

Status of Previous Issues

SECY-02-0062, "Calendar Year 2001 Reactor Oversight Process Self Assessment," dated April 3, 2002, included a listing and status of numerous previous issues related to implementation of the Reactor Oversight Process (ROP) for which additional actions were planned by the staff. SECY-02-0062 further discussed additional planned actions and commitments as a result of the calendar year (CY) 2001 ROP self-assessment. Lastly, the Commission directed the staff to consider several additional issues as detailed in an Staff Requirements Memorandum (SRM) dated June 28, 2002, resulting from the staff's Commission briefing on May 1, 2002, and an SRM dated December 20, 2001, resulting from the Advisory Committee on Reactor Safeguards' (ACRS) Commission briefing on December 5, 2001. During this last self-assessment period, the staff resolved many of these issues and made progress towards resolution of several others. Compiled below are the issues in each program area that were addressed in the above-noted documents along with an update of the staff actions to address them. The more significant issues listed below are also discussed in the respective program area assessment discussions in this paper.

Performance Indicator Program

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

The Mitigating Systems Performance Index (MSPI) has been developed as a replacement for the Safety System Unavailability PI. The data collection phase of the MSPI pilot program was completed in March and evaluation of the data is currently underway. The evaluation phase is scheduled to be completed in September 2003. Both the Nuclear Regulatory Commission (NRC) and industry have devoted significant resources to this effort from the time it began in May 2001 and this has impacted other PI work, as noted below.

- (2) *Potential unintended consequences of the Unplanned Power Change PI*

The requirement that the power change exceed 20 percent and that licensees allow 72 hours for planning the power change could influence licensees to operate the plant in a manner inconsistent with safety. The staff is investigating several alternatives to the current PI and has presented these to stakeholders in the regularly scheduled public meetings. However, resolution of the issue has been delayed due to competing priorities.

- (3) *Develop improved Barrier Integrity cornerstone PIs*

This activity subsumes last year's commitment entitled "Guidance and thresholds for reactor coolant system (RCS) activity and leakage PIs." The staff developed draft replacements for the RCS Activity, RCS Leakage, and Containment Leakage indicators and presented them to industry in the regularly scheduled public meetings; however, resolution of the issue has not

been completed due to competing priorities. The staff has also recently begun development of an RCS leakage PI improvement program as a result of the Davis-Besse Lessons Learned Task Force recommendations.

(4) *Physical Protection cornerstone issues*

The staff and industry have recognized the need to make improvements to the physical protection indicators. Among the issues being discussed are concerns about good performance of closed-circuit TVs masking poor performance of the intrusion detection system, and problems with the Personnel Screening Program Performance and the Fitness-for-Duty Program Performance PIs. These efforts were put on hold due to the events of September 11, 2001, and are now being evaluated as part of the staff's ongoing security review.

(5) *Emergency Preparedness cornerstone issues*

Through analysis of the Alert and Notification System (ANS) Reliability PI data, the staff realized that the PI may remain within the licensee response band, indicating greater than 94-percent reliability, even if the sirens are available less than 94 percent of the time. The staff is therefore reevaluating this PI to determine if it should be changed from a reliability indicator to an availability indicator. The staff has discussed this issue with both the industry and the Federal Emergency Management Agency (which uses the same unreliability measure and which would need to be involved in any change to the data required to be reported) but has not yet reached a conclusion.

(6) *Clarify the guidance for the Safety System Functional Failure PI*

The staff has developed a draft replacement for the Safety System Functional Failure PI and has presented it to stakeholders in the regularly scheduled monthly meetings. However, resolution of the issue has been delayed due to competing priorities.

(7) *Review ACRS recommendations concerning the white/yellow and yellow/red thresholds for performance indicators (PIs)*

In an SRM dated December 20, 2001, the Commission requested the staff to review ACRS recommendations concerning the white/yellow and yellow/red thresholds for PIs, particularly with regard to implementation of risk-based PIs. The staff acknowledges the ACRS's concern, and is considering modifying or eliminating the risk-informed thresholds. However, there is a basis for each of these thresholds, and any consideration of their elimination will require careful evaluation and implementation as noted in the staff's response to the ACRS (ADAMS accession number ML023610493).

Inspection Program

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

The staff revised and issued Inspection Manual Chapter (IMC) 0612, "Power Reactor Inspection Reports," on April 29, 2002. After a brief training period, all regions implemented the new requirements of IMC 0612 in July 2002. The staff has also prepared a sample inspection report that will be finalized shortly and issued as an attachment to IMC 0612. The staff had suspended the auditing of inspection reports to allow inspectors and regional management to become more familiar with the new requirements of IMC 0612, but the staff plans to resume audits of inspection reports in CY 2003.

- (2) *Revise the Physical Protection cornerstone inspection procedure and its attachment to account for significant changes and new polices in physical security*

As a result of the events of September 11, 2001, the staff issued Temporary Instruction (TI) 2515/148, "Inspection of Nuclear Reactor Safeguards Interim Compensatory Measures." The staff informed the Commission in SECY-02-0195, "Staff Plans to use Temporary Instruction for Verification of Licensee Implementation of Power Reactor Security Interim Compensatory Measures and as Temporary Replacement of the Physical Protection Baseline Inspection Program," dated November 1, 2002, that the inspections conducted pursuant to TI 2515/148 were sufficiently scoped that they could serve as the baseline inspection program for the physical protection cornerstone in CY 2002 and 2003. The staff continues to refine and enhance the security inspection program in light of the current threat environment, potential changes in the design basis threat, and other considerations.

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

The staff has been working with stakeholders to evaluate allowing licensees to conduct and receive credit for some self-assessment activities. Examples of inspections for which the staff might consider credit for licensee self-assessments are baseline specialist/team inspections, such as those in the engineering design, fire protection, and plant support areas. Licensees that would be eligible for credit for self-assessments would be those in the licensee response column and the regulatory response column of the Action Matrix. The staff is working with stakeholders to develop a pilot this summer using the biennial safety system design inspection (SSDI) as a first step.

Significance Determination Process (SDP)

- (1) *Validate and issue plant-specific Reactor Safety SDP notebooks, including the Phase 2 worksheets*

The funding rate for benchmarking and issuing the notebooks was accelerated during the year to support completion of the effort during fiscal year (FY) 2003. To date, approximately 48 plant-specific risk notebooks have been benchmarked and issued for use with the remaining 23

notebooks scheduled for completion in FY 2003. With the support of the senior reactor analysts, the inspectors have been generally successful in using the risk notebooks to estimate risk significance of safety findings that are used as an input to the performance assessment process, although there are concerns with its complexity. As a result of the SDP Task Group recommendation, the staff intends to develop pre-solved SDP tables for use by the inspectors.

(2) *Continue efforts to obtain improved and standardized risk analysis tools for the risk analysts*

As discussed above, the staff continues to make improvements to the Phase 2 notebooks through the previously described benchmarking effort to provide increased levels of reliability and predictability with results that are understood by all stakeholders. Additionally, the Office of Nuclear Regulatory Research (RES) has completed development of all Level 1 Revision 3i Standardized Plant Analysis Risk (SPAR) models and has coordinated with NRR to schedule onsite quality assurance (QA) reviews during benchmarking visits to develop a more reliable Phase 3 SDP analysis tool for at-power internal events. To date, 48 SPAR models have been have received onsite quality assurance reviews with completion of the remaining onsite reviews scheduled during FY 2003. Development of SPAR models for issues related to low power/shutdown, large early release, and external events is also planned.

(3) *Continue work to revise the As Low As Reasonably Achievable (ALARA) SDP*

The staff, through a series of public meetings, developed and issued a revision to the ALARA SDP, Appendix C to IMC 0609, "Occupational Radiation Safety Significance Determination Process," on March 6, 2002, incorporating lessons identified since initial implementation of the ROP. The staff will also continue efforts to clarify the ALARA SDP regarding the concept of "issues that could or do compromise the licensee's ability to assess dose" and how this concept is to be applied in determining the significance of inspection findings.

(4) *Replace the interim Physical Protection SDP with a revised SDP that will be developed with internal and external stakeholder input*

Enhancements to the Physical Protection SDP have been deferred while the NRC continues to focus on a number of near- and long-term security issues identified since September 11, 2001. The staff continues to refine and enhance the security inspection program and SDP in light of the current threat environment, potential changes in the design basis threat, and other considerations.

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

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

protection is receiving internal and external stakeholder evaluation to identify changes that would improve and simplify the process.

(6) *Develop a process to evaluate the risk significance of plant shutdown issues*

The staff's ongoing effort to create a Phase 2 methodology tool will allow the assessment of inspection findings identified during plant shutdown to be done by regional Senior Reactor Analysts (SRAs). This will replace the existing process that must be completed by NRC headquarters-based risk analysts.

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

Incorporation of risk due to external initiators remains a significant challenge since such risk is very plant- and site-specific. Only a small percentage of reactor sites have Probabilistic Risk Assessment (PRA) that address external initiators, and there is currently no industry standard for development of such PRAs. The staff developed changes to IMC 0609, Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," to simplify the process for accounting for external initiators in characterizing and approximating the risk significance of inspection findings, but the incorporation of risk due to external initiators remains a significant challenge.

(8) *Enhance the guidance provided for treatment of concurrent deficiencies*

The staff revised IMC 0609, Appendix A to address this specific concern. Under the SDP, concurrent findings with a common underlying cause are analyzed as a single finding and are assigned a single color appropriate to the combined risk. Concurrent findings that are determined to be the result of independent causes are analyzed separately, and each receives a color based on the calculation of its risk significance as if the other finding did not overlap. Similarly, the Action Matrix considers the SDP outcome of findings with a common underlying cause as a single input, while the results of independent concurrent deficiencies are considered as individual inputs.

(9) *Use lessons learned during initial implementation to clarify the definition of a performance deficiency*

The staff developed and incorporated a formal definition of performance deficiency in IMC 0612. This definition is also referenced in the SDP and assessment guidance documents. Issues that are not a result of a licensee performance deficiency (either past or present) are not entered into the SDP process and are not assigned a color.

(10) *Inform the Commission of the steps the staff is taking to improve the scrutability of SDP input assumptions, including the increased use of realistic best estimates*

In response to an SRM dated June 28, 2002, the staff provided information regarding the actions taken to ensure that the staff's decision bases are clearly understood by external stakeholders and that input assumptions used to reach those decisions are documented in sufficient detail to justify the SDP results. Specifically, IMC 0609, Attachment 1, "Significance

and Enforcement Review Panel,” and IMC 0612 were revised to require, where appropriate, more explicit discussions of dominating affected accident sequences, pertinent assumptions, sensitivity of results to influential assumptions, contributions of greatest uncertainty factors, and known differences between licensee and NRC risk models.

Assessment Program

- (1) *Develop additional guidance for closing inspection findings at plants that are in the multiple/repetitive degraded cornerstone column of the Action Matrix*

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

IMC 0305, “Operating Reactor Assessment Program,” was revised to consider certain criteria before closing out the associated inspection findings, including that (1) new plant events or findings do not reveal similar significant performance weaknesses, (2) NRC and licensee performance indicators do not indicate similar significant performance weaknesses that have not been adequately addressed, (3) the licensee’s performance improvement program has demonstrated sustained improvement, (4) NRC supplemental inspections show licensee progress in the principal areas of weaknesses, and (5) there were no issues that led the NRC to take additional regulatory actions beyond those listed in the multiple/repetitive degraded cornerstone column of the Action Matrix. Additionally, a further consideration is that the licensee has made significant progress on any regulatory actions which were imposed (i.e. confirmatory action letters, orders, 10 CFR 50.54(f) letters) because of the performance deficiencies which led to the multiple/repetitive degraded cornerstone designation.

- (2) *Determine whether a graded approach for removing inspection findings from consideration in the Action Matrix is appropriate*

The industry has recommended a graded approach for removing inspection findings from consideration in the assessment program. This recommendation involves applying a graded approach based on safety significance such that white findings would remain in the assessment program for two quarters, yellow findings for three quarters, and red findings for four quarters. This approach would only apply to those findings where corrective actions were deemed appropriate.

One concern with this approach is that inspection findings will not be allowed to remain in the assessment program long enough to accumulate in the Action Matrix and allow increased NRC action with degrading performance. The staff will continue to review the Action Matrix annually as part of the self-assessment and the Agency Action Review Meeting (AARM) to assess the appropriateness of the criteria for determining the combination of inputs and length of time for

consideration that dictate a licensee's placement in the Action Matrix. This will be reported in the annual self-assessment paper to the Commission.

- (3) *The staff should reexamine the treatment within the ROP of findings that the staff currently characterizes as "old design issues." The staff should reconsider the criteria for determining when a design issue should be treated outside the Action Matrix framework. The staff should also develop decision-making criteria for situations where a supplemental inspection need not be performed.*

In an SRM dated June 28, 2002, the Commission directed the staff to reexamine the treatment of old design issues (ODIs) within the Action Matrix. The staff modified the guidance in IMC 0305 on ODIs based on feedback from internal and external stakeholders, as well as experience from issues that arose during CY 2002. The primary revisions included changing the supplemental inspection level from an Inspection Procedure (IP) 95003, "Supplemental Inspection for Repetitive Degraded Cornerstones, Multiple Degraded Cornerstones, Multiple Yellow Inputs, or One Red Input," to an IP 95002, "Inspection for One Degraded Cornerstone or Any Three White Inputs in a Strategic Performance Area," for an ODI with a red safety significance, clarifying the timeframe for identification with respect to licensee credit for timely corrective actions, and adding guidance on processing an ODI as information becomes available on whether the ODI criteria have been met.

A supplemental inspection is typically performed for every greater-than-green inspection finding or performance indicator to ensure that, at a minimum, the licensee's root cause analysis of the performance issue and planned corrective actions are acceptable. The supplemental inspection procedures provide, for the vast majority of circumstances, sufficient flexibility in the depth and breadth of the inspection. However, the region may choose not to perform a supplemental inspection for white issues identified as part of a licensee's self-assessment in accordance with IMC 2515, "Light-Water Reactor Inspection Program - Operations Phase," although such exceptions are expected to be infrequent.

However, the regional offices may choose to deviate from the Action Matrix when the level of supplemental inspection is not appropriate for the particular circumstances. Action Matrix deviations are expected to be rare and IMC 0305 and IMC 2515 provide examples of situations when deviations may be appropriate. For example, the first Action Matrix deviation was approved for Oconee Unit 1 in August 2002 to allow for a less resource intensive supplemental inspection (IP 95002 instead of IP 95003). The staff will continue to monitor the ROP to determine if any changes should be made to the guidance on old design issues, Action Matrix deviations, or supplemental inspections.

- (4) *Evaluate changing the approval level for Action Matrix deviations*

In SECY-02-0062, the staff indicated an intent to change the authorization level for deviations from the Action Matrix from the Executive Director for Operations (EDO) to the Regional Administrator and the Office of Nuclear Reactor Regulation (except for plants in the multiple/repetitive degraded cornerstone column of the Action Matrix). In an SRM dated June 28, 2002, the Commission disapproved this change. Accordingly, the approval level for any Action Matrix deviations will continue to reside with the EDO.

Other Program Issues

- (1) *Provide recommendations for resolving, in a transparent manner, apparent conflicts and discrepancies between aspects of the ROP that are risk-informed and those that are performance-based*

In an SRM dated December 20, 2001, the Commission requested the staff, with ACRS input, provide recommendations for resolving, in a transparent manner, apparent conflicts and discrepancies between aspects of the revised reactor oversight process that are risk-informed (e.g., significance determination process) and those that are performance based (e.g., performance indicators). The staff met with the ACRS on three separate occasions over the past year to address the specific ACRS concerns regarding the ROP. As discussed in the staff's written response to the ACRS (ADAMS accession number ML023610493), the staff believes that the ROP should continue to be implemented as currently designed, though incremental improvements are warranted and should be incorporated under the existing self-assessment program. The staff recognized that there are acknowledged differences between the risk-informed and strictly performance-based aspects of the ROP; however, the staff believes that the ROP appropriately addresses both risk-informed and performance-based issues. The staff further recognized the need for a central document to consolidate the basis for PIs, SDPs, and other ROP aspects in a more transparent manner, and has issued the ROP Basis Document.

Most recently, the staff met with the ACRS on March 6, 2003. As a result of this briefing, the ACRS forwarded a letter to the Commission on March 13, 2003, concluding that there are still disagreements between the staff and the ACRS. The specific issues presented in the March 13 letter will serve as the basis for further discussion and potential revisions to the ROP.

- (2) *Conduct an independent survey by a qualified contractor of the impact of the NRC's activities on reactor licensees' operations*

In an SRM dated January 30, 2002, the Commission approved the conduct of an independent survey by a qualified contractor of the impact of the NRC's activities on reactor licensees' operations. Although the survey was initially scheduled for completion this year to provide input to this Commission paper, it was postponed to redirect applicable staff to support the Office of Nuclear Security and Incident Response. The staff plans to complete this survey later this year and incorporate the results into the next ROP self-assessment Commission paper.