Reactor Oversight Process Independent Assessment

2013

Enclosure

Reactor Oversight Process Independent Assessment
Working Group Members:

Eric Benner
Daniel Collins
Stuart Easson
Michael Jones
Brian McDermott
David Pelton

Acknowledgment

The Reactor Oversight Process (ROP) Independent Assessment Working Group has gathered insights from internal and external stakeholders as inputs in developing an informed independent view of the ROP and its implementation. The working group deliberated on its recommendations in a collegial manner and collaborated to produce the final report text. The working group was comprised of individuals with more than 135 years of collective experience in the nuclear field who also had no recent duties associated with ROP implementation or substantive ties to the original ROP development effort. The diversity of the group members' experience and views provided a strong measure of independence to this review. I thank the working group members for their active engagement in the review and professional commitment to the project.

Brian J. McDermott

EXECUTIVE SUMMARY

The U.S. Nuclear Regulatory Commission's (NRC's) Reactor Oversight Process (ROP) integrates the agency's inspection, assessment, and enforcement activities for operating commercial nuclear power reactors. The Operating Reactor Assessment Program evaluates the overall performance of the facilities using the ROP results and communicates this information to licensee management, members of the public, and other stakeholders.

The ROP was initially implemented in 1999 and has undergone several evolutionary changes in its implementation. Self assessments are conducted by the Office of Nuclear Reactor Regulation (NRR) on an annual basis and have identified opportunities to enhance and refine the oversight process. While some changes in the implementation of the process have enhanced how specific aspects of plant performance are evaluated, there have been no significant changes in the ROP's conceptual framework since the inception of the program.

In October 2012, the Commission directed agency staff to provide a fresh review of the practices and approaches the NRC has developed for the ROP over the course of years. Specifically, the Commission requested an independent review of the program's objectives and implementation. The ROP Independent Assessment Working Group developed this report in response to the Commission's request.

Review Objectives and Approach

A six-person working group comprising of NRC staff with no current duties associated with implementation of the ROP and no substantive ties to the original ROP development effort performed the 2013 independent assessment of the ROP. The working group members were selected on the basis of their diversity of nuclear and regulatory experience. To provide an independent assessment, the working group sought information about the ROP implementation from a variety of internal and external sources, identified focus areas, and then made its assessment of the ROP outcomes in comparison to the program objectives. The charter for the working group is provided as Attachment 1.

The ROP derived its original objectives from the NRC Strategic Plan and included maintaining safety; increasing openness; making NRC activities and decisions more effective, efficient, and realistic; and reducing unnecessary regulatory burden. As the program has matured, the objective of reducing unnecessary regulatory burden has become an integral part of the second objective, "making NRC activities and decisions more effective, efficient, and realistic." The working group used multiple means to collect information and stakeholder perspectives regarding the effectiveness of the ROP in meeting these objectives. Prior assessments of the ROP and its effectiveness completed between 2001 and 2012 were reviewed to identify common themes. These included program office self assessments, external reviews and audits, and collections of stakeholder feedback. To obtain current perspectives, the working group interviewed a range of internal and external stakeholders including industry groups and corporate leaders, non-governmental organizations, and NRC staff and senior leadership.

The working group formulated its assessment of the ROP and its implementation by comparing the collection of past and present feedback as well as program outcomes with the original objectives of the ROP. Themes identified during the working group's initial review were discussed at a public meeting on June 18, 2013, and stakeholder input on the issues was considered in the final assessment. The 2013 ROP Independent Assessment Report

documents the working group's review, recommendations, and suggestions. A list of the documents reviewed by the working group and additional information regarding the public meeting to solicit stakeholder views are provided as Attachments 2 and 3, respectively.

Conclusions, Recommendations, and Suggestions

The working group found that the ROP has been effective in accomplishing its objectives of maintaining safety, increasing openness, and making NRC activities and decisions more effective, efficient, and realistic. The ROP framework has enabled the NRC to effectively and predictably allocate oversight resources based on the safety and security performance of the operating reactor fleet. The working group's assessment of views provided by internal and external stakeholders in interviews and written evaluations found no broad issues of concern regarding the ROP framework. The insights provided as well as the working group's assessment indicate that the ROP's systematic approach to oversight provides sufficient information to reach reliable regulatory conclusions. While implementation of the ROP framework for the next generation of nuclear power plants would need to account for substantial differences in the baseline risk of new reactor designs, the fundamental ROP framework will continue to serve the agency well.

The ROP benefits from an extensive self assessment process that includes consideration of program metrics, outcomes achieved, and input from external stakeholders. These self assessments have resulted in evolutionary changes in the program implementation such as the adoption of the Mitigating System Performance Indicator. The working group considered the focus on self assessment an important element in the success of the ROP.

The working group's overall assessment is that the ROP is functioning well. Opportunities to further enhance the ROP structure, program implementation, and the conduct of self assessments were noted, and each issue was prioritized by designation as either a "recommendation" or a "suggestion." A recommendation identifies an issue that the working group believes would enhance the ROP in terms of meeting its overall objectives and warrants staff evaluation. A suggestion relates to an option for potential improvement at an operational level that the working group believes should be considered by staff as future changes to the ROP are evaluated.

While each recommendation or suggestion has its individual merits, two recommendations suggest that a thorough reexamination of the current ROP approach would be beneficial. Specifically, the threshold for the *Degraded Cornerstone* column of the ROP Action Matrix (Recommendation 5) and the use of Substantive Cross-Cutting Issues/Safety Culture Attributes in the ROP process (Recommendation 6). These two issues garnered the most commentary from both the regulators and the regulated community. While functional in their current state, these aspects of the ROP present the greatest opportunity to enhance the efficiency of the oversight process.

A summary table of all recommendations and suggestions identified through this ROP Independent Assessment is provided as Attachment 4 to this report. The details of the recommendations and suggestions are provided in the body of the report. The following are the recommendations of the ROP Independent Assessment working group organized by the ROP goals:

Maintaining Safety

Issue: Licensee requests for an extended period of time to conduct cause evaluations and plan corrective actions in advance of Supplemental Inspections for Column 4 of the ROP Action Matrix could potentially delay NRC reviews to verify the adequacy of the licensee's corrective action program while operations continue.

Recommendation 1: Clarify expectations for the timing of supplemental inspections for Column 4 of the ROP Action Matrix, or portions thereof, to ensure that the NRC's assessment of continued operation and consideration of additional regulatory actions are completed in a timely manner. (Section 4.1)

Issue: The ROP assessment process does not require a licensee to demonstrate improved performance (i.e., adequate and lasting corrective actions) before a plant is moved from a "higher" Action Matrix column back to the Licensee Response column. This can lead to abrupt swings in the Action Matrix characterization of a plant's performance, might appear disjointed to external stakeholders, and can result in unnecessary resource burdens for the NRC and licensees.

Recommendation 2: Consider including additional measures in the ROP to minimize abrupt changes in the Action Matrix characterization of plant performance caused by mechanistic relaxation of oversight based on the passage of time and completion of NRC inspections. (Section 4.2)

Issue: Generic issues are often considered "resolved" by licensee commitments to programmatic changes and future actions. After initial NRC reviews, the inspection program does not generally *include* explicit *activities to confirm continued licensee implementation over time.*

Recommendation 3: Include a risk-informed periodic review of licensee programs or actions implemented to address generic issues to enhance the agency's assurance that these measures continue to be effectively implemented. (Section 4.3)

Increasing Openness

Issue: Current NRC message presentation used for routine ROP communication and outreach with stakeholders can lead to confusion regarding the safety significance of licensee performance issues or the meaning of regulatory actions. The heavy reliance on ROP terminology in NRC messages contributes to heightened stakeholder concern over performance issues that are within the anticipated range of licensee performance and do not impact safe operations.

Recommendation 4: Consider enhancements to improve the effectiveness of NRC messages through more extensive use of plain language, a focus on the desired effect of the communication on stakeholder perceptions, and the use of wording that coveys the significance of issues to the broadest possible audience. (Section 5.1)

Making NRC Activities and Decisions More Effective, Efficient, and Realistic

Issue: Internal and external stakeholders agree that the resources expended to disposition a finding at the Green/White threshold can be excessive. Licensees are willing to expend a great

deal of resources to challenge a White finding because, in part, the increase in regulatory oversight for two White findings in a cornerstone (transition to Column 3 of the NRC Action Matrix) is not viewed as proportionate to the risk associated with the White findings. Consequently, the NRC also expends significant resources to finalize the characterization of White findings.

Recommendation 5: The NRC should review the criteria for transition to Column 3 of the NRC Action Matrix against the original ROP program goals to ensure that the significance of White inspection findings is not being overemphasized and to ensure that agency resources used to process White inspection findings are commensurate with findings that, by definition, are of low to moderate safety significance. (Section 6.3.3)

Issue: A rigorous comparison of the benefits of considering cross-cutting issues and safety culture in the ROP on licensee safety performance and an assessment of the NRC resources expended to achieve those benefits have not been performed. Additionally, the working group found differences between various NRC policy, program, and communication documents when describing the purposes and uses of cross-cutting issues and safety culture in the ROP.

Recommendation 6: The NRC should perform a comprehensive analysis to determine whether the use of cross-cutting issues and safety culture, as currently incorporated in the ROP, provides regulatory value in terms of licensee safety performance for the resources expended. To support that determination, NRC staff should clarify and document the goals, purposes, uses, and desired outcomes associated with the inclusion of cross-cutting issues and safety culture in the ROP. If program changes are needed, the staff should determine whether Commission approval is required for implementation. (Section 6.4.3)

Issue: The identification of performance issues applicable to multiple licensees through inspections or through the Task Interface Agreement process is an anticipated outcome of the NRC's oversight process; however, some issues could be more efficiently and effectively addressed by NRC and industry by using other NRC processes to better ensure a consistent generic response.

Recommendation 7: Clarify ROP program expectations for when performance issues that are common to multiple facilities should be considered for resolution through a generic issues process in order to improve the use of NRC inspection resources and ensure a thorough and consistent industry response. (Section 6.5)

Issue: The ROP self assessment process focuses on identifying and addressing operational issues impacting program implementation and does not explicitly evaluate the effectiveness of the ROP in achieving expected outcomes.

Recommendation 8: Consider revising the ROP self assessment process to better solicit and assess both tactical and strategic feedback. Reexamine how internal and external feedback is collected, analyzed, and used to improve oversight approaches to and the implementation of the ROP. (Section 6.6)

CONTENTS

1.0 INTRODUCTION

In the staff requirements memorandum (SRM) for SECY-12-0081, "Risk-Informed Regulatory Framework for New Reactors" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML12296A158), the Commission approved two staff recommendations associated with the review and analysis for new reactor designs and disapproved a staff recommendation related to the Reactor Oversight Process (ROP) that would have resulted in continued staff use of existing risk-informed ROP tools and augmentation of qualitative tools with deterministic backstops to ensure an appropriate regulatory response for new reactor designs. In its disapproval of the staff's recommendation related to the ROP, the Commission specified that the staff should give additional consideration to the use of relative risk metrics or other options that would provide a more risk-informed approach to the determination of the significance of inspection findings for new reactors. In addition, the Commission requested an independent review of the practices and approaches the U.S. Nuclear Regulatory Commission (NRC) has developed for the ROP over the course of years. In its tasking, the Commission stated the following:

> The Commission would benefit from a fresh review of the practices and approaches the NRC has developed for the [ROP] over the course of years. The staff should pursue an independent review of the program's objectives and implementation including the relative roles of headquarters and regional staff, our interactions with industry over performance indicator assessments, and the effectiveness of NRC's assessment of substantive cross-cutting issues [(SCCIs)]. Such an assessment would provide a reinforced foundation upon which the agency can plan for the operational review of new nuclear power plants based on Generation III+ reactor technology.

This paper responds to the Commission's specific tasking for the conduct of an independent assessment of the practices and approaches the NRC has developed for the ROP. The staff's response to the Commission tasking regarding relative risk metrics is being addressed by a separate staff working group and is not contained in this assessment report.

2.0 INDEPENDENT REVIEW

2.1 ROP Independent Assessment Working Group

On February 26, 2013, the Deputy Executive Director for Reactor and Preparedness Programs established a ROP Independent Assessment Working Group to conduct the independent review directed by the Commission in the SRM for SECY-12-0081. The working group created a charter to define the objective, scope, coordination and communication, expected products, schedule, and staffing. A copy of the working group charter and a list of the documents reviewed by the working group are provided as Attachments 1 and 2 to this report.

To provide the independence directed by the Commission, the selection of working group members was limited to individuals who were not substantially involved in the ROP development and have not recently been involved in ROP implementation. The charter for this independent review specified that review be conducted by NRC staff, independent of the present stewards of the ROP in the Office of Nuclear Reactor Regulation (NRR) and the NRC staff members that initially developed the program.

The independent review was conducted as a collaborative assessment by the working group members. The working group sought to identify programmatic issues based on its assessment of a wide variety of inputs against the original ROP goals and objectives. The inputs included the collection of existing self assessments, external reviews, and stakeholder feedback amassed since the initial implementation of the ROP in 2001. The working group also obtained current views on the effectiveness of the program relative to its goals by conducting structured interviews with current ROP practitioners and stakeholders and by observing a sample of ROP-related processes. Additionally, themes identified during the working group's initial review were also discussed at a public meeting on June 18, 2013, and stakeholder input on the issues was considered in the final assessment. Information regarding this public meeting to solicit stakeholder views is provided as Attachment 3 to this report.

The working group was cognizant of efforts underway in NRR to enhance the ROP including an ROP enhancement initiative and a business process improvement project for the significance determination process (SDP). The independent review focused on strategic-level achievement of objectives and outcomes rather than on ROP implementation issues, thereby minimizing the opportunity for duplication of efforts by the working group and NRR staff.

2.2 Summary of Review Activities

The working group reviewed 22 previously documented internal and external assessments of the ROP along with any reports of related follow-up actions. These documents along with the ROP's bases documents helped the group gain an appreciation for changes to the ROP since its inception. It also provided an opportunity for the working group to identify recurring themes and potential areas for improvement.

Working group members observed a number of routine ROP activities in progress including several Monthly ROP meetings with industry, the 2012 ROP End-of-Cycle (EOC) review meeting, an escalated enforcement review panel, and the Agency Action Review Meeting. The working group also observed the regional session at the 2013 Regulatory Information Conference where a panel of NRC and Industry leaders discussed a variety of ROP issues.

The observations provided the group with insights on the issues of concern to individuals actively engaged in implementing the program.

Interviews were conducted with a representative sample of internal and external stakeholders with the goal of obtaining their insights on the effectiveness of the ROP and areas for improvement. A combination of individual and group interviews were conducted to obtain candid views, as well as to benefit from the synergy offered by interviewing a group of ROP practitioners. The interviewees included NRC management and staff, industry and corporate leaders, and representatives from non-governmental organizations.

A summary table of all recommendations and suggestions identified through this ROP independent assessment is provided as Attachment 4 to this report.

3.0 ROP BACKGROUND AND BASES

The ROP integrates the NRC's inspection, assessment, and enforcement programs. The Operating Reactor Assessment Program evaluates the overall performance of operating commercial nuclear reactors and communicates this information to licensee management, members of the public, and other stakeholders.

The Operating Reactor Assessment Program collects information from NRC inspections and licensee-reported performance indicators (PIs) to enable the NRC to develop objective conclusions about a licensee's safety performance. Based on this assessment information, the NRC determines the appropriate level of its response, such as performing supplemental inspections, conducting meetings with NRC and licensee management, or issuing orders to shut down plants. The assessment information and NRC response are then communicated to the public, except for certain security-related information associated with the Security Cornerstone that the Commission has determined to withhold from public disclosure. The NRC conducts follow-up actions, as applicable, to ensure that the corrective actions designed to address performance issues were effective.

The ROP was also developed to meet the following four agency strategic performance goals:

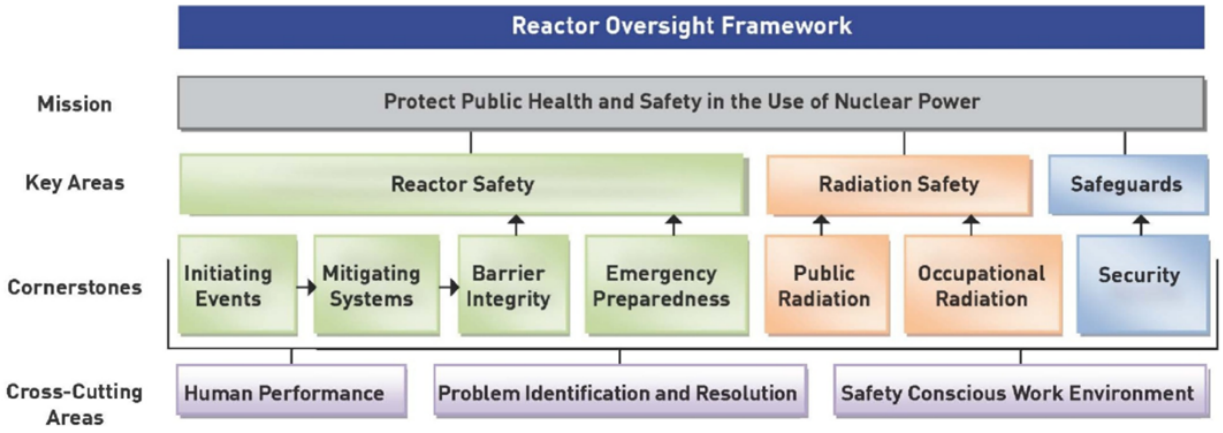
- maintain safety;
- increase openness;
- make NRC activities and decisions more effective, efficient, and realistic; and reduce unnecessary regulatory burden.[1]

The ROP applies to all operating commercial nuclear reactors except those sites that are under Inspection Manual Chapter (IMC) 0350, "Oversight of Reactor Facilities in a Shutdown Condition Due to Significant Performance and/or Operational Concerns" (ADAMS Accession No. ML063400076). While this process outlines the NRC's general approach to reactor oversight, the structure and guidance of the ROP do not restrict the NRC from taking any necessary actions to fulfill its responsibilities under the Atomic Energy Act of 1954, as amended.

Some of the key tenets of the ROP and the drivers in its development were (1) to improve the objectivity of the oversight processes so that subjective decisionmaking is minimized, (2) to improve the scrutability and predictability of NRC actions so that regulatory response has a clear tie to licensee performance, and (3) to risk inform the processes so that NRC and licensee resources are focused on performance issues with the greatest impact on safe plant operation. In ways consistent with Regulatory Guide (RG) 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis" (ADAMS Accession No. ML100910006), the ROP's risk-informed processes integrate risk insights with more traditional deterministic factors (such as defense in depth and maintaining safety margins) to guide regulatory decisionmaking.

[1] In 2004, the NRC implemented a revised Strategic Plan in which an Effectiveness goal was established to "Ensure that NRC actions are effective, efficient, realistic, and timely;" this replaced the previous goal to "Make NRC activities and decisions more effective, efficient, and realistic." At the same time, the prior goal to "Reduce unnecessary regulatory burden" was eliminated.

The regulatory framework for reactor oversight consists of the following three key strategic performance areas: reactor safety, radiation safety, and safeguards. Within each strategic performance area are cornerstones that reflect the essential safety aspects of facility operation. These seven cornerstones include initiating events, mitigating systems, barrier integrity, emergency preparedness, public radiation safety, occupational radiation safety, and security. Satisfactory licensee performance in the cornerstones provides reasonable assurance that the licensee's facilities are being operated safely and that the NRC's safety mission is being accomplished. Each cornerstone contains inspection procedures and licensee-reported PIs to ensure that their objectives are being met. Both inspection findings and licensee-reported PIs are evaluated and given a color designation based on their safety significance, and this designation feeds the ROP Action Matrix to determine a predictable regulatory response. This framework is shown in the following figure.



SDP implementation guidance is contained in IMC 0609 (ADAMS Accession No. ML101400479). IMC 0609, Appendix A, "The Significance Determination Process (SDP) for Findings at Power" (ADAMS Accession No. ML101400574), is used to determine the risk significance of performance deficiencies in the initiating events, mitigating systems, and barrier integrity cornerstones. Risk thresholds are a function of changes in core damage frequency (CDF) and large early release frequency (LERF) against a plant's baseline risk. For those relatively infrequent cases in which sufficient probabilistic risk assessment (PRA) methods and tools are not available or appropriate to provide reasonable and timely estimates of safety significance, the staff uses IMC 0609, Appendix M, "Significance Determination Process Using Qualitative Criteria" (ADAMS Accession No. ML101550365), and considers the best available information and factors such as defense in depth, safety margins, and the potential for plant wide impacts attributable to the performance deficiency to determine the safety significance in those cases. Several additional SDPs are more subjective to determine an equivalent regulatory response (i.e., emergency preparedness, radiation safety, and security).

Aspects of licensee performance such as human performance, the establishment of a safety conscious work environment (SCWE), and the effectiveness of licensee problem identification and resolution programs, although not identified as specific cornerstones, are still important to meeting the agency's safety mission. While determining how best to account for these aspects of performance, which can affect multiple cornerstones, the staff concluded that these items generally manifest themselves as the root causes of performance problems. Adequate licensee

performance in these “cross-cutting” areas is assessed either explicitly in each cornerstone area or is inferred through cornerstone performance results from both NRC inspections and licensee-reported PI data.

The ROP was developed with the presumption that plants that have significant licensee performance issues with cross-cutting areas would be revealed through the existence of safety significant PIs or inspection findings. The NRC identifies an SCCI to inform the licensee that the NRC has a concern with the licensee’s performance in the cross-cutting area and to encourage the licensee to take appropriate actions before more significant performance issues emerge.

Implementation guidance for the PI program including but not limited to the mitigating systems performance index (MSPI) is contained in IMC 0608, “Performance Indicator Program” (ADAMS Accession No. ML12219A374). More detailed guidance on the data collection and PI calculations are contained in Nuclear Energy Institute (NEI) 99-02, “Regulatory Assessment Performance Indicator Guideline” (ADAMS Accession No. ML13261A116), which is jointly produced and maintained by the NEI and the NRC. The MSPI covers five systems important to safety; it tracks the unavailability of monitored trains and the unreliability of monitored components. The MSPI calculation reflects the deviation of a specific unit’s performance from an industry baseline, converted to a simplified delta (change in) CDF (ΔCDF). A performance limit, or deterministic backstop, is also used for determining degraded performance.

The ROP Action Matrix identifies the range of NRC and licensee actions and the appropriate level of communication for different levels of licensee performance. The Action Matrix describes a graded approach for addressing performance issues and was developed with the philosophy that within a certain level of safety performance (i.e., the licensee response band), licensees would address their performance issues without additional NRC engagement beyond the baseline inspection program. NRC actions are graded in such a way that the NRC becomes more engaged as licensee performance declines. If licensee actions are not being taken to address performance issues, the NRC may consider expanding the scope of the applicable supplemental inspection to appropriately address the area(s) of concern.

The implementation guidance for NRC’s response to events is contained in MD 8.3, “NRC Incident Investigation Program” (ADAMS Accession No. ML031250592), and supplemented by IMC 0309, “Reactive Inspection Decision Basis for Reactors” (ADAMS Accession No. ML111801157). Deterministic criteria are used for initial event screening and a range of risk thresholds are subsequently applied to determine whether a reactive inspection will be launched. The risk-informed reactive inspection thresholds are a function of conditional core damage probability (CCDP) and conditional large early release probability. An overlap of options provides flexibility based on uncertainty and deterministic insights, and additional deterministic criteria are reviewed and documented as the basis for staff decisions on the appropriate regulatory response. While these ranges offer some flexibility in determining the level of event response, they still involve thresholds based on risk values.

4.0 ROP GOAL - MAINTAINING SAFETY

The NRC is committed to maintaining safety, and the ROP framework, as discussed in Section 3.0, has as its highest level the NRC's overall mission to ensure that commercial nuclear power plants are operated in a manner that provides adequate protection of public health and safety. The staff has identified those aspects of licensee performance that are important to the mission and, therefore, merit regulatory oversight and identified them as the strategic performance areas of reactor safety, radiation safety, and safeguards which form the second level of the regulatory oversight framework.

With a risk-informed perspective, the staff has also identified the most important elements in each of these strategic performance areas that form the foundation for meeting the overall agency mission. These elements were identified as the cornerstones of safety in the third level of the regulatory oversight framework structure. These cornerstones are the fundamental building blocks for the ROP, and acceptable licensee performance in these cornerstones should provide reasonable assurance that the overall mission of adequate protection of public health and safety is met.

The working group found that the ROP has been effective in accomplishing its objective of maintaining safety. In a way consistent with the spirit of continuous improvement demonstrated in the ROP self assessments, the working group's independent review identified opportunities to further enhance the ROP's ability to maintain safety as discussed below.

4.1 Timing of Supplemental Inspections for Column 4

When licensee performance is in Column 4 (the *Multiple/Repetitive Degraded Cornerstone* column) of the ROP Action Matrix, the licensee is expected to place the identified deficiencies in its corrective action program and perform an evaluation of the root and contributing causes for both the individual and the collective issues. However, from an oversight perspective, the significance of these performance issues may indicate that the licensee's corrective action has pervasive or systemic deficiencies, and the NRC needs to assess whether additional regulatory action is necessary.

The NRC performs Inspection Procedure (IP) 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input" (ADAMS Accession No. ML102020551), to review the breadth and depth of the performance deficiencies, assess the licensee's evaluation of its safety culture, and independently perform a graded assessment of the licensee's safety culture. This procedure was written with the assumption that supplemental inspections (either IP 95001, "Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area" (ADAMS Accession No. ML102020522), or IP 95002, "Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area" (ADAMS Accession No. ML102020532)) have been conducted to evaluate the licensee's root-cause, extent-of-cause, and extent-of-condition evaluations and associated corrective actions for "White" or greater performance indicators or inspection findings. If those supplemental inspections have not been conducted, the scope of this inspection should include inspection of the licensee's evaluation of those issues.

IP 95003 includes the following inspection objectives:

- to provide the NRC with additional information to be used in deciding whether the continued operation of the facility is acceptable and whether additional regulatory actions are necessary to arrest declining plant performance, and

- to provide an independent assessment of the extent of risk significant issues to aid in the determination of whether an unacceptable margin of safety or security exists.

The procedure requires that some sample reviews be performed for all key attributes of the affected strategic performance areas because "additional NRC assurance is required to ensure public health and safety, and security".

As indicated in IMC 0305, "Operating Reactor Assessment Program" (ADAMS Accession No. ML13178A032), following the completion of IP 95003, the NRC's Office of the Executive Director for Operations (EDO) or their designee in conjunction with the appropriate Regional Administrator and the Director of NRR will decide whether additional NRC actions are warranted. At a minimum, the regional office issues a Confirmatory Action Letter (CAL) to document the licensee's commitments (as discussed in its performance improvement plan) and any other written or verbal commitments. Other actions are also considered including performing additional supplemental inspections, issuing a demand for information, or issuing an order up to and including a plant shutdown.

Stakeholders provided feedback that flexibility in the timing for the conduct of IP 95003 to accommodate licensee actions can result in significant delays in performance of the supplemental inspection. Feedback indicated that such delay can impact NRC management's ability to make timely decisions regarding plant performance. Other stakeholders commented that they believe the ROP needs to provide a better mechanism to prompt performance-challenged plants to correct their deficiencies in a timely manner and that allowing delays in the conduct of supplemental inspections runs counter to that belief.

Once a licensee has entered Column 4 of the ROP Action Matrix, the ROP indicates that supplemental inspection is necessary. The inspection is, in part, to determine whether other regulatory actions up to and including plant shutdown are necessary. However, a specific time frame for initiating the inspection is not specified. IP 95003 indicates that, in most cases, the licensee will complete its root-cause, extent-of-cause, and extent-of-condition investigations of the performance deficiencies and will complete an independent third-party assessment of their safety culture before the NRC begins the inspection. In some cases, NRC inspection of these activities has been deferred to accommodate a longer time required for the licensee to complete these actions.

In the latest ROP self assessment metric report, the staff has noted that the average time elapsed before the supplemental inspections were performed in CY 2012 was higher than the yearly average of all prior years. The delays in performing the supplemental inspections were often caused by the licensee not being ready for the inspection; the staff intends to add guidance to the next revision of IMC 0305 to emphasize that supplemental inspections should be completed in a timely manner. The staff acknowledges that licensees play a significant role in the timely completion of supplemental inspections, which are not initiated until the licensee indicates its readiness. The working group was informed that as part of its ROP Enhancement effort, the NRR staff plans to examine additional ways to encourage the timely completion of supplemental inspections.

Conceptually, a licensee in Column 4 could be required to shut down as a result of performance issues identified during conduct of an IP 95003 inspection. However, if the conduct of the inspection were delayed for an extended period of time, the NRC's ability to make the necessary regulatory decision would also be delayed. The working group acknowledges that the NRC could make such regulatory decisions in the absence of the inspection. Additionally, a significant delay could impact whether the licensee was placed in the appropriate column of the ROP Action Matrix because of delayed identification of performance deficiencies.

The working group believes that either (1) setting specific timeframes for when IP 95003 should be performed or (2) more explicitly segmenting the procedure to conduct some sample reviews of key attributes of the affected strategic performance area before the licensee's completion of its evaluation would better provide NRC decisionmakers with timely information to decide whether additional regulatory actions are necessary.

Issue: Licensee requests for an extended period of time to conduct cause evaluations and plan corrective actions in advance of Supplemental Inspections for Column 4 of the Reactor Oversight Process (ROP) Action Matrix could potentially delay NRC reviews to verify the adequacy of the licensee's corrective action program while operations continue.

Recommendation 1: Clarify expectations for the timing of supplemental inspections for Column 4 of the ROP Action Matrix, or portions thereof, to ensure that the NRC's assessment of continued operation and consideration of additional regulatory actions are completed in a timely manner.

4.2 Demonstration of Improved Plant Performance Before Returning to Column 1

The ROP was developed with the philosophy that within a certain level of safety performance (i.e., the licensee response band), licensees would address their performance issues without additional NRC engagement beyond the baseline inspection program. If a licensee's performance declines to such a degree that the assessment results in the plant moving to higher columns in the Action Matrix, the NRC assesses the licensee's root-cause evaluation and corrective actions through baseline and supplemental IPs 95001 (*Regulatory Response*; Column 2), 95002 (*Degraded Cornerstone;* Column 3), and 95003 (*Multiple/Repetitive Degraded Cornerstone;* Column 4). Although the 95003 procedure contains provisions for ensuring that licensee corrective actions are effective, the 95001 and 95002 inspections allow credit for licensees having *planned,* but not necessarily *implemented*, corrective actions in order to successfully complete the supplemental inspection.

Because the 95001 and 95002 procedures allow inspectors to credit actions planned by the licensee, the inspectors do not assess the licensee's effectiveness in improving performance before completion of the inspection that would move the licensee to the left in the Action Matrix and that would reduce NRC oversight. The procedures only require a verification that appropriate corrective actions are identified and scheduled and that measures of success are put in place; the inspection focuses on plans, not actual performance. Consequently, poorly performing licensees can successfully complete the inspection and return to the *Licensee Response* column (Column 1) before the implementation of corrective actions thereby resulting in a situation in which the plant assessment may not match actual plant performance. Additionally, once the inspection is completed, licensees could adjust/modify their corrective action plans without regulatory involvement. This can result in a situation in which corrective

actions are deferred, thereby raising the possibility of a return to higher columns of the Action Matrix.

The feedback received indicated that this process does not ensure effective oversight or improved licensee performance in all cases. Licensees that have difficulty in identifying and implementing adequate and lasting corrective actions might wind up back in the *Regulatory Response* or *Degraded Cornerstone* columns in a short period of time – which "cycles" both NRC and licensee resources. Specific feedback provided included, but was not limited to, the following:

- *Plants are closing more issues to "trending" rather than fixing the issues.*

- *Room is needed for "wisdom" in moving between columns (i.e., movement should be 3 → 2 → 1 rather than jumping from 3 →1) when findings clear off of the board. In other words, sustained performance should be observed before a licensee is put back in Column 1.*

- *There is not a lot of rigor behind licensee follow-up actions to address SCCIs.*

- *IP 95001 is adequate to look at a specific issue that caused a White finding, but it doesn't really look at the "bigger picture" with respect to licensee performance.*

- *Guidance is needed on how to determine when a licensee's corrective action program is not working. The ROP is based on the licensee's corrective action program working, but we don't have criteria for determining/validating that the corrective action program is working properly Should there be a periodic validation/"recertification" of the corrective acton program?*

The working group attempted to validate the anecdotal feedback received on this matter. Review of historical plant assessment information revealed that there have been 37 instances since the inception of the ROP in which a plant moved from an Action Matrix column higher than Column 1 to a lower column and then subsequently moved back to a higher column in fewer than four quarters. Since 2009, this has occurred 10 times. In several of these cases, the underlying issues that contributed to the subsequent move to the right were identical, or related, to the issues that contributed to initial move to the higher column. In the most extreme example, one plant moved into a higher column, returned to a lower column, and then re-returned to the higher column five times in a 6-year period.

The working group concludes that the effectiveness of the ROP could be enhanced by requiring licensees to demonstrate improved performance before returning to the *Licensee Response* column or by otherwise providing a graduated process for returning to the *Licensee Response* column. Recognizing that the ROP is intended to be performance based, the group also believes that this recommended enhancement could be structured in a manner that would allow those licensees that have a consistent track record for effectively managing their corrective action process to be given credit for planned corrective actions; whereas licensees that have not demonstrated effective implementation of corrective actions would have to implement and demonstrate effectiveness of corrective actions for the root causes of the greater-than-Green inputs to the assessment process.

Issue: The Reactor Oversight Process (ROP) assessment process does not require a licensee to demonstrate improved performance (i.e., adequate and lasting corrective actions) before a plant is moved from a "higher" Action Matrix column back to the Licensee Response Column. This can lead to abrupt swings in the Action Matrix characterization of a plant's performance, might appear disjointed to external stakeholders, and can result in unnecessary resource burdens for the NRC and licensees.

Recommendation 2: Consider including additional measures in the ROP to minimize abrupt changes in the Action Matrix characterization of plant performance caused by mechanistic relaxation of oversight based on the passage of time and completion of NRC inspections.

4.3 Assessment of Licensee Corrective Actions in Response to Generic Issues

To fulfill its responsibility to protect public health and safety, the NRC performs the following five principal regulatory functions:

- developing regulations and guidance;
- licensing the operation of nuclear power plants;
- inspecting and assessing licensees to ensure that licensees comply with NRC requirements and taking appropriate follow-up or enforcement actions when necessary (accomplished through the ROP for reactor licensees);
- evaluating operational experience; and
- conducting research, holding hearings, and obtaining independent reviews to support regulatory decisions.

As identified in Item 4 of Figure 1 from the NRC 2013-2014 Information Digest (NUREG-1350, Volume 25), reproduced below as Figure 4-1, generic issues are occasionally identified which require regulatory action by the NRC and licensees. When the NRC identifies a generic issue, it may impose new requirements on licensees by issuing orders or revising regulations. The NRC also clarifies the application of existing requirements to newly-identified circumstances through various generic communications such as bulletins, generic letters, and regulatory information summaries.

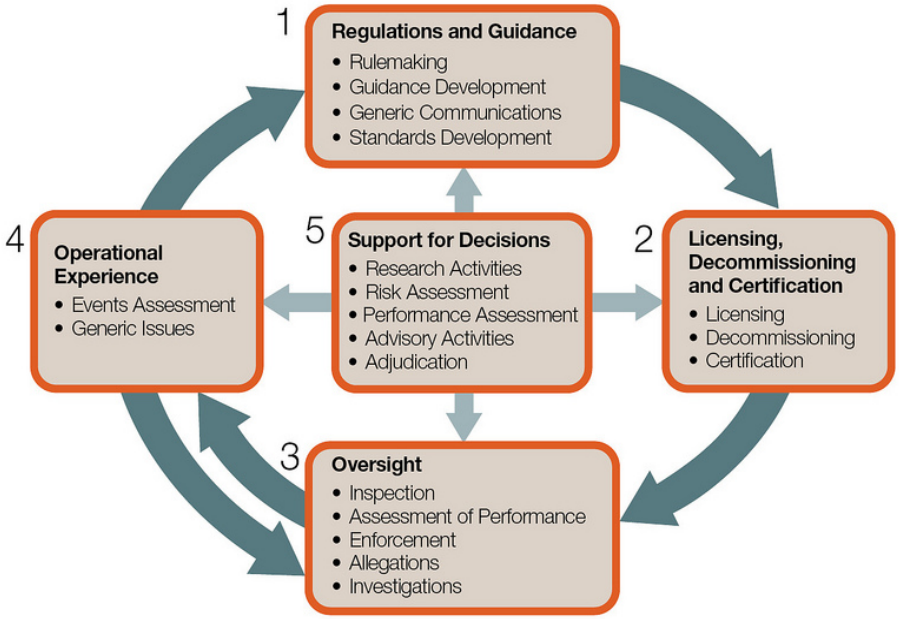


Figure 4-1 How We Regulate

If new requirements are imposed or existing requirements are clarified, the NRC often performs near-term oversight of reactor licensees to assess the adequacy of any actions that they have taken. This near-term oversight is often performed through the issuance of a Temporary Instruction which provides guidance to inspectors on how to inspect for the particular issue. Feedback indicates that this process is generally effective for ensuring that licensees have taken adequate short-term corrective actions to address the particular issue. However, feedback and observation indicate (1) that the ROP is less effective at ensuring that longer-term corrective actions are adequately implemented and (2) that, as corrective actions are migrated into routine operational programs, they continue to be linked to the instigating generic issue for context and continue to remain effective in mitigating the instigating generic issue. The group believes that the program could be enhanced to provide more effective oversight of long-term implementation of licensee corrective actions to resolve generic issues by developing risk-informed mechanisms to identify attributes of generic issue resolution that could be incorporated into or linked to the baseline inspection program.

Issue: Generic issues are often considered "resolved" by licensee commitments to programmatic changes and future actions. After initial NRC reviews, the inspection program does not generally include explicit activities to confirm continued licensee implementation over time.

Recommendation 3: Include a risk-informed, periodic review of licensee programs or actions implemented to address generic issues to enhance the agency's assurance that these measures continue to be effectively implemented.

5.0 ROP GOAL - INCREASING OPENNESS

The NRC is committed to improving its communications with stakeholders and has directed the staff to use plain understandable language whenever possible in documents and at public meetings. Several years of ROP periodic self assessment reports included feedback from a variety of stakeholders which highlighted that the assessment process could be enhanced by modifying the way NRC communicates technical information to the public. Specifically, the feedback indicated that staff should look for ways to clarify for industry, and the public, the meaning of Green and White performance indicators within the ROP, The feedback claimed that these indicators are too complex and cumbersome and at times do not appear consistent across all ROP cornerstones. Commenters on the ROP echoed what was found in the self assessments (primarily that communications are not nearly as effective for the public as they are for the industry). Press releases and other forms of public information do not always clearly communicate the significance of Green and White findings which causes confusion around the risk to the public.

5.1 Impacts of Message Presentation on Stakeholder Perceptions

The working group's review of documentation and interviews of internal and external stakeholders were used as an opportunity to gain feedback related to NRC message presentation. The working group reviewed the feedback to assess how NRC's messages related to the ROP and how findings influence the public's perceptions regarding plant safety. Specific feedback provided included but was not limited to the following:

- *The public has difficulty with the color schemes of the Action Matrix.*
- *Getting the agency to use plain language continues to be a struggle.*
- *Annual meetings for Columns 1 and 2 of the Action Matrix are of lesser value, and meetings for Green or White findings cause confusion.*
- *The NRC's strong messaging and degree of public outreach regarding White findings result in escalated stakeholder concerns while the overall safety of a facility is strong.*
- *Action Matrix uses versus resource allocation – Does the NRC clearly communicate the meaning of Action Matrix outcomes? How does resource allocation match up with overall performance by licensees?*
- *Use of Action Matrix Column 5 versus IMC 0350, IMC 0351, CALs, etc. – How well does the NRC communicate the differences between actions associated with IMCs 0350 and 0351 or issuance of a CAL versus being in Column 5 of the Action Matrix (unacceptable performance)?*
- *Usefulness of annual public meetings and the messages that are conveyed – Annual meetings for Columns 1 and 2 of the Action Matrix are of lesser value. Annual meetings for Green or White findings cause confusion.*

Most messages associated with the ROP consist of program language with a heavy focus on the specific details of a particular issue or process and less focus on the larger message being given to stakeholders. Currently, there is neither a comprehensive strategy to develop message

presentation that conveys the intended significance to the broadest possible audience, nor is there a structured review to assess how effectively the NRC's intended messages are conveyed to the general public. The working group recognizes the challenge in retaining sufficient program detail to ensure clear messages for industry and well-informed stakeholders while at the same time providing a clear safety message for the general public.

Issue: Current NRC message presentation used for routine Reactor Oversight Process (ROP) communication and outreach with stakeholders can lead to confusion regarding the safety significance of licensee performance issues or the meaning of regulatory actions. The heavy reliance on ROP terminology in NRC messages contributes to heightened stakeholder concern over performance issues that are within the anticipated range of licensee performance and do not impact safe operations.

Recommendation 4: Consider enhancements to improve the effectiveness of NRC messages through more extensive use of plain language, a focus on the desired effect of the communication on stakeholder perceptions, and the use of wording that coveys the significance of issues to the broadest possible audience.

5.2 Meaning of "All Green" Performance Indicators (PIs)

Within the ROP Regulatory Framework, the NRC evaluates plant performance by analyzing the following two distinct inputs: inspection findings resulting from NRC's inspection program and PIs reported by the licensees. Several years of ROP periodic self assessment reports, in addition to feedback from a variety of stakeholders, highlight the need to clarify the message delivered to stakeholders when PI's are "always Green."

In SRM-M080604, "Briefing on Results of the Agency Action Review Meeting (AARM), 9:00 A.M., Wednesday, June 4, 2008, Commissioners' Conference Room, One White Flint North, Rockville, Maryland (Open to Public Attendance)" dated June 30, 2008 (ADAMS Accession No. ML081820771), the Commission directed the staff to look for ways to clarify to industry and the public the meaning and use of Green PIs within the ROP. Although the staff endeavored to clarify the meaning and role of PIs in the assessment process, stakeholder feedback continued to indicate an ongoing concern that PIs should better distinguish between levels of licensee performance. In response, staff revised slides used in public meetings to emphasize that Green PI performance represents performance in which cornerstone objectives are fully met. NRC staff changed the NRC ROP Web site to better explain how inputs to the ROP assessment were used. In 2008, the NRC discontinued the Personnel Screening Program and the Fitness-for-Duty/Personnel Reliability PIs because they provided minimal input and because reasonable confidence existed through the security baseline inspection program.

The NRC has developed and implemented a robust operational experience feedback program that has a well organized and structured inspection program with clear goals and publicly available procedures to ensure plant safety. The working group interview respondents generally indicated that the ROP program's use of PIs was effective. There were a few areas in which the respondents questioned whether the NRC could improve its communication and perhaps the breadth of issues covered by PIs. Representative questions included the following:

- *Are PIs that are typically Green providing a reasonable assessment tool?*

- *If licensees are managing their processes and equipment efficiently, did the PI have its appropriate outcome?*

- *Should there be a PI for other areas such as quality of licensing (might indicate weaknesses in engineering, licensing skills, or other aspects) or financial aspects?*

The working group's takeaways from its review of documentation and interviews during this review indicate that stakeholders do not understand the value that "always Green" PIs can provide or the consideration of other indicators that have been contemplated. As the staff periodically evaluates existing PIs or considers alternative PIs, the stakeholders would benefit from presentation of strategic messages to ensure that the value of indicators used, or considered, is effectively communicated to the public.

Issue: Many stakeholders question the value of Performance Indicators (PIs) that are "always Green."

Suggestion 1: Review current PIs to evaluate whether they are providing meaningful information on licensee performance. If the PIs are validated as being appropriate and not needing adjustment, develop messages to enhance stakeholder understanding of how the PIs continue to contribute to the NRC's assessment of plant safety and licensee performance.

6.0 ROP GOAL - EFFECTIVE AND EFFICIENT DECISIONMAKING

The goal of making NRC activities and decisions more effective and efficient was a priority of the NRC strategic plan at the time the ROP was originally implemented. This goal was intended to ensure adequate protection of public health and safety, as well as the environment, through a focus on maintaining the quality of the technical base for our decisions and by optimizing our regulatory activities, while maintaining safety and increasing public confidence. In working toward this performance goal, the NRC applied its Principles of Good Regulation which include improved efficiency, clarity, and reliability.

In the late 1990s, feedback from stakeholders, self assessments, international experience, and research results suggested that the NRC should capitalize on advances in technology, implement efficiencies to improve our internal processes, and improve the quality and bases for decisionmaking. Feedback and the NRC's own analyses suggested that the NRC should improve the consistency and predictability of regulatory decisions by evolving to a more risk-informed and performance-based approach.

The NRC implemented the following strategies to make NRC activities and decisions more effective, efficient, and realistic:

- used risk information to improve the effectiveness and efficiency of NRC activities and decisions;
- based agency decisions on technically sound and realistic information;
- anticipated challenges posed by the introduction of new technologies and changing regulatory demands; and
- identified, prioritized, and modified processes based on effectiveness reviews in order to maximize opportunities to improve those processes.

The working group conducted reviews of ROP-related documents (such as self assessments), conducted interviews with internal and external stakeholders, and observed some routine ROP activities in progress. Based on its assessment of these inputs, the working group concluded that the ROP continues to contribute to improved NRC decision quality, timeliness, and consistency with regard to licensee oversight and plant safety. The program includes a blend of technical and organizational reviews and feedback processes that contribute to effective risk-informed, performance-based decisionmaking. During the conduct of this independent assessment, the working group identified opportunities for improvement regarding the assessment, inspection, and SDP processes.

6.1 ROP Assessment Process

6.1.1 Consideration of Additional Performance Inputs

IMC 0308, "Reactor Oversight Process (ROP) Basis Document" (ADAMS Accession No. ML071860181), indicates that the original architects of the ROP gave consideration to use of traditional enforcement information in the licensee assessment process. The Commission at that time, however, gave the staff specific guidance in the SRM for SECY-98-045, "Status of the Integrated Review of the NRC Assessment Process for Operating Commercial Nuclear

Reactors" (ADAMS Accession No. ML003752969), stating, "While the enforcement program is a valuable regulatory tool, the Commission does not desire that enforcement be used as a 'driving force' of assessment activities."

After several years of ROP implementation, the periodic self assessment process (which included feedback from a variety of stakeholders) highlighted that the assessment process might be enhanced by including consideration of a broader set of inputs than just inspection findings and licensee-reported performance indicator data. In 2009, IMC 0305 was revised to include consideration of traditional enforcement and SCCIs in the process of assessing licensee performance.

While the revised guidance provides important flexibility in the assessment process, the feedback received from stakeholders interviewed for this independent assessment indicates that the revised guidance is either not fully understood or does not completely explain when/how to consider "other" information in the assessment process. Specifically, the feedback provided included, but was not limited to, the following:

- *The public/licensees don't always understand differences between ROP and traditional enforcement and/or how they work together.*

- *More could be done to integrate the ROP with enforcement. "Why doesn't traditional enforcement work its way into the Action Matrix?"*

- *IMC 0305 and IMC 2515 ("Light Water Reactor Inspection Program – Operations Phase," (ADAMS Accession No. ML13176A336) could be clearer on how to handle emergent issues.*

- *SCCIs are arbitrary. Are we driving resources to areas where they really aren't warranted? There are too many different bins in which to put issues; and there is a need to simplify the process. There is confusion regarding the role of cross-cutting aspects.*

- *The process needs better structure for following up on SCCIs (particularly for long standing issues). IMC 0305 doesn't really have guidance on what to do after a licensee has had four or five cycles of SCCIs.*

- *SCCIs seem to be poor predictors of licensees' improving or declining performance.*

- *ROP has trained licensees to focus on only what the ROP covers.*

- *Health physics and emergency preparedness inspectors are not looking at cross-cutting issues as hard as they should. They don't seem to recognize how effective this tool can be.*

- *How does ROP enforcement history get considered in traditional enforcement space (when a plant is getting traditional enforcement for an issue)?*

An extension of the consideration of traditional enforcement and SCCI information, which are discussed in IMC 0305, would be to consider "other" potentially relevant information that is not explicitly discussed in IMC 0305. Examples of potentially relevant information include petitions under Title 10 of the Code of Federal Regulations (10 CFR) 2.206, "Requests for Action under

this Subpart;" licensing issues; and financial issues that are within the scope of NRC regulations.

The working group discussions included consideration that a licensee assessment should not be unduly influenced by a simplistic measure such as the volume of *unverified* or *unsubstantiated* 2.206 petitions or allegations. However, information regarding *substantiated* 2.206 petitions or allegations, information related to the quality and timeliness of licensing action submittals (which in many cases is subject to the same quality assurance (QA) program as the licensee's maintenance program), and financial issues that are within the scope of NRC regulations (such as decommissioning funding assurance and adequacy of underlying assets) could potentially provide meaningful insights into broader licensee performance on matters that are ultimately non-trivial. Examples of feedback received included the following:

- *Enforce 10 CFR 50.9, "Completeness of Accuracy of Information," in the licensing space.*

- *Force strict adherence to the design and licensing basis in all aspects of the ROP.*

- *Independent spent fuel storage installations could be better incorporated into the ROP (the same licensee and the same QA program that are covered by the ROP … but treated differently when it comes to dry fuel storage).*

- *The process needs more focus on licensed operator requalification.*

- *Commercial-grade dedications aren't getting looked at.*

- *Aging management is not fully addressed in ROP space.*

- *Completeness and accuracy of licensing action submittals can vary widely. Incomplete or inaccurate submittals require additional staff time and effort to review and can unnecessarily challenge timeliness goals.*

- *Observation: Significant weakness in licensing technical support performance (resulting in application rejection and/or the identification of significant quality issues) can identify weaknesses in licensee capability.*

Based on its assessment of the feedback from stakeholders and review of the program documents, the working group concluded that there is potential value in considering, in a limited way, a wider variety of performance information (such as substantiated 2.206 petitions, substantiated allegations, licensing issues, and financial issues that are within the scope of NRC regulations) in the assessment process. Additionally, this could include consideration of licensing-related factors (such as technical adequacy of engineering support or quality assurance). In order to effectively use information other than inspection findings and licensee-reported PI data, the process for including "other" considerations in NRC performance assessments needs to be well defined and transparent in order to achieve consistent results.

Issue: Although traditional enforcement, allegations, substantive cross-cutting issues, and safety culture are discussed in Reactor Oversight Process program documents as contributors to NRC's assessment process, current guidance documents do not clearly explain how or when to factor consideration of these issues into the assessment process.

Suggestion 2: Enhance the Operating Reactor Assessment Program to ensure that plant performance assessment decisions fully and consistently consider "other" relevant performance perspectives discussed in Inspection Manual Chapter (IMC 0305), including traditional enforcement, allegations, substantive cross-cutting issues, and safety culture in addition to the Action Matrix outcomes.

Issue: The population of "other" types of information (such as traditional enforcement) that may be considered in the assessment process is narrowly defined in Reactor Oversight Process program documents. Additional indicators of licensee performance may be available to support NRC performance assessments but are not included in the set of "other" information currently specified in Inspection Manual Chapter (IMC) 0305.

Suggestion 3: Consider expanding the list of relevant indicators of licensee performance in the Operating Reactor Assessment Program description in IMC 0305 to include significant performance concerns that may come to light through 10 CFR 2.206 petitions, licensing issues, or financial issues that are within the scope of NRC regulations.

6.1.2 Timing of Supplemental Inspection Activities for Column 2 and Column 3

When plant performance is determined to be in Column 2 (the *Regulatory Response* column) or Column 3 (the *Degraded Cornerstone* column) of the ROP Action Matrix, the licensee is expected to place the identified deficiencies in its corrective action program and perform an evaluation of the root and contributing causes for both the individual and the collective performance issues.

Subsequently, the NRC performs IP 95001 for Column 2 or IP 95002 for Column 3. These supplemental inspections assess the licensee's actions to evaluate and correct identified issues. The 95002 procedure also assesses whether safety culture components caused or significantly contributed to the risk significant performance issues. As indicated in IMC 0305 and MD 8.14, "Agency Action Review Meeting" (AARM, ADAMS Accession No. ML060940095), a licensee that has been in Column 3 of the Action Matrix for 3 years will be discussed at the AARM and may be invited to meet with the Commission. The Commission will then evaluate the need for subsequent briefings by the licensee with senior agency management after the AARM.

The 95001 and 95002 procedures state the following:

> A reasonable amount of time (generally within 30-60 days) should be allowed for the licensee staff to complete their evaluation; however, all corrective actions may not be fully completed upon commencement of this supplemental inspection. The inspection should not be scheduled until the licensee has completed its problem identification, evaluation, and corrective action plan. In the event that the licensee has not defined their corrective action plan within a reasonable time, regional management should prompt the licensee to provide the basis, including risk insights, for the delay.

Such flexibility in the procedure can allow significant delays in performance of supplemental inspections. Feedback from internal stakeholders indicated that untimely or inadequate licensee preparations can add unnecessary delay to reaching a regulatory decision. Additionally, a significant delay in conduct of a supplemental inspection could impact whether the licensee is subsequently placed in the appropriate column of the ROP Action Matrix because of delayed identification of performance deficiencies. Specific feedback provided included, but was not limited to, the following:

- *Why is it okay for it to take 2 plus years to complete a 95002 or 95003 inspection?*
  - *NRC should wait a reasonable amount of time and then inspect whether the licensee is ready or not.*
  - *The extended time for licensees to get ready cheats the Commission out of an opportunity to get engaged.*
  - *These time frames were never envisioned by the program.*
- *Licensees fight White findings in PRA space which takes a lot of staff time when the supplemental inspection would only be 40 hours.*

The working group concluded that specific timeframes should be established for performance of supplemental inspection procedures 95001 and 95002, or allowance added to these procedures for management discretion to move forward with the supplemental inspection activities for cases in which a licensee is not making sufficient progress in preparing for these inspection activities.

Issue: Completion of supplemental inspections can be significantly delayed by either untimely or inadequate licensee preparations. Such delays create inefficiencies in the oversight process and add unnecessary delay to regulatory decisions.

Suggestion 4: Consider including additional guidance in Inspection Manual Chapter (IMC) 0305 to enable the use of management discretion in determining whether to accelerate the timing of supplemental inspection activities particularly for cases in which it is determined that a licensee is not making reasonable progress in preparing for these inspection activities.

6.1.3 Discussion of Licensee Performance at ROP Management Meetings

In order to facilitate open, cross disciplinary discussions of reactor plant performance, the ROP assessment process includes several planned meetings, including Mid-Cycle Review Meetings, EOC Review Meetings, EOC Summary Meetings, and an annual AARM. Each of these meetings is described in detail in IMC 0305, IMC 0308, and MD 8.14. These meetings also provide opportunities for headquarters and regional office participants to share any significant insights into licensee performance over the course of the annual assessment period, provide an independent validation of the regional office's assessment of licensee performance (from another office's perspective), provide clarifying or ancillary remarks regarding ongoing or current issues under their cognizance, and make decisions regarding regional inspection resource allocation.

During this assessment, the working group conducted interviews with senior management and inspection staff based in the regions and at NRC headquarters, attended the 2013 EOC

Summary Meeting, and attended the 2013 AARM. Feedback provided to the working group regarding the quality, level of discussion, and collaborative decisionmaking during the Mid-Cycle and EOC Review Meetings was very positive. Most of the feedback on, and group observations of, the 2013 EOC Summary Meeting and AARM were equally positive. In particular, feedback frequently indicated that the AARM was a significant enhancement from the original Senior Management Meeting process based on the perspectives of transparency, consistency, and predictability of senior management decisionmaking. However, some feedback from participants of these later two meetings indicated that it seemed as though meeting efficiency and a rather high threshold for plant performance discussions made the discussions conducted during these meetings seem too "mechanistic." Additional similar feedback included the following:

- *At times, the scope of the AARM appears to preclude an open dialogue of lower level plant performance. Mid-Cycle and EOC Review Meeting discussions seem to include a number of problem site discussions.*

- *There seems to be a large dichotomy in perspective available to senior leaders depending on which meeting they participate in. Why couldn't "near miss" plants (those whose performance appears to be at risk of degrading to Column 3 or 4 of the NRC Action Matrix) also be discussed at the EOC Summary Meeting and AARM?*

- *ROP decisionmaking continues to appear to be very mechanical and dependent on process criteria. There is not much open discussion on how well the process is working. Discussions have become too scripted particularly at the AARM.*

- *Plant performance discussions often take on a different tone the higher you go. The NRC seldom has an open dialogue regarding whether or not it "did the right thing."*

- *The discussion of individual plant performance issues during the 2013 EOC Summary Meeting, at times, resulted in senior management asking, "Does it make sense that the plant is in Column 1 or 2 of the NRC Action Matrix given the other issues at the site (i.e., numbers of allegations, [SCCIs], and unique site phenomena such as flooding)?" Such questions and plant performance conclusions are not always fully explored at this meeting.*

As reflected in the above feedback; discussed in IMC 0305, IMC 0308, and MD 8.14; and demonstrated during the conduct of Mid-Cycle and EOC Review Meetings; the thresholds established for discussing plant performance at these meetings provide ample opportunities for participants to discuss a broad range of performance issues. However, the working group noted that the bar rises very quickly during the EOC Summary Meeting and AARM. Ultimately, the AARM process, while still collegial, tends to limit plant performance discussions to those plants whose performance falls in Column 4 or 5 of the Action Matrix (noting that no plants have historically made their way into Column 5). While these discussions are often very good and provide ample opportunities for senior management to vet performance conclusions and planned actions, the plants discussed are only those that have been determined to cross a threshold. In borderline cases, discussion among senior agency officials may be beneficial to validate the performance assessment, application of ROP thresholds, and characterization of a plant's performance within the Action Matrix.

Issue: Plant performance meetings conducted within the Reactor Oversight Process continue to provide an efficient and consistent means of vetting important plant performance information with multiple levels of NRC management. Based on the working group review and feedback from stakeholders, the meetings and the decisionmaking that occurs as a result of these meetings would benefit from some additional flexibility regarding the thresholds established in Inspection Manual Chapter (IMC) 0305, IMC 0308, and Management Directive (MD) 8.14 for discussing plant performance issues.

Suggestion 5: The criteria for discussion of licensee performance issues during the Agency Action Review Meeting and End-of-Cycle Summary Meeting should allow senior management the opportunity to discuss plants with performance issues considered to be at the threshold for additional regulatory action particularly those considered to be at risk of moving into Column 3 or 4 of the NRC Action Matrix.

6.1.4 Action Matrix Deviations

IMC 0305 provides the definition of Action Matrix deviations as well as guidance on how to process deviations. According to IMC 0305, it might be necessary on rare occasions to deviate from the regulatory responses associated with each column of the NRC Action Matrix. Under such circumstances, regional senior management may use the deviation process to request approval from the EDO to increase or decrease the inspection activities, degree of regulatory outreach, and/or expected licensee actions outlined in the Action Matrix. The ROP assessment process provides for an extensive vetting of deviations and ensures that approved changes are communicated to affected licensees.

During the 2012 EOC Summary Meeting, the working group observed a number of discussions among senior managers regarding the use the deviation process and whether the process was always the most efficient means for ensuring that adequate regulatory oversight was brought to bear for significant plant specific issues. This prompted the working group to perform a review of deviations, both active and previously closed, to gain an understanding of how the process has traditionally been used.

The working group reviewed each of the 22 deviations that have been issued since the inception of the ROP and identified the following:

- Five deviations (approximately 23 percent) have been issued documenting recommended reductions in the inspection activities associated with a particular column of the NRC Action Matrix.

- Regardless of performance, eight deviations (approximately 36 percent) have been issued recommending that additional oversight be provided at plants with unique, ongoing, technical challenges.

- Four deviations (approximately 18 percent) have been issued recommending that additional oversight be provided at plants with ongoing safety culture or SCCIs.

- Five deviations (approximately 23 percent) have been issued recommending that additional oversight be provided at plants to allow appropriate follow-up for long standing plant performance issues.

Feedback provided during interviews with regional and headquarters senior management indicates that being able to use deviations from the Action Matrix to do more than simple accounting is a useful flexibility of the program. The working group acknowledges the value in a process that allows regional management to exercise discretion in order to ensure that adequate resources are brought to bear and to provide adequate oversight for significant plant-specific issues. The working group also believes that, in some cases, an alternative process could be established to provide a more efficient means for regional management to make resource decisions.

Since the inclusion of the deviation process in IMC 0305, NRR has taken actions to improve the process including stipulating certain inspection follow-up activities that regional management can prescribe at plants with significant performance issues without seeking formal approval from the EDO. Additionally, examples of approved deviations can now be found on the NRC's public "ROP Action Matrix Deviations" Web site. The working group believes that an opportunity exists to gain additional efficiency by expanding the set of activities stipulated in IMC 0305 for which regional management can make informed resource decisions without the added administrative burden of the deviation process. Doing so would also help support minimizing deviations from the Action Matrix, as originally mandated by the Commission in the SRM for SECY-00-0049, "Results of the Revised Reactor Oversight Process Pilot Program (Part 2)," dated May 17, 2000 (ADAMS Accession No. ML003715823). As reflected in the historical review above, such activities might include providing additional oversight at plants with unique, ongoing technical challenges and at plants with ongoing safety culture or SCCIs.

Issue: Reactor Oversight Process (ROP) Action Matrix deviations have been used as a mechanism to gain internal NRC alignment on resource and other issues not specifically addressed in the ROP. While a functional process, the administrative burden of processing an ROP deviation might not be necessary to gain internal alignment for management decisions.

Suggestion 6: The list of activities that do not constitute Action Matrix deviations provided in Inspection Manual Chapter (IMC) 0305 could be expanded to allow more efficient management decisions on resources needed to address oversight at plants with unique, ongoing, technical challenges or with ongoing safety culture or substantive cross-cutting issues.

6.2 ROP Inspection Process

6.2.1 Flexibility Within the ROP Inspection Program

As discussed in Attachment 2, "Technical Basis for the Inspection Program," to IMC 0308 (ADAMS Accession No. ML062890421), the agency strove to develop an inspection process ensuring that the minimum level of inspection required for a plant is performed while also ensuring that inspectors are afforded a sufficient degree of flexibility in applying their inspection focus to areas that they feel need more or less inspection effort based on their overall knowledge of a specific plant. To that end, the baseline inspection program provides inspectors with a wide variety of individual inspection procedures that can be adjusted, within an established range of hours and samples, in such a way that inspection focus areas can be explored without compromising the overall effectiveness of the program.

During interviews with NRC region-based management and inspection staff, the working group received feedback covering a spectrum of views regarding the degree of flexibility afforded by the ROP inspection program. While many inspectors and managers stated that they believed

that the ROP afforded an appropriate degree of flexibility, others maintained that it did not. Specific feedback indicating a lack of flexibility in the program included statements such as the following:

- *The ROP structure is inhibiting "follow your nose" activities.*
- *ROP doesn't allow for "collection of pebbles."*
- *Sample selection is not flexible enough.*
- *Inspections tend to be hour driven rather than scope driven.*
- *There seems to be an overreliance on ROP program "mechanics."*

As discussed in IMC 0308, similar concerns with program flexibility were raised by regional management and inspectors during the early years of ROP implementation. To address these earlier concerns, program changes were made, in consultation with regional management and inspectors, that provided inspection procedures with a range of hours and samples to support the ability of inspectors to identify and explore areas of degrading licensee performance. Despite attempts to address concerns with ROP inspection flexibility, negative views such as those listed above continue to persist.

Additionally, some inspectors stated that they viewed indirect inspection activities (i.e., activities that support inspections such as preparation, documentation, and gathering plant status information through the conduct of plant walkdowns and by observing various licensee work planning and plant status meetings) as inherently "administrative" in nature and that they felt that such activities, at times, detracted from an inspector's focus on safety. Specifically, feedback received from inspectors included the following:

- *Resident Inspectors seem to be more focused on counting numbers of samples and inspection hours than identifying performance themes and "pulling the string" on issues.*
- *New inspectors are overwhelmed. The focus on administrative issues detracts from safety.*
- *Spending time on administrative matters causes inspectors to miss out on "walk-around" time.*
- *Inspectors are often more focused on accounting for completion of the program than they are on working toward having an integrated picture of plant performance.*

Interestingly, many other inspectors stated that indirect inspection activities were necessary and that the impact on the ability to conduct direct inspection activities could be minimized through teamwork and the use of computer-based tools such as the Inspection Planning and Inspection Reporting aspects of the Reactor Program System. During its review of ROP basis documents, and through discussions with staff from NRR's Division of Inspection and Regional Support (DIRS), the working group noted that there are several web sites, such as the *Reactor Inspection and Assessment Network* (http://nrr10.nrc.gov/rop-digital-city/index.html), that provide (or link to) training and best practices regarding the management of indirect inspection activities.

The working group observed that the performance of "direct inspection" activities (i.e., activities associated with individual NRC inspection procedures) associated with the Baseline Inspection Program is a critical element of the ROP, independently verifying that the plant is operated in a manner that supports public health and safety. An equally important element for the effectiveness of the ROP is the performance of "indirect inspection" activities (defined above). It is through inspection activities that the NRC demonstrates to key stakeholders, such as Congress and members of the public, that the minimum level of inspection required for a given plant (regardless of performance) is being performed to give the NRC sufficient information to determine whether plant performance is acceptable. The indirect inspection efforts help to ensure the overall effectiveness and uniformity of the implementation of the inspection program.

A broad spectrum of views was shared by regional management and inspectors regarding ROP inspection flexibility and the impact of indirect inspection activities. While there were no indications that the majority of individuals felt constrained in their ability to identify safety issues, the fact that some individuals believe the program is overly restrictive led the working group to conclude that there is an opportunity to facilitate a better understanding among management and inspectors regarding the flexibility inherent in the ROP inspection program and the importance of indirect inspection activities. Inspector counterpart seminars, training, and mentoring provide opportunities to reinforce best practices for applying ROP program flexibility to assess areas of degrading licensee performance and to manage inspection activities in a way that supports, rather than detracts from, the performance of direct inspection activities.

Issue: Some individuals implementing the Reactor Oversight Process (ROP), while not in the majority, do not have an appreciation for the flexibilities within the ROP that allow inspectors to focus additional effort in assessing areas of potentially degrading licensee performance.

Suggestion 7: Periodic inspector counterpart seminars, training, and mentoring should be used as opportunities to ensure that inspectors and managers have a common understanding of the inherent flexibilities in the ROP inspection program. Best practices in using the ROP flexibilities should continue to be highlighted, and a similar approach should be used to communicate the importance of indirect inspection activities and how to effectively and efficiently manage these activities.

6.3 The Significance Determination Process (SDP)

IMC 0308, Attachment 3, "Significance Determination Process Basis Document" (ADAMS Accession No. ML062890430), describes the SDP as a process that includes all associated provisions designed to meet ROP objectives, such as formal opportunities for licensee input (i.e., Regulatory Conferences), NRC management review for any significance characterization greater than Green (i.e., the Significance and Enforcement Review Panel (SERP)), and licensee appeal options. The SDP is implemented using various cornerstone specific SDP tools also described in IMC 0308.

While conducting this assessment, the working group was briefed by staff and management from NRR's DIRS regarding the efforts of an ongoing SDP Business Process Improvement (BPI) project. As stated in the SDP BPI charter, the intent of this project is to "... balance the goal of having reliable significance determination process outcomes against the need for efficient and timely regulatory decisionmaking." To minimize the duplication of effort and maintain a more strategic approach to the working group's efforts, the working group shared

much of the timeliness feedback and recommendations provided by stakeholders with the SDP BPI project lead and focused its efforts on the objectivity, scrutability, and resource attributes of the SDP.

Based on feedback received from internal and external stakeholders, reviews of ROP and SDP implementation and basis documents, and discussions with NRR/DIRS management and staff as described above; the working group identified the following areas where it believes that opportunities exist to enhance the efficiency, effectiveness, and communication of agency decisionmaking:

- SERP members' understanding of uncertainties associated with the NRC's PRA tools,
- documentation of the qualitative considerations applied during the final characterization of greater-than-Green inspection findings, and
- resources expended by the NRC and industry to characterize inspection findings that fall on the Green/White threshold.

Further discussion of the background, program requirements, and specific stakeholder feedback is included in the following sections.

6.3.1 SERPs and Uncertainties Associated with Risk Assessment Tools

IMC 0308 states, in part, that each SDP tool should attempt to provide a decision logic or a decision framework that remains constant across applicable findings. This enhances objectivity by minimizing the likelihood that SDP results will be influenced by different value judgments held by different individuals. IMC 0308 also states that probabilistic risk models, no matter how detailed, should not automatically be accepted without understanding their influential assumptions, limitations, and uncertainties.

During interviews with the working group, internal and external stakeholders shared many positive experiences about the use and outcomes of the various components of the SDP (specifically, Regulatory Conferences, SERPs, and the licensee inspection finding appeal process). However, the working group also received feedback indicating that not all NRC participants on SERPs had a common understanding of the uncertainties associated with the NRC's PRA tools. The feedback also indicated that, at times, SERP decisionmakers appeared to make final decisions solely on the outcomes of PRA tools (i.e., a quantitative assessment) rather than a balanced combination of both quantitative and qualitative factors. Examples of the feedback received include the following:

- *There appear to be many SERP members that do not have a basic understanding of PRA or its limitations.*
- *The findings of SERPs often fall in the "gray area" between colors. The process should support the use of qualitative factors under such circumstances.*
- *Several SERP members lack technical understanding about the nature of PRA, probabilities, and uncertainties. This impacts decisionmaking based on risk-analysis results, which is especially crucial when differing opinions on the risk-analysis results exist and the SERP must resolve these differences before making a final decision.*

- *The PRA process does not always account for the propagation of uncertainties. Should consider including sensitivity studies in the PRA process.*

- *Uncertainty of data and results is largely ignored. Standardized Plant Analysis Risk (SPAR) models and Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (SAPHIRE) software have the capability to quantify the uncertainty, and it should be factored into the decision.*

- *Managers and staff have a tendency to be interested in hard thresholds of color assessments in lieu of using a balanced risk-informed approach.*

- *Defense-in-Depth and PRA are not always factored into agency decisionmaking in a balanced manner. There is too much reliance on PRA. For example, flooding analysis is often fraught with uncertainties but treated as an "absolute" by decisionmakers when evaluating findings and violations.*

- *SERP members do not have a minimum understanding of the role of PRA and place too much emphasis on the SDP outcomes.*

Developing and maintaining a common understanding among SERP members regarding the uncertainties associated with the NRC's PRA tools and the use of qualitative and deterministic aspects of findings in reaching a decision is important for consistency and efficiency of the SERP decisionmaking. This common understanding would also help ensure that the process remains objective and "risk-informed." As discussed in IMC 0308, the SDP is considered to be a risk-informed process so long as SDP results are sufficiently understood by those best positioned to examine the probabilistic and technical assumptions as well as by the management decisionmakers who ultimately make the decisions. If the SERP's decisions are made without understanding the uncertainties in the PRA analysis, the panel's conclusions could be considered, or perceived to be, risk-based decisions. Periodic training of SERP participants (i.e., briefings by agency PRA practitioners) could aid in building a common understanding among SERP members regarding uncertainties inherent in the NRC's PRA tools and the role PRA outputs should play in the panel's decisionmaking.

Issue: Not all NRC participants on Significance and Enforcement Review Panels (SERPs) have a common understanding of uncertainties associated with the NRC's probabilistic risk assessment (PRA) tools. Feedback indicated that, at times, SERP decisionmakers appeared to make final decisions solely on the outcomes of PRA tools (i.e., a quantitative assessment) rather than a consideration of both quantitative and qualitative factors.

Suggestion 8: SERP members should be provided with periodic training or briefings regarding the uncertainties inherent in the agency's PRA tool outputs and the use of PRA quantitative results in SERP decisionmaking.

6.3.2 Documentation of SDP Decisionmaking

As discussed in IMC 0308, the SDP was developed in a manner that provides a clear (i.e., scrutable) framework to facilitate communication of each significance determination and its basis among technically knowledgeable stakeholders (both internal and external). The objective of such communication is to achieve a common understanding, to the extent desired by any

interested stakeholder, of SDP decision bases. This allows for broad and independent verification of the staff's objectivity and most directly enhances NRC public credibility. IMC 0308 also discusses the need to clearly document quantitative insights used to inform decisionmaking (whether solely based quantitative insights or a combination of qualitative and quantitative insights) in a manner that allows stakeholders the means to independently assess the SDP result. Such documentation should include influential assumptions considered and the basis of these assumptions as well as the limitations and uncertainties of the risk model and how these were considered by the staff in arriving at a final result.

The results of SERP meetings and SDPs are to be documented in accordance with IMC 0609, Attachment 1, "Significance and Enforcement Review Panel Process" (ADAMS Accession No. ML101400488); for example, in inspection reports, Notices of Violation, Preliminary/Final Significance Determination Letters to licensees, etc. During interviews conducted with internal and external stakeholders, the working group received feedback, largely from external stakeholders, indicating that the results of SERP meetings and SDPs are not always documented in a manner that supports scrutability (i.e., openness) and an understanding of bases for decisionmaking about inspection findings. Examples of feedback received included the following:

- *Public citizens' groups and State agencies indicated that the SDP is too complex and inaccessible for public scrutiny.*

- *Many stakeholders indicated that the SDP is very technical and is inconsistently documented.*

- *It seems as though the final characterization of inspection findings was based on factors not included (plant-specific assumptions, political pressure, or management discretion) in the SERP documentation or in the inspection report.*

- *The NRC needs a better way of communicating the results of SERPs and SDPs PRAs to the public. There is limited information provided in Choice Letters and the information provided is often very complex.*

- *SERP results lack transparency. Consideration should be given to issuing SERP summaries and making them publicly available, as appropriate.*

Clearly, the SDP was developed with scrutability of decisionmaking in mind. IMC 0308 discusses at length measures in place to ensure that the results of SERPs and PRAs are clearly documented and include the basis for results. However, the stakeholder feedback suggests that the results of SDP decisionmaking are not always communicated with all audiences in mind. The working group recognizes that it is often challenging to document all aspects of decisionmaking in a way that all stakeholders easily understand, particularly when inspection findings involve complex PRAs, challenging technical issues, and (at times) sensitive security information. However, the group also believes that scrutability of decisionmaking is an important fundamental attribute of the SDP and that steps should be taken to more effectively communicate SDP results to the broad audience of stakeholders.

Issue: A range of stakeholders and audiences continue to have difficulties understanding the NRC's communication of significance determination process (SDP) proceedings and results.

Suggestion 9: To the extent practicable, steps should be taken to better understand stakeholder concerns with the documentation of SDP results and to enhance the communication of SDP results to improve the transparency of the process for the broad audience of stakeholders.

6.3.3 Impact of White Findings on Resources

Supplemental inspection activities have varying degrees of regulatory impact which can be generally characterized by their associated resources. Each supplemental IP provides guidance/estimates of the resources required to conduct the direct inspection activities (not including indirect resources for preparation and documentation). These are as follows:

- IP 95001: 40 hours for each White issue (max of 80 hours),
- IP 95002: 200 hours, and
- IP 95003: 3000 hours.

Although the impact on a licensee from an IP 95001 supplemental inspection is fairly modest, the escalating "costs" associated with additional White (or greater) findings are non-trivial if those findings lead to the NRC conducting a 95002 or 95003 inspection. During feedback sessions with stakeholders, the working group heard a wide variety of perspectives regarding the impacts of White findings which can be decisive inputs to the assessment process and to the determination of regulatory follow-up. Internal stakeholders tended to offer a perspective that many licensees challenge the validity of all White findings regardless of the potential Action Matrix outcome. The anecdotes included cases in which licensees invested far more staff time and financial resources in protest of a White finding, and required far more NRC staff time to reach an SDP conclusion, than would have been required to conduct the associated supplemental inspection. In those cases, the lengthy decisionmaking process was not only costly in terms of NRC and licensee resources, but it also added unnecessary delays to the regulatory decisionmaking process.

Feedback from external stakeholders presented an alternative perspective that, in some cases, suggested the NRC assessment of issues is biased to yield White inputs to the Action Matrix. This was voiced principally as a concern regarding entry into Column 3 of the Action Matrix but could conceivably influence entry into other Action Matrix columns. Specific feedback from licensees included the following:

- *It was anticipated that plants would have White findings as a matter of course. Now, the NRC treats White findings as though safety has been compromised at the plant.*
- *A 95002 inspection for a White finding doesn't seem to add value for cases in which the Senior Resident Inspector/Resident Inspector could do the follow-up.*
- *Seventy-five Green findings at one facility are seemingly okay, but one White finding garners far more "heat" from the NRC and from other stakeholders.*

- *Too much time and effort goes into the cross-cutting area process with seemingly no "substantive" safety gain. NRC subjectivity and inconsistencies from region to region only make matters worse.*

- *The NRC needs to reduce what licensees believe is unnecessary focus on White findings.*

While the external and internal stakeholders don't always agree on whether the SDP yields "correct" assessments (i.e., Green versus White) of issues, both groups do agree that the determination process for issues that are near a threshold (particularly Green/White) is frequently lengthy and has a large resource impact. Accordingly, the working group suggests that a review of the criteria for transition to Column 3 of the NRC Action Matrix be conducted against the original ROP program goals to ensure that the significance of White inspection findings is not being over-emphasized and to ensure that agency resources are not being unnecessarily expended to deal with issues that, by definition, are of low to moderate safety significance.

The working group also received a great deal of feedback suggesting that licensees frequently expend a great deal of resources to "push back" during Pre-decisional Enforcement Conferences regarding the significance of potential White inspection findings. Additionally, some SERP participants observed that NRC staff invests a substantial amount of time and effort preparing for this anticipated licensee pushback particularly if the licensee already has an existing White inspection finding or performance indicator associated with the same ROP cornerstone or strategic performance area.

When the working group asked for more elaboration, some stakeholders suggested that the current threshold established in IMC 0305 for Column 3, "Degraded Cornerstone Column," of the NRC Action Matrix might contribute to the extent of licensee pushback on potential White inspection findings. Specifically, concerns were shared that simply increasing the number of White inspection findings at a facility from one to two in any cornerstone (i.e., the IMC 0305 Action Matrix threshold for entry into Column 3) results in a disproportionate level of additional regulatory oversight (i.e., an IP 95002 supplemental inspection, a licensee root cause analysis, and potentially an independent safety culture assessment or an inspection under IP 71152, "Problem Identification and Resolution" (ADAMS Accession No. ML13179A365)). One way to quantify this increase is to note that the supplemental inspection hours alone will increase from 80 hours to 400 hours as a result of having two White findings in once cornerstone. Other specific feedback included the following:

- *Resources expended by the agency and industry supporting PRAs/SERPs are "huge." Efforts can sometimes involve 20 to 40 people, large amounts of time spent debating SDP results, senior resident analysts (SRAs) reviewing licensee procedures and traveling to sites to walk down systems, licensees even developing mockups costing millions, etc.*

- *We have never understood how multiple [two] White findings [can] become a Yellow finding. Safety does not seem to be best served using this approach.*

- *The NRC needs to reduce what we [external stakeholders] believe is unnecessary focus on White findings.*

- *In 2007, two licensees appealed the final determination of two separate findings characterized as White. The Regional Administrator upheld the original decisions to maintain the characterization of the performance deficiencies as White; however, both licensees petitioned for a second appeal through the Office of the EDO even though no such process exists.*

- *Licensee efforts to ensure that findings are characterized to have as low a safety significance as possible results in delays in NRC management assigning a color and determining placement within the NRC's Action Matrix essentially delaying the increased oversight called for if the finding is determined to be greater than Green.*

- *Because most inspection findings are Green, one White finding at a plant can place it in the "bottom quartile" of plant performance. Therefore, licensees try to avoid this placement and will expend a great deal effort and resources to ensure that the risk level for a finding is appropriate.*

IMC 0308 describes how plant performance bands, based on a combination of CDF and LERF, were used in developing the five columns of the Action Matrix. However, the manual chapter does not provide a specific basis for why a licensee with as few as two White inspection findings should be subjected to the same degree of regulatory oversight as a licensee with one Yellow inspection finding (finding of substantial safety significance).

Based on the working group's review of the ROP implementation relative to the Green/White threshold issues and stakeholder feedback, the working group believes there would be value in further exploring ways to address licensee and NRC staff concerns with White inspection findings. Specifically, the staff should consider whether the Action Matrix threshold for entering Column 3 (based on two White inspection findings) and the prescribed increase in regulatory oversight are commensurate with overall impact such findings have on the continued safe operation of the facility.

Issue: Internal and external stakeholders agree that the resources expended to disposition a finding at the Green/White threshold can be excessive. Licensees are willing to expend a great deal of resources to challenge a White finding because, in part, the increase in regulatory oversight for two White findings in a cornerstone (transition to Column 3 of the NRC Action Matrix) is not viewed as proportionate to the risk associated with the White findings. Consequently, the NRC also expends significant resources to finalize the characterization of White findings.

Recommendation 5: The NRC should review the criteria for transition to Column 3 of the NRC Action Matrix against the original Reactor Oversight Process program goals to ensure that the significance of White inspection findings is not being overemphasized and to ensure that agency resources used to process White inspection findings are commensurate with findings that, by definition, are of low to moderate safety significance.

6.4 Use of Cross-Cutting Issues and Safety Culture in the ROP

6.4.1 Background and Discussion

The accidents at Three Mile Island in 1979 and at the Chernobyl nuclear plant in 1986 brought attention to the importance of sound organizational practices and on the impact that

weaknesses in safety culture can have on safety performance. During early ROP development, the use of cross-cutting areas related to human performance, problem identification and resolution, and SCWE was established. Following the Davis-Besse degraded reactor head event in 2002, the NRC Davis-Besse Lessons Learned Task Force identified root causes that would be characterized today as a weak safety culture (ADAMS Accession No. ML022760172). In 2003, the Commission directed the staff to incorporate enhanced SCWE processes in the ROP. The Commission also directed the staff to "… monitor [safety culture] developments abroad so as to ensure that the Commission remains informed about these efforts and their effectiveness. In particular, because subjectivity is a principal objection to the direct regulation of safety culture, the staff should also monitor efforts to develop objective measures that serve as indicators of possible problems with safety culture" ("Policy Options and Recommendations for Revising the NRC's Process for Handling Discrimination Issues," SRM-SECY-02-0166, dated March 26, 2003, ADAMS Accession No. ML030850783). Following a series of interactions with the Commission, the staff revised the ROP and issued the approved changes on July 1, 2006. On July 31, 2006, the staff issued NRC Regulatory Issue Summary (RIS) 2006-13, "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture" (ADAMS Accession No. ML061880341).

6.4.1.1 Are Cross-Cutting Issues and Safety Culture the Same Thing?

The working group found that within the NRC the terms "cross-cutting issues" and "safety culture" are frequently used interchangeably.

Within NRC headquarters, feedback to the working group indicates there is a difference of opinion on whether the use of cross-cutting issues and safety culture comprise co-dependent or independent activities. Staff safety culture experts interviewed by the working group believe that safety culture envelops cross-cutting issues. Staff ROP practitioners interviewed by the working group believe that safety culture traits and attributes should be addressed separately from the cross-cutting areas, components, and aspects.

This ideological difference is borne out in the NRC's descriptive literature and IMCs. For example, the "Reactor Oversight Process" brochure (NUREG/BR-508, March 2013, ADAMS Accession No. ML13064A291) doesn't include any discussion of safety culture. IMC 0310, "Components Within the Cross-Cutting Areas" (ADAMS Accession No. ML091480473), describes Other Safety Culture Components to be considered only in the supplemental inspection program. IMC 0310 also describes cross-cutting components as "the components of safety culture directly related to one of the cross-cutting areas."

The NRC Safety Culture Policy Statement brochure (SCPS, NUREG/BR-0500, Revision 1, December 2012, ADAMS Accession No. ML12355A122) makes no mention of the ROP or cross-cutting areas, but the *Federal Register* Notice that announced publication of the final SCPS ("Issuance of Final Safety Culture Policy Statement," 76 FR 34773, June 14, 2011) mentioned that the policy was based on "… a variety of sources including the 13 safety culture components used in the ROP." IMC 0310 does list a total of 13 components, but 9 of the 13 are described as "cross-cutting components" while the remaining 4 are described as "other safety culture components."

6.4.1.2 Correlation Between Cross-Cutting Issues, Safety Culture, and Licensee Safety Performance

NRC subject matter experts have assessed general industry studies of safety culture and applied their findings within the nuclear industry context where applicable. In a technical paper published in 2012 ("Independent Evaluation of INPO's Nuclear Safety Culture Survey and Construct Validation Study," S. Morrow and V. Barnes, ADAMS Accession No. ML12172A093), the NRC performed an analysis on the results of the Institute of Nuclear Power Operations' (INPO's) 2010 safety culture survey of domestic nuclear power plants. The primary purposes of the paper "… were to investigate the factors that comprise the concept of safety culture in the nuclear power industry, assess the extent to which they match the traits identified in the NRC's SCPS, and evaluate the relationships between the safety culture factors identified from the survey and other measures of organizational and safety performance."

The analysis results indicated that, in the aggregate, there were statistically significant (i.e., non-random) correlations between the survey response data and the NRC's plant safety performance data for 2010. Examples from the analysis include correlations between: management responsibility for safety and the number of inspection findings with cross-cutting aspects at a plant per year (with a correlation value of -0.44), a questioning attitude and the number of allegations reported to the NRC from plant personnel per year (-0.41), supervisor responsibility for safety and the rate of human performance errors per year (-0.40), and safety communications and the number of unplanned scrams at a plant per year (-0.35) (Regulatory Information Conference 2013 Presentation TH36, "Domestic and International Cooperation to Advance Nuclear Safety Culture Research," S. Morrow (NRC) and G.K. Koves (INPO)). Such negative correlation values indicate an inverse relationship between the factors (i.e., better safety culture means fewer human performance errors).

The NRC's independent evaluation confirmed "… that the INPO safety culture survey is multidimensional, consists of factors similar to the traits in the NRC's SCPS, and demonstrates statistically significant relationships with some, but not all, measures of safety performance in the expected directions." The report results indicate that there were correlations between aspects of safety culture and plant safety performance, but further study is needed to determine whether causal relationships between safety culture and safety performance exist.

These analysis results conceptually demonstrate the potential value of including safety culture in the ROP. However, based on stakeholder feedback, the practical application of safety culture as an indicator of licensee safety performance in an operational environment is problematic as currently implemented.

6.4.1.3 The Current Use of Cross-Cutting Issues and Safety Culture in the ROP

According to stakeholder feedback received by the working group, the current implementation of cross-cutting issues and safety culture in the ROP is viewed as subjective and subject to manipulation. Stakeholders interviewed during the independent assessment described examples of tagging inspection findings with various cross-cutting aspects either to reach or to avoid reaching identification of an SCCI. Regional differences were described by stakeholders in program implementation of cross-cutting issues and safety culture. Depending on the stakeholder's perspective, this practice could be characterized as programmatic flexibility or as inconsistent implementation.

The working group found that the graded approach for escalated oversight of licensee safety culture (as referenced in IMC 0310) is well described in IMC 0305, IP 95001 (Action Matrix Column 2), IP 95002 (Action Matrix Column 3), IP 95003 (Action Matrix Column 4), and IP 40100 ("Independent Safety Culture Assessment Followup," ADAMS Accession No. ML080040273). However, the NRC's bases (reasons) used to develop the definition of a cross-cutting "theme" as described in IMC 0305 are not provided in IMC 0308. Industry feedback questioned the number of inspection findings tagged with the same cross-cutting aspect needed to establish a cross-cutting theme and, therefore, to be considered for classification as an SCCI.

SCCI closure criteria are left to be developed by the regions for inclusion in licensee assessment letters. Significantly, absent other operational performance findings, there is no apparent regulatory action required by or available to the NRC should the licensee fail to remedy a long standing SCCI.

6.4.1.4 How Does the NRC Safety Culture Policy Statement Affect the ROP?

The SRM for SECY-11-0005, "Proposed Final Safety Culture Policy Statement" (Accession No. ML110660547), states, "Since the policy statement is not a regulation or requirement, staff activities beyond communication and education should not be pursued without further specific Commission approval." The Commission also directed, "Before staff implements new initiatives based on the policy statement, it should seek Commission policy review of its plan including short-term and long-term goals for implementation and the vision for each program office's oversight."

The staff provided the proposed SCPS implementation plans for the Office of Federal and State Materials and Environmental Management Programs, NRR, the Office of New Reactors, and the Office of Nuclear Material Safety and Safeguards, with supporting roles for the Office of Enforcement, the Office of Nuclear Regulatory Research, and the Office of Nuclear Security and Incident Response, to the Commission for approval in SECY-12-0008, "Implementation Plan for the Safety Culture Policy Statement" (ADAMS Accession No. ML11334A073 for the entire package). The plans presented included communication and education initiatives as directed in the Commission's staff guidance. But additionally, in the SECY "Background" section, the EDO noted, "At present, the staff has not engaged in any new actions that go beyond outreach and education *or are not under previous Commission direction*" (emphasis added). This language appears to have been included by the staff to bridge the current uses of safety culture/ cross-cutting issues in the ROP that can be interpreted as going beyond the Commission's approved scope of communication and education activities in the SCPS.

Additionally, the SCPS explicitly states, "… the NRC does not monitor or trend the traits in the Policy Statement." Further, the SCPS notes, "… these traits are not necessarily inspectable and were not developed for that purpose." However, one of the traits listed in the SCPS is Problem Identification and Resolution (also one of the three cross-cutting areas currently used in the ROP).

In the SRM for SECY-12-0008 (ADAMS Accession No. ML120620120), the Commission approved the proposed implementation plan submitted in SECY-12-0008, reaffirming the direction, "Staff activities beyond communication and education should not be pursued without further specific Commission approval." The Commission made no comment regarding the prior usage of safety culture concepts in the existing ROP and subsequently approved safety culture

policy documents have not addressed this apparent difference between the general SCPS direction and existing ROP implementation.

6.4.1.5 Future Changes to the ROP for Incorporation of the Nuclear Safety Culture Common Language (NSCCL)

The working group noted that the NRC has recently reached consensus with industry on the NSCCL. It will be up to the NRC ROP practitioners to meld this new safety culture "dictionary" with the existing ROP guidance documents, training, and inspection procedures. The working group independently cross-mapped existing cross-cutting areas, components, and aspects to the traits and attributes of the NSCCL. Based on its review, the working group believes that the newly developed common language traits and attributes do envelop the cross-cutting areas, components, and aspects currently used.

The development of the NSCCL is intended to provide a common base of understanding of safety culture terms and definitions for all stakeholders. Regardless of the particular safety culture traits and definitions established in the common language, the working group was not able to identify any plans to address the downstream process activities within the ROP that would change how cross-cutting aspects are handled. Therefore, the working group did not find a reason to expect the broader treatment of cross-cutting issues to improve solely because of the incorporation of the new common language.

During its assessment, the working group was informed of preliminary plans for implementation of the common language that would maintain the three existing cross-cutting areas (Human Performance, Problem Identification and Resolution, and SCWE) and parse the new common language traits and aspects under these areas. There are a total of ten common language traits and forty common language attributes included in the common language. The working group believes that simply incorporating the new traits and attributes into the existing cross-cutting area taxonomy is likely to cause additional confusion for ROP practitioners and stakeholders regarding the intended application of cross cutting and safety culture concepts.

During the fact checking phase in development of this report, NRR/DIRS provided the working group with a draft revision of IMC-0310 incorporating the NSCCL. The working group noted that the existing cross-cutting taxonomy has been revised to eliminate the classification level of "cross-cutting components." However, the draft language persists in using the "cross-cutting" terminology rather than "safety culture" terminology, continuing an unclear distinction of usage.

6.4.2 Stakeholder Feedback

Most stakeholders agree that including cross-cutting issues and safety culture in the ROP as a program element is important. However, the working group found a diverse set of opinions on the best way to incorporate these program elements in the ROP and the expected outcomes.

During focus group and individual interviews, the working group received a significant amount of feedback regarding the use of cross-cutting issues and safety culture. Some representative comments included the following:

- *For human performance and cross-cutting issues, as we define them, the measures are imperfect but workable. Better (less subjective) than the term "safety culture." There is some direct connection between SCCI and safety performance even if the linkage is not well identified.*

- *Use of cross-cutting as a surrogate for safety culture – What is the benefit to safety? The basis for closeout of these issues is not always clear even though the closure criteria are supposed to be set at the beginning.*

- *The increased attention to safety culture is appropriate and strongly supported by the industry.*

- *Cross-cutting issues rolling up into substantial cross-cutting issue. Good first effort, but both sides seem to agree that it needs refinement.*

- *Continue work on honing the safety culture process. Consider "common language" work with INPO.*

- *The cross-cutting issue matrix seems to be in need of work. I'm not sure it's working as well as it should. Also, with growing regulation, the NRC gets a greater number of findings so consideration should be given to increasing the number of findings in a single cross-cutting area before a SCCI exists.*

- *The NRC should be revisiting cross-cutting issues now that we have the safety culture process. The ROP is set up to be objective and the cross-cutting areas are subjective.*

- *Cross-cutting aspects do not always seem to "cut across" multiple processes. Many times these aspects are isolated to a particular process.*

- *There is(are) no clear action(s) established to manage long standing SCCIs.*

- *Cross-cutting aspects are often subjective and appear to have regional office bias regarding when to assign a cross-cutting aspect to a finding, which bin it falls under, and what actions are appropriate as a result. This can create the perception that there are varying "shades of Green."*

- *Too much time and effort goes into cross-cutting area process with seemingly no "substantive" safety gain. The NRC subjectivity and inconsistencies from region to region only make matters worse.*

- *Has the NRC ever measured the success of the cross-cutting area process?*

- *The cross-cutting area process is almost always a burden with little perceived benefit.*

- *SCCIs have become so processed – What are we trying to accomplish? We have some that have lingered for years and become almost meaningless. They do have some value, helping to focus on certain areas, but what do you do with the ultimate issue? It kind of hangs.*

The working group's assessment of the feedback received during annual ROP self assessments and during interviews conducted by the working group is that the current academic state of the art and practical application of safety culture in the nuclear industry is still evolving.

6.4.3 Assessing the Value of Using Cross-Cutting Issues and Safety Culture

The inclusion of cross-cutting issues and safety culture considerations in the ROP was initially directed by the Commission in 2003. The staff has consulted with the Commission on its efforts to incorporate and refine safety culture considerations in the ROP since that time. While there is a general presumption regarding the benefits of incorporating cross-cutting issues and safety culture in the ROP, the working group did not find evidence of a rigorous assessment to systematically measure or quantify the benefits of incorporating these concepts in the oversight program. Further complicating this issue is the absence of explicit goals and outcomes expected to result from the incorporation of these concepts in the ROP. The working group also determined through interviews and document research that the NRC resources expended to obtain the expected benefits have not been tracked over time. The working group believes that to fully assess the value of incorporating cross-cutting issues or safety culture in the ROP, additional rigor must be applied to define expected outcomes and assess whether the resources invested in this aspect of the ROP are being used most effectively.

The NRC faces a significant strategic challenge in determining the best uses of cross-cutting issues and safety culture. Additional study is needed to identify definitive causal relationships between cross-cutting issues, safety culture, and sustained licensee safety performance. In parallel, the NRC needs to decide how best to apply the information to the regulatory environment. For example, how should the agency's role as a regulator govern its actions if it determines that specific safety culture measures correlate directly and strongly with specific plant safety measures? Should the agency act to preemptively intervene in some way to drive licensee safety culture performance improvements? Or should the agency rely on licensee improvement efforts knowing that a potential safety performance issue could arise if the improvement efforts were not effective or timely? Should the safety culture framework remain as part of the ROP, or should it be separate?

Issue: A rigorous comparison of the benefits of considering cross-cutting issues and safety culture in the Reactor Oversight Process (ROP) on licensee safety performance and an assessment of the NRC resources expended to achieve those benefits have not been performed. Additionally, the working group found differences between various NRC policy, program, and communication documents when describing the purposes and uses of cross-cutting issues and safety culture in the ROP.

Recommendation 6: The NRC should perform a comprehensive analysis to determine whether the use of cross-cutting issues and safety culture, as currently incorporated in the ROP, provides regulatory value in terms of licensee safety performance for the resources expended. To support that determination, NRC staff should clarify and document the goals, purposes, uses, and desired outcomes associated with the inclusion of cross-cutting issues and safety culture in the ROP. If program changes are needed, the staff should determine whether Commission approval is required for implementation.

6.4.4 Effective Use of Substantive Cross-Cutting Issues (SCCIs)

In the Staff Requirements Memo (SRM) for SECY-12-0081, the Commission directed the staff to pursue an independent review of the program's objectives and implementation including "… the effectiveness of NRC's assessment of [SCCIs]."

The working group reviewed existing ROP documentation and discussed with NRC stakeholders whether a similar review had been conducted in the past. The group determined that an internal review of SCCI effectiveness had not been conducted previously, but a current review has been commissioned within NRR's DIRS.

The working group suggests that effectiveness could be measured in several ways using existing program data. Potential measures of effectiveness might include the following:

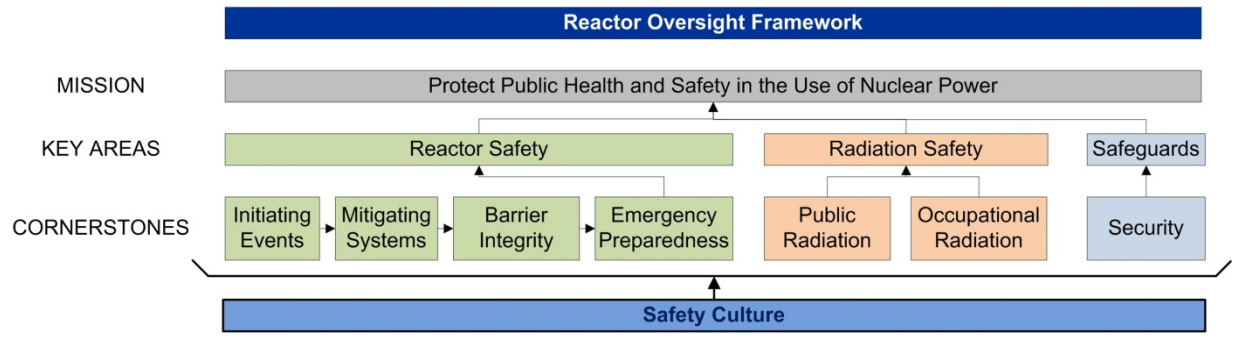
- the number of sites/plants that have had SCCIs identified, corrected the SCCIs, and subsequently had additional SCCIs;
- the number of assessment cycles required for a site/plant to clear an SCCI; and
- the degree of alignment between SCCIs identified by the NRC and subsequent findings of site's independent or third party safety culture assessments (if conducted).

The working group notes that the term "effectiveness" is subject to interpretation and that any discussion of the term should include a definition of the term's use. For example, "effectiveness" could be one input used for determining the value of using SCCIs in the ROP as discussed above.

Issue: There are ideological differences between NRC's safety culture subject matter experts and Reactor Oversight Process (ROP) practitioners on how best to apply cross-cutting issues and safety culture in the ROP. Based on feedback received by the working group, there is stakeholder disagreement on the purposes, application, and disposition of substantive cross-cutting issues.

Suggestion 10: Consider replacing the use of substantive cross-cutting issues and the current cross-cutting aspects, components, and areas with a process that uses the recently developed Nuclear Safety Culture Common Language (NSCCL) traits and attributes in a graded regulatory response aligned with the overall ROP philosophy. Further, a more graded regulatory response could be established to allow licensees to address safety culture issues when performance is in the *Licensee Response* column and would escalate the NRC's level of engagement as the significance of findings increase.

The following figure reflects the suggested approach:



6.5 Generic Treatment of Common Plant Performance Issues

As discussed in Section 4.3 of this report, "Assessment of Licensee Corrective Actions in Response to Generic Issues," generic issues are occasionally identified which require regulatory action by the NRC and licensees. However, it is often not clear whether an issue is generic when it is first identified. The ROP is focused on assessing performance of individual facilities, but findings identified at one facility might be present at others. This has borne out in findings at a facility resulting in subsequent, similar, duplicate findings at other facilities.

Identification of performance issues applicable to multiple licensees through inspections or through the Task Interface Agreement (TIA) process is an expected outcome of the oversight process. However, some issues with generic applicability are not recognized as such and are, therefore, not placed into NRC processes that would facilitate consistent treatment by NRC or licensees. The TIA process is the means by which the regions can ask NRR technical and regulatory questions which might ultimately result in the region identifying a finding relative to a single licensee. The process for TIAs is detailed in NRR Office Instruction COM-106, "Control of Task Interface Agreements" (ADAMS Accession No. ML073440014).

During the working group's review, a number of stakeholders raised concerns about how findings identified at one plant, or regulatory concerns identified in the resolution of a plant-specific TIA, can often result in findings being identified at other licensees. The stakeholders indicated that such issues are often not widely communicated to the industry using transparent and retrievable communications means (even though there are sometimes verbally communicated during NRC/industry interface meetings) and could be better addressed through established regulatory tools for generic issues.

IMC 0970, "Potentially Generic Items Identified by Regional Offices," (ADAMS Accession No. ML101600326) outlined the responsibility of regional offices to identify potentially generic safety questions to NRR for evaluation and determination of whether generic action is warranted. The working group noted that IMC 0970 was issued on December 11, 2000, and does not reflect the current NRR operating experience (OpE) program and appears to be replaced by other guidance documents (but is still available on the NRC website). The responsibility in IMC 0970 described above appears to remain appropriate but does not appear to be captured in other documents. Providing generic treatment of common issues would improve the NRC's regulatory effectiveness and reduce the burden associated with identification and resolution of duplicate findings at multiple facilities. Depending on the safety significance of an issue, a mechanism that would allow industry to enter issues directly into licensee corrective action processes for resolution might be the most effective and efficient means for resolving generic issues.

IMC 2523, "NRC Application of the Reactor Operating Experience Program in NRC Oversight Processes" (ADAMS Accession No. ML12332A099), describes the interface between the reactor OpE program (as described in MD 8.7, "Reactor Operating Experience Program," ADAMS Accession No. ML122750292), and the ROP. IMC 2523 discusses the attributes of the OpE program including internal communication avenues available for inspectors to share and become aware of OpE issues and the outcomes of the OpE evaluation process which can impact the inspection program; for example, through the issuance of a generic communication. Of particular note is the OpE Smart Sample program. The Smart Sample program is designed to provide NRC inspection staff with a detailed synopsis of select issues that have safety significance and can be reviewed as part of baseline inspection activities. The Smart Sample program supports the ROP by informing inspection scope and sample selection. The

information and trends identified from Smart Sample inspections might provide further indication that a specific issue warrants additional agency action, such as a technical instruction or generic communication.

The Smart Sample reports are made publicly available. This program appears to be an appropriate mechanism for informing baseline inspection scope and sample selection, but it is not clear how well industry is informed of new Smart Samples when they are issued. There also does not appear to be a "latency period" afforded to industry when new issues are identified that would allow licensees to self initiate corrective actions before the NRC inspects the Smart Sample. Adding features to the OpE program that make new information on potentially generic issues more readily available to industry and that enable licensees to use their corrective action programs to address these issues could improve the effectiveness of the OpE program and reduce industry concerns regarding duplicate findings.

Issue: The identification of performance issues applicable to multiple licensees through inspections or through the Task Interface Agreement process is an anticipated outcome of the NRC's oversight process; however, some issues could be more efficiently and effectively addressed by NRC and industry by using other NRC processes to better ensure a consistent generic response.

Recommendation 7: Clarify Reactor Oversight Process program expectations for when performance issues that are common to multiple facilities should be considered for resolution through a generic issues process in order to improve the use of NRC inspection resources and ensure a thorough and consistent industry response.

6.6 Scope of ROP Self Assessments

IMC 0307, "Reactor Oversight Process Self Assessment Program" (ADAMS Accession No. ML090300565), describes the ROP self assessment program. The self assessments are intended to objectively evaluate the effectiveness of the ROP in achieving the goals of being objective, risk informed, understandable, and predictable as well as the applicable agency performance goals listed in the NRC's Strategic Plan. The reviews are to inform the Commission, NRC senior management, and the public of the results of the program including any conclusions and resulting improvement actions.

IMC 0307 identifies several types of periodic ROP self assessments:

- Periodic Reports: Metric data is collected and analyzed on a quarterly basis and periodic reports may be issued as deemed necessary to address particular issues of concern resulting from the quarterly data and analysis.

- Annual Performance Metric Report and Commission Paper: NRR develops an annual ROP performance metric report after the conclusion of each calendar year and presents the results in a Commission paper. The overall summary report must discuss any metrics that did not meet their pre-established criteria, the staff's analysis of the reasons for not meeting the criteria, and any actions taken or planned to change the program or improve its implementation. The Commission paper is written to support the AARM and the Commission briefing on AARM results that follows the review meeting. NRR also prepares a consolidated response to the external survey used in the self assessment process.

- Customized Audits of the ROP: After each annual ROP cycle, NRR may use the insights gained from the self assessment to develop topics for audits that delve more deeply into those aspects of the ROP that show indications of weaknesses or areas for future development.

At the initiation of the ROP, the staff and Commission acknowledged the need for continuous self assessment of program effectiveness after the program's implementation and developed IMC 0307. Stakeholder feedback and group review of self assessments show that the current self assessment process appears to provide a robust mechanism for identifying operational enhancements to the ROP. However, stakeholders provide a variety of feedback on potential improvements including issues such as the following:

- the need for the agency to assess its own performance after poorly performing facilities are identified and to perform effectiveness reviews after supplemental and reactive inspections to determine whether the baseline is adequate;

- the need for occasional benchmarking of outcomes from the ROP against expert elicitation to see whether the program needs revision as well as evaluation of the results of decisionmaking tools versus the final outcomes to identify process enhancements;

- better assessment of the cost effectiveness of the ROP in general and of the self assessment program in particular; and

- increased focus on independent strategic evaluation of achievement of program goals. This feedback was separate from the Commission direction to perform this independent assessment but was similar in nature.

The working group felt that a common element of this feedback was a need for a more strategic (versus operational) periodic look at the program similar to this independent assessment. To achieve this, the group believes that the current self assessment process could be reconfigured to be more effective with no increase in resources expended by developing the following:

- a streamlined version of the current process to continue to identify operational enhancements with reduced expenditure of resources and

- a periodic broader assessment of accomplishment of the ROP strategic goals incorporating independent staff similar to those who participated in this independent assessment and also perhaps incorporating a panel of more senior experts to assess the program and stakeholder feedback.

As part of the independent assessment, the working group examined annual ROP self assessment reports from 2001 through 2012 with specific regard to cross-cutting issues and safety culture. There were several observations identified during the reviews.

- First, the multiple revisions to the survey format make it difficult to reliably trend (compare) the perception of the safety culture enhancements over time. The criterion to be met by the metric "Perceived Effectiveness of Safety Culture Enhancements to ROP" (AS-11 in 2006, AS-8 in 2007 through 2012, and O-10 in 2013) is "expect stable or increasingly positive perception over time." The internal and external survey formats

have evolved since 2006 with a significant expansion of the number of internal survey questions (from 3 to 11) on the topic in 2010.

- Second, the limited survey population and the binary response format (agree/disagree) for individual survey questions mean that the results of the tabulated surveys are a coarse indicator. Minor positive or negative changes in survey percentages of agreement over time are likely not discernible using this format.

- Third, the survey questions and formats used for internal and external stakeholder surveys are not the same, making it difficult to compare internal and external responses directly.

- Finally, there appears to be a consistent and persistent difference in stakeholder perception between internal and external stakeholders with regard to the value of using cross-cutting issues and safety culture in the ROP.

These observations support the need to strengthen the ROP self assessment process (from a data collection and analytical perspective) and to periodically review the program (from a strategic perspective).

Issue: The Reactor Oversight Process (ROP) self assessment process focuses on identifying and addressing operational issues impacting program implementation and does not explicitly evaluate the effectiveness of the ROP in achieving expected outcomes.

Recommendation 8: Consider revising the ROP self assessment process to better solicit and assess both tactical and strategic feedback. Reexamine how internal and external feedback is collected, analyzed, and used to improve the oversight approaches to and the implementation of the ROP.

7.0 TOPICS OF INTEREST

The independent assessment of the ROP practices and approaches was intended to compare, at a high level, the program's original objectives and with its current implementation. In SRM-SECY-12-0081, the Commission also highlighted the following three implementation topics of particular interest: the relative roles of headquarters and regional staff, interactions with industry over performance indicator assessments, and the effectiveness of NRC's assessment of SCCIs. Lastly, the Commission noted that the independent assessment would be helpful as the agency plans for the operational review of new nuclear power plants based on Generation III+ reactor technology.

In conducting its review, the working group included consideration of these specific Commission topics of interest as context for the potential focus areas of this report. The working group looked for indicators related to these topics when evaluating the historical documents assessing the effectiveness of the ROP, during interviews with current ROP practitioners and stakeholders, and during observation of ROP-related process interactions between NRC staff and industry. The working group's assessment of ROP objectives and implementation, in general, was used as the basis for the team's view on potential applicability of the ROP to new nuclear power plants.

The topic of interest, "effectiveness of NRC's assessment of [SCCIs]," resonated with internal and stakeholders and is extensively discussed in Section 6.4 of this report. The remaining two topics of interest, "the relative role of headquarters and regional staff," and "interactions with industry over performance indicator assessments," did not resonate the same way with the stakeholders or internal focus groups areas of significant concern. Stakeholders interviewed did not express, and the team did not identify, concerns regarding roles and responsibilities of the headquarters or regional staff related to the ROP. Staff interactions with industry related to performance indicators were observed as part of the working group's assessment which is generally discussed in Section 5.2. Stakeholder feedback and the team's observations revealed no significant issues related to NRC and industry interactions with respect to implementation of the ROP PI program.

The full applicability of the ROP relative to new reactors is a topic that goes beyond the scope of this report. However, since the Commission noted the potential relevance of the independent assessment to future planning for the operational review of new nuclear power plants, the working group considered whether any information identified during the course of its review might impact the applicability of the ROP framework to new reactors. The working group's view of this issue is documented in Section 7.1 below.

7.1 ROP Applicability and Implementation Strategy for New Reactors

The working group reviewed the current ROP structure to determine how well the existing framework would adapt for use with new large light water reactors and with new light water small modular reactors. While implementation of the ROP framework for the next generation of nuclear power plants would need to account for substantial differences in the baseline risk of new reactor designs, the working group concluded that the fundamental ROP framework should continue to serve the agency well.

The working group noted that there are current efforts by staff to adapt the ROP to the next generations of power reactors. These efforts include the following:

- adaptation of the ROP to a construction environment for new reactors in a program known as the Construction ROP (cROP) and

- preparation of staff recommendations for risk informing the ROP for new reactors.

The most recent annual self assessment for the cROP process is found in SECY-13-0042, "Construction Reactor Oversight Process Self Assessment for Calendar Year 2012," dated April 15, 2013 (ADAMS Accession No. ML13045A493 for the entire package). The staff determined in the self assessment report that the cROP met the agency's organizational excellence objectives (i.e., openness and effectiveness) from the NRC's Strategic Plan for Fiscal Years 2008 through 2013 and the strategic goals of ensuring safety and security through objective, risk-informed, understandable, and predictable oversight.

Staff recommendations for risk informing the ROP for new reactors were provided to the Advisory Committee on Reactor Safeguards (ACRS) for review and comment in June 2013 and the ACRS provided feedback to the staff in September 2013. The staff responded to the ACRS comments in December 2013 (ADAMS Accession No. ML13283A029 for the entire package). The staff issued its final recommendations on this subject to the Commission in December 2013 as SECY-13-0137 (ADAMS Accession No. ML13263A351 for the entire package).

CHARTER (3 PAGES)

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 26, 2013

MEMORANDUM TO: Brian J. McDermott, Director
Division of Materials Safety and State Agreements
Office of Federal and State Materials
and Environmental Management Programs

FROM: Michael R. Johnson
Deputy Executive Director for Reactor
and Preparedness Programs
Executive Director for Operations

SUBJECT: WORKING GROUP TO CONDUCT AN INDEPENDENT REVIEW OF THE REACTOR OVERSIGHT PROCESS

On October 22, 2012, the Commission directed the staff to perform an independent review of the Reactor Oversight Process (ROP) in the Staff Requirements Memorandum (SRM) for SECY-12-0081, "Risk-Informed Regulatory Framework for New Reactors." The SRM states that "The Commission would benefit from a fresh review of the practices and approaches the U.S. Nucleaer Regulatory Commission (NRC) has developed for the Reactor Oversight Program over the course of years. The staff should pursue an independent review of the program's objectives and implementation, including the relative roles of headquarters and regional staff, our interactions with industry over performance indicator assessments, and the effectiveness of NRC's assessment of substantive cross-cutting issues. Such an assessment would provide a reinforced foundation upon which the agency can plan for the operational review of new nuclear power plants based on Generation III+ reactor technology."

The purpose of this memorandum is to task you to convene a working group to conduct the independent review in accordance with the direction provided in the SRM. To support the independent nature of this review, the working group should be comprised of individuals that were not significantly involved in the ROP development and have not recently been involved in ROP implementation.

Attached is a charter for the working group. The charter defines the objective, scope, coordination and communication, expected products, schedule, and staffing.

Enclosure: As stated

CHARTER FOR AN INDFPENDENT REVIEW

OF THE NUCLEAR REGULATORY COMMISSION'S

REACTOR OVERSIGHT PROGRAM

In the Staff Requirements Memorandum for SECY-2012-0081, "Risk-Informed Regulatory Framework for New Reactors," the Commission directed the staff to pursue an independent review of the Reactor Oversight Program to provide a reinforced foundation upon which the agency can plan for the operational review of new nuclear power plants based on Generation III+ reactor technology. The independent review will be conducted by U.S. Nuclear Regulatory Commission (NRC) staff, independent of the present stewards of the Reactor Oversight Process (ROP) in the Office of Nuclear Reactor Regulation (NRR) and the NRC staff members that initially developed the program.

Objective

Conduct an independent assessment of the ROP's objectives and implementation, including the relative roles of headquarters and regional staff, interactions with industry over performance indicator assessments, and the effectiveness of NRC's assessment of substantive cross-cutting issues.

Scope

The independent review will include the following activities:

a. Reviews of existing documentation assessing the effectiveness of the ROP in achieving its stated objectives. Examples of available products include:
    - Self-assessments by NRR
    - Inspector General audits
    - External stakeholder feedback and reviews

b. Interviews with current ROP practitioners and stakeholders. Representative interviews would include individuals such as:
    - NRC headquarters and regional staff
    - NRC headquarters and regional management
    - Non-Governmental Organization representatives
    - Industry representatives (licensee management and Nuclear Energy Institute)

c. Observations of a sample of ROP-related process interactions between NRC staff and industry.

d. Assessment of common issues and programmatic themes.

e. Development of recommendations, as appropriate, for enhancements or areas for further review.

Coordination and Communications

The independent team review will:

a. Solicit input from the ROP program office stewards, the implementers, and stakeholders

b. Remain independent of the existing ROP Enhancement[1] initiative

c. Keep the program office informed of the team's efforts

d. Develop a communications plan

Expected Product and Schedule

The independent team review will provide its observations, conclusions, and recommendations in the form of a written report to the Deputy Executive Director for Reactor and Preparedness Programs in June 2013.

Staffing

The independent review team will consist of the following members:

Leader Brian McDermott, The Office of Federal and State Materials and Environmental Management Programs (FSME)

Managers	Eric Benner, FSME David Pelton, Office of Nuclear Reactor Regulation
Staff	TBD

Additional team members will be added as needed to support the project's objective and elements of the review. The estimated resources for this project include part time support from an Senior Executive Service team leader, two Branch Chiefs, and four staff, over a period of five months. Staff will be added to the project following approval of the Charter and development of the data collection framework.

[1] In November 2012, NRR began a broad initiative to enhance the ROP baseline inspection program. Portions of the NRR initiative have been placed on hold pending completion of the ROP Independent Assessment, to avoid any duplication of effort.

LIST OF DOCUMENTS REVIEWED

1. "Risk-Informed Regulatory Framework for New Reactors," SECY-12-0081, June 6, 2012, Agencywide Documents Access and Management System (ADAMS) Accession No. ML12117A012.

2. "Risk-Informed Regulatory Framework for New Reactors," Staff Requirements Memorandum (SRM) for SECY-12-0081, October 22, 2012, ADAMS Accession No. ML12296A158.

3. Transmittal of Draft Commission Paper on "Recommendations for Risk Informing the Reactor Oversight Process for New Reactors," package of draft SECY paper and staff memorandum to the Advisory Committee on Reactor Safeguards (ACRS), June 24, 2013, ADAMS Accession No. ML13169A408.

4. "Proposed Final Safety Culture Policy Statement," SECY-11-0005, January 5, 2011, ADAMS Accession No. ML103200087.

5. "Proposed Final Safety Culture Policy Statement," SRM-SECY-11-0005, March 7, 2011, ADAMS Accession No. ML110660547, and the associated Commission Voting Record (VR) for SECY-11-0005, March 7, 2011, ADAMS Accession No. ML110660554.

6. "Implementation Plan for the Safety Culture Policy Statement," SECY-12-0008 and enclosures, January 19, 2012, ADAMS Accession No. ML11334A073 (package).

7. "Implementation Plan for the Safety Culture Policy Statement," SRM-SECY-12-0008, March 1, 2012, ADAMS Accession No. ML120620120.

8. "Construction Reactor Oversight Process Self Assessment for Calendar Year 2012," SECY-13-0042, April 15, 2013, ADAMS Accession No. ML13045A493.

9. NRC "Information on the Changes Made to the Reactor Oversight Process to More Fully Address Safety Culture," Regulatory Issue Summary (RIS) 2006-13, July 31, 2006, ADAMS Accession No. ML061880341.

10. "Policy Options and Recommendations for Revising the NRC's Process for Handling Discrimination Issues," SRM-SECY-02-0166, March 26, 2003, ADAMS Accession No. ML030850783.

11. "Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscious Work Environment and Safety Culture," SECY-04-0111, July 1, 2004, ADAMS Accession No. ML041750238.

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13. "Recommended Staff Actions Regarding Agency Guidance in the Areas of Safety Conscious Work Environment and Safety Culture," VR-SECY-04-0111, August 30, 2004, ADAMS Accession No. ML042440149.

14. "Status of Safety Culture Initiatives and Schedule for Near-Term Deliverables," SECY-05-0187 and attachment, October 19, 2005, ADAMS Accession No. ML052850012 (package).

15. "Status of Safety Culture Initiatives and Schedule for Near-Term Deliverables," SRM-SECY-05-0187, December 21, 2005, ADAMS Accession No. ML053550519.

16. "Status of Safety Culture Initiatives and Schedule for Near-Term Deliverables," VR-SECY-05-0187, December 21, 2005, ADAMS Accession No. ML053560116.

17. "Safety Culture Initiative Activities to Enhance the Reactor Oversight Process and Outcomes of the Initiatives," SECY-06-0122, May 24, 2006, ADAMS Accession No. ML061320282.

18. "Gap Analysis of the Reactor Oversight Process," April 8, 2011, ADAMS Accession No. ML110810078 (package).

19. Union of Concerned Scientists, "The NRC's Reactor Oversight Process: An Assessment of the First Decade," Issue Brief, Cambridge, MA, January 27, 2011, http://www.ucsusa.org/assets/documents/nuclear_power/20110127-ucs-brief-rop-first-decade.pdf (accessed October 30, 2013).

20. Union of Concerned Scientists, "The NRC and Nuclear Power Plant Safety in 2012: Tolerating the Intolerable," Report, Cambridge, MA, March 2013, http://www.ucsusa.org/assets/documents/nuclear_power/NRC-nuclear-safety-2012-report.pdf (accessed October 30, 2013).

21. "NRC Staff White Paper: A Comparison of International and US Nuclear Industry Performance Indicators to the Current ROP Performance Indicator Program," December 29, 2009, ADAMS Accession No. ML093340455.

22. Casto, C., "Double Down, Pivot and Blindside: The Dynamic Future of the ROP," presentation for "Regulatory Information Conference (RIC) 2010: The Future of the ROP," March 11, 2010, http://www.nrc.gov/public-involve/conference-symposia/ric/past/2010/slides/th38castocpv.pdf (accessed October 31, 2013).

23. Morrow, S., and V. Barnes, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, "Independent Evaluation of INPO's Nuclear Safety Culture

Survey and Construct Validation Study," Technical Paper, June 2012, ADAMS Accession No. ML12172A093.

24. "The NRC's Safety Culture Policy Statement - Domestic and International Initiatives," RIC 2013 Presentation Track TH-36, slide presentations, March 14, 2013, http://www.nrc.gov/public-involve/conference-symposia/ric/past/2013/docs/abstracts/sessionabstract-36.html (all pages and linked files accessed October 31, 2013): Shoop, U. (NRC), "Common Language for a Common Understanding," http://www.nrc.gov/public-involve/conference-symposia/ric/past/2013/docs/abstracts/shoopu-rev1-hv-th36.pdf, Morrow, S. (NRC), and G.K. Koves (Institute of Nuclear Power Operations, INPO), "Domestic and International Cooperation to Advance Nuclear Safety Culture Research," http://www.nrc.gov/public-involve/conference-symposia/ric/past/2013/docs/abstracts/morros-kovesk-rev1-hv-th36.pdf, Elsasser, R. (Idaho National Laboratory), "Creating the Foundation and Organizational Climate for a Strong Nuclear Safety Culture," http://www.nrc.gov/public-involve/conference-symposia/ric/past/2013/docs/abstracts/elsasserr-hv-th36.pdf.

25. "Nuclear Safety Culture Common Language, 4th Public Workshop, January 29–31, 2013," slide presentation, ADAMS Accession No. ML13028A508.

26. International Atomic Energy Agency (IAEA), Final "IAEA 2010 Integrated Regulatory Review Service (IRRS) Report to the United States of America," March 1, 2011, ADAMS Accession No. ML110630400.

27. "Operating Reactor Assessment Program," NRC Inspection Manual Chapter (IMC) 0305, October 18, 2013, ADAMS Accession No. ML13178A032.

28. "Reactor Oversight Process Self Assessment Program," IMC 0307, March 23, 2009, ADAMS Accession No. ML090300565.

29. "Reactor Oversight Process (ROP) Basis Document," IMC 0308, November 8, 2007, ADAMS Accession No. ML071860181.

30. "Components Within the Cross-Cutting Areas," IMC 0310, October 28, 2011, ADAMS Accession No. ML091480473.

31. "Significance Determination Process," IMC 0609, June 2, 2011, ADAMS Accession No. ML101400479.

32. "Power Reactor Inspection Reports," IMC 0612, January 24, 2013, ADAMS Accession No. ML12244A483.

33. “Safety Culture Assessor Training and Qualification Journal,” Appendix C-12 to “Qualification Program for Operating Reactor Programs,” IMC 1245, September 26, 2012, ADAMS Accession No. ML12166A543.

34. “Light Water Reactor Inspection Program – Operations Phase,” IMC 2515, June 19, 2013, ADAMS Accession No. ML13176A336.

35. “Independent Safety Culture Assessment Followup,” NRC Inspection Manual Inspection Procedure (IP) 40100, April 5, 2011, ADAMS Accession No. ML080040273.

36. “Problem Identification and Resolution,” IP 71152, August 13, 2013, ADAMS Accession No. ML13179A365.

37. “Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area,” IP 95001, February 9, 2011, ADAMS Accession No. ML102020522.

38. “Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area,” IP 95002, February 9, 2011, ADAMS Accession No. ML102020532.

39. “Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs or One Red Input,” IP 95003, February 9, 2011, ADAMS Accession No. ML102020551.

40. “Degradation of the Davis-Besse Nuclear Power Station Reactor Pressure Vessel Head Lessons-Learned Report,” September 30, 2002, ADAMS Accession No. ML022760172.

41. “Reactor Oversight Process,” NUREG/BR--0508 (brochure), March 2013, ADAMS Accession No. ML13064A291.

42. “Safety Culture Policy Statement,” NUREG/BR-0500 (brochure), Revision 1, December 2012, ADAMS Accession No. ML12355A122.

43. “Davis-Besse Reactor Pressure Vessel Head Degradation: Overview, Lessons Learned, and NRC Actions Based on Lessons Learned,” NUREG/BR-0353 (brochure), Revision 1, August 2008, ADAMS Accession No. ML082490129.

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46. “Annual Assessment Letter for Susquehanna Steam Electric Station, Units 1 and 2 (Report 05000387/2012001 and 05000388/2012001),” March 4, 2013, ADAMS Accession No. ML13059A425.

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48. “Annual Assessment Letter for Browns Ferry Nuclear Plant Units 1, 2, and 3 (NRC Inspection Report 05000259, 260, 296/2012001),” March 4, 2013, ADAMS Accession No. ML13063A461.

49. “Annual Assessment Letter for Cooper Nuclear Station (Report 05000298/2012801),” March 4, 2013, ADAMS Accession No. ML13063A076.

50. “Annual Assessment Letter for Prairie Island Nuclear Generating Plant, Units 1 and 2 (Report 05000282/2012001 and 05000306/2012001),” March 4, 2013, ADAMS Accession No. ML13060A115.

51. Annual “End-Of-Cycle Assessment Letter for Palisades Nuclear Plant (Report 05000255/2012001),” March 4, 2013, ADAMS Accession No. ML13063A141.

52. “Reactor Oversight Process Metric Report for Calendar Year 2012,” April 3, 2013, ADAMS Accession No. ML13084A194 (package).

53. “Solicitation of Public Comments on the Reactor Oversight Process,” November 29, 2011, ADAMS Accession No. ML112030316 (package).

54. “Consolidated Response to the 2011 Reactor Oversight Process External Survey,” October 18, 2012, ADAMS Accession No. ML12297A327 (package).

55. “Reactor Oversight Process Annual Performance Metric Report for Calendar Year 2010,” April 13, 2011, ADAMS Accession No. ML110740073 (package).

56. “Solicitation of Public Comments on the Implementation of the Reactor Oversight Process,” September 17, 2009, ADAMS Accession No. ML092590482.

57. “Reactor Oversight Process Annual Performance Metric Report for Calendar Year 2009,” April 5, 2010, ADAMS Accession No. ML100540037.

58. “Reactor Oversight Process Self Assessment for Calendar Year 2008,” SECY-09-0054, April 6, 2009, ADAMS Accession No. ML090540513 (package).

59. Reactor Oversight Process Annual Self Assessment Performance Metrics – "Metric Report for Calendar Year 2008," April 2, 2009, ADAMS Accession No. ML090690616 (package).

60. Metric Report – "Reactor Oversight Process Annual Self Assessment Performance Metrics [for Calendar Year (CY) 2007]," March 28, 2008, ADAMS Accession No. ML080350368.

61. "Reactor Oversight Process Annual Self Assessment Performance Metrics [for CY 2006]," March 26, 2007, ADAMS Accession No. ML070720085.

62. "Reactor Oversight Process Annual Self Assessment Performance Metrics [for CY 2005]," March 30, 2006, ADAMS Accession No. ML060590135.

63. "Reactor Oversight Process Annual Self Assessment for Calendar Year 2004," SECY-05-0070, March 25, 2005, ADAMS Accession No. ML050630297 (package).

64. "Reactor Oversight Process Annual Self Assessment for Calendar Year 2003," SECY-04-0053, April 6, 2004, ADAMS Accession No. ML040620267 (package).

65. Bonaca, Mario V., ACRS, letter to Richard A. Meserve, NRC, "Reactor Oversight Process," March 13, 2003, ADAMS Accession No. ML030730366.

66. Travers, William D., NRC, letter to Mario V. Bonaca, ACRS, "Reactor Oversight Process," April 29, 2003, ADAMS Accession No. ML030980473.

67. "Reactor Oversight Process Self Assessment for Calendar Year 2002," SECY-03-0062, April 21, 2003, ADAMS Accession No. ML030640004 (package).

68. Carpenter, C., memorandum to Deputy Regional Administrators, "Changes Resulting from the 2002 Reactor Oversight Process Internal Survey," January 1, 2003, ADAMS Accession No. ML030870883.

69. "Calendar Year 2001 Reactor Oversight Process Self Assessment," SECY-02-0062, April 3, 2002, ADAMS Accession No. ML020710781 (package).

PUBLIC MEETING TO SOLICIT STAKEHOLDER VIEWS

Themes identified during the working group's initial review were also discussed at a public meeting on June 18, 2013, and stakeholder input on the issues was considered in the final assessment. Refer to the following referenced documents for additional information.

- Public meeting notice and agenda, Agencywide Documents Access and Management System (ADAMS) Accession No. ML13157A384
- Public meeting slides, ADAMS Accession No. ML13196A385
- Public meeting summary, ADAMS Accession No. ML13196A372

List of External Stakeholders Requesting Public Meeting Agenda and Participation Information	
Name	Affiliation
J. Bergman	Scientech
B. Carroll	Duke Energy
S. Dolley	Platts' *Inside NRC*
R. Ritzman	First Energy Corporation
J. Slider	Nuclear Energy Institute
J. Tomkins	Certrec
T. Tramm	Certrec
P. Wilson	TVA
T. Zimmerman	Duke Energy

TABLE OF RECOMMENDATIONS AND SUGGESTIONS

ROP Goal: Maintaining Safety (Report Section 4.0)	
Recommendation 1	Clarify expectations for the timing of supplemental inspections for Column 4 of the Reactor Oversight Process (ROP) Action Matrix, or portions thereof, to ensure that the U.S. Nuclear Regulatory Commission's (NRC's) assessment of continued operation and consideration of additional regulatory actions are completed in a timely manner. (Section 4.1)
Recommendation 2	Consider including additional measures in the ROP to minimize abrupt changes in the Action Matrix characterization of plant performance caused by mechanistic relaxation of oversight based on the passage of time and completion of NRC inspections. (Section 4.2)
Recommendation 3	Include a risk-informed periodic review of licensee programs or actions implemented to address generic issues in order to enhance the agency's assurance that these measures continue to be effectively implemented. (Section 4.3)
ROP Goal: Increasing Openness (Report Section 5.0)	
Recommendation 4	Consider enhancements to improve the effectiveness of NRC messages through more extensive use of plain language, a focus on the desired effect of the communication on stakeholder perceptions, and the use of wording that coveys the significance of issues to the broadest possible audience. (Section 5.1)
Suggestion 1	Review current Performance Indicators (PIs) to evaluate whether they are providing meaningful information on licensee performance. If the PIs are validated as being appropriate and not needing adjustment, develop messages to enhance stakeholder understanding of how the PIs continue to contribute to the NRC's assessment of plant safety and licensee performance. (Section 5.2)
ROP Goal: Effective and Efficient Decisionmaking (Report Section 6.0)	
Recommendation 5	The NRC should review the criteria for transition to Column 3 of the NRC Action Matrix against the original ROP program goals to ensure that the significance of White inspection findings is not being overemphasized and to ensure that agency resources used to process White inspection findings are commensurate with findings that, by definition, are of low to moderate safety significance. (Section 6.3.3)

ROP Goal: Effective and Efficient Decisionmaking (Report Section 6.0) (continued)	
Recommendation 6	The NRC should perform a comprehensive analysis to determine whether the use of cross-cutting issues and safety culture, as currently incorporated in the ROP, provides regulatory value in terms of licensee safety performance for the resources expended. To support that determination, NRC staff should clarify and document the goals, purposes, uses, and desired outcomes associated with the inclusion of cross-cutting issues and safety culture in the ROP. If program changes are needed, the staff should determine whether Commission approval is required for implementation. (Section 6.4.3)
Recommendation 7	Clarify ROP program expectations for when performance issues that are common to multiple facilities should be considered for resolution through a generic issues process in order to improve the use of NRC inspection resources and ensure a thorough and consistent industry response. (Section 6.5)
Recommendation 8	Consider revising the ROP self assessment process to better solicit and assess both tactical and strategic feedback. Reexamine how internal and external feedback is collected, analyzed, and used to improve oversight approaches to and the implementation of the ROP. (Section 6.6)
Suggestion 2	Enhance the Operating Reactor Assessment Program to ensure that plant performance assessment decisions fully and consistently consider "other" relevant performance perspectives discussed in Inspection Manual Chapter (IMC) 0305 including traditional enforcement, allegations, substantive cross-cutting issues, and safety culture in addition to the Action Matrix outcomes. (Section 6.1.1)
Suggestion 3	Consider expanding the list of relevant indicators of licensee performance in the Operating Reactor Assessment Program description in IMC 0305 to include significant performance concerns that may come to light through 10 CFR 2.206 petitions, licensing issues, or financial issues that are within the scope of NRC regulations. (Section 6.1.1)
Suggestion 4	Consider including additional guidance in IMC 0305 to enable the use of management discretion in determining whether to accelerate the timing of supplemental inspection activities particularly for cases in which it is determined that a licensee is not making reasonable progress in preparing for these inspection activities. (Section 6.1.2)
Suggestion 5	The criteria for discussion of licensee performance issues during the Agency Action Review Meeting and End-of-Cycle Summary Meeting should allow senior management the opportunity to discuss plants with performance issues considered at the threshold for additional regulatory action particularly those considered to be at risk of moving into Column 3 or 4 of the NRC Action Matrix. (Section 6.1.3)

ROP Goal: Effective and Efficient Decisionmaking (Report Section 6.0) (continued)	
Suggestion 6	The list of activities that do not constitute Action Matrix deviations provided in IMC 0305 could be expanded to allow more efficient management decisions on resources needed to address oversight at plants with unique, ongoing technical challenges or with ongoing safety culture or substantive cross-cutting issues. (Section 6.1.4)
Suggestion 7	Periodic inspector counterpart seminars, training, and mentoring should be used as opportunities to ensure that inspectors and managers have a common understanding of the inherent flexibilities in the ROP inspection program. Best practices in using the ROP flexibilities should continue to be highlighted, and a similar approach should be used to communicate the importance of indirect inspection activities and how to effectively and efficiently manage these activities. (Section 6.2.1)
Suggestion 8	Significance and Enforcement Review Panel (SERP) members should be provided with periodic training or briefings regarding the uncertainties inherent in the agency's probabilistic risk assessment (PRA) tool outputs and the use of PRA quantitative results in SERP decisionmaking. (Section 6.3.1)
Suggestion 9	To the extent practicable, steps should be taken to better understand stakeholder concerns with the documentation of significance determination process (SDP) results and to enhance the communication of SDP results to improve the transparency of the process for the broad audience of stakeholders. (Section 6.3.2)
Suggestion 10	Suggestion 10: Consider replacing the use of substantive cross-cutting issues and the current cross-cutting aspects, components, and areas with a process that uses the recently developed Nuclear Safety Culture Common Language (NSCCL) traits and attributes in a graded regulatory response aligned with the overall ROP philosophy. Further, a more graded regulatory response could be established to allow licensees to address safety culture issues when performance is in the *Licensee Response* column and would escalate the NRC's level of engagement as the significance of findings increase. (Section 6.4.4) The following figure reflects the suggested approach: