been issued each year since ROP implementation in 2000.

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. Additional information and comments related to the ROP that were not directly captured by the specific questions were expounded on in Question 22.

In an effort to solicit feedback, the staff (1) mailed approximately 700 surveys directly to stakeholders, (2) placed a direct link to the survey information on both the ROP Web page and the "Documents for Comment" page of the NRC's external Web site, and (3) issued a press release. Compared to the internal survey, the external survey did not get a significant level of response and therefore does not lend itself to the more detailed statistical analysis that was performed for the internal survey. The results of the external survey and the staff's plans to address the insights gained are discussed below.

Survey Response - The NRC received 16 responses to the FRN issued in October 2006 from individuals and/or organizations listed chronologically in the order received below. The ADAMS accession number is given in parentheses after the respondent's name.

Stanley Gamble, Exelon Limerick Generating Station (ML063000055)
Raymond Tierney, Private Citizen (ML063070324)
T. Gurdziel, Private Citizen (ML063130355)
George Vargo, Private Citizen (ML063200031)
James Sniezek, Utility Consultant (ML063240279)
Union of Concerned Scientists (ML063340400)

Pennsylvania Department of Environmental Protection (ML063260281)
South Texas Nuclear Operating Company (ML063340361)
Farouk Baxter, Private Citizen (ML063340365)
Division of Environmental Safety and Health, State of New Jersey (ML063400352)
Nuclear Energy Institute (ML063390650)
Region IV Utility Group (ML063400360)
Florida Power and Light (ML063400368)
Southern California Edison (ML063470342)
Slovenian Nuclear Safety Administration (ML063560068)
Strategic Teaming and Resource Sharing (ML063560024)

Survey Results - The results are similar when comparing respondent satisfaction to the previous surveys. There were no dramatic improvements or declines. However, the level of participation (16 responses) was down from previous years (21 responses in each of the previous two years). Approximately twelve of the respondents answered the survey questions, while four of those that responded provided only comments. Based on a review of the responses, there were three distinct categories of external stakeholders. Half of the 16 responses came from NEI or utilities endorsing the NEI response, three came from State or other agencies, and five came from public interest groups or members of the public. The opinions and experience of the collective stakeholders vastly differ, but at times are parallel or coincide. Several repetitive areas that the staff identified as stakeholder concerns are discussed below.

PI Program Results - Although many of those that answered the survey questions believe that PIs promote plant safety, some public citizens groups are losing confidence in the ability of PIs to promote safety. Their comments complained that the program “caved in to the industry,” and provided examples to show that the PI program is “virtually useless.” It further stated, as an example, that Alert and Notification System indicators can be, and were, easily manipulated. These same views were shared with at least one State agency. In contrast, the industry primarily believed that the mix of the PI Program in conjunction with the inspection program promotes plant safety.

Inspection Program Results - Nearly all utility respondents agreed that the inspection program adequately covers areas important to safety, and is effective in identifying and ensuring the prompt correction of any performance deficiencies. In contrast, public comments cast doubts. A public interest group noted that numerous inspection procedures were broken, particularly inspection procedure (IP) 71152, "Identification and Resolution of Problems," and the associated portions of individual IPs that assess why licensees failed to identify problems. An effort is currently underway where the NRC ROP Problem Identification and Resolution (PI&R) focus group is performing a "Best Practices" review that includes IP 71152 and the PI&R portions of other IPs. Another comment from the public calls for a stronger enforcement program to ensure correction of problem areas. A comment from the public also pointed out that the reference section of inspection reports is useless to the public because many of the documents on the reference list are not publicly available.

SDP Results - The significance determination process, similar and consistent to previous survey results, had an unfavorable response from the majority of those that answered the survey. Many respondents indicated that the SDP is too complex, is inconsistent, and did not yield equivalent results for issues of similar significance in all ROP cornerstones. Comments

from a State agency raised concerns on probabilistic risk assessments (PRAs) used by the industry, and stated that the PRAs are not adequate, and were never approved by the NRC. The public citizens groups and State agencies indicated that the SDP is too complex and inaccessible for public scrutiny. The industry also expressed concerns about the timeliness and the inconsistency of the SDP.

Assessment Program Results - In the area of addressing performance issues, the majority of the industry respondents agreed that actions taken by the NRC for plants outside of the licensee response column have been appropriate. Many respondents from the public and State and local agencies generally are critical of the NRC for not "taking appropriate actions," and that NRC actions are usually too narrow in scope to ensure larger issues are corrected. The majority of respondents, including the utilities and State and local agencies, agree that the information in the assessment reports is relevant, useful, and written in plain English. Some utility comments expressed concerns about the basis and closure process for substantive cross-cutting issues identified in assessment letters.

Overall ROP Results - The majority of the respondents agreed that the ROP (1) is predictable and objective, (2) is generally risk-informed, (3) is understandable and written in plain English, (4) is effective, efficient, and realistic, (5) ensures openness in the regulatory process, (6) provides sufficient opportunities for the public to participate in the process, (7) has been implemented as defined, (8) minimizes unintended consequences, and (9) provides adequate regulatory assurance when combined with other NRC regulatory processes that plants are being operated and maintained safely. Concerns were noted that the ROP is more reactive than proactive.

Although a vast majority of respondents agree that the NRC has been responsive to public inputs, including several State and local agencies and members of the public, those that disagree feel that the NRC's response has been slow or inadequate. There are additional negative comments indicating a perception that public inputs are not valued.

In addition to the general analysis above, the staff's analysis of the specific responses is included in the applicable portions of the program area evaluations in Enclosure 1 to this paper as well as in the annual ROP performance metrics report (reference ML070720085).

NRC Response to External Feedback - As noted above, the staff reviewed all of the survey responses and evaluated the stakeholder comments as part of this annual self-assessment. The staff also plans to prepare a consolidated response to the CY 2006 external survey as was done for CYs 2004 and 2005. In addition, to ensure continued openness and responsiveness to the public's inputs and comments on the ROP, the staff plans to complete this task in response to future external surveys, and revised IMC 0307 to institutionalize the process.

As noted in SECY-06-0074, the staff proposed a change in the frequency of the external survey to every other year, consistent with the internal survey. This change was suggested 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 solicited feedback regarding the proposed change in survey frequency by adding a specific question to the 2006 external survey. Half of the respondents indicated that they agreed with the change in frequency, while half indicated that they disagreed, including a few who expressed concerns with changing the frequency. As noted above, there was also a notable decline in the level of participation from previous years'

surveys. As a result, the staff plans to conduct the external survey in CY 2007 and revise IMC 0307 to change the frequency to every other year. 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. In addition, the staff will continue to solicit and consider stakeholder feedback for significant ROP changes (e.g., safety culture, MSPI, etc.).

As in previous years, the staff will acknowledge receipt of each FRN response by correspondence indicating that the staff has considered and generally addressed the comments in this paper. In addition, this paper, the annual ROP performance metric report, and the consolidated response will be posted to the ROP Web page and sent along with the acknowledgment letters to each survey respondent.

Internal Survey

An internal survey was completed in November 2006 to solicit and analyze stakeholder feedback regarding the effectiveness of the ROP. The internal surveys are conducted on a biennial basis. Previous surveys were conducted in November 2004, December 2002, in March 2001 (in the initial year of ROP implementation), and in November 1999 (during the pilot phase).

The staff announced the survey through multiple channels with internal stakeholders to encourage participation. As a result, the staff received a higher number of responses than previous years and a higher level of comments. A total of 266 responses were received from internal NRC stakeholders, including resident and senior resident inspectors, regional-based inspectors and staff, senior reactor analysts, regional and headquarters line management, and headquarters technical and program staff employees. The comments overall reflect frank and honest feedback. Some internal stakeholders voiced concerns over certain aspects of the ROP which would not otherwise be provided.

The respondents selected answers from a computer-based program in the following topic areas: (1) demographics, (2) overall ROP, (3) ROP Web page, (4) assessment process, (5) inspection program, (6) inspection procedures, (7) performance indicators, (8) SDP, (9) SDP results, (10) feedback forms, (11) training issues, and (12) other issues. Each section of the survey allowed for additional comments. All respondent replies were anonymous and each question had five possible answers (strongly agree, agree, disagree, strongly disagree, and unable to answer).

The results of the survey sections are provided below. Note that the numbers in parentheses in the summaries below represent the combined percentage of respondents who endorsed the stated view versus the opposing view. Responses of "unable to answer" were not factored into these percentages.

Demographic Summary - Survey respondents made selections for each of four demographic issues: position, work location, grade, and years of service with the NRC. Most of the respondents are inspectors directly implementing the ROP. More than 200 of the 266 respondents are regional staff, including resident inspectors, region-based inspectors, senior

reactor analysts, and managers. Regional participation breakdowns are as follows: Region I had 77 respondents, while Region II had 35, Region III had 45, and Region IV had 45. Headquarters personnel account for 23 percent of the respondents (62).

Overall ROP - The majority of respondents indicate that the ROP generally provides appropriate assurance that plants are being operated safely (90 percent), appropriate regulatory attention to licensees with performance problems (87 percent), and a realistic approach to the oversight process (84 percent). Respondents further agree that the ROP provides appropriate objectivity to the oversight process (88 percent). Over two-thirds (68 percent) of the internal stakeholders agree that the ROP provides appropriate identification of declining safety performance before there is a significant reduction in safety margins. The staff is in the process of improving several PIs and continues 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.

Respondents believe that the ROP provides an effective risk-informed approach to oversight (80 percent), provides sufficient attention to licensees whose performance is in the licensee response column (87 percent), and provides appropriate communication through the use of plain language in official correspondence. Additionally, the internal stakeholders agree that the ROP provides appropriate inspector and licensee communication (95 percent) and that the ROP is understandable and the procedures and output products are clear and written in plain English (80 percent).

There were 14 questions included in this area of the survey. The first 10 are the same as in the 2004 survey, the percentage of respondents who agreed increased noticeably for 8 of the 10 questions. The "ROP vs. Previous Process" section in the 2004 survey was consolidated into the "Overall ROP" section of this survey, resulting in the last four questions. Most respondents agree that, overall, the ROP is a predictable (88 percent), consistent (85 percent), and timely (79 percent). Seventy-seven percent agree the ROP provides appropriate efficiency and effectiveness to the oversight process.

ROP Web Page - The vast majority of the respondents agree that the plant performance information on the ROP Web page is accurate (96 percent), timely (93 percent), and understandable (written in plain English) (92 percent). Additionally, the respondents believe that the information is adequate to keep NRC internal stakeholders informed (93 percent) and is organized for easy access (87 percent).

There were 5 questions included in this area of the survey. The percentage of respondents who agreed increased in all 5 questions when compared to the 2004 survey.

Assessment Program - Respondents agree that the assessment process provides an appropriate range of actions for safety issues (89 percent). Most respondents (75 percent) agree that the assessment process provides for timely resolution of issues commensurate with safety significance. Eighty percent of the respondents felt that the assessment process applies appropriate enforcement actions.

Over three-quarters (78 percent) of respondents agree that the assessment process focuses resources on areas of greatest safety significance. Approximately two-thirds (65 percent) of the respondents agree that the assessment process minimizes duplication/rework in preparation for assessment meetings.

The majority of the respondents agree that the assessment process provides objective levels of assessment (88 percent) and the agency takes appropriate actions to address performance issues for those licensees outside of the licensee response column of the Action Matrix (87 percent). Two-thirds of the respondents (67 percent) believe that the assessment process provides effective consideration of safety culture aspects. The safety culture initiative was first implemented in mid 2006 and was a new question added to the 2006 survey. The staff plans to evaluate the effectiveness of the safety culture initiative and compile lessons learned during CY 2007.

There were 10 questions included in this area of the survey versus 8 in the 2004 survey. The percentage of respondents who agreed increased for 7 of the 8 questions and the percentage in agreement decreased for one question when compared to the 2004 survey.

Inspection Program - Most respondents agree that the baseline inspection program inspection reports are communicated in a timely fashion (94 percent). A high percentage of the respondents believe that reports were communicated accurately (96 percent). More than three-quarters of the internal stakeholders believe that the baseline inspection program appropriately inspects for and identifies risk-significant issues (89 percent), and provides appropriate coverage of plant activities and operations important to safety (83 percent). A majority of the respondents believe that the baseline inspection program leads to objective findings whose significance can be clearly documented (81 percent). Nearly two-thirds (64 percent) of respondents agree the inspection program provides adequate guidance on safety culture aspects. The percentage of respondents that perceive the level of effort for conducting each inspection to be consistent with that estimated in the inspection procedure is nearly two-thirds (65 percent). The staff refined and formalized the process to realign inspection resources in CY 2006 and plans to perform the resource realignment effort in CY 2007.

There were 7 questions included in this area of the survey. The percentage of respondents who agreed increased for 5 questions, while the percentage in agreement decreased for 1 question. The safety culture question was new for 2006 and therefore cannot be trended.

Inspection Procedures - A high percentage of the respondents believe that the baseline inspection program procedures are adequate to address intended cornerstone attributes (93 percent), are conducted at an appropriate frequency (86 percent), and adequately sample risk significant aspects of each inspectible area (87 percent). Many of the respondents indicated that inspection procedures are clearly written (85 percent). Eighty-three percent of those surveyed believed that the inspection procedures place sufficient emphasis on planning.

There were 6 questions included in this area of the survey. The percentage of respondents who agreed increased in all questions when compared to the 2004 survey.

Performance Indicators - The majority of the respondents believe that the performance indicators were understandable (82 percent). Additionally, many believe that they were clearly defined (82 percent) and provide an appropriate level of overlap with the inspection program

(78 percent). More than two-thirds of the respondents believe that the performance indicators provide useful information on risk-significant areas (71 percent) and help to maintain safety (74 percent).

Slightly over half of the respondents agree that the performance indicators increase public confidence (56 percent). Only 58 percent of the respondents believe that the performance indicators provide an adequate indication of declining safety performance. When asked if the inclusion of MSPI can effectively identify performance outliers, only 60 percent agree (this was a new question in the 2006 survey).

There were 8 questions included in this area of the survey. The percentage of respondents who agreed increased for 6 of the 7 questions and the percentage in agreement decreased for one question when compared to the 2004 survey.

Significance Determination Process (SDP) - Many of the respondents agree that the SDPs provide a basis for effective communication of inspection findings to the licensee (84 percent) and focus NRC attention on safety-significant issues (83 percent). Three quarters of the respondents agree that the SDP provides consistent results (74 percent) and a basis for effective communication of inspection findings to the public (73 percent).

Sixty-three percent of the respondents agree that program guidance documents are clear and 60 percent agree that resource expenditures are appropriate. Only 57 percent of respondents believe non-reactor safety SDPs are easy to use. To a lesser extent, approximately only half of the respondents believe that the reactor safety SDPs are easy to use (54 percent) and SDP training is effective (56 percent). Several significant SDP improvements were implemented in CY 2006, including implementing the pre-solved tables, issuing the IMC 0609 Appendix M, "Significance Determination Process Using Qualitative Attributes," and addressing the need for risk informing findings which do not fit a previously developed SDP. The staff believes that once training is completed on these process improvements, internal stakeholder perception of the SDP will significantly improve.

There were 9 questions included in this area of the survey. The percentage of respondents who agreed increased in all 9 questions when compared to the 2004 survey.

SDP Results - Eighty-five percent of the respondents believe that the SDP results were verifiable. A majority of the respondents believe that the SDP results correctly characterize the risk-significance of inspection findings (76 percent), are accurate (76 percent), are timely (68 percent), are based on clear standards (69 percent), and are realistic (78 percent).

There were 6 questions included in this area of the survey. The percentage of respondents who agreed increased in all 6 questions when compared to the 2004 survey.

Feedback Forms - Many respondents believe that the feedback forms were understandable and written in plain English (78 percent) and were accurate (79 percent). Only half agree that the responses to feedback forms sent to headquarters are timely (50 percent). Nearly two-thirds of the respondents believe that the feedback forms are responsive and address the issues raised (68 percent). Approximately 40 percent of the respondents were unable to answer these questions because they did not have experience using the feedback process. The staff

believes that the recent improvements in CY 2006 for tracking feedback forms will significantly increase timeliness and stakeholder satisfaction with the internal feedback process.

There were 4 questions included in this area of the survey. The percentage of respondents who agreed increased for all 4 of the questions when compared to the 2004 survey.

Training Issues - Most of the respondents agree that inspectors are encouraged to maintain a questioning attitude (94 percent). Three quarters of the respondents agree that adequate training is provided to effectively implement the ROP. Only 59 percent agree that adequate training is available for the safety culture aspects of the ROP inspection procedures and manual chapters. The staff plans to evaluate the effectiveness of the safety culture initiative, including inspector training, and compile lessons learned during CY 2007.

There were 7 questions included in this area of the survey. This is a new area added to the 2006 survey. Two similar training questions were included in the 2004 survey. The percentage increased in both questions during this survey.

Other Issues - Three quarters of respondents agree that the resources needed to oversee licensees using the ROP are appropriate. Sixty-eight percent agree the ROP fosters a long-term self-improvement by the licensees. A high percentage of the respondents believe that the supplemental inspection procedures provide sufficient information to confirm the adequacy of a licensee's root cause and corrective action effort (90 percent). Many survey respondents also agree that the information provided by the NRC appropriately keeps the public informed of the agency oversight activities related to the plants (89 percent) and that issuing non-cited violations and relying on licensees' corrective action programs provide an adequate approach to resolve issues of very low safety significance (i.e., Green findings) (80 percent).

Regarding new questions, 70 percent agree that the ROP appropriately integrates and provides insights to cross-cutting issues. Only 62 percent agree that the ROP safety culture enhancements help in identifying licensee safety culture weaknesses. The staff plans to evaluate the effectiveness of the safety culture initiative and compile lessons learned during CY 2007.

There were 7 questions included in this area of the survey. This area represented various aspects of the ROP (i.e., resources, oversight, safety culture).

Common Themes from Specific Internal Comments - In contrast to the highly favorable percentages in the question responses, some respondents provided critical comments on the ROP in the free-form comment sections of the survey. Several commenters noted that although the ROP has shortcomings, it is more objective and predictable than the previous assessments conducted under the subjective Systematic Assessment of Licensee Performance (SALP). In general, many respondents agree that the ROP provides appropriate identification of declining safety performance before there is a significant reduction in safety margins.

Several respondents noted that the SDP was too complex, inconsistent, and/or did not provide timely results. Several respondents believed that too much time and effort were spent obtaining and analyzing data to determine the color of a finding. The need for SDP training was also a recurring concern.

The inspection program comments were broad and far reaching across the baseline inspection program. Many respondents expressed concerns with the quality of licensee PRAs and with the sampling required in inspection procedures. Another area of the inspection program that received numerous comments was that additional focus should be dedicated to maintenance activities.

Performance indicator comments, while not overwhelmingly critical, were consistent. Some respondents believed that the credibility of the thresholds was compromised because the thresholds were set too high and failed to provide viable plant performance information. Since the green threshold is rarely exceeded (such as many of the barrier integrity PIs), it gives a false impression of licensee performance. Additionally, some respondents believe that the PIs are managed since they are not clearly defined, resulting in interpretations by the licensee that potentially mask actual performance.

Other themes from the comments were that the handling of cross-cutting issues is unclear and inconsistent, that inspector feedback is not adequately addressed and resolved, and that NRC enforcement actions are not adequately incorporated into the ROP.

Comparison of November 2004 and November 2006 Surveys - The staff last conducted an internal survey in November 2004. Responses to the 2004 survey were generally favorable. The majority of respondents indicated that the ROP provided appropriate assurance that plants were operated safely and that appropriate regulatory attention was provided to licensees with performance problems, resulting in a realistic approach to oversight.

The 2006 survey experienced a significant increase of 27 percent in participation from the 2004 survey. The results represent a good cross-section of ROP users. The average percentage of agreement for the questions in the 2006 survey is more than 76 percent; a noted increase from the 2004 survey. Overall, there were improvements in level of agreement (on average 5 percent to 6 percent) across all areas of the ROP as compared to the 2004 survey results. The vast majority of the responses showed an increase in stakeholder satisfaction when compared to previous results. Several areas of the ROP experienced a significant increase up to 15 percent. Each of the major topic areas demonstrated overall improvement and an increase in stakeholder satisfaction when compared to the previous survey. The topic area that showed the greatest improvement was feedback forms. Every question regarding the feedback forms showed a noticeable improvement over the previous survey (4 out of 4), with an average increase of more than 7 percent. Two other sections that significantly improved were the SDP and performance indicators. The SDP sections showed improvement in all 9 questions with an average increase of nearly 5 percent. Performance indicators had an improvement in 6 out of 7 questions.

Stakeholder Survey Conclusions

The responses from the surveys of both internal and external stakeholders were generally in line with responses from previous years, as were the number and distribution of the responses. The responses were generally positive, with some concerns being raised in each of the ROP program areas. The feedback from these surveys has been or will be considered in modifying the appropriate areas of the ROP. Further discussion and analysis of the survey results are included in the applicable portions of the program evaluations in Enclosure 1 to this paper as

well as in the ROP performance metric report (reference ML070720085). In addition, a consolidated table including all internal and external survey results since inception of the ROP, along with the staff's evaluation and response, can be accessed through the recently developed ROP Web page entitled "ROP Program Evaluations and Stakeholder Feedback."

Regulatory Impact Summary

Scope and Objectives 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 to report the feedback on the process to the Commission each year. The staff described the continual feedback process in SECY-92-286, "Staff's Progress on Implementing Activities Described in SECY-91-172, Regulatory Impact Survey Report—Final," issued August 18, 1992.

The feedback process requires regional management to solicit informal feedback from their licensees 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. This process, which was implemented in October 1992, has given licensees frequent opportunities to comment on regulatory impact.

This enclosure reports on feedback received from licensees during the previous fiscal year. During this period, the staff received feedback from 68 reactor licensees regarding 191 issues. The comments fell into three main categories—formal communication with licensees, inspector performance, and security and safeguards activities. Of the comments received, 84 percent were favorable and 16 percent were unfavorable.

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

(1) Formal Communication with Licensees

Feedback

About 40 percent of the licensees' comments (78/191) concerned the effectiveness of communication between the NRC staff and licensees, and about 95 percent of these comments were favorable. 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 (2/4) related to communication in the security area.

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 headquarters management.

(2) Inspector Performance

Feedback

Over one-third of the licensees' comments (66/191) concerned inspector performance. This category covers a wide range of inspector practices but excludes issues involving communication with licensees discussed in the previous section. About 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. Almost half of the unfavorable comments (3/7) related to instances where the licensee disagreed with the inspector's characterization of an inspection issue.

Evaluation and Action

The staff concludes that inspectors, with the exception of isolated incidents, were professional and maintained effective working relationships. About 90 percent of the comments received this year were favorable. 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 professional conduct. 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 staff will continue to closely monitor inspector performance.

(3) Security and Safeguards Activities

Feedback

About 10 percent of the comments received (21/191) related to the NRC's security and safeguards activities and over half of those comments (12/21) were unfavorable. Although some licensees complimented safeguards inspectors for their professionalism and the effectiveness of the force-on-force exercises, the majority of licensees desired more stability and clearer expectations regarding safeguards activities.

Evaluation and Action

The NRC 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 is continuing outreach efforts with various stakeholders to help assure timely communication and involvement in regulatory activities.

ROP Resources

Summary of 2006 ROP Resources

A summary of staff resources expended for the Reactor Oversight Process (ROP) during the past five annual review periods is provided in Table 1¹.

Overall, inspection effort and ROP requirements have increased since 2002. Increases in the regional inspection budget in 2004 through 2006 and aggressive actions by regional offices in filling open inspector positions have eliminated the difficulties in completing the baseline inspections experienced in 2002 and 2003.

Overall staff effort in 2006 was essentially unchanged compared with 2005 with a decrease of 0.4%, although there was variation in the distribution of effort among the various elements of the ROP.

Baseline inspection effort in 2006 was comparable with 2005. The reduction in “plant status” effort is the result of accounting changes in mid-2006 for effort related to daily reviews of licensee corrective action activities. This effort is now charged to Inspection Procedure (IP) 71152 instead of “plant status,” which increased accordingly.

Plant-specific inspections include supplemental inspections conducted in response to inspection findings and degraded performance indicators, reactive inspections such as Augmented Inspection Teams (AITs) and Special Inspections (SIs) performed in response to events, and infrequently performed inspections that are not part of the baseline or supplemental inspection program. The effort for supplemental inspections (IP 95001, IP 95002, and IP 95003) decreased in 2006 compared with 2005. However, this decrease was offset by increases in the other plant-specific inspections resulting in an overall increase in the 2006 inspection effort for plant-specific inspections. A noticeable increase was reported in SIs in response to events and in infrequently performed inspections. The effort in this area includes inspection activity at sites with approved deviations for additional inspection and inspection activity at Browns Ferry Unit 1.

Additional noteworthy changes include a decrease of 17.1% from 2005 to 2006 in inspection effort related to Generic Safety Issue inspections (GSIs), and an increase in the hours reported for the “other activities.” The GSIs are typically one time inspections of specific safety issues with significant variability in effort possible from year to year. In addition, the majority of the work on the mitigating system performance index (MSPI) Temporary Instruction occurred in the fourth quarter of calendar year 2006. Since resource data are obtained and reported on a fiscal year basis, these hours are not captured in the fiscal year data. The increase in the “other activities” was in the aggregate of Routine Communication/Regional Support/Enforcement Support/Review of Technical Documents. Hours charged for inspection-related travel and Significance Determination Process remained similar to 2005 hours. The staff will continue to

¹The ROP is implemented on a calendar year basis; however, the staff obtains and reports resource data on a fiscal year basis.

monitor the hours charged to these activities in order to understand and address the causes of any changes.

2006 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 has improved the site staffing levels with experienced and qualified resident inspectors and alleviated the resource burden in completing the baseline inspection program. As in 2005, all four regions completed their baseline inspections in 2006 using the allocated regional resources; no indications of the staffing difficulties previously experienced in 2002 and 2003 were evident during the 2006 inspection cycle.

ROP Resource Model/ Regional Inspection Budget

The regional inspection budget for FY 2007 and beyond was increased to reflect ROP resource requirements. Issues related to inspection resources are reviewed as part of the ongoing ROP self-assessment and resources are adjusted as required by program needs.

One initiative piloted in 2006 in Region I is a resource model that includes a “unique site” designation in addition to single-, dual- and triple-unit sites. The previous resource model treated Millstone, Units 2 and 3, as two single-unit sites instead of one dual-unit site. This treatment allocated additional inspection resources to Millstone in order to address unique site features and historical circumstances that are currently being resolved.

The staff is conducting a review of the inspection data and model for the Millstone (MILL), 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” due to design, vintage or operational differences between the units. In order to address Region I’s recommendation, this “unique site” model was tested and evaluated in 2006 at MILL, NMP, and BV.

The impact of this unique site model on regional inspection resource requirements and the resulting implications for the regional inspection budget is currently being evaluated by the staff. If the review concludes that this approach has merit, the “unique site” will be factored into the ROP resource model for future budget formulation.

ROP Efficiency Initiatives

A number of initiatives are currently underway that may improve program efficiency and effectiveness. These initiatives include a realignment of resources allocated to the individual baseline inspection procedures, revised design engineering inspections, regional best practice initiatives, continued SDP improvements, and implementation of the PI improvements. These initiatives are discussed in other sections of this paper.

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

	52 weeks FY 2002 9/23/01-9/21/02	52 weeks FY 2003 9/29/02-9/27/03	52 weeks FY 2004 9/28/03-9/25/04	52 weeks FY2005* 9/26/04-9/24/05	52 weeks FY2006* 9/25/05-9/23/06	% Δ FY05-06
Baseline/Core						
Direct Inspection Effort	119,884	123,027	133,028	145,042	144,117	
Inspection Prep/Doc	91,385	91,230	100,904	110,837	107,042	
Plant Status	<u>44,228</u>	<u>46,755</u>	<u>51,073</u>	<u>55,394</u>	<u>51,488</u>	
Subtotal	255,497	261,012	285,005	311,273	302,647	(2.8)%
Plant Specific Inspections						
Direct Inspection Effort	9,354	14,647	12,720	14,818	16,709	
Inspection Prep/Doc	<u>7,715</u>	<u>9,978</u>	<u>9,971</u>	<u>9,149</u>	<u>11,130</u>	
Subtotal	17,069	24,625	22,691	23,967	27,839	16.1%
GSI Inspections	1,718	3,953	7,293	10,011	8,295	(17.1)%
Performance Assessment	17,293	20,013	21,261	19,284	16,885	(12.4)%
Other Activities (Inspection Related Travel, Routine Communication, Regional Support, Enforcement Support, Significance Determination Process, Review of Technical Documents)	43,627	48,058	54,040	59,290	66,156	11.6%
Total Staff Effort	335,204 hrs	357,661 hrs	390,290 hrs	423,825 hrs	421,822 hrs	
Total Staff Effort/Operating Site	5,003 hrs/site	5,338 hrs/site	5,825 hrs/site	6,326 hrs/site	6,296 hrs/site	-0.4%

* Includes Regional, NRR and NSIR hours. Prior years do not include NSIR hours.