REACTOR OVERSIGHT PROCESS
JUNE 2001
ANNUAL SELF-ASSESSMENT REPORT

OVERVIEW

The Reactor Oversight Process (ROP) is a regulatory framework that includes licensee performance indicator data, NRC inspection activity and determination of inspection finding significance, and assessment with the goals of being objective, risk-informed, understandable, and predictable. The ROP self-assessment program evaluates the overall success of the ROP in meeting these objectives as well as meeting the agency's performance goals of 1) maintaining safety, 2) increasing public confidence, 3) improving effectiveness, efficiency, and realism of NRC activities and decisions, and 4) reducing unnecessary regulatory burden. The outputs of the ROP include adjustment and enhancement of inspection activities, communication activities such as reports and regulatory conferences, regulatory actions such as confirmatory action letters and orders, and enforcement.

On a periodic basis, the self-assessment program collects information from various sources, including the Reactor Program System (RPS), the inspection program, the ROP performance indicator (PI) program, additional industry level PIs, periodic independent audits, stakeholder surveys, and public comment. Based on this information, an assessment of ROP success in the programmatic areas of PIs, inspection program, significance determination process, and assessment is performed, as well as overall ROP efficacy. This assessment assists the staff in making recommendations for improvement to the ROP.

As part of implementing a Planning, Budgeting, and Performance Management process, the agency has developed program-level operating plans, which include performance measures and targets. The ROP self-assessment program is not meant to replicate or replace this activity; however, many of the same or similar measures and criteria are used.

While it is too early to draw detailed overall conclusions from the self-assessment data collected so far, some general statements can be made. Also, general conclusions regarding individual aspects of the ROP can be made and are discussed in other sections of this report. In general, the ROP has been successful in being more objective, risk-informed, understandable, and predictable than the previous process. In addition to other objective measures, comments received from internal and external stakeholders support this conclusion and represent an improving trend in perception of performance since initial implementation. In contrast, internal stakeholders are critical of the training provided before initial implementation and of the responsiveness by headquarters staff to regional feedback. Additionally, some public stakeholders expressed difficulty in understanding the bases for SDP results, particularly those that were based on licensee's risk analyses. Both internal and external stakeholders were critical of the complexity in use of the SDPs and with the effort and time needed to finalized the safety significance of issues. Success in the remaining criteria: maintain safety; increase public confidence; improve effectiveness, efficiency and realism of NRC activities and decisions; and reduce unnecessary regulatory burden, is harder to determine and will require additional time to assess. For example, the impact on safety of any regulatory approach cannot be gauged quickly, since 1) many factors affect safety, 2) there is some normal variation in indicators, 3) there is usually significant lag time between a regulatory change and the full manifestation of its impact, and 4) conditions that potentially impact safety may exist for some time before detection (e.g., design and latent errors). However, it should be noted that the ROP self-assessment process is continuous and includes responding to noted deficiencies and incorporating improvements as needed.

It should also be noted that the self-assessment process itself is still undergoing development and review. New metrics may be added to provide a more complete picture and some metrics

may be eliminated if found to not provide an accurate indication of ROP performance. Future program changes will be identified in future annual reports.

BACKGROUND

The ROP development model presented in SECY-99-007, "Recommendations for Reactor Oversight Process Improvements," dated January 8, 1999, included an ongoing self-assessment process that would use objective measures and pre-determined criteria to monitor the performance of the ROP. During the ROP pilot program, criteria were established to evaluate the results of implementing each of the components of the ROP at the pilot plants. In addition, the staff employed a number of methods to obtain internal and external stakeholder feedback. The results of these efforts were used by the staff and the Pilot Program Evaluation Panel (PPEP) to aid in determining the efficacy of the new process and the advisability of proceeding to initial implementation. The ROP transition plan presented in SECY-00-0049, "Results of the Revised Reactor Oversight Process Pilot Program," dated February 24, 2000, stated that the staff would continue to perform program self-assessments to collect additional lessons learned and gain insights from the new oversight process.

Employing the lessons learned from the pilot program, the staff proposed monitoring the major components of the ROP using eight criteria. The first four criteria would monitor the ROP's ability to be: 1) objective, 2) risk-informed, 3) understandable, and 4) predictable. These criteria derive from the original design objectives of the ROP. The other four criteria would monitor the ROP's ability to: 1) maintain safety, 2) increase public confidence, 3) make NRC activities and decisions more effective, efficient, and realistic, and (4) reduce unnecessary regulatory burden on stakeholders. These criteria derive from the agency's performance goals as outlined in the *Strategic Plan.* The major components of the ROP are: 1) the performance indicators, 2) the inspection program, 3) the significance determination process (SDP), and 4) the assessment process.

The ROP self-assessment program metrics rely on information from various sources, including the RPS, the inspection program, periodic independent audits, stakeholder surveys, and public comment. In addition to the metrics developed for each major component of the ROP, metrics of a more general nature have been developed utilizing primarily stakeholder feedback to gauge overall performance. Industry level performance metrics are also being developed and are described in SECY 01-0111, "Development of an Industry Trends Program for Operating Power Reactors," dated June 22, 2001.

With the exception of stakeholder surveys, federal register notice responses, and some audit results, data is collected quarterly. Internal and external stakeholder surveys and federal register notices to collect stakeholder feedback will be performed less frequently. Also, periodic equipment trending reports issued by the Office of Research (RES) are reviewed to identify additional insights into ROP performance.

Data analysis consists of a comparison of performance metric data with pre-established criteria and a written determination of its meaning or programmatic impact. Thus a favorable comparison of data to criteria would indicate the ROP met the process goals and objectives and likely no programmatic changes would be recommended. However, in the event of an unfavorable comparison, more analysis would be required to determine causal factors and develop recommended process improvements.

Success criteria for each of the performance metrics have been established. In most cases, success is defined as an improving trend. Quantitative success criteria for many of the performance metrics could not be developed because of the newness of the ROP and the resultant lack of data needed to establish thresholds. Therefore, baseline data collected during the first few years of implementation will be used to monitor trends and establish thresholds for action, as appropriate. Consequently, success of the first year of implementation can not be assessed by the metrics alone.

SUMMARY OF FINDINGS

The ROP self-assessment program is divided into five areas which correspond to the four major components of the ROP: 1) the performance indicators, 2) the inspection program, 3) the significance determination process (SDP), and 4) the assessment process, and a fifth area of a more general nature to assess overall performance. The following paragraphs summarize the observations from each of the five attachments from this report.

Performance Indicators:

While it is too early to draw definite findings after the first full year of initial implementation, favorable feedback from external and internal stakeholders support and indicate the premise that the PIs are objective; understandable; and efficient, effective, and realistic.

The majority of individuals using PIs found them to be objective based on consistent results. Additionally, the number of questions regarding interpretation of PI guidance decreased over time as licensees better understood the PI Program and guidelines. However, problems interpreting the guidance for the Safety System Unavailability (SSU) PIs continue and are being addressed by a joint NRC/Industry working group.

All PIs are not risk informed. Those that have risk significance associated with their thresholds, have received favorable comments from numerous stakeholders. There has been a positive trend in stakeholder's perception of the PIs providing useful information in risk-significant areas of licensee performance. Nevertheless, one year of implementation of the ROP is too soon to develop well-founded observations regarding this attribute.

The self-assessment results support the premise that PIs are generally understandable by all users. There have been very few instances of different PI values obtained by different users when using the same guidelines. The level and frequency of PI guidance interpretation questions after an initial period of substantial activity, are declining. Positive feedback was received regarding stakeholders' ability to understand the guidelines and the intent of the PIs. However, problems associated with the SSU PI were noted. In addition, efforts to improve the guidance continue via the frequently asked question (FAQ) process.

The self-assessment results support the observation that the PIs appear predictable based on different users obtaining the same results using the same guidance. However, four quarters worth of data is insufficient to make a conclusion regarding stability and guideline consistency. While reporting discrepancies are trending downward, significant deficiencies occur at low frequencies and changes to PIs occur at a low rate, industry continues to experience problems with the SSU indicator.

The results appear to support the observation that the PIs are efficient effective, and realistic. PI reports have been accurate and timely with few discrepancies reported and only one

instance of a PI crossing multiple thresholds was noted. However, mixed stakeholder feedback was received regarding the ability of PIs to minimize unintended consequences.

The data indicates that accurate and timely information was provided and that internal stakeholders support the observation that the PIs may enhance public confidence. However, additional data and feedback are necessary for a complete appraisal.

Internal stakeholders and some external stakeholders responded that regulatory burden had increased appropriately in the performance indicator reporting area. However, concerns with the SSU PI and appropriate overlap of inspection activities in the Occupational Radiation Safety cornerstone were received. Consequently, a joint NRC/Industry working group has been formed to address concerns with the SSU PI and similar efforts are underway in the radiation safety area.

The data from the first year of full implementation of the ROP is not sufficient to conclude that the maintaining safety criteria are being met. Whereas few PIs crossed multiple thresholds, stakeholders feedback was mixed regarding unintended consequences and the ability of the PIs to identify declining performance or maintain safety. The staff will continue to evaluate this aspect of the PI to ensure that any potential unintended consequences do not impact the maintain safety criteria.

Inspection Program:

A majority of the NRC employees who are implementing the ROP believe that the program leads to objective findings whose significance can be clearly documented, and the majority of inspection findings are documented in accordance with program requirements. Therefore, the reactor inspection program contributes to objectively assessing licensee performance. However, feedback indicates the program guidance needs to be improved to increase the clarity of the significance descriptions for findings in inspection reports.

Some changes to the baseline inspection program were needed to improve its risk-informed aspects and the changes to scope or frequency were not significant. However, the number of changes to SDPs and Inspection Manual Chapter (IMC) 0610* indicate that the tools for determining the significance of findings, the thresholds for documenting findings, and guidance for documenting inspections need improvement. Although the descriptions of significance of findings in inspection reports were often deficient, the findings were usually valid. For example, several external stakeholders expressed concern that many inspection reports did not adequately document the bases for determining the significance of findings. Internal stakeholders also noted that several inspection areas yielded issues whose significance could not be easily determined, or that could not be documented in inspection reports. The two most notable areas were security force-on-force exercises and Maintenance Rule inspections. The staff acknowledges that both areas require changes to the inspection procedures.

The few no color findings in recently audited reports may indicate that fewer of them are being documented than during initial ROP implementation, which is consistent with the program's design. No challenge of significance determination was sustained. The survey of those implementing the program indicate they believe the program is risk informed. Therefore, the staff concludes the baseline inspection program is risk-informed.

Although program documents are generally understandable to the staff, they can be improved. Inspection reports on average provide relevant information for their target audiences; however,

they too can be improved in order to increase inspector efficiency and effectiveness, as well as increase the public's understanding of the ROP's inspection program.

The baseline inspection program can be fully implemented in a 12-month cycle and is completed fairly evenly over the year. Less than 9 percent of scheduled inspections had to be changed. When inspections were changed it was usually because inspectors were not available or conditions at the site were not appropriate for the inspection. The direct inspection resources necessary to implement the program were below the estimates. Only one plant (Indian Point 2) had it's baseline program significantly altered due the significant contractor effort needed to supplement the inspection program. Additionally, Millstone Units 2 and 3, a dual unit site that normally would be allocated dual unit baseline inspection hours, were treated as two single unit sites based on its unique design challenges, thereby increasing the allocated inspection resources per unit. In reference to these differences, the program appears to be predictable.

The baseline inspection program covers the important aspects of plant operation, and the program is being implemented as planned. Although almost a fourth of the baseline inspection program procedures were changed affecting scope or frequency of inspection, few of the changes were significant. However, some other significant changes are being planned, such as in the physical protection area based on stakeholder and inspector feedback. The majority of NRC employees surveyed find the program covers areas important to safety and the key attributes of the cornerstones of safety. Therefore, the staff concludes that the program contributes to maintaining safe plant operations.

The resources used during the first year of the ROP for baseline inspection program direct effort was about 10 percent less than the estimated effort, although the overall inspection program resource expenditure was greater than estimated. Contractor effort was used in the areas expected: design and fire protection. However, a sizeable contractor effort was necessary to supplement Region I because of efforts at Indian Point 2. Although only about 9 percent of scheduled inspections needed to be changed (about 100 changes), a large portion of those (41) were because inspectors were not available or because of the cascading effects of making changes to a schedule. Changes to schedules to make inspections more effective or efficient (e.g., combining inspections, using inspectors already on site, or plant conditions not appropriate for the inspection) also accounted for a sizeable number of schedule changes (22).

The number of change notices resulting in significant changes to the program increased during the year. A large percentage of the changes were for new or revised SDPs. The number of changes to the program will probably not decrease in the near term as changes from first year evaluations are made and issued. The survey of those implementing the ROP found that the baseline inspection program emphasizes planning inspections, which is necessary for effective and efficient inspections. The performance metrics also reflect that inspection reports and completion of temporary instructions were timely with only a few exceptions.

The staff concludes that the inspection program is effective, efficient, and realistic. However, improvements can be made by stabilizing the program (fewer significant changes) and implementing improved SDPs.

All the postings of inspection data to the Internet web pages available to the public were made within timeliness goals set by the program. Only 13 instances of incorrect data with the issued or posted inspection data were noted, a very small percentage of the data made available. The NRC employees implementing the ROP who were surveyed noted that the inspection reports are timely and accurate (supported by the timeliness and accuracy metrics), and that the

information contained in the reports is relevant to the public. Therefore, it appears that the inspection program does enhance public confidence in the oversight of operating power reactors.

Although the ROP has reduced overall unnecessary regulatory burden on licensees and the inspection program is focusing the NRC and licensees on the more important issues, there are opportunities to improve the unnecessary regulatory burden imposed by the inspection program.

Significance Determination Process:

Based on audits of inspection reports from the first full year of ROP implementation, it appears that the SDP findings reported met the established standards which supports the observation that the SDP is objective. However, auditors could not verify the SDP logic for several GREEN SDP findings because inspection report details were not adequately developed.

Stakeholder response indicates that the SDP focuses NRC and licensee attention on safety-significant issues. SDP outcomes were conservative and generally accepted by the licensees. And evaluation of docketed correspondence for WHITE , YELLOW, and RED findings contained the appropriate information, including the basis for any deviations, necessary to support SDP outcomes. These support the observation that the SDP is risk-informed as designed.

With regard to being understandable, stakeholder feedback indicates that internal and external stakeholders perceive the SDP as a verifiable and consistent ROP tool. The stakeholders believe that the reactor SDP, although in some areas still complex, is an improvement over past inspection finding significance determination efforts. However, certain non-reactor SDP methodologies are still considered to be too complex.

In general, internal and external respondents had a positive perception of the stability and predictability of the SDP. Final significance ratings were generally understandable and believed to accurately reflect the significance of the findings.

It is too early to draw accurate conclusions regarding the SDP's influence on maintaining safety. The review of SDP findings confirmed that the majority of SDP outcomes were reached in accordance with the established guidance and the significance ratings were relatively conservative, although many stakeholders were critical of the complexity in use of the SDPs and with the effort and time needed to finalize the safety significance of issues.

Overall stakeholder feedback and survey results indicate a positive perception of the SDP as an effective ROP tool that focuses NRC and licensee attention on significant issues. In general, SDP outcomes were considered to be accurate and conservative. A concern was expressed regarding the staff's proficiency with the SDP and the timeliness of final SDP results.

Increased emphasis on accurate characterization and timely resolution of issues is necessary to ensure that the NRC and licensee resources are focused and that risk significant findings are promptly corrected. Accurate characterization and prompt resolution of issues increases public confidence.

While it may be too early to draw absolute inferences, the slightly positive internal response and the positive external stakeholder perception from the previous year indicate that the staff

and industry believe that the SDP has permitted NRC and licensees to better allocate appropriate resources based on safety significance.

Assessment Process:

The results of the metrics indicate that the Assessment Program is objective based upon 1) no deviations from the Action Matrix, 2) only one appeal of an SDP result which was upheld by the agency, and 3) few departures from program office guidance . The one area of concern is limited to signature authority for Assessment Follow-Up letters. The March 23, 2001 revision to IMC 0305 clarified the guidance on signature authority for all assessment letters.

The results of the metrics indicate that the Assessment Program is risk-informed. This observation is based upon 1) only one appeal of an SDP result which was upheld by the agency and 2) all actions taken by the regional offices during the four quarters of ROP initial implementation were consistent with program guidance.

The results of the metrics indicate that the Assessment Program is predictable. This observation is based upon 1) only one appeal of an SDP result which was upheld by the agency, 2) all actions taken by the regional offices during the four quarters of ROP initial implementation were consistent with program guidance, 3) no deviations from the Action Matrix, 4) few program timeliness goals that were not met, 4) all assessment letters that were issued on time were available in agencywide documents access and management systems (ADAMS) and the web within timeliness goals, 5) only one unplanned substantive change to IMC 0350, and 6) a positive survey result on the perception of program timeliness. The resources expended on the assessment program is an area of concern due to the varied methods by which the regions captured their resource expenditures. The staff will continue to evaluate this area of concern as the regions more consistently report their expenditures.

The limited results of the metrics are inconclusive as to whether the Assessment Program maintains safety. This observation is based upon a positive perception of the appropriateness of agency actions for licensees with performance problems. The data from the metric that measures the appropriateness with which the staff addresses risk-significant performance issues is inconclusive based on the limited data to date. However, the staff's evaluation of the data received to date does not indicate that the agency's goal of "maintaining safety" has been challenged.

The results of the metrics indicate that the Assessment Program is efficient, effective, and realistic. This observation is based upon 1) a positive perception of the appropriateness of agency actions given to licensees with performance problems and the resources expended on the areas of greatest safety significance, 2) no deviations between the position level of people involved in NRC actions vs the position levels specified in the Action Matrix during the first four quarters of initial implementation, 3) few program timeliness goals that were not met, 4) all assessment letters that were issued on time were available in ADAMS and the web within timeliness goals, and 5) only one unplanned substantive change to IMC 0350, and 6) a positive survey result on the perception of program timeliness. The data from the metric that measures the appropriateness with which the staff addresses risk-significant performance issues is inconclusive based on the limited data to date. However, the staff's evaluation of the data received to date does not indicate that the agency's goal of "maintaining safety" has been challenged.

The results of the metrics indicate that the Assessment Program does enhance public confidence in the ROP. This observation is based upon 1) positive results from the internal and

external surveys, 2) no deviations from the Action Matrix, 3) all assessment letters were issued on time and were available in ADAMS and the web within timeliness goals, and 4) assessment letters were consistent with the inspection reports.

The results of the metrics indicate that the Assessment Program does reduce unnecessary regulatory burden. This observation is based upon 1) positive results from the external survey, 2) few departures from program office guidance , and 3) all actions taken by the regional offices during the four quarters of ROP initial implementation were consistent with program guidance.

Overall:

While it is too early to draw absolute inferences, positive responses from external and internal stakeholders support the observation that the ROP is objective, understandable, and predictable. Some negative comments were provided by internal and external stakeholders. These will be used to focus ROP enhancement efforts in these areas.

Positive responses from most external and internal stakeholders support the observation that the ROP is risk-informed. However, negative comments from some stakeholders point to areas for improvement. Specifically, the safeguards and as low as reasonable achievable (ALARA) SDP, the reactor safety SDP Phase II worksheets, and inspection finding screening guidance.

It is too early to draw accurate conclusions regarding the ROP's impact on maintaining safety. Responses from external stakeholders provided conflicting perspectives and, while most internal stakeholders responded positively to most questions on this subject, some responses indicated an internal perception that indicates some of the staff remain skeptical. This may be due to the newness of the ROP and the resultant lack of data from which respondents could draw conclusions. It should be noted that both the review of accident sequence precursor (ASP) events and one augmented inspection team (AIT) did not identify any major programmatic weaknesses; however, this observation is based on a limited amount of data.

Positive responses from most external and internal stakeholders and the analysis of resource expenditures correlated to the action matrix support the observation that the ROP is efficient, effective, and realistic. However, negative comments from some stakeholders point to areas for improvement. Specifically, inspection activities associated with the radiation protection, physical security, corrective action programs, and safety system design inspection areas will be reviewed to ensure optimum usage of NRC resources. The time needed to evaluate non-green inspection findings will be assessed to determine if improvements can be made or efficiencies gained.

Data is insufficient to determine if the ROP will enhance public confidence. However, the level of positive response from internal and external stakeholders appears to support that observation.

Positive responses from most external and internal stakeholders support the observation that the ROP does reduce unnecessary regulatory burden. However, comments from some stakeholders point to areas for improvement, specifically, the unavailability performance indicators, the ALARA inspection, and SDP.

OTHER SOURCES:

During the first year of implementation, the staff encountered several situations that provided insight regarding the completeness and efficacy of the ROP. For example, following the February 2000 steam generator tube failure at Indian Point Unit 2 (IP2), NRC inspectors identified what was eventually characterized as a Red inspection finding associated with the previous steam generator tube inspection. This issue, in combination with other existing performance concerns, placed IP2 in the Multiple/Repetitive Degraded Cornerstone column of the Action Matrix which resulted in a supplemental inspection effort under the guidance of Inspection Procedure (IP) 95003. This was the first experience under the new program with a plant in this column of the Action Matrix and the first full exercise of this supplemental inspection procedure. This experience highlighted for the staff that the resources associated with providing oversight for a plant in the Multiple/Repetitive Degraded Cornerstone column of the Action Matrix are significant and will challenge a region's ability to perform routine inspections at other sites. Additionally, an extensive effort was necessary to appropriately interact with external stakeholders. As a result of specific lessons learned, adjustments to resource estimates and planning models were made and changes are being made to strengthen pertinent inspection procedures and guidance.

In response to a Yellow Alert and Notification System Reliability PI at Kewuanee, supplemental inspection efforts identified significant weakness in the licensee's efforts to address the underlying performance issue. Corrective actions taken by the licensee did not address extent of condition, even though the specific actions taken were sufficient to cause the PI to return to the licensee response band (i.e., Green) at the next quarterly data submittal. This was the first time that supplemental inspection had identified inadequate corrective actions under the new program. Program changes were made to strengthen the guidance in this area to ensure that the performance issue remains open until the licensee has responded sufficiently to address the issue.

A third example is the operational safeguards response evaluation (OSRE) findings at Quad Cities Station which identified significant weaknesses in the physical protection SDP. In response, the staff developed an interim physical protection SDP that was approved by the Commission. Development of a revised physical protection SDP is currently underway.

In addition to the internal survey and *Federal Register* Notice, feedback and comments from the NRC staff and external stakeholders were obtained through periodic meetings, a formal Lessons Learned Public Workshop, the use of a formal feedback process for internal staff comments, the use of a formal "frequently asked question" process for the PI program, and site visits by headquarters staff. Finally, an Initial Implementation Evaluation Panel (IIEP) was established by the Agency in accordance with Federal Advisory Committees Act (FACA) requirements to serve as an advisory committee to the Agency. The results of these efforts for the first year of implementation are documented in SECY 01-0114, "Results of the Initial Implementation of the New Reactor Oversight Process," dated June 25, 2001.

ACTIONS TAKEN AND PLANNED:

SECY 01-0114 documented in detail the actions taken during the first year of implementation and the actions planned to improve and enhance the ROP as a result of self-assessment efforts. The following is a summary.

Program Changes Made:

Performance Indicators

The SSU indicators were changed as follows:

- Credit for operator recovery actions was expanded to allow credit for recovery from operator errors and equipment malfunctions. The latter has generated a number of questions and resulted in some licensee actions that are well beyond what was originally intended.

- A provision was added that allowed licensees who perform on-line maintenance to not count those hours as unavailable if the licensee has in place a quantitative risk assessment that demonstrates that the increase in risk is small. This was done to allow licensees to perform on-line maintenance and not count unavailable hours if the risk is comparable to doing that maintenance while shut down, when the hours would also not be counted.

- A provision was added to allow the removal of fault exposure hours (FEH) for blocks of FEH of 336 hours or greater due to a single event after 4 quarters have elapsed, if the licensee has competed all necessary corrective action and the NRC has inspected and closed out the issue. This will reset the indicator so that future problems could cross the threshold and result in supplemental inspection.

Inspection Program

- IMC 0610*, "Reactor Inspection Reports," was revised to clarify 1) the thresholds for documenting inspection findings, 2) what constitutes a documentable cross-cutting issue, and 3) documenting the basis for significance of findings. Agency decisions about "No Color" findings will affect the guidance in IMC 0610*, which will be revised to implement the decisions. Examples of properly and improperly documented findings from past inspection reports will be added to the manual chapter.

- A supplemental inspection procedure (IP 71841, "Human Performance") for evaluating corrective actions for human performance deficiencies was issued on December 12, 2000 (SECY-00-049 commitment).

- The baseline inspection procedure for following up events (IP 71153) was revised to compliment the risk-informed aspects of Management Directive 8.3.

- The baseline inspection procedure for refueling and other outages (IP 71111.20) was revised to clarify its basis for fuel movement and to add guidance on the increased risk during such times.

- The baseline inspection procedure IP 71111.13, "Maintenance Risk Assessment and Emergent Work Control," was revised to incorporate 10 CFR 50.65 (a)(4) rule requirements and inspection guidance. A supplemental inspection procedure (IP 62709, "Configuration Risk Assessment and Risk Management Process") for performing independent assessment of the conditions associated with 10 CFR 50.65 (a)(4) implementation problems was issued on December 28, 2001.

A number of baseline inspection program procedures are being changed based on the staff's review of initial implementation. The procedures whose scope, frequency, or level of effort are being changed significantly include the following:

- The procedure for in service inspections will be changed based on recommendations of the steam generator action plan and the lessons learned from the steam generator tube failure at Indian Point 2. At multi-unit sites, the inspection will be conducted at every refueling outage for each reactor unit instead of at one unit during an outage about every two years. Additional inspection requirements will be added for pressurized water reactors with older steam generators.

- The inspection frequency for evaluating licensees' programs that implement 10 CFR 50.59 will be changed from annual to biennial because the inspection is more effective when combined with other design related inspections that are conducted every two years. An initial evaluation of licensee's meeting the recently revised rule will be accomplished with a one-time temporary instruction inspection.

- The Maintenance Rule inspection procedure (IP 71111.12) is being rewritten to make it more risk-informed and performance based.

- The ALARA procedure will be revised after the staff restructures the screening and significance criteria for ALARA findings.

- The annual problem identification and resolution inspection will be changed to biennial. Other changes to the baseline inspection program will ensure continued oversight of this cross-cutting area every year. The changes will make the inspections more effective and efficient by allowing a more in-depth (albeit less frequent) assessment of a licensee's program while emphasizing routinely following up individual issues. (See the cross-cutting attachment to this Commission paper.)

Significance Determination Process

Reactor Safety SDP

Phase 2 Notebooks:

The staff determined that the most important change to the reactor safety SDP, currently ongoing, is the development and issuance of the plant/site specific Risk-informed Inspection Notebooks. The notebooks incorporate site specific information collected and verified during site visits by Regional SRAs and NRC Headquarters risk analysts. The notebooks include the Phase 2 worksheets of the SDP, giving the inspectors the tool they need to assess inspection findings in the field. All of the 70 notebooks will be completed and issued for use by the inspectors by the end of September 2001. Following issuance the last important step remaining is a benchmarking process that compares the results of the SDP Phase 2 notebooks with the licensee risk model results to ensure that the SDP is generally conservative. The latter effort requires site visits that started in April 2001. To date, several benchmarking efforts indicate that SDP results using the notebooks are conservative as expected. However, there is also indication that some licensees did not provide adequate comments during the initial site visits resulting in some notebooks that do not accurately reflect certain accident sequences. While the process is ready for full implementation by the inspectors, continued SRA involvement and verification by the SERP remain important aspects of the process. The benchmarking of the notebooks continues at a rate of two site visits per month.

Credit for Operator Actions:

The staff revised the credit given for operator actions by changing from two categories, recovery under normal conditions and recovery under stressful conditions, to four categories of Human Error Probabilities (HEP) ranging from 0.1 to 1E-4. Phase 2 worksheets are in the process of being updated to include plant and site specific information.

Transportation SDP

For the transportation 10 CFR (Part 61) area (i.e., classification of radioactive materials for shipment and disposal); the staff accepted a proposed revision to the Part 61 portion of the SDP that was submitted by the Nuclear Energy Institute (NEI) on June 12, 2000. This portion of the SDP assesses the risk from the failure of a licensee to correctively classify a radioactive waste shipment (i.e., under classify waste shipments by assigning a less restrictive classification(i.e., classifying Class B waste as Class A waste). Prior to the change, all findings that involved radioactive materials being under classified received a White finding. NEI proposed that the SDP flowchart be expanded to offer additional decision questions to refine the SDP process into separate steps that correspond to graded levels of "risk" to the public. NEI maintained that there are cases where there is low risk to workers, members of the public, the waste disposal facility, and the environment. For such cases, the SDP should reflect this low risk and the SDP should be include a risk assessment of Green. The NRC agreed with the proposed revision. Adjustments to the SDP and associated flowcharts were made and subsequently tested to assure that the SDP will screen inspection findings to the appropriate licensee and NRC response bands. It was also agreed that a White finding was still appropriate for cases that involved Class C waste and for Class B waste that did not meet the requirements of 10 CFR 61.56.

Physical Protection SDP

The staff determined that linking the Reactor Safety SDP to the Physical Protection SDP (PPSDP) would result in reactor safety findings that were at a higher level of NRC response and engagement than is warranted. The problem was most noticeable when processing simulated equipment damage that resulted from mock adversary actions (force-on-force exercises) not prevented by security measures. To remedy the problem, the staff recommended interim significance determination process to be used to evaluate force-on-force exercise findings. The Commission accepted the staff recommendations and provided additional guidance in COMSECY-00-0036, which directed the staff to continue the effort to develop more permanent guidance. This guidance will be developed and finalized based upon stakeholder feedback and experience with the interim PPSDP.

Fire Protection SDP

The staff decided to temporarily suspend the review of fire induced circuit failures of associated circuits, as part of the triennial inspection program. This suspension is in response to a voluntary industry initiative to improve the understanding of the behavior of electrical circuits when exposed to a fire. Details of the ongoing study, which involves fire tests of various circuit arrangements, are being closely followed by the staff. This effort is expected to take about a year. New guidance, based on the staff's evaluation of the industry's test results, will be incorporated into the inspection procedure.

Near the end of the initial implementation period, additional information to enhance the inspectors' ability to assess functionality of fire protection defense in depth components such as

fire brigade, automatic detection, and protection performance as they relate to the SDP, was incorporated into an attachment to the fire protection SDP.

Assessment Process

- Added guidance that the Executive Director for Operations (EDO) is responsible for authorizing all deviations from the Action Matrix (see SRM on SECY 00-0049).

- Added a description of the roles of the Agency Allegations Advisor, Office of Enforcement, Office of Investigations, Office of Research, and Office of Nuclear Reactor Regulation during the End-of-Cycle (EOC) Review meetings.

- Added additional guidance for the regional offices regarding preparation for and conduct of the Mid-Cycle and EOC Review meetings.

- Added an end-of-cycle summary meeting, between the regional offices and the Director of NRR (or another member of the Executive Team), at the conclusion of the EOC Review meeting.

- Changed the requirement for issuance of the annual assessment letters to three weeks after the EOC Review meeting from 1 week after the Agency Action Review (AARM) meeting. This change was made to recognize the fact that there should be no direct tie between the AARM and issuance of the annual assessment letters.

- Added a note to clarify that "regulatory actions listed in the Multiple/Repetitive Degraded Cornerstone column of the Action Matrix are not mandatory. However, the regional office should consider each of these regulatory actions when new performance information regarding licensee performance becomes available". This note has also been added to the Action Matrix.

- Updated sample assessment letters to reflect lessons learned from the previous Mid-Cycle and End-of-Cycle Review meetings.

- Added additional guidance regarding the process for approval of a deviation from the Action Matrix.

<u>Program Changes Planned:</u>

Performance Indicators

- Evaluate the results of the two Initiating Events Cornerstone pilots for possible replacement of the three indicators in this cornerstone (Scrams, Scrams with Loss of Normal Heat Removal, and Unplanned Power Changes).

- Work with industry to Improve the existing SSU indicators to simplify them, make them easier to understand, more compatible with all uses, and more risk-informed; and evaluate the risk-based PIs as possible additions to or replacements for the SSU indicators.

- Continue to work on the barrier indicators (reactor coolant system (RCS) activity, RCS leakage, and a containment PI) to improve the usefulness of those indicators.

- Work with industry to remove the potential to mask poor performance in the security equipment index PI.

- Improve the usefulness of the Personnel Screening Program Performance and the Fitness-for-Duty /Personnel Reliability Program Performance indicators.

Inspection Program

- The Physical Protection cornerstone baseline inspection program procedure (IP 71130) and its attachments will be revised over the next year to account for any changes in policy or regulations. The feedback from external stakeholders on the 10 CFR Parts 26 and 73 rulemaking and the OSRE program, along with internal inspector feedback on the baseline inspection program, will form the basis for drafting the revisions to the inspection procedure. The staff also will write a new attachment to the inspection procedure to inspect the industry's self-assessment program.

- Refinements to the estimates for the inspection effort and budget models will continue as a result of these changes in inspection program scope.
- The staff will evaluate how licensee self-assessments could be used in satisfying some requirements of the baseline inspection program.

- The staff is publically meeting with stakeholders to restructure the assessment of ALARA findings (screening criteria and significance criteria) and will revise the associated inspection program documents to accommodate the consensus outcomes.

Significance Determination Process

<u>All Cornerstones</u>

The staff will continue to enhance the SDP through improving existing and developing new significance determination tools. However, changes to the process will be closely scrutinized to ensure the balance between increased regulatory burden and the benefit in maintaining safety and agency effectiveness. For example, changes to the process to address the "No Color" category of findings are under extensive review to assure that the change improves the process. The development of a maintenance activity related SDP is under similar evaluation by the staff. The staff will continue efforts to reduce time spent on preliminary safety significance determinations. For example, the site specific notebooks for the reactor safety SDPs and enhancements to the fire protection SDP should result in improvements of timeliness and reduction of resources. Incorporating comments into SDP associated with other cornerstones should also result in improvement of efficiencies.

<u>Reactor Safety SDP</u>

The staff's capability to assess the impact of external events on operating reactor safety related issues needs to be improved. To this affect the staff requested the Office of Research to conduct a preliminary evaluation of the specific plants that may warrant development of improved external events tool.

The staff also needs to improve guidance provided for the assessment of concurrent deficiencies. Existing guidance in MC 0609 provides for concurrent performance deficiencies to be assessed collectively to determine total contribution to change in the core damage frequency (CDF). However, each concurrent performance deficiency should be assigned a color

individually. When multiple issues stem from the same common cause, risk analysis techniques account for the potentially greater risk significance of the combined issues (i.e., delta CDF or delta large early release frequency (LERF). However, in all cases the Action Matrix was designed to combine multiple issues for determining the appropriate NRC response. Although it is expected that in most cases the regulatory response will not differ if multiple issues are treated either in combination or independently, ROP guidance is being evaluated for enhancement with regard to applying combined risk results of multiple issues in a manner that is appropriate for use in the ROP Action Matrix.

Fire Protection SDP

The staff continues to develop the methodologies that will allow inspectors to determine fire scenario development and improve the accuracy of site specific data used in the assessment of risk associated with findings, such as ignition frequency. The results of these efforts will undergo functional evaluation and be made available to the inspectors by the end of 2001.

Shutdown SDP

The development of a Phase 2 process, a tool that will allow for the conservative assessment of the risk associated with a finding by inspectors is under way with the assistance of risk analysts at Brookhaven National Laboratories. The effort is expected to be complete by the end of 2001. The results of the Phase 2 process should provide colors that correspond to our existing definitions of significance based on incremental increase in core damage frequency and expected Action Matrix Response.

Occupational Radiation Safety SDP

The staff is evaluating options to revise the Radiation Exposure Control section of the Occupational Radiation Safety SDP to clarify how the SDP reflects the Commission's policy on enforcement discretion for skin over exposures from hot particles (or discrete radioactive particles).

The current Occupational Radiation Safety Group 2, Question 1 (concerning ALARA) will be removed. The rolling three year average collective dose comparison will be used to adjust the baseline inspection level of effort (hours of inspection) and possibly as a SDP significance criteria. The other criteria (e.g., "greater than 5 person-rem," and "actual dose exceeds estimated [planned] by 50%") will be incorporated the baseline inspection procedure as guidance on what constitutes a "more than minor" issue. A new Group 2 Question will be developed to clarify that the basis for a finding in this area is an ALARA program failure that results in "unintended collective dose" for a job, similar to the current Occupational Radiation Safety Group 2, Question 2.

Containment SDP

Interim guidance for assessing significance of containment related inspection findings is provided in Appendix H to Manual Chapter 0609. Appendix H is based on a draft (August 2000) technical basis document by Brookhaven National Laboratory. The technical basis document is being revised to address residual technical issues and incorporate additional guidance based on feedback and questions from regions. Appendix H will be updated and expanded following revision of the basis document. The target completion date is December 2001. Issues being

addressed in the revision include: additional screening guidance for boiling water reactor (BWR) main steam isolation valve (MSIV) leakage and suppression pool bypass findings, refinement of failure criteria for ice condenser hydrogen igniters and ice bed doors, and extension of the guidance to cover containment integrity during shutdown operations.

Spent Fuel SDP.

Spent fuel issues are currently evaluated by a risk analyst using Phase 3 analysis. The feasibility for the development of an assessment tool that can be implemented by the inspector is under evaluation.

Assessment Process

- Implement any lessons learned from the End-of-Cycle Review Meetings, the Agency Action Review Meeting, and the annual public meetings with the licensees.

- Add additional guidance on how to address supplemental inspection for performance indicators when there are substantive inadequacies in the evaluation of the root causes of the original performance deficiency, the extent of the performance problems, or the associated corrective actions.

- Continue to evaluate how historical licensee performance issues should be treated by the Action Matrix.

- Consider the development of further guidance that would describe the types of issues that may be considered for deviations from the Action Matrix.

- Monitor the ROP to determine whether a graded reset approach for inspection findings is appropriate.

- Clarify guidance in 0609 Attachment 1, IMC 0305, and the enforcement policy regarding the purposes of the Regulatory Conferences and the Regulatory Performance Meetings.