POLICY ISSUE
INFORMATION

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FOR: The Commissioners

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SUBJECT: CALENDAR YEAR 2001 REACTOR OVERSIGHT PROCESS SELF ASSESSMENT

PURPOSE:

This Commission paper presents the results of the annual self-assessment of the NRC's reactor oversight process (ROP). The assessment covered each of the four key areas of the ROP: the performance indicator (PI) program, the inspection program, the significance determination process (SDP), and the licensee assessment program. The paper also provides the results of an assessment of ROP resources, a status update on inspector training initiatives, and a periodic update on resident inspector demographics (an update requested in Commission's Staff Requirements Memorandum (SRM) dated April 8, 1998).

The data for the self-assessment was taken from the internal ROP performance metrics, the ROP internal feedback process, staff audits of selected program areas, comments provided by the Advisory Committee on Reactor Safeguards (ACRS), comments from external stakeholders in response to a *Federal Register* Notice (FRN), and from feedback received from stakeholders at various meetings, workshops, and conferences. In conducting this assessment, the staff also considered the direction and insight provided by the Commission through several staff requirements memoranda (SRM).

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SUMMARY:

The self-assessment shows that the ROP has been successful in supporting the NRC's performance goals and making progress towards attaining the regulatory principles upon which it was established. During 2001, the ROP was effective in monitoring operating nuclear power plant activities, identifying significant performance issues, and ensuring that licensees took appropriate actions before plant performance became unacceptable, thereby helping to ensure that safety was maintained. During this self-assessment period, the staff continued to improve various aspects of the ROP as a result of feedback and lessons learned. Internal performance metrics were met for the PI, inspection, and assessment programs; however, three SDP metrics were not met.

In the PI area, the staff worked with industry and other external stakeholders during a series of public meetings to develop and issue Revision 2 to Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guidelines," that resulted in major improvements to the PI program guidelines and implementation procedures. Feedback received from stakeholders on the PI program indicated that additional improvements were needed for the Safety System Unavailability (SSU) PI. As a result, some short term improvements were included in the PI guidance contained in Revision 2 to NEI 99-02. The staff is working with the industry to complete the development of revised SSU PIs, as well as new unreliability indicators, and plans to pilot them in July 2002.

Among the more significant improvements made in the inspection area were revisions to the ALARA inspection procedure, the problem identification and resolution (PI&R) inspection procedure, and the inspection budget model. Audits of issued inspection reports identified that approximately 30% of inspection findings were not fully documented in accordance with program guidance; however, recent audits of completed inspection reports show significant improvement from a year ago. To achieve additional improvements in this area, the staff is working on new guidance that should simplify inspection report documentation requirements. In response to the events of September 11, 2001, the staff is reevaluating the safeguards and physical security inspection program as part of its top to bottom security review and will make recommendations to the Commission regarding proposed changes to the associated inspection procedures, PIs, or SDPs after completing the evaluation.

The staff also continued to make progress on improving the SDP. Among the SDP improvements initiated during this period were the issuance of a proposed revision to the ALARA SDP, the development of a computer program that enables inspectors to construct more realistic fire scenarios, and the development of guidance on accounting for external initiators in approximating the risk significance of inspection findings and on evaluating concurrent inspection findings. In addition, the staff continued to benchmark the Phase 2 notebooks and improve the other SDP tools.

The SDP did not meet its internal performance metrics associated with SDP notebook errors, SDP timeliness, and accurate communication of SDP results to the public. Feedback received from internal and external stakeholders, including a differing professional view (DPV) received from a region-based inspector, also raised concerns regarding aspects of the SDP. The feedback was directed primarily towards the use of the Phase 2 notebooks, consistency of the

SDP across cornerstones, assessment of programmatic issues, and the number of times the final SDP determination was downgraded from the initial determination.

To address these concerns, the staff has developed an SDP Improvement Strategy and Task Action Plan (Attachment 3). Among the more significant actions in the plan are improvements to the SDP tools, including the fire protection SDP, the shutdown SDP, and the Phase 2 site-specific risk-informed notebooks; improvements to the process and consistency of its implementation; and an evaluation of possible approaches to assessing programmatic deficiencies that are not easily evaluated using a quantitative type risk analysis.

In the assessment area, the staff developed additional guidance for treating historical issues, identifying substantive crosscutting issues, and is in the process of eliminating “no color” inspection findings. The staff also added a new row to the action matrix to more clearly reflect the Commission’s involvement in the assessment program. The staff is developing additional guidance for closing inspection findings at multiple or repetitive degraded cornerstone plants and is evaluating the concept of a graded reset of inspection findings in the action matrix. The staff also plans to change the authorization level for action matrix deviations to the regional administrator and the director of the Office of Nuclear Reactor Regulation (NRR) (except for plants in the multiple/repetitive degraded cornerstone column of the action matrix).

The ROP resource expenditure data shows that efficiencies have also been achieved in implementing the ROP. Annualized, the data from the period of April 2, 2001, through September 30, 2001, shows a reduction in hours charged to the ROP of about 5 percent as compared to the period of April 2, 2000 through April 1, 2001; however, some of the reduction may be due to the generally higher rate of vacations taken during the summer period and the temporary diversion of inspection resources to respond to the September 11, 2001, events. To further explore areas where additional ROP efficiencies might be gained, the staff formed an efficiency focus group that is currently assessing a number of suggested resource savings initiatives.

Program improvements and close management of the resident inspector resources appear to have contributed to an increase in resident inspector and senior resident inspector experience levels. As of December 31, 2001, most multi-unit sites were staffed with “N” resident inspectors, with only 5 of the 35 multi-unit sites staffed at the “N+1" level (down from 8 of 35 as of June 2001). The reduction in the total number of resident inspectors as a result of the transition to “N” resident staffing has highlighted the importance of careful resource management in order to ensure completion of the baseline inspection program at each site. In addition, the projected increase in resident inspector rotations during 2004 through 2006 and the current requirement that 25 percent of new hires be at entry level positions may result in additional challenges.

In summary, during the 2001 self-assessment period, the staff made considerable progress in improving the effectiveness of the ROP and in gaining confidence in the efficacy of the program. As discussed above, and as detailed in the following sections of his paper, additional challenges remain. In a broad sense, the challenges reinforce the fact that despite the progress that has been made, the ROP is still new and portions of the ROP are still being exercised for the first time. This will necessitate continued development efforts, and as changes are made, the need for additional training of the staff will be evaluated.

Also, in addition to those items previously noted, the staff will continue to assess emerging issues and will continue its efforts to improve the risk-informed decision making process and the consistency of the ROP's implementation. Finally, the staff plans to continue with its stakeholder outreach efforts that were a hallmark in the original development and initial implementation of the ROP.

BACKGROUND:

On February 24, 2000, the staff issued SECY-00-0049, "Results of the Revised Reactor Oversight Process Pilot Program." The SRM for SECY-00-0049, issued on March 28, 2000, approved initial implementation of the ROP as recommended by the staff. The initial implementation of the ROP began on April 2, 2000. In a follow-up SRM issued on May 17, 2000, the Commission directed the staff to report on the implementation of the ROP results after the first year of implementation. Following completion of the first year of implementation, the staff assessed the efficacy of the process and documented the results in SECY-01-0114, "Results of the Initial Implementation of the New Reactor Oversight Process," issued on June 25, 2001. SECY-01-0114 also noted the staff's intention to perform an annual self-assessment of the ROP. This paper provides the results of the self-assessment for the year that ended on December 31, 2001.[1]

The following sections of this paper contain the results of the staff's assessment of the four key ROP program areas, followed by an assessment of ROP resource expenditures and resident inspector demographics. The paper also includes an update on the staff's assessment of inspector training. Attachment 1 to the paper provides a status update for issues that had been previously identified in SECY-00-0049 and SECY-01-0114. Attachment 2 contains the ROP self-assessment metrics. Attachment 3 provides details concerning the SDP improvement plan and Attachment 4 provides the results of the staff's assessment of cross cutting issues. Attachment 5 is a detailed summary of the external comments received in response to the FRN solicitation for public comments. Attachment 6 contains the details of the staff's assessment of resident inspector demographics.

DISCUSSION:

During calender year 2001, the staff conducted many activities to assess the effectiveness and efficiency of the ROP and to collect internal and external feedback and comments. The staff used previously established internal performance metrics to provide objective insights regarding the effectiveness of the ROP in supporting the NRC strategic goals of maintaining safety, enhancing public confidence, making regulatory activities more effective, efficient, and realistic, and reducing unnecessary regulatory burden. The performance metrics also provide insights regarding the success of the ROP in fulfilling the regulatory principles of being predictable, understandable, objective, and risk-informed. The staff also obtained input from internal stakeholders through counterpart meetings, focus groups, and the internal feedback process. External feedback was obtained by an FRN solicitation for comments and through periodic meetings with the industry and other forums. Based on the metric results and stakeholder

[1]This self-assessment covers the nine month period from April 1 through December 31, 2001 due to the transition that took place this year to a calender year assessment cycle.

feedback, the staff identified certain issues and actions in the key program areas of PIs, inspection, SDP, and assessment.

The following sections describe the actions taken since April 2001 for each ROP program area in response to previous commitments, the results of the self-assessment, and actions planned to address the issues that were identified. The last section contains the overall conclusions of the self-assessment.

Performance Indicator Program

In SECY-01-0114, issued on June 25, 2001, the staff concluded that the use of risk-informed PIs had helped the industry and the NRC to focus their resources on areas of the most safety significance. SECY-01-0114 also detailed the staff's plans to improve the existing safety system unavailability (SSU) PIs to make them more consistent with those monitored by other NRC and industry programs. Since that time, the staff has worked with industry and other external stakeholders to revise NEI 99-02, "Regulatory Assessment Performance Indicator Guidelines." Revision 2 of NEI 99-02 became effective January 1, 2002, and included revised guidance for assessing risk significant safety functions and treating estimated fault exposure hours (T/2) in the SSU PIs. In conjunction with the above changes, the staff also revised the way the NRC web page displays SSU PIs that have been reset due to the elimination of fault exposure hours.

SECY-01-0114 also described the staff's plans to begin a pilot program for the unplanned power changes PI. Revisions to this PI were discussed at several NRC/Industry ROP Working Group meetings; however, neither the staff nor the industry could identify changes to this PI that would result in an overall improvement. Additional efforts to revise this PI were put on hold to focus on more pressing PI issues. The staff and industry also recognized the need to make improvements to certain physical protection cornerstone PIs. The staff will consider how to improve these PIs following its top to bottom reevaluation of the safeguards and physical security programs in response to the events of September 11, 2001.

All ROP performance metrics that were developed for the PI program met their established criteria or goals for the period covered by this self-assessment. The majority of comments received in response to the FRN request indicated that conflicts exist between the reporting requirements of the ROP and those associated with the Institute of Nuclear Power Operations, the World Association of Nuclear Operators (WANO), and the Maintenance Rule. Some respondents thought that standardizing the reporting rules would significantly reduce licensee burden. Most respondents stated that NEI 99-02 generally provided adequate guidance and that where it did not, the Frequently Asked Questions (FAQ) process was useful. Several respondents commented that, in general, appropriate overlap exists between the PIs and the inspection program.

In conclusion, the PI program continues to provide the NRC with an objective source of information regarding licensee performance. The staff plans to continue its efforts to work with industry and other external stakeholders to address inconsistencies between the ROP, maintenance rule, INPO, and WANO requirements (primarily with respect to the SSU PI). The NRC and industry will conduct a pilot program to test the new unreliability and improved unavailability PIs that were derived from the risk-based PI program conducted by the NRC's Office of Research. In addition, the staff plans to clarify the guidance for the safety system

functional failure (SSFF) PI, improve the physical protection PIs, evaluate the need for an alert notification system reliability PI, and develop improved barrier integrity PIs.

Inspection Program

At the start of the second year of ROP implementation, the staff's self-assessment and feedback activities indicated that, in general, the inspection program was meeting its predetermined goals and objectives. Several issues concerning implementation of the inspection program were identified in SECY-01-0114 for follow-on staff action. Among the more significant issues were the need to improve the documentation of the basis of significance for inspection findings, revise the physical protection cornerstone inspection procedure, clarify the basis for evaluating ALARA inspection findings, and refine the estimates for inspection effort for certain inspectable areas as well as the overall ROP budget model. To address these issues the staff performed the following actions:

- Developed inspection report documentation guidance with regard to documentation thresholds. This guidance will be implemented with issuance of Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports."

- Began a thorough evaluation of the physical protection inspection procedures as a result of the September 11, 2001, events and initiated changes to the applicable inspection procedures.

- Revised the ALARA inspection procedure to clarify the criteria for inspection findings and to provide additional guidance for estimating procedure effort based on the licensee's collective dose.

- Evaluated all baseline inspection procedure resource requirements and revised applicable inspection procedures to reflect the results of the evaluation.

A more complete listing of previous issues and details concerning the staff's actions is contained in Attachment 1.

The staff also conducted an in-depth review of each principal procedure and its attachments to identify needed improvements based upon lessons learned from the first year of implementation of the ROP. As a result, the staff changed the frequency of inspecting licensee's problem identification and resolution (PI&R) processes from an annual to a biennial team inspection[2], initiated changes to revise the focus of the maintenance rule inspection to emphasize overall effectiveness of maintenance, and added specific inspection requirements to the in-service inspection procedure to evaluate the effectiveness of licensee's programs for testing the steam generator tubes. The staff also made less significant modifications to most of the other baseline inspection procedures and attachments.

The inspection program internal performance metrics for this self-assessment period indicate that the program met all previously established criteria or goals. Audits of issued inspection reports identified that approximately 30 percent of inspection findings were not fully documented in accordance with program guidance; however, the 30 percent represents a

[2] As a result of this change, the staff will be conducting more frequent, issue-specific, PI&R inspections.

significant improvement from the 50 percent a year ago. Inspection finding documentation was also the subject of several ROP internal feedback forms. To address this issue, the staff is revising IMC 0612 (which will replace IMC 0610*) to clarify the threshold logic for determining if an issue should be documented and to provide specific examples of acceptable inspection report documentation.

External stakeholder feedback regarding the inspection program related primarily to inspection report documentation. The staff received mixed feedback in response to a specific question in the FRN regarding the usefulness of inspection reports. Three licensees indicated that the information in inspection reports is useful to public audiences, but not to licensees. The Illinois Department of Nuclear Safety state representative who responded indicated that the reports contain useful information on violations, but the absence of observations below the level of findings makes them less informative. NEI indicated that the inspection reports generally provide clear and useful information on the inspection issues and their risk significance. The staff's overall analysis of the usefulness of inspection reports is that the reports provide meaningful information to the public regarding the results of NRC inspection activities and that the documentation helps to maintain the focus of licensees on issues that are of greatest safety significance.

In conclusion, the inspection program is meeting the agency's goals. Planned changes to the program guidance are expected to improve the way in which inspection findings are documented. The staff will reevaluate the physical security baseline inspections and revise them following the comprehensive review of the safeguards area discussed in SECY-01-0215, "Scoping Paper for a Comprehensive Review of the NRC's Safeguards and Security Programs in Light of the Terrorist Attacks on September 11, 2001."

Significance Determination Process

The staff's self-assessment of the first year of implementation discussed in SECY-01-0114, judged the SDP to be generally effective in meeting its goals and objectives. However, the staff identified concerns regarding several important aspects of the SDP. Among the more significant issues were the need to improve SDP timeliness and address inspector concerns regarding the ease of use of several of the SDP tools. For the risk-informed SDPs, the staff recognized the need to compare the Phase 2 SDP notebook results with those of the more detailed licensee risk models (benchmarking), improve and standardize the Phase 3 risk analysis tools and guidance for the risk analysts, improve the fire protection SDP, and provide guidance for assessing the risk-significance of concurrent deficiencies. The staff also recognized the need to revise some non-risk-informed SDPs, including those related to occupational radiation safety and emergency preparedness. A Commission SRM dated August 2, 2001, also directed the staff to improve SDP timeliness consistent with established performance goals (i.e., 100 percent within 90 days). A second SRM, dated February 5, 2002, requested that the staff provide additional information concerning SDP improvement plans. The information is provided in Attachment 3 to this paper.

To address the above concerns the staff performed the following actions during the past year:

- Began the process of benchmarking all SDP Phase 2 inspection notebooks.

- Developed a computer program that assists inspectors in developing realistic fire scenarios in some instances.

- Began an effort to create a phase 2 methodology tool for shutdown risk issues that will allow the assessment of inspection findings to be done by regional inspectors and senior reactor analysts (SRAs) rather than by NRR risk analysts.

- Drafted and issued for internal comment changes to IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations" to simplify the process and account for external initiators in characterizing and approximating the risk significance of inspection findings and to provide enhanced guidance on evaluating the risk-significance of concurrent inspection findings.

- Drafted and issued for comment a proposed revision to the ALARA SDP, Appendix C to IMC 0609 "Occupational Radiation Safety."

During this assessment period the SDP was effective in enabling the NRC, licensees, and other external stakeholders to objectively determine the significance of performance issues so that the agency could focus its regulatory actions on issues of greatest safety significance. Despite the overall ability of the SDP to meet its objectives, internal ROP metrics and feedback from internal and external stakeholders indicated the need to improve the efficiency of and consistency of its implementation. Three SDP metrics did not meet the established criteria for this assessment period: SDP timeliness, revisions to SDP notebooks, and accuracy of communication to the public.

The SDP timeliness metric counts the number of SDP analyses each calender quarter that remained open for more than 90 days since the exit meeting in which the staff "characterized" the finding to the licensee. In response to Commission direction, the staff has established criteria that all SDP results should be final within 90 days. Seven SDP analyses that were tracked by this metric in the 2nd quarter of 2001 remained open or were closed more than 90 days from the date of the exit meeting. There were six such SDP analyses in the 3rd quarter of 2001. The total number of open and in-progress SDP analyses for each of these quarters were 17 and 21, respectively. Because there can be multiple exit meetings that might change the characterization of an inspection finding, the staff is considering re-defining the SDP timeliness metric to more accurately assess process performance. Extensive review and two formal audits by the staff have determined that several interrelated factors are influencing the lack of timeliness. The staff has developed an integrated set of SDP Improvement Strategies to address these factors.

The SDP Phase 2 risk-informed notebook error metric monitors the number of Revision 0 SDP notebooks that were withdrawn from use because benchmarking against licensee risk-models revealed substantial errors. During FY01, two such notebooks were identified out of twelve that were benchmarked. Benchmarking has continued in 2002 without further notebook retractions.

The SDP accuracy of communication metric monitors the accuracy of the SDP results posted on the NRC Web-site. Seven instances occurred where either a posted finding was inappropriately given a color greater than green when the significance color was not yet final, or a final SDP result had been determined but not reflected on the Web-site. Each of these cases was corrected immediately. To ensure the accuracy of SDP results displayed on the ROP web page, the staff is revising IMC 0306, "Information Technology Support for the Reactor Oversight Process," to require independent verification of all greater than green inspection findings before displaying the results onto the inspection findings summary page.

Internal feedback received identified concerns regarding the inconsistency of Revision 0 of the Phase 2 risk-informed inspection notebooks with licensee risk models, the complexity of the fire protection SDP, and the difficulty in using the SDP to consider programmatic deficiencies as an input to a risk-informed assessment. A Differing Professional View was also written by a member of the staff that challenged the use of the Phase 2 site-specific risk-informed inspection notebooks as part of the implementation of the SDP.

Comments were also received from ACRS. In a letter to the Chairman dated October 12, 2001, the ACRS summarized the results of their review of the ROP and concluded that the ROP was more objective and understandable than the former oversight process and represents a significant improvement. However, the ACRS recommended that the staff improve its risk-informed SDP tools such as the Phase 2 notebooks and the SDPs for fire protection and shutdown operations.

Feedback from some licensees and public interest groups indicated that the SDP did not yield equivalent and/or consistent results for issues of similar significance across ROP cornerstones. This was partly attributed to the fact that some cornerstones lend themselves to the use of risk-informed tools while others do not. Some licensees also indicated that the occupational radiation safety SDP inappropriately mitigated findings solely on the basis of the plant's three year rolling average exposure and thereby penalized plants with higher three year exposure values. Several respondents noted measurable improvement in the fire protection SDP, however, licensees continue to express concern with inconsistent implementation.

One public interest group stated that confidence in the SDP process was undermined when the NRC staff and the licensee staff were orders of magnitude apart on their initial risk determinations, but that hiding that disparity from the public did not improve confidence. They recommended that the NRC take steps to reduce the number of times that preliminary colors are revised. They also noted that the greatest gain would be realized by licensees putting their current risk models and plant safety assessments on the docket so that the NRC could readily access the information.

Insights from the self-assessment metrics, input and direction from the ACRS and Commission, and feedback from internal and external stakeholders all reinforce the need for continuing improvements to the SDP. In general, concerns raised fall into one of three general categories: the SDP tools, including their complexity and consistency of use; the SDP process, with regard to its efficiency, timeliness, and consistency; and the implementation of the SDP in the context of risk-informed decision making. The last issue relates to ensuring that the staff has clearly established expectations regarding the need to further analyze issues and when other methods should be used to analyze issues that can not be analyzed adequately using PRA tools. The staff considered these inter-related issues in the context of the original ROP principles and developed an integrated set of SDP improvement strategies and an associated task action plan to help focus improvement initiatives. The strategies and plan are provided as Attachment 3 to this paper.

In conclusion, compared with the previous oversight process, the SDP has provided the staff with a more objective and risk-informed way of evaluating the significance of inspection findings. The SDP has also enabled the staff to more effectively communicate the results to the public and allocate resources in a more appropriate manner through a graded agency response. In addition, there have been few licensee appeals of the NRC's final significance determinations which seems to indicate that licensees are in general agreement with the final outcome of the process. However, as noted above, several SDP issues are still unresolved.

The staff has acknowledged the issues and has initiated near-term changes to the process over the past year to resolve some of these issues. The remaining issues will be addressed through implementation of the SDP improvement strategies and associated task action plan. The staff believes that these planned improvements to the SDPs will increase reliability, reduce complexity of usage, and enhance stakeholders' confidence in the results. The implementation of the improvement strategies should also improve overall process efficiency and timeliness of the SDP results. However, it should be noted that SDP evaluations are often more driven by underlying assumptions than the risk tools themselves. (For example, establishing the fault exposure time associated with a failed diesel generator can be of overriding importance.) There is often a great deal of complexity and uncertainty associated with the technical factors that determine these assumptions. Uncertainties can lead to estimates which range over several orders of magnitude.

Licensees choosing to contest staff findings often invest significant resources to narrow the range of uncertainty; this, in turn, leads to extending the time it takes to complete the process. SDP evaluations end in estimates which are compared to fixed thresholds; as such, the process inherently requires extensive effort where licensees choose this route. While the staff considers the SDP to be an important, positive aspect of the ROP, it is essential that in pursuing efficiency initiatives, we avoid raising unrealistic expectations regarding how far the process can be streamlined.

Assessment Program

In SECY-01-0114, the staff stated that during initial implementation the assessment process was objective and predictable and there had been no deviations from the action matrix. Several issues concerning implementation of the assessment program were identified in SECY 01-0114 for follow-on staff action. Among the more significant issues were the need to develop a parallel performance indicator inspection finding to address inadequacies in a licensee's root cause evaluation or proposed corrective actions for PIs that cross thresholds; the treatment of historical performance issues in the action matrix; and the use of "no color" inspection findings. To address these concerns, the staff sought stakeholder feedback on these issues and subsequently revised IMC 0305, "Operating Reactor Assessment Program." The revised IMC provides guidance for issuing parallel performance indicator inspection findings, provides guidance for the treatment of historical issues, and eliminates "no-color" inspection findings.

A more complete listing of previous issues and details concerning the staff's actions is contained in Attachment 1. In addition to these changes to resolve previously identified issues, the staff made several changes based upon lessons learned. These included additional guidance for conducting supplemental inspections for multiple safety significant issues and for discussing substantive crosscutting issue in the mid-cycle or annual assessment letters. The staff also added a row to the action matrix to better describe the role of the Commission in the assessment program. These changes were incorporated in the latest revision to IMC 0305.

A review of the data for the past self-assessment period indicated that all of the performance metrics in the assessment area met established criteria and there were no deviations from the action matrix. The May 17, 2000, SRM in response to SECY 00-0049, directed that action matrix deviations should be pre-approved by the Executive Director for Operations during initial implementation of the ROP that ended in April 2001. The purpose of EDO approval was to ensure that deviations from the action matrix were rare. With the completion of initial implementation, the staff believes that the appropriate level for approval of action matrix deviations should be the Regional Administrator and NRR Office Director (except for plants in

the multiple/repetitive degraded cornerstone column of the action matrix). Therefore, the staff plans to change the authorization level for deviations to the action matrix, but will continue to monitor and report the number of deviations to the Commission in its annual self-assessment report. This approach is more consistent with the graded approach applied in the action matrix. The staff intends to incorporate these changes prior to the 2002 mid-cycle review of licensee performance.

To address concerns previously raised by stakeholders regarding the ROP premise concerning cross cutting issues, the staff performed an assessment (Attachment 4) of plants that reached the degraded cornerstone column of the action matrix. The staff concluded that weaknesses in the cross cutting area of licensee problem identification and resolution contributed to all five facilities reaching the degraded cornerstone column of the action matrix in the first three quarters of CY 2001. The cross cutting area of human performance was a contributor in one instance, while the cross cutting issue of safety conscious work environment was not seen as a contributor for any of the plants reviewed. For all five plants, the ROP was found to be sufficiently pro-active to provide for identification and resolution of performance concerns before plant performance became unacceptable.

The staff's review of lessons learned from exercising the ROP at Indian Point 2 has indicated that additional guidance and criteria are needed to address closing white or greater inspection findings at plants that reach the multiple/repetitive degraded cornerstone column of the action matrix. For plants in other columns of the action matrix, such inspection findings are no longer considered in the action matrix after four quarters, provided the supplemental inspection results indicate that the licensee's root cause analysis of the performance issue, review of the extent of condition, and planned corrective actions are acceptable. Due to the depth or breadth of performance issues reflected by a plant being in the multiple/repetitive degraded cornerstone column of the action matrix, it is prudent to ensure that actual performance improvements (which typically take longer than a year to achieve) have been made prior to closing out the inspection findings. The staff is developing additional guidance to address this issue in a manner that is understandable and predictable.

External feedback in response to the FRN indicates that stakeholders believe that the ROP takes appropriate actions to address performance issues for licensees that fall outside of the licensee response column of the action matrix. The industry as a whole also indicated that the information contained in assessment reports is relevant, useful, and written in plain language. However, several external stakeholders indicated that the unavailability of the NRC Web-site, as a result of the events of September 11, 2001, has made it difficult to obtain a snapshot of plant health.

In conclusion, the assessment program is meeting the agency's goals. The NRC Web-site has recently been restored for public access. The staff is developing additional guidance for closing inspection findings at plants in the multiple/repetitive degraded cornerstone column. The staff is also evaluating the concept of a graded reset of inspection findings in the action matrix. Finally, the staff plans to change the authorization level for action matrix deviations to the regional administrator and the director of NRR (except for plants in the multiple/repetitive degraded cornerstone column of the action matrix).

General Program Issues

In addition to the assessment of the four specific ROP program areas contained above, the staff assessed several general program issues that relate to the effectiveness and efficiency of the overall ROP program. Included below are assessments of ROP resource expenditures,

models, and efficiencies; inspector training program improvements; and resident inspector demographics.

Resource Expenditures

In SECY-01-0114, the staff committed to (1) continue resource data collection and analysis in order to more accurately track resource expenditures, (2) improve the regional resource model to better reflect actual resource requirements and expenditures, and (3) identify areas where possible efficiencies can be realized and make the necessary changes. Based on data collected since April 2001, a downward trend is evident in total staff effort expended on the ROP (see Table 1).[3] This reduction in resources was driven by a slight reduction in hours expended on the baseline inspection program and a larger decrease in the number of hours expended on supplemental/plant specific inspections. Effort expended on completing other elements of the ROP remained relatively constant or have increased slightly. This overall reduction in resources charged to the ROP was expected as the staff became increasingly familiar with the ROP and inspection procedures and with the elimination of start-up costs.

A significant decrease in the number of hours charged to the ROP was seen in the last 13 weeks of the calender year, mainly due to the impact of the September 11, 2001 terrorist event. This diversion of resources is not expected to continue through the next ROP cycle (January 1 through December 31, 2002) since the regions ceased staffing their incident response centers. However, re-staffing the response centers would likely have a significant impact on the ability to successfully implement the ROP as currently designed, unless additional resources were diverted from other NRC program areas.

Resource Model Refinement

Using the ROP resource data and the experience gained during the initial year of ROP implementation, the staff has revised the resource model to provide a more accurate estimate of regional resources required to implement the ROP. Resource requirements for the ROP were calculated prior to initial implementation based on the estimated resources needed to complete the baseline, supplemental, event response, and generic safety issue inspections. During the last year, a review was also performed for all baseline inspection procedures to better understand the reasons for regional variations, the variation in the hours required to complete the procedure at different sites, and to determine if adjustments to the frequency and scope of the individual procedures were appropriate. This effort resulted in a more realistic annual resource estimate for a number of baseline inspection procedures. The following details the more significant changes made to the resource model:

- The ratio of hours allocated for inspection preparation/documentation to direct inspection effort was revised based on actual charges and expected, continued, near-term improvements.

- The resource estimate for supplemental inspections was revised based on the actual number and color distribution of findings reported during the first year of implementation.

[3]Some of the resource reduction seen may also be due to the generally higher rate of vacations taken during the summer period and the diversion of some inspection resources during the later part of September to respond to the events of September 11, 2001.

- The resource estimates for generic safety issue/special inspections and licensee performance assessment were revised to reflect actual charges and realistic expectations for safety issues.

- The model now explicitly includes charges for other direct inspection related activities (e.g.; inspection related travel, regional assistance, routine communication, significance determination of inspection findings, enforcement), effort for other infrequently performed inspections (IMC 2515, Appendix C inspection procedures), and expected contractor assistance.

Resource Efficiencies

In order to identify additional ROP program efficiencies, a focus group consisting of senior staff from headquarters and each of the regional offices was formed. The focus group generated several dozen candidate ideas that could result in increased efficiencies in the ROP's implementation. The group also identified suggested criteria for assessing the feasibility of implementing the ideas. Finally, the group categorized the ideas by the relative ease of their implementation and the overall impact the ideas could have on efficiency savings. Regional and headquarters management then reviewed and approved the criteria and developed weighting factors that will be used to select three to five of the ideas for near-term development and implementation. The projected savings resulting from these efficiency gains will be incorporated into the resource projections for future years as these initiatives are implemented.

Inspector Training Program Improvements

During the last year the staff revised the requirements for inspector training and qualification. The basis of the redesign, which was begun in late 2000, was the development of a "competency-based" inspector performance model. The work was initiated to ensure that inspector training addressed the knowledge, skills, and attitudes needed to implement the ROP successfully. The results of this effort will be contained in the revised version of IMC 1245, "Qualification Program for the Office of Nuclear Reactor Regulation Programs," which is scheduled to be issued by May 1, 2002.

The individual study and on-the-job study portions of the inspector qualification program have received the most extensive revision during the redesign effort. In keeping with the conversion to a competency-based program, both the individual study and on-the-job portions have been formalized into a series of discrete activities which identify the specific observable outcomes which must be demonstrated for the inspector to be successful. Each activity has been linked to one or more of the 12 inspector competency areas to ensure that the inspector training and qualification program supports inspector performance. The improvements to these portions of the program were guided by feedback collected from the incumbent inspector population and were executed by regional and headquarters technical staff. The changes to the program will improve the consistency of the qualification program by emphasizing expectations in key areas and will improve the efficiency of the program by providing evaluation criteria for use by supervisors in assessing inspector progress in the qualification program.

The content of the various classroom courses required of inspectors was also assessed. A few topics were added; however, in most cases the existing content was found to be adequate to support the development of inspector competence. Several courses were reorganized to provide for more efficient and effective delivery but no major revisions or additions to existing training courses were needed. For example, lesson content covering the various SDPs and PIs

was taken from materials used to initially train on the ROP, updated to reflect the current expectations, and integrated into an appropriate required technical course for each of the seven inspector classifications.

The oral board process, which acts as the final evaluation of a qualifying inspector, has also been improved. In addition to ensuring that the inspector has a sufficient knowledge of NRC rules, regulations, and inspection techniques, the revision to IMC 1245 specifically tasks an oral qualification board with assessing how well an inspector demonstrates an understanding of, and an appreciation for, the NRC's organizational values of integrity, excellence, service, respect, cooperation, commitment, and openness. The revision to IMC 1245 also delineates requirements for ensuring that proposed changes to the inspection program are evaluated for their impacts on inspector training as they are implemented. In addition, an annual review of inspector qualification board data and inspector feedback is required to ensure that the program remains effective and current.

Risk Analysis and SDP Training

In order to ease the burden on the senior reactor analysts, advanced risk training has been initiated for GG-14 inspectors based on previous recommendations to ensure that every reactor inspector in the regions is capable of using and understanding the risk-informed SDP. Initially a total of twelve GG-14 inspectors completed a series of advanced training courses on risk during 2001. Nine of those twelve individuals remain in jobs that require the use of their risk assessment skills. A second group of seven inspectors began their training in December 2001. The inspectors who have completed the training will be consulted to determine how well the risk training they received matches the on-the-job risk assessment activities they are now being asked to perform. The information will be factored into any decisions about the need to modify the various aspects of the program and its methods of implementation.

In addition, the staff conducted a web-based training pilot for the reactor safety SDP in August, 2001. Pilot participants included 4 inspectors from each region. This pilot was well received by the participants and effort is ongoing to further develop and use this mode of training for the SDP.

ROP Feedback Process

The ROP feedback process provides a means for the staff to identify concerns or issues and propose recommended improvements related to ROP policies, procedures, or guidance. The feedback process was initiated during the first year of ROP implementation. Survey data collected from the staff in March of 2001, indicated that the feedback process was not timely. Since then, the staff has implemented several significant improvements to make the feedback process more timely and to better communicate the disposition of feedback forms back to initiators.

- The staff closed 84 percent of the backlog of feedback forms that were open in June 2001. Management attention was focused on further reducing that backlog as well as on closing out incoming feedback forms in a timely manner. The staff's goal is to close out 100% of feedback forms within 180 days.

- The staff made enhancements to the ROP Web-page to include copies of feedback forms, both open and closed; previously, feedback forms and reports were not made available to the staff.

- The staff revised IMC 801 “ROP Feedback Program,” to better define the process.

As a further improvement, the staff plans to develop an interactive online database. Development of this database is currently scheduled to begin early summer 2002.

Industry Performance Trends

NRR uses industry-level performance indicators to assess whether the safety of power plants is being maintained by the nuclear industry and to enhance public confidence in the efficacy of NRC processes. As discussed in SECY-01-0111, “Development of an Industry Trends Program for Operating Power Reactors,” the staff currently uses the indicators developed by the former NRC Office for Analysis and Evaluation of Operational Data (AEOD) and the Accident Sequence Precursor (ASP) program conducted by RES. Based on these indicators, no statistically significant adverse industry trends in safety performance have been identified to date.

The results of the Industry Trends Program are reviewed each year at the Agency Action Review Meeting (AARM), and are reported to Congress each year as part of the NRC’s Performance and Accountability Report. The staff will continue to use the above indicators while developing additional indicators for the cornerstones of safety, and will qualify them for use in phases. A more detailed discussion of the Industry Trends Program will be provided to the Commission in a separate paper in the same time frame as this Commission paper.

Resident Inspector Demographics

As the Commission requested in its SRM dated April 8, 1998, the staff developed metrics to monitor and trend resident inspector demographics. The staff last reported its analysis of resident inspector demographics in SECY-01-135, “Annual Update and Analysis of Demographic Data on Resident Inspectors,” dated July 24, 2001. The resident inspector demographics (experience levels) for this self-assessment period show a stable or improving trend in nearly all categories since data collection began in 1994. A detailed analysis of the 2001 resident inspector data is presented in Attachment 6. Program improvements such as the change to the relocation policy from five to seven years appear to have contributed to an increase in resident inspector and senior resident inspector experience levels. Based on an analysis of the metrics, the staff has no recommendations for changing the resident inspector program at this time.

As of December 31, 2001, most multi-unit sites were staffed with “N” resident inspectors, with only 5 of the 35 multi-unit sites staffed at the “N+1" level (down from 8 of 35 as of June 2001). The reduction in the total number of resident inspectors as a result of the transition to “N” resident staffing has highlighted the importance of careful resource management in order to ensure completion of the baseline inspection program at each site. In addition, the projected increase in resident inspector rotations during 2004 through 2006 and the current requirement that 25 percent of new hires be at entry level positions may result in additional challenges.

This will be the last annual update to the Commission on resident inspector demographic data. The staff will continue to assess resident demographic data and the impact of the “N” resident staffing policy as part of its annual self-assessment and will notify the Commission of any significant issues that arise.

OVERALL SELF-ASSESSMENT CONCLUSIONS

This self-assessment shows the ROP has been successful in supporting the NRC's performance goals of maintaining safety, enhancing public confidence, making activities more effective, efficient, and realistic, and reducing unnecessary regulatory burden. In 2001, the ROP was effective in monitoring operating nuclear power plant activities, identifying significant performance issues, and ensuring that licensees took appropriate actions before plant performance became unacceptable, thereby helping to ensure that safety was maintained. Also, in 2001, there were no statistically significant adverse trends identified in any industry-level performance indicators. The ROP has enhanced public confidence by providing a more objective and consistent way of communicating the results of the NRC's assessment of licensee performance. The ROP has also improved public access to the results and actions resulting from the implementation of the process. By focusing NRC and industry resources on the most safety-significant issues, the ROP has improved the safety focus of the regulatory process. The ROP has also reduced unnecessary regulatory burden and efforts are being made to identify additional efficiencies.

As detailed in the previous sections of this paper, additional challenges remain. In a broad sense, the challenges emphasize the fact that despite the progress that has been made, the program is still new and portions of the program are still being exercised for the first time. This will necessitate continued development efforts, and as changes are made, the need for additional training of the staff will be evaluated. The staff will also continue to assess emerging issues and will continue its efforts to improve the risk-informed decision making process and the consistency of the ROP's implementation. Finally, the staff plans to continue with its stakeholder outreach efforts that were a hallmark in original development of the ROP. The staff, as part of the Agency Action Review Meeting, will continue to report to the Commission the results of its annual self-assessment.

COORDINATION

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

/RA by William F. Kane Acting For/

William D. Travers
Executive Director
for Operations

Attachments:
1. Status of Previous Issues
2. Reactor Oversight Process 2001 Assessment Cycle End-of-Year Report
3. SDP Improvement Strategies and Task Action Plan
4. Cross Cutting Issue Assessment
5. External Stakeholder Feedback
6. 2001 Resident Inspector Demographics

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Table 1

Resources Expended

(Total Staff Effort Expended at Operating Power Reactors)

	52 weeks initial implementation 4/2/00-4/1/01	52 weeks FY2001 9/24/00-9/22/01	26 weeks 4/2/01-9/30/01 (Annual Equivalent)	13 weeks 10/1/01-12/31/01* (Annual Equivalent)
Baseline				
Direct Inspection Effort	128,447	130,330	62,475 (124,950)	30,898 (123,592)
Inspection Prep/Doc	115,935	109,227	52,836 (105,672)	23,079 (92,316)
Plant Status	43,751	46,191	23,475 (46,950)	10,742 (42,968)
Subtotal	288,133	285,748	138,786 (277,572)	64,719 (258,876)
Supplemental/Plant Specific Inspections				
Direct Inspection Effort	11,295	8,436	2,224 (4,448)	1,724 (6,896)
Inspection Prep/Doc	6,683	6,161	2,007 (4,014)	985 (3,940)
Subtotal	17,978	14,597	4,231 (8,462)	2,709 (10,836)
GSI/SI	2,416	918	384 (768)	81 (324)
Performance Assessment	21,017	19,845	10,515 (21,030)	2,302 (9,208)
Other Activities	47,190	49,471	25,326 (50,652)	9,803 (39,212)
Inspection Related Travel				
Routine Communication				
Regional Support				
Enforcement Support				
Significance Determination Process				
Review of Technical Documents				
Total Staff Effort (regular + nonreg hrs)	376,734 hrs	370,579 hrs	179,242 hrs(358,484)	79,614hrs (318,456)
Total Staff Effort/Operating Site	5,623 hrs/site	5,531 hrs/site	(5,350 hrs/site)	(4,753 hrs/site)

*Effort expended 10/1/01- 12/31/01 is not considered representative because of impact of events of 9/11/01

Attachment 1 - Status of Previous Issues

SECY 01-0114, dated June 25, 2001, listed numerous long term issues related to implementation of the ROP for which additional actions were planned by the staff. SECY 01-0114 also included recommendations made by the Initial Implementation Evaluation Panel (IIEP). Lastly, the Commission's SRM dated August 2, 2001, directed the staff to consider several additional issues. During this last self-assessment period, the staff resolved many of these issues and made progress towards resolution on several others. Compiled below in this attachment are the issues in each program area that were addressed in the above noted documents along with an update of the staff actions to address them. The more significant issues listed below are also discussed in the body of this paper.

Performance Indicators

- *Potential unintended consequences of the two scram PIs*

The staff completed its evaluation of the pilot test of proposed replacements for the "Unplanned Scrams per 7,000 Critical Hours" and the "Scrams With Loss of Normal Heat Removal" PIs. The staff determined that the proposed replacement PIs would have missed about 14 percent of the scrams in 2000 and were as likely, if not more likely, to produce unintended consequences as the original PIs. For these reasons, the staff concluded that the proposed replacement PIs should not be implemented, although the staff expressed its willingness to consider future industry proposals on this subject. The improved definition of "loss of normal heat removal" used in the pilot, however, did prove to be an improvement and was incorporated into the existing PI.

- *Potential unintended consequences of the unplanned power change PI*

This issue was discussed at several of the regularly scheduled NRC/Industry working group meetings in the first half of 2001; however, neither the staff, nor the industry could develop changes to this PI that would result in an overall improvement. As a result, additional efforts to revise this PI were put on hold to focus on other PI issues.

- *Improvements to address problems in the Safety System Unavailability (SSU) PI, including the lack a common definition and data set, the use of fault exposure hours (both known and estimated) and its relationship to operability and reportability, and the impact on thresholds on an effective preventive maintenance program*

The staff began monthly meetings with industry representatives in May 2001 to resolve problems in the Safety System Unavailability (SSU) PIs that were identified during initial implementation. As a result, short-term improvements were made to the SSU PI and are contained in Revision 2 to NEI 99-02, which became effective on January 1, 2002. The changes include the removal of estimated fault exposure hours (t/2) from the SSU PI. In addition, a pilot test of long-term improvements to the PI is scheduled to begin in the spring of 2002. The pilot program will test safety system unreliability (SSURs) indicators as well as additional improvements to the unavailability (SSUAs) indicators. The pilot will include development of appropriate techniques for setting thresholds for both the SSUA and SSUR

PIs. The goal of this effort has been to develop common sets of definitions and data for indicators of equipment performance to be used by all industry organizations.

Guidance and thresholds for reactor coolant system (RCS) activity and leakage PIs

No significant work was done on this issue due to other higher priority items.

- *Physical Protection Cornerstone issues*

The staff and industry have recognized the need to make improvements to the physical protection PIs. Among the issues being discussed are concerns about good performance of closed-circuit TVs masking poor performance of the intrusion detection system, and problems with the Personnel Screening Program Performance and Fitness for Duty Program Performance PIs. Because of the events of September 11, these efforts have been put on hold and will be evaluated following the staffs top to bottom security review.

- *Emergency Preparedness Cornerstone issues*

The linkage between the Drill/Exercise Performance and the Drill Participation PIs was clarified in industry training conducted by the Nuclear Energy Institute. With regard to the definition of the Alert and Notification System (ANS), experience in the past year has shown that a PI that monitors ANS reliability, in addition to or in lieu of the current ANS availability PI, may be warranted. The staff has begun to discuss this issue with the industry and FEMA.

Inspection

- *Continue to evaluate and revise as necessary the guidance for documenting inspection findings to ensure that significance thresholds are consistently applied*

The staff is revising Inspection Manual Chapter (IMC) 0610*, "Power Reactor Inspection Reports," (now renumbered IMC 0612) to clarify expectations regarding documentation thresholds. The revision includes changing the logic for determining the minimum threshold for documenting findings to make it more simple and consistent with other program guidance. In addition, specific examples were developed to illustrate the guidance. IMC 0612 is scheduled to be issued this spring.

- *Revise the Physical Protection cornerstone inspection procedure and its attachments to account for significant changes and new policies in physical security*

The staff was developing new inspection guidance to support a pilot of the industry-initiated Safeguards Performance Assessment program when the September 11th attacks occurred. In accordance with a directive from Chairman Meserve, the staff is comprehensively reevaluating the NRC's safeguards and security program and will make its recommendations to the Commission after completing the evaluation. These recommendations, if approved by the Commission, will determine the scope of future changes to the inspection program for physical protection. In the interim, the staff re-instituted, with some changes the physical protection baseline inspection program, which had been temporarily suspended after September 11th while the staff verified and monitored the industry's implementation of the NRC's security advisories and subsequent February 25, 2002, NRC Order to implement interim compensatory measures at all 104 operating commercial nuclear power plants. See SECY-01-0215, "Scoping Paper for

a Comprehensive Review of the NRC's Safeguards and Security Program in Light of the Terrorist Attacks on September 11, 2001," for a description of the actions taken.

- *Continue to clarify the basis for evaluating ALARA inspection findings and revise the associated inspection procedure as needed*

The staff, through a series of public meetings with the industry developed a proposed revision to the ALARA SDP, Appendix C to IMC 0609 " Occupational Radiation Safety." A final draft has been issued to the regional staff for their review and comments and was made available for external stakeholder review. In conjunction with the above changes, the staff revised IP 711121.02 to be consistent. The IP was also revised to use the plant's 3-year rolling average for collective dose as one criteria to set the level of effort necessary to complete the procedure.

- *Refine the estimates for the inspection effort and budget models based on experience, continued data collection, and analysis of future changes in the inspection program scope*

The staff evaluated estimates for nominal performance of each baseline inspection program procedure using the data collected during the first year of implementation, feedback gained from inspectors, and other information. The estimates were confirmed to be valid or were revised to account for actual experience and any changes in scope or frequency of inspection. Although some of the estimates were increased, overall the annualized estimate for direct inspection under the baseline inspection program was reduced by about 100 hours. See the discussion on overall ROP budget elsewhere in this paper.

- *Evaluate how licensee self-assessments might be used to satisfy some requirements of the baseline inspection program without compromising overall outcome goals, including public confidence*

The staff developed a proposal for discussion on this subject and held several meetings with key NRC stakeholders, including NEI and the Combustion Engineering Owners Group. The staff is planning to pursue this issue further this year as part of its overall effort to provide for increased efficiencies in the ROP.

<u>Significance Determination Process</u>

- *Validate and issue plant specific Reactor Safety SDP notebooks, including the phase 2 worksheets*

The phase 2 inspection notebooks incorporating site specific information and the phase 2 worksheets were issued as Revision 0 in January of 2002. The staff is conducting benchmarking efforts for the notebooks and has identified some inconsistencies at a few sites. As a result, the staff plans to benchmark all remaining notebooks. In the interim, the expectation is for inspectors to utilize the phase 2 notebooks. If the notebook has not been benchmarked, then the results of the phase 2 analysis are to be reviewed by NRC risk analysts before a preliminary significance determination is made. It is the staff's expectation that the phase 2 worksheets will be more consistent with the results of detailed probabilistic risk assessments (PRAs) following revisions based on the ongoing benchmarking effort. The staff plans to accelerate the funding rate for benchmarking the notebooks so that they will be completed in FY 2003.

- *Continue efforts to obtain improved and standardized risk analysis tools for the risk analysts*

As discussed above, the staff continues to make improvements to the phase 2 notebooks through the previously described benchmarking effort. The existing revision 0 of the notebooks and the final benchmarked version, revision 1 when issued, provide increased levels of reliability, predictability, with results that are scrutable by all stakeholders. Additionally, the Level 1, Revision 3i Standardized Plant Analysis Risk (SPAR) for Phase 3 analysis efforts will have an increasing role in the ROP, as the models undergo external and internal quality assurance (QA) reviews and become reliable risk estimation tools. The external QA review consists of onsite review of the specific model. Furthermore, there is a plan to develop SPAR models for issues related to low power/shutdown, large early release, and external events. The Level 1, Revision 3i SPAR models for at-power internal events are currently being used in the Phase 3 SDP analyses. To date, 58 Revision 3i SPAR models have been produced; the remaining (12) models are planned to be completed by the end of FY 2002. Twenty-five of these models have already received onsite quality assurance reviews. Completion of the remaining (45) onsite reviews is planned for the end of FY 2004.

- *Continue work to revise the ALARA SDP*

The staff, through a series of public meetings with the industry developed a proposed revision to the ALARA SDP, Appendix C to IMC 0609 " Occupational Radiation Safety." A final draft has been issued to the regional staff for their review and comments and was made available for external stakeholder review. Issuance of the revised document incorporating stakeholder comments is planned for March 2002.

- *Replace interim Physical Protection SDP with a revised SDP that will be developed with internal and external stakeholder input*

The development of the Physical Protection SDP was deferred while the NRC continues to focus on near term security issues resulting from the September 11, 2001, events.

- *Continue to devise methodologies that will allow inspectors to develop realistic fire scenarios and improve the accuracy of site specific data used in the assessment of risk associated with fire protection findings, such as fire ignition frequency*

The staff is developing changes to the fire protection SDP to allow the inspectors to develop realistic fire scenarios. Quarterly regional training of the inspectors in the use of the process has also been instituted and is ongoing. Fire ignition frequencies have been updated to reflect specific area/equipment content configurations. Additionally, the applicability of the fire protection SDP is receiving internal stakeholder evaluation to identify changes that would improve and simplify the process.

- *Develop a process to evaluate risk significance of plant shutdown issues*

The staff's ongoing effort to create a phase 2 methodology tool by the first quarter of 2003 will allow the assessment of "shutdown" inspection findings to be done by regional inspectors and SRAs. This will replace the existing process that must be completed by NRC headquarters based risk analysts.

- *Improve the capability to assess the impact of external events on operating reactor safety related issues*

The staff has developed proposed changes to IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations" to simplify the process to account for external initiators in characterizing and approximating the risk significance of inspection findings. The new guidance has been issued in draft for NRC staff review and comments.

Incorporation of risk due to external initiators remains a significant challenge since such risk is very plant and site specific, only a small percent of the sites have PRAs that address external initiators, and there is currently no industry standard for development of such PRAs.

- *Enhance the guidance provided for treatment of concurrent deficiencies*

Proposed changes to IMC 0609, Appendix A, provide enhanced guidance on evaluating concurrent inspection findings. The new guidance has been issued in draft for NRC staff review and comments.

- *Use lessons learned during initial implementation to clarify the definition of a performance deficiency*

The staff clarified the definition contained in the SDP and assessment guidance documents. Issues that are not a result of a licensee performance deficiency (either past or present) are not entered into the SDP process and are not assigned a color.

<u>Assessment</u>

- *Continue to monitor "No Color" findings during the ongoing inspection report review process and evaluate changes in program guidance, as appropriate, to minimize their use*

This issue was discussed at the External Lessons Learned Workshop on March 26-28, 2001 as well as at several regional Division of Reactor Projects (DRP)/Division of Reactor Safety (DRS) Counterpart meetings. As a result of a broad consensus of both internal and external stakeholders, the staff is modifying the guidance such that findings previously characterized as "no color" (i.e. greater than minor but does not affect a cornerstone objective) will be designated as non-SDP green findings. These findings will be reviewed by NRC management to ensure that document threshold guidance is being met and that findings that are truly minor do not get documented in inspection reports as green findings. IMC 0612 (formerly 0610*) "Inspection Reports" is being revised to reflect this guidance.

- *Continue to evaluate how historical licensee performance issues should be treated by the action matrix*

This issue was discussed at the External Lessons Learned Workshop on March 26-28, 2001 as well as at several DRP/DRS Counterpart meetings and ROP public meetings. The staff has developed guidance to address this issue and it was included in a revision to IMC 0305, "Operating Reactor Assessment Program." The guidance will permit the NRC to refrain from considering certain historical performance issues in the assessment program as long as the following criteria are met: 1) the finding was licensee-identified as a result of a voluntary initiative such as a design basis reconstitution; 2) the finding was or will be corrected, including immediate corrective action and long term comprehensive corrective action; 3) the finding was not likely to be identified by routine licensee efforts; and 4) the finding does not reflect current licensee performance. The staff will determine whether the above criteria are met during a supplemental inspection that will be conducted for the issue. Subsequent to that inspection, a determination will be made whether to apply the special treatment discussed above. This approach is intended to encourage licensees to maintain self-assessment programs to identify and correct safety-significant issues that are not likely to be identified by routine inspection or monitoring efforts.

- *Develop additional guidance on how to address the situation where supplemental inspection for performance indicators indicate that there are substantive inadequacies in a licensee's root cause evaluation or corrective actions*

This issue was discussed at the External Lessons Learned Workshop on March 26-28, 2001 as well as at several other internal and external meetings. The staff has developed guidance to address this issue and it is reflected in the latest revision of IMC 0305. The guidance applies if there are substantive inadequacies in the licensee's evaluation of the root causes of the original performance deficiency, determination of the extent of performance problems, or actions taken or planned to address the issue as determined by the results of the associated supplemental inspection. In this case, a parallel inspection finding will be opened and given the same color as the performance deficiency. This finding will be removed from consideration of future agency actions (per the action matrix) when the inadequacies in the licensee's efforts to address the issue are completed.

- *Determine whether a graded approach for removing inspection findings from consideration in the action matrix is appropriate*

The nuclear industry recommended that a graded approach be used for removing inspection findings from the assessment program such that white findings would remain in the assessment program for two quarters, yellow findings for three quarters, and red findings for four quarters. This approach would only apply to those findings where corrective actions were deemed appropriate during the supplemental inspection.

Efforts to address this issue by the NRC/Industry workgroup were not completed during the self-assessment period due to other higher priority items. The staff will consider additional evaluation of such an approach as more experience is gained with the ROP's implementation.

- *Implement lessons learned from the Spring 2001 End-of-Cycle activities, such as the End-of-Cycle assessments, the Agency Action Review meeting, and the annual meetings with licensees*

Lesson learned from these activities have been incorporated into the most recent revision of IMC 0305 and have been subsequently implemented during the recent (January-April 2002) End-of-Cycle activities.

- *Consider the development of further guidance that would describe the types of issues that may be considered for deviations from the action matrix*

Examples of when action matrix deviations should be considered has been added to the latest revision of IMC 0305.

Attachment 3 - SDP Improvement Plan

The SDP is integral to the success of the Reactor Oversight Process (ROP). It was developed with substantial involvement from both internal and external stakeholders to provide a means for evaluating the significance of inspection findings that is consistent with our regulatory objectives of ensuring that our activities are risk-informed, objective, predictable, and understandable. The SDP was intended to elevate potentially significant findings early and to provide an opportunity for licensee input in a publically visible manner. Furthermore, through the use of a simplified plant specific probabilistic tool (i.e., Phase 2 notebooks), the reactor safety SDP was intended to support achievement of a broader vision. This vision included enabling the staff, particularly non-risk practitioners, to better understand the basis for risk significance determinations, to communicate it clearly to all stakeholders, and to increasingly risk-inform their own activities. Although the staff continues to grapple with the inherent challenges, the objectives and vision for the SDP are still considered to be sound. However, improvement is needed in several areas (e.g., process, tools, and knowledge).

One of the greatest challenges with the implementation of the SDP involves the use of the Phase 2 site specific risk-informed inspection notebooks. These notebooks were designed, in part, as a tool to screen out inspection findings of very low significance. Because of their simplified nature, they cannot be used to fully evaluate some complex inspection findings. Also, because these notebooks were designed with a higher tolerance for overestimating the risk significance of inspection findings than for underestimating the risk significance, the risk characterization determined using the notebooks may be conservative. In addition to these intrinsic limitations, the use of these notebooks is currently complicated by the need to complete the benchmarking and revision process, improve the existing procedural guidance, and train the staff. Notwithstanding the ongoing challenges, the Phase 2 site specific risk-informed inspection notebooks are an integral part of accomplishing the objectives of the SDP in accordance with our regulatory principles, and there are substantial benefits to be gained from using the notebooks.

In order to address the identified challenges with the implementation of the SDP, the staff has developed SDP Improvement Strategies and an associated SDP Improvement Task Action Plan. The strategies and plan will provide for continued improvements in the timeliness, consistency, and usefulness of the SDP tools and will result in greater effectiveness of the SDP. The strategies and associated action plan incorporated the recommendations, where appropriate, of audits conducted by the Office of Enforcement and the Inspection Program Branch in NRR and the results of the Ad Hoc Review Panel for a Differing Professional View. In addition, the guidance provided by the Commission in Staff Requirements Memoranda M010720A, “Staff Requirements - Briefing on Results of Reactor Oversight Process Initial Implementation,” and COMEXM-01-0001, “D.C. Cook Potential Red Finding, and the Implementation of the Significance Determination Process within the Reactor Oversight Program,” has been incorporated.

The strategies and action plan are also responsive, in part, to comments received from the Advisory Committee on Reactor Safeguards and the Memorandum dated December 20, 2001, from Ellis Merschoff, Regional Administrator, Region IV, and Frank Congel, Director, Office of Enforcement, to Samuel Collins, Director, Office of Nuclear Reactor Regulation, on the treatment of programmatic issues by the SDP. This improvement initiative is intrinsic to the long term success of the SDP, and consequently, the Reactor Oversight Program. Therefore, the SDP Improvement Strategies and the SDP Improvement Task Action Plan will be reviewed and updated periodically.

SDP Improvement Strategies

1. Improve Focus on Early Resolution of Specific Technical Questions and Internal Staff Disagreements

Objective 1.1 Implement a weekly management status report on SDP issues in process.

Objective 1.2 Incorporate into the process features to provide for early identification of issues being processed in the SDP that are likely to become untimely due to technical, policy, or process issues.

Objective 1.3 Develop and track/trend SDP process timeliness metrics within ROP Self-assessment Process, including automating the cycle-time calculation for major process steps.

Objective 1.4 Implement a requirement to conduct a self-assessment for SDP results that are not timely.

2. Improve SDP Process

Objective 2.1 Revise Attachment 1 of IMC 0609 to clarify the roles and responsibilities of the SERP, to include an escalation process for resolution of issues for which the SERP cannot reach a consensus position, and to include process timeliness goals. (1)

Objective 2.2 Issue guidance on obtaining licensee input during the conduct of SDP Phase 2 and Phase 3 risk analyses. (2)

Objective 2.3 Issue guidance on the use of the site specific risk-informed inspection notebooks within the overall context of the SDP. The guidance should address the use of the notebooks until they have been benchmarked, in addition to their use following the subsequent revision. The guidance should strive to achieve consistency between the regions on when additional analysis beyond the capability of the notebooks needs to be conducted. (2, 3)

Objective 2.4 Evaluate revising the SDP to require that the preliminary characterization of potentially risk significant issues be “potentially greater than green,” rather than a specific color. (2)

Objective 2.5 Assemble a focus group of internal stakeholders to identify issues going forward and provide recommendations for their resolution, consistent with the ROP principles and objectives. (3)

Objective 2.6 Develop a plan for long range improvements to the SDP that will include consideration of alternative approaches. (3)

3. Improve SDP Tools

Objective 3.1 Revise Appendix A of IMC 0609 to improve the guidance for conducting a phase 2 analysis, to simplify the process of accounting for external initiators, and to clarify the guidance on the treatment of concurrent issues. (3)

Objective 3.2 Develop a plan to benchmark and revise all of the site specific risk-informed inspection notebooks. Provide periodic status reports that include any insights and lessons learned. Develop and implement a quality assurance plan for the development of revision 1 to the site specific risk-informed inspection notebooks. (2, 3)

Objective 3.3 Develop or improve the following aspects of the reactor safety SDP: fire protection, maintenance rule, shutdown safety, containment integrity, steam generator tube integrity, spent fuel safety, external initiators and internal flooding.

Objective 3.4 Improve the physical protection SDP, if necessary, accounting for any safeguards policy changes.

Objective 3.5 Develop a database of all completed phase 3 analyses. (3)

Objective 3.6 Develop analysis criteria and standards for conducting detailed phase 3 analysis. (3)

Objective 3.7 Evaluate accelerating the SPAR Model Development Program (i.e., Revision 3i SPAR models, low power/shutdown models, LERF models, and external event analysis capability). (2)

4. Improve the Staff's Knowledge of the SDP Tools

Objective 4.1 Develop and conduct training on the use of the site specific risk-informed inspection notebooks. Develop initial and periodic refresher training on the SDP. (3)

Objective 4.2 Increase staffing and/or staff development in the areas of shutdown risk, seismic, fire protection, and containment risk-analysis.

5. Improve Clarity of Risk-Informed ROP Decision Guidance

Objective 5.1 Develop improved decision criteria on the cost-benefit decision of ceasing to refine risk analyses when the benefit is not justifiable.

Objective 5.2 Define the attributes of a minimally acceptable risk-informed decision for use by the ROP. This should include how uncertainty is accounted for within this process.

Objective 5.3 Evaluate the feasibility of an alternative process design to characterize the significance of programmatic issues whose significance is difficult to estimate through quantitative risk analysis (e.g., widespread program deficiencies with EQ, GL 89-10, seismic qualification, etc). [4]

6. Clarify Expectations for ASP and SDP Process Coordination

Objective 6.1 Issue guidance to delineate the relationship between ASP and the SDP, in order to minimize the potential for unexpected or unreasonable differences in the results of the SDP and ASP processes.

[1] Staff Requirements Memorandum M010720A which resulted from the Commission briefing on the results of initial implementation of the reactor oversight process held on Friday, July 20, 2001

[2] Staff Requirements Memorandum resulting from COMEXM-01-0001, D.C. Cook Potential Red Finding, and the Implementation of the Significance Determination Process Within the Reactor Oversight Program

[3] Response to Differing Professional View NRR-02-DPV-02 concerning the continued performance of significance determination process phase 2 analysis

[4] Memorandum dated December 20, 2001, from Ellis Merschoff, Regional Administrator, Region IV, and Frank Congel, Director, Office of Enforcement, to Samuel Collins, Director, Office of Nuclear Reactor Regulation, on the treatment of programmatic issues by the SDP

SDP Improvement Task Action Plan

Objective: The objective is to improve the effectiveness and efficiency of the SDP, consistent with the vision. The Plan delineates assigned responsibilities and completion dates for the tasks to achieve the stated objectives.

Action Plan Coordinator: Peter Koltay, IIPB/DIPM/NRR

TASK ACTION PLAN		
Task	**Completion Date**	**Lead**
1. Improve Focus on Early Resolution of Specific Technical Questions and Internal Staff Disagreements		
Objective 1.1 Implement a weekly management status report on SDP issues in process.	04/01/02	IIPB
Objective 1.2 Incorporate into the process features to provide for early identification of issues being processed in the SDP that are likely to become untimely due to technical, policy, or process issues.	06/28/02	IIPB
Objective 1.3 Develop and track/trend SDP process timeliness metrics within ROP Self-assessment Process, including automating the cycle-time calculation for major process steps.	06/28/02	IIPB
Objective 1.4 Implement a requirement to conduct a self-assessment for SDP results that are not timely.	06/28/02	IIPB
2. Improve SDP Process		
Objective 2.1 Revise Attachment 1 of IMC 0609 to clarify the roles and responsibilities of the SERP, to include an escalation process for resolution of issues for which the SERP cannot reach a consensus position, and to include process timeliness goals(1)		IIPB
a. Clearly define the accounting process of the 90 day time period including starting and ending time	08/01/02	IIPB
b. Improve the SERP process: Clearly identify SERP participants and define their respective roles and responsibilities in IMC0609.01		IIPB

TASK ACTION PLAN		
Task	**Completion Date**	**Lead**
c. Outline the escalation process for issues where the SERP fails to reach consensus in IMC0609.01	06/28/02	IIPB
d. Improve the Regulatory Conference process and associated activities: Designation of NRC participants Post conference caucus Post conference re-SERP Post conference SDP and re-SERP	06/28/02 06/28/02	IIPB
Objective 2.2 Issue guidance on the level and type of licensee engagement that is appropriate during the conduct of:(2)		IIPB Support: SPSB
a. SDP Phase 2 risk analyses	08/01/02	
b. SDP Phase 3 risk analyses	08/01/02	
Objective 2.3 Issue guidance on the use of the site specific risk-informed inspection notebooks within the overall context of the SDP.(2,3)		IIPB Support: SPSB
a. Use of the revision 0 notebooks (pre-benchmarking)	05/31/02	
b. Use of the benchmarked notebooks, revision 1		
c. Guidance for when additional analysis beyond the capability of the notebooks needs to be conducted	05/31/02 05/31/02	
Objective 2.4 Evaluate revising the SDP to require that the preliminary characterization of potentially risk significant issues be “potentially greater than green,” rather than a specific color. (2)	08/01/02	IIPB,

TASK ACTION PLAN		
Task	**Completion Date**	**Lead**
Objective 2.5 Assemble a focus group of internal stakeholders to identify issues going forward and provide recommendations for their resolution, consistent with the ROP principles and objectives.[3]		IIPB Support: SPSB Regions, TBD
a. Identify focus group members	05/01/02	
b. Develop charter	06/28/02	
c. Present recommendations	12/20/02	
Objective 2.6 Develop a plan for long range improvements to the SDP that will include consideration of alternative approaches.[3]		IIPB Support: SPSB, TBD
a. Develop a user need memo	10/01/02	RES, TBD
3. Improve SDP Tools		
Objective 3.1 Revise Appendix A of IMC 0609 to improve the guidance for conducting a phase 2 analysis to:[3]		IIPB
a. Simplify the process of accounting for external initiators	04/01/02	
b. Clarify the guidance on the treatment of concurrent issues	04/01/02	
Objective 3.2 Develop a plan to benchmark and revise all of the site specific risk-informed inspection notebooks (Revision 1). Develop and implement a quality assurance (QA) plan for the development of revision 1 to the site specific risk-informed inspection notebooks.[2, 3]		
a. Develop input for Commission paper		
b. Schedule benchmarking plan (site visits) through 2002 through 2003	3/24/02	SPSB
c. Develop and implement QA plan	05/01/02 10/01/02	SPSB Support:
d. Issue revised notebooks	3/01/02	IIPB

TASK ACTION PLAN		
Task	**Completion Date**	**Lead**
e. Provide periodic status reports that include any insights and lessons learned	2 months after bench-marking trip annual	
Objective 3.3** Develop or improve existing SDP tools as applicable in the following areas:		
a. Fire protection	12/15/03*	SPSB
b. Maintenance rule	10/01/02*	SPSB
c. Containment	12/01/02*	SPSB
d. Steam generator tube integrity	08/28/02*	IIPB
e. Shutdown	03/01/03*	SPSB
f. Spent fuel safety	10/01/03*	IIPB
g. External initiators and internal flooding	10/01/04*	SPSB
** The responsible organizations will develop detailed schedules that will lead to the development and implementation of the specific SDPs.	*by this date draft SDP ready for stakeholder comments	
Objective 3.4 Improve the physical protection SDP, if necessary, accounting for any safeguards policy changes.	TBD	IRSB
Objective 3.5 Develop a database of all completed phase 3 analyses.(3)	06/28/02	SPSBt
Objective 3.6 Develop analysis criteria and standards for conducting detailed phase 3 analysis.(3)		SPSB, SRA
a. Identify participating RES and NRR personnel	6/28/02	Support: RES, TBD
b. Clarify responsibilities and develop schedule	10/01/02	

TASK ACTION PLAN		
Task	**Completion Date**	**Lead**
Objective 3.7 Evaluate accelerating the SPAR Model Development Program (i.e., Revision 3i SPAR models, low power/shutdown models, LERF models, and external events analysis capability).(2)		RES
a. Develop input for Commission paper	3/24/02	
Current Schedule:		
Complete development of Rev. 3i models including internal QA for Level 1 internal events	09/30/02	
Complete external QA of Rev. 3i models	9/30/04	
4. Improve the Staff's Knowledge of the SDP Tools		
Objective 4.1 Develop and conduct training on the use of the site specific risk-informed inspection notebooks. Develop initial and periodic refresher training on the SDP.(3)		
a. Develop training materials for IMC 0609A revision	4/15/02	IIPB
b. Schedule IMC 0609A training: Region I Region II Region III Region IV	May 2002	Support: SPSB
c. Develop a schedule that will lead to the development of an initial SDP training	10/01/02	IIPB
d. Develop a schedule that will lead to the development of periodic refresher SDP training	10/01/02	IIPB
Objective 4.2 Increase staffing and/or staff development in the areas of shutdown risk, seismic, fire protection, and containment risk-analysis.		SPSB Support: IIPB
a. Develop staffing plan	04/01/02	
5. Improve Clarity of Risk-Informed ROP Decision Guidance		
Objective 5.1 Develop improved decision criteria on the cost-benefit decision of ceasing to refine risk analyses when the benefit is not justifiable.	08/01/03	IIPB Support: SPSB

TASK ACTION PLAN		
Task	**Completion Date**	**Lead**
Objective 5.2 Define the attributes of a minimally acceptable risk-informed decision for use by the ROP. This should include how uncertainty is accounted for within this process.	08/01/03	IIPB Support: SPSB
Objective 5.3 Evaluate the feasibility of alternative SDP processes designed to characterize the significance of programmatic issues whose significance is difficult to estimate through quantitative risk analysis (e.g., widespread program deficiencies with EQ, GL 89-10, seismic qualification, etc).(4) a. Identify focus group members b. Develop charter c. Present recommendations	 10/01/02 1/31/03 8/01/03	IIPB Support: SPSB Regions
6. Clarify Expectations for ASP and SDP Process Coordination		
Objective 6.1 Issue guidance to delineate the role of the Office of Research in the SDP, in order to minimize the potential for unexpected or unreasonable differences in the results of the SDP and ASP processes.	04/01/03	IIPB Support: RES SPSB

(1) Staff Requirements Memorandum M010720A which resulted from the Commission briefing on the results of initial implementation of the reactor oversight process held on Friday, July 20, 2001

(2) Staff Requirements Memorandum resulting from COMEXM-01-0001, D.C. Cook Potential Red Finding, and the Implementation of the Significance Determination Process Within the Reactor Oversight Program

(3) Response to Differing Professional View NRR-02-DPV-02 concerning the continued performance of significance determination process phase 2 analysis

(4) Memorandum dated December 20, 2001, from Ellis Merschoff, Regional Administrator, Region IV, and Frank Congel, Director, Office of Enforcement, to Samuel Collins, Director, Office of Nuclear Reactor Regulation, on the treatment of programmatic issues by the SDP

Attachment 4 - Cross Cutting Issue Assessment

Introduction

One of the fundamental premises of the ROP is that significant weaknesses in the cross cutting areas of human performance, safety conscious work environment, and problem identification and resolution will be detected by performance indicators crossing thresholds or via inspection activities in a sufficiently pro-active time frame to ensure adequate public health and safety. In order to confirm the validity of this premise, the staff committed to perform a yearly assessment for all ASP[1] events and those facilities that reached the degraded cornerstone column of the action matrix. The purpose of the assessment is to ensure that the ROP provides for an appropriate level of NRC engagement to detect and prevent an unacceptable safety risk. If the ROP can detect issues and provide for an appropriate level of NRC engagement prior to the creation of an unacceptable risk, the ROP premise regarding cross cutting issues would tend to be supported.

Assessment

In the first three quarters of calendar year 2001, there were no ASP events and there were five[2] plants that reached the degraded cornerstone column of the action matrix; Kewaunee, Millstone 2, Oconnee 1, Calvert Cliffs, and Cooper. For each of these plants, a supplemental inspection was conducted to review the licensee's root cause evaluation and independently assess the extent of condition of the performance issue.

Kewaunee reached the degraded cornerstone column of the action matrix in the first quarter of 2001 due to a yellow inspection finding in the emergency preparedness cornerstone. The inspection finding was issued due to inadequacies identified by the NRC in the licensee's root cause evaluation of performance issues associated with the emergency notification system. These deficiencies were found to be indicative of more general weaknesses in the licensee's corrective action program. No additional risk significant issues were identified. Successive supplemental inspections have confirmed that the licensee has addressed the corrective action program issues.

Millstone 2 reached the degraded cornerstone column of the action matrix in the first quarter of 2001 due to one white PI and one white inspection finding in the mitigating systems cornerstone. The white PI was for the unavailability of the high pressure safety injection (HPSI) system and the white inspection finding was for ineffective corrective actions associated with the turbine driven auxiliary feedwater (TDAFW) pump. A supplemental inspection confirmed that in general, appropriate corrective actions were taken for both the HPSI system and the TDAFW pump. No additional risk significant issues were identified.

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[1]ASP events are events with a conditional core damage probability of equal to or greater than 1.0 X 10E-6.

[2]Columbia Generating Station reached the degraded cornerstone column of the action matrix in the fourth quarter and was not assessed due to the fact that the supplemental inspection for the issue had not yet been conducted.

Oconee 1 reached the degraded cornerstone column of the action matrix in the second quarter of 2001 due to two white inspection findings in the mitigating systems cornerstone. The inspection findings involved procedures and calculations associated with the licensee's response to certain postulated tornado events. One of the two inspection findings was due to untimely corrective actions. During a supplemental inspection conducted to address the two inspection findings, the inspectors noted that the licensee had identified additional deficiencies in its tornado mitigation strategy. These additional deficiencies involved several safety systems and called into question the licensee's overall strategy for mitigating the effects of certain tornados. Included within the supplemental inspection report were the results of an NRC risk analysis of the additional deficiencies. The NRC risk analysis concluded that the overall integrated risk associated with these new issues was in line with that of the original two white inspection findings (low to moderate). Since the licensee's corrective actions for these issues were still under development at the time of the inspection, one of the two original white findings was left open by the inspection team and will require further review during a subsequent supplemental inspection.

The inspection report also discussed three related unresolved issues that could complicate the licensee's response to a tornado or could increase the consequences of the tornado event. Due to the unresolved nature of these issues, the actual risk presented could not be determined at this time, but is not expected to be significantly greater than previously calculated.

Cooper reached the degraded cornerstone column of the action matrix in the second quarter of 2001 due to two white inspection findings in the Emergency Preparedness cornerstone. The inspection findings were for failure of the licensee's critique process to identify dose assessment performance problems and inadequate corrective actions associated with dose assessment during a biennial exercise. A supplemental inspection was conducted to review the licensee's corrective actions associated with these two findings and to independently assess the extent of condition of the problems. The inspection team identified that the licensee's root cause analysis associated with the two inspection findings was narrowly focused and did not assess broader corrective action program issues. The inspection team did not identify any additional concerns during its independent extent of condition review; however, additional examples of emergency preparedness deficiencies of low to moderate risk have been identified during subsequent inspections.

Calvert Cliffs reached the degraded cornerstone column of the action matrix in the third quarter of 2001 due to one yellow inspection finding in the mitigating systems cornerstone. The inspection finding was for failing to follow procedures regarding the application of sealant to the TDAFW pump bearing which resulted in the bearing's failure. The issue was the result of a human performance deficiency and several previous opportunities to identify and prevent this problem had been missed. A special inspection and a supplemental inspection were conducted in response to this issue. No additional risk significant issues were identified.

Conclusion

The results of this analysis are summarized in the attached Table. Weaknesses in the cross cutting area of problem identification and resolution contributed to all five facilities reaching the degraded cornerstone column of the action matrix in calendar year 2001. Of those five plants, the cross cutting area of human performance was also a contributor in one instance. For three of the five facilities, supplemental inspections confirmed the adequacy of the licensee's root cause analysis. The issues at these facilities were found to be limited in scope and had not

progressed to a degree that they required additional regulatory actions or posed a significant risk to public health and safety. At the other two facilities the licensee's root cause analysis was either not complete or not sufficiently comprehensive to allow closing out the performance issues.

Based on review the of above data, the premise regarding the influence of, and the ability of the ROP to identify cross cutting issues appears to be supported. Specifically, the data reviewed indicates that the reactor oversight process can detect weaknesses in the cross cutting areas of human performance, safety conscious work environment, and problem identification and resolution in a sufficiently pro-active time frame to protect public health and safety. The performance issues that had resulted in the five facilities reaching the degraded cornerstone column of the action matrix had not spread across other cornerstones to the extent that an unacceptable safety risk was created. This premise will continue to be assessed by the staff as more data become available.

Summary Table - Crosscutting Issue Assessment

	Quarter Reached and Reason	Cornerstones Effected	Cross Cutting Issues That Contributed	Supplemental Inspection Results Adequate	Unacceptable Safety Level Identified
Kewaunee	1st quarter due to yellow inspection finding	emergency preparedness	problem identification and resolution	yes	no
Millstone 2	1st quarter due to one white PI and one white inspection findings	mitigating systems	problem identification and resolution	yes	no
Oconee 1	2nd quarter due to two white inspection findings	mitigating systems	problem identification and resolution	no	no
Cooper	2nd quarter due to two white inspection findings	emergency preparedness	problem identification and resolution	no	no
Calvert Cliffs	3rd quarter due to one yellow inspection finding	mitigating systems	human performance and problem identification and resolution	yes	no

Attachment 5 - External Stakeholder Feedback

Introduction

This attachment contains the results of the *Federal Register* Notice (FRN) that solicited external stakeholder comment and feedback on the Reactor Oversight Process (ROP).

Comments from the *Federal Register* Notice

An FRN (66 FR 58529) entitled, "Solicitation of Public Comments on the Second Year of Implementation of the Reactor Oversight Process," was issued on November 21, 2001. This notice was part of an ongoing effort by the staff to obtain external stakeholder input regarding the efficacy of the Reactor Oversight Process (ROP). The comment period expired on December 28, 2001. However, in light of the unavailability of the external NRC Web-site, comments that were received beyond the closing date were also considered.

With respect to the second year of implementation of the ROP, the FRN requested responses to 20 specific questions related to two general ROP areas: (1) the efficacy of the overall process, and (2) specific ROP program areas. The NRC received comments from 13 external groups. The most salient comments received are summarized following each question. While each comment has not been specifically addressed, all comments were appropriately considered by the staff in assessing the ROP and in identifying needed improvement actions.

FRN ROP comments were received from the following:

- Tennessee Valley Authority (TVA)
- Entergy Operations, Inc.
- Dominion
- Emergency Management Region 5/6 (Washington County, Nebraska)
- Prairie Island Nuclear Generating Plant
- Southern California Edison (SCE)
- Exelon Nuclear
- Illinois Department of Nuclear Safety
- Union of Concerned Scientists (UCS)
- Strategic Teaming and Resource Sharing (STARS)
- Nuclear Energy Institute (NEI)
- PSEG Nuclear
- The State of New Jersey, Department of Environmental Protection

The specific FRN questions, and summaries of the replies provided by the respondents, are provided below. The responses reflect views of the individual respondent organizations and may be contrary to those views of the NRC staff or others.

Questions related to the efficacy of the overall Reactor Oversight Process (ROP):

1. Are the ROP oversight activities predictable (i.e., controlled by the process) and objective (i.e., based on supported facts, rather than relying on subjective judgement)?

A majority of the respondents indicated that ROP oversight activities are predictable and objective. Nuclear Energy Institute (NEI) indicated that, in general, the ROP oversight activities are predictable and objective. NEI attributed the consistency to the quality of the SDPs and the oversight review of SDP findings conducted by headquarters. NEI indicated that the NRC is following the action matrix without exception and generally seems to be following its new process procedures; however, some inconsistencies exist among the NRC regions. NEI was also satisfied with the NRC's efforts to achieve consistency and its willingness to address region-to-region differences.

NEI noted that most of the inconsistency is in the area of documenting issues with low safety significance, as minor violations or some crosscutting issues. Some minor violations were documented in inspection reports, and the crosscutting issues that are documented are not well defined. NEI indicated that crosscutting issues have the possibility of becoming a "storage bin" for issues that do not rise to the safety significance required by the Commission for being formally cited in an inspection report.

NEI stated the cause of the implementation inconsistencies has been subjective guidance in IMC 0610* (Inspection Manual Chapter for Power Reactor Inspection Reports) for issue characterization. NEI recommend that NRC devote additional effort to ensure that a common interpretation can be made across regions and inspectors and that this guidance should be explained to licensees and other external stakeholders in a public meeting. NEI noted several inconsistencies in the issue characterization process as described in IMC 0610* and IMC 0609 (Significance Determination Process) and recommended that issue characterization in IMC 0609 be eliminated to avoid unnecessary duplication and inconsistencies with IMC 0610*. NEI further stated that to ensure licensee/public understanding of the basis for characterization of a particular issue, IMC 0610* should require that inspectors document in inspection reports the disposition of issues through the various stages of the issue characterization process.

TVA indicated that the ROP oversight activities are predictable and objective and that the scope of the inspections were much more predictable. They stated the outcomes of the findings result in significantly fewer disagreements. TVA stated that the current practice of sharing inspectors between regions appears to be an excellent practice which will yield even greater predictability to the consistency of the ROP's implementation between plants in different regions. Although Entergy indicated that the ROP activities are predictable, especially when compared to the previous (SALP) program, they stated that there is quite a bit of subjectivity in the interpretation of the Significance Determination Process (SDP) screening questions. Dominion indicated that cross cutting issues for human performance and corrective action criteria are not well defined or understood and that there is no closure mechanism for non-color cross cutting issues. Additionally, the Illinois Department of Nuclear Safety expressed concern that the predictability of the process in the long term could be problematic if licensees focus their entire efforts on items they know will be inspected.

2. Is the ROP risk-informed, in that the NRC's actions are graduated on the basis of increased significance?

Respondents generally agreed with the statement that the NRC's actions are graduated on the basis of increased significance. NEI commented that the ROP is specifically devised to increase the level of regulatory attention to plants with performance problems by additional inspection oversight commensurate with the level of safety performance. The ROP reviews performance across each cornerstone of safety, and across all cornerstones (using the action matrix), to assess potential weaknesses and assign additional oversight resources as necessary. NEI characterized the NRC Web site, before being severely restricted as a result of the events of September 11, 2001, as clearly displaying the different levels of attention paid to plants with different levels of performance; i.e., it showed that several plants had exceeded thresholds of performance and were receiving the appropriate graduated level of increased NRC attention.

TVA stated a different view concerning the emergency preparedness cornerstone, citing recent developments in risk analysis not being incorporated into the indicators. Entergy added that some activities do not seem to consider risk in the amount of inspection hours and some SDPs still consider the number of events rather than assessing the risk of the individual event. Entergy stated that this contrasts with the ROP philosophy to not aggregate issues of very low safety significance. Dominion stated that the NRC's treatment of cross cutting issues may be opening up an area where subjectivity and inconsistency in NRC response can occur.

3. Is the ROP understandable and are the procedures and output products clear and written in plain English?

Industry respondents in general, indicated that the majority of the ROP is understandable and clear. TVA stated that some documents are still in draft (Physical Protection SDP) and should not be in this status for a program this far along. Dominion indicated that the SDP process (Phases 1 and 2) is complex and, due to infrequent use, is not a tool that is used by the licensee.

NEI commented that before removing information from its Web site, the NRC did a very good job of explaining the key concepts of the ROP in language that could be understood by average citizens. NEI stated the more detailed explanation of procedures and output products (for example, the SDPs) could be readily understood by the informed layman.

4. Does the ROP provide adequate assurance that plants are being operated and maintained safely?

Most respondents commented that the ROP provides adequate assurance that plants are being operated and maintained safely. Entergy stated that the number of inspections and data provided via the performance indicator process is more than sufficient in demonstrating that plants are being operated and maintained safely. Prairie Island indicated that the ROP did not by itself provide adequate assurance that plants are being operated and maintained safely, but that the ROP does not appear to have any significant gaps. The Illinois Department of Nuclear Safety expressed concern that the thresholds used in the significance determination process are set too high, masking trends that could result in long term problems.

NEI commented that the ROP provides a uniform, consistent process by which NRC deploys its inspection forces to determine whether plants are being operated safely. NEI further commented that the NRC also performs additional inspection, as deemed necessary, based on a consistent, repeatable and scrutable process, to assure operational safety. NEI stated the ROP provides an improved framework which focuses decision making based on an objective assessment of safety performance in each of seven specific cornerstones. The key attributes to assure operational safety for each of the cornerstones are assessed using performance indicators and risk-informed assessments of inspection findings. The performance indicators and inspection finding safety determinations provide a consistent, measurable, and objective assessment of nuclear power plant safety performance. NEI indicated that performance can be judged in a disciplined manner and appropriate resources deployed based on safety performance. Additionally, thresholds of safety performance exist such that issues can be addressed and corrected in a timely manner to assure operating safety.

5. Does the ROP improve the efficiency, effectiveness, and realism of the regulatory process?

All respondents indicated that the ROP provided improvement in this area, but some identified areas needing further attention. TVA indicated that the ROP significantly improves the efficiency, effectiveness, and realism of the regulatory process by replacing the “regulatory significance” term with “safety significance” to improve the quality of the dialog between the regulator and the industry, and the regulator and the public. The Illinois Department of Nuclear Safety maintained that although efficiency and realism have improved, improvement in effectiveness is less clear, primarily due to the inability to directly measure cross-cutting issues of human performance, safety culture, and problem identification and resolution. It further commented that additional time will be needed to instill confidence that these factors will manifest themselves through degradation in performance indicators or other measurable factors prior to significantly compromising safety.

NEI commented that overall improvements were made in this area. They indicated the greatest improvement in focus has been in the reactor safety area where the performance indicators and reactor SDP have permitted NRC and licensees to allocate resources based on safety significance. NEI stated that while an improvement, the gains in efficiency, effectiveness, and realism have been less pronounced in the radiation protection and fire protection inspection areas.

6. Does the ROP enhance public confidence?

Respondents expressed mixed views concerning whether the ROP enhanced public confidence. Dominion indicated that a positive aspect of this new program was that the public was very involved in the development of this process. Dominion stated that public confidence could be improved by more aggressive advertising of public meetings, but cautioned that public confidence could be damaged by constant revisions to performance indicators that have no value added (i.e. reactor scram criteria). Entergy commented that the Web site was a good tool for the public to use to review the performance of each plant and its availability increased public confidence. They also indicated that it was unclear how the unavailablity of the Web-site following September 11, 2001, has affected public confidence. The Illinois Department of

Nuclear Safety stated that the ROP probably did not enhance public confidence because the public at large is probably not aware of the significance of the ROP. Their comments were based on attendance at local public meetings regarding the ROP and on the lack of access to the NRC Web site since the September 11 event.

NEI wrote that public information associated with the ROP has been appropriate. The Web site expanded the amount of information available to the public with a format that was easy to use and understand. NEI noted that it is evident that the NRC considers public information on the new process to be of very high significance, and the staff has obviously expended significant worthwhile efforts to make information timely, user-friendly, and very available to experts and laymen alike. NEI recommended that the NRC learn how to communicate a perspective that "operation in the green" is a regulatory success, since it means that the nuclear industry is operating more safely.

NEI further commented a perception exists among some of the public that the new ROP consists solely of the "Performance Indicators" and less awareness of the improved Inspection Process, SDP, action matrix, and Enforcement Policy. Criticism has been unfairly made that if most licensees are "all Green" then the process isn't working – ignoring the fact that the 18 Performance Indicators are only a small part of how the NRC assesses licensee performance. NEI noted that the NRC has been upgrading the Web site format to improve this situation.

NEI stated the Web site convention of using the color blue to denote "no color" findings without explanation is confusing and tends to inappropriately draw attention to these issues in that they are notably different than the vast majority of findings/violations that are Green. NEI understands that the NRC intends to eliminate the use of no color findings except in those cases addressing enforcement related findings that cannot be assessed using an SDP (e.g., willfulness, withholding information) and supports that change.

7. Has the public been afforded adequate opportunity to participate in the ROP and to provide inputs and comments?

The responses to this question indicated general agreement that the public has been afforded adequate opportunity to participate in the ROP and to provide inputs and comments. Entergy indicated that there have been many opportunities for the public to provide comments, both in scheduled meetings specifically for ROP feedback, as well as during plant performance meetings. The Illinois Department of Nuclear Safety stated that the access provided by NRC during the development of the ROP was one of the most open and receptive they have seen. Dominion stated that the public had adequate opportunity to participate in the ROP, but that the removal of the plant performance Web site now limits this.

8. Has the NRC been responsive to public inputs and comments on the ROP?

Although the Illinois Department of Nuclear Safety stated that NRC has been very responsive to public and stakeholder comments based on comments they have submitted and observations they made during evaluation panel meetings, other respondents commented less positively. For instance, Entergy indicated that there still seems to be disagreement within the agency on some issues (e.g., security and fire protection) which they believe are taking too long to resolve. NEI expressed an inability to comment on whether the non-regulated public feels the NRC has been responsive to its input. NEI noted changes to the program that have resulted from the

NRC staff efforts to listen and respond to the public's comments.

9. Has the NRC implemented the ROP as defined by program documents?

Many of the respondents maintained that in general, the NRC implemented the ROP as defined by program documents, but with several qualifying comments. TVA indicated that many of the SDPs continue to be revised, but this has not posed any significant impediment to the implementation of the process. TVA further described that the downsizing of the NRC Web site challenges licensee's ability to ascertain accessing the latest revision of the SDPs. TVA supports the NEI recommendation that the SDP manuals need to be finalized with minimal revisions to allow the program to stabilize in the eyes of both the pubic and industry stakeholders.

NEI stated that the NRC generally seems to be following its new process procedures, but with some inconsistencies among the NRC regions. Although industry is pleased with the NRC's efforts to achieve consistency and their willingness to address region-to-region differences, NEI noted most of the inconsistency stems from documenting issues with low safety significance, as discussed in response to Question 1.

NEI indicated that many of the SDPs continue to be revised to address inconsistencies and strengthen their technical merit. They indicated that this has resulted in some consternation by both the licensee and the regulator on several occasions, it has not posed any significant impediment to the implementation of the process. NEI wrote the appearance of consistency differences between similar inspections performed at different locations was not a major stumbling block in program implementation.

With respect to revisions to IMC 0609 that are being developed by the staff, NEI commented that although some aspects of the changes have been discussed in public meetings, they request that the entire revision be made publicly available for comment. NEI indicated that future changes need to be minimized to allow the program to stabilize in the eyes of both public and industry stakeholders.

10. Does the ROP reduce unnecessary regulatory burden on licensees?

In general, respondents indicated that the ROP has reduced unnecessary regulatory burden. NEI stated that the reduction in burden has been primarily the result of alignment of the new Enforcement Policy with the SDP. Notwithstanding the regulatory burden reductions mentioned, NEI points out additional improvements that can be made to further reduce unnecessary regulatory burden, comments included:

> Continued effort is necessary to address the mitigating systems performance indicator. The inconsistency between NRC, WANO, the Equipment Performance and Information Exchange (EPIX), Maintenance Rule, and probabilistic risk assessments needs to be addressed as soon as possible. Also, some inspectors are pursuing issues that have

negligible safety significance and no historical regulatory basis. In some cases, the acceptance criteria and/or thresholds established in the inspection modules and SDPs have no regulatory basis (for example, the dose-based criteria in the occupational radiation safety module and SDP).

NEI recommends when the NRC issues a preliminary finding it only state that the issue is "potentially greater than green." This will avoid unnecessary burden on licensees and unwarranted public concern and later confusion when the more appropriate result is announced following a Phase 3 evaluation. Another concern sometimes expressed about the SDP is the amount of time required to resolve the safety significance of issues. While NEI stated that improvement can and will be achieved in average time of resolution (because of more experience and issuance of the Phase 2 SDP notebooks), NEI does not feel that the relatively small number of SDP resolutions that have taken extended periods of time to resolve have had any deleterious effect on the overall program. NEI stated that the use of the Phase 2 SDP is an effective tool in providing an early screen of risk significance. Without the Phase 2 process, the industry would be left with an extensive, unnecessary burden of performing Phase 3 risk assessments for many very low risk issues.

With the merging of many licensed operators into larger multi-site companies that share common programs and procedures, efficiency can be gained by combining programmatic inspections. Industry efforts in the area of self-assessment could also provide an opportunity for more efficient use of NRC resources and reduce unnecessary burden. NEI recommends a pilot effort to take advantage of licensee self-assessment in lieu of current inspector resources for certain inspection procedures.

Finally, NEI stated that lessons learned from the first twenty-one months of implementation suggest the need for improvements in scope, frequency and implementation of inspections in the areas of Radiation Protection, Fire Protection, and Physical Security.

Industry respondents described both reductions to existing activities and an increase of new activities. Entergy cited examples of reduced regulatory burden because licensees are preparing fewer responses to violations because the majority of the violations are non-cited; however, the number of inspection hours has not been reduced as originally envisioned and that has resulted in an unnecessary increase in regulatory burden. Prairie Island added that performance indicator reporting is a substantial new workload.

11. Does the ROP result in unintended consequences?

NEI stated that they have not noted any unintended safety consequences of the ROP. NEI stated they are aware of a concern by some in the NRC that the unplanned power change PI is susceptible to manipulation by the licensee; however, NEI's view was that there have been no actual examples in which safety was even a peripheral issue. Also, as the industry moves into a deregulated environment, power reductions may be planned as part of economic and power availability considerations. Pro-active down powers to improve reliability will likely become more common. NRC has, at times, suggested changes to this performance indicator that could

unwisely penalize licensees for taking appropriate actions to operate their plants in a safe and economic fashion. NEI stated that all stakeholders should work together to monitor the effectiveness of this performance indicator to provide meaningful information while not penalizing appropriate operations.

NEI also stated the thresholds for the unavailability performance indicators do not always properly reflect the site-specific unavailability limits allowed by the maintenance rule or other license provisions, in particular, NRC-approved extended allowed outage times (AOTs). NEI recommends that the NRC, with stakeholder involvement, continue to expedite the development and implementation of a common unavailability definition with site-specific thresholds that recognize the variance across the industry of the safety value of the monitored safety systems.

TVA cited the inclusion of fault exposure hours within the safety system unavailability performance indicator (SSU PI) had unintended consequences of masking real equipment performance issues due to large amount of T/2 fault exposure that had to be assumed when an actual occurrence date could not be identified with certainty. TVA recognized that the T/2 fault exposure will now be dealt with through the SDP process. Entergy stated that licensees may be hesitant to perform on-line preventive maintenance due to the unavailability that will result, even though the on-line maintenance may result in the system being more reliable. Prairie Island commented further on the SSU PI with the example that if a safety system was close to a threshold, there could be significant impetus to delay maintenance activities.

Questions related to specific ROP program areas:

12. Does the ROP take appropriate actions to address performance issues for those licensees that fall outside of the Licensee Response Column of the action matrix?

All respondents who specifically addressed this question indicated that the ROP takes appropriate actions to address performance issues for those licensees that fall outside of the Licensee Response Column of the Action matrix.

NEI agreed and noted that the ROP is specifically devised to increase the level of regulatory attention to plants with performance problems by additional inspection oversight commensurate with the level of safety performance.

13. Is the information contained in assessment reports relevant, useful, and written in plain language?

Industry respondents supported the premise that the information contained in assessment reports is relevant, useful, and written in plain language. However, the Illinois Department of Nuclear Safety added that this is true when the NRC web site is available and the present Web site unavailability is quite frustrating to those who relied on it for a snapshot of plant health.

14. Is the information in the inspection reports useful to you?

Entergy, Prairie Island, and Dominion echoed a common theme that the inspection reports do not provide useful information to the licensee, but rather provide a benefit to the public. They

maintain that the more useful insights are the observations by the various inspectors that do not rise to the level of safety significance to be included in the report. These positive comments/strengths are typically brought forward during inspection exit meetings.

The Illinois Department of Nuclear Safety stated that the reports provide information on cited and non-cited violations but that observations on plant trends that do not reach the level of a finding are no longer included, making the reports less informative.

NEI stated that the inspection reports, for the most part, provided clear and useful information on the inspection issue and its risk significance.

15. Does the Performance Indicator Program minimize the potential for licensees to take actions that adversely impact plant safety?

Entergy stated that most performance indicators are results of event/conditions that occurred and not of conditions that are planned and that licensees will tend to minimize the negative affect on performance indicators if possible. Dominion commented that the performance indicators have some impact on licensee performance in planning and scheduling activities because managers remain cognizant of decreasing performance indicator trends and incorporate this information into their planning and training processes. NEI responded by referring to their response for Question 11.

16. Does appropriate overlap exist between the Performance Indicator Program and the Inspection Program?

Respondents commented that, in general, appropriate overlap exists between the Performance Indicator Program and the Inspection Program. NEI stated that there is unnecessary overlap in the area of radiation safety inspection and the Occupational Exposure Control Effectiveness performance indicator. Entergy stated that cases exist where performance indicators do not seem to add much value (e.g., Reactor Coolant System Specific Activity, Radiological Effluent Technical Specification / Offsite Dose Calculation Manual (RETS/ODCM) Occurrences, Personnel Screening Program and Fitness For Duty Occurrences).

17. Do reporting conflicts exist, or is there unnecessary overlap between reporting requirements of the ROP and those associated with the Institute of Nuclear Power Operations, the World Association of Nuclear Operations, or the Maintenance Rule?

Every respondent that specifically commented on this question indicated that in some manner conflicts exist, especially in the area of safety system unavailability within the Mitigating Systems Cornerstone. Entergy stated that the conflicts exist due to the differing definitions and interpretations used by NRC and Institute of Nuclear Power Operations. TVA and an individual stakeholder echoed that licensee burden would be reduced in the area of tracking mitigating systems unavailability if Maintenance Rule, World Association of Nuclear Operations, Institute of Nuclear Power Operations, and NRC Performance Indicator unavailability reporting criteria could be standardized. TVA further maintained that little progress has been achieved in reaching an implementable, consistent set of performance indicators and that the NRC's current effort lacks a sense of urgency to reach final solutions. Additionally, TVA commented

that the goal of the effort is to simplify the performance indicator definition, not complicate the Action matrix.

NEI agreed with other respondents and stated that considerable burden could be reduced by consolidating definitions in the mitigating system PIs. (See NEI's response in the fourth paragraph to Question 10).

18. Does NEI 99-02, "Regulatory Assessment Performance Indicator Guideline" provide clear guidance regarding Performance Indicators?

Industry respondents indicated that NEI 99-02 generally provides adequate guidance regarding performance indicators. Entergy commented that where NEI 99-02 does not provide adequate guidance, the frequently asked question (FAQ) process helps to clarify the guidance. Citing that the FAQ is a useful process, Prairie Island added that no guidance can cover all eventualities, but in cases of simpler questions, they preferred a simpler/faster process. An individual stakeholder described that the process for obtaining clarification of guidance is not very efficient. NEI responded that NEI 99-02, Revision 2 has recently been published and a Regulatory Information Summary has been issued endorsing its use in reporting performance indicators. The guideline revision reflects comments, suggestions and answers to FAQs to make it more understandable and clear. Although there will continue to be interpretation questions, NEI stated it provides clear guidance.

19. Does the Significance Determination Process yield equivalent results for issues of similar significance in all ROP cornerstones?

Comments varied among the respondents. The Illinois Department of Nuclear Safety commented that it is very difficult to judge because of the large variances in the issues being evaluated. Dominion commented that it seems as if non-reactor cornerstone events can yield more severe regulatory response than would seem reasonable and that the fire protection SDP is confusing.

Entergy commented that the SDP did not yield equivalent results for issues of similar significance in all ROP cornerstones. Entergy also indicated that the interim SDP process for physical protection was issued without significant input from stakeholders and that the industry should be given ample time for input on any SDP process change, especially with the development of the NRC's temporary instruction for inspection of the security area.
NEI added that the non-reactor safety SDPs offer significantly more consistency to the process when compared to the prior inspection process. However, these SDPs did not benefit from the same review and use during the pilot process as did the reactor SDP. As a result, problems have arisen in the physical security, radiation safety, and fire protection areas that need to be resolved in a public and controlled manner. NEI stated a process similar to that used to manage change in the PIs should be applied to changes in SDPs, to include setting clear criteria for change, table-top testing and piloting, and training for NRC and industry before implementation. Finally, to determine whether an SDP provides an equivalent safety result across different cornerstones, NEI adds that inspection reports need to do a better job of explaining how the inspection finding results are derived. NEI is concerned that too often the logic and path to safety significance (color) is not clear, and sometimes is not even discussed.

20. Please provide any additional information or comments on other program areas related to the Reactor Oversight Process. Other areas of interest may include the treatment of cross-cutting issues in the ROP, the risk-based evaluation process associated with determining event response, and the reduced subjectivity and elevated threshold for documenting issues in inspection reports.

Some respondents provided information and comments on other program areas related to the Reactor Oversight Process that did not address a specific FRN question. A summary of their response is included below along with the answers to other respondents for Question 20:

Entergy's Response :

NRC seems to be using no color or green findings to allow documentation of minor violations and issues without specific regulatory significance. Items that have no observed performance impact are being documented using this far ranging process. This detracts from more safety significant processes and issues.

NRC ROP places emphasis on problem identification and resolution. In that light, NRC segregates licensee identified NCVs from NRC identified NCVs in the reporting process. However, these issues still appeared on the web site. This would seem to imply the same level of significance. More screening criteria with clearer direction on its use is needed.

In general, some NRC inspectors seem to enter the SDP to evaluate all findings without first clearly documenting the issue (i.e., what is the requirement, what is the impact, etc.). This causes time to be used during the inspection process to "weed-out" issues that are clearly minor at most. They believe additional training of inspectors is needed to allow their quick resolution of the true impact.

Finally, Entergy suggests re-evaluating the durations needed for conducting inspections. For example: Problem Identification and Resolution, Safety System Design and Performance and Triennial Fire Protection Inspections. They agree with the shift to biennial Problem Identification and Resolution Inspections from the current annual periodicity. However, they believe that in all of the above-cited inspections that consideration should be given to completing the inspections within two consecutive weeks on the site and not break them up with weeks in the region.

Dominion's Response:

The NRC should re-evaluate the periodicity of some Radiation Protection, Problem Identification & Resolution, and Safety System Design inspections. An evaluation of the utility corrective action system is probably not warranted at the once per year frequency.

Emergency Management Region 5/6 for Washington County's (NE) Response:

The respondent indicated that since the Fort Calhoun Nuclear Station is his agency's county, the ROP is an important subject. Having provided input during the trial phase of ROP, the respondent is familiar with what this new process represents and so during plant performance review Washington County is better able to understand performance ratings and safety factors.

Bottom line, Washington County stated the ROP is a vast improvement and provides the county with an understandable method of reviewing plant operations and their relationship to us as the public safety and emergency management office for the surrounding area. The county opinion is that the ROP does enhance public confidence, is written in plain language, improves the performance rating for the plant and addresses issues that fall outside of the action matrix.

Prairie Island's Response:

There is some concern that NRC requirements are getting placed on licensees outside of the Rulemaking process. Inspection Procedures, SDP, and Performance Indicators can impart "requirements" and bypass rulemaking. For example: Safeguards Advisory, Fire Protection Triennial Inspection issue with CO2 system pre-operational test, and Steam Generator issues arising out of IP-2 (low row u-bends).

Southern California Edison's Response:

SCE concludes that the NRC's ROPs has been successful in providing a more risk-informed framework. Notwithstanding the overall success, there are several areas that require continuing attention:

> Performance indicators and other aspects of the ROP (e.g., SDP, etc.) can create unintended consequences. While a limited number of conservative "false positives" are acceptable in this process (i.e., Performance Indicators, SDPs), it is necessary that the ROP identify and resolve potential "false negatives". A "false negative" has the potential to significantly undermine the credibility of the entire ROP.
>
> There appears to be a need to improve the public understanding of the scope of the ROP. It appears much of the public perceives the ROP as solely the "Performance Indicators" and is less unaware of the revised Inspection Process, SDPs, action matrix, and Enforcement Policy. This situation has been exacerbated by the suspension of many NRC Web site communications following the September 11, 2001 attack. Questions continue to be raised to the effect that if most licensees' performance indicators and/or inspection findings are "all GREEN" then the ROP is not working. This reflects a fundamental lack of understanding of the risk-informed approach to the ROP, and the NRC's policy of allowing licensees to correct less risk-significant issues within their corrective action program.
>
> The ROP does not appear to have achieved the correct balance with regard to the performance indicators for the Mitigating Systems metrics. SCE understands that the NRC is undertaking a Safety System Unavailability Pilot Program to develop new replacement risk-informed unreliability and unavailability metrics. This effort is important, as the GREEN/WHITE threshold for Performance Indicators was set at the 95% performance level based on historical data. The other thresholds (including the GREEN/WHITE thresholds for assessing Inspection findings using the SDPs) are set based on risk. Having an inconsistent logic for the bases for setting the thresholds continues to create confusion and uncertainty.

Difficulties continue to be experienced in implementing the SDPs. Security, Fire Protection, Emergency Planning, and Health Physics SDPs do not appear to be very robust and do not appear to produce consistent and accurate results. In addition, the Frequently Asked Question (FAQ) process for Performance Indicators appears to have been a positive mechanism to resolve licensee and inspector issues relating to the Performance Indicators; the SDPs would benefit from a similar FAQ process.

The action matrix uses inspection findings for a fixed one-year period from the inspection. Therefore, a non-GREEN inspection finding is used in the action matrix for a year, while the PI is recalculated quarterly. Considering the risk significance of the various findings, it might be beneficial to establish a "graded reset" of the inspection finding window. For example, after one quarter a WHITE finding window could be reset, a YELLOW inspection finding window after 2 quarters, and a RED inspection finding after 4 quarters.

Exelon's Response:

The ROP is seen as an improvement over the previous process in that the approach is objective, safety-focused, predictable and more transparent to the industry and the public. This approach provides an objective measurement of performance, avoids unnecessary regulatory burden, focuses NRC and licensee resources on risk or safe significant issues, and dictates NRC response to findings based on safety significance. In addition, it gives the public and industry a timely and understandable assessment of a plant's performance, which has led to an increase in public confidence regarding the nuclear industry.

Improvement to the process has been ongoing and needs to continue into the future for the continued success of the Process. Industry and the NRC must continue to properly prioritize and pursue ROP process changes in the inspection and assessment areas. Enhancements in the inspection arena would include revisions to the SDP and Inspection Program. Changes need to be made to the ALARA, Emergency Preparedness, Fire Protection, and Physical Protection SDPs to mitigate flaws and address implementation issues. Changes in the Inspection Program would include enhancements to the Safety System Design inspection guidance and Fire Protection inspection guidance and the crediting licensee's self-assessments in lieu of inspections. Assessment area enhancements include the initiation of new PIs; the revision of existing indicators, such as the Scram PIs, to better reflect plant activities; and the adoption of a common PI definition and threshold for mitigating system performance that will be consistent between NRC, WANO, EPIX, Maintenance Rule, and probabilistic risk assessment.

An integral part of this process was the access to plant data on the NRC web site for both the utilities and the general public. Having this data readily available and depicted in a clear and concise manner allowed the general public to see the safety levels achieved by the various nuclear plants as well as the NRC actions taken in response to those plants that fell outside the licensee response band (i.e., non-green PI or inspection finding). This information also served as a good benchmarking source for the industry. Due to the recent national events, it is understandable why additional security measures were implemented and the information was removed from the web site. However, due to the importance of this information to the industry and the general public, every effort needs to be made to restore as much of this data as possible so that public confidence in this Process and the nuclear industry is maintained.

Illinois Department of Nuclear Safety's Response:

The department is aware that the revised ROP is still a work in progress and will require additional modification over the long term. As indicated above, the areas where they believe the ROP is weakest are: Reliance on less than rigorous PRAs for risk assessment, and lack of specific indicators for the cross-cutting issues of human performance, safety culture, and most importantly, problem identification and resolution.

Union of Concerned Scientists Interim Response:

Internal self-assessments: UCS has always liked the formal inclusion of internal self-assessments within the reactor oversight process. From the internal self-assessments that they have reviewed, it appears that these NRC efforts have considerable value. For example, an NRC team assessed 51 inspection findings from 26 inspection reports and concluded that there were signs of over-reporting, of under-reporting, and of inconsistent reporting.

Action matrix: UCS has always liked the concept of the action matrix, which clearly links licensee performance to NRC response. However, UCS was always concerned about whether the NRC staff would in fact abide by these 'mandated' actions. As feared, that's not been the case. For example, UCS submitted a letter titled "Broken Promises" dated October 23, 2001, to the NRC Chairman and Commissioners. UCS protested that the NRC staff essentially promised the public that it would conduct a series of inspections at the worst-performing nuclear plant in the United States, but had deferred those inspections following a request by the plant owner. The fastest way for the NRC to lose public confidence is to fail to fulfill its promises. UCS recommend that the NRC stop deviating from the action matrix and stop breaking promises to the public.

Cone of Silence: The ROP was recognized by the NRC staff, the industry, and at least elements of the public as being evolutionary. There was a prescribed process for developing, testing, and implementing changes to the ROP that involved the NRC staff, the industry, and the public. But that process was abandoned when the Commission did not like the fact that Quad Cities would get a YELLOW or RED violation for failing its Operational Safeguards Readiness Evaluation (OSRE). So, the interim physical protection significance determination process (PPSDP) was fabricated under the NRC's version of the Cone of Silence to bestow a WHITE finding. As indicated in my letter dated September 4, 2001, to Mr. Alan Madison, UCS considers the interim PPSDP to be fundamentally broken and recommends that it be expeditiously revised using — rather than shamelessly skirting — the promised public process.

Preliminary Significance Determination Process Results: In the current SDP for inspection findings, the NRC staff evaluates risk using information in its possession. When this staff evaluation results in a non-GREEN finding, the licensee has the opportunity to submit additional and/or clarifying material. Typically, licensees contend that less severe color findings are warranted based on the new material. UCS concedes that it is troubling when the NRC staff and the licensee staff are orders of magnitude apart on their initial risk determinations. That apparent disparity does undermine confidence in the process. But hiding that disparity behind a curtain does not improve confidence. It merely swaps the reason for the public's mistrust.

Despite the baggage associated with preliminary colors sometimes fading, public confidence would best be served by continuing to conduct the process in the open. The best way to minimize the problem would be to reduce the frequency of times that preliminary colors are later revised. The NRC staff's risk models could be further improved. Continued clarification and documentation on credit for operator actions and recovery times would also help. The greatest gain, of course, would be realized by licensees putting their current risk models and plant safety assessments on the docket so that the NRC staff would have ready access to that vital information. UCS recommends that the NRC take steps to reduce the number of times that preliminary colors are revised rather than take steps to hide the negotiations.

Strategic Teaming and Resource Sharing's Response:

The STARS plants expressed appreciation for the opportunity to provide comments on the NRC's ROP and fully endorse the comments submitted by NEI on December 21, 2001.

Since implementation in April 2000, the ROP has exhibited marked improvement over the former inspection and enforcement process. The process is more objective and scrutable with an increase in regulatory focus on risk significance and a reduction in unnecessary regulatory burden. Strict adherence to the ROP guidelines has generally provided for a more predictable and consistent characterization of inspection findings within an inspected area and, to a limited degree, from area to area across the spectrum of the inspection areas.

Though improvements have occurred and additional areas needing improvement have been recognized in the second year of the ROP, implementation of the process has resulted in some unintended consequences that continue to present challenges to licensees. A few of these areas are highlighted below:

> Issue Characterization - The interpretation of what constitutes "credible or actual impact on safety" in Question 1 of the Inspection Manual Chapter ('MC) 0610*, Appendix B, Group 1 Questions varies from inspector to inspector; and the interpretation also appears to have changed over time. Resident inspectors at some sites currently consider ANY impact on safety, no matter how slight, to be a credible or actual impact on safety." STARS proposes that consistent guidance be developed and provided to inspectors in this area.
>
> The September 29, 1999, guidance from the Director of the Office of Enforcement on classifying minor violations should be updated to include more examples reflecting the intent of 'MC 0610*.
>
> Inspection Reports - The lack of any positive statements in inspection reports presents an unbalanced portrait of licensees' actual performance. This tends to foster an overly negative perception of licensee performance by the public.
>
> Performance Indicators - The various performance monitoring reporting requirements for INPO, WANO, 10 CFR 50.65, and NRC PIs are currently inconsistent resulting in unnecessary burden on licensees. STARS encourages and support continuing efforts to refine and coordinate these requirements including the Safety System Unavailability/Unreliability Pilot Program currently under development.

Significance Determination Process - Since the guidance of MC 0609 is often very general and frequently subject to interpretation, a frequently asked questions (FAQ) process should be provided for the SDP. The FAQ process has been very helpful in resolving interpretation issues for the PI program. A similar FAQ process for the SDP would facilitate identifying/resolving SDP issues and communicating them to the industry.

Assessment Process - On occasion, the public has been frustrated by the lack of detail provided in annual assessment meetings for which licensee performance is all "Green". STARS proposes that the NRC reassess the intended audience and the level of informational detail provided at these meetings.

STARS recommends that the NRC and NEI continue to jointly identify and aggressively correct these and any other unintended consequences that are subsequently identified.

Nuclear Energy Institute's Response:

NEI supports the NRC's change management process to control evolution and necessary improvements to the program. The change management process allows for stability by requiring careful consideration of potential changes to the program, and piloting of performance indicator changes. The FAQ element of the change process has been a very positive element of the program, providing a timely and responsive mechanism to ask questions about the implementation of PIs. In addition, the NRC has been responsive to questions about SDPs and inspection findings, addressing them primarily through questions at public meetings. NEI stated it would be appropriate to consider placing some information on SDP issues on the NRC Web site, after the SDP finding has become final. NEI stated more than minor changes to inspection procedures, SDPs, and the action matrix should be piloted in the same way as new performance indicators. This approach would avoid unintended consequences (such as occurred in the physical security SDP) and ensure that the changes would indeed be an improvement to the ROP.

During the initial year of the ROP, a special Enforcement Discretion period was created whereby interpretations in the guidance would not be subject to Enforcement. This Enforcement Discretion period expired on January 31, 2001. NEI stated that if a new PI is implemented, that NRC should provide discretion during the first year of implementation of the new PI.

A key premise of the new ROP is that weaknesses in cross-cutting issues, such as the corrective action program, will manifest themselves in the PIs and inspection findings by crossing thresholds to be greater than green (the licensee response band). Having been revealed through the PIs or inspection findings, the weaknesses can be addressed through licensee actions and NRC supplemental inspection to ensure performance is improved before safety is compromised. NEI stated the program is working as intended, and therefore, no additional PIs or SDPs are necessary in the cross-cutting area.

NEI stated the procedures for preparing inspection reports to be appropriate. For the most part, the NRC has been following the procedure and providing reports that are concise, safety performance focused, provide appropriate information for both licensees and the public, and

remove the subjectivity and conjecture that marred reports in the previous program. Improvement is necessary in the areas of explaining the NRC reasoning in arriving at its inspection finding results (i.e., discussion of the screening steps and the details of the decision paths in the SDPs), and in greater discipline in the area of minimizing “no-color” findings.

NEI stated that inspectors have insights which licensees appreciate receiving. However, to avoid confusion and unintended implications that the inspectors opinions are requirements which must be implemented, NEI recommends that inspector insights and suggestions be provided verbally at the exit meeting for the licensees consideration rather than in the inspection report itself, which should focus on safety performance outcomes, not on how the outcomes are achieved.

PSEG Nuclear, LLC’s Response:

The NRC's openness and willingness to consider stakeholders' comments and recommendations are appreciated. The public interaction has allowed the process to address most emerging questions and unforeseen concerns in a timely and fair manner. The NRC should be commended for its willingness to openly share its ideas and to allow public comment on a real-time basis. The result has been a better product than could have been achieved in the past and has resulted in improved communication and understanding between the regulator, licensees, and the non-industry public.

Concerted effort is necessary to address the mitigating systems performance indicators. The inconsistencies between various reporting requirements cause unnecessary burden and need to be addressed. The recent series of public meetings in this area have resulted in considerable progress, but much work remains to be done. The following issues need to be addressed: (1) replacing design basis assumptions with risk important functions; (2) replacing fault exposure with an easily collectable measure of unreliability; (3) eliminating the practice of cascading support systems onto front line systems; (4) providing more realistic credit for operator action, (5) reassessing the performance thresholds to be consistent with actions prescribed in the maintenance rule, (6) ensuring the burden of the additional data elements is not excessively burdensome, and (7) evaluating the impact of additional performance indicators on the action matrix.

The non-reactor safety Significance Determination Processes (SDPs) offer consistency to the process when compared to the prior methods. However, problems have arisen in some areas that need to be resolved in a public and controlled manner. A process similar to that used to manage change in the PIs should be applied to changes in SDPs; including setting clear criteria for change, table-top testing, and training for NRC and industry prior to implementation.

As the industry continues to move into a deregulated environment, power reductions are planned as part of economic and power availability considerations. Pro-active down powers to improve reliability will likely become more common. NRC has at times suggested changes to the unplanned power change indicator that could penalize licensees for taking appropriate actions to operate their plants in a safe and economic fashion. All stakeholders should continue to work together to monitor the effectiveness of this indicator to provide meaningful information while not penalizing appropriate action.

A key premise of the ROP is that weaknesses in cross-cutting issues will manifest themselves

in the PIs and inspection findings. When these weaknesses are revealed through the PIs or inspection findings, they can be addressed through licensee actions and NRC inspection to ensure performance is improved before safety is compromised. The program is working as intended; therefore, no additional PIs or SDPs are necessary in the cross-cutting area.

Industry efforts in the area of self-assessment could provide an opportunity for more efficient use of NRC resources and unnecessary burden reduction. A pilot effort to take advantage of licensee self-assessment in lieu of current inspector resources for certain inspection procedures should be undertaken.

Further refinements to the ROP will occur in the future. The ROP should be a continuously improving process, which corrects weaknesses, while maintaining stability through well thought out change management processes. The program is now operating in an effective manner, and is an improvement over the previous inspection, assessment, and enforcement process of industry oversight.

PSEG looks forward to a continuing dialogue with the NRC and other stakeholders as we enter the next year of program implementation.

State of New Jersey, Department of Environmental Protection's Response:

In light of the September 11th terrorist attack and the subsequent closure of the U.S. NRC web site we could not perform a normal assessment of the reactor oversight process. Without access to performance indicator information and other useful reactor oversight data, we can not provide answers to the questions you outlined in the federal register notice.

In light of the lack of reactor oversight information available for review, we recommend that the NRC make available for public comment the results of the second year of implementation of the new reactor oversight process for public review and comment. Not only would the NRC's results of the second year of implementation of the new reactor oversight process provide an opportunity for external review, but it would provide an opportunity to compare the latest results against the results of the initial implementation of the new reactor oversight process that were published as SECY-0 1 -0114 on June 25,2001.

It would be particularly interesting to read about the NRC's assessment of whether the NRC Reactor Oversight Process for security was implemented as defined by program documents. It is unclear whether the NRC considers the current Reactor Oversight Process to be acceptable for ensuring security at nuclear power plants. Certainly, States have felt that addition security was necessary and have placed national guard troops, as well as State and local police, as supplements to the security at the nuclear power plants.