February 24, 2000 SECY-00-0049

FOR: The Commissioners

FROM: William D. Travers /RA/
Executive Director for Operations

SUBJECT: RESULTS OF THE REVISED REACTOR OVERSIGHT PROCESS PILOT PROGRAM

PURPOSE:

This Commission paper provides the results and lessons learned from the 6-month pilot program conducted on the revised reactor oversight process (RROP). In addition to a discussion and evaluation of the pilot program lessons learned, this paper requests Commission approval to implement the RROP at all power reactors. Finally, this paper provides the staff response to the Commission comments documented in the Staff Requirements Memorandum (SRM) on SECY-99-007 and SECY-99-007A dated June 18, 1999.

SUMMARY

A 6-month pilot program of the RROP was conducted at two sites per region from May to November 1999. The purpose of the pilot program was to apply the RROP and identify lessons learned so that the various processes and procedures could be refined and revised as necessary prior to a Commission decision on the initial implementation of the RROP at all power reactors. Pilot program criteria were established to evaluate the results of implementing each of the components of the RROP at the pilot plants.

In addition to evaluating the new process against these pilot program criteria, the staff employed a number of methods to obtain internal and external stakeholder feedback during the pilot program. This feedback was considered by the staff, along with the other pilot program results and lessons learned, and pertinent oversight processes and procedures were revised as appropriate.

The effort undertaken by the staff to implement the RROP at the pilot plants highlighted the challenges inherent in developing a risk-informed regulatory oversight process. Due to its nature, the uncertainties associated with risk analysis make it difficult to establish objective, risk-informed thresholds for both performance indicators and inspection findings. However, the pilot program demonstrated that these new risk-informed tools, used by a knowledgeable and

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experienced inspection staff, result in an oversight process that is more objective and predictable than the current oversight process.

Based on the results of the 6-month pilot program, the staff has concluded that the cornerstones of safety concept and the associated framework is sound. Pilot program feedback received by the staff, from both internal and external stakeholders, indicates that further experience with the process is needed. Implementing the RROP at all sites will enable the staff to acquire further experience and provide it the opportunity to identify additional lessons learned and gain greater confidence in the efficacy of the RROP.

The pilot program increased staff confidence that the combination of PIs and inspection findings can provide adequate indications of licensee safety performance. The appropriate implementation of these processes should provide reasonable assurance that safe plant operation is maintained. Most internal and external stakeholders agreed that the RROP provides assessments of licensee performance, with corresponding NRC actions, in a manner that is more objective, understandable, and predictable than the current oversight process. Additional data is needed following initial implementation to confirm the capability of the RROP to identify declining safety performance trends in a timely manner, adjust thresholds if needed, and determine any increased efficiency resulting from the new oversight processes. Based on industry and agency feedback, the regulatory burden associated with the RROP appears appropriate.

Certain significant aspects of the RROP (e.g., event response and the annual assessment process) were not able to be fully exercised during the pilot program. The staff has determined that the continued development and implementation of these, and other aspects of the RROP, will not adversely impact the initial implementation of the RROP. As described in this Commission paper, these longer term issues will be addressed by a program self-assessment to be conducted by the staff during the first year of implementation.

Other than these noted exceptions, the procedures and guidance documents required to support initial implementation of the RROP at all power plants have been sufficiently exercised during the pilot program. Most pilot program lessons learned have been incorporated into the oversight process procedures as appropriate and these procedures are expected to be issued in time to support initial implementation. A few significant issues remain to be resolved to support initial implementation. These issues, and planned staff action to ensure that they are adequately resolved, are described in detail in this Commission paper. The NRC will continue to conduct staff training and public workshops to ensure that all stakeholders have a sufficient understanding of the RROP prior to initial implementation.

With the premise that these outstanding issues will be successfully resolved, the staff concludes that the RROP will be ready for the proposed initial implementation on April 2, 2000, for all commercial operating power plants.

BACKGROUND:

On January 8, 1999, the staff issued SECY-99-007, “Recommendations for Reactor Oversight Process Improvements,” forwarding the staff’s recommendations for a revised reactor oversight process for commercial nuclear power plants. These recommendations consisted of a framework for regulatory oversight that established seven cornerstones of safety. Fundamental

to this concept was that licensee performance that met the objectives and key attributes of each of these cornerstones would provide reasonable assurance that public health and safety was maintained.

In the RROP, licensee performance within each cornerstone is measured by a combination of performance indicators (PIs) and inspection results. PIs were developed for each of the cornerstones to provide an objective indication of licensee performance. A risk-informed baseline inspection program was developed to both independently verify the PIs and to inspect those aspects of licensee performance not adequately covered by a PI. The risk-informed baseline inspection program established the minimum inspection effort that all licensees would receive, regardless of their performance.

Risk-informed thresholds were developed for both the PIs and inspection findings to establish performance bands. These performance bands provide for increased regulatory action as licensee performance degrades, as indicated by crossing more risk significant thresholds. A key aspect of using performance thresholds is that it establishes a level of licensee performance that does not warrant additional NRC involvement beyond the baseline inspection program.

The assessment process was redesigned to be more streamlined and objective by using the PIs and inspection findings as assessment inputs and applying an Action Matrix to determine the appropriate follow-up to indications of degrading licensee performance. The enforcement process was also revised to be better integrated and consistent with the inspection program and assessment process.

On January 20, 1999, the staff briefed the Commission on the scope and concepts of the RROP as described in SECY-99-007. On March 22, 1999, the staff issued SECY-99-007A, "Recommendations for Reactor Oversight Process Improvements (Follow-up to SECY-99-007)," which forwarded to the Commission additional information on the concepts for the RROP, and presented the staff's plans for a 6-month pilot of the revised oversight processes at two sites per region. On June 18, 1999, the SRM on SECY-99-007 and SECY-99-007A was issued which approved the scope and concepts for the RROP, approved the staff plan for the pilot program, and provided additional issues and Commission comments for the staff to consider when evaluating the pilot program results.

The 6-month pilot program for the RROP was conducted at two sites per region from May 30, 1999, to November 27, 1999. The pilot program was conducted in accordance with the guidelines and procedures forwarded by memorandum from the Director, Office of Nuclear Reactor Regulation (NRR) to the four Regional Administrators (RAs), dated May 20, 1999. The sites participating in the pilot program were:

Region I	Region II	Region III	Region IV
Salem/Hope Creek	Shearon Harris	Prairie Island	Fort Calhoun
FitzPatrick	Sequoyah	Quad Cities	Cooper

The purpose of the pilot program was to apply the RROP and identify lessons learned so that the various processes and procedures could be refined and revised as necessary prior to initial implementation. The objectives of the pilot program were: (1) to exercise the various

components of the RROP to evaluate whether or not they could function efficiently, (2) to identify significant process and procedure problems and make appropriate changes prior to initial implementation, and (3) to the extent possible, evaluate the effectiveness of the new process. Pilot program criteria were established to evaluate the results of implementing the RROP at the pilot plants.

In addition to evaluating the new process against these pilot program criteria, the staff employed a number of methods to obtain internal and external stakeholder feedback and comments during the pilot program. The evaluation and disposition of this feedback is discussed in detail in this Commission paper under the pilot results for each component of the RROP.

Internal feedback and comments from NRC staff were obtained using various methods. Weekly teleconferences were held with regional management and biweekly teleconferences with the pilot program resident inspectors to solicit feedback. Monthly counterpart meetings were held with the regional Division Directors and Executive Forum meetings were periodically conducted with the four Deputy Regional Administrators to solicit feedback and comments on the RROP. Inspection procedure and oversight process feedback forms were developed and used during the pilot program for regional staff to document questions and concerns on the various components of the RROP. Comments from these feedback forms were utilized by the staff in making needed modifications to procedures as the pilot program progressed. Finally, an internal stakeholder survey of the RAs and staff who participated in the pilot program was conducted at the end of the pilot to gather additional insights to be considered while evaluating the pilot program lessons learned.

The results of the surveys indicated that the regional staff and RAs considered the revised program to be an improved oversight approach. Among the areas commented on by the RAs as needing additional monitoring or improvement were the licensee's corrective action program, cross-cutting issues, the significance determination process (SDP), the resources needed to implement the new program, and communication and internal program management issues leading toward acceptance and implementation of the revised process. Among the concerns expressed by the regional staff were a need for clarification of definitions of some PIs and their thresholds; the limited opportunity to fully utilize the SDP during the pilot program; and disagreement as to the ability of the revised process to allow identification of declining safety performance before significant reductions in safety margins occurred.

The staff is mindful of this latter concern and recognizes that a lack of experience in dealing with problem plants using the RROP has contributed to the above noted skepticism. In developing the RROP, the staff has used a graded approach to establish risk-informed thresholds, which are intended to provide reasonable assurance that safety margins are being maintained, and allow sufficient time for both the NRC and licensees to address noted performance deficiencies before there is an undue risk to public health and safety. The staff believes the appropriate fundamentals are in place and expects that this concern will be alleviated over time. The results of the regional survey are discussed in more detail in Attachment 1.

Public comment was solicited on the RROP and the results of the pilot program by *a Federal Register* notice (FRN) dated July 26, 1999. The FRN established a public comment period that ended on December 31, 1999, and included a questionnaire to focus public comment on

specific topics. This questionnaire requested comment and feedback on the RROP's ability to meet the four agency outcome measures, and also requested feedback and comments on topics such as the role of positive inspection findings in the RROP and the need to develop overall assessment ratings for power plants. A summary of these comments can be found in Attachment 1. The State of New Jersey had significant involvement in the pilot program and had many specific comments. Attachment 1 contains a special section which addresses these comments.

To keep local public stakeholders informed of the new oversight process, public meetings were held in the vicinity of each pilot plant. Public meetings were first held at the beginning of the pilot program, and then a series of Public Roundtable meetings were conducted at the end of the pilot program. These meetings were designed to both explain the new program, and then solicit feedback from the public on their views of the RROP. A summary of the results of these public meetings is included in Attachment 1.

Finally, a pilot program evaluation panel (PPEP) was established by the agency in accordance with Federal Advisory Committees Act (FACA) requirements to serve as an independent advisory committee to the agency. This panel was a cross-disciplinary group of managers and industry experts representing many different nuclear power interests, including the Union of Concerned Scientists, the Nuclear Energy Institute, pilot plant licensee management, and the Illinois Department of Nuclear Safety, in addition to NRC Headquarters and regional management. The purpose of the PPEP was to independently evaluate the results of the pilot program and draw conclusions regarding required process changes and the readiness for initial implementation. The results of the PPEP review are included as Attachment 2 to this Commission paper.

Staff response to the PPEP conclusions and recommendations are included as Attachment 3. Overall the PPEP made several recommendations for action prior to initial implementation, including: (1) develop the process for handling inaccuracies in performance indicator data reported and resolve how the requirements of 10 CFR 50.9 will apply, (2) ensure that the thresholds for the different significance determination processes are consistent in safety impact, and (3) develop a clear and formally documented procedure for handling those rare instances when deviation from the Action Matrix is warranted. As described in this Commission paper, these PPEP recommended actions have been considered and addressed by the staff in conjunction with the pilot program results and lessons learned.

Culminating the feedback activities, the staff conducted a public lessons learned workshop from January 10-13, 2000. The purpose of the workshop was to bring internal and external stakeholders together to identify lessons learned and approaches to resolving key issues of concern. The workshop was successful in enabling the staff to achieve a good level of concensus on those issues requiring action prior to initial implementation, longer-term resolution, and continued monitoring during initial implementation.

DISCUSSION

The following discussion provides the pilot program criteria results and lessons learned, significant stakeholder feedback on the RROP, and process changes resulting from the pilot effort. The discussion also addresses the status of remaining work to support initial implementation of the RROP, a discussion of the staff's plans to transition from the current

oversight process, and the staff's recommendation for the initial implementation of the RROP at all nuclear power plants.

Regulatory Framework

In addition to exercising each component of the RROP, the pilot program also provided for a practical evaluation of the concepts for the new regulatory oversight framework and the cornerstones of safety. The results of the pilot program indicated that the cornerstone concept was fundamentally sound and that the attributes of the seven cornerstones established a framework that could provide reasonable assurance that public health and safety will be maintained. The establishment of performance bands for performance indicators and inspection findings allowed agency and industry resources to be focused on those issues with the most risk significance.

Performance Indicators

The results of reporting PIs during the pilot program are described in detail in Attachment 4. During the pilot program, all PIs were able to be reported on time, within the required 14 days for each of the pilot plants. However, several problems were noted during the pilot program with accurately reporting the PIs in accordance with the industry guideline document, NEI 99-02, "Regulatory Assessment Performance Indicator Guideline." Most of these errors were minor in nature and were largely attributed to the difficulty in collecting and reporting historical data and problems with ambiguous definitions and clarifying instructions. There were, however, some pilot plants where errors in reporting were substantial and continued for some time. Because these problems could occur at other plants, the staff will be looking for similar problems during initial implementation and will promptly take the appropriate corrective actions. Many changes were made to the industry guideline document during the pilot program and the accuracy of the data submitted for the PIs improved significantly by the end of the pilot.

Significant stakeholder feedback and comments were received on PI reporting, including: (1) several PI definitions, calculation methods, and descriptions need to be clarified (e.g., Security Equipment Performance Index), (2) several PI thresholds do not appear appropriate (e.g., Reactor Coolant System Specific Activity), (3) additional guidance for PI data reporting needs to be provided (e.g., when a PI should be considered invalid), (4) the process for resolving PI interpretation issues needs to be formalized, (5) the process for changing, adding, or deleting PIs needs to be developed, (6) the PI reporting period should be extended beyond 14 days from the end of the quarter to ensure accurate data reporting, and (7) the definitions for PIs need to be made more consistent across the industry (e.g., NEI 99-02, World Association of Nuclear Operators (WANO), Maintenance Rule).

Several changes were made to the NEI 99-02 PI reporting guidance, both during the pilot program and in response to feedback received afterward, including: (1) clarifying the guidance

for reporting unplanned power changes, (2) clarifying how fault exposure time will be accounted for in the Safety System Unavailability PI, (3) deleting the Containment Leakage PI, and (4) extending the reporting period from 14 to 21 days.

Several items remain to be addressed prior to the proposed initial implementation of the RROP on April 2, 2000, including: (1) develop and implement a more formal process for resolving PI interpretation issues, (2) reassess the guidance, definitions, and thresholds for several PIs based on the January 2000 historical data submittal, including the Security Equipment Performance Index PI, (3) develop guidance for identifying invalid PIs, such as those in which the NRC has lost confidence that the licensee is reporting accurately, and (4) issue a Temporary Instruction for inspecting licensee processes for collecting and reporting PI data.

Additional performance indicator issues have been identified by the staff for resolution, but are not significant enough to impact initial implementation of the RROP. The staff will work to resolve these issues, and others identified during the first year of implementation. Resolution of these issues will be discussed in the staff's report to the Commission on the self-assessment of the first year of implementing the RROP, due in June 2001.

These longer term issues include: (1) improving the guidance, definition, and thresholds for several PIs, such as Reactor Coolant System Specific Activity, (2) developing the formal process for changing, adding, or deleting performance indicators, and (3) working to develop more consistency between NEI 99-02 PI definitions and WANO indicator definitions.

In addition, the staff continues to work with the public and industry on other improvements to the indicators that will: (1) will provide more meaningful data, thus enhancing NRC effectiveness and efficiency as well as public confidence, and (2) will be easier to understand and simpler to implement, thereby reducing unnecessary regulatory burden, while continuing to maintain safety. The staff will report to the Commission on these additional changes at the end of the first year of implementation.

Inspection Program

The NRC's revised inspection program for commercial nuclear power reactors consists of several elements: risk-informed baseline inspections, supplemental inspections for indicated declines in performance, and when necessary, inspections to address generic safety issues. In addition to these elements, the inspection program includes guidance for responding to events and for overseeing plants in extended shutdowns to address performance issues.

As described in Attachment 5, the pilot results demonstrated that baseline inspections could be planned and an inspection schedule issued in a timely manner. Most of the baseline inspection procedures were clearly written, were appropriately risk-informed, and inspectors were able to satisfy the inspection objectives by completing the inspection procedures. In most cases, the scope and frequency of the baseline inspection procedures were adequate to meet the key attributes identified for each cornerstone. Inspection reports were issued, and the plant issues matrices (PIMs) were able to be updated in a timely manner to document inspection findings. The pilot data could not support definitive conclusions on inspection resource requirements. At least a year's experience with the RROP at all power plants will be needed before the staff can provide more definitive information on the resource implications.

The supplemental inspection program was exercised twice during the pilot program in response to single white inputs, with generally positive stakeholder feedback received on its use. While the entire baseline inspection program and some elements of the supplemental inspection procedures were exercised during the pilot program, the event response and extended shutdown procedures were still under development by the end of the pilot program. As described later, a feasibility review was performed near the end of the pilot to evaluate the event response and other oversight procedures that were not exercised during the pilot program.

Significant stakeholder feedback and comments received on the inspection program include: (1) the resource estimates for many of the individual inspection procedures were too low, (2) the scope and frequency of many inspections should account for site-specific differences, (3) the program should more clearly define the role of cross-cutting issues, such as human performance and problem identification and resolution, in the oversight process and determine the proper documentation of cross-cutting issues in inspection reports, and (4) the threshold for documenting inspection observations and findings needs to be clarified to avoid documenting insignificant issues, yet allow the documentation of issues that could potentially lead to more significant programmatic problems.

The staff evaluated all of the comments received and revised most of the inspection program documents and procedures to incorporate this feedback. In some cases, inspectable areas were combined into other procedures to put the inspection objectives into a better context and provide the appropriate emphasis. Adjustments were made to the scope, frequency, and resource estimates for some of the inspection procedures as they were revised. Using pilot program lessons learned, a resource planning meeting was held in mid-February 2000 with the regional Division Directors and the program office to further adjust resource estimates. Based on comments received, the guidance for inspection reports was changed to allow inspectors to document pertinent observations that relate to important cross-cutting areas, but that do not readily lend themselves to evaluation through the significance determination process.

To support initial implementation of the RROP, the staff is developing a process for responding to those occasions when the results of a PI verification inspection determine that the NRC has lost confidence in a licensee's ability to report PI data accurately or completely. This could include supplemental inspection above the baseline to compensate for the missing data and insights intended to be provided by the PIs in question. As previously discussed, the staff is developing an inspection Temporary Instruction to verify licensees' processes for reporting PIs.

Additional experience with implementing specific portions of the inspection program will be required during the first year or more following initial implementation to collect and evaluate lessons learned. The experience is needed to gain further insights into the supplemental and event response portions of the inspection program and into the extended shutdown oversight process because they were not fully executed as part of the pilot program. The staff will collect additional feedback and lessons learned on how cross-cutting issues are addressed by the inspection program. Changes to the program will be evaluated and incorporated to address any lessons learned during the first year of initial implementation.

Also during the first year of initial implementation, the staff will continue to work on improvements to the content of the inspection program to ensure that it provides adequate information to assess the key attributes of the cornerstones. The staff will continue validating

and resolving issues, including feedback on the time estimates for completing a number of the baseline inspections. A full year of implementation beyond the pilot program is planned to obtain reliable data on which to estimate the amount of resources needed to accomplish individual inspections as well as execute the overall inspection program.

Significance Determination Process

The results of the pilot application of the SDP are described in detail in Attachment 6. In summary, three inspection findings identified during the pilot program were characterized as "white" (low to moderate risk significance) by the SDP and received preliminary concurrence by the SDP Oversight Panel. However, two of these issues could not be completely resolved within the pilot program timeliness criteria of 120 days from issue discovery. The time involved with resolving the technical issue, documenting and issuing the inspection report, and allowing due-process for the licensee made it difficult to resolve these issues in a timely manner. An independent review of the plant-specific reactor safety SDP characterizations of inspection findings did not identify any risk significant inspection findings that were inappropriately characterized as "green" (very low risk significance).

Significant stakeholder comments and feedback on the pilot application of the SDP recommended that the staff: (1) determine whether the plant-specific reactor safety SDP characterization should consider the entire plant configuration including equipment out of service for routine maintenance or testing (conditional core damage probability [CCDP]), or be based on an increase in core damage frequency (ΔCDF) which already considers routine maintenance and testing unavailability, (2) improve the consistency of SDP entry conditions for inspection findings, (3) improve the guidance for conducting plant-specific reactor safety SDP Phase 3 analyses and consider an appeal process for licensees, (4) reduce the complexity and improve the usability of the fire protection SDP, and (5) improve the degree to which the safeguards SDP is risk-informed.

Early in the pilot program, concerns were raised regarding the use of the change in annualized core damage frequency (ΔCDF) as the appropriate risk measure for assigning significance to inspection findings within the reactor safety cornerstones, as opposed to the use of CCDP. Based on further review and evaluation during the pilot program, the staff concluded that ΔCDF is the appropriate risk measure for inspection findings to support the assessment and enforcement processes. A complete discussion of the staff's approach and its basis is given in Attachment 6. In addition, the staff considers CCDP to be a potentially useful risk metric to help risk-inform our decisions to initiate rapid inspection responses to reactor events or degraded conditions, as discussed further in Attachment 7.

When the pilot program started, it was noted that SDPs for containment, fire protection, and shutdown activities needed to be developed. The staff completed the initial development of the fire protection SDP, which was exercised during the pilot period and lessons learned were collected. These lessons learned and other stakeholder comments will be used to refine this SDP prior to initial implementation. The staff is also working with its stakeholders to develop a screening tool for inspection findings that affect shutdown safety and the development of an SDP for inspection findings that affect containment barrier integrity, prior to initial implementation. During the pilot program, several inspection findings involving shutdown conditions or the containment were forwarded to NRC Headquarters for significance characterization by risk analysts.

The plant-specific reactor safety SDP is a three step process that is intended to provide inspectors with a relatively simple, conservative process to assign a risk characterization to inspection findings in the initiating events, mitigation systems, and barrier integrity cornerstones. This presents unique challenges in establishing a process that is not overly complex or purely risk-based, but maintains a risk-informed perspective with an appropriate degree of conservatism. The reactor safety SDP process allows risk analysts to directly apply licensee's PRA insights in establishing the risk significance of inspection findings. Therefore, the current SDP process includes some element of risk-based decision making. Several issues exist within the plant-specific reactor safety SDP that challenge the staff in just this manner.

The first of these issues is fundamental to the use of any probabilistic methodology to inform a decision process. This issue is the adequacy (i.e., accuracy) of the assumptions that define the model of the plant and its response to various initiating events. The plant-specific reactor safety SDP helps to address such uncertainty issues by revealing the major assumptions that combine within the probabilistic framework to render each significance determination. This offers the opportunity for inspectors, NRC management, and other stakeholders to either accept or challenge these assumptions. It further allows the decision-maker to examine the sensitivity of the result to the various assumptions that are made. It is through this process of applying a probabilistic model that decision-makers gain risk insights.

The plant-specific reactor safety SDP was developed to address the significance of an issue as to its impact on CDF and large early release frequency (LERF). The potential impact of external events as evaluated by licensee individual plant examination for external events (IPEEEs) are not currently reflected in these SDPs. For some plants where the influence of external events on overall risk is notable, this will introduce non-conservatism into the SDP analysis for initiating event frequency. For initial implementation at all plants, the staff will develop a screening tool to help identify those issues that should receive further evaluation specifically to account for the increased risk contribution from external initiating events. This tool will be evaluated during initial implementation. Further efforts may be required to refine the SDP to account for the impact of external events.

During the pilot program, comparing plant-specific reactor safety SDP Phase 2 worksheets to licensee PRAs identified that the SDPs underestimated risk in some instances due to the omission of certain core damage sequences associated with support system initiating events such as failure of AC/DC control power or component cooling water. The information needed to complete the development of the SDP Phase 2 worksheets, which provide plant-specific information necessary to characterize risk changes, needs to be collected during a site visit. The staff plans to visit each plant site to discuss the accuracy of the plant-specific SDP Phase 2 worksheets with the licensee. The objective of these visits is to ensure that the individual plant examination (IPE) based SDP worksheets are modified as needed to include any plant changes since the IPE was written or any new risk insights generated by the licensee's most current risk analysis. These site visits, which are currently in progress, will not be completed until approximately a month or so after the proposed initial implementation date. The staff believes that initial implementation of the RROP can proceed while the plant-specific reactor safety SDPs are completed. Until the Phase 2 worksheets are finalized for a plant, which takes several weeks following the site visit, the Phase 1 screening tool will be used to identify potentially risk-significant inspection findings for a Phase 3 analysis by a risk analyst. Based on

the results of the pilot program, it is expected that only a handful of Phase 3 analyses will be required for those sites without finalized Phase 2 worksheets in place when initial implementation commences.

It is expected that there will also be a number of questions regarding the appropriate use and limitations of the SDP during the early stages of initial implementation. To alleviate the potential resource impact on the Senior Reactor Analyst (SRA) workload following initial implementation, the Operations Support Team in the Probabilistic Safety Assessment Branch of NRR will assist the NRC regional offices in conducting the necessary risk assessments.

Additionally, to support initial implementation, the staff is working to clarify the guidance to: (1) ensure that the entry conditions for each SDP are consistent, (2) ensure that inspection findings characterized by the same color have similar degrees of importance both within each cornerstone and throughout all cornerstone SDPs, and (3) better define the plant-specific reactor safety SDP Phase 3 process to ensure it can be completed in a timely manner.

The staff will continue to evaluate the efficacy of the various SDPs and will continue to evaluate NRC risk analyst staffing needs throughout the first year of implementation. It is anticipated that additional risk analyst expertise will be needed to augment the regional SRAs on a long-term basis. The staff is working with the regions and the Office of Human Resources to identify an appropriate approach to augment risk analyst expertise in the regions.

Enforcement

The results of piloting the new enforcement policy for the RROP are documented in Attachment 8. During the pilot program, all compliance issues assessed as “green” (very low risk significance) were documented as non-cited violations in issued inspection reports. Regulatory conferences were held with the licensees and Notices of Violation were issued for those issues identified as “white” (low to moderate risk significance) during the pilot program. These enforcement outcomes were consistent with the SDP and enforcement policy guidance.

Significant stakeholder comments and feedback on enforcement included: (1) determine the applicability of 10 CFR 50.9 to any errors and inaccuracies associated with the reporting of PI data, and (2) agency oversight panels such as those for SDP, Maintenance Rule and 10 CFR 50.59 need to be better integrated.

Prior to initial implementation, the staff will resolve the concern of how the requirements of 10 CFR 50.9 will be applied to PI data reporting. Specifically, the staff needs to establish the thresholds to determine the degree of enforcement action that will be taken. The resolution to this concern will likely have an impact on the level of licensee management overview that is given to PI data prior to submittal to the agency, and could have an impact on the timeliness of PI data reporting. In establishing a 21-day period for PI data reporting, this issue was taken into consideration.

Based on the experience gained during the pilot program, a better integration with current panels discussing regional issues is needed. As a result, NRR and the Office of Enforcement have started to integrate the panels into the existing weekly regional panel schedule and an individual in the region and in headquarters will be assigned responsibility for each issue. This

integration will ensure that panels are appropriately scheduled, that documentation needed for discussion at the panels is available and that personnel are not required at different meetings being held simultaneously.

Assessment

The pilot program demonstrated that the assessment process and Action Matrix could be used to take appropriate actions in response to indications of licensee performance. During the pilot program, several different PIs and three inspection findings were reported as crossing the green/white threshold. The NRC response dictated by the Action Matrix was appropriate to address these performance issues, and follow-up action was taken in a consistent manner. However, since the pilot program was only able to exercise the first two columns of the Action Matrix, a feasibility review was performed near the end of the pilot to allow for further evaluation of additional aspects of the assessment process using actual, non-pilot plant events. It was noted early in the pilot program that the originally proposed time line for completing the mid-cycle and end-of-cycle reviews could not be implemented in a practical manner by the regional staff. The time line for conducting these assessment meetings and issuing the assessment letters (with an updated inspection plan) was therefore extended from four to eight weeks from the end of the quarter. Assessment process pilot results and lessons learned are described in more detail in Attachment 9.

Significant stakeholder comments and feedback received on the assessment process include: (1) there needs to be clear program guidance for those instances when deviation from the Action Matrix is necessary, and (2) there needs to be a methodology for addressing "substantial" cross-cutting issues in the assessment process.

In response to this feedback, the assessment procedure was revised to provide additional guidance on the process for approving and documenting deviations from the Action Matrix which are expected to occur in a few rare instances. The treatment of cross-cutting issues in the assessment process was discussed at length with various stakeholders, and no clear consensus could be reached. One opinion was that the NRC should not assess cross-cutting issues in the absence of other issues outside of the licensee response band, as stated in the original tenets of the framework. Another opinion was that the NRC should inspect and assess cross-cutting issues which, individually, do not rise to the high level of risk associated with the SDP but which, collectively, could reveal important insights into the licensee's programs.

For initial implementation, stakeholders agreed during the lessons learned workshop that the assessment process should be modified to allow regional offices to provide a qualitative assessment of the effectiveness of the licensee's corrective action program and a discussion of any other substantial cross-cutting issues in the mid-cycle and annual assessment letters. However, NRC action would not be taken for these cross-cutting concerns absent a performance indicator or inspection finding that has at least entered the "white" (low to moderate risk significance) band. During the first year of implementation, the staff will establish a working group to continue to evaluate the role of cross-cutting issues in the assessment process.

Certain aspects of the assessment process, such as the end-of-cycle assessment and agency action review meeting, were not exercised during the pilot program. However, these portions of

the assessment process will be exercised at the pilot plants during May 2000. Lessons learned from the pilot plants will be incorporated into the procedure guidance prior to conducting these portions of the assessment process at all plants in May 2001.

Information Management Systems

During the pilot program, the staff generally demonstrated that the agency's information management systems can support the RROP, though some key milestones still need to be met to support the proposed initial implementation in April 2000. PIs were successfully submitted by each of the pilot plants and received by the NRC, were first made available on the external Web in July 1999, and were successfully updated monthly throughout the pilot program. Inspection findings, including the PIM and the inspection reports, were first made available on the external Web in mid-October 1999, and were also updated throughout the remainder of the pilot. The initial posting of inspection findings on the Internet was delayed during the pilot program due in part to the inherent time delay in issuing inspection reports and updating the PIM, and the need for the program office to provide additional guidance and review PIM entries to ensure quality and consistency.

New Regulatory Information Tracking System (RITS) codes were established and successfully used throughout the pilot for time reporting and budget purposes. Portions of the Reactor Program System (RPS) and its associated modules were modified and successfully used during the pilot. In spite of these successes, the agency's data submittal and processing systems were not able to be fully tested during the pilot since the systems to be used for initial implementation will differ from those used during the pilot program. Additional detail regarding the pilot of the NRC's information management systems can be found in Attachment 10.

Significant stakeholder comments on the agency's systems for handling oversight process information included: (1) the posting of assessment information on the Internet has increased the availability of more objective and scrutable information on licensee performance, and (2) all inspection reports, not just those with issues that resulted in findings in the PIM, should be posted on the assessment Web page to provide a more balanced perspective of licensee performance.

The staff has identified several key information management system issues and milestones that need to be met to support the proposed initial implementation in April 2000, including: (1) the protocol for the quarterly PI submittals beginning in April 2000 still needs to be established and included in program documents, (2) trial runs of the first quarterly submittals need to be performed prior to the actual submittals to identify and resolve any problems ahead of time, (3) the overall design of the Web page needs to be revised to include the addition of all inspection reports, assessment letters, and inspection plans, (4) the new RITS activity codes need to be made available and their proper use verified, and (5) several minor modifications and enhancements to RPS need to be completed and the development of a new module in RPS to capture the PI data, compute the PIs, and post the information to the Web needs to be completed.

Feasibility Review

Certain aspects of the RROP, such as the event response procedures, were developed during the pilot program and were not fully implemented in the field. Therefore, the staff conducted a

feasibility review near the end of the pilot program to exercise the event response procedures and those portions of the RROP designed to address significant licensee performance issues. This feasibility review included a table top test of the event response process using risk significant non-pilot plant events. The exercise demonstrated the ability of the process to:

1. Adequately determine agency response to events based on a risk characterization of the event coupled with traditional deterministic criteria;

2. Provide a reliable method, using the SDP, for characterizing the risk associated with findings resulting from the NRC follow-up of events; and

3. Provide adequate guidance, using the Action Matrix, for appropriate actions in response to the performance issues identified during these events.

Additionally, it was documented that cross-cutting issues such as human performance and corrective action program performance could be used effectively to adjust agency response within the appropriate Action Matrix column. Details of the results and conclusions of the feasibility review are discussed more fully in Attachment 7.

Transition Plan

The staff has developed a plan to transition all operating nuclear power plants from the current oversight processes to the RROP. Pending Commission approval, initial implementation of the RROP for all power plants is scheduled to occur on April 2, 2000. During the first 12 months of initial implementation, the staff will continue to perform program self-assessments to collect additional lessons learned and gain insights from the new oversight process. Prior to initial implementation, the staff will develop a more detailed transition plan to describe the change management strategies and program oversight necessary to support initial implementation. As part of this transition plan, criteria will be established by the staff to evaluate the results of initial implementation and identify additional lessons learned. The results of the initial implementation self-assessment, lessons learned, and oversight process changes are expected to be presented to the Commission in June 2001. The schedule of activities to support the transition of all power plants to the RROP is included as Attachment 11.

The nine pilot plants have remained in the RROP following the completion of the pilot program in November 1999. For the non-pilot plants, the last Plant Performance Reviews (PPRs) under the current assessment process will be performed in late February and early March 2000. These PPRs will be conducted in a manner to help transition these plants to the RROP by assessing licensee performance using the historical PI data submittal from January 2000 in addition to the inspection record. The PPR letters to the non-pilot plant licensees will forward an inspection plan that implements the revised inspection program starting in April 2000. Those non-pilot plants whose performance warrants agency-level attention will be evaluated under the Senior Management Meeting (SMM) process following the PPRs. With the exception of D.C. Cook, the non-pilot plants will then join the pilot plants in the new inspection and assessment cycles starting in April 2000. The staff intends to keep the D.C. Cook plant under the current oversight process (it is currently under the Inspection Manual Chapter 0350 oversight process) until licensee corrective actions have been completed to the extent necessary to support the transition to the RROP. The staff has recently met with D.C. Cook management to discuss the

transition of the plant to the RROP. Additional detail on the staff's plan to coordinate the transition to the RROP with the current oversight processes is described in Attachment 12.

A number of training sessions have been scheduled by the Technical Training Division to prepare NRC staff for initial implementation, with several of these training sessions having already been completed. Additionally, public workshops will be conducted in each region from late February through March 2000 to provide an overview of the RROP to the public and industry. Staff preparations for initial implementation of the RROP are discussed in more detail in Attachment 13.

All procedures and program documents for the new oversight processes are expected to be issued to support the proposed initial implementation date of April 2, 2000. Most of these procedures were distributed for regional and program office review in January 2000. Comments are currently being reviewed and incorporated, with all procedures and program documents, with some minor exceptions, expected to be ready for issuance by early March 2000.

Coordination With Other Agency Initiatives

Commission paper SECY-99-007 described several key policy issues that needed to be more fully considered and addressed to support the implementation of the RROP. These key policy issues, and their status, are as follows.

Changes to the reactor oversight process need to be closely coordinated with the agency initiative to risk-inform 10 CFR Part 50. The RROP increases focus on certain risk-significant requirements and decreases focus on certain other less risk significant requirements. This could result in situations where very low significance findings, even if numerous, would be evaluated and treated with little to no follow-up by the agency. Similarly, the RROP may identify risk significant conditions, not covered by current regulations, that warrant some level of agency follow-up beyond the baseline inspection program. Risk-informing 10 CFR Part 50 may provide further insights into aspects of our current regulations that may impact the inspection program. The staff will continue to monitor activities in this area and ensure that the RROP is consistent with the results of this effort.

The staff's approach to event assessment and response needs to be consistent with the fundamental concepts of the RROP. As described in Attachment 5, the agency event response procedures have been reviewed and revised to be consistent with the risk-informed approach of the RROP.

The RROP may have a long-term impact on the N+1 policy for resident inspector staffing due to the potential for improved efficiency and changes in the division of responsibility for implementing the new processes. The staff's proposal for addressing the N+1 resident inspector staffing policy under the RROP was forwarded to the Commission by SECY-99-227, "N+1 Resident Inspector Staffing Policy," dated September 13, 1999. By SRM dated January 11, 2000, the Commission approved the staff's recommendation to modify the policy to require N resident inspectors at dual and triple-unit plants, but maintain N+1 resident inspector staffing at single unit plants. This change in resident inspector staffing policy does directly reflect a reduction in inspection resources applied to a power plant, but is intended to provide the

regions with more flexibility in assigning resources as required by the RROP. The staff will continue to evaluate the resource requirements of the RROP during the first year of implementation. The staff will provide recommendations on resident inspector staffing as part of the report on initial implementation of the RROP, due to the Commission in June 2001.

The regional and Headquarters organizational structures may need to be changed to support the cornerstone framework and the RROP. While sufficient data were not developed during the pilot program to draw any conclusions, the staff will continue to assess this issue during the first year of initial implementation to determine whether any agency organizational structure and staffing changes should be made to better support the RROP. Two areas where the staff has focused their attention for regional resources for performing the baseline inspections are in engineering area and fire protection. The baseline inspection program calls for engineering inspection in part because this area does not lend itself to performance monitoring through performance indicators and experience indicates that this is an area that we should continue to monitor through the inspection program. Headquarters and regional staff have reviewed the skills necessary for these inspections and have developed a plan to ensure the regions have the necessary expertise to conduct these inspections. Fire protection triennial inspections require a breadth of fire protection knowledge that does not currently exist in all regions. The staff has developed a plan to provide the regions with training in this area to support the baseline inspection program. Finally, the staff continues to evaluate the adequacy of risk expertise in the region and review the options for training additional people in the mechanics of probabilistic risk assessments.

In addition to these four previously identified issues, the staff has recognized several other agency coordination issues related to the development of the RROP. The staff has recognized that the implementation of the RROP will have an impact on the conduct of the agency's allegation program. Four options for modifying the allegation program were forwarded by the staff in Commission paper SECY-99-273, "Impact of Changes to the Inspection Program for Reactors on Implementing the Allegation Program," dated November 23, 1999. As documented in the SRM on SECY-99-273 dated January 27, 2000, the Commission approved the staff's proposal to solicit stakeholder input prior to a final Commission decision on one of the options. The staff will continue to work closely with the Agency Allegations Advisor to ensure that changes to the allegation program are closely integrated and consistent with the RROP.

The staff is working closely with the Office of Nuclear Regulatory Research (RES) to investigate the feasibility of risk-based performance indicators of component, train, and system performance. This effort is intended to enhance the current set of indicators by providing indicators in areas where there are currently none, such as equipment reliability, shutdown operations, and containment performance. It may also include the use of PI thresholds that are more plant-specific. RES expects to have preliminary results by mid-summer of 2000 that will allow the staff to better define its needs in this area. In addition, NRR and RES are working jointly to develop indicators of industry trends, including risk-significant trends of performance elements that are difficult to measure on a plant-specific basis. Such indicators may be useful in assessing the effectiveness of the RROP and in ensuring the plant safety is being maintained.

The staff is also working to apply many of the RROP concepts developed and lessons learned identified to the oversight of nuclear fuel cycle facilities. The Office of Nuclear Material Safety and Safeguards (NMSS) has forwarded its proposal for evaluating and proposing revisions to the oversight process in Commission paper SECY-99-188, "Evaluation and Proposed Revision of the Nuclear Fuel Cycle Facility Safety Inspection Program," dated July 21, 1999. NRR staff will continue to work closely with NMSS to share information and support its work to develop a more risk-informed process for the regulatory oversight of nuclear fuel cycle facilities.

Issues of Note

As described throughout this Commission paper, the staff has worked closely with all stakeholders to resolve pilot program comments and lessons learned. For the most part, this effort has resulted in a solution for each issue that appropriately considers the majority of stakeholder feedback or concern. However, three issues emerged that have a significant impact on the implementation of the RROP, and for which the staff has not been able to resolve in a manner that adequately addresses the majority of stakeholder concerns. The staff committed to present these issues, the differing points of view, and the staff proposal for resolution to the Commission for consideration. These issues are as follows:

1. Significantly different viewpoints exist among stakeholders on how cross-cutting issues and programmatic breakdowns should be addressed in the RROP. One viewpoint supports the original tenet that programmatic breakdowns would reveal themselves by PIs crossing thresholds and the identification of significant inspection findings. The other viewpoint supported the opinion that significant programmatic breakdowns can occur without prior indication through PIs or inspection findings, and a means must be available for the agency to respond to these concerns.

   For initial implementation the staff will revise the process for documenting inspection findings to allow the documentation of inspector observations of programmatic deficiencies that have been placed in an appropriate safety context. The assessment process has been revised to allow a qualitative discussion of distinct adverse trends, as indicated by substantial cross-cutting issues, as part of the mid-cycle and end-of-cycle assessments. However, increased NRC action will not be taken on these programmatic concerns absent any PIs that have crossed a threshold or significant inspection findings. As part of the program self-assessment during the first year of implementation, the staff will continue to evaluate the appropriate means to address cross-cutting issues and programmatic breakdowns in the oversight process. Also, a working group, consisting of both NRC and industry representatives, will be formed to further review this issue.

2. The barrier integrity PIs are fundamentally different from the other indicators used in the RROP. They are intended to provide indications of the integrity of the three barriers to the release of radioactive material from the reactor core. They use readily available information that licensees are required to collect by technical specifications (TS). The thresholds are set as percentages of the TS limit. However, in practice, plants typically operate very far below the TS limits, so that the green/white threshold would rarely, if ever, be exceeded. The indicators therefore serve primarily a public confidence role to indicate how much margin there is to any safety concern in the performance of these barriers, as opposed to an indication, at least at the green/white threshold, that there is a deviation from nominal industry performance. In addition, because TS requirements vary from plant to plant (e.g.,

for Reactor Coolant System leakage, in addition to unidentified leakage some plants measure identified leakage while others measure total leakage), and because licensees use a variety of methods to measure compliance with these TS (e.g., some measure as-found containment leakage while others record only as-left leakage), the data reported can vary considerably from plant to plant.

The problems with data reporting and the thresholds for these indicators have resulted in a number of stakeholder comments challenging the meaningfulness of the barrier indicators. For initial implementation the staff intends to revise the PI reporting guidance as necessary to clarify the use and meaning of these PIs. The staff has eliminated the Containment Leakage PI because of the varied methods used to calculate containment leakage and the lack of valid data points, since meaningful information is only obtained during outages. This will require the development of additional inspection guidance in the interim. The staff will continue to collect data and lessons learned on these PIs during the first year of implementation to evaluate their continued use in the RROP while awaiting the results of the effort by RES to develop risk-based PIs that may be more meaningful.

3. There is disagreement on how the RROP should treat inspection findings involving licensee performance issues that are outside the licensing and design basis of the plant. The RROP requires the staff to assess the significance of inspection findings involving deficient licensee performance and to input any results that are of greater than “green” (very low risk significance) into the Action Matrix to determine the most appropriate agency responses to licensee performance declines. The key feature of this policy is that it does not distinguish between findings involving regulatory non-compliance and those findings that do not violate the licensing or design basis but never-the-less represent an unintended increase in plant risk resulting from deficient licensee performance. If such an issue were to achieve sufficient risk significance to meet the regulatory analysis guidelines for backfit, then the staff would consider implementing such a backfit. However, based on the pilot program experience, it is very possible for the risk significance of such issues not to achieve this threshold, but still be characterized as greater than “green”.

   For initial implementation, the staff intends to process these issues as licensee performance deficiencies using the Action Matrix. Stakeholders from the industry have opposed this position on the basis that such issues are outside of NRC regulatory authority. The staff acknowledges that all requirements for backfitting a licensee must be met prior to imposing any new regulatory requirements. However, the staff also acknowledges that the threshold for regulatory engagement has been raised by the RROP and that the framework requires NRC actions to have bases in an objective process that assesses the degree of risk to public health and safety whenever possible.

Conclusions

Based on the results of the 6-month pilot program, the staff has concluded that the cornerstones of safety concept and the associated framework is sound. Pilot program feedback received by the staff, from both internal and external stakeholders, indicates that further experience with the process is needed. Implementing the RROP at all sites will enable the staff to acquire further experience and provide it the opportunity to identify additional lessons learned and gain greater confidence in the efficacy of the RROP.

The pilot program increased staff confidence that the combination of PIs and inspection findings can provide appropriate indications of licensee performance. The graded approach used in establishing risk-informed thresholds are intended to assure that safety margins are being maintained and that sufficient time would exist for both the NRC and licensees to address noted performance deficiencies before there was an undue risk to public health and safety. The appropriate implementation of these processes should provide reasonable assurance that safe plant operation is maintained. Initial implementation of the RROP at all sites will enable the staff to confirm the capability of the RROP to identify declining safety performance trends in a timely manner, and to determine if threshold adjustments are warranted. During the pilot program, no significant aspects of licensee performance related to the cornerstones of safety were identified that were not adequately covered through the combination of PIs and inspection. Additional experience and insights gathered through the implementation of the RROP at all sites will permit more extensive execution of all aspects of the process and generate greater confidence in the appropriateness of the RROP.

Most internal and external stakeholders agreed that the RROP provides assessments of licensee performance, with corresponding NRC actions, in a manner that is more objective, understandable, and predictable than the current oversight process. The submittal of PIs by the licensees provided performance data that were more timely and relevant. Information was more readily accessible to the public through the posting of the PIs and inspection findings on the NRC's Internet Web page. The bases for NRC actions were more easily understood through the use of the assessment Action Matrix.

Sufficient data were not able to be generated during the pilot program to accurately quantify any efficiency changes associated with the RROP. Pilot program results indicated a notable shift in resource expenditure, with more time required for inspection preparation, and less time required for inspection documentation. Overall program resources, including inspection, assessment, enforcement, inspection preparation and documentation time, were about the same, and in some cases slightly more than those required to implement the current oversight process. However, several startup costs associated with the pilot program influenced these results, including the increased effort to prepare for, conduct, and document an inspection for the first time. More substantial data are required before a more accurate evaluation of resource requirements can be accomplished. The staff intends to address the resource implications of the RROP more fully in its report to the Commission on the first year of initial implementation, currently planned for June 2001.

Based on industry and agency feedback, the regulatory burden associated with the RROP appears appropriate. More licensee resources are required to support the data collection and reporting associated with PIs. However, this increase in burden has been more than offset by the changes to the inspection, assessment, and enforcement processes, which have allowed licensees to focus their resources more efficiently on those issues with the greatest safety significance.

As described in Attachment 2, the PPEP concluded that the RROP framework provides a more objective, clear, and risk-informed approach to the oversight of nuclear reactors. The PPEP recommended that the agency proceed to industry-wide initial implementation of the RROP. The PPEP identified several areas that need refinement before industry-wide initial implementation, which have been addressed in this Commission paper.

With some exceptions as noted earlier, the procedures and guidance documents required to support the RROP have been exercised sufficiently during the pilot program to support their use at all power plants. Pilot program lessons learned have been incorporated into the oversight process procedures as appropriate, and these procedures are expected to be issued in time to support initial implementation. Staff training and public workshops will also be completed to support implementation of the RROP. To support initial implementation, the following issues must be resolved by the staff:

Performance Indicators

- Reassess the guidance, definitions, and thresholds for several PIs based on the January 2000 historical data submittal, including the Security Equipment Performance Index, Safety System Unavailability, Scrams with a Loss of Normal Heat Removal, and the Occupational Exposure Control Effectiveness PIs.

- Develop and implement a more formal process for resolving PI interpretation issues.

- Develop definitions and guidance for what constitutes an invalid PI.

- Clearly define the use and meaning of the barrier integrity PIs

Inspection Program

- Develop the process for addressing and responding to those instances when the NRC has lost confidence in a licensee's ability to report PI data accurately and completely.

- Develop appropriate inspection guidance to compensate for the deletion of the Containment Leakage PI.

- Develop the Temporary Instruction to perform an inspection of the licensee processes for collecting and reporting PI data.

- Develop the guidance to allow the documentation of inspector observations of programmatic deficiencies and cross-cutting issues that have been placed in an appropriate safety context.

SDP

- Complete the initial development of the shutdown and external events SDP screening tools and the containment SDP.

- Improve the consistency of SDP entry conditions for inspection findings.

- Improve the guidance for conducting phase 3 analysis.

- Clarify the guidance to ensure that all SDP results have a similar level of importance for the same color.

- Determine how significant inspection findings pertaining to issues beyond the licensing and design basis of a plant are treated in the RROP.

Enforcement

- Resolve how the requirements of 10 CFR 50.9 will be applied to inaccurate PI data reported by a licensee and how enforcement will be applied.

Assessment

- Refine the process for those rare instances when a deviation from the Action Matrix is warranted, including clarifying the actions specified in the Action Matrix.

- Establish a working group to gather insights and propose refinement on how to treat cross-cutting issues.

Information Management Systems

- Trial run the protocol that will that will be used for quarterly PI submittals to identify and resolve problems.

- Make the new RITS activity codes required to support the new oversight processes available and verify their proper use.

Transition Plan

- Develop the change management strategies, methods for program oversight, and evaluation criteria necessary to support initial implementation and the program self-assessment.

Pending the successful completion of these issues, the staff concludes that the RROP is ready for the proposed initial implementation on April 2, 2000, for all commercial operating power plants (except for D. C. Cook as discussed earlier).

Significant stakeholder feedback will need to continue throughout the initial implementation of the RROP at all power plants to capture additional lessons learned and insights on the implementation of the new processes. Additionally, program self-assessments will continue during the first year of initial implementation to gather the additional information necessary to appropriately refine the oversight process.

RESOURCES

The development of the RROP and the cornerstones of safety framework have resulted in an oversight process that is more focused on safety significant issues, with a better defined and consistent set of inspection requirements. Additional data needs to be obtained during the first year of implementation to determine any resource changes associated with the RROP. Therefore, it would be premature to make any resource reduction decisions at this time beyond those already documented in the fiscal year (FY) 2000 and FY 2001 budgets. The RROP can be implemented at all operating commercial nuclear power reactors, effective April 2000, with

the resources already budgeted for FYs 2000 and 2001. Oversight process resource requirements will be re-evaluated following the first year of initial implementation, and are expected to be reported to the Commission in June 2001.

STAFF RESPONSE TO SECY-99-007A SRM

The SRM for SECY-99-007 and SECY-99-007A, dated June 18, 1999, identified 11 specific issues that the Commission requested the staff to consider along with the RROP pilot program results. These specific issues have been considered by the staff along with the lessons learned from the pilot program in determining oversight process changes or improvements. Some of these issues were discussed in a memorandum from the Executive Director for Operations to the Commission dated August 12, 1999. Many of these issues were incorporated into earlier discussions in this Commission paper on oversight process changes. All of these issues, and how they were addressed by the staff, are discussed in detail in Attachment 14. In particular, the Commission directed the staff to consider the following issues.

1. **The Commission directed the staff to consider ways to ensure that the assessment process is sufficiently robust to address licensee programmatic breakdowns.** Pilot program comments and lessons learned pertaining to how the oversight process should address programmatic breakdowns were discussed with stakeholders at the January 2000 Lessons Learned Public Workshop. This effort resulted in two significantly different viewpoints on how cross-cutting issues and programmatic breakdowns should be addressed. As discussed previously in this Commission paper, the staff is revising the RROP to address both of these viewpoints. The role of programmatic breakdowns and cross-cutting issues in the RROP will be reviewed and evaluated during the first year of implementation, including the establishment of a working group to continue to consider the issue.

2. **The Commission also directed the staff to further define how the system for grading inspection findings and combining individual inspection findings and performance indicators will be applied to develop an overall assessment of a cornerstone.** The new assessment process does not assign an overall rating to the individual cornerstones. Rather, thresholds are established in the Action Matrix that prescribe appropriate NRC actions based on the number of assessment inputs (both PIs and inspection findings) that have crossed thresholds and the type of thresholds crossed. The staff solicited comments and feedback on this approach during the pilot program, with stakeholder input supporting the staff position of not developing an overall assessment of licensee performance. Providing an overall cornerstone assessment would be akin to the previous concept of rating functional areas under the systematic assessment of licensee performance (SALP) process. This would be somewhat contrary to the staff's efforts to make the oversight process more objective and predictable. The revised assessment process does identify when a cornerstone is degraded and dictates the appropriate NRC action. This embodies a performance-based approach to assessment, focusing NRC and licensee attention on those issues associated with degraded performance.

3. **Additionally, the Commission stated that the assessment process should treat all inspection observations reported in a balanced manner, and that positive inspection findings should continue to be recorded in the PIM and weighed in reaching an**

overall inspection indicator for each cornerstone. During the development of the fundamental concepts of the RROP, the staff concluded, and stakeholder feedback affirmed, that positive findings were not necessary to evaluate and communicate the agency's assessment of licensee performance to the industry and public. Further, due to their subjective nature, many commenters noted that any attempt to use positive findings would result in processes that are not more objective, transparent, or predictable than the current oversight processes. During the pilot program, the staff solicited additional stakeholder comment on whether positive findings should have a role in the revised oversight processes. Stakeholder feedback clearly demonstrated that incorporating positive findings into the RROP would result in an oversight process that is less objective than that proposed by the staff. Stakeholders further stated that the establishment of a licensee response band is in fact a positive statement, since any performance issues that fall in this band are of very low safety significance and will be addressed by the licensee without additional NRC interaction above the baseline inspection program. Therefore, the staff continues to recommend that positive inspection findings should not be factored into the RROP and are not necessary to provide a balanced assessment of licensee performance.

4. **The Commission approved the staff's position to continue with the suspension of the SALP process.** Consistent with its plan to transition from the current oversight process to initial implementation of the RROP, the staff recommends termination of the SALP process. Any future changes to the staff's methods for assessing licensee performance will be made within the context of the continued development and implementation of the RROP.

COORDINATION:

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

The Office of the Chief Information Officer has reviewed this Commission paper for information technology and information management implications and has no objections.

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

RECOMMENDATIONS: That the Commission:

1. Approve the initial implementation of the RROP at all operating commercial nuclear power plants (except for the D.C. Cook plant), effective April 2, 2000, as described in the staff's transition plan.

2. Approve the termination of the SALP process.

3. Specifically consider the three issues discussed in this Commission paper in the section titled "Issues of Note."

4. Note:

   a. Unless directed otherwise, the staff will continue with those efforts necessary to support initial implementation (e.g., procedure development and staff training) as outlined in the transition plan.

   b. By March 28, 2000, the staff will notify the Commission of the status of all outstanding RROP development items identified within this paper as needed to support initial implementation.

   c. The proposed plan for initial implementation of the RROP is contingent upon the staff receiving a response from the Commission by March 31, 2000.

   d. The Commission provided direction to the staff in SECY-99-007A SRM dated June 18,1999, to commence implementation of the RROP in April 2000. The staff has expended substantial effort to have all necessary elements of the RROP in place to support this implementation date. Of particular note is the need to develop and issue inspection plans for all reactor plants so that the baseline inspection program can commence in April 2000. Therefore, consistent with Commission direction, the staff intends to issue these inspection plans to all licensees and initiate the new baseline inspection program to support the proposed April 2, 2000 start date.

   e. The staff recommends that the D.C. Cook plant not be included in the initial implementation of the RROP at this time. This is due to the licensee's continued efforts to implement corrective actions to address significant performance concerns and the increased agency focus to monitor and evaluate these licensee efforts. Regulatory oversight of the D.C. Cook plant would continue under the current inspection and assessment processes. The staff will develop a separate plan to transition the D.C. Cook plant to the RROP when licensee corrective actions have been completed to the extent necessary to support the transition to the new oversight process.

/RA by Carl J. Paperiello Acting For/

William D. Travers
Executive Director
for Operations

Attachments: See attached page for list.

Attachments:
1. Communication and Stakeholder Feedback
2. PPEP Final Report
3. Staff Response to the PPEP Final Report
4. Performance Indicators
5. Inspection Program
6. Significance Determination Process
7. Feasibility Review
8. Enforcement Process
9. Assessment Process
10. Information Management Systems
11. Transition Schedule
12. Coordination with Current Oversight Processes
13. Staff Training for Initial Implementation
14. Staff Response to SECY-99-007A SRM

COMMUNICATION AND STAKEHOLDER FEEDBACK

Attachment 1

COMMUNICATION AND STAKEHOLDER FEEDBACK

Introduction

This section contains a summary of internal and external stakeholder comments received in response to the Federal Register Notice, Roundtable Public meetings, on going communication efforts, the revised reactor oversight process (RROP) Web site and an internal stakeholder survey on the results of the pilot program.

Summary

NRC staff made a concerted effort to not only keep various internal and external stakeholders informed of the new process and its progress toward implementation, but to provide frequent and ongoing opportunities for stakeholders to provide feedback. The staff developed a communication plan which included features such as an external Web page, *Federal Register* notices, and forums during which agency, public, industry, and governmental stakeholders had an opportunity to provide feedback on the development and implementation of the new program.

Generally, overall feedback indicates that the RROP is perceived to be an improvement over existing processes in many respects. Stakeholders generally consider that the new program will provide the necessary regulatory assurance that plants will be operated safely and provide the necessary regulatory attention in a clear, predictable, understandable, and objective fashion. Industry and knowledgeable public stakeholders indicated that the new approach, based upon specific measurable performance indicators and inspection processes, was more realistic and scrutable than previous approaches. Many public stakeholders considered potential NRC resource reductions in light of industry deregulation to be a significant concern.

Stakeholders considered that the internal (to NRC) and external communication processes have helped to improve understanding and confidence in the agency. Stakeholders encouraged the agency to maintain this new level of communication outreach. Industry and public stakeholders have shown considerable interest and use of the RROP external Web site. Feedback derived from Public Roundtable meetings, as well as feedback from numerous members of the press and public interest groups, all agree that the Web site provides not only useful background and overview information, but specific data regarding each pilot plants' performance. They also noted that the agency and RROP Web sites could be improved in terms of their ease of navigation and use of technical jargon. Many members of the public expressed appreciation of the agency's attention to the public and the concerned effort to consider stakeholder input during the developmental and pilot stages of this new initiative. The staff considers these efforts to have contributed to public confidence in the agency and its activities and should be continued in some form in the future.

Stakeholders local to the pilot plants were appreciative that the agency held a variety of public meetings at which time the new oversight process was explained and local citizens had an opportunity to gain clarification about the NRC's effort to maintain safety. Various recommendations were made to enhance the agency's local public outreach activities in order to keep citizens informed of the agency's mission and programs. In general, the public indicated that their confidence in the agency's efforts to maintain safety was enhanced as a

result of the Public Roundtable discussion meetings. The staff intends to conduct evening public meetings at each of the power plant sites prior to initial implementation. These meetings will be used to orient local citizens about the RROP, explain why the agency is revising its processes, how the new process will work, and explain the agency's mission and role.

During the pilot program, the staff monitored internal stakeholder perceptions of the new program and conducted an end-of-program survey in order to solicit feedback from regional administrators and staff involved with the pilot program. Feedback from these internal stakeholders indicated that agency personnel are having to deal with a major transition in the way NRC implements various oversight processes, and the resulting impact on how inspectors and technical personnel conduct their activities. As a result, these internal stakeholders dealt with and accepted these changes in a variety of ways. Many accept the new approach to reactor oversight as a needed improvement, while some remain skeptical. Such skepticism is normal during a period of significant transition, and it is recognized that during the initial phase of program implementation staff members will continue to have concerns. Agency management and key program office staff must continue to emphasize open, continuous dialogue among all internal stakeholders, to improve understanding and support ongoing change efforts.

Communication Efforts

Numerous communication activities were conducted during the pilot program to provide information about the new program and solicit input from internal as well as external stakeholders. The staff initiated a communication plan which utilized a variety of communication approaches designed to reach the widest number of stakeholders both within and outside of the agency.

External Communication

At the beginning of the pilot program, the staff conducted public meetings in the vicinity of each pilot plant site. These meetings provided the public, local public interest groups, and the licensees with specific information about the new oversight process. The staff explained why the agency was modifying their approach to oversight and how the agency was attempting to meet its strategic goals. Participants were provided an opportunity to ask questions and provide their insight to the program.

At the conclusion of the pilot program the staff returned to the vicinity of each pilot plant site and again conducted a series of public meetings. These meetings, conducted in a roundtable format, were designed to directly solicit input from members of the public, local community and governmental leaders, and public interest groups. Participants were invited to the roundtable because of their previous involvement in issues in the area or their role as local community leaders and emergency planning coordinators. Prior to attendance, roundtable participants were given information about the new program and a list of questions which would be presented. The roundtables were conducted using a facilitated focus group approach. The public indicated that the new oversight process, based upon specific measurable performance indicators and inspection processes, was more realistic and understandable than previous approaches. They were encouraged by the openness of NRC's outreach efforts. Participants at each roundtable meeting expressed a lack of knowledge and understanding of NRC's mission, role, and activities. They recommended that the agency continue its outreach efforts

to keep the public informed of NRC's activities at local plant sites. Recommendations were made to utilize local organizations and facilities, such as presentations at community groups and publication of activities in local newspapers, as ways to keep the public informed.

The staff conducted bi-weekly public meetings during the developmental stages of the RROP, continuing through and subsequent to the pilot program. These meetings were working sessions between the staff and the Nuclear Energy Institute (NEI), industry representatives, public interest groups, and interested members of the public. The bi-weekly meetings provided an important vehicle for providing openness to the development and implementation of the process and being responsive to public concern. Much information was shared with all participants in an effort to keep the public informed of staff activities.

Staff utilized several *Federal Register* notices (FRNs) to inform the public of agency activities and to solicit public input on the RROP. A summary of the response to the public comment FRN is discussed later in this attachment.

The staff conducted public meeting workshops designed to provide current information about the RROP to a wide audience of industry and public interest group representatives. These meetings were from two to three days in length and ranged in size from 200 to 400 attendees. The staff and industry representatives discussed many different aspects of the RROP, including the significance determination process (SDP), performance indicators, the Action Matrix, and the new risk-informed inspection program. Several meetings were held in the regions as well as in Headquarters to assist the staff in gaining input from industry and specific questions which were of importance to stakeholders.

The staff conducted a Lessons Learned Workshop of the Pilot Program in January 2000, at which time industry, public interest organizations, members of the public, and NRC had an opportunity to share information and lessons learned from the pilot program. Recommendations were made to revise the RROP communication plan for use during the initial implementation phase.

Lessons Learned Workshop participants recommended that the agency consider the identification of items which are not appropriate (and may not be prudent) for public disclosure on the Web site, as well as through other public communication vehicles. Such information relates to classified and sensitive unclassified Safeguards information as defined in 10 CFR 73.21, Official Use Only Information, and a variety of lesser classifications. The group expressed concern that such information, if made public on the Web, could be used by saboteurs, who easily could electronically compile sensitive information.

An RROP Web site was created consisting of two sub-sites specifically designed to communicate the new oversight process to internal and external shareholders. The staff found these Web sites to be used by a large variety of stakeholders. Because of the amount of information the agency is trying to provide, some users have indicated difficulty “navigating” the Web site. In addition, a poll of several members of the national press by the Office of Public Affairs indicated that the agency was, in fact, providing too much information about the new program, hence they sometimes had difficulty digesting all of it. The staff is in the process of modifying the RROP Web site to improve its appearance and usability and to provide information appropriate to stakeholder interest level. This will be an action item in the revised communication plan.

The Office of Public Affairs, in conjunction with the Office of Nuclear Reactor Regulation (NRR), published an overview pamphlet, "New NRC Reactor Inspection and Oversight Program (NUREG-1649)," in February, with a follow-up revision in May 1999. This plain language pamphlet provided a description of the new program. The NUREG was widely distributed at public meetings, industry workshops, to all NRC employees and was published on the NRC Web site. This publication contributed to increasing the confidence the public has in the agency and its activities. The NUREG is currently being revised to include changes in the program which will have been made since the last issuance. An expected publication date for this revision is April 2000. The NUREG will also be reviewed to determine if it should be revised after the first year of implementation.

The staff gave presentations at a variety of workshops and courses sponsored by various nuclear orientated associations and universities. These presentations provided concerned stakeholders and students current information on the RROP and provided the NRC an opportunity to gain special insight from members of the academic community. The staff also made presentations at several international conferences and met with foreign visitors to the NRC.

Internal communications

Internal communication has been an on-going process throughout the developmental stages of the RROP and the pilot program. The staff held a number of regional workshops, at which time regional and Headquarters staff learned of the new program and had an opportunity to provide input directly to program office management. Senior managers from NRR visited each regional office at which time they conducted all-employee sessions to explain the new process and gain regional staff insight.

NRR staff met with employees and mangers in other Headquarters program offices at which time participants were given a briefing on the new program and learned of any potential implications the new program may have on their program activities.

The NR&C all-employee newsletter was utilized to communicate not only the progress of the pilot program, but to explain, using a plain language approach, the new process. This effort consisted of a series of informative articles. The staff will continue utilizing the NR&C newsletter as a vehicle for internal communication.

The staff conducted weekly regional teleconference meetings with division directors, branch chiefs, and their staffs, at which time key regional and headquarter staff were kept informed of current program activities. In addition, these meetings provided an opportunity for regional staff to provide direct input to RROP program task leads.

An Executive Forum was formed consisting of each Deputy Regional Administrator. The Executive Forum conducted several meetings throughout the development and pilot program stages at which time specific management implications were considered. Among the issues discussed by the Executive Forum were the SDP, inspection program procedures, the supplemental inspection program, and cross-cutting issues.

The staff conducted an internal Lessons Learned Workshop in January 2000, at which time key regional and headquarter staff had an opportunity to share information and discuss lessons

learned from the pilot program. This two-day workshop provided the staff an opportunity to prioritize major concerns and to further coordinate ongoing intra-office activities.

Throughout the pilot program the regions conducted a variety of internal activities designed to help the staff better understand the new program and to raise their concerns. These activities consisted of large and small group sessions, identification of key communication leaders, regional Web sites, and other forms of written internal communication.

Key Communication Issues for Implementation

External communication

Public stakeholders expressed appreciation of the agency's attention to the information needs of the public and the concerted effort to consider stakeholder input during the developmental and pilot stages. The staff will continue these outreach activities in a number of ways:

a. The staff intends to conduct evening public meetings at each of the power plant sites during the first nine months of initial implementation. These meetings will orient local citizens with the RROP, explain why the agency is revising its processes, describe how the new process will work, and explain the agency's mission and role. The staff will develop a model presentation format, explaining the revised program, for use by regional staff presenters.

b. On a yearly basis regional staff will conduct public meetings designed to provide local citizens with current plant status under the new oversight program.

c. Additional agency outreach activities will be considered in order to keep members of the public local to plant sites cognizant of NRC's mission, role, and activities. This in no way is to be construed as promoting nuclear energy, it is merely meant to maintain public awareness of who we are, what we do, and how we regulate. Such activities could utilize local organizations and facilities such as presentations at community groups and publication of activities in local newspapers as ways to keep the public informed.

NUREG-1649 (Rev 1) is currently being revised to include changes in the program which have been made since its last issuance in May 1999. An expected publication date for this revision is April 2000. After the first year of implementation the staff will consider incorporating the NUREG as part of the agency's public affairs material with periodic revisions.

The staff will continue to conduct working public meetings on a regular basis in order to provide openness and encourage confidence in oversight activities with interested stakeholders. The staff is planning on conducting these working meetings on a bi-weekly basis, but as the program continues, eventually scheduling them monthly.

The staff is planning to conduct a public "lessons learned" type workshop, currently scheduled to be held in the Spring of 2001, for NRC, NEI, industry, and public stakeholders. This workshop will provide an opportunity for continued dialogue with interested stakeholders and an opportunity for the agency to gain valuable input for any needed revisions as a result of the first year of program implementation.

The external and internal RROP Web sites are being revised to provide for current information and ease of user navigation. Future RROP Web site modification will be accomplished in conjunction with agency-wide Internet coordination activities.

Internal Communication

The RROP communication plan is being revised for use during the initial implementation phase. This plan will integrate both internal and external communication activities.

The staff is in the process of modifying the internal RROP Web site to improve its appearance and usability and to provide information appropriate to stakeholder interest level. Two-way Web links to regional Web sites are being considered to provide easy access by regional staff. The Web site is being consolidated under the purview of NRR to maintain consistency of information and timeliness of data provided.

Concern was expressed that proprietary safeguards information, if made public on the Web, could be used, for example, by saboteurs who easily could electronically compile sensitive information. The staff will develop an approach in meeting this challenge while remaining in compliance with 10 CFR 73.21, Official Use Only Information, and a variety of lesser classifications.

The staff will continue to utilize the all employees newsletter, the NR&C, as a vehicle for internal communication.

Management and key program office staff will continue to emphasize open, continuous dialogue among all internal stakeholders designed to improve understanding and support ongoing change efforts. Senior managers from NRR will continue to visit each regional office at which time they will conduct all-employee sessions to discuss current oversight activities and to gain regional staff insight. The staff is developing a transition plan which includes Headquarters as well as regional activities designed to assist internal stakeholders during the transition to the new program.

Comments from the *Federal Register* Notice

A FRN was issued on July 26, 1999, soliciting public comments regarding the revised reactor oversight process. The original deadline for comments was extended from November 30, 1999, to December 31, 1999. The NRC received 21 public comments in response to the FRN.

The FRN requested public comment on nine specific topics pertinent to the RROP. The comments received in response to the FRN covered a wide spectrum of opinions and points of view. Some of the more significant comments, and staff resolution include:

- Industry stakeholders felt that the 14-day reporting requirement for PIs was to restrictive. The staff changed the reporting requirement to 21-days.

- Both industry and public stakeholders felt that many of the PI definitions and thresholds were unclear and/or inappropriate. The staff has worked with the industry and public to make appropriate revisions to the PIs, their definitions, and the thresholds.

- Industry stakeholders felt that several of the individual SDPs, such as the Safeguards SDP, were too subjective and inconsistent. The staff has worked with the public and industry to improve these SDPs.

- Industry stakeholders were concerned with how unwillful PI reporting errors would be treated by 10 CFR 50.9. The staff has worked closely with the industry and OGC to clarify the enforcement policy for the treatment of PI reporting issues.

The specific comments received, and the staff response, are discussed in more detail in the individual attachments of this paper for each of the new oversight processes. While each comment was not specifically addressed, the comments were appropriately considered in the staff's efforts to make process refinements based on the entire spectrum of stakeholder comments received. Although the State of New Jersey comments are included in the following summary of the FRN comments received, the State's comments are also discussed in more detail later in this attachment. The comments received are summarized below.

Comments were received from the following:

Union Electric Company
TXU Electric
TVA
APS
Consumers Energy
Omaha Public Power District
Wolf Creek
Florida Power Corporation
Commonwealth Edison Corp.
Southern California Edison
Nebraska Public Power District
North Atlantic Energy Service Corp.
SCE&G and Company
Wisconsin Public Service Corp.
Entergy
PECO Nuclear Company
State of New Jersey
Public Citizen
Union of Concerned Scientists
Hopkins and Sutter
Nuclear Energy Institute

1. Does the new oversight process provide adequate assurance that plants are being operated safely?

Industry and non-industry stakeholders generally agreed that the RROP, which uses a combination of performance indicators and NRC inspection, provides adequate assurance that nuclear power plants are operated safety. A State stakeholder, however, indicated that "the new oversight program is a clearer method for focusing on risk-significant areas and potentially provides a more objective way to evaluate nuclear power plant performance, but the overall effectiveness of the program remains uncertain." One public interest group stakeholder

expressed concern that the pilot program did not provide sufficient data to determine whether adequate assurance exists that the plants are being operated safely. This stakeholder indicated that there is no verifiable data nor any NRC action upon which to base a determination of adequacy.

2. Does the new oversight process enhance public confidence by increasing the predictability, consistency, clarity and objectivity of the NRC's oversight process?

Most stakeholders felt that many components of the RROP such as the Action Matrix, and the posting of performance indicators, the plant issues matrix (PIM), and inspection reports on the NRC external Web site enhanced public confidence in the agency and in the new oversight process. Stakeholders indicted that the agency should be consistent in reporting of data on a regular schedule and that proper categorization of information must remain accurate and consistent in order to maintain public confidence in the new process. Reporting of information on the NRC's revised reactor oversight Web site was found to be a positive approach to creating confidence in NRC's activities. A State stakeholder considered the "color system" to be an oversimplification of reporting plant data and may have undesired results with the public. This stakeholder suggested using "real" numbers to report data, not just colors. In addition, the stakeholder expressed that the regulatory burden on licensees might increase as a result of continuous debates between the licensee and the NRC on color-based indicators that are publicly displayed.

3. Does the new oversight process improve the efficiency and effectiveness of the regulatory process focusing agency resources on those issues with the most safety significance?

Stakeholders indicated that the new process should improve efficiency and effectiveness of the regulatory process and focus agency resources on those issues which have the most safety significance. Industry and other stakeholders indicated that the agency should more clearly define and provide guidance relative to determining cross-cutting issues and their documentation.

4. Does the new oversight process reduce unnecessary regulatory burden on licensees?

Industry stakeholders stated that the new process would reduce unnecessary regulatory burden on licensees. However, industry stakeholders cautioned the agency to ensure that additional regulatory burden is not inadvertently introduced whenever new performance indicators or inspection procedures are eventually introduced. Industry stakeholders indicated concern regarding the period of time required for reporting of performance indicator data to the NRC. They indicated a preference for a 21 or 30-day reporting requirement rather than the 14-day requirement. It was pointed out by the industry stakeholders that this would reduce human errors in reporting data which are currently more likely to occur due to the limited time period.

The industry expressed serious concern regarding the submission of accurate performance indicator data to NRC in terms of the applicability of 10 CFR 50.9. Willful incorrect data submission is appropriately handled by existing enforcement policy. However, the industry is concerned with applying this regulation to minor errors associated with the administrative effort in data preparation. They believe 10 CFR 50.9 should be applied differently under such

circumstances as long as the error would not have resulted in a licensee changing color bands. These stakeholders recommended that the NRC consider a minor violation, non-cited violation, or Severity Level IV violation be applied, as appropriate.

In regard to 10 CFR 50.9, one public stakeholder suggested that the NRC should establish some specific measures to protect against unjust enforcement for unintended errors by licensees, particularly during the initial implementation of the oversight program at all sites. This stakeholder felt that the NRC, in determining whether PI data reporting errors were material so as to give rise to a 10 CFR 50.9 violation, should generally only be concerned with unwillful errors that would cause a change from one color band to the next. In this stakeholders opinion, if no change in a color band would have occurred, the error would not be considered material for purposes of 10 CFR 50.9.

5. **The new oversight process does not currently provide an overall assessment of performance of an individual safety cornerstone other than a determination that the cornerstone objectives have or have not been met. However, it does identify regulatory actions to be taken for degraded performance within the safety cornerstones. Is an overall safety cornerstone assessment warranted or appropriate?**

Industry stakeholders did not believe an overall safety cornerstone assessment is warranted or appropriate. They considered the strength of the new process to be that each cornerstone applies to specific risk and safety significant concerns. The assessment of each cornerstone is based on a set of performance indicators and inspection activities which indicates whether the cornerstone objectives are being met. Combining the wide-variety of different indicators into a single overall assessment score or color, would create a meaningless and potentially inappropriate rating. This would lead to relying on possible subjective judgements about the relative importance of different indicators, leading to the false assumption that by fixing one cornerstone the plant would be in a safe condition.

6. **Licensees findings, as well as NRC inspection findings, are candidates for being evaluated by the significance determination process. Does this serve to discourage licensees from having an aggressive problem identification process?**

Industry stakeholders stated that the SDP process would not discourage licensees from having an aggressive problem identification process. They indicated that the new process was based on safety significance and it was in the best interest of licensees to aggressively self-identify problems and correct them before performance degrades and a threshold is crossed. They felt that they have established the necessary corrective action programs to assure that conditions averse to quality would be promptly identified and corrected. The new enforcement policy, which focuses on identifying and resolving safety issues, would encourage licensees to aggressively identify problems and fix them in a timely manner.

Stakeholders considered the SDP process to be safety focused and risk informed. When plant specific information is available, this process should provide even more meaningful information.

Stakeholder comments related to the SDP process were generally favorable. Industry stakeholders indicated that the SDP process provided for a more scrutable analysis of

inspection findings. Several suggestions were made related to the security SDP in terms of providing a quantitative review and need for clarification of terms.

7. **In the new oversight program, positive inspection observations are not included in NRC inspection reports and the plant issues matrix (PIM) due to lack of criteria and past inconsistencies and subjectivity in identifying such issues. Previous feedback on this issue indicated that the vast majority of commenters believe positive inspection findings should not be factored into the assessment process. Does the available public information associated with the revised reactor oversight process, including the NRC's Web page which includes information on performance indicators and inspection findings, provide an appropriately balanced view of licensee performance? If not, should positive inspection findings be captured and incorporated into a process to reach an overall inspection indicator for each cornerstone?**

Stakeholders indicated that inspection results should be based on factual information that characterizes the safety significance of findings consistent with the thresholds established by the new program, and that subjective judgement and non-risk significant items should be kept to a minimum. Due to their subjective nature, many commenters noted that any attempt to use positive findings would result in processes that are not more objective, transparent, or predictable than the current oversight processes. Stakeholders further stated that the establishment of a licensee response band is in fact a positive statement, since any performance issues that fall in this band are of very low safety significance and will be addressed by the licensee without additional NRC interaction above the baseline inspection program.

The revised reactor oversight Web site was noted to be useful to stakeholders in gaining a better understanding of recent plant conditions and should be maintained in a timely manner. Stakeholders indicated that the NRC may want to provide more summary information written in plain language so that the public may gain a broad and clearer understanding of plant conditions.

8. **The staff has established several mechanisms such as public meetings held in the vicinity of plants, this Federal Register Notice, and the NRC's Web site to solicit public feedback on the pilot program. Are there any other appropriate means by which the agency could solicit stakeholder feedback, in a structured and consistent manner, on the Pilot Program?**

Stakeholders provided positive comments on the RROP Web site. Suggestions were made to improve the clarity of "colors" utilized so that they can be clearly distinguished and to improve "navigation" on the Web, making it more user friendly. Stakeholders indicated that the NRC agency Web page(s) were not "user friendly" causing difficulty in easily locating and understanding information. Stakeholders agreed that frequently asked questions and other general information should be posted on the revised reactor oversight Web site in a timely manner. It was noted that the revised reactor oversight Web site provided an extremely complete set of information about the new process in an easily retrievable form.

One public stakeholder felt that the NRC's public meetings were "little more than window dressing," that if the agency desires to regain public confidence it should provide accurate information in a timely manner.

Another public stakeholder suggested that a key area for improvement was to ensure "buy-in" with the new process throughout the NRC and ensure scrutable monitoring of inspector performance. This stakeholder suggested that the agency place more emphasis on training of NRC staff and internal communication of the new program. Additionally, the industry should implement training programs for their staff in the new process. This stakeholder noted that the agency should encourage open dialogue and feedback among its staff without fear of recrimination as the program is implemented. Industry stakeholders recommended that the current program office communication plan be revised to more clearly define external audience needs and appropriate messages to be communicated in the agency's outreach efforts.

9. Are there any additional issues that the agency needs to address prior to full implementation of the new oversight process at all sites?

Industry stakeholders indicated some disagreement regarding the appropriateness of some performance indicators. Several questioned if the performance indicators were measuring the correct safety significant areas and questioned if the PIs were clearly defined. However, there was general agreement that PIs would provide useful and important safety significant data which the NRC and licensees could use in maintaining safety.

Industry stakeholders recommended that any additional PIs should not increase regulatory burden and should be directed at safety significant concerns. The agency should utilize the same rigorous process used to adopt the current indicators when revising and/or creating new performance indicators.

Industry stakeholders stated that care should be exercised that the PIs do not unintentionally motivate behavior that is contrary to safety or inconsistent with regulatory requirements. The NRC should be explicit concerning the bases for PIs in their regulations. The opportunity for comment should be afforded to the public and industry for any changes to the PIs to be used and adequate definitions should be provided to ensure that PIs are consistently used by all licensees.

Industry stakeholders expressed concern related to the Action Matrixes division of five categories. They indicated that NRC actions appear reasonable for the cornerstones within the Reactor Safety Strategic Performance Area. However, for the cornerstones of Emergency Preparedness, Occupational Radiation Safety, Public Radiation Safety, and Physical Protection, the PIs and inspection finding color codes may result in Action Matrix responses that are inappropriate when considering the safety significance or impact on public health and safety. Industry comments suggest that the PI and SDP thresholds be reviewed against the Action Matrix to ensure the proposed regulatory response is indeed prudent and commensurate with the actual safety significance of issues. They suggest that where differences are identified, the general response should be to revise the associated SDP.

One stakeholder recommended that the PI colors and corresponding thresholds should be dropped from the program. Although this stakeholder was not opposed to PIs, they indicated that PIs have not been determined to correlate with plant performance or that the colors have

any real significance. They indicated that PIs should be used as important information in the overall plant assessment process, but not as conclusive evidence that a plant has an adequate margin of safety.

Response to State of New Jersey Comments

While most of the responses received by the NRC as a result of the pilot program and RROP public comment FRN were from licensees and industry representatives, the submittal from the State of New Jersey's Department of Environmental Protection deserves particular attention for several reasons. The State of New Jersey was particularly active in monitoring the pilot program activities, including direct observation of a number of inspections. They have also provided significant ongoing feedback, both during the initial development of the new process, as well as throughout the implementation of the process. This included participation in NRC stakeholder meetings as well as in presentations made at a recent State Liaison Officers meeting and the recently conducted external Lessons Learned Workshop. Other external stakeholders, such as the State of Illinois and the Union of Concerned Scientists, participated in the Pilot Program Evaluation Panel (PPEP), and were thus able to raise pertinent issues and concerns through the PPEP process. Therefore, the staff determined that specifically responding to the issues raised by the State of New Jersey was appropriate, instead of incorporating it into the more general discussion noted earlier in this attachment. This response has been discussed with representatives of the State of New Jersey prior to its incorporation into this Commission Paper.

The State of New Jersey's response to the FRN, dated December 31, 1999, consisted of a forwarding letter which provided a broader set of issues, as well as an attachment with more detailed questions or concerns about various elements of the program. The discussion below focuses on the broader issues raised in the State's cover letter. The more specific issues about program elements have been considered within the various attachments dealing with the related topic areas.

I. Use of Color-based Indicators of Performance

Summary of State's Issues: The State of New Jersey's concerns in this area enveloped a number of aspects regarding the use of color bands within the new oversight process. These included that the color system oversimplifies the process, public perception of the color system may not increase confidence, continuous debate on color-based indicators may increase regulatory burden, and a system that has the lowest color barrier (green) rarely being exceeded could further erode confidence.

Staff Response: The concept of the color bands was an attempt by the staff to provide a more understandable and accessible characterization of plant performance by avoiding actual numerical risk values and other complexities in assigning a risk characterization to performance issues. It was also intended to support a regulatory framework that recognizes the appropriateness of "bands of performance" with a recognized level of NRC interaction for an identified level of performance. These were key elements in attempting to make the oversight process more objective, predictable and understandable. Feedback that has been received from many stakeholders, both internal and external, indicates that the new oversight process has made great strides in this regard. While the color bands may be a simplified

characterization of performance, they serve to more closely link pertinent performance issues to the performance characterization represented by the color.

Clearly the potential for debate over issues that would cause thresholds to be crossed is a legitimate issue, as an early lesson learned is that licensees provide heightened attention on issues that would possibly cause a performance threshold to be crossed. Due to some of the extensive debate over risk related aspects of inspection findings during the pilot program, the NRC is currently developing a more streamlined process for finalizing risk characterizations of inspection findings. Also, with respect to the presumption that green thresholds will be rarely crossed, it should be noted that the staff is revisiting many of the PI thresholds as a result of the recently submitted historical PI data from all licensees to assure that on a going-forward basis, the thresholds at the green/white level are appropriately set to meet the intent of most of the PIs, which is identifying deviation from nominal industry performance. Finally, several of the PIs that are relatively new (e.g., Safeguards and Emergency Preparedness) will need to be further evaluated during the first year of implementation to determine appropriateness of the thresholds.

II. Performance Indicators

Summary of State's Issues: The State recommends eliminating the PI color bands and thresholds. Since they have not yet been determined to correlate to plant performance, they should not be used to provide conclusive evidence that a plant has adequate safety margin. They also raised concerns about the comprehensiveness and appropriateness of the PIs, that licensees are averse to accepting PI indications other than green, the use of risk alone to determine PI thresholds is inappropriate, that it is not clear how the PI information assists in plant performance evaluations, and that PI response bands may result in a decline in a licensee's safety culture as they may focus less attention to detail. Finally, the State raised concerns about the volunteer nature of the PI reporting process and what will the NRC do about plants that do not volunteer.

Staff Response: Many of the questions and concerns raised by the State were issues associated with the initial framework development as the staff incorporated PIs into its oversight process. Each PI was identified within the framework of the new oversight process to provide indications regarding the performance of key attributes within each of the cornerstone areas. The PIs are intended, *together with the risk-informed baseline inspections*, to provide a broad sample of data to assess licensee performance in risk-significant areas of each cornerstone. They are not intended to provide complete coverage of every aspect of plant design and operation, but to help determine the level of regulatory response appropriate to identified licensee performance in each cornerstone area. By themselves, PIs do not provide conclusive evidence that a plant has adequate safety margin. However, the graded approach used in establishing risk-informed thresholds provides reasonable assurance that safety margins are being maintained and that sufficient time would exist for the NRC and licensees to address noted performance deficiencies before there was an undue risk to public health and safety.

A number of the PIs are directly tied to probabilistic risk assessment data (e.g., scrams, safety system unavailability) and are thus more risk-informed than others where the thresholds are more related to regulatory requirements and professional judgment (e.g., barrier integrity PIs). Therefore, risk information was applied where it was appropriate, but an overriding consideration was to assure that thresholds were set such that additional NRC actions would be

taken and that this action would be graded based on the deviation of the PI from the threshold and the number of PI thresholds that were crossed. This was especially true for setting the green/white threshold for several of the PIs, which were lowered during the development of the RROP below that which PRA data would recommend (e.g., scrams).

The State is correct in its assertion that the pilot program was not long enough to ascertain if the use of a licensee response band would result in a relaxation of a licensee's attention to detail. A basic tenet of the RROP was that given improved overall industry performance over the past 10 years, in part driven by an improved focus by licensees on self-identification of problems and improved performance in resolving identified issues, that a licensee's corrective action program should be relied upon to correct identified issues that do not result in safety performance thresholds being crossed. This issue was also a concern with the NRC staff, and has been reflected in individual feedback as well as the results of the internal survey discussed elsewhere. This issue will only be resolved over time. The process will either prove its premise that problems with a licensee's corrective action program will be evidenced by PI thresholds being crossed or risk-significant inspection findings emerging. Or licensees will find themselves progressing rapidly through the Action Matrix responses and will have multiple or repetitive degraded cornerstones such that a graded response by the licensee and the NRC is ineffective. In light of the concerns in this area, NRR has provided greater opportunity for NRC inspectors to comment on the inspection and assessment processes and the treatment of crosscutting issues, such as problem identification and resolution, while further experience and confidence is gained during initial implementation of the RROP.

The staff also recognizes that the State's concerns about the potential for a licensee to not report PI data may result in "holes" in the process. The staff is currently developing an addition to the inspection program that would compensate for absent or invalid PI information by conducting additional inspection intended to gather the insights that would have been obtained by the PI in question.

III. Inspections

Summary of State's Issues: The State expressed concerns about the depth of the inspection program. This was embodied in three key elements: underestimated inspection hours, clarity and usability of inspection procedures, and inspector experience.

Staff Response: The statement that a meaningful inspection process " . . . should be supported by the inspector's experience, not dependent on their experience . . . " is certainly true. This statement is as much based on the State's experience in executing its own inspection related activities as it is in its observations of the NRC's inspection program. The issue of inspector and regional consistency is an ongoing issue for this agency, and the new baseline inspection program is intended to help make the inspections more consistent in their application and assessment of pertinent findings. Clearly, the more experienced an inspector, the more readily they may be able to identify important issues and better focus their attention on the key aspects of the issue. In the new baseline inspection program, less flexibility is allowed the inspectors in executing the inspection procedure, as all inspection objectives must be accomplished, whereas in the past, the inspection process was much more flexible in allowing inspectors to "follow their nose". This does not mean that inspectors cannot pursue issues with potential risk significance. The program clearly encourages this approach. However, the SDP is provided as a tool with which an inspector, for most issues, can ascertain the potential risk significance of

an issue and if it could not be anything more than a very low safety significant issue, allow the inspector to turn the issue over to the licensee and focus attention elsewhere. It should be noted that there has been ongoing efforts to improve the inspection procedures based on feedback from the inspectors. A major revision effort using region inspectors to assist the program office was conducted in December 1999 on almost all the new baseline inspection procedures.

Given that the inspection framework is integrated with the information gathered from PIs to provide an adequate sampling of all the key attributes of each cornerstone, it is important to assure that the inspection objectives are met. By emphasizing greater planning on the part of inspectors, combined with the more risk-informed nature of the inspection program as well as each individual inspection, the experience factor will hopefully be less of a determiner of the quality of an inspection as it has been in the past. However, the staff believes it is unrealistic to totally eliminate experience as a factor in achieving a meaningful inspection. The staff has ongoing efforts to monitor inspector experience and demographics, and are currently evaluating the inspector skill set in the regions to assure that there is an appropriate collection of skills and abilities to execute the RROP.

With respect to resources, while it was not the intent of the new inspection program to specifically reduce resources, it was a goal to improve its efficiency and effectiveness, in keeping with the agency's overall performance goals. The Commission provided guidance to the staff prior to the pilot program that there should not be a focus on reducing individual inspection resources, but to allow the pilot program to help identify what resources were needed to execute the program. The staff has eliminated any criteria associated with reducing inspection resources, per se, but is attempting to measure the overall resources needed to execute the entire oversight process to ascertain if there is an overall efficiency gain. This should be an expected outcome with the improvements made to the overall oversight process. With respect to individual inspections, it is important to recognize that initial estimates were based on the judgement of a number of subject matter experts. The pilot program experience has indicated that a number of these estimates may have been low, but even more importantly, there is a band of time needed to execute any procedure, based on a number of factors. These include inspector experience and familiarity with the site, the ability of licensees to provide easily retrievable information, the tempo of activity at the site, and the type and complexity of issues that emerge during an inspection. Estimated hours are intended to provide regional management and inspectors guidance in allowing them to schedule inspections and appropriately assign and allocate resources. The staff will continue to refine these estimates as additional experience is gained with the new process. This is a key area for which experience at many more plants is needed to support future resource projections.

IV. Significance Determination Process

Summary of State's Issues: The State's key issues and concerns were with the complexity of the SDP, the validity of underlying assumptions, the loss of objectivity as discussions take place on identified findings, and that while the SDP is an important advancement, it should not replace the overall assessment process.

Staff Response: The State raises many pertinent issues associated with the SDP. Indeed, it is not very accessible to the general public, given its basis (for reactor safety areas) in probabilistic risk concepts and its reliance, as issues of more significance are identified, on the

NRC's and the licensee's specific risk models. The State is also appropriately concerned about the loss of objectivity, which is one of the key features of the SDP, as discussions between the NRC and the licensee take place regarding the risk aspects of any issue. The staff identified this as a lesson learned from its pilot program experience and is developing a better process for finalizing its risk characterizations. Given that enforcement actions are tied to the results of a risk characterization, it is necessary to allow licensees to challenge the NRC's assessment, but this has to be balanced with the need to identify and follow up on risk-significant issues in a timely manner. This process, as noted by the state, needs to be conducted in an appropriate public manner, and the staff believes that the SDP accomplishes this.

One of the key purposes of the SDP is to achieve exactly what the State recommends, namely that the results of the SDP should be part of the ongoing plant performance evaluation and further actions should be determined independently. The SDP is intended to focus agency and licensee attention on those issues of most risk importance. When an issue causes a licensee to cross a threshold within the Action Matrix, the regulatory attention is intended to be a graded approach. For minor, singular issues, NRC follow-up actions would generally be focused on the specific issue which caused the threshold to be crossed. However, as performance were to more generally degrade, resulting in degraded or multiple degraded cornerstones, the NRC's (and the licensee's) attention would be focused more broadly on the collection of issues that led to the performance issues. This concept is embodied in the series of supplemental inspection procedures that describe the NRC's approach as each column of the Action Matrix is entered as a licensee's performance degrades more broadly.

V. Program

Summary of State's Issues: The State raises a number of broad, and in many cases, currently unanswerable issues. These issues relate to the regulatory framework (are all strategic areas addressed?, is there a role for economic indicators?), the impact of future industry trends (deregulation), the tradeoff between getting more experience with the process and being able to change it, the perceived shift in safety consciousness, the tradeoff between more public information and the public's ability to provide judgements, the role of States, and whether there is enough information from the pilot program to justify the planned expansion to all sites. The State also is concerned that the staff is moving forward with implementation at all sites prematurely

Staff Response: The State raises a number of issues that are central to the staff's own concerns about the efficacy of the RROP, much of which really cannot be demonstrated without a broader and longer expansion of the process. This is the difficulty the staff has in making the determination as to what should be the next step in the process of implementing the RROP. While the pilot program was very successful in identifying areas that needed revision and refinement, the staff has clearly recognized it needs additional information to judge some of the key questions - foremost is whether this process will provide adequate assurance that reactor safety is maintained. There is no question that the RROP is a much improved oversight process than what previously existed relative to how risk-informed it is, as well as its objectivity, predictability, and clarity. However, there has been a distinct change in the agency's approach to oversight, giving more responsibility to the licensees for handling identified issues that are of very low significance. This is intended to allow the NRC to focus its attention on issues that are more important and thus better related to its mission of protecting public health and safety.

Clearly, close monitoring of the impact of this new process will be required. In that regard, the staff will continue to utilize many of its established processes outside the oversight process to evaluate overall industry performance (e.g., Accident Sequence Precursor Program, industry performance indicators) and is developing an integrated industry assessment process that is intended to ascertain the overall industry performance to help the NRC determine if adjustments in the oversight process are needed. Also, the staff, in recognition of the still dynamic nature of the process, will conduct a thorough self-assessment and report to the Commission on lessons learned after it implements the process at all sites for a year. Moving forward with implementation at all sites is a part of the natural progression of the process. The staff notes that the next phase of implementation is not "full" implementation, but "initial" implementation. That is a conscious recognition by the staff that further lessons will be learned and that the potential for change still exists. A number of the concerns about the program raised by the State will be more fully evaluated after broader execution of the program, such as concerns about public response to greater availability of information and the role of the States. However, the staff believes that it has obtained sufficient information from the pilot program that gives it confidence that the regulatory framework and associated RROP provide an improved methodology to assess nuclear power plant performance while addressing the criticisms of the previous process. The development of the RROP has also resulted in a process that better meets the agency's four major performance goals and the specific direction of the Commission to establish an oversight process that was more risk-informed, objective, understandable, and predictable. Although further improvements are likely, the staff considers that the process is ready to be implemented at all sites in order to exercise the program more fully to gain additional insights.

Public Comments from the Roundtable Public Meetings

During the initial stages of the pilot program, public meetings were held in the vicinity of each pilot plant site to explain the new program to local citizens. Upon completion of the pilot program, a series of Public Roundtable meetings were held during the months of November 1999 through February 2000 in the vicinity of each pilot plant. These meetings provided an opportunity for local officials, interest groups, and members of the public to provide their views on the new program. Participants at the roundtable meetings were sent individual invitations. Invitations included background and supplementary information regarding the new program along with a list of questions to be discussed. Roundtable meetings were conducted using a facilitated focus group approach. Each roundtable discussion was proceeded with a brief overview explanation of the revised program. Attendance varied at each session ranging from approximately 15 to 30 participants. Meeting participants were asked for their views on the following topics.

1. **Does the new oversight process provide adequate assurance that plants are being operated safely? Does the new oversight process enhance public confidence by increasing the predictability, consistency, clarity and objectivity of the NRC's oversight process?**

Local citizens and community leaders felt that the new oversight process, which uses a combination of performance indicators and NRC inspection, would provide adequate assurance that nuclear power plants were operated safety. However, most individuals indicated little understanding of the "old process" to make an educated judgement. After the agency's brief explanation of the new process and a review of Web site information, most participants

indicated a level of confidence in NRC's program. Reporting of information on the NRC's Web site was found to be an especially significant positive approach to creating confidence in NRC's activities.

At several meetings, a small number of public interest groups questioned the new process and approach to reporting information. They felt that the new approach could potentially lead to less confidence in NRC's ability to provide objectivity, consistency and predictability of plant conditions, due to the type and amount of information presented.

2. Does the new oversight process improve the efficiency, effectiveness, and realism of the regulatory process focusing agency resources on those issues with the most safety significance? Does the new oversight process reduce unnecessary regulatory burden on licensees?

Roundtable participants felt that the new process would improve efficiency and effectiveness of the regulatory process and focus agency resources on those issues that have the most safety significance. Participants expressed confusion as to the meaning of "unnecessary regulatory burden" on licensees, suggesting NRC should not reduce its oversight mission. Once the concept of reducing unnecessary regulatory burden was clarified participants generally expressed increased understanding of and confidence in the NRC's oversight activities. A small group of public stakeholders continued to remain skeptical of the idea of reducing "unnecessary regulatory burden" in the context of decreasing burden so that utilities can operate profitably in a competitive environment.

3. Does the available public information associated with the revised reactor oversight process, including the NRC's Web page which includes information on performance indicators and inspection findings, provide an appropriately balanced view of licensee performance?

Roundtable participants stated that inspection results should be based on factual information that characterizes the safety significance of findings consistent with the thresholds established by the new program and that subjective judgement and non-risk significant items should be kept to a minimum.

The majority of roundtable participants indicated that they had used the revised reactor oversight Web site. They found the Web site to be useful in gaining a better understanding of the new program. However, they indicated that the NRC may want to provide more summary information written in plain language so that the public may gain a broad and clearer understanding of plant conditions. Many roundtable participants indicated they were primarily concerned that the plants were operating safely, that NRC was performing its oversight process well, and that the technical information related to aspects of plant performance may be beyond the understanding of most citizens.

Individuals representing public interest groups expressed positive comments regarding the availability of individual performance indicator data and inspection findings. Some concern was expressed regarding the usability of the performance indicator data, in that participants were seeking a "one color indicator" display that demonstrated that the plant was "in a safe

condition." After the staff explained the concept of performance indicators, the roundtable participants had a better understanding of the new approach to oversight and how the public is informed of plant performance.

At several roundtable meetings, participants indicated dissatisfaction with NRC's decision to close local public document rooms. Although the agency has expanded the potential audience for receiving information by utilizing the Web, many do not have computer access or Internet access, especially those living in small towns or rural areas near power plants.

4. **The staff has established several mechanisms such as public meetings held in the vicinity of plants, this *Federal Register* notice, and the NRC's Web site to solicit public feedback on the pilot program. Are there any other appropriate means by which the agency could solicit stakeholder feedback, in a structured and consistent manner, on the pilot program?**

Roundtable participants provided positive comments regarding the RROP Web site. However, suggestions were made to improve the clarity of "colors" utilized so that they can be clearly distinguished in "black and white" print form.

Suggestions were made regarding improving the public's ability to "navigate" on NRC Web pages. Stakeholders indicated that the NRC Web page(s) were not "user friendly" causing difficulty in easily locating information about NRC activities.

Recommendations were made to include frequently-asked-questions and other general information on the revised reactor oversight Web site in a timely manner. However, it was pointed out that the Web site provided an extremely complete set of information about the new process in an easily retrievable form.

Roundtable participants appreciated that the agency was holding a variety of public meetings on the new oversight process and that local citizens had an opportunity to gain clarification about NRC's efforts to maintain safety and to express their views. At each meeting, participants stated that they had little knowledge of the NRC's mission, role, or activities. They expressed a need and desire to know more about the agency and its mission to protect public health and safety. Various recommendations were made to enhance the agency's local public "outreach" activities designed to keep citizens informed of NRC's mission and programs. These recommendations included presentations at community organization meetings, presentations to local school groups about NRC activities, and additional stories in the local press related to NRC activities. In general, the public indicated their confidence in the agency's efforts to maintain safety was enhanced as a result of the public roundtable discussion meetings, though some expressed frustration with some of the questions as they did not feel they had adequate knowledge or information to make a reasonable judgement.

Internal Stakeholder Survey

An end-of-pilot survey was distributed in November 1999 as an additional effort to collect feedback from the staff involved with the pilot program. This survey consisted of a series of questions designed to solicit feedback on specific program issues, as well as general comments and insights about the process. Ninety-four regional staff members responded to the survey and provided extensive written comments. In addition, NRR staff submitted 8

responses. The survey evaluation focused on regional comments as the regional staff were the primary implementers of the new process. NRR staff comments were generally consistent with regional staff comments. All four regional administrators (RAs) provided feedback as well. Results of the survey were used at the NRC's internal lessons learned review meeting and by the staff in considering modifications to the program. Survey results are summarized below.

Regional and NRR Staff

The survey requested respondents to indicate the degree they agreed or disagreed with the effectiveness of 35 attributes of the new oversight process. The questionnaire divided the attributes into eight areas: overall process, inspection program, performance indicators, effectiveness and efficiency, assessment and enforcement, stakeholder confidence, significance determination process, and training.

a. Overall the staff considered the RROP to be objective and to provide adequate assurance that plants will be operated safely. Some internal stakeholders indicated skepticism, reserving judgement until further program implementation.

b. The staff indicated that PIs provide information in areas which are risk-significant and that the PIs are understandable. They did indicate that some PI definitions need clarification and some thresholds need modification. The staff strongly disagreed that PIs and the new process allow for identification of declining safety performance before significant reductions in safety margins.

c. The staff indicated that the SDP process may not adequately screen risk-significant issues and that the risk-significance of inspection findings may not be correctly characterized using the SDP. However, they stated that these limitations may be better understood as more experience is gained using the SDP. The staff generally considered the SDP process difficult to use during the pilot program, partly due to limited opportunity to gain experience with all parts of the new process.

d. The staff agreed that the baseline inspection program appropriately identified risk-significant issues and considered its scope to be adequate in addressing intended cornerstone attributes. They indicated that the level of effort required for conducting each inspection was not consistent with that in the inspection procedures. Inspectors indicated that more time was need for conducting many procedures, while less time was needed for others. The original time estimates for conducting inspections are being adjusted to incorporate experience from the pilot program.

e. The staff indicated that the new inspection report format inadequately communicated relevant information to the licensee and the public. Suggestions were made to include more information in reports such as inspection observations.

f. Suggestions were made to improve the clarity and ease of use of the new inspection procedures. NRR is currently modifying these procedures in light of comments and recommendations received from regional-based inspectors.

g. The staff felt that relying on the licensee corrective action program would provide for an adequate approach to resolving issues of low safety significance, however they indicated that the NRC should remain vigilant in reviewing uncompleted corrective actions.

h. The staff felt that the Action Matrix provides adequate incentive for licensees to improve safety performance. Compared to the "old process," the staff felt that the threshold actions recommended by the Action Matrix are appropriate for dealing with the significance level of safety issues. Compared to the "old process", the new assessment and enforcement approach was felt to be more efficient, effective, and timely.

i. The staff complimented the training received in the new process indicating that it was helpful in explaining the process to industry and public stakeholders.

j. The staff considered the revised reactor oversight Web site information to provide adequate information.

k. The staff agreed that the new process improved the efficiency and effectiveness of the regulatory process by focusing agency resources on those issues with the most safety significance. They indicated that the new processes can reduce regulatory burden, although insufficient experience was gained during the pilot program to reach a conclusion.

Regional Administrators

As part of the regional survey efforts, specific feedback was requested of the RAs regarding their insights as to how the RROP met the agency's four major performance goals. Generally they considered the new process to be heading in the right direction in terms of meeting agency goals. They felt that the new program was considered a significant improvement and a needed change for the NRC. There was consensus that the new process (coupled with the revised enforcement policy) reduced unnecessary burden on licensees and increased the efficiency of NRC processes. The RROP was found to be based on a sound and more objective regulatory framework. Regional administrators pointed out that it will take an additional period of monitoring and experience with the new process in order to make final judgements about the need for any modifications in specific areas. Some of those areas include the scope of the inspection report documentation, cross-cutting issues, the significance determination process, inspection planning and resource requirements.

A key area of concern to RAs was the identification of corrective action program weakness through assessment of cross-cutting issues and events. They pointed out that inspectors must be very careful to avoid overlooking a pattern of problems which, individually, do not raise to a high level of risk (associated with the SDP) but which collectively may reveal important weaknesses in licensee programs. The RAs indicated that Headquarters and regional management should continue to assess the role of senior reactor analysts and the resource implications affected by the new program. They felt that regional and Headquarters resource implications must be carefully considered during the initial implementation phase in order to

adjust resource requirements to the most realistic levels. Finally, RAs considered that an additional period of monitoring and experience with the new process is necessary to make final judgements about outcomes with respect to safety performance and public confidence.

Regional administrators considered communication with key stakeholders, both internally and externally, to have been well received. They were particularly pleased with the participation of regional staff on various program office task groups during the developmental stages of the new program. This brought about not only a regional perspective and realism to the new processes, but provided regional staff an opportunity to better understand and coordinate with the NRR and between regions. It was felt that utilizing a combination of Headquarters and regional input during the developmental and pilot program stages produced a final program that would be more accepted by their own staff and lead to more effective implementation. Regional administrators felt that various internal change management issues (e.g., communication, training, coordination, human resource concerns, etc.) remain a challenge as the agency moves toward acceptance and implementation of the revised program. The staff is considering these in its revised communication and transition plan (noted earlier in this attachment). The staff will continue to monitor feedback from those involved in the reactor oversight program and is considering conducting a follow-up survey.

PPEP FINAL REPORT

Attachment 2

MEMORANDUM TO: Samuel J. Collins, Director
Office of Nuclear Reactor Regulation

FROM: Frank P. Gillespie, Deputy Director
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

SUBJECT: FINAL REPORT OF THE PILOT PROGRAM EVALUATION PANEL

The Pilot Program Evaluation Panel (PPEP) has completed its evaluation of the results of the NRC=s revised reactor oversight process pilot program effort. The panel=s final report is attached.

In its report, the panel provides an overall conclusion that the program should proceed to initial implementation. The panel recommends that the staff should consider taking certain actions prior to initial implementation, and consider other actions based on the experience gained during the first year of implementation. I have listed below, for your information, examples of actions that the panel has cited in the report.

Prior to Initial Implementation

- Develop processes for handling inaccuracies in performance indicator data reported by the industry. Focus on how 10 CFR 50.9 should be used with respect to industry's reports of performance indicators.

- Develop SDP processes for remaining reactor issues. Define clearly the process for interaction between the NRC and the industry including the use of PRAs on Phase 3 of the SDP process. Ensure thresholds selected for different SDP's and Indicators are consistent in safety impact.

- For rare circumstances where deviations from the actions specified in the agency action matrix are warranted, the procedures should be clearly and formally documented and process made available for public inspection.

- Improve the process for providing data to the public within the required time.

- Update the plain language summary document.

After Initial Implementation

- Conduct required verification inspections early for the performance indicator data provided by non-pilot plants.

- Resolve the outstanding issues surrounding emergency preparedness response training and drill participation, security equipment performance, containment integrity, and siren notification systems.

- Ensure that the program effectiveness is not measured solely based on the increase or decrease of resource utilization.

- Significant events should be evaluated from a program perspective as related to the effectiveness of performance indicators and risk informed baseline inspection results.

- Update the program basis document and make it publicly available as soon as possible.

- Set up a process for ongoing confirmation of assumptions underlying the process.

The panel consisted of members with diverse interests. The report reflects those major points where a consensus was achievable. Some minority views were necessary to achieve a consensus on the overall recommendation. The exchange of individual perspectives by panel members brought out a number of strongly held divergent opinions. This difference in views was particularly strong in lengthy discussion of how cross-cutting issues should be addressed. While agreement was achieved on many conclusions and recommendations, the individual basis for the members reaching consensus was many times different. This makes this report difficult to follow in that it lacks a match up between a conclusion followed by a technical basis. In order to capture these opinions and the rationale behind them, the individual member inputs have been forwarded to the staff to be considered as input from the public comment process ending December 31, 1999.

As per the work scope described in the PPEP Charter presented to the Congress, the panel=s work is complete.

Attachment: As stated

cc: James T. Wiggins
Bruce Mallett
Geoffrey E. Grant
Kenneth E. Brockman
James Lieberman
Steve Floyd
David Garchow
Masoud Bajestani
George Barnes
James Chase
Gary Wright
David Lochbaum

FINAL REPORT OF THE PILOT PROGRAM EVALUATION PANEL

In SECY-99-007, "Recommendations for Reactor Oversight Process Improvements," and SECY-99-007A, "Recommendations for Reactor Oversight Process Improvements (Follow-up to SECY-99-007)," the NRC staff proposed a new risk informed regulatory oversight process for commercial nuclear power plant licensees. In SECY-99-007A, the staff also described a pilot effort for testing the new oversight at selected commercial nuclear power plants, and stated that it would establish a Pilot Program Evaluation Panel (PPEP) to independently evaluate the pilot program results, and advise on the success of the pilot effort and lessons learned. The Director, Office of Nuclear Reactor Regulation established PPEP by charter under the rules of the Federal Advisory Committees Act (FACA). A charter governing the PPEP functions under FACA was filed with Congress on June 30, 1999. The PPEP has completed its review of the criteria for evaluating the pilot program results. This report provides the panel's conclusions and recommendations. The report is prepared as an independent advisory committee's advice to the Director, Office of Nuclear Reactor Regulation.

Mr. Frank Gillespie, PPEP Chairman,
Nuclear Regulatory Commission

Mr. Masoud Bajestani, Tennessee Valley Authority

Mr. George Barnes, Commonwealth Edison Company

Mr. Kenneth Brockman, Nuclear Regulatory Commission

Mr. James Chase, Omaha Public Power District

Mr. Stephen Floyd, Nuclear Energy Institute

Mr. David Garchow, PSEG Nuclear

Mr. Geoffrey Grant, Nuclear Regulatory Commission

Mr. James Lieberman, Nuclear Regulatory Commission

Mr. David Lochbaum, Union of Concerned Scientists

Mr. Bruce Mallett, Nuclear Regulatory Commission

Mr. James Wiggins, Nuclear Regulatory Commission

Mr. Gary Wright, Illinois Department of Nuclear Safety

Mr. Mohan Thadani, Designated Federal Official,
Nuclear Regulatory Commission

FINAL REPORT OF THE PILOT PROGRAM EVALUATION PANEL

INTRODUCTION

In SECY-99-007 the NRC staff outlined a detailed framework of a new regulatory oversight process.

The objectives of the new process are to:

- Improve the objectivity of the oversight so subjective decisions and judgments are not central features.

- Improve the scrutability of the oversight so NRC actions have a clear tie to licensee performance.

- Risk-inform the oversight process to focus NRC and licensee resources on performance having the greatest impact on plant safety.

The NRC tested the new program at nine pilot nuclear sites. To evaluate whether the NRC can effectively carry out the new oversight program, the NRC staff developed 19 evaluation criteria. The NRC staff applied the criteria to the results of the pilot program to find out whether the new oversight meets the overall objectives of the pilot program. Specifically, the NRC will determine from the industry-wide implementation whether the new oversight process:

· Maintains the current level of safety and public protection related to the operation of nuclear power plants.

· Improves public confidence by increasing predictability, consistency, transparency, and objectivity of the oversight.

· Improves the efficiency and effectiveness of regulatory oversight by focusing agency and licensee efforts on those issues with the most safety significance.

· Reduces unnecessary regulatory burden, as the oversight program becomes more efficient and effective.

The staff set the criteria up with thresholds to help decide if the new regulatory oversight and procedures are fundamentally sound and the NRC and the industry should proceed to industry-wide implementation. Failure to meet a criterion shows a potential problem that needs to be addressed before industry-wide implementation. The NRC will decide the overall success of the program from the cumulative assessment of the pilot and evaluation of the results of the first year of the initial industry-wide implementation.

The NRC established the Pilot Program Evaluation Panel (PPEP) as an advisory committee under the Federal Advisory Committees Act (FACA). The NRC chartered the PPEP to evaluate the pilot program results against the staff evaluation criteria. The charter asked that the PPEP to review and report on each of the evaluation criteria and recommend refinements which are needed to effectively meet program expectation. For those criteria that measure the

effectiveness of the oversight program, but do not have quantifiable performance measures, the PPEP depended on its member's expertise to review the results of the pilot effort and evaluate how well the pilot effort meets underlying objectives. The PPEP worked as a management level cross-disciplinary oversight group of experts to evaluate whether the new regulatory oversight can be successfully and effectively carried out and how the pilot program compares in its execution to its overall objectives.

The NRC selected the members of the PPEP to represent the views of diverse groups that had an expressed interest in the changes to the reactor oversight program. The members included NRC and industry managers directly involved in the development and pilot testing, a knowledgeable state representative, and a public interest group.

The PPEP met periodically during the implementation of the pilot program to review the criteria and program status. All meetings were open to the public with all meeting material being placed in the NRC public document room (PDR). Additionally, the transcripts, proceedings or reports of the meetings were placed on NRC Web page.

Additional views were sought by the panel to supplement the members' personal insights from representatives of nine states, Public Citizen, and a representative of non-pilot plant licensees. NRC obtained written views of selected journalists. The NRC and NEI staffs directly involved in the program development provided the status of the pilot effort and responded to questions and comments.

The report provides the consensus views of the members. Where minority views remained, this report documents them. The conclusions and recommendations documented by the panel highlight issues for the NRC staff to consider. The PPEP may supplement this report in a subsequent letter to the Staff for its consideration after the NRC workshop in January 2000. This would be based on information obtained which would significantly affect the report's overall conclusions.

The overall conclusion of the panel is that the framework provides a more objective, clear, and risk-informed approach to the oversight of nuclear reactors. The program should proceed to industry-wide implementation. The panel has identified several areas that need refinement before industry-wide implementation. In addition, industry-wide implementation will be needed to gather data to judge the effectiveness of the program and to allow for further improvements.

PILOT PROGRAM EVALUATION PANEL COMMENTS AND CONCERNS

The following section provides the consensus conclusions and recommendations of the PPEP with respect to the pilot program evaluation criteria. Minority views, where they exist, are indicated. Working comments from every panelist are available in the PDR.

Performance Indicators (PIs) and PI Reporting

The performance indicators are monitored to provide information regarding certain licensee performance. To be meaningful, the PIs have to be readily available, be accurate, and be submitted to the NRC in a timely manner. Two criteria were utilized as a measure of the efficiency and effectiveness of PI reporting during the pilot program. The criteria and the conclusions from the panel are discussed below:

Criterion 1: Accuracy of Reporting

Can PI data be reported accurately by the industry, in accordance with the reporting guidelines? They can, if, by the end of the pilot program each PI is being reported accurately for at least 8 out of the 9 pilot sites.

Conclusion: This evaluation criterion was not met. In the pilot program there were inaccuracies in the data reported by the pilot plants. Accurate data reporting required additional utility attention and training over that originally anticipated. Errors declined throughout the pilot and only a small number of these errors resulted in crossed thresholds which would have changed the NRC response. Therefore, it is the panel's view that PI data can be reported accurately once there is a clear understanding as to what needs to be reported and appropriate procedures are in place to provide sufficient quality of data.

Recommendations: Because errors may occur in PI data reporting, the inspection or verification of the indicators must remain as an integral part of the baseline inspection program. Additional verification of PI data submitted for non-pilot plants should be performed shortly after industry-wide implementation.

Criterion 2: Timeliness of Reporting

Can PI data results be submitted by the industry in a timely manner? They can, if, by the end of the pilot program all PI data is submitted by each pilot plant within one business day of the due date.

Conclusion: This criterion was met.

Recommendations: While pilot plants have met the timeliness criterion, there should be some relaxation of the time constraints for PI reporting. This would allow licensees more time to assure the quality of the data, which would help address the issues raised under criterion 1 above.

General Recommendations on PIs

- Prior to industry-wide implementation, processes for handling inaccuracies in data reporting must be developed. Particular attention should be focused on how 10 CFR 50.9 should be used with respect to data reporting.

- During the evaluation of the pilot plants, questions were raised regarding the appropriateness and threshold values of some indicators. Examples include emergency preparedness response training and drill participation, security equipment performance, containment integrity, and sirens and notification systems. These issues should be resolved during the first year of industry-wide implementation and included as part of the report requested by the Commission in June 2001.

Baseline Inspection Program

The risk-informed, baseline inspection program utilizes a set of inspections to monitor each licensee's performance. Each individual inspection uses risk information to focus on risk significant activities or systems. The goal is to determine whether licensee performance in each of 7 cornerstones is satisfying the cornerstone objectives. The inspection program also utilizes a review of the licensee's problem identification and resolution program as a precursor of performance problems. Five criteria were used to measure the efficiency and effectiveness of the baseline inspection program during the pilot. The criteria and conclusions from the panel are discussed below:

Criterion 1: Timeliness of Inspection Planning

Can the inspection planning process be performed in a timely manner to support the assessment cycle? It can, if the planning process supports the scheduling of all required inspections for the upcoming period and the issuance of a 6-month inspection look-ahead letter within 4 weeks from the end of an assessment cycle for at least 8 out of the 9 pilot sites.

Conclusion: For the parts of the inspection program tested during the pilot, this criterion was met.

Recommendations: Because there were areas of inspection, including supplemental inspection and inspections for event response, safety significant emergent issues, and allegations, that were not exercised in the pilot, the resource levels required to plan and implement the baseline inspection program must continue to be evaluated during industry-wide implementation.

Criterion 2: Clarity of Inspection Procedures

Are the inspection procedures clearly written so that the inspectors can consistently conduct the inspections as intended? They are, if by the end of the pilot program, resources expended to perform each routinely performed (e.g., monthly) inspection procedure are within 25% of the average for at least 8 out of the 9 pilot sites. Similar data and analysis will be assessed for less

frequently performed procedures (e.g., biennial safety system design inspection). Inspection procedure quality will also be determined by an analysis of the numerical rating factors and a review and evaluation of the comments received on the procedure feedback forms.

Conclusion: This criterion was not met because resource expenditures varied widely and some procedures were not clear. This conclusion should not, however, impede industry-wide implementation.

Recommendations: Continued feedback from inspectors and ongoing modification of procedures will be needed throughout industry-wide implementation to assure that the procedures are clear and appropriately address the cornerstones.

Criterion 3: Reduction of Inspection Resource Requirements

Are less NRC resources required to provide adequate oversight of licensee activities through inspection? They are, if the direct inspection effort expended to perform baseline and regional initiative inspection activities are less than the resources that would have been expended under the current inspection program. Review will be based on a comparison of the pilot program direct inspection resources against the regional average during the pilot and the resources required for the same plant prior to the pilot.

Conclusion: The data is insufficient to indicate that less resources are required to perform the new inspection program. The comparison has too many variables to allow valid conclusions. This should not prevent industry-wide implementation provided the following recommendation is followed.

Recommendations: As industry-wide implementation progresses, it is recommended that program effectiveness not be measured solely based on increases or decreases in resource utilization.

Criterion 4: Timeliness of Inspection Reports and the Plant Issues Matrix (PIM)

Can inspection reports be issued and the plant issues matrix (PIM) updated in a timely manner to support the assessment process? They can if by the end of the pilot, 90% of the pilot plant inspection reports (except those for major team inspections) were issued within 30 days of the end of the inspection period with the PIMs updated within 14 days of the issuance of the inspection reports.

Conclusion: By the end of the pilot program, the data suggested that this criterion is being met. Inspection reports were issued to the licensees in the required timeframe. By the end of the pilot, PIM updates were issued within the 14 day requirement.

Criterion 5: Adequacy of Scope and Frequency of Baseline Inspections

Are the scope and frequencies of the baseline inspection procedures adequate to address their intended cornerstone attributes? They are, based on the evaluation of any specific examples of

risk-significant aspects of licensee performance, which are not adequately covered by the baseline inspection program. These examples will be solicited from the NRC staff, the public, and the industry through the use of inspection procedure feedback forms and surveys.

Majority Conclusion: It is premature to make an overall conclusion relative to this criterion. There were no instances of risk-significant issues being identified at the sites during the pilot that were not addressed by the baseline inspection program. However, the panel does not believe that sufficient data have been collected to confirm some of the assumptions inherent in the program design. For example, the assumption that cross-cutting issues or issues involving the common-mode failures will manifest themselves in PIs or inspection results has not been tested sufficiently. Notwithstanding this concern, nothing observed in the pilot would preclude industry-wide implementation.

Minority Conclusion: First, the baseline inspection program did not explicitly cover topical areas such as motor-operated valves and breakers. Second, the baseline inspection program did not allow GREEN findings to be evaluated for potential cross-cutting implications. Finally, the short duration of the pilot program coupled with the lack of supplemental and event response inspections did not provide opportunities to independently assess the robustness of the baseline inspection program. Notwithstanding these indications, it is concluded that the scope and frequencies of the baseline inspection program procedures are sufficient to permit industry-wide implementation.

Second Minority Comment: In light of the above Minority Conclusion and the Minority Comment on Recommendations under the Assessment, Criterion 2, Appropriate Use of Action Matrix, the baseline inspection program is sufficient provided the override procedure to address cross-cutting issues described under the Minority Comment under Assessment is adopted before industry-wide implementation.

Recommendations: The panel recommends that the staff continue to monitor industry-wide implementation such that when a risk-significant event occurs, the event-specific response requires reevaluation of the PIs and inspection results and ensures that a process for handling cross-cutting or common-mode failure issues exists. The appropriateness of the inspection frequency and scope needs to continue to be assessed during industry-wide implementation, including inspector feedback. In its June 2001 report to the Commission, the staff should provide these evaluations.

Significance Determination Process (SDP)

The significance determination process screens for risk significance. It employs a risk informed approach relating inspection findings to plant risk context through a cause and effect relationship. The SDP uses realistic accident analyses and not the design basis accident analyses. It considers the functional capability and not the Operability as a basis for determining the significance of a finding.

Criterion 1: Timeliness of Categorization of Findings

Can the SDP be used by inspectors and regional management to categorize inspection findings in a timely manner? It can, if the phase 2 evaluations can be completed within 30 days of the phase 1 evaluation, 90% of the phase 3 evaluations can be completed within 90 days of the phase 1 evaluation, and 100% of the phase 3 evaluations can be completed with 120 days of the phase 1 evaluation.

Conclusion: This criterion was not met because Phase 3 evaluations were not completed within 120 days of Phase 1 evaluations. At the beginning of the pilot, the plant specific SDP matrices for the reactor cornerstones were not available and some Phase 2 evaluations were not completed within the time required. Because of the lack of sufficient data, timeliness of SDP evaluations for non-reactor cornerstones could not be assessed. Further, the panel notes that SDPs do not exist for all applications, including those for fire protection and shutdown.

Recommendations: Plant specific mitigation cornerstone SDP matrices must be developed prior to industry-wide implementation. The SDPs for the remaining reactor and non-reactor cornerstones must also be developed prior to industry-wide implementation. The process for interactions between the licensee and the NRC including the use of PRAs on Phase 3 evaluations must be better defined. The staff needs to better align the timeliness of evaluations and safety significance by shortening the 120 day turnaround time on Phase 3 evaluations.

Criterion 2: Accurate Assignment of Significance Rating

Can inspection findings be properly assigned a safety significance rating in accordance with established guidance? They can, if a review of inspection findings by the SDP operational support team, chosen for 95% assurance, demonstrates that at least 95% of the findings were properly categorized by the SDP. This review will also confirm that no risk-significant inspection findings were screened out. Additionally, by the end of the pilot, there should be no instances where the Significance Determination Process and Enforcement Review Panel changes an SDP determination performed by the regions.

Conclusion: This criterion was met.

Recommendations: Along with continued review and assessment of PI thresholds, the thresholds selected for the SDP warrant continued review to confirm that they were correctly chosen. A monitoring program that seeks to confirm the continued validity of the underlying assumptions regarding cross-cutting issues such as human performance is needed for the first year of implementation. The staff should clearly articulate in writing both the approach and the rationale for using core damage probability (CDP) not core damage frequency (CDF) for event response and enforcement, and CDF and not CDP for SDP and enforcement.

General Recommendations on the SDP

- The independent SDP review panel should be maintained during and following industry-wide implementation to continue to reinforce and ensure desired consistency as more inspectors are exposed to the process.

Assessment

In Assessment, the PI data are integrated with the risk informed performance based inspection findings, and the results are characterized to determine the appropriate regulatory response as categorized in the performance assessment matrix. Two criteria were used to measure the efficiency and effectiveness of the new assessment process.

Criterion 1: Timeliness

Can the assessment process be performed within the scheduled time? It can, if for at least 8 out of the 9 pilot plants, a mid-cycle assessment of the PIs and inspection findings can be completed, with a letter forwarding the results and a 6-month inspection look-ahead schedule, within 4 weeks of the end of the assessment cycle.

Conclusion: This criterion was met.

Criterion 2: Appropriate Use of Action Matrix

Can the action matrix be used to take appropriate NRC actions in response to indications of licensee performance? It can, if there is no more than one instance (with a goal of zero) in which the action taken for a pilot plant is different from the range of actions specified by the action matrix.

Conclusion: The criterion was met, however, there was limited experience with exercising the action matrix outside columns 1 and 2.

Recommendations: Prior to industry-wide implementation, there should be clearly specified procedures to cover those rare circumstances where deviations from the specified action in the action matrix are clearly warranted. These procedures should provide a formalized process for the exercise of discretion to either increase or decrease the level of NRC involvement under the agency action matrix. This recommendation provides for a documented process that will be available for public inspection to treat issues that lend themselves to subjective rather than objective treatment.

Minority Comment on Recommendations: The above recommendation addresses the need for a formalized process for the exercise of discretion to both increase and decrease the level of NRC involvement under the agency action matrix. However, this process should specifically allow for the reduction of NRC-licensee interaction for isolated unforeseeable failures (not demonstrating a performance issue) and increase NRC-licensee interaction for substantive cross-cutting failures. This will provide a controlled method to treat cross-cutting issues (i.e.,substantive corrective action failures, safety conscious-work environment issues, and other programmatic human performance issues with potential risk significance that are not being properly treated in a licensee's corrective action program) which would not otherwise be assessed at a white or yellow level. While deviations from the norm should be relatively rare, this recommendation should provide a documented process that will be available for public inspection to treat issues that lend themselves to subjective rather than objective treatment. It will also address the concern that the agency action matrix does not address the situation where the licensee is

outside the presumption of the oversight program that the licensee has an effective corrective action program. Importantly, this recommendation only changes the degree of NRC-licensee interaction not the assigned color code based on risk.

In making this recommendation, it is recognized that it has the potential, if abused, to lead to a return to a subjective process similar to the former Senior Management Meeting process that the new oversight process is intended to avoid. The intent of the recommendation is not to return to the past, but rather to provide a non-routine process to allow an override where the color categorization does not clearly reflect a licensee's performance. It is emphasized that it is expected that the need to use this override should be rare because the fundamental tenet of the revised oversight process is that cross-cutting issues will manifest themselves in departures from expected norms of performance, thereby causing the established threshold for PIs and inspection findings to be exceeded. During the monitoring of the full-industry implementation of the oversight program, the staff will need to continue its efforts to validate this tenet. If this monitoring effort concludes that cross-cutting issues need to be a more structured part of the overall process to meet the process objectives, formal changes to the process should be pursued to incorporate cross-cutting issues as an integral part of the program. The purpose of the recommendation is to provide for an escape mechanism to consider cross-cutting issues , if necessary, before the validation effort is completed.

Therefore notwithstanding the improvements in the oversight program in the areas of objectivity, scrutabilty, and risk considerations, a process for treatment of cross-cutting issues must be addressed prior to full industry implementation.

Minority Comment on Recommendation: A fundamental tenet of the revised reactor oversight process is that cross-cutting issues will manifest themselves in departures from expected norms of performance, thereby causing the established thresholds for PIs and inspection findings to be exceeded. While this tenet should be validated during industry-wide implementation, it is premature and inappropriate to incorporate subjective judgments into the process absent any performance issues. If the validation concludes that cross-cutting issues need to be a more structured part of the overall process to meet process objectives, formal changes to the process should be pursued to incorporate cross-cutting issues as an integral part of the program.

Criterion 3: Consistency of Application Across Regions

Are assessments of licensee performance performed for the pilot plants in a manner that is consistent across the regions and that meets the objectives of the assessment program guidance? They are, as determined by a review and evaluation of the outputs of the assessment process generated by each region.

Conclusion: This criterion was met.

Recommendations: Continued oversight will be needed in industry-wide implementation to ensure ongoing consistency.

General Recommendations on Assessment

- The staff's guidance should be clarified relative to the use of the action matrix when the significance of the inspection findings are under review at the time the assessment is published (mid-cycle or annual).

Enforcement

Criterion: Consistency between Enforcement and Assessment Results

Are enforcement actions taken in a manner consistent with the assessment of inspection findings that result from the SDP? They are, as determined by a review of the Office of Enforcement of the issues evaluated by the SDP operational support team.

Conclusion: Based on the data presented from the pilot, this criterion was met.

Recommendations: As stated in the general PI recommendations, resolution of the issue regarding application of 10 CFR 50.9 is necessary.

Information Management Systems

Three criteria were used to determine whether the NRC information management systems are ready to support industry-wide implementation of the new regulatory oversight process.

Criterion 1: Public Availability of Assessment Data and Results

Are the assessment data and results readily available to the public? They are, if by the end of the pilot program, the NRC information systems support receiving industry data, and if PIs and the current plant issues matrix are publicly available on the Internet within 30 days of the end of the data period (end of month for pilot) for at least 8 out of the 9 sites.

Conclusion: The criterion was not met. Pilot plant reports were readily available to the staff and the industry but have not been available to the public either on the Internet or in the PDR in a timely manner.

Recommendations: Prior to industry-wide implementation, the process for providing data to the public within the required time must be improved.

Criterion 2: Capability of NRC Time Reporting and Budget Systems

Are the time reporting and budget systems, such as the Regulatory Information Tracking System (RITS), ready to support the process changes? They are, if by the end of the pilot program, the new RITS codes are established and the new codes are being used properly.

Conclusion: The panel did not specifically evaluate this criterion. However, staff provided information to the panel indicating that there are no issues that would preclude industry-wide implementation.

Criterion 3: Capability of NRC Information Support Systems

Are the information support systems, such as the Reactor Support System (RPS) and its associated modules, ready to support full implementation of the new oversight processes? They are, as determined by the status of the systems identified as necessary to support the revised reactor oversight process.

Conclusion: The panel did not specifically evaluate this criterion. However, staff provided information to the panel indicating that there are no issues that would preclude industry-wide implementation.

Overall

Criterion 1: Adequacy of PIs and Inspection Findings as Indicators of Licensee Performance

Do the combination of PIs and inspection findings provide an adequate indication of licensee performance? Does the oversight process provide a reasonable assurance that the cornerstone objectives are being met and safe plant operation is maintained? It does, based on a review an evaluation of any specific examples of risk-significant aspects of licensee performance that are not adequately accounted for in the revised reactor oversight process. These examples were solicited from the NRC staff, the public, and the industry through public comment, feedback forms, and stakeholder surveys.

Conclusion: This criterion was met. Although there were issues that arose during the pilot, none of the issues were of such a magnitude to preclude industry-wide implementation, subject to satisfactory resolution of the issues raised in this report.

Recommendations: Ongoing confirmation of the assumptions underlying this program is needed in industry-wide implementation.

Criterion 2: Understandability, Predictability, Consistency, and Objectivity of NRC Actions

Does the new oversight process result in NRC assessments of licensee performance and NRC actions that are more understandable, predictable, consistent, and objective as perceived by both the industry and the general public? They are, if the industry and public have a better understanding of the regulatory oversight process, the assessment of licensee performance, and the reasons for NRC actions taken. Comments were obtained through feedback forms and surveys of the industry and the public.

Conclusion: This criterion was met.

Recommendations: The program basis document should be updated and made available to the public as soon as possible but prior to the June 2001 Commission report. The plain language summary document should be updated prior to industry-wide implementation. In public communications, attention must be focused on explaining the basis for inspection findings and their SDP color assignment. Information must be made publicly available consistent with the timeliness goals stated in the information management systems criteria.

Criterion 3: Efficiency of the Oversight Process

Are the regulatory oversight processes more efficient overall? They are, if by the end of the pilot program, the agency resources required to implement the inspection, assessment, and enforcement programs are projected to be less than currently required. Review was based on a comparison of the resources expended for DIE and non-DIE activities at each pilot plant to the regional average during the pilot, and the same plant for the six-month period prior to the pilot.

Conclusion: The data is insufficient to indicate that less resources are required to perform the new inspection program. The comparison has too many variables to allow valid conclusions. This should not prevent industry-wide implementation based on the following recommendation.

Recommendations: Program efficiency should not be measured based solely on increases or decreases in resource utilization.

Criterion 4: Appropriateness of Licensee Burden

Is the burden on licensees associated with the implementation of the revised reactor oversight process appropriate? It is, based on feedback of how the regulatory burden associated with each of the revised oversight process has changed as compared to the current oversight processes. These comments were solicited from the NRC staff, the public, and the industry through the use of a public comment period, feedback forms, and surveys.

Conclusion: Due to the magnitude of the changes that evolved during the pilot program and the small amount of data, the data is not sufficient to assess the true burden on the licensee. Industry-wide implementation will provide the additional data needed to fully assess this criterion.

STAFF RESPONSE TO THE PPEP FINAL REPORT

Attachment 3

STAFF RESPONSE TO THE PPEP FINAL REPORT

Introduction

In its final report, included as attachment 2 to this Commission paper, the pilot program evaluation panel (PPEP) presented its independent evaluation of the results of the revised reactor oversight process (RROP) pilot program and its recommendation for initial implementation. The overall panel conclusion was that the agency should proceed to initial implementation of the RROP. The panel recommended several actions for the staff to consider prior to initial implementation, and additional actions for consideration based on the experience gained during the first year of implementation.

Most of the PPEP conclusions and recommended actions were consistent with the staff's evaluation of the results of the pilot program. These panel recommendations were factored into the staff evaluation, and are addressed by the process changes described throughout this Commission paper. However, the staff has determined that a few of the PPEP recommended actions and minority conclusions are not necessary to support initial implementation of the RROP. These PPEP recommendations and conclusions, and the staff's basis for not taking action, are discussed below.

Inspection Program

A minority conclusion of the PPEP was that the scope and frequency of the baseline inspection program was sufficient for initial implementation only if an override process was established for the assessment process to increase agency-licensee interaction to address cross-cutting issues.

The staff resolution of this minority panel conclusion is included with the discussion below regarding addressing cross-cutting issues in the assessment process.

Significance Determination Process

The PPEP noted that the significance determination process (SDP) had not been fully developed to support all applications, including fire protection and shutdown. The PPEP recommended that the SDPs for the remaining reactor and non-reactor cornerstones must be developed prior to industry-wide implementation. The PPEP also recommended that all plant-specific Phase 2 reactor safety SDP worksheets be completed prior to industry-wide implementation.

The SDP has been developed for most reactor and non-reactor cornerstone applications. Pilot program lessons learned have identified the need to revise and improve the fire protection, emergency preparedness and safeguards SDPs. Revisions to these SDPs will be completed prior to initial implementation.

As discussed in Attachment 6 to this Commission paper, some portions of the SDP will not be fully developed prior to initial implementation, including external events and shutdown. However, the staff does intend to develop an screening tool for shutdown and external events to help determine issues of risk significance for further review. The process directs that

findings in these areas should then be forwarded to regional and Headquarters risk personnel to perform Phase 2 and Phase 3 type analysis. Based on insights gained during the pilot and the frequency of findings in these areas, the staff has concluded that this will be sufficient to support initial implementation until these portions of the SDP are fully developed.

The information needed to complete the development of the reactor safety SDP Phase 2 worksheets, which provide plant-specific information necessary to characterize risk changes, needs to be collected during a site visit. The staff has planned to visit each plant site to discuss the accuracy of the plant-specific SDP Phase 2 worksheets with the licensee. These site visits, which are currently in progress, will not be completed until after initial implementation begins. The staff believes that initial implementation of the RROP can proceed while the plant-specific reactor safety SDPs are completed. Until the Phase 2 worksheets are finalized for a plant, which takes several weeks following the site visit, the Phase 1 screening tool will be used to identify potentially risk-significant inspection findings for a Phase 3 analysis by a risk analyst. Based on the results of the pilot program, it is expected that only a handful of Phase 3 analyses will be required for those sites without finalized Phase 2 worksheets in place when initial implementation commences.

Assessment

A minority recommendation of the PPEP was that the assessment process should specifically allow an increase in NRC-licensee interaction for substantive cross-cutting failures. This would provide a controlled method to treat cross-cutting issues which would otherwise not be assessed at a white or yellow level. This recommendation would provide a documented process that will be available for public inspection to treat issues that lend themselves to subjective rather than objective treatment. It would also address a concern that the action matrix does not address the situation where the licensee is outside the presumption of the oversight program that the licensee has an effective corrective action program. This PPEP minority recommendation was tied to the PPEP minority conclusion on inspection program scope and frequency, with recommended action prior to initial implementation.

Based on pilot program lessons learned and comments, the staff has made certain revisions to how cross-cutting issues will be handled in the oversight process. The process for documentation of inspection findings was revised to allow the documentation of those observations of programmatic deficiencies (e.g., human performance, problem identification and resolution) that although may not be related to a finding, have been placed in a safety context. Further, the assessment process was revised to allow the discussion of substantial adverse programmatic trends in the mid-cycle and end-of-cycle assessment letters. Although a substantial programmatic adverse trend might be discussed, additional NRC-licensee interaction would not be warranted if a performance indicator or inspection finding had not crossed a threshold. Additionally, prior to initial implementation, the staff will better define the process for deviating from the required actions of the Action Matrix.

However, prior to initial implementation, the staff does not intend to revise the assessment process to allow for increased NRC-licensee interaction, based on substantive cross-cutting failures alone. During the first year of implementation, the staff will continue to evaluate the need to incorporate subjective judgements on cross-cutting issues into the oversight process absent any performance issues.

PERFORMANCE INDICATORS

Attachment 4

PERFORMANCE INDICATORS

Introduction

This attachment provides the results of the staff's evaluation of the data reported for the 19 performance indicators during the pilot program of the revised reactor oversight process (RROP). The data were collected between April and November of 1999. Two years of historical data were reported by licensees in April and monthly reports were submitted from May through November. To determine whether or not the pilot program criteria for performance indicators were met, the staff (1) evaluated the reported data, (2) visited each of the pilot program sites to discuss issues or concerns about the program with both NRC regional staff and licensees, and (3) reviewed the performance indicator verification inspection reports submitted by the regions as part of the pilot program. In addition, the staff, with input from stakeholders and in cooperation with the Nuclear Energy Institute (NEI), identified a number of issues that arose during the pilot program that affected the meaningfulness, accuracy, or consistency of the reported data, or that indicated a need for additional program guidance. Some of these issues were addressed during the pilot program and were incorporated into revisions to the pilot program performance indicator guidance document, NEI 99-02. During the NRC's public Lessons Learned Workshop conducted January 10 through 13, 2000, the remaining issues, and others brought to the workshop by stakeholders, were prioritized to identify those that require resolution prior to initial implementation and those that can be addressed during the first year of implementation. The results of this evaluation follow.

Pilot Criteria Results

There were two criteria established for the pilot program performance indicators. The first is as follows:

> Can Performance Indicator (PI) data submitted by industry be reported accurately, in accordance with reporting guidelines, by the end of the pilot program by 8 out of 9 plants?

The means of collecting information to measure the accuracy of PI reporting were the PI verification inspection and feedback from licensees through the PI reporting process. Approximately 75 percent of the verification inspections were performed during the last two months of the pilot program, for which inspection reports have just recently been issued. In addition, licensees may make corrections to previously submitted data and annotate the reasons in the comment field of their PI report. The results of the verification inspections, along with licensees' comments, were analyzed to provide a reasonable estimate of whether or not this criterion has been satisfied. A preliminary look at the inspection reports and licensee data submissions indicates that this criterion has not been met. This is due to (1) revisions that were made to some PI definitions and calculational methods during the pilot program that required licensees to change their PI reporting, (2) to problems that still exist in some of the PI definitions or calculations, (3) to differences between NRC PI guidance and the comparable WANO guidance, and (4) to licensees learning to report some indicators that are new to them. However, reporting accuracy did improve significantly during the pilot program and the staff expects that improvement to continue as licensees become more experienced with the indicators.

The second criterion is as follows:

Can PI data be submitted by pilot plants within one business day of the due date?

Each of the nine pilot plants reported the PI data within one business day of the due date in each month of the pilot program. This criterion was met. It should be noted that industry believes the 14 day reporting period is too constraining and they would prefer at least a 30 day period of time.

Stakeholder Feedback (NRC/Industry/Public)

Feedback from stakeholders on the performance indicators was plentiful and addressed virtually every aspect of the program. The comments can be generally categorized as follows:

Indicator Definitions

Comments in this category addressed the definitions, calculation methods, and descriptions of the indicators, including the following examples:

- expand reporting of certain indicators to provide greater coverage (e.g., include unavailability in the Alert and Notification System reliability indicator)
- change the indicator to provide more meaningful information (e.g., measure unidentified Reactor Coolant System leakage rather than identified leakage)
- eliminate indicators that are not meaningful (e.g., containment leakage)
- eliminate words that could provide an incentive for a licensee to do something different from what it would have done had the indicator been defined differently (e.g., unplanned power changes)
- identify more clearly what is included in an indicator definition and what is not (e.g., in the scrams with loss of normal heat removal indicator, is a temporary loss of feedwater included?)
- how to interpret PI guidance (e.g., can an event be a safety system functional failure if the licensee event report is submitted under a section of 10 CFR 50.73, other than a(2)(v)?)
- how to calculate indicators to provide the intended measure (e, g., the calculation method used for the vital area security equipment performance index could result in many plants unnecessarily being in the white band)

Indicator Thresholds

There were concerns raised about some of the indicator thresholds, such as in the examples that follow:

- the green-white threshold is set too high to provide adequate warning of declining performance (e.g., barrier indicators are set at a percentage of technical specifications)
- there are no yellow or red thresholds for some indicators (e.g., containment leakage has only a green-white threshold)

Indicator Guidance

During the course of the pilot program, the NRC staff, in cooperation with NEI, identified the need for additional guidance in some key areas, as described below:

- when PI reporting by a plant does not achieve the requisite accuracy, the indicator(s) will be declared invalid and supplemental inspection will be performed; there is a need for a definition of an "invalid" PI
- when a plant is in an extended shutdown, some of the indicators no longer provide meaningful information; there is a need to establish a definition of an "extended shutdown," to identify the indicators that will continue to be useful for plants in extended shutdown, and to develop a process for resuming the use of indicators when a plant returns to power after an extended shutdown
- the pilot program pointed out the need to have a logical and deliberate method for making changes to the PI guidance, whether to modify existing indicators or to add new ones

Process Changes Resulting from Lessons Learned

During the pilot program, a number of issues were identified for potential process improvements. As a result, the following process changes were implemented during the pilot program.

Scrams With Loss of Normal Heat Removal
The guidance was revised to state more clearly the duration for which the normal heat removal path must be available to avoid inclusion in this indicator.

Unplanned Power Changes
One of the pilot plants did not report a power change that should have been included in this indicator due to a misinterpretation of the guidance. The guidance was revised to make this more clear.

Safety System Unavailability
Fault exposure hours (the hours a train was in a failed state but went undetected), when the time of failure is not known, are estimated as one-half the time (t/2) since the last successful operation. When applied to surveillance tests with a periodicity of three months or more, the effect of t/2 can be to turn the indicator white or yellow for up to three years. After some period of time, the white or yellow PI is no longer representative of current performance and can mask additional, smaller periods of unavailability. The guidance was rewritten to allow fault exposure hours due to a single occurrence to be removed in subsequent reports provided certain criteria are met.

Safety System Functional Failures
There were many problems with the reporting of SSFFs during the pilot program. Most of them were caused by misinterpretation of the guidance. The guidance was completely rewritten to be more clear and concise. In addition, there was considerable dialogue between licensees and the NRC staff concerning how to look for and recognize SSFFs.

Reactor Coolant System (RCS) Activity
The guidance was modified to ensure that measurements of activity are taken during steady-state operation. With this change, the indicator will show actual fuel clad degradation rather than activity spikes due to transient reactor temperature and pressure conditions.

Reactor Coolant System Leakage
The guidance was revised to specify that licensees whose Technical Specifications require them to measure total RCS leakage instead of identified leakage should report total leakage for this PI.

Drill/Exercise Performance (DEP) and Emergency Response Organization Participation (ERO)
The DEP and ERO indicators are linked such that only those drills that are counted for DEP can be credited for ERO. This ensures that the organization has 80 percent of its staff trained to perform at a 90 percent level. However, licensees wanted to count participation in training drills for key staff who are not being trained without having to count the performance of those being trained. The guidance was rewritten to allow this if there is a formal evaluation of the individual's performance.

Occupational Radiation Safety
The guidance was rewritten to clarify that this indicator applies to high radiation areas of greater than 1 rem/hour only.

The following process change identified during the pilot program was implemented following completion of the pilot program.

Containment Leakage
The staff eliminated this indicator because: (1) some plants do not record as-found leakage, which is necessary for the PI to be meaningful, (2) data is obtained almost exclusively during refueling outages, therefore the PI does not continuously monitor performance as do the other indicators, and (3) when containment leakage is discovered to be in the white band it must be corrected or the plant must either shut down, if operating, or remain shut down, if not operating.

In addition, in January 2000 the staff convened a public Lessons Learned Workshop to discuss and prioritize issues identified by the staff or by stakeholder feedback, as well as new issues brought to the workshop by participants. The following change discussed at the workshop was recently implemented.

PI Reporting Period
The staff reconsidered the requirement for timely PI data for use in the RROP and for public dissemination and determined that the PI reporting period could be extended to 21 days with no noticeable impact. This reporting period will be reevaluated at the end of the first full year of implementation (4 reporting periods) and retained or modified as necessary.

Issues for Resolution Prior to Initial Implementation
During the Lessons Learned Workshop, open issues were prioritized for short-term resolution or longer-term resolution. Short-term issues are those that require resolution prior to April 2, 2000, to support initial implementation. The following issues were prioritized as short-term issues:

Interpretation Issues
Formal guidance on the process to resolve interpretation issues, designated "frequently asked questions" (FAQs), will be promulgated and the NRC will maintain its FAQ Web site up-to-date. A process to incorporate FAQs into the guidance document, NEI 99-02, will be developed. The

NRC/NEI public meetings will continue approximately every two weeks, or as needed, and the NRC will improve public notification of the agenda for each meeting.

Security Equipment Performance Index Threshold
The NRC will consider the threshold to be under development for purposes of historical data reporting and will reassess the threshold based on the historical data submitted.

Consistency of PI Definitions
The NRC will provide consistent definitions of indicators used by various organizations within the NRC (Maintenance Rule, Office of Research, Regulatory Oversight, Monthly Operating Report) to the extent possible.

Process for Changing, Adding, or Deleting Indicators
The NRC/NEI working group will develop and implement a formal process for collecting proposed modifications to the PI program.

Guidance on When to Declare a PI Invalid
When the NRC loses confidence in a licensee's ability to report an indicator accurately, the NRC will declare that PI invalid and will perform supplemental inspection to cover the attributes of licensee performance that the PI was intended to capture. The staff will develop guidance on what constitutes an invalid PI and will obtain feedback from the NRC/NEI working group.

Definition of Safety System Unavailability
The NRC/NEI working group will resolve identified plant-or vendor-unique configurations to provide consistent reporting, particularly with regard to PWR RHR systems.

Guidance on Unintended Overexposure Occurrences
The NRC/NEI working group will provide guidance on how to establish the intended dose through the FAQ process and in Rev 0 to NEI 99-02.

Guidance on Security-Related Reportable Events
The NRC/NEI working group will revise the guidance to ensure that PI data and thresholds are consistent with the intent of the indicator.

Guidance on Inspection of Data Collection and Reporting Processes
The NRC will issue a Temporary Instruction to inform inspectors of the NRC's inspection approach to review licensee data collection and reporting processes.

Guidance on the Potential for Double Counting Indicators and Inspection Findings
The NRC plans to issue guidance stating that deviations from the action matrix will be allowed for issues that result in crossing both a PI threshold and an inspection finding threshold, if they involve essentially the same issue or appear to have the same cause.

Safety System Unavailability Thresholds
The NRC will use the historical data submitted in January to reassess the thresholds for each of the safety systems monitored.

Guidance for Scrams With Loss of Normal Heat Removal
The NRC/NEI working group will use the FAQ process and Rev 0 to NEI 99-02 to provide new guidance for BWRs concerning when the loss of the main condenser pathway during a reactor cooldown would count in this PI.

Remaining Long-term Issues

Issues that have been prioritized for long-tern resolution will be addressed during the first year of implementation. These issues are described below.

Security Equipment Performance Index Definition
The NRC/NEI working group will evaluate developing an indicator using unplanned unavailability.

Consistency of PI Definitions
The NRC/NEI working group will attempt to resolve definition consistency issues with WANO.

Process for Changing, Adding, or Deleting Indicators
The NRC/NEI working group will assess proposed changes during the first year of implementation. The annual assessment process will be the mechanism for identifying needed changes, and the changes will be implemented the quarter following their adoption by the working group.

Guidance on How to Handle a Plant in an Extended Non-Regulatory Shutdown
When a plant has been shut down for some period of time, some of the indicators, particularly in the Initiating Events and Mitigating Systems cornerstones, no longer provide meaningful information on plant performance, while other indicators may continue to be useful. The staff will identify those indicators which can be used during an extended shutdown, will define the duration of a shutdown that is to be considered an extended shutdown, and will develop a program to resume the use of indicators following startup.

Guidance and Thresholds for RCS Activity and Leakage
The NRC /NEI working group will provide a better description of the bases for these indicators (including the use of identified instead of unidentified RCS leakage) and will reconsider the appropriateness of the green-white thresholds.

Guidance on Security-Related Reportable Events
The NRC/NEI working group will undertake an effort to develop an alternate PI.

Guidance on Unplanned Power Changes
The PI will be evaluated in the first annual oversight program assessment to determine if the PI is influencing licensees activities. There is a perception that this PI could be subject to management by licensees and should be addressed.

Impact of Multi-Unit Sites or Multi-Input Indicators on Site-wide Indicators
The NRC/NEI working group will monitor the site-wide indicators (Emergency Preparedness, Occupational Radiation Safety, and Physical Protection cornerstones) for possible masking of performance at one unit or in one part of a PI. The working group will consider the need for alternate indicators at the first annual oversight assessment.

Guidance for Loss of Key Control/Surveys
The NRC/NEI working group and the FAQ process are adequate to resolve these issues concerning the adequacy of high radiation area key control and radiation surveys.

Guidance on the Relationship of Fault Exposure Hours to Operability and Reportability
The FAQ process will be used to resolve site-specific questions regarding the appropriateness of fault exposure hours for specific events or conditions. The impact of fault exposure hours will be addressed in the first annual oversight program assessment. RES efforts to develop a reliability PI could alleviate this problem.

Guidance on Alert and Notification System Reliability
This PI does not include known (reported to the NRC) periods of unavailability. The NRC will consider additional indicators to address this concern.

Conclusion on Readiness for Initial Implementation

There are several open issues regarding the performance indicators for the RROP. It is not unexpected, particularly for indicators for which there is little or no historical experience (e.g., Physical Protection or Occupational Radiation Safety), that there would be a need to readjust the guidance or the thresholds. Most of the remaining issues will require further collection of data in order for the staff to establish thresholds or confirm the validity of these indicators. Therefore, while there are still unresolved issues with regard to several of the indicators, the staff believes the indicators provide the necessary, pertinent information to implement the RROP. Future adjustments may be needed as more data are collected.

INSPECTION PROGRAM

Attachment 5

Table of Contents

1. INTRODUCTION

This attachment discusses the results of the 6-month pilot program for the risked-informed baseline inspection program and the major lessons learned related to the baseline program from the pilot. It also discusses other parts of the inspection program that were developed or revised during the pilot program. Those parts include the supplemental inspection program, event response, and oversight of plants shut down for performance problems.

Baseline Inspection Program

In order to assess the viability of the baseline inspection program, the staff developed metrics and associated criteria to allow it to measure during the 6-month pilot how well the baseline inspection program met its intended objectives. The metrics were designed to measure aspects of the baseline inspection program such as planning inspections, adequacy and quality of the instructions to the inspectors, timeliness of documenting the inspections to meet the needs of the assessment process, and a comparison of the resources to implement the baseline inspection program to similar activities in the existing inspection program. Each metric and results from the pilot are discussed in section 2, below.

Supplemental Inspection Program

The supplemental element of the inspection program, which was developed during the 6-month pilot, was designed to apply NRC inspection resources in a graded manner when risk significant performance issues are identified, either by inspection findings evaluated using the significance determination process (SDP) or when performance indicator thresholds are exceeded. The scope and breadth of these inspections are based upon the guidance provided in the assessment "Action Matrix" in Inspection Manual Chapter 0305 and expanded upon in the "Supplemental Inspection Selection Table" included in Appendix B to Inspection Manual Chapter 2515.

Depending on the risk significance and breadth of the identified performance issues, the supplemental inspections provide a range of activities including: oversight of the licensee's root cause evaluation of the issues; expansion of the baseline inspection sample or a focused team inspection (as necessary to evaluate extent of condition); or a broad scope multi-disciplined team inspection which would include inspection of multiple cornerstone areas and inspection of cross-cutting issues. Any new issues identified during the supplemental inspections are evaluated by the SDP. The need for additional NRC actions, including additional supplemental inspections, are governed by the assessment Action Matrix.

Because the supplemental inspection program had not yet been developed at the beginning of the pilot in June 1999, specific metrics and criteria for these aspects of the inspection program were not included as part of the pilot. One of the three new supplemental inspection procedures was, however, successfully used during the pilot program.

Event Response

The procedures for NRC's response to events at reactor facilities were revised so that the NRC investigatory response will be based on both deterministic criteria and a risk assessment. The associated procedure in the baseline inspection program will emphasize the resident inspector's

role in supporting the regional risk analyst in expeditiously estimating risk significance. The revised event procedures were not used during the 6-month pilot program but the guidance was subsequently used at two of the pilot plants.

Performance Related Shutdowns

The staff also significantly revised its process for overseeing plants in an extended shutdown for performance problems. The process was risk informed through new criteria that better focus agency attention on those issues affecting safety that contributed to the shutdown. This process also was not used during the pilot program.

The sections that follow discuss the results and analysis of performance metrics used in evaluating the baseline inspection program during the pilot period, significant feedback the staff has received from various stakeholders and the staff's resolution of the feedback, major lessons from the pilot program and how they led to changes in the inspection program, what remaining activities are necessary for the proposed initial implementation in April 2000, and the other processes associated with the inspection program.

2. PILOT CRITERIA RESULTS

The pilot program included several metrics to measure certain aspects of the new baseline inspection program as a part of the reactor oversight processes. The metrics measured inspection planning, the quality of the baseline inspection procedures, whether reporting would be timely for the assessment process, and effort required to implement baseline inspections.

At the beginning of the pilot, the staff realized that not all of the baseline inspection program procedures would be used or used frequently. The procedure for refueling outages was not used because none of the pilot plants had an outage during the 6-month pilot. The performance demonstration portion of the physical protection procedure was not used because the staff had not yet reported to the Commission the results of the one-time operational safeguards response evaluations (OSREs).

a. Baseline Inspection Planning

The baseline inspection program is an annual program, although it includes some inspections that are biennial and triennial. This differs from the current process that establishes an overall plant inspection schedule on a staggered 18- to 24-month schedule. Therefore, the pilot program included a metric to measure if the inspections can be planned and if an inspection schedule can be issued shortly after the mid-cycle and end of cycle assessments.

The planning metric measured how many days after the end of a cycle the inspection schedule was sent to the licensee. The initial criteria, developed before the pilot program, was for the regional offices to conduct the mid-cycle review and issue an inspection plan within 30 days after the end of the assessment cycle. Regional feedback early in the pilot program was that the regional offices could not support the time line of 30 days. The schedule for holding a mid-cycle review was extended to five weeks after the end of the assessment cycle with the mid-cycle letter and inspection plan issued three weeks after the meeting. The regions now have eight weeks instead

of four weeks to complete this process. The times for the end-of-cycle reviews were also similarly extended. All the regional offices met these revised time lines for the pilot plant mid-cycle reviews. See Table 5-1, below.

Based on the metric results, the staff concluded that the baseline inspections could be planned and an inspection schedule issued within eight weeks of the end of the assessment cycle. These process changes were reviewed to ensure that there were no negative impacts on the inspection program or other elements of the revised reactor oversight program. The staff believes that the revised criteria represents a more reasonable time for completing the reviews and inspection planning during implementation at all plants.

Table 5-1, Time to Issue Inspection Schedules

Pilot Plant	Initial Planning		Mid-Cycle Review	
	Letter Issued	No. of Days from End of Cycle	Letter Issued	No. of Days from Mid-Cycle review
Hope Creek	5/27/99	27	1/3/00	21
Salem	5/27/99	27	1/3/00	21
Fitz Patrick	5/27/99	27	1/3/00	21
Harris	5/28/99	28	12/23/99	17
Sequoyah	5/28/99	28	12/21/99	17
Prairie Island	5/13/99	13	12/21/99	20
Quad Cities	5/13/99	13	12/22/99	21
Fort Calhoun	5/27/99	27	12/27/99	20
Cooper	5/27/99	27	12/27/99	20

b. Baseline Inspection Procedures

The staff established several metrics to help determine the quality of the baseline inspection procedures used during the pilot program. The metrics were based on feedback from the inspectors and an evaluation of the level of effort used to implement each of the procedures.

Inspector Feedback

The inspectors involved with the pilot program were asked to fill out a feedback form after each inspection. The forms included several statements, to which the inspectors provided a numerical response, and the inspectors were also encouraged to include written comments.

The quality of the pilot plant inspection procedures was determined by analyzing the numerical rating factors and reviewing and evaluating the comments received on the procedure evaluation forms. The inspectors rated each inspection procedure on a numerical scale of 1 to 5 in which a response of 1 indicated that they strongly disagreed and a response of 5 indicated that they strongly agreed with the statement in the inspection procedure evaluation form. The evaluation forms contained the following statements for inspectors to use to evaluate the baseline inspection procedures at the pilot plants.

- The level of effort required for this inspection was consistent with that in the procedure.
- The procedure met the inspection objectives.
- The inspection requirements were appropriate based on risk.
- The procedure was clear and easy to use.
- The inspection does not result in an unreasonable impact on licensees.

The staff received over 200 responses by the end of November 1999. The staff averaged the numerical responses to each statement as a rating for each inspection procedure. See Figures 3-1 through 3-5, below.

Figure 5-1, Inspector response to question about resource estimates in procedures

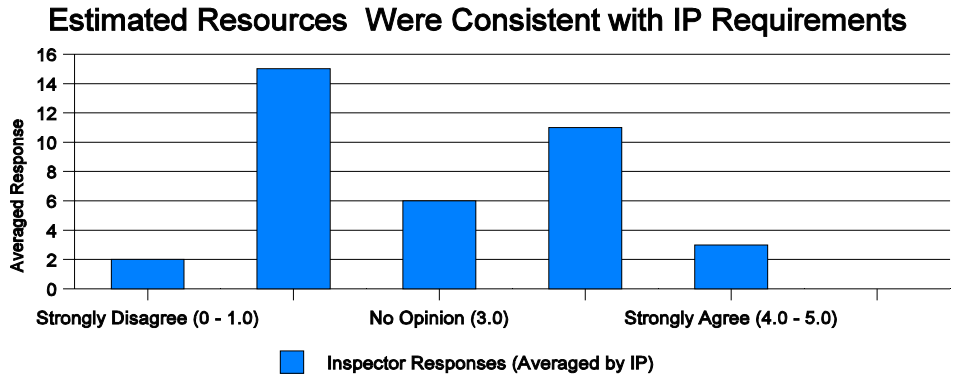


Figure 5-2, Inspector response to question about procedure meeting its objectives

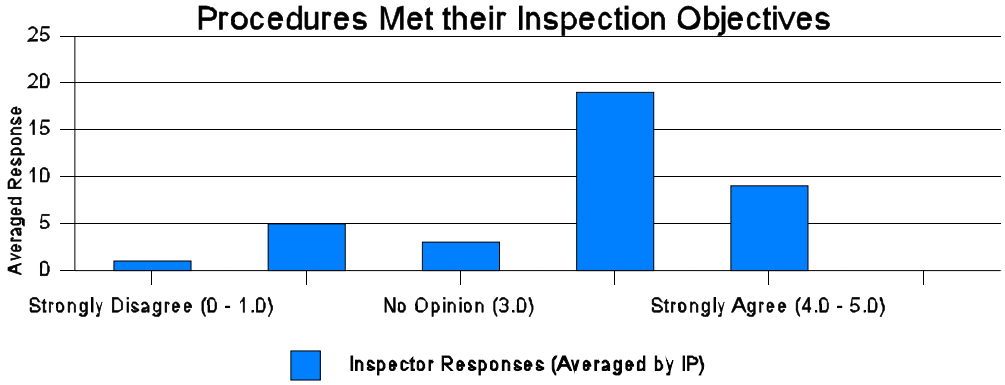


Figure 5-3, Inspector response to question about procedures being risk-informed

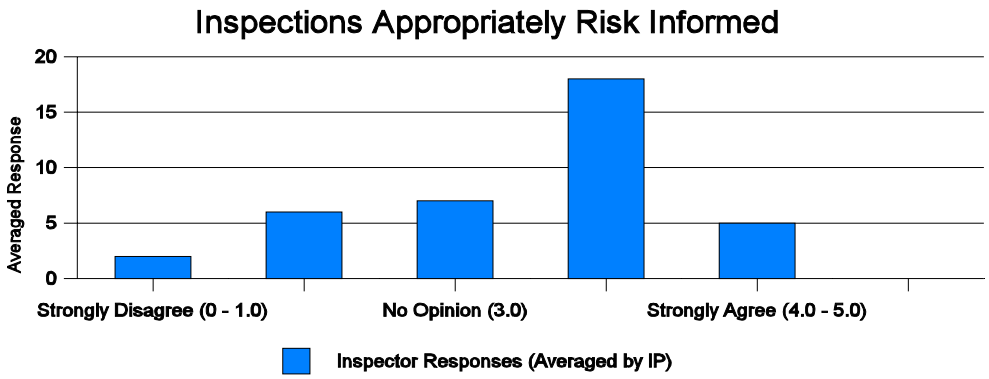


Figure 5-4, Inspector response to question about procedure clarity

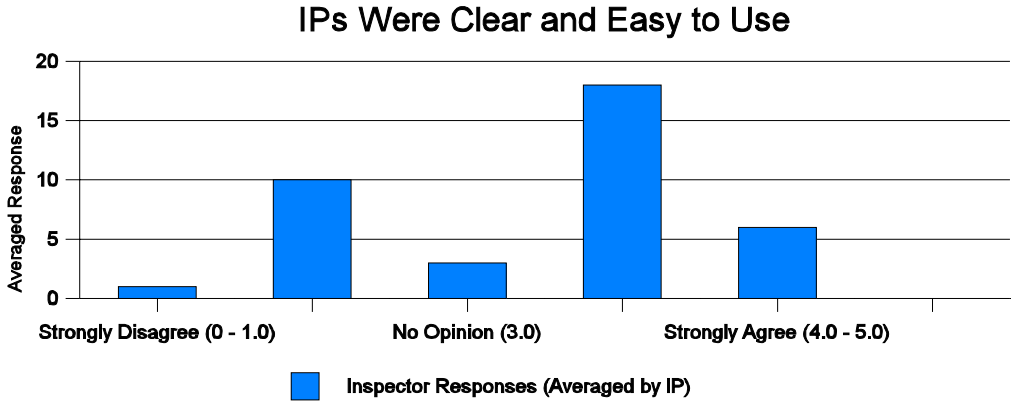
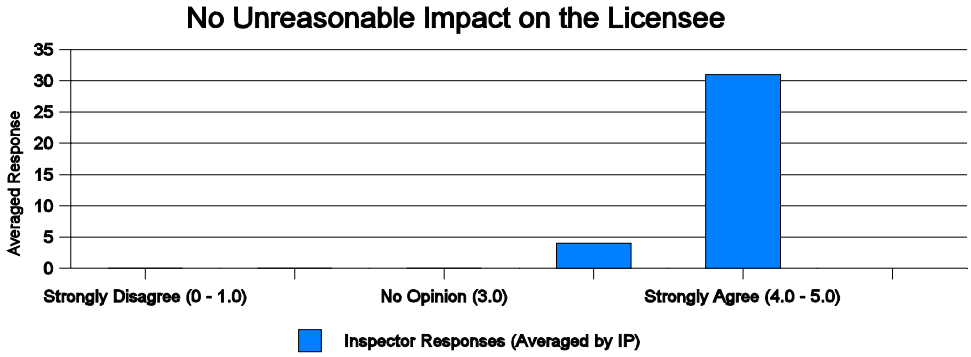


Figure 5-5, Inspector response to impact of procedure on licensees



The inspection procedure was evaluated as having not satisfied the criteria specified in the statement if the calculated average response was equal to or less than three. Based on the averaged responses, the inspectors felt that:

- Only about a third (38 percent) of the pilot plant procedures had sufficient time estimated to complete the inspections as intended.

- Majority (76 percent) of the pilot plant procedures met their inspection objectives.
- Most (61 percent) of the pilot plant procedures were appropriately risk-informed.
- Most (63 percent) of the pilot plant procedures were written clearly and were easy to use.
- All (100 percent) of the pilot plant procedures had reasonable impact on the licensee.

The staff used the above results to make further refinements to the inspection procedures. The staff evaluated all the comments and revised most of the inspection procedures by enlisting the help of inspectors who participated in the pilot program. The staff is currently validating and resolving issues to address the inspectors' feedback that there is inadequate time to complete a number of inspections. To develop a more reliable estimate requires broader implementation of the program in order to collect more comprehensive data.

Comparison of Inspection Effort

The second criteria of procedure quality was intended to measure the consistency of the procedure on the premise that consistent effort would, in part, be attributable to clearly written procedures. Procedure consistency would be demonstrated if the resources required to perform each procedure were within 25 percent of each other.

The staff compared resources by obtaining the hours charged to each procedure at each of the pilot sites. From these data, the staff calculated the deviation from the average number of hours. The data were analyzed for the pilot period (June 1999 through November 1999). The data show that, for essentially all the baseline procedures, there was significant variation in the hours charged at the different pilot sites, and the deviation from the average was much greater than the 25 percent criterion.

However, these results could be due to a number of factors unrelated to procedural quality, such as:

- Not all procedures were performed at each site. The small sample size from the pilot program provided limited data, which heightened the impact of a single large deviation.

- With the information that was readily available, the staff could not establish a correlation between hours charged to a procedure and the extent to which the procedure was completed. In many cases the extent of procedure completion is influenced by the specific activities at the site and availability of inspectable activities. For example, activities for adverse weather preparations may be significantly more extensive at some sites and more hours are expected to be charged at those sites simply because there is more opportunity for inspections. Inspection hours also would increase if a finding were identified.

- In some cases the composition of the procedure itself led to discrepancies in the number of hours charged. A number of procedures consisted of a routine component of small effort that was performed repetitively by the resident

inspectors and a much larger regional component that was performed periodically by the regional inspection staff. As a result, the hours charged to the procedure during any specific time period varied significantly depending on which component was completed.

- In addition to varying sample sizes, some variation in hours may also have resulted from resident inspector scheduling preferences. The hours charged to a procedure during any specific period varied significantly due solely to scheduling preferences or completion status and not because of procedure quality.

- Instances of inaccurate data reporting occurred during the pilot program, which impacted some of the results.

Based on the pilot plant results, the staff concludes that the data currently available are not sufficient for definitive conclusions regarding inspection procedure quality as it relates to consistency, and proposes the following to address the current results:

- Continue to identify any true outliers and clarify guidance or revise the procedures to eliminate inconsistencies and misinterpretations

- Validate the accuracy of reported hours including possible enhancements to the reporting systems to show extent of procedure completion

- Analyze longer term data from the pilot plants and data obtained from the first full year of initial implementation

The staff will continue to gather this type of information for future program evaluation.

c. Scope and Frequency of Baseline Inspections

The staff used feedback from the inspectors, regional managers, and Headquarters staff associated with the pilot program in determining whether the scope of the baseline inspection procedures and how often the inspections were required were appropriate. The staff collected comments from the inspectors throughout the pilot and NRC personnel involved with the pilot program also were surveyed at the end of the program.

The inspectors rated how well the procedures met their intended objectives and if the inspection requirements were appropriately risk informed. The staff's analysis of the numerical ratings (see section 2, above) indicated that the inspectors believed that the majority (76 percent) of the procedures fulfilled their stated objectives and most of the procedures (61 percent) were appropriately risk informed.

The inspectors provided comments on the individual procedures and some of those comments related to the scope of procedures. Most of the inspection procedures were revised after considering the comments from the inspectors. Only two areas were identified as not being addressed by the baseline program with the recommendation that they be added to the program. Those two areas were spent fuel cooling and licensee's programs for motor-operated valves.

Spent Fuel Cooling

The baseline inspection program does not include a separate inspection procedure for spent fuel cooling systems or fuel movement because the baseline inspection program is primarily based on the risk associated with reactor core damage when the reactor fuel is in the reactor vessel. However, the baseline inspection procedure for refueling and outage activities does include spent fuel handling and operation of spent fuel pool cooling systems. The guidance in the procedure includes verifying availability of equipment and procedures for recovery if spent fuel cooling is lost.

None of the pilot plants had a refueling outage scheduled during the 6-month pilot program, so this baseline inspection procedure will be first used after the proposed initial implementation in April 2000. Lessons learned from using the refueling and outage activities inspection procedure and its adequacy in addressing spent fuel cooling systems will be incorporated into the procedure. The need for additional inspections of fuel handling during power operations will also be evaluated during the first year of initial implementation.

Motor-Operated Valves

Concerns with testing motor-operated valves at a pilot plant led to comments on adding this area as a separate inspection into the baseline inspection program. The NRC has been inspecting licensees' programs for assuring proper performance of motor-operated valves through Temporary Instruction 2515/109 since 1989. The latest revision of the temporary instruction includes verifying that licensees are trending valve performance and closing previously identified issues. The baseline inspection program provides opportunities to inspect motor-operated valves through several inspectable areas such as safety system design and performance capability, permanent plant modifications, and surveillance testing. Also, the baseline inspection program places an emphasis on continual assessment of a licensees' corrective action programs, which would include problems found during the implementation of their programs for motor-operated valves. Issues that could contribute to common cause failure of motor-operated valves can be evaluated with the Significance Determination Process by making the appropriate assumptions about affected valves.

A new supplemental inspection procedure for motor-operated valves that is being developed can be used to inspect the specific root causes for valve degradation and implementation of the licensee's motor-operated valve program. The procedure would be used if, through the baseline inspection program or as a result of degraded performance indicators, significant findings are identified regarding the functionality of motor-operated valves.

Adding additional inspection areas, such as motor-operated valves or other important equipment susceptible to common mode failures, into the baseline inspection program will be assessed during initial implementation.

d. Timeliness of Reporting

The staff established criteria during the pilot program to determine whether inspection reports could be issued and the plant issues matrices (PIMs) updated in a timely manner. This was an important attribute of the new oversight process because it was necessary to ensure that the most current inspection findings were available to be posted on the NRC's Web page on a quarterly basis. This could be accomplished if, during the pilot, 90 percent of the inspection reports could be issued within 30 days of the completion of the inspection, and 90 percent of the corresponding PIM updates could be completed within 14 days of report issuance.

The results during the pilot program are summarized in Table 5-2, below. Except for a few isolated examples, inspection reports were issued in a timely manner during the pilot program. The staff evaluated the instances of late inspection reports and determined they were caused by competing work demands that impacted completing the reports. There were no problems associated with the new oversight process that caused the late reports and that need to be addressed.

Table 5-2, Inspection Report and PIM Timeliness

	Inspection Reports Issued	Inspection Reports Issued within 30/45 Days	PIM Updates	PIM Updates within 14 Days
Total	78	74	78	65
Percent Success		95%		83%

More problems were observed during the pilot with updating the PIMs, especially early in the program. The problems were evaluated by the staff and attributed to unfamiliarity with new PIM guidance, which was promulgated after the pilot program started, and some problems with coordinating the updates between the different regional divisions. These problems were addressed and PIM update timeliness improved throughout the pilot program to a satisfactory level of performance. However, the additional workload from all of the non-pilot plants may affect timely updating of the PIMs during full implementation.

e. Inspection Program Efficiency

Less inspection resources should be required to provide adequate oversight of licensed activities with the development and reporting of performance indicators, and the establishment of a licensee response band to address issues of low safety significance. Pilot program criteria was established to evaluate this and stated that the direct inspection effort under the new inspection program, including baseline, supplemental and event response, should be less than that required by the current inspection program. This evaluation was made by comparing the inspection resources for the pilot

plants against the amount of inspection performed at the same plants the previous year and also by comparing the effort at the pilot plants against the average effort of the other non-pilot plants in the region.

The pilot program results indicated that the implementation of the new risk-informed inspection program required about the same resources as those expended at the non-pilot plants for the current inspection program. However, several important factors associated with the pilot program affected these results. Foremost is that the results for the new inspection program include several startup costs which had an impact on the total inspection effort at the pilot plants. These startup costs include some "front end loading" of inspections at the pilot plants to exercise the new inspection procedures to the maximum extent possible. These results also reflect the increased effort that will accompany performing a new procedure for the first time. More meaningful data and resource estimates will require at least a full year of implementation at all reactor sites in order to determine whether the inspection efficiency has improved.

The pilot program evaluation also highlighted that both the pilot plants under the new inspection program and the non-pilot plants under the current inspection program received less inspection effort than they did the previous year. This reduction was attributed to several factors, including fewer plants requiring increased agency oversight due to improved performance, which resulted in recent budget reductions for reactive inspection resources. NRR will continue to evaluate these results to better understand this shift in resources and determine the impact on the allocation of resources under the RROP.

3. STAKEHOLDER FEEDBACK (NRC/Industry/Public)

As part of its pilot, the staff solicited feedback and comments from internal and external stakeholders. The majority of the comments provided by the stakeholders dealt with specific details and the implementation of the various recommended processes and procedures. The staff used a two-pronged approach to address stakeholder comments: (1) high-level policy issues and comments and the staff's efforts to address them are discussed below, and (2) specific comments on documents such as inspectable area procedures, program guidance documents, and the oversight process document were addressed as part of the feedback effort begun during the pilot program. Most of the program documents and procedures have either been revised or will be revised presently to address many of the individual comments. This effort will be completed before the proposed initial implementation of the program in April 2000.

a. Baseline Inspection Program

The stakeholder feedback for the risk-informed baseline inspection program can be categorized into several general areas: schedule, scope of and resources for inspections, risk significance of the inspections, and documenting inspection results.

Regarding the scope of the risk-informed baseline inspection program, several stakeholders commented that NRC should focus more on risk significant systems in the area of design engineering than does the current core inspection program. Several

stakeholders commented that cross-cutting issues cannot be reduced to a simple set of industry-wide indicators and the new inspection program does not appear to cover human performance issues. The stakeholders also commented that in the new inspection and oversight process, the NRC has to rely heavily on the licensee's corrective action program to be effective. Regarding the estimated hours to implement the baseline inspection program, many stakeholders commented that the estimates were too low and should account for site differences such as numbers of units.

The staff recognized the importance of design-related issues to the safety of the plant and that design cannot be measured with indicators. Therefore, the staff emphasized design inspections in the baseline program, substantially increasing the level of effort for these types of inspections from the core inspection program. The design inspections are intended to be focused on the most risk significant systems.

The staff agrees that cross-cutting issues cannot be measured solely by performance indicators (PIs). Within the framework of the oversight process, the programs were designed such that the combination of information gathered from performance indicators and inspection findings provide insights into cross-cutting areas. In particular, the baseline inspection program is designed to garner insights into a licensee's problem identification and resolution process during most inspections. Based on the number of comments on cross-cutting issues, especially problem identification and resolution, the staff will continue to pursue defining the proper role of this area in the oversight process. The staff will also re-evaluate the scope, depth, and frequency of inspections and establish guidance for adjusting the baseline inspection program based on site-specific factors.

Regarding the documentation of inspection findings, the Commission requested information regarding the staff's disposition of positive findings. Also, several stakeholders disagreed with NRC's position of including green inspection findings in the plant issues matrix (PIM). They believe that this is a counterproductive approach that will take resources away from risk-significant areas.

The issue of documenting positive findings from inspections in inspection reports was discussed at the public workshop in January 2000. The consensus was that the NRC does not have objective criteria for evaluating positive findings. Therefore, because the assessment process does not explicitly incorporate positive findings, they should not be documented in inspection reports. However, positive aspects of licensee operations will be reflected in those items for which the significance determination process credits mitigation capabilities, and those positive aspects will be recorded in inspection reports as assumptions used in characterizing inspection findings.

Green inspection findings are those findings that have some, albeit very low, risk significance and that are, therefore, important in presenting a more complete picture of licensee performance. In addition, green inspection findings provide the background information for decisions related to follow-up actions in response to inspection findings or PIs that at a later time cross the established thresholds. The tracking of green findings in the PIM also provides a complete enforcement history as well, because many of the findings may be noncited violations of NRC requirements.

In addition, the Commission questioned the numerical criterion used in the inspection program success criterion. The Commission expressed concern about the pilot program success criterion that measured the reduction of required direct inspection effort (DIE) for the new risk-informed baseline inspection program. The Commission was concerned that using a 15-percent reduction in resources as the measure of success would put an undue bias on assessing the effectiveness of the new inspection program. The Commission stated that a more appropriate measure of success for the baseline inspection program would be to evaluate its ability to meet the four process outcome measures (i.e., maintain safety, enhance public confidence, improve effectiveness and efficiency, and reduce unnecessary regulatory burden).

The staff agrees that the success of the risk-informed baseline inspection program should be measured by its ability to meet the four outcome measures, and the criteria discussed in Section 2 were established to evaluate this. The staff also agreed that the development of the program should not be biased to meet a certain level of DIE. The staff developed the scope and frequency of baseline inspections with the goal of addressing the four outcome measures, without any bias toward achieving a certain level of inspection effort. The staff used risk insights to select areas and targets of opportunity for inspection to develop a program that resulted in the necessary level of insight into plant performance to ensure that safe operation was maintained. A full year of implementation at all plants will be necessary to help determine how much DIE is required to implement the baseline inspection program. While the comparison of the hours to implement the baseline inspection program to the core inspection program is useful, the numerical goal or expectation was removed as a success criterion.

b. Supplemental Inspection Program

During the pilot process, three supplemental inspection procedures were developed to correspond to the middle three columns of the Action Matrix; Inspection Procedure (IP) 95001, “Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area,” IP 95002, “Supplemental Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area,” and IP 95003, “Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input.” The draft inspection procedures were provided to the regions and to NEI for comment during the pilot process. The resulting comments were evaluated and incorporated into procedure revisions. The majority of the comments received centered around a few key issues. A listing of those key issues and the major changes made to address them is summarized below:

For IPs 95001 and 95002, several regions questioned the level of independence the NRC needs to take in assessing the adequacy of the licensee’s evaluation of performance issues (i.e., just ensuring that an evaluation was completed versus independently performing an evaluation and comparing the NRC’s results against the licensee), and the additional actions to be taken for programmatic performance issues identified during the inspection.

Additional guidance was provided to explain that the intent of the inspection procedure is to review and selectively challenge aspects of the licensee’s evaluation, but not to perform an independent assessment of the performance issue. Also, additional

guidance was provided for dealing with programmatic issues identified during supplemental inspections. Generally, the guidance states that significant issues pertaining to the adequacy of the licensee's root cause evaluation may result in the expansion of the procedure as necessary to independently complete the inspection requirements. Also, the original performance issue, which is currently retained in the assessment process for a year, will not be removed from consideration of actions in the Action Matrix until the weaknesses identified during the supplemental inspection are addressed and corrected.

Regarding the requirements in IPs 95001 and 95002, several regions questioned the degree of freedom that should be given to the inspectors to chose only certain inspection requirements for review during the inspection, and that wording in the inspection procedures would imply that the inspection requirements are licensee requirements. In general, all inspection requirements contained in the procedure are intended to be addressed for each issue; however, the extent that they are reviewed and their specific applicability to the given issue will necessarily vary. The staff determined that this level of flexibility was necessary given the various issues that potentially could lead to supplemental inspections.

Additional wording was added to the procedures to clarify that the inspection requirements are intended to provide the information the NRC needs in order to assess safety. The NRC can acquire this information by performing independent inspections or can acquire the information by reviewing the licensee's efforts to assess the root cause of the issue. If the licensee chooses not to provide some of the information needed to satisfy the inspection requirements, the NRC would always have the option of acquiring this information by independent inspection.

Several regions questioned the guidance for documenting the results of supplemental inspections and whether it should be different than or the same as the documentation requirements for the baseline inspection program.

An attachment to IMC 0610*, "Inspection Reports," was written, which provides guidance for documenting supplemental inspection findings. In general, the expectation is that the documentation should be more comprehensive, qualitative, and diagnostic in nature than that for baseline inspections. Inspectors will document their assessment for each inspection requirement contained in the inspection procedure.

Inspection procedure 95001 was used twice during the pilot process for assessing a single white input, once in the Emergency Preparedness cornerstone, and once in the Physical Protection strategic performance area. Feedback received from the inspectors who implemented the procedure was positive.

c. Event Response

Proposed draft revisions to event guidance and procedures were provided to the regions during the pilot program. The drafts were provided and discussed at meetings with NEI and the NRC PRA Coordinating Committee and during a feasibility review by regional SRAs and other staff. Feedback was received from all but NEI.

One comment received was that the risk evaluation to support a prompt NRC determination of the level of response will be hampered by lack of information in the early stages of the event. In addition, information from the NRC event response inspection may significantly revise the risk value and thereby require a different level of NRC response. This problem stresses the need to use the deterministic criteria in conjunction with risk insights. In addition, the program will retain the flexibility, similar to the current oversight process, to revise the level of response based on new information and changing risk levels. Areas requiring procedural clarification include defining which events require follow up with the baseline inspection program Inspection Procedure 71153, "Event Followup," and inspector activities for uncomplicated reactor trips and licensee event reports.

d. Performance Related Shutdowns

The draft IMC 0350 was issued for comment in November 1999. The staff received stakeholder feedback from each of the regional offices and from NEI. Regional comments on policy suggested that the manual chapter provide additional detail regarding the criteria for implementing the IMC 0350 process, provide flexibility in the criteria for ending the IMC 0350 process after a plant has been allowed to restart, and clarify how to address programmatic cross-cutting issues, such as repetitive equipment failures, human performance, and safety-conscious work environment. The external stakeholder comments provided by NEI included clarification of the entry conditions into the IMC 0350 process and questions concerning the scope and criteria for those issues required to be resolved prior to restart of the plant (i.e., the criteria for the oversight panel's restart checklist.) The staff is evaluating these comments for inclusion into IMC 0350 when it is issued for use before April 2000.

4. PROGRAM CHANGES FROM LESSONS LEARNED

a. Level of Effort of Inspections

The initial estimates for how much effort may be required to complete the baseline inspection program were developed early in the process, before the procedures were written. The estimates recognized the limitations in the number of available inspectors and roughly established a ranking of importance for the inspectable areas based on risk insights and experience. In one case (event followup) the estimate was just a place holder for resources that the staff recognized would vary greatly. The staff also recognized before the pilot program began that at least a full year of implementation beyond the pilot program would be necessary to obtain reliable data on which to estimate the amount of resources needed to accomplish the program.

Much of the feed back from inspectors has been that the estimates for the individual procedures, which were based on two unit sites, are too low (see section 2, above). As the procedures were revised, adjustments were made to some of the estimates. However, more definitive estimates will be made following the first year of initial implementation.

The scope and frequency of inspections that could be affected by plant activities and number of reactor units at a plant's site were discussed at the January 2000 public workshop on the pilot program. The consensus from the workshop was that guidance regarding inspection levels of effort for single unit sites and triple unit sites needs to be communicated to the regions before the proposed initial implementation in April 2000. Also, the staff further discussed the scope, depth and frequency of inspections at a meeting with regional division directors in early February 2000 and is currently making some adjustments to the baseline inspection program.

b. Threshold for Documenting Findings and Insights

The new oversight process uses performance indicators and inspection findings evaluated for risk in determining a plant's performance in meeting the objectives of the seven cornerstones, and in determining agency actions. Therefore, the format for inspection reports for the baseline inspection program was developed to document only those issues that meet a minimum threshold for safety importance. This change removed from the reports much of the discussions of inspectors' observations, both positive and negative, of aspects of licensees' activities that would not be used in objectively assessing performance.

Many inspectors and regional managers were uncomfortable with removing from inspection reports these "insights" into licensees' performance. The inspectors and regional managers feel they need the observations (issues that may have very little or no risk significance individually) to better assess cross-cutting areas, such as problem identification and resolution and human performance. Some licensees also expressed their concern with no longer having the insights from NRC inspectors. Therefore, the guidance for inspection reports was changed to allow inspectors to document observations that relate to important cross-cutting areas but may not rise to the level for inclusion in assessing a plant's performance in the new assessment program.

The consensus (with dissenting opinion from some NRC participants) from the January 2000 workshop was to continue to follow the guidance developed during the pilot with further clarifications to the guidance. The threshold of significance similar to the significance of minor violation seemed to be appropriate and the guidance for inspection reports should be linked to the latest guidance from the NRC's Office of Enforcement for determining if a violation is a minor one. The State of New Jersey's Division of Safety, Health and Analytical Programs stated that all violations of requirements, even minor ones, should be documented in inspection reports. Also, inspection reports should more fully discuss the specific items that were inspected.

c. Responding to Problems in Reporting Performance Indicators

A portion of the baseline inspection program is devoted to annually verifying the performance indicators reported by the licensees. The verification is to give the NRC confidence in the accuracy of the reported indicators.

The pilot program showed that some licensees may have problems with accurately collecting and reporting some of the indicators. This situation raised questions about

how much effort should be devoted to following up previous reporting problems, and what actions should the agency take if it doesn't have confidence in indicators reported by a licensee.

The consensus from the public workshop in January 2000 was that such a process was needed. The process has to recognize the NRC's need for the performance information, the role of the licensee's corrective action program when problems in reporting performance indicators are found, and the severity of the reporting problem in determining subsequent NRC actions. The process should be developed before the proposed initial implementation in April 2000.

d. Documenting Positive Inspection Findings

The assessment process was developed using an objective and repeatable determination of the significance of problems to assist the NRC in assessing licensee performance and to determine the appropriate level of NRC's response. Positive findings, which generally are subjective and usually have no measurable basis in regulation or safety, were not included in the process.

The Commission, in the Staff Requirements Memorandum for SECY 99-007 and 99-007A, suggested that positive inspection findings should continue to be recorded and used in reaching a decision on performance. Therefore, the July 26, 1999, *Federal Register* notice requesting comments on the new oversight process asked if positive inspection findings should captured and incorporated into the process.

The industry's response to the *Federal Register* notice stated that all subjective comments, both positive and negative ones, should be eliminated from the assessment process. When discussed at the January 2000 workshop, the consensus was that positive inspection findings should not be documented in inspection reports. Such findings were considered to be too subjective and including them in reports could have unintended consequences. The workshop group considered that inspection observations, both negative and positive, would be verbally communicated to the licensee in routine interactions with inspectors during the inspection and considered it more appropriately the licensee's responsibility to publically communicate positive aspects of their operations.

e. Assessing Corrective Action Programs

Licensees' processes for finding, evaluating, and correcting problems is an important fundamental block upon which the new oversight process is built. The NRC's confidence in the effectiveness of these programs is the basis for the NRC's policy of closing lower level violations when they are entered into the licensee's corrective action program without independently verifying the final corrective actions. The inspection program is intended to verify that our confidence in licensees' programs is still deserved and still periodically verifies the final actions on some of the lower level violations. To accomplish this objective, the baseline inspection program inspects identification and resolution of problems in two parts: a portion of each cornerstone inspection includes identification and resolution of problems, and an annual inspection takes a broader look at the process.

Implementing this portion of the baseline inspection program during the pilot showed that the estimated level of effort for the annual inspection was too low to fully assess a licensee's corrective action process in all seven cornerstones. Also, the structure of the baseline inspection program in this area made it difficult to find related inspection findings during later reviews for the annual inspection.

The consensus from the public workshop in January 2000 was to form a task group before April 2000 to further investigate the role of this crosscutting area in the reactor oversight process and the proper level for documenting findings in this area.

f. Significance of Inspection Sample Sizes

The State of New Jersey's Division of Safety, Health and Analytical Programs raised a question about the suitable number of samples inspected when compared to the number of opportunities for inspection in several areas of the baseline inspection program.

The NRC's inspection program is not based on statistically valid sampling but uses selective sampling to focus on the more important activities, equipment, and processes. When discussed at the public workshop in January 2000, a consensus was reached that the NRC should more clearly describe its position on inspection sampling in its program documents, review the bases for required sample sizes in its inspection procedures and document the bases in the procedures, and more clearly describe in the inspection reports the context and reasons for samples selected. This effort is in progress.

g. Using Surveys in the Baseline Inspection Program

Several inspection procedures include sets of questions that the inspector may use when talking to plant personnel. The questions range from an inspection tool for determining further areas to inspect to determining if a environment exists that would deter plant personnel from reporting safety concerns.

Industry stakeholders raised a concern about the appropriateness of the questions, the ability of the inspectors to properly and effectively use the survey questions, and the NRC's ability to draw conclusions about licensee processes from the questions.

The consensus from the January workshop was that the use of the questions needs to be clearly stated in the inspection procedures and questions used as inspection tools should result in issues that can be objectively evaluated, such as with a Significance Determination Process. Other surveys used to draw conclusions about licensee operations should be developed and administered as professional survey tools.

h. The Role of Inspection In Notices of Enforcement Discretion (NOEDs)

Licensees may request, under certain conditions, that the NRC not enforce a regulatory requirement, such as a technical specification surveillance frequency or limiting condition for operation. The granting of request is in the form of a notice of enforcement discretion (NOED). Such requests can require a quick decision by the NRC. The NRC

typically evaluates the need for the request and any compensatory actions proposed by the licensee. The guidance for processing NOEDs is in NUREG-1600, the NRC's enforcement policy, and in the NRC's inspection manual Part 9900, Technical Guidance. These evaluations usually involve inspections by the resident inspectors.

During the pilot program, a licensee questioned the need for inspection beyond the baseline program for an NOED request that involved low risk to the plant.

This issue was discussed at the January 2000 workshop. It was the consensus of the group that the inspection response to an NOED request should be within the baseline inspection program. The response should be graded based on the risk significance of the requirement being exempted, and the process should be described in a baseline inspection procedure. Appropriate guidance is currently being developed to reflect this recommendation.

5. EVENT FOLLOW UP

Management Directive (MD) 8.3, "NRC Incident Investigation Procedures", provides deterministic criteria for NRC investigatory response to significant operational events involving reactor and nonreactor facilities licensed by the NRC. The current criteria define two levels of response: Incident Investigation Team (IIT) and Augmented Inspection Team (AIT). IITs inspect events having greater health and safety significance than events inspected by AITs.

MD 8.3 is being revised to risk inform the deterministic criteria for event response at reactor facilities. The current criteria for IITs and AITs will be evaluated in conjunction with risk in order to identify a graded response, based in part on the risk metric. The graded response will consist of an IIT, AIT, and Special Inspection (SI) for the lowest level of response. The risk metric of conditional core damage probability (CCDP) will be used to best reflect the full extent of any loss of defense-in-depth due to the event, regardless of whether the cause is due to licensee performance or otherwise. Numerical risk estimation by itself is not meaningful unless accompanied by an understanding of the most influential related assumptions and uncertainties.

Baseline Inspection Procedure 71153, "Event Followup", is being revised to focus the resident inspector's initial evaluation of events on communicating details regarding the event to risk analysts for their use in determining risk significance. Inspectors will identify equipment malfunctions and unavailability, operator errors, and other complications. In addition, a new inspection procedure (IP 93812) was developed for the special inspection level of response to events.

Although not part of the 6-month pilot program, the newly developed risk-informed guidance was used to evaluate events at two of the pilot plants following the pilot period.

6. PERFORMANCE RELATED SHUTDOWNS

The staff made revisions to its process for overseeing plants that are in an extended shutdown based on performance problems and, therefore, not under the routine reactor oversight process. The changes risk informed the process and made it more objective by using the

Action Matrix (Inspection Manual Chapter [IMC] 0305, "Operating Reactor Assessment Program") and Significance Determination Process (IMC 0609) from the routine reactor oversight process to establish criteria and thresholds for actions under this process. The new guidance is incorporated into a draft of IMC 0350, "Staff Guidelines for the Assessment and Review of Plants that Are Not Under the Routine Reactor Oversight Process."

The three areas of the draft IMC 0350 process that have been significantly changed are (1) the criteria for placing a plant into the process, (2) the scope of issues for the IMC 0350 required restart panel, and (3) the criteria for removing a plant from this process and placing it back into the routine oversight process. The thresholds for placing a plant into the process have been risk-informed and made more objective by using the reactor assessment process's Action Matrix. The entrance threshold is met when a licensee's performance as determined by the Action Matrix is determined to be in the Multiple or Repetitive Degraded Cornerstone column of the matrix, and the plant is expected to be shutdown for at least three months.

The second area of major change is the scope of concern to the NRC restart panel required by IMC 0350. The scope has been risk informed by using the Significance Determination Process. The issue(s) that have to be resolved before a plant restarts and would be within the panel's scope are to have risk significance (determined to be white, yellow, or red by the Significance Determination Process), but the issue(s) would not be limited to any specific performance area.

The third area changed is the criteria for returning a plant to the routine oversight process. This criteria also has been risk-informed by using the Action Matrix. The approval for exiting the process and returning a plant to the routine oversight process is based on the licensee satisfactorily resolving all performance issues with low to moderate or greater risk significance (white, yellow or red), and has operated the plant for approximately four calendar quarters while accumulating performance indicator data needed for the routine assessment process.

7. REMAINING WORK

a. Baseline Inspection Program

The major guidance documents for the inspection program and the inspection procedures have been revised. Any other changes necessitated from the January 2000 lessons learned workshop will be incorporated into the documents and the documents issued as official inspection program documents before April 2000.

Additional information on the effort used to implement the baseline program will be collected and analyzed during the first full year of implementation. The information will be used to develop more accurate estimates for the program and to refine the budget model for the inspection program. Also, the document that records the risk-informed basis for the baseline inspection program will be updated to reflect the basis for significant changes to the program.

b. Supplemental Inspection Program

Before April 2000, the staff plans to incorporate comments received from the regions into IP 95003 and reissue all three supplemental inspection procedures. Additional guidance has been developed for documenting the results of supplemental inspections,

and the regions will have an opportunity to review this guidance before it is issued for use by April. Also, the staff plans to issue a supplemental inspection procedure for assessing human performance deficiencies. A draft of this procedure has been written, but it has not yet been reviewed by the regions.

After initial implementation, the supplemental portion of the inspection program will be monitored whenever supplemental inspections are called for by the Action Matrix. The staff will assess the adequacy of the supplemental inspection portion of the inspection program before final program implementation.

c. Event Response

The above stakeholder feedback needs to be incorporated into Management Directive 8.3 and Inspection Procedure 71153. In addition, inspection procedures for IITs, AITs, and SIs need to be revised to be consistent with the risk informing of event response and the need to evaluate licensee performance issues by the Significance Determination Process. The NRC's Incident Response Organization recently issued for comment a draft of Management Directive 8.3.

d. Performance Related Shutdowns

The staff is evaluating comments received on IMC 0350 for inclusion into the manual chapter when it is issued for use before April 2000.

8. CONCLUSIONS

Although the criteria for most of the baseline inspection program pilot program metrics were not met, the staff understands some of the reasons for that and has revised the program where necessary. The actions necessary for initial implementation of the revised program are scheduled to be accomplished in time for initial implementation. Therefore, the staff concludes that the revised inspection program is sufficiently effective and ready to be implemented at all nuclear power reactors.

SIGNIFICANCE DETERMINATION PROCESS

Attachment 6

SIGNIFICANCE DETERMINATION PROCESS

Introduction

The development and implementation of the Significance Determination Process (SDP) has been one of the major challenges for the new reactor oversight program. The objective of achieving consistent, scrutable, and predictable significance characterization results for all inspection findings is fundamental to the success of the new oversight process. However, for the plant-specific reactor safety SDP, the use of risk metrics as the yardstick for initiating event, mitigation system, and barrier cornerstones requires both staff and licensees to institutionalize the use of risk insights to a greater degree than in the past. Additionally, any method of incorporating risk insights into a decision process necessarily must address issues related to the quality of the bases for those insights. The plant-specific reactor safety SDP helps to address such uncertainty issues by revealing the major assumptions that combine within the probabilistic framework to render each significance determination. This offers the opportunity for inspectors, NRC management, and other stakeholders to either accept or challenge these assumptions. It further allows the decision-maker to examine the sensitivity of the result to the various assumptions that are made. It is through this process of manipulation of a probabilistic model that decision-makers gain risk insights. For all cornerstones, the SDPs provide a framework for discussions, both internal and external, of the bases for significance determinations of inspection findings. Additionally, inspectors can use the SDPs to select a better sample of inspection items by looking for issues that would result in higher significance.

The SDPs are not intended to apply to certain categories of findings such as willful violations or hindrance of regulatory activities, which are dealt with directly by the enforcement program. The outcome of the plant-specific reactor safety SDP is the estimated "order-of-magnitude" increase in risk (core damage frequency [CDF] or large early release frequency [LERF]) due to issues arising from deficient licensee performance and is assumed to add to the underlying acceptable risk that results from normal plant operation. Each order-of-magnitude is assigned a color, ranging from "green" for increases in core damage frequency of less than one in one million core damage occurrences per year to "red" for increases of one in ten thousand occurrences per year. During the six month pilot program for 13 reactor plants at nine sites there were a total of 99 inspection findings assessed using the SDPs. Of these findings 96 were characterized as "green", and the SDP Oversight Panel concurred that three findings were appropriately characterized as "white". As of this writing, the Panel had not yet reviewed two additional potential "white" findings from pilot plant inspections conducted after the pilot program ended. There have been no "yellow" or "red" inspection findings. The three "white" findings individually affected the initiating event, mitigation systems, and emergency planning cornerstones.

Pilot Criteria Results

The pilot program measured SDP implementation against two criteria: 1) Timeliness of Categorizations, and 2) Accuracy of Significance Ratings. The Pilot Program Evaluation Panel (PPEP) concluded that the timeliness criterion was not met because plant-specific reactor safety SDP Phase 3 risk evaluations were not completed within 120 days of the time of discovery of the finding. In one case, timeliness was hampered by the need for further detailed licensee engineering analysis. In another case, it was due to extended interactions with a

licensee regarding several of the important assumptions in their risk analysis. As noted below, the staff recognizes the need for better guidance on the process of Phase 3 reviews. Although the second criterion was met because there were no risk-significant inspection findings that were inappropriately screened as "green", continued testing of plant-specific reactor safety SDP phase 2 worksheets using hypothetical test cases revealed the potential for underestimation of risk significance in certain situations. The resolution of this issue is discussed below.

Stakeholder Feedback (NRC/Industry/Public)

1. Core Damage Frequency (CDF) vs. Conditional Core Damage Probability (CCDP)

The plant-specific reactor safety SDP was designed to estimate the *increase* in annualized CDF risk due to identified deficiencies in licensee performance that lead to unavailability of equipment or safety functions. This increase is measured from the annualized (average) CDF that results from routine plant operation in compliance with NRC regulations. The additional risk contributions caused by deficient licensee performance (as characterized by the SDP) are additive to this annualized CDF that already includes the risk contribution due to the probabilities of equipment failures expected occasionally for commercial nuclear power stations of this size and complexity. Another contribution to normal annualized CDF is caused by planned preventive maintenance and testing activities which cause the CDF at any particular moment in time to fluctuate dependent upon the changes in plant equipment status. The additional annualized CDF risk due to deficient licensee performance must be dependent only upon the performance issue itself and not the particular plant configurations during which the issue occurred. Therefore, if a degraded component or function is identified to exist simultaneously with equipment outages for preventive maintenance or testing, the SDP inputs cannot include the contribution of the maintenance or testing, since this is already included in the normal annualized CDF against which the change is being measured. This non-consideration of routine maintenance and testing is a departure from the traditional enforcement practice of including the consideration of any additional equipment unavailability that made the loss of function due to a deficiency more severe, even if the added unavailability were due to routine maintenance.

The plant-specific reactor safety SDP can be used to estimate either 1) the increase in annualized CDF or 2) the conditional core damage probability (CCDP) given any plant configuration, which may include a combination of degraded equipment/functions and equipment outages for maintenance. Use of CCDP could potentially render results of higher "color" significance than the use of change in CDF, whenever routine maintenance or testing was involved. However, the staff intends to use estimated increase in annualized CDF, instead of CCDP, to characterize deficient licensee performance for the following reasons.

a. The objective of the SDP is to characterize the significance of inspection findings and to compare these findings with a licensee's performance indicators in an additive manner within the NRC Action Matrix. The reactor safety cornerstone performance indicator thresholds were developed using insights derived from the possible increases to annualized CDF represented by the value of the indicators. Thus, in comparing and "adding" the effects of PIs and inspection findings within the Action Matrix, it is necessary to use the same risk metric.

b. If CCDP were used to characterize licensee performance, the result would be inconsistent as it is influenced as much by routine pre-planned preventive maintenance as by deficient performance. Therefore, it would penalize licensee's for their performance of maintenance even though this is an acceptable practice when 10 CFR 50.65 requirements are met.

c. Deficient licensee performance can cause equipment unavailability over periods of time extending to days and months. Estimating CCDP would require a time-consuming, and therefore untimely, detailed historical analysis of all plant maintenance configurations that existed concurrently with the degraded equipment.

The CCDP risk metric is considered useful as an input to the decision of how the NRC staff should follow up on a reactor event. This use of CCDP will be made part of the staff's internal guidance for event responses, as discussed in another Attachment to this paper..

2. Public Workshop on Reactor Oversight Pilot Process Lessons Learned Results

At the public lessons learned workshop held from January 10 - 13, 2000, a number of issues related to all SDPs were developed from inputs given by NRC staff, industry, and public participants. A list of the SDP issues that were recommended to be addressed prior to initial implementation of the revised reactor oversight program are given below.

a. Improve consistency of entry conditions between all SDPs (i.e., definition of a finding) and the treatment of Problem Identification and Resolution (PI&R) findings in the Emergency Planning, Radiation Protection, and Safeguards SDPs,

b. ensure SDP results from each cornerstone have similar importance for same "color",

c. provide a significance screening tool specifically to account for a deficient condition that would increase the risk contribution from external initiating events such as fire or external flooding (there can be a substantial contribution to plant risk from such external events, and a more detailed SDP to account for these will be considered as a long-term development effort),

d. improve the guidance for the plant-specific reactor safety SDP Phase 3 risk analysis to achieve improved efficiency, and consider establishing a licensee appeal process for these analyses,

e. document the process for revising, implementing, validating, and training on SDPs under development,

f. develop explicit SDP guidance for addressing "white", or greater, deficient licensee performance issues that still conform to the licensing and design bases,

g. reduce the complexity or improve the usability of the SDP for assessing inspection findings in the fire protection area.

The staff is developing modifications to the SDP guidance that will consider the input received from internal and external stakeholders regarding the above issues. These changes are expected to be incorporated into the revised SDP guidance to be issued prior to implementation.

3. State of New Jersey Department of Environmental Protection Comments

The Department of Environmental Protection of the State of New Jersey offered several recommendations pertaining to the SDP during the public lessons learned workshop. The staff appreciated the effort made by the State of New Jersey to participate in and observe the pilot program. Their SDP recommendations and the staff's responses are summarized below.

a. Comment: The SDP is overly complex, difficult to apply, and understood by only a small minority in industry and the NRC.

   Response: The plant-specific reactor safety SDP is a simplification of the detailed computer-based PRA models used by both the industry and the NRC staff. Risk insights related to inspection planning and significance determination of inspection findings are obtained only through engaging in a thought process accomplished within a probabilistic framework. In the past, the process of extracting risk insights was left to specialists (i.e., risk analysts). The objective of the SDP is to afford inspectors, their management, and other stakeholders an opportunity to understand the bases for plant-specific risk insights without the need for the extensive training and experience needed to manipulate and interpret computer-based PRA models. The experience gained to date suggests that NRC inspectors and management are capable of using the plant-specific reactor safety SDP and understanding the basis for its results. The staff acknowledges the challenge of communicating these results and their bases with external stakeholders and is currently exploring ways to improve in this area.

b. Comment: A "color" SDP result doesn't assure the public or other stakeholders that the underlying risk assumptions are valid. Licensees that contested the SDP result caused delays and added confusion to the process.

   Response: One of the requirements in the SDP guidance is to clearly state the basis for any SDP result. If this requirement is met, it should be possible for any interested and informed observer to utilize the SDP charts and tables to reconstruct the underlying assumptions and logic that produced the resulting color. In fact, the SDP represents a significant improvement in the staff's ability to document and communicate these assumptions. The staff intends to better define the plant-specific reactor safety SDP Phase 3 risk analysis process to avoid the delays and confusion issues identified during the pilot program.

c. Comment: The goal of objectivity may not be achieved when negotiations occur between NRC staff and licensees over SDP results.

   Response: The SDP guidance provides the opportunity for licensees to present information related to the facts surrounding an issue and the licensee's own evaluation of its significance. This remains consistent with the staff's historical

enforcement policies and is not in any way considered a negotiation. The objective of the process is to ensure that the staff has received all pertinent information and licensee evaluations prior to making a determination. The staff retains the full responsibility for making an SDP determination and an obligation to clearly identify its basis. The use of the pre-defined SDP logic and the documentation of the bases for the results are expected to improve the objectivity of the reactor oversight process.

4. Ongoing SDP Issues To Be Addressed After the Start of Initial Implementation

In addition, a number of SDP-related issues are being addressed on an ongoing basis and are not expected to delay implementation of the revised reactor oversight program. These actions will not be completed prior to initial implementation and are listed below.

a. The staff benchmarked the plant-specific reactor safety SDP Phase 2 results for several hypothetical inspection findings against the licensee's current PRA model at two pilot plants. The objective was to gain additional confidence that the SDP Phase 2 would render conservative results as compared to the more detailed licensee PRA models. This benchmarking revealed that the SDP rendered a less significant result than licensee models in several cases. This was due to the omission in the pilot plant SDP Phase 2 worksheets of a number of core damage sequences related to initiating events that consequently removed mitigation capability and therefore had a greater effect on plant risk than the SDP had previously incorporated. The effect of these sequences is highly dependent upon plant-specific inter-system dependencies. The information needed to develop the SDP Phase 2 worksheets representing these additional initiating events may, in some cases, need to be collected during a site visit. The staff has planned to visit each plant site to discuss the plant-specific SDP Phase 2 worksheets with the licensee. The objective of these visits is to ensure that the IPE-based SDP worksheets are modified as needed to include any plant changes since the IPE was written or any new risk insights generated by the licensee's most current risk analysis. The development effort needed to complete the additional SDP worksheets for each plant either prior to or as part of the site visit has resulted in a schedule delay for these site visits. The staff believes that implementation of the revised reactor oversight program could proceed while the plant-specific reactor safety SDP Phase 2 worksheets are completed. Until the Phase 2 worksheets are finalized for a plant, the Phase 1 screening tool will be used to identify potentially risk-significant inspection findings for further analysis by a risk analyst. The NRR Probabilistic Safety Assessment Branch will assist the regional Senior Reactor Analysts with this effort.

b. An SDP for containment issues and a significance screening tool for shutdown conditions are expected to be completed prior to initial implementation. However, a longer-term effort to develop a phase 2 SDP process for issues affecting reactor safety during shutdown conditions will continue into initial implementation.

c. Additional NRC risk analyst staffing needs are under consideration.

d. An integrated review of inspector training requirements will be conducted to better align the NRC training courses in reactor technology, regulatory practices, and PRA

to support the revised reactor oversight program. An evaluation of the type of training needed on new or significantly revised SDPs will be made after development of these are complete.

e. The current SDP does not address certain categories of violations of 10 CFR 50.65 (Maintenance Rule) such as inadequate a(4) evaluations. Any guidance pertaining to the significance of such violations will be coordinated with the issuance of the appropriate regulatory guides.

f. Develop an SDP for licensed operator requalification inspection issues and other cross-cutting operator/human performance issues.

Process Changes Resulting from Lessons Learned

The SDP guidance has been piloted and changes will be made based on lessons learned as noted above. The staff expects that reviews of the effectiveness and efficiency of the SDPs will continue on an ongoing basis as greater experience is gained during the first year of implementation of the revised reactor oversight program.

Resolution of Issues to Support Initial Implementation

The staff will address the issues recommended in Section 2 prior to initial implementation. In addition, the SDP Oversight Panel has been established as a joint NRR/OE/RES/Region panel to help ensure that the SDP is implemented consistently. The Chairman of this Panel will continue to be the Chief, Inspection Programs Branch, NRR. The coordination role will be assumed by the Office of Enforcement.

Remaining Long-term Issues

The staff intends to establish SDPs for containment issues and a screening tool for assessment of significance of issues during shutdown plant conditions prior to initial implementation. In addition, the items listed above from the public lessons learned workshop will also be addressed.

Conclusion on Readiness of SDP for Initial Implementation

The existence of the SDP has given the staff and industry a more objective logic against which to assess significance of identified deficient licensee performance. The plant-specific reactor safety SDP brings the discipline of probabilistic risk thinking to a wider audience of non-analysts, including inspectors and their management. This consequently provides a much greater opportunity for decision-makers to better understand the benefits of risk analysis as well as its limitations. The existence of all SDPs offers a substantial improvement in scrutability over past NRC assessment programs. That this logic is potentially imperfect can be accepted if the regional and headquarters staff, many of whom helped create these SDPs, continue to critically test their sense of safety significance, as developed over years of experience, against the results from the SDPs. When these comparisons are shown to require enhancements to the SDP logic, the appropriate changes to the SDP will be made. In addition, the continued

staffing of experienced risk analysts in both the regions and at headquarters is necessary to ensure that the limitations of the plant-specific reactor safety SDP can be addressed using other available risk analysis tools.

It must be acknowledged that based on a limited sample of pilot program inspection findings, the SDPs have not been exercised across the full range of potential inspection findings. Therefore, it is expected that as ongoing experience is gained, further refinements will be necessary. The SDPs currently provide an acceptable starting point to begin this process of continuing improvement.

FEASIBILITY REVIEW

Attachment 7

FEASIBILITY REVIEW

Introduction

Attachment 3 of SECY-99-007A, "Recommendations For Reactor Oversight Process Improvements (Follow-up to SECY-99-007)," dated March 22, 1999 described a limited scope review to evaluate the feasibility of the new reactor oversight process. Because of the significant changes incorporated into the process since that early review, including the addition of an event response procedure, and because of the lack of opportunities to fully exercise all aspects of the revised reactor oversight process (RROP) during the pilot program, the staff decided to repeat this effort. This second feasibility review included a limited test of selected non-pilot plant events and follow-up inspections, subject to availability of data, to demonstrate the ability of the process to 1) adequately determine appropriate agency response to plant events, 2) reliably assess risk significance of individual inspection findings, and 3) evaluate cornerstone assessment inputs to determine appropriate agency actions based on licensee performance consistent with agency policy.

This attachment describes the scope, findings, results, and recommendations of this feasibility review. The recommendations of the feasibility review task group were incorporated into changes made to the RROP. These changes are not discussed in this report.

The task group concluded that the proposed process, modified by the improvements outlined in this report, was capable of adequately determining agency response to events and plant conditions based on a risk characterization of the event or plant condition coupled with traditional deterministic criteria. However, the task group recommends providing additional oversight for the new process during initial implementation of the RROP.

The task group concluded that the Significance Determination Process (SDP) provided a reliable method of risk characterization of inspection findings resulting from event response inspections. Additionally, the SDP worksheets provided adequate qualitative information and led to consideration of appropriate issues and questions to focus deliberations regarding event response, however, SRA analysis should use more refined methods to determine actual risk characterization to be used in determining NRC response to events or conditions. The task group also concluded that the Action Matrix provided adequate guidance for appropriate actions in response to the performance issues identified and that these actions were in agreement with the actual agency response.

Scope

This feasibility review was performed during a brief two-day workshop which began on November 22, 1999 and ended the following day with a debriefing of the task group. The task group consisted of five members from the regional offices, including two senior risk analysts, and six members from headquarters, including an enforcement specialist from the Office of Enforcement, an incident investigation specialist from the Office of the Executive Director for Operations, representatives from the Events Assessment Branch of NRR, and two NRR senior risk analysts. To promote efficiency and effectiveness, the working group was provided program documentation, selected event information, and inspection reports in advance.

This feasibility review was intended to solicit end-user insights and feedback regarding the use of the proposed elements of the RROP to adequately determine appropriate agency response to plant events, reliably assess risk significance and assessment area information of individual inspection findings, effectively evaluate assessment inputs for cornerstones, and to reach conclusions related to actions to be taken that are consistent with agency policy when applied to actual plant events. Agency response during events is beyond the scope of this review. It was expected that additional insights and feedback may be gained from the forthcoming lessons learned workshops and as a result of the pilot program.

Caution must be exercised regarding extrapolating information from this review because:

- ! The review was limited to 2 days. Only a limited amount of data could be processed in this time.

- ! Performance Indicator data available for the review was limited.

- ! Inspection results reviewed were from the existing inspection program and may not represent findings resulting from the new program.

- ! Issue specific knowledge was not available in all cases when reviewing inspection results not directly associated with the selected events.

Three non-pilot plants were selected for review because of the recent occurrence of significant events: Indian Point Unit 2, Edwin I. Hatch Unit 2, and Beaver Valley Unit 2.

Objectives

The stated objectives of this feasibility review were to ---

- ! Evaluate the feasibility of the RROP, realizing that further development and refinement will continue as a result of lessons learned during the pilot as well as during the initial implementation phase.

  - Evaluate the feasibility of a procedure to determine agency response to events and plant conditions based on a risk characterization of the event or plant condition coupled with traditional deterministic criteria and compare proposed the results associated with selected events with those actually taken.

  - Evaluate the adequacy of the Significance Determination Process for risk significance characterization of the resultant findings from follow-up inspection to these events and identified plant conditions.

  - Use available data to conduct an abbreviated performance assessment of the plants, and compare proposed actions based on the revised reactor oversight process Action Matrix to those actually taken. Additionally, differences between the two processes should be explained based on regional insights.

- ! Provide feedback for use in the continued development of the RROP.

Details

Event/plant Condition Response

Draft Management Directive 8.3, "NRC Incident Investigation Procedures," Part 1, dated November 11, 1999 was used during this portion of the feasibility review to determine proposed agency response. The task group utilized only the information that was available during the first few days of the event to replicate the initial decision process. This information was generally contained in the licensee event report (LER) or the event briefing package, however, team member personal knowledge was relied on in some cases to determine when information was available.

The SDP worksheets provided adequate qualitative information and led to consideration of appropriate issues and questions to focus deliberations regarding event response, however, the task group used more refined methods such as the NRC's Simplified Plant Analysis Risk (SPAR) Model to determine the actual risk characterization to be used in determining proposed NRC response.

Hatch 2

On June 15, 1999, Plant Hatch, Unit 2 experienced a loss of condenser vacuum. This coupled with several unrelated maintenance program deficiencies, led to a reactor scram, a reactor isolation, and excessive torus temperature.

The feasibility task group reviewed the 10CFR 50.72 report dated 10/13/1999, associated with this event, the NRC event briefing package for this event, the Sequence Coding and Search System report for LER number 36699006, and LER 99-006-00, dated July 14, 1999. In addition, a risk evaluation of the event was performed by a member of the task group using the NRC's Simplified Plant Analysis Risk (SPAR) Model for Plant Hatch. Based on the information provided in these documents and additional information provided by the Region II participant, the task group determined that the risk associated with this event was approximately 5E -5. Consequently, the task group determined that adequate information was available to justify dispatch of a SI based on risk alone. This was in agreement with the actions taken by Region II following the event. However, as required by program guidance in place at the time, the Region's action were based on deterministic methods only, and no risk analysis was performed at the time.

Beaver Valley 2

On July 17, 1999, Beaver Valley, Unit 2 experienced an electrical transient during emergency diesel generator testing that caused a 4160v safety bus outage, the loss of seal injection and thermal barrier flow to two reactor coolant pumps, and the degradation of two division "B" batteries.

The feasibility task group reviewed the 10CFR 50.72 report dated 7/17/199, associated with this event, the NRC event briefing package for this event, the SCSS report for LER number 41299007, and LER 0-007-00, dated August 19, 1999. In addition, the task group was provided a set of risk analysis information developed by the Region I SRA at the time of the event.

Based on the information provided in these documents and additional information provided by the Region I participant, the task group determined that the risk associated with this event was approximately 4.6 E -6 and sufficient to justify dispatch of an SI. This was in agreement with the actions taken by Region I at the time of the event.

Indian Point 2

On August 31, 1999 at 2:31pm EST, Indian Point, Unit 2 scrammed from full power. In addition, the plant experienced a loss of off-site power to all vital 480v buses. One bus, 6A, remained de-energized for an extended period and caused the eventual loss of one 125vdc bus and one 120 vac instrument bus. Conditions were not corrected in time to prevent the loss of station emergency batteries.

The feasibility task group reviewed EN Number 36104 dated August 31, 1999, Operating Reactor Events Briefing Package 99-04, and LER 1999-15-0 dated September 30, 1999. In addition, the task group reviewed the note from Peter Wilson to Richard Barrett, "Preliminary Risk Estimate for the Indian Pt. 2 Event," dated September 2, 1999. Based on the information provided in these documents and additional information provided by the Region I participant, the task group determined that the risk associated with this event was approximately 2 E-4. Consequently, the task group determined that adequate information was available by early afternoon on September 1, 1999, to justify dispatch of an Augmented Inspection Team (AIT) based on the risk characterization alone. This was just slightly before the actual AIT decision which was made at about 5:00p.m. that same day. The NRC initially responded by dispatching a Special Inspection (SI) early on September 1. Both the SI and AIT decisions were consistent with the draft procedure and manual chapter for the new program.

Risk Characterization of Inspection Findings

The following is a description of risk assessments that the feasibility study group performed using the significance determination process (SDP) for inspection findings that the NRC identified during special inspections at Hatch Unit 2 and Beaver Valley Unit 2 and an AIT at Indian Point Unit 2. The inspection findings are documented in NRC Inspection Special Report 50-366/99-10 and 50-412/99-07 and NRC Augmented Inspection Team Report 50-247/99-08 respectively. The task group utilized recently developed SDP worksheets. These worksheets had received limited review for accuracy and were not available at the time of the inspections noted above.

Hatch Event Findings

On June 15, 1999 Hatch Unit 2 lost condenser vacuum and was manually tripped from about 30 percent power. The most probable cause of the loss of vacuum was air entrapment in the condenser waterboxes during a lowered flume level in support of a chlorination procedure. Several equipment problems complicated the event, including one outboard MSIV that did not shut, two BOP electrical buses that had to be manually transferred to the startup transformer, and an RHRSW leak into the torus area sump. Licensee performance issues identified in the inspection report were:

a. Corrective actions for two similar events in 1995 and 1997 included maintaining a minimum circ water flume level during chlorination and moving the flume level indicators to the pump suction pit. These actions had not been taken at the time of the 1999 event.

b. Although a continuous vent path from the waterboxes had been installed following the 1997 event, inspectors reported that the current evidence indicates that the design was inadequate and may also have contributed to the problem (in 1999).

c. Untimely corrective maintenance of the "B" CRD pump suction filter due to a doubling of the non-outage corrective maintenance backlog within the last year.

d. An NCV was issued for inadequate corrective action, allowing an electrical ground that caused four Unit 1 safety-related breakers to trip during the Unit 2 scram.

e. Failure to correct 4160v voltage relay setpoint drift that led to loss of autotransfer capability for two of four 4160v buses supplying condensate and feedwater trains.

Using SDP, the feasibility study first performed a phase 1 screening of this finding. Since the findings contributed both to the likelihood of a reactor scram AND the likelihood that mitigation equipment would not be available after the scram, the group continued to evaluate the findings by performing a SDP phase 2 assessment.

Using the Plant Hatch SDP phase 2 work sheet for transient initiating events[1], the initial risk estimation for these findings would be **yellow** (moderate to high risk significance). This is based on the following assumptions:

> Findings a) and b) above contributed to increasing the frequency of a reactor scram and existed for over 1 year. Findings a), b), and e) above contributed to increasing the frequency of a loss of PCS following a reactor scram and existed for over 1 year. Finding c) contributed to the unavailability of CRD pumps as injection sources following plant scrams or other initiating events and existed for greater than 30 days, but CRD pumps are not modeled in the SDP and are not credited as an independent success path for injection in the IPE. Finding d) did not affect Unit 2.

The Transient core damage sequences assuming loss of PCS, with credit for recovery, results in a **yellow** risk significance estimation based on sequence number 3. Since these findings were "greater than green," they would be reviewed by an NRC risk analyst. It must be noted that the failure probabilities used in this simple estimation model are conservative. It is highly likely that the use of more realistic failure probability values for HPCI, RCIC, and manual reactor depressurization in a SDP phase III analysis would result in reducing the risk significance of these findings to no greater than **white** and possibly even **green**.

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[1]The SDP phase II worksheets used for this feasibility study were developed directly from the licensee's IPE submittals and had not yet been verified by a site visit or reviewed for current accuracy by either the licensee or the NRC staff.

Beaver Valley Event Findings

Region I dispatched a special inspection team to Beaver Valley Unit 2 on July 20, 1999 to evaluate an emergency diesel generator (EDG) failure that resulted from biofouling of the service water cooling flow to the EDG. The team was also tasked with reviewing the plant operators inadequate response to the loss of reactor coolant pump seal cooling.

Finding Number 1 - EDG Rendered Inoperable due to Inadequate Biocide Treatment

Macro biological fouling (biofouling) in the service water piping that supplies the unit's EDGs was not detected during a biocide treatment. Several days later, a rapid and substantial degradation of service water flow to EDG 2-2 occurred during a routine surveillance test. The inspectors concluded that EDG 2-2 was inoperable for seven days.

Using SDP, the feasibility study first performed a phase 1 screening of this finding. Since the unavailability of the EDG impacted two of the reactor cornerstones (mitigation and containment barrier), the group continued to evaluate the finding by performing a SDP phase 2 assessment.

Using the SDP phase 2 work sheet for loss of offsite power initiating events, the group determined that risk estimation for this finding would be **white** (low to moderate risk significance). Since this finding was "greater than green," this finding would be reviewed by an NRC risk analyst if the licensee had contested the phase 2 risk estimation. The Region I senior reactor analysts (SRAs) had previously performed a risk assessment of this finding. The SRAs also concluded that this was a **white** finding.

Subsequent to the issuance of the special inspection report, the region concluded EDG 2-2 had not been rendered inoperable by the biofouling. Therefore, the actual out of service time for EDG 2-2 due to biofouling was approximately 68 hours. The group concluded that given the actual out of service time, that the finding would be characterized as **green** by the SDP phase 1 process since the EDG was out of service for less that the technical specification allowed outage time.

Finding Number 2 - Operators' Inadequate Response to Loss of Reactor Coolant Pump Seal Cooling

On July 16, 1999 Beaver Valley Unit 2 lost both seal injection and thermal barrier heat exchanger cooling to two reactor coolant pumps (RCPs) for approximately 3 minutes while the pumps were in operation. The cause of the seal cooling loss was the failure of both the normal offsite power supply and emergency power to 4160 V bus 2DF. The special inspection team found that following the loss this bus, the operators did not promptly recognize that cooling to two RCP seals was lost and did not take actions to both the reactor and the affected reactor coolant pumps as required by procedure. The team found that this was the result of inadequate training, the lack of adequate procedural guidance and weak human factor design considerations.

Using SDP, the feasibility study first performed a phase 1 screening of this finding. Since the failure to recognize the loss of cooling to two RCP seals increased the probability of a reactor coolant pump seal loss of coolant accident (LOCA), the group continued to evaluate the finding by performing a SDP phase 2 assessment.

This finding was not readily evaluated with using the SDP phase 2 process without the assistance of a risk analyst. With the assistance of a risk analyst, the group estimated the risk associated with this finding with the following bounding assumptions. The group assumed that the all operators would always fail to identify the loss of seal cooling when either 4160 Vac emergency bus failed. The group also assumed that these performance problems existed for greater than one year. The risk analyst provided the group with the an estimated frequency of bus failure leading to as loss of seal cooling LOCA of approximately 4E-3/yr Using the SDP phase 2 work sheet for small break LOCA, the group determined that risk estimation for this finding would be **yellow** (moderate to high risk significance).

Since this finding was "greater than green," this finding would be reviewed by an NRC risk analyst if the licensee had contested the phase 2 risk estimation. The Region I senior reactor analysts (SRAs) had previously performed a risk assessment of this finding. The SRAs concluded that this was a **white** finding.

Indian Point 2 Event Findings

On August 31, 1999 Indian Point Unit 2 experienced a reactor trip complicated by a loss-of-offsite power to all four vital 480v buses and a loss of emergency power to one of the four buses. In addition, one safety-related battery depleted, resulting in loss of a majority of control room annunciators. Licensee performance issues identified in the inspection report were:

a. RPS channel 4 $OT_{\Delta}T$ spurious trip signal (event initiator) had existed for several days without correction.

b. Station aux transformer load tap changer was left in "manual" for about 1 year, which was not in accordance with the plant licensing basis.

c. EDG 23 output breaker overcurrent trip setting was too low for more than 30 days.

d. EDG 23 blackout sequencer timing tolerance was inappropriate in that it allowed multiple pump starts causing higher starting currents and contributed to the EDG output breaker tripping for more than 30 days.

e. A Notification of Unusual Event was not made when offsite power was lost for greater than 15 minutes.

f. Station Management did not focus engineering and support personnel on plant recovery.

Using SDP, the feasibility study first performed a phase 1 screening of this finding. Since the above findings affected both the frequency of initiating events and the availability/reliability of mitigation equipment, two cornerstones were affected and the group continued to evaluate the finding by performing a SDP phase 2 assessment.

Using the Indian Point Unit 2 SDP phase 2 work sheet for transient initiating events, the initial risk estimation for this finding would be **yellow** (moderate to high risk significance). This is based on the following assumptions:

> Finding a) did not noticeably increase the expected reactor trip frequency for the total period of time that mitigation equipment was degraded, and therefore the Transient initiating event frequency was not adjusted for this analysis. Finding b) increased the LOOP frequency by an assumed order-of-magnitude. Findings c) and d) made EDG 23 unavailable but recoverable, and had the effect of losing one motor-driven AFW train and all primary bleed and feed capability due to the inability to open one of two PORV block valves required for success. Finding e) was assessed using the EP SDP flowchart as "green". Finding d) could not be assessed using the SDP since it is a "cross-cutting" type of issue.

The Transient core damage sequences assuming loss of one motor-driven train of AFW and bleed and feed capability, with credit for recovery, results in a **yellow** risk significance estimation based on sequence number 3. Additionally, the Loss-of-Offsite Power core damage sequences assuming an increased LOOP frequency, with credit for recovery, also results in a **yellow** risk significance estimation based on sequence number 2. Since these findings were "greater than green," they would be reviewed by an NRC risk analyst.

Plant Performance Assessment

The task group reviewed the plant issues matrix (PIM) information for each plant for the 12 month period prior to each event. No inspection findings were identified which would have been characterized as more significant than **green**. However, it should be noted that the information contained in the PIMs reviewed was from the current inspection program and may not represent findings from the new program. In addition, the information contained in these PIMs may not have provided adequate data to perform an accurate risk assessment characterization in all cases. Where this documentation was lacking, the regional representative provided addtional clarification

The task group also reviewed performance indicator (PI) information derived from monthly operating reports. This information was limited and did not provide adequate data to derive all 19 PIs associated with the new program. However, sufficient information was available to provide an indication of performance in the Initiating Events and Mitigation System conerstones. Based on this information, the task group concluded that these PIs would likely have been **green**.

The resultant PI inputs and inspection inputs from the PIMs were used in conjunction with the RROP Action Matrix to determine the appropriate level of agency action in response to the

inspection findings discussed above. Based on this information, the task group concluded that the actions specified in the Action Matrix were appropriate and generally agreed with the actual response taken during the assessment period.

The task group also discussed what conditions were necessary to escalate actions to those required by the next column and what conditions would warrant taking less action than specified. The task group concluded that the conditions specified by the Action Matrix were appropriate for each event reviewed. The task group further concluded that barring "acts of God" where no licensee performance issues were identified, taking less action than specified by the Action Matrix was not justifiable.

Findings and Recommendations

Event Response

The task group concluded that the proposed process, modified by the improvements outlined below, was capable of adequately determining agency response to events and plant conditions based on a risk characterization of the event or plant condition coupled with traditional deterministic criteria. However, the task group recommends providing additional oversight for the new process during the initial implementation of the RROP. The task group further recommends that consideration be given to computerizing appropriate portions of the process in future years.

The SDP worksheets provide adequate qualitative information and lead to consideration of appropriate issues and questions to focus deliberations regarding event response, however, SRA analysis should use more refined methods to determine actual risk characterization to be used in determining NRC response to events or conditions. The criteria for performing these risk analyses should be more clearly defined. Additionally, the deterministic criteria specified in MD 8.3 should be retained and considered when deciding NRC response.

IIT response is justified if the licensee declares a site area emergency. Similar ties to emergency action levels should be considered for AIT and SI responses.

MD 8.3 should contain a description of special inspections (SI) and criteria for dispatch similar to that provided for IITs and AITs. Additionally, lower level procedural guidance should be developed for SIs similar to Inspection Procedure 93800, "Augmented Inspection Team" used for AITs.

The current practice of initiating an inspection effort following IITs and AITs to fully characterize and determine the extent of condition of findings should be reflected in the revised process.

The definition of "complicated trip or event" should be refined and examples should be provided. Additionally, terms used in MD 8.3 such as "significant" should be defined where appropriate.

Inspection Finding Risk Characterization

The task group concluded that the Significance Determination Process provided a reliable method of risk characterization of the resultant inspection findings.

Performance Assessment

The task group concluded that the Action Matrix provided adequate guidance for appropriate actions in response to the performance issues identified and that these actions were in agreement with the actual agency response. The task group also concluded that cross-cutting issues such as human performance and corrective action program performance could be effectively used to adjust agency response within the appropriate Action Matrix column.

ENFORCEMENT PROCESS

Attachment 8

ENFORCEMENT PROCESS

Introduction

This attachment discusses the results of the 6 month pilot program. The metric success criterion for the enforcement process in the pilot program was that the NRC take enforcement actions in a manner consistent with the assessment of inspection findings that result from the Significance Determination Process (SDP). The enforcement policy was revised for plants participating in the pilot process to use the results of the SDP to determine the enforcement action for violations of NRC requirements. As described in EGM 099-06 Rev 1, for issues that are violations and are assessed by the SDP and given a color (green, white, yellow or red), a non cited violation or cited violation is documented. No severity levels or civil penalties are used. Violations that fall outside the SDP, such as those involving willfulness, impacting the regulatory process or actual safety consequences continue to be handled by the Enforcement Policy that uses severity levels and civil penalties.

Pilot Criteria Results

During the pilot program 85 issues were assessed as of green (very low) significance in issued inspection reports. These issues were documented as non cited violations. Three issues were assessed being of white (low to moderate) significance. For these issues, regulatory conferences were held with the licensees and Notices of Violation (NOV) were issued for the applicable violations. Although experience with the process for issuing NOVs was limited during the pilot program, no fundamental flaws with the approach were identified. As a result, these enforcement outcomes are consistent with guidance in the enforcement policy and result in success with the enforcement program metric that enforcement actions were consistent with the SDP.

Stakeholder Feedback (NRC/Industry/Public)

The Office of Enforcement solicited feedback on the revised policy for pilot plants from NRC stakeholders during visits to regional offices and other discussions with NRC personnel. OE also solicited feedback from the industry and the public at meetings at the pilot plant sites, at NRC headquarters, in the federal register notice on the new enforcement policy, and at the public Lessons Learned Workshop conducted in January 2000.

Verbal feedback on the new reactor oversight process received by NRC, industry representatives and public participants was generally positive. Overall support was given for the close tie between the SDP process assessment and resulting enforcement action. The feedback suggests that the use of severity levels and civil penalties for violations involving willfulness, actual consequences and impacting the regulatory process was also appropriate.

Stakeholders expressed concern with the thresholds for citing violations related to errors in submitted Performance Indicator (PI) data. Minor violations associated with PI errors were documented during the pilot program to be able to assess the ability of licensees to appropriately report PI information. Industry participants were concerned that errors in data

that did not cause a PI color change and as a result would not change the NRC actions, should not be considered material errors and therefore were not even minor violations of NRC requirements.

Written feedback received from industry was generally supportive of the enforcement policy changes. The Nuclear Energy Institute (NEI) strongly supports the enforcement policy changes and believes that the principles underlying the new process represent sound public policy. NEI cited three issues as needing more evaluation.

1. The need to re-evaluate the criteria that a licensee has not had any previous enforcement action in the last two years as a factor for determining which path to take in the enforcement process for determining a civil penalty assessment. NEI considers that using the fact that a licensee has had any escalated enforcement action in any area within the previous two years too broad and that the policy should be clarified to state that the criteria is met unless the previous violation is in the same functional area.

2. The regulatory basis for taking enforcement action for issues involving safety conscious work environment.

3. Continue to re-evaluate the Enforcement Policy Supplements to be more risk informed.

Resolution of these issues is not required for initial implementation of the new reactor oversight program. However, OE will evaluate these issues during future revisions to the enforcement policy.

Process Changes Resulting From Lessons Learned

During the pilot program, the regions determined several issues to be of white (low to moderate) risk significance following an SDP phase 2 analysis. To maintain consistency between regions on the assessment of risk, an SDP Panel reviewed white, yellow and red issues. This panel consisted of representatives from NRR, Research, OE, the region presenting the issue, and at least one other region. The panel reviewed the SDP analysis to gain agreement on the region's analysis and discussed any violations of NRC requirements associated with the issues. Following agreement of the panel, the region sent a letter to the licensee describing the NRC's position on the significance of the issue and allowed the licensee to submit more information and/or request a Regulatory Conference to discuss the issue.

Based on the experience gained during the pilot program, a better integration with current panels discussing regional issues is needed. As a result, NRR and OE have started to integrate the panels into the existing weekly regional panel schedule and an individual in the region and in headquarters will be assigned responsibility for each issue. This integration will ensure that panels are appropriately scheduled, that documentation needed for discussion at the panels is available and that personnel are not required at different meetings being held simultaneously. Personnel assigned the responsibility to track the issues will ensure that they do not remain open and unresolved for extended periods without resolution and that

correspondence regarding the NRC decision on significance and any Notice of Violation is issued in a reasonable time. NRR will continue to be responsible for the SDP process and will chair the SDP panel portion of the meeting.

The use of PI data in the process introduced a unique issue. The NRC baseline inspection program requires inspection to verify PIs. During these activities inspectors identified instances of inaccurate PI data. Although licensees are voluntarily submitting this information, it is an important part of the assessment of licensee activities and is used instead of more detailed inspection by the NRC. As a result, PI information is material to NRC processes and is required to be complete and accurate according to 10CFR50.9, Completeness and Accuracy of Information. Inaccurate PI data may cause the NRC to develop a false picture of licensee performance and could result in not performing necessary inspection or not taking other actions as directed by the Action Matrix. Given the importance of this information, it is appropriate that enforcement action is taken for PI data errors commensurate with the significance of an error and its impact on the regulatory process.

During the pilot program, PI data errors that did not change the PI color were considered minor violations that were not required to be documented. Enforcement discretion was used to not cite violations involving PI data errors that would have resulted in a color change had the accurate data been reported. Discretion was appropriate because both the NRC and pilot plant personnel were on a learning curve to determine the best methods to submit the data. This approach was extended for the pilot plants following the pilot program until initial implementation of the reactor oversight process and for historical data submittal by the non pilot plants.

During the January 10-14, 2000 Lesson Learned workshop the question of appropriate enforcement guidance for non willful inaccurate reporting of PI s (10 CFR 50.9) was discussed. The participants evaluated possible approaches for handling inaccurate reporting of performance indicator data and developed recommended resolutions. The consensus of the participants, which the Office of Enforcement supports, was as follows.

- If a reported performance indicator is inaccurate but licensee identified and corrected before NRC reliance on the information, then no enforcement action would be taken regardless of the regulatory impact of the error had the error gone uncorrected. This guidance is consistent with the current enforcement policy.

- Conservative errors, such as those causing a PI to be reported as white when it was really green do not result in the NRC being unaware of adverse information regarding the licensee's performance. Although the inaccurate information may have caused unnecessary increased inspection or other action, while inefficient, the error is not a reason to take enforcement action. As a result, no enforcement action would normally be taken.

- If the inaccuracy does not result in a crossed threshold (i.e., the PI stays in the same color band), then no enforcement action will be taken.

- If the inaccuracy of concern does result in a crossed threshold, then enforcement action will be issued using the following guidelines:
  Green → White = Severity Level IV (NCV if criteria are satisfied)

White → Yellow, Yellow → Red, White → Red= Evaluated as a Severity Level III NOV

- Enforcement discretion to not cite violations involving PI data errors that would have resulted in a color change had the accurate data been reported will continue until January 31, 2001 to allow all plants to become familiar with the new PI reporting process.

Other "minority view" variations of this approach were discussed during the workshop including basing the severity level on crossing multiple color thresholds crossed. That is, using Severity Level IV violations for one threshold crossed, (e.g., green to white; white to yellow; yellow to red) and Severity Level III violations for two thresholds crossed (e.g., green to yellow, white to red). OE considered this approach but did not find it any more compelling that the majority view expressed above.

Another alternative "minority view" position was that no individual PI data error is more significant than another. In this approach all errors would be treated the same regardless of the color band involved. If the error causes a change in the PI color, then the Action Matrix will dictate the NRC response. OE believes that if the inaccurate PI information prevented the timely NRC response, enforcement action is appropriate. If the Action Matrix alone determines the NRC response to data errors, licensees will have little incentive to ensure the errors do not exist. The only consequence for an inaccurate data submittal would be the action that would have occurred had the correct data been submitted originally. The net result is a delay in the increased regulatory scrutiny that would accompany a PI color change. As a result, OE believes that PI reporting errors that may have prevented timely NRC response warrant enforcement action.

OE recognizes that there may be a perceived inconsistency in the handling of errors in the consensus approach. Specifically, a small error at a plant that causes a threshold to be crossed may be treated differently than the same magnitude of error that does not cause a threshold to be crossed. However, OE believes that errors that impede the NRC's ability to perform its regulatory function, which in this case may be increased inspection or other action matrix responses, are more significant. As a result, errors of similar magnitude may be treated differently based on the impact they had on the NRC action. This inconsistency is inevitable in any system that uses varying thresholds for determining the NRC response. Not varying the enforcement response based on the impact on NRC processes would be inconsistent with the philosophy of varying levels of engagement in the new reactor oversight process. The consensus approach maintains safety by emphasizing the need to provide accurate PI data that can be used to accurately assess performance. Also, it acts to improve public confidence by emphasizing the importance of accurate PI data submittals while accounting for the regulatory impact of inaccurate data on a case by case basis.

Another issue discussed at the workshop was the need to develop a consensus on how much documentation for violations that are being given enforcement discretion. A concern was raised that a high level of detail, at times in a very negative light was being used to discuss violations

that in the end were given discretion. The majority view was that the existing approach for documenting these issues is appropriate and to continuously monitor this issue in light of the new Reactor Oversight Process for overall implementation consistency.

Issues for Resolution Prior to Initial Implementation

The only major open issue is the treatment of 10CFR50.9, Completeness and Accuracy of information, violations for PI data reporting errors. Based on the discussions during the lessons learned workshop, OE recommends the consensus approach discussed in Section 5.3. OE will continue to evaluate the stakeholder comments for future policy changes.

Remaining Long-term Issues

OE is planning to make a revision to the enforcement policy to incorporate the interim policy for the pilot plants into the body of the policy that will be applicable for all reactor plants. This change will be presented to the Commission in time to allow publication of the policy revision before the planned initial implementation of the reactor oversight process on April 2, 2000.

Conclusion on Readiness of the Enforcement Program for Initial Implementation

Based on the results of the pilot program reviews, the staff considers the new enforcement approach used at the pilot plants to have met its stated goals. The enforcement process uses the results of the SDP when applicable to formulate the enforcement action. As a result, enforcement and the assessment process use the same significance for an issue to determine appropriate agency actions. With the revision of the Enforcement Policy the enforcement process is ready for initial implementation.

ASSESSMENT PROCESS

Attachment 9

ASSESSMENT PROCESS

Introduction

This attachment provides the results of the 6 month pilot program related to the Revised Reactor Oversight Process (RROP). The Operating Reactor Assessment Program evaluates the overall safety performance of operating commercial nuclear reactors and communicates those results to licensee management, members of the public, and other government agencies.

The assessment program collects information from the inspection program and performance indicators in order to enable the agency to arrive at objective conclusions about the licensee's safety performance. Based on this assessment information, the process determines the appropriate level of agency response including supplemental inspection, demands for information, confirmation of specific corrective actions, or orders, up to and including a plant shutdown. The assessment information and agency response are then communicated to the public. Follow-up agency actions, as applicable, are conducted to ensure that the corrective actions designed to address performance weaknesses were effective.

The assessment program was exercised as part of the RROP pilot program at nine pilot plants from June 1, 1999 through November 30, 1999. Pilot program success criteria were established to measure the objectives of the pilot program. The assessment program results from the pilot program are compared with the success criteria below.

Pilot Criteria Results

Criteria #1: Can the action matrix be used to take appropriate NRC actions in response to indications of licensee performance? It can, if there is no more than one instance (with a goal of zero) in which the action taken for a pilot plant is different from the range of actions specified by the Action Matrix.

Results: The actions dictated in the Action Matrix were limited to individual white performance indicators and inspection findings. None of these individual white assessment inputs combined to create a degraded cornerstone or three white inputs in a strategic performance area. Therefore, actions dictated in the degraded cornerstone column, multiple/repetitive degraded cornerstone column, or unacceptable performance column of the Action Matrix were not exercised during the pilot program. However, those actions that were taken by the regional offices for a single white input were consistent with those described in the Action Matrix. It is expected that there will be instances in which the Action Matrix will be exercised more fully once initial implementation begins at all plants.

A recent reactor trip provided an opportunity to evaluate a single event which resulted in tripping the green/white threshold for a performance indicator (PI) and an inspection finding. The PI for *Safety System Unavailability, High Pressure Injection System* performance indicator tripped the green/white threshold in October 1999. This resulted from an event that occurred on October 14, 1999 in which a high pressure coolant injection (HPCI) turbine tripped on overspeed following a reactor trip. The staff conducted a parallel review, through the

significance determination process (SDP), and determined that the noted HPCI unavailability constituted an inspection finding in the white (low to moderate risk significance) band. Since the SDP characterization pertains to the same underlying issue as the PI, the agency considers this to be a single issue within the cornerstone. The agency response from this event has been carried forward through the pilot program lessons learned process.

Criteria #2: Are assessments of licensee performance performed for the pilot plants in a manner that is consistent across the regions and that meets the objectives of the assessment program guidance? They are, as determined by a review and evaluation of the outputs of the assessment process generated by each region.

Results: As stated above, the actions dictated in the Action Matrix were limited to individual white performance indicators and inspection findings. This resulted in only actions taken in the licensee response column and the regulatory response column of the Action Matrix. From this set of data, the actions taken by the regional offices were consistent.

Criteria #3: Can the assessment process be performed within the scheduled time? It can, if for at least 8 out of the 9 pilot plants, a mid-cycle assessment of the PIs and inspection findings can be completed, with a letter forwarding the results and a 6-month inspection look-ahead schedule, within 4 weeks of the end of the assessment cycle.

Results: Early feedback received during the pilot program was that the regional offices could not support the existing time line for completing the mid-cycle review, with a letter forwarding the results of the plant's assessment and an inspection look-ahead letter, within four weeks of the end of the assessment cycle. The time frame has been extended to five weeks after the end of the assessment cycle for completing the mid-cycle review and an additional three weeks after the meeting to issue the mid-cycle assessment letter with an inspection plan. This represents a change from four weeks to eight weeks after the end of the assessment cycle for the regional offices to complete the process. All regional offices met these revised time lines for the pilot plant mid-cycle reviews. The time line for the end-of-cycle reviews was also extended to reflect these same considerations. These process changes were reviewed to ensure that there were no negative impacts on other aspects of the assessment program or other elements of the RROP. The staff does not believe that the failure to meet this criteria is indicative of the agency's ability to effectively execute the assessment program.

Stakeholder Feedback (NRC/Industry/Public)

The agency has received feedback on the pilot process through a variety of mediums. Stakeholder feedback on the assessment program was received through weekly conference calls with the regional offices, agency counterpart meetings, biweekly public meetings, the Pilot Plant Evaluation Panel (PPEP) meetings, the lessons learned workshop, and the mid-cycle reviews of the pilot plants. Comments were dispositioned in three ways: 1) incorporated into IMC 0305 *Operating Reactor Assessment Program*, 2) carried forward as an issue to be resolved prior to initial implementation, or 3) carried forward as a long term issue. The

assessment program guidance is contained in Inspection Manual Chapter 0305 *Operating Reactor Assessment Program*. Major issues are summarized below:

1. There was significant stakeholder feedback that clear agency guidance did not exist a) when describing plants with "significant performance problems" and, b) on the timeliness of agency response to these plants. Based on early feedback, IMC 0305 has been modified during the pilot program to reflect the following guidance:

- Plants with significant performance problems are defined as those plants with performance in the multiple/repetitive degraded cornerstone column or unacceptable performance column of the Action Matrix.

- The agency will normally review plants with significant performance problems annually at the Agency Action Review Meeting. However, in accordance with the Action Matrix, the EDO or Commission will meet at any point during the annual assessment cycle with any licensee whose plant has "significant performance problems".

- Additionally, for plants whose performance is in the Multiple/Degraded Cornerstone column of the Action Matrix, consideration shall be given at each quarterly review for engaging senior licensee and agency management in discussions associated with declaring licensee performance to be unacceptable in accordance with IMC 0305 *Operating Reactor Assessment Program.*

2. There are fundamentally differing views on how cross-cutting issues should be handled in the assessment program.

A fundamental aspect of the original framework is that cross-cutting issues will manifest themselves in tripping either a PI or inspection finding threshold. However, because of the importance of cross-cutting issues and the lack of experience with the RROP, IMC 0305 *Operating Reactor Assessment Program* was modified during the pilot program to allow for the regional offices to provide a qualitative assessment of the PI&R inspections in the annual assessment letter. Additionally, the procedure allows for a qualitative discussion of any substantial cross-cutting issues in the mid-cycle and annual assessment letters.

This issue was discussed during the Lessons Learned Workshop which was held on January 10-13, 2000. The breakout session participants were unable to reach consensus on the appropriateness of the current approach in the context of the underlying principles of the RROP. Opinions were divided along two premises:

- The NRC should not assess cross-cutting issues in the absence of other issues outside of the licensee response band as stated in the original tenets of the framework. While this tenet should be validated during industry-wide implementation, it is premature and inappropriate to incorporate subjective judgements into the process absent any performance issues.

- The other opinion was that, without focused inspection of cross-cutting issues in the baseline inspection program, the NRC would not be able to provide early indications of programmatic breakdowns that may not necessarily manifest themselves in a high level of risk associated with tripping the PIs or inspection findings. These insights have

historically provided early indications, which if left uncorrected, of significant performance degradations. Therefore, inspection and assessment activities focused on cross-cutting issues should be retained and further refined.

Due to inability of the group to develop a consensus on this issue, a recommended approach is to continue using existing (i.e., Pilot Program) assessment guidance upon initial implementation at all plants and inform the Commission of the diverse positions. A longer term resolution would be to establish a working group, representing diverse interests, to gather insights and propose refinements to the program.

3. There was significant stakeholder feedback that there may be instances in which deviations from those actions prescribed in the Action Matrix may be warranted and that there needs to be clear program office guidance in this area.

The staff recognizes that there may be rare instances in which there may be a need for the agency to either increase or decrease the level of engagement with the licensee from those actions prescribed in the Action Matrix. During the pilot program the following general guidance was added to IMC 0305 *Operating Reactor Assessment Process*:

- The agency may consider, in a few limited situations, that an issue or event that results in a red inspection finding is not indicative of licensee performance, but rather, a condition outside of the licensee's control. The staff will consider treating these findings as exceptions for the purpose of determining appropriate NRC actions per the Action Matrix. In such instances, the minimum response would be implementation of supplemental inspection procedure 95001 *Supplemental Inspection for One or Two White Inputs in a Strategic Performance Area*. In these cases, the Regional Administrator shall obtain concurrence from the Director of the Office of Nuclear Reactor Regulation (NRR).

- The agency may consider in a few rare instances that circumstances dictate that actions outside of the Action Matrix apply. In these cases the Regional Administrator shall obtain concurrence from the Director of the Office of Nuclear Reactor Regulation (NRR) for the proposed actions.

This issue was discussed during the Lessons Learned Workshop which was held on January 10-13, 2000. The group divided this issue into two separate topics and provided a priority to each. These were a) a **process** for deviating from the Action Matrix needed to be defined prior to initial implementation, and b) **criteria** for deviating from the Action Matrix will be further developed after initial implementation as additional experience is gained through initial implementation at all plants. The recommended resolutions for defining the process are as follows:

- A deviation from the Action Matrix should be defined as any action taken by the agency that is not in accordance with the appropriate column of the Action Matrix.

- The contents of the cells within the Action Matrix should be clarified, where appropriate, such that deviations are more recognizable to all stakeholders.

- A deviation from the Action Matrix should require the appropriate level of regional management approval with concurrence from the appropriate level of NRR management. The agency manager responsible for approval of the assessment letter one column to the right of where the licensee's performance is in the Action Matrix should authorize the deviation.

- Deviations should be captured in the appropriate letter to the licensee (i.e. assessment follow up letter, mid-cycle or end-of-cycle letter). The rational for initiating the deviation should be included in the letter to the licensee.

4. Some singular events may cause a performance indicator to trip out of the license response band as well as create a white inspection finding. This would result in two white assessment inputs and a degraded cornerstone such as a recent event at a pilot plant in which a reactor trip was followed by a subsequent failure of the high pressure coolant injection (HPCI) turbine.

Singular events should not be "double-counted" in the assessment program. However, the most conservative color from the performance indicator and the inspection finding (i.e. yellow vs. white) shall be used to determine appropriate agency action according to the Action Matrix.

5. There was some feedback that the agency should evaluate the feasibility of aggregating licensee performance at the cornerstone level.

Licensee performance is determined using individual performance indicators and inspection findings (utilizing the SDP). Overall licensee performance is aggregated in the Action Matrix across cornerstones and strategic performance areas for the purpose of determining appropriate agency action. The agency should review this approach as experience is gained with the new oversight process and changes should be made based on the lessons learned.

Process Changes Resulting From Lessons Learned

Process changes as a result of lessons learned from the pilot program and stakeholder feedback have been previously discussed.

Issues for Resolution Prior to Initial Implementation

Listed below are unresolved issues that will be resolved prior to initial implementation:

1. The staff recognizes that there may be rare instances in which there may be a need for the agency to either increase or decrease the level of engagement with the licensee from those actions prescribed in the Action Matrix. The Office of Nuclear Reactor

Regulation will provide guidance on a process for these issues prior to initial implementation. Additionally, the staff will define the term "deviation" when referring to actions outside of the Action Matrix.

2. The staff will establish a working group, representing diverse interests, to gather insights and propose refinements on how to treat cross-cutting issues in the assessment program.

3. MC 0305 *Operating Reactor Assessment Program* should be revised to incorporate lessons learned prior to initial implementation.

Remaining Long-term Issues

The pilot program period of six months did not include an end-of-cycle review and an agency action review meeting. These reviews will occur in May 2000. Therefore, any lessons learned from these processes will not be available until after initial implementation of the RROP at all plants. Any lessons learned from these processes will be incorporated into the assessment program. Additionally, criteria should be developed for deviating from the Action Matrix during the initial implementation phase of the RROP.

Conclusion on Readiness for Initial Implementation

As stated previously, the pilot program did not exercise actions dictated in the degraded cornerstone column, multiple/repetitive degraded cornerstone column, or unacceptable performance column of the Action Matrix. Additionally, other elements of the pilot program (end-of-cycle and agency action review meetings) were not exercised due to the abbreviated nature of the pilot program. However, significant lessons were learned during the pilot program which assisted in the further development of these aspects of the assessment program. The assessment program will be ready to support the proposed initial implementation at all plants on April 2, 2000, pending the successful resolution of the three items listed above.

INFORMATION MANAGEMENT SYSTEMS

Attachment 10

INFORMATION MANAGEMENT SYSTEMS

Introduction

This attachment provides the results of the 6-month pilot program of the revised reactor oversight process (RROP) regarding the NRC's information management systems. Several modifications to the NRC's information management systems were identified as being necessary to support implementation of the RROP. Most of these modifications were designed to support making the NRC's assessment of licensee performance publicly available on the Internet in a consistent and timely manner. Some internal information management systems, including the Regulatory Information Tracking System (RITS) and Reactor Program System (RPS), also require revisions to support the RROP.

Pilot Criteria Results

Three specific criteria were established to determine whether the NRC's information management systems are ready to support industry-wide implementation of the RROP.

1. Are the assessment data and results readily available to the public?

Success for this criterion was that if by the end of the pilot program, the NRC information systems support receiving industry data, and if the performance indicators (PIs) and current plant issues matrices (PIMs) are publicly available on the Internet within 30 days of the end of the data period (end of the month for the pilot) for at least 8 out of the 9 plants. This criterion was met each month for the PI data, but only once for the PIM data (in October 1999) as explained in more detail below.

The PIs were successfully sent by the industry and received by the NRC within 14 days for each month from all pilot plants during the pilot program. The PI data and charts were first made available on the external Web in July 1999 (June data) and were updated monthly throughout the pilot program within the 30-day timeliness guideline. The inspection findings, including the PIM and the inspection reports that documented the findings, were first made available on the external Web in mid October 1999. This delay was due to the fact that inspection findings from the pilot were not documented in inspection reports until mid-to-late August and were not entered into the PIM until September. The staff was then confronted with issues concerning the timeliness and consistency of PIM entries as noted in Attachment 5 to this paper. Because the inspection results were not made available on the Web earlier, the public comment period on the RROP pilot program was extended until the end of the year to allow sufficient time for the public to review the results of the entire RROP. By the end of October, it was successfully demonstrated that the PIs and the current PIM could be posted to the external Web within the 30-day timeliness guideline.

However, it is important to note that the PI reporting and posting processes implemented during the pilot program were different in many respects from the processes to be used during initial industry-wide implementation, so the implementation has not been fully piloted. Some key differences include that: (1) PI submittals will come directly from the licensees as opposed to from a central source (NEI) during the pilot program, (2) the files will be in a delimited text format as opposed to a spreadsheet format during the pilot program, and (3) the PI submittals

will eventually be received through the Electronic Information Exchange (EIE) and placed in the Agencywide Document Access and Management System (ADAMS) as official agency records, and these systems were not available during the pilot program. In addition, the process for computing the PIs and posting them to the Web site is expected to be more automated and efficient, where the process was manual and labor-intensive during the pilot program. The staff's plans to ensure that the assessment data and results will be made readily available to the public for initial industry-wide implementation of the RROP in April 2000 are discussed below.

2. Are the time reporting and budget systems, such as the Regulatory Information Tracking System (RITS), ready to support the RROP?

Success for this criterion was that the new RITS codes were established and were being used properly by the end of the pilot program. New RITS activity codes were defined and used by the pilot plants throughout the pilot program via a form to cross reference to the existing activity codes. In addition, the new Inspection Procedures were made available in the RITS system and have been used since the inception of the pilot program. There have been some consistency issues in recording time spent as noted in Attachment 5 to this paper. The new RITS activity codes were not made available in the RITS system until late November 1999 and are not planned to be used until March 2000. Although the RITS codes were not verified as being properly implemented by the end of the pilot program, the staff plans to ensure the availability and proper use of the new RITS activity codes prior to the proposed initial implementation in April 2000 as described below.

3. Are the information support systems, such as the Reactor Program System (RPS) and its associated modules, ready to support the RROP?

Success for this criterion was an analysis of the readiness of the systems identified as necessary to support the RROP. The necessary RPS system modifications were identified early in the pilot program. The RPS team provided temporary software solutions to support the RROP for the pilot program and has made significant progress in developing the system modifications necessary to support industry-wide implementation. The staff's plans to ensure readiness of the information support systems for initial industry-wide implementation of the RROP in April 2000 are described below.

Stakeholder Feedback (NRC/Industry/Public)

The staff has received feedback from several sources through different mediums regarding the readability and understandability of the assessment data and results on the Web page. These include written comments on the RROP in response to the Federal Register Notice, public meetings in the vicinity of the pilot plants, biweekly public meetings with industry, the recommendations of the Pilot Program Evaluation Panel, weekly conference calls with the regional offices, public stakeholder meetings, and the lessons-learned workshops. As expected, minimal feedback was received regarding the second or third criteria because they are internal NRC systems and they have not been fully developed and exercised yet.

In general, the feedback on the Web page has been positive and the stakeholders have acknowledged the increased availability of more objective and scrutable assessment

information. The majority of the feedback on improvements to the Web page are already under development by the staff. These include: (1) continue to solicit feedback and consider improvements to the Web page design, (2) place the letter designation in colored fields (i.e., "R" for red, "G" for green, etc.) to ease in differentiating between colors for those who are color-blind and when printing in black and white, (3) add more clarifying information to explain the PI calculations and thresholds, the meaning of the color designations, and other information to improve the understandability of the Web page and the NRC's assessment of licensee performance, (4) include ALL inspection reports on the assessment Web page to provide a more balanced perspective of licensee performance, and (5) include assessment letters and inspection plans on the Web page.

Other feedback included that the staff should: (1) test the process for PI submittals prior to the historical submittals in January 2000, (2) improve the organization and accessibility of the RROP Web site and assessment information through more user-friendly Web page navigation (i.e., the current RROP Web site location is not prominent or easily accessible within the overall NRC external Web page framework), (3) add an index at the top of certain Web pages to let the user know that additional information is available beyond what is viewable on the screen by scrolling down the page (particularly the plant performance summary page), (4) add a brief summary of the NRC's assessment of plant performance on the Web page for each plant on a quarterly basis (although assessment letters will be issued and available on the Web biannually as a result of the mid-cycle and end-of-cycle reviews, letters will only be issued quarterly for those plants who have crossed performance thresholds), (5) add the results of the Action Matrix for each plant to indicate the NRC's actions as a result of licensee performance (as noted in 3 above, this information will be in each quarterly assessment letter for licensees who cross performance thresholds and in biannual assessment letters for all plants), and (6) reconsider the current "color scheme" used to distinguish between performance thresholds to minimize potential misinterpretations (i.e., green and white may have connotations which are inconsistent with the desired message).

Process Changes Resulting From Lessons Learned

There are no specific process changes identified as a result of lessons learned during the pilot program in the area of information management systems. However, the staff has identified several key issues and milestones that need to be met to support the proposed initial implementation in April 2000 as noted in the next section.

Issues for Resolution Prior to Initial Implementation

1. Protocol for PI Submittals

The protocol for use during the historical PI submittals in January 2000 was established as described in Regulatory Issue Summary 99-06, "Voluntary Submission of Performance Indicator Data," and in NEI 99-02,"Regulatory Assessment Performance Indicator Guideline," Draft Revision D. Licensees use an NEI server and Web application to enter and manipulate the PI data prior to submitting it to the NRC. The NEI Web application puts the data in the proper delimited text format for the licensees to submit to the NRC. The licensees attach the file to an email and send it to a central NRC email address (pidata@nrc.gov). The historical PI data

submittals were received by January 21, 2000, using the aforementioned process. The staff is in the process of posting the data to the Web for public consumption as well as to the ADAMS system as an official agency record.

The protocol for the quarterly submittals beginning in April 2000 still needs to be established and included in a separate Regulatory Issue Summary and a future revision to NEI 99-02. The staff expects to eventually use the EIE system for PI submittals in place of the central email address that was used for the historical submittals. EIE is a Web-based system that uses encryption and user certification to protect transmitted information and is under development by the Office of the Chief Information Officer. If the EIE system is not available by April 2000, the process used for the historical submittals will be continued until the EIE system is available.

2. Trial Runs for PI Submittals

Trial runs of the historical submittals were completed prior to the January 21 submittals. Similarly, trial runs of the first quarterly submittals are planned to be performed about a month or so prior to the actual submittals to identify and resolve any problems ahead of time so that the actual submittals will go as smoothly as possible.

3. Web Page Improvements

The staff continues to make improvements and add new features to the Web page to make it more comprehensive and user friendly. The staff will evaluate all feedback on the Web page and consider making additional modifications as necessary to make the assessment results understandable and readily available to the public. The overall design of the Web page needs to be finalized to support initial implementation, including the addition of assessment letters, inspection plans, and access to all inspection reports.

4. Application of RITS Activity Codes

The staff plans to make the new activity codes available to the pilot plants through the RITS system and to issue revised guidance on the proper use of the new RITS activity codes in February 2000. The proper use of the RITS activity codes will be verified and monitored for the pilot plants over the next few reporting periods to ensure readiness for the proposed initial implementation in April 2000. The FY 2000 RITS Users Guide will also be modified to reflect the use of these new codes.

5. RPS Modifications

As noted earlier, the staff plans to make additional revisions to RPS to support initial industry-wide implementation. Through meetings with the regional RPS counterparts, we have identified several minor modifications and enhancements to RPS which are needed to support the RROP and/or to improve the usability of the RPS system as a management tool. In addition, a new module in RPS is being developed to capture the PI data, compute the PIs, and post the information to the Web. These modifications should be completed in the next several weeks and should be tested and implemented prior to the April 2000 proposed initial implementation date.

Remaining Long-term Issues

There are no specific information management issues identified as necessary to resolve after initial implementation of the RROP. Several long term improvements to the Web page are under consideration by the staff as noted in the stakeholder feedback discussion above. The information management systems will also need to be modified as necessary to support any RROP changes as technical issues are resolved.

Conclusion on Readiness for Initial Implementation

As noted, we have several observations from the pilot program regarding the information management systems, though it is difficult to reach any steadfast conclusions about the readiness of these systems to support initial implementation because they haven't been fully developed and exercised yet. However, the staff expects that the NRC information management systems and processes will be fully developed, tested, and ready to support initial industry-wide implementation of the RROP for all plants prior to April 2, 2000.

TRANSITION SCHEDULE

Attachment 11

TRANSITION SCHEDULE

The following schedule provides the remaining major activities and milestones to be completed in transitioning oversight of all operating commercial nuclear power plants to the RROP.

March 2000	• Issue all RROP procedures and program guidance • Conduct RROP public workshops • Complete non-pilot plant PPRs and issue inspection plans • Obtain Commission approval for initial implementation of the RROP
April 2000	• Complete regional inspector training on the RROP • Commence initial implementation of RROP for all power plants • Quarterly PI data reported
May 2000	• Conduct pilot plant End-of-Cycle and Agency Action Review meetings • Conduct final Senior Management Meeting and hold Commission Brief for all plants • Complete SDP site visits and Phase 2 worksheet development
July 2000	• Quarterly PI data reported • Issue Commission paper on industry-wide performance assessment process
October 2000	• Quarterly PI data reported
November 2000	• Conduct Mid-Cycle assessment for all power plants
January 2001	• Quarterly PI data reported
April 2001	• Quarterly PI data reported • Commence program self-assessment of first year of RROP implementation
May 2001	• Conduct End-of-Cycle assessment for all power plants • Conduct Agency Action Review meeting
June 2001	• Annual Commission brief on assessment results • Staff report on the program self-assessment results and lessons learned from the first year of implementing the RROP

COORDINATION WITH CURRENT OVERSIGHT PROCESSES

Attachment 12

COORDINATION WITH CURRENT OVERSIGHT PROCESSES

The final phase of the current assessment process will occur as we transition into the RROP. The staff expects that this will comprise the last round of Plant Performance Reviews (PPRs) in each of the regions, followed by screening meetings in Headquarters, and the final Senior Management Meeting (SMM) to be conducted in Region I. Simultaneously, the pilot plants from the revised reactor oversight process will be assessed under the new program, culminating in the Agency Action Review Meeting, which will be integrated with the SMM.

The attached table provides a summary of the performance assessment transition plan, illustrating the transition from the current assessment process into the revised reactor oversight process for both the pilot and non-pilot plants. The activities for the non-pilot plants are stipulated in the left-hand column and the parallel activities for the pilot plants appear in the right-hand column. Common activities (i.e., the SMM and the Commission Briefing) are spread across both columns. This summary was provided to the regions as an attachment to a memorandum dated January 25, 2000, entitled "Guidance for February 2000 Plant Performance Reviews." Detailed guidance for the May 2000 SMM preparations will be provided to the regions and other internal stakeholders in February 2000.

The May 2000 SMM and the resultant Commission briefing are expected to be similar to last year's meetings and consistent with the process changes noted in SECY-99-086, "Recommendations Regarding the Senior Management Meeting Process and Ongoing Improvements to Existing Licensee Performance Assessment Processes." Specifically, the Commission paper to be written following the May 2000 SMM will identify only those plants warranting agency-level attention (including any revised reactor oversight process pilot plants that were forwarded to the Agency Action Review Meeting based on the Action Matrix). The focus of the annual public Commission meeting will be on those plants identified during the SMM that warrant agency-level attention, as well as an update on the status of those plants that received NRC action as a result of the previous SMM. The discussion will include the plant's current status, the NRC's planned response, and the rationale for future agency action.

The staff plans to conduct future assessment activities under the revised reactor oversight process as described in Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," and discussed in Attachment 9 to this paper. However, if the Commission does not approve initial implementation of the revised oversight process to commence in April 2000, the staff would plan to continue to follow the existing assessment process consistent with SECY-99-086. Any deviations from SECY-99-086 would be presented to the Commission prior to the next SMM that would then be held in 2001.

As noted in Regulatory Issue Summary 99-04, "Voluntary Submission of Performance Indicator Data," dated November 22, 1999, the NRC does not expect D.C. Cook to participate in the initial implementation of the revised reactor oversight process because of the extended period of time they have been shut down. The staff plans to develop a transition plan for converting D.C. Cook from its current oversight process (IMC 0350) into the revised reactor oversight process.

PERFORMANCE ASSESSMENT TRANSITION PLAN

<table>
<tr><th>NON-PILOT PLANTS</th><th>PILOT PLANTS</th></tr>
<tr><td>PIs from licensees (Jan 21)
- non-pilot licensees submit historical PI data through December 31, 1999</td><td>PIs from licensees (Jan 21)
- Dec 1999 PI data from pilot plants completes the 99Q4 data (last monthly submittal from pilot plants)</td></tr>
<tr><td>PPRs (Feb 14 - Mar 3) in regions
- use PIM findings (Feb 1, 1999 - Jan 31, 2000) and licensee-submitted PI data to determine allocation of resources
- prepare 2-3 page PPR summary for each plant, emphasizing areas of concern (with examples) by strategic performance area, with optional paragraphs on substantial cross-cutting issues
(no discussion of strengths)
- based on performance, determine which plants warrant focused inspections (evaluate if covered in baseline, and if not, use the supplemental program). In rare instances, it may be necessary to use pertinent elements of the “old” regional initiative program
- develop 12-month inspection plans (April 2, 2000 - March 31, 2001) with caveat that 2nd half is tentative and may be adjusted in the future (noted in the PPR letter)</td><td rowspan="2">Quarterly Review (by Jan 28) in regions
- review 99Q4 (through Dec 1999) PI data and PIM findings to determine any adjustments needed to inspection plan or allocation of resources
- the assessment program guidance for the revised reactor oversight process is contained in IMC 0305</td></tr>
<tr><td>Screening meetings (Mar 13 - 24) at HQ
- submit PPR summaries (2 weeks prior to screening meeting), for ALL non-pilot plants
- submit proposed list of plants warranting further discussion at the screening meeting
- plants to be discussed include:
(1) plants warranting heightened review (based on threshold similar to new assessment process and at the discretion of the RA)
(2) existing SMM agency or regional focus plants
(3) other plants as requested by ancillary offices (NRR, OE, OI, RES, etc.), who would lead discussion, prepare supporting documentation, and coordinate through regions and program office prior to screening meeting</td></tr>
</table>

<table>
<tr><th>NON-PILOT PLANTS</th><th>PILOT PLANTS</th></tr>
<tr><td>PPR Letters (Mar 31)
- issued following the screening meetings
- include assessment summary by strategic performance area (noting shift to revised oversight process) in cover letter emphasizing only those areas of significant concern (including substantive examples)
- if applicable, include optional paragraphs on substantial cross-cutting issues
- no discussion of strengths
- attach PIM and inspection plan</td><td>Assessment Followup Letters (by Feb 11 - as necessary)
- issue assessment followup letters to any pilot plants who crossed PI or inspection finding safety significance thresholds with NRC plans/ allocation of resources to address the issues</td></tr>
<tr><td colspan="2">PIs from licensees (Apr 14)
- 2000Q1 PI data from ALL plants (first quarterly PI submittal)</td></tr>
<tr><td>SMM Preparation (inputs by Apr 14)
- prepare SMM packages for plants being forwarded, including PPR summaries, the latest PIM and PI data, inspection plans, and evaluation matrices (i.e., removal matrices, pro/con charts)</td><td>End-of-Cycle Review (by Apr 28) in regions - complete annual review of PIs and PIM findings from 6/1/99 including evaluation of substantial cross-cutting issues (to determine allocation of resources)
- develop inspection plan through 3/31/2001</td></tr>
<tr><td colspan="2">SMM (tentatively May 10-11) in Region 1
(a.k.a. Agency Action Review Meeting)
- similar to last year’s SMM, consistent with the process changes noted in SECY-99-086
- confirmation of planned and completed actions using evaluation matrices
- non-pilot plants (new plants forwarded to SMM for review and existing SMM plants)
- pilot plants forwarded based on the action matrix (multiple/ repetitive degraded cornerstones)</td></tr>
<tr><td>Post-SMM Letters (May 30 - as necessary)
- issue docketed correspondence as a result of the SMM when the agency’s intended actions are different from those conveyed in previous correspondence (PPR letters)
- issue letters to existing SMM plants to notify them of the end of SMM process and implications</td><td>Annual Assessment Letters (by May 15)
- include assessment summary (with discussion of all crossed PI or inspection finding thresholds and substantial cross-cutting issues) and planned NRC actions
- attach PIM and inspection plan
- reference to PIs on Web</td></tr>
<tr><td colspan="2">Commission Briefing (tentatively May 26)
- similar to the briefing following last year’s SMM, consistent with SECY-99-086
- discussion of plants warranting agency-level action (non-pilot or pilot plants) or action different from that conveyed in the PPR letters
- disposition of existing SMM plants</td></tr>
<tr><td>Public Meetings (March 31 - July 31)
- necessary meetings for the non-pilot plants (if not conducted within the past 2 years) should be conducted within 16 weeks of issuance of PPR letters (by July 31)</td><td>Public Meetings (May 15 - July 21)
- public meetings for ALL pilot plants within 16 weeks of the end of the assessment cycle (after the issuance of the annual assessment letters)</td></tr>
</table>

STAFF TRAINING FOR INITIAL IMPLEMENTATION

Attachment 13

STAFF TRAINING FOR INITIAL IMPLEMENTATION

The staff recognized that ongoing agency initiatives such as changes to organizations and positions, the licensee assessment process, the enforcement policy, risk-informed regulation, and revision of the inspection program must be well underway and communicated to the training staff before appropriate training could be designed and developed. The NRC training specialists were integrated into the change process.

Early workshops were conducted by NRR and Regional subject matter experts with assistance by the NRC training specialists. The purpose of the workshops was to provide information to Regional and Headquarters staff that would be interfacing with the pilot plants. The NRC workshops were supplemented with on-site training at pilot plants and in the Regional offices. Headquarters staff training was integrated with the regional effort as much as possible. Briefing sessions were also conducted for specialized groups in headquarters.

In conjunction with training the staff, NRC has conducted public workshops to provide information on the revised regulatory oversight process to the NRC, industry, and the public. Early efforts were focused on providing program information to pilot plants, but had some industry and public in attendance. Prior to initial implementation of the program with all facilities, the NRC will conduct public workshops in each of the four NRC regions.

The process of developing a formal training course for the Revised Reactor Oversight Process was initiated in February 1999. The time required to develop the Reactor Inspection and Oversight Program (G-200) training course was approximately 1 FTE. Direct course development activities took about 24 man-weeks and instructor preparation including participation at public workshops, feasibility studies, and development of workshop materials accounted for another 20 man-weeks. The formal course is 1 week in length and provides an overview of the new Reactor Inspection and Oversight program; performance indicators; inspection procedures; significance determination processes; inspection planning; inspection reports; assessment, and enforcement. Breakout sessions provide detailed discussions of topics in the areas of Reactor Safety, Emergency Preparedness, Radiation Safety, and Safeguards. The course was developed and is taught by NRC Technical Training Center staff. Feedback from the early workshops was factored into the development of the Reactor Inspection and Oversight Program (G-200) training course. Evaluations collected for course presentations and feedback received from the program office will be and have been factored into revisions of the course presentation.

The goal of the Revised Reactor Oversight Process training is to make an individual productive as efficiently as possible. The training is currently succeeding in meeting this goal. Prior to the proposed initial implementation date of April 2, 2000, the Reactor Inspection and Oversight Program (G-200) training course will have been presented six times across the four regions. The course will be presented three additional times between April and May for any inspectors and headquarters staff unable to attend earlier sessions. It is the staff's conclusion that regional inspectors are trained to a level of readiness to support initial implementation.

It is recognized that training is an on-going process. As the Revised Reactor Oversight Process is refined, it will be necessary to modify the Reactor Inspection and Oversight Program (G-200) training course. Development and revision of other regulatory skills courses, such as, Fundamentals of Inspection (G-101), Inspecting for Performance (G-303), and Field Techniques and Regulatory Processes (G-103) will be initiated as resources become available.

STAFF RESPONSE TO SECY-99-007A SRM

Attachment 14

STAFF RESPONSE TO SECY–99-007A SRM

1. The Commission approved the staff's position to continue with the suspension of the SALP process.

Consistent with its plan to transition from the current oversight process to initial implementation of the revised oversight process, the staff recommends termination of the SALP process. Any future changes to the staff's methods for assessing licensee performance will be made within the context of the continued development and implementation of the revised oversight process.

2. The staff should consider ways to ensure that the assessment process is sufficiently robust to address programmatic breakdowns (e.g., breakdown of a corrective action program or aspects of a particular quality assurance program) which are different from issues involving many minor findings. Consistent with this approach, and the overall direction of the changes to the inspection, assessment, and enforcement programs, the staff should not continue the RES project to evaluate the feasibility of designing a system to analyze the risk significance of numerous problems of lower safety significance, which in the aggregate could be significant.

The issue of assuring that the revised reactor oversight process would identify and address breakdowns of program such as corrective action programs has presented a significant challenge to the staff.

At the external lessons learned workshop, there was broad understanding of the oversight process concept related to identifying programmatic breakdowns in important cross-cutting areas such as licensee problem identification and resolution. The concept incorporated in the oversight process was that the breakdown of a corrective action program would eventually manifest itself through a performance decline that would be identified through performance indicators or cornerstone inspection findings. However, during development of the revised reactor oversight process, some stakeholders expressed concern that licensee problem identification and resolution program may not be adequately evaluated by performance indicators and a risk-informed inspection program because and expressed concern that significant cross-cutting concerns may exist even when performance indicator and inspection finding thresholds are not crossed. Therefore focused inspections of licensee problem identification and corrective action programs were included in the baseline pilot program.

Discussions at the lessons learned workshop revealed significant differences of opinion regarding this issue. One position was that, in keeping with the premise that a programmatic breakdown in problem identification and resolution performance would reveal itself through degraded performance indicators and risk-significant inspection findings, no focused inspection or assessment of a corrective action program should be conducted unless overall licensee performance was not within the licensee response band of the Action Matrix.

The second significant opinion expressed was that, without focused inspection of problem identification and resolution performance in the baseline inspection program, the NRC would not be able to provide identification of programmatic breakdowns that have in the past provided early indications of problems, which, if uncorrected, result in significant performance degradations. Therefore, inspection and assessment activities focused on problem identification and resolution in the baseline inspection and assessment programs should be retained and further refined.

Consistent with the recommendations of the lessons learned workshop, the staff has adopted a three-step approach to resolve this issue. For the first step, the staff workshop participants recommended that NRC proceed with the process used in the pilot program and the current procedures for evaluating cross-cutting issues, including problem identification and resolution, during initial implementation. Currently, within the assessment process, as outlined in IMC 0305, the staff may include "a qualitative discussion of distinct adverse trends as indicated by substantial cross-cutting issues that have not resulted in performance indicators or inspection findings outside of the licensee response band" as part of the mid-cycle and end-of-cycle reviews. To support the assessment process, the baseline inspection program currently includes inspection procedure IP 71152, "Problem Identification and Resolution," which examines licensee corrective actions on a sampling basis during the course of the assessment cycle.

The second step involves the creation of an expert working group, including representatives of diverse interests, to further explore and define a satisfactory approach to inspection and assessment of performance in cross-cutting issues. It is envisioned that such a working group will be created prior to the start of initial implementation. Further goals and milestones would be defined by the working group. The working group would be provided with certain framing questions and issues defined at the external lessons learned workshop. It is also envisioned that the working groups efforts would be consistent with and in concert with ongoing industry and staff efforts to improve techniques to objectively assess corrective action program performance.

The third step of the approach developed during the external lessons learned workshop is to inform the Commission of the lack of consensus on the pilot program approach to inspecting and assessing corrective action program performance. This paper serves to inform the Commission of this issue and of the staff's approach to resolution. The staff will update the Commission on this issue at the end of the first year of full implementation.

With regard to the Office of Research (RES) project to analyze the aggregate risk significance of numerous problems of lower safety significance, the staff responded to the Commission's direction to discontinue that project in a memorandum dated August 12, 1999. In that memorandum, the staff observed that the RES project had two objectives. One was to develop a tool to collect and categorize issues of lower risk significance as means of gaining insight into the effectiveness of the inspection program. While the staff indicated in its memorandum that it would continue the RES effort in this area, it has since determined that this approach would not be fruitful. The second objective of the RES effort was indeed to determine if a tool could be developed

to aggregate issues of lower safety significance and assign some level of risk significance to the aggregate. As noted in the August 12, 1999 memorandum, the staff discontinued the RES effort in this area in accordance with Commission direction.

3. **The new process anticipates more frequent public meetings and more frequent public communications. In addition to the plans documented in the subject paper, these aspects of the program should be modeled to the extent practical in the pilot program by involving citizens local to the pilot program plant as a test of whether the staff communication efforts are having their intended effects. Specifically, the staff should consider involving representatives of local governments of emergency planning agencies to ensure that the NRC is communicating effectively with these important stakeholders. It may be desirable to conduct facilitated information exchange (e.g., round table meetings) with local stakeholders to solicit, in a consistent manner, structured feedback on the pilot. The importance of communication internally as well as externally should continue to be stressed.**

The staff has placed a strong emphasis on communicating the basis and details of the revised reactor oversight process to the public during the pilot. These efforts include establishing vehicles by which the general public can routinely access information on the oversight process via the internet as well as publication of print information describing the new process. Other vehicles included numerous public workshops and meetings on the oversight process and public meetings of the PPEP.

Special effort has been focused on communicating with the local public in the vicinity of the pilot plants. During the early stages of the pilot, public meetings were held in the vicinity of each pilot plant at which the staff explained the revised reactor oversight process and the pilot program. In addition, between November 1999 and February 2000, the staff held roundtable public meetings near each pilot plant to discuss the oversight process and experience of the pilot program to date. The staff issued personal written invitations to local government officials, local emergency planning officials, community leaders and local public interest groups. By conducting these public meetings in a roundtable format, the staff and public engaged in a dialogue on the oversight process and members of the public were encouraged to voice their questions and concerns. Feedback from the local public and officials regarding these meetings was generally positive both with respect to the new oversight process and to the NRC's public outreach efforts.

The staff plans to continue to expend significant effort on public communication associated with implementing the revised reactor oversight process. Prior to or during the early phases of initial implementation, the staff plans to conduct public meetings in the vicinity of all plants to explain the new reactor oversight process. In addition, the staff is currently planning to conduct public meetings in the vicinity of the sites in conjunction with the proposed annual performance review meetings with the licensees. This process is documented in more retail in IMC 0305.

The staff will continue to explore means to enhance and improve communication with the public as it gains additional experience with the program during the first year of initial implementation.

The staff has also continued to maintain its high level of emphasis on internal communication during the pilot phase and will continue to do so after it begins initial implementation. The staff is currently developing a more formalized feedback process to (1) collect feedback and (2) respond to those who submit queries or feedback in a more timely manner.

4. The staff needs to further define how the system for grading inspection findings and combining individual inspection findings and performance indicators will be applied to develop an overall assessment of a cornerstone. Further explanation is needed on how long the impact of a single inspection finding would impact the overall assessment (e.g., would a single "red" inspection finding only impact the assessment for a particular cornerstone until the condition was corrected, until the next assessment, until the end of the assessment cycle or for some other period?). The staff should inform the Commission on how this aspect of the process will be treated.

Item 4 of the SRM raises two issues: (1) a system for grading and combining inspection findings and performance indicators to develop an overall assessment of a cornerstone, and (2) the period of time in which an individual inspection finding will serve as an input to the assessment process.

As described in a memorandum from the EDO to the Commissioners dated August 12, 1999, the assessment process does not assign an overall rating to an individual cornerstone area. Rather, the thresholds in the Action Matrix consider the numbers and types (colors) of findings and performance indicators from combinations of individual or multiple cornerstones. By structuring the Action Matrix in this manner, the staff has moved the oversight and assessment process away from the SALP-like grading process for individual aspects of licensee operation and made it more objective and predictable.

In its request for public comments on the pilot program for the new oversight process (64 FR 40394), the staff specifically requested feedback on whether an overall assessment of an individual safety cornerstone was warranted or appropriate. The staff received responses to the FRN notice from industry representatives which specifically addressed this question (These comments were submitted by NEI and were endorsed in whole or with minor additional comments by individual utilities) These comments suggested that assigning an overall assessment of a cornerstone was not appropriate. The comments also stated that the Action Matrix can be used to determine an appropriate NRC response to indications of declining licensee performance. Of the four commenters not explicitly associated with industry, none had specific comments on this point.

With regard to the period of time in which an individual inspection finding will serve as an input to the assessment process, the staff has completed detailed development work

for the assessment process, including a methodology for considering individual inspection findings. The details of the assessment process are delineated in IMC 0305, "Operating Reactor Assessment Program." As described in IMC 0305, inspection findings are carried forward into the assessment process for a total of four calendar quarters.

5. The staff states that, while there will be a significant reduction in the number of civil penalties issued under the proposed plan, the staff may wish to issues civil penalties for "particularly significant violations." The staff should provide explicit criteria for determining what falls into this category and develop clear guidance which provides discipline to the process associated with determining the amount of the civil penalty.

A detailed discussion of the agency's revised approach to enforcement which accompanies the new oversight process was forwarded to the Commission in SECY 99-146. Under the new reactor oversight process, the agency's enforcement policy and assessment program are much more closely integrated than under previous approaches, providing for a unified agency process for determining and responding to licensee performance issues. It is expected that the majority of violations will be evaluated for risk significance with the Significance Determination Process. Such violations, whether of low or higher risk significance, will be subject to actions provided for in the structured Agency Action Matrix, which does not provide for civil penalties.

Notwithstanding the highly structured approach to violations provided for by the SDP and the Agency Action Matrix, provision is made for the imposition of civil penalties for violations which have been processed through the SDP under certain rare instances which are termed "particularly significant violations." This provision is not intended to allow for routine overriding of the agency action matrix. Rather, it is intended to ensure that the Commission retains the full scope of *discretion* for the imposition of civil penalties accorded to it under Section 234 of the Atomic Energy Act of 1954, as amended. As noted in SECY 99-146, this discretion is expected to be exercised rarely and it is intended that the imposition of civil penalties in such cases would be subject to Commission approval. For example, this discretion may be considered for issues categorized as Severity Level I under the existing Enforcement Policy, such as an accidental criticality at a power reactor.

For completeness, it is noted that the existing Enforcement Policy, including the use of severity levels to characterize significance and the use of a structured methodology for determining civil penalties, is retained for three clearly defined categories of violations. Those categories are (1) violations that involve willfulness, including discrimination, (2) violations that impact NRC's ability to oversee licensee activities, and (3) violations involving actual consequences as defined in SECY 99-146.

6. The Commission should be briefed annually regardless of whether any plants are identified for agency level action. Since the process is also meant to be relatively open, it should be no surprise to any licensee or member of the public who follows the quarterly updates of inspection and performance indicators which plants would fall into each category.

The EDO will brief the Commission annually to convey the results of the Agency Action Review meeting. As described in IMC 0305, "Operating Reactor Assessment Program," the Agency Action Review meeting is held within seven weeks of the end of assessment cycle. At the Agency Action Review meeting, senior NRC managers, chaired by the EDO will discuss overall industry performance, oversight process performance and plants with significant performance weaknesses (i.e., plants in the Multiple/Repetitive Degraded Cornerstone column of the Action Matrix). The meeting will ensure that a coordinated, balanced consistent agency response is provided for a given set of assessment inputs. Note that the Agency Action Review meeting is held regardless of whether any plants demonstrate significant performance weakness and thus, the Commission will be briefed regardless of whether any plants are identified as having significant performance weaknesses.

7. **The staff should provide licensees (and the public) with fourth quarter assessments prior to the annual Commission meeting to aid licensees' efforts to address NRC concerns, to provide due process, and to ensure against surprises coming out at the meeting.**

The staff intends to send annual assessment letters to licensees approximately one-to-two weeks prior to the annual Commission meeting. IMC 0305 contains schedule expectations for activities associated with the annual assessment. In the current version of IMC 0305, letters to licensees are issued within one week of the Agency Action Review meeting and the Commission meeting occurs within ten weeks of the end of the fourth quarter of the assessment cycle, subsequent to the Agency Action Review meeting. The staff will consider revising IMC 0305 to make issuance of letters to licensees prior to the annual Commission meeting an explicit requirement of the assessment procedure.

8. **A criterion is established for resources expended with success defined as a 15% reduction in expenditure over the core program. This presupposes that a reduction in resources is a goal of the program. An original goal in the development of this program was that resource demands would be defined by a risk-informed baseline program. Establishing resource demands artificially is inconsistent with this goal. The staff should reformulate the success criteria of the pilot program to address the conflict between risk-informed methods and specific targets for reductions in inspection effort**.

The staff observed in both SECY 99-007 and 99-007A that, although overall resource savings could be expected in the long term from implementation of the revised reactor oversight process, it would be premature to make any resource reduction decisions beyond those documented in the FY 2000 budget. The staff observed that it would be able to further quantify these resource changes after experienced is gained through the pilot program and the first year of initial implementation.

In Attachment 6, Pilot Program" of SECY 99-007A, the staff defined criteria by which the success of the pilot program in meeting the overall objectives of the revised reactor oversight process could be measured. With regard to the implementation of the revised

inspection procedures, the staff defined a 15% reduction in direct inspection effort as a measure by which the improved efficiency of the inspection procedures could be conclusively demonstrated.

The staff agrees with the Commission that the 15% criteria was an artificial value. Implementation of the revised inspection procedures may achieve an improvement in efficiency short of a 15% reduction and still be considered successful. In response to the Commission's concern regarding the conflict between allowing a rigorously risk-informed oversight process to demonstrate its resource requirements and artificially establishing resource reduction goals, the staff revised its criterion.

The staff retained the overall philosophy that although overall resource savings could be expected in the long term from implementation of the revised reactor oversight process, it would be premature to make any resource reduction decisions beyond those documented in the FY 2000 budget. With regard to direct inspection resources, the staff will continue to monitor direct inspection resources through the first year of implementation of the revised program. The staff will report to the Commission the resource impact of the revised oversight program at the end of one year of full implementation. At that time, the staff will present recommendations regarding future resource targets.

9. The staff indicates that indicates that licensee identified issues , when reviewed by NRC inspectors, are candidates for the inspection finding risk characterization process and the risk associated with an issue is blind to whether it was identified by the NRC or the licensee. In this manner, the new oversight process may be reducing incentives for licensees to identify aggressively their own problems. As the staff proceeds with the pilot program, it should consider further how it will address licensee identified issues so as to not discourage licensees from having an aggressive problem identification process.

The staff has constructed the assessment process to provide for consideration of the licensee's role in identifying issues. The assessment process, as described in IMC 0305, "Operating Reactor Assessment Program," permits the staff to refrain from performing supplemental inspection for a white finding if the issue was identified as part of a licensee self-assessment and if the need for additional inspection is not warranted. In such instances, in order to ensure the transparency of the staff's decision making process, the staff is required to document its reasons for not performing the supplemental inspections.

By including this provision in the assessment process, the staff sought to address concerns about the licensee burden of hosting supplemental inspection activities for an issue which is presumably already well understood, which could have a discouraging impact on licensee's problem identification activities. At the same time, this approach does not constrain the oversight process from evaluating and reporting on issues that, regardless of who identified them, may have risk significance.

10. The assessment process should treat all of the inspection observations that are reported in a balanced manner. Positive inspection findings should continue to be recorded in the plant issues matrix (PIM) and should be weighed in reaching an overall inspection indicator for each cornerstone.

As the staff noted in it's memorandum dated August 12, 1999, in developing the revised reactor oversight process, the staff attempted to improve the objectivity of the process so that subjective decisions and judgements were not central to the process. Given that there is no clear internal guidance or criteria with regard to what constitutes a positive inspection finding, and that the agency's historical performance has been inconsistent in this regard, the staff solicited stakeholder feedback on this issue during the development of the revised reactor oversight process. The vast majority of commenters at that stage of the oversight program development stated that positive inspection findings should not be factored into the oversight process. In the revised process, the staff presumes that a balanced view of licensee performance will be obtained in several ways. The performance bands used to characterize each performance indicator will provide an objective indication of licensee performance. Additionally, the significance determination process used to characterize inspection findings will incorporate, as appropriate, positive aspects of licensee performance regarding the availability and capability of mitigating systems to deal with a postulated accident sequence. Discussions related to findings processed through the SDP will be captured in both inspection reports and the PIM. Finally, inspection reports will be more focused on those issues of risk significance reducing the number of subjective comments and observations, both positive and negative, about licensee performance typically seen in current inspection reports.

In its request for public comments regarding the experience of the reactor oversight pilot program (64 FR 40394), the staff again addressed the issue of positive findings. The staff provided the following question:

Does the available public information associated with the revised reactor oversight process, including the NRC's Web page which includes information on performance indicators and inspection findings, provide an appropriately balanced view of licensee's performance. If not, should positive inspection findings be captured and incorporated into a process to reach an overall inspection indicator for each cornerstone.

The staff received responses to the FRN notice from industry representatives which specifically addressed this question (These comments were submitted by NEI and were endorsed in whole or with minor additional comments by individual utilities.) These comments supported the elimination of positive comments because of the inherently subjective nature of such comments. The comments noted that if a licensee is operating in the green band of performance indicators and has green inspection findings, this would be a positive statement in itself. Of the four commenters not explicitly associated with industry, none had specific comments on this point.

11. The staff states, "When a plant is in an extended shutdown to address significant performance concerns, the plant will be removed from the normal performance assessment process. NRC Inspection Manual Chapter 0350 will be used to

monitor plant activities." The staff should address why such plants have to be removed from the agency's normal assessment process and whether this approach would lead to inconsistent treatment of facilities and introduce additional subjectivity.

The agency's normal assessment process, described in detail in IMC 0305, "Operating Reactor Assessment Program", relies in part, on performance indicator data to determine the level of future NRC inspection activity. When a facility is shutdown for an extended period, certain of the performance indicators, notably those associated with Initiating Events and Mitigating Systems, lose their validity since they measure aspects of the facility's performance associated with power operation. As a result, the normal assessment process, with its reliance on performance indicator data, is not an appropriate model for assessing plants that have been shutdown for extended periods.

Instead, IMC 0350, "Staff Guidelines for Assessment and Review of Plants That Are Not Under the Routine Reactor Oversight Process," is used to assess plants that have been shutdown for an extended period due to performance problems. IMC 0350 provides a focused, disciplined process for identifying those performance issues that must be resolved prior to plant restart and for identifying the necessary NRC inspection activities. IMC 0350 has been revised extensively concurrent with the development of the new reactor oversight and assessment process. Much of the revision has been directed at removing the subjective and potentially inconsistent treatment of facilities that may have occurred in the past. For example, under the new procedure a plant remains under the IMC 0350 process for a fixed four quarters after plant restart, before being transferred back to the normal assessment program. This provides for the accumulation of four quarters of valid performance indicator data which are needed to support the assessment process.