



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS  
WASHINGTON, DC 20555 - 0001**

October 16, 2015

The Honorable Stephen G. Burns  
Chairman  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

SUBJECT: REACTOR OVERSIGHT PROCESS ENHANCEMENTS

Dear Chairman Burns:

During the 628th meeting of the Advisory Committee on Reactor Safeguards (ACRS), October 7-10, 2015, we were provided a presentation on the ongoing actions by the Office of Nuclear Reactor Regulation staff to enhance the Reactor Oversight Process (ROP). Our Subcommittee on Plant Operations and Fire Protection reviewed this matter during a meeting on September 24, 2015. During these reviews, we had the benefit of discussions with representatives of the NRC staff. We also had the benefit of the documents referenced.

**RECOMMENDATION AND CONCLUSIONS**

1. The ROP enhancement actions proposed by the staff are timely and beneficial, and should be implemented.
2. The proposed enhancements to the Baseline Inspection Program, which include changes to the Component Design Basis Inspection process and the Problem Identification and Resolution process, should increase the effectiveness of the licensees' overall engineering programs.
3. We have no objection to the change in the definition of a degraded cornerstone whereby the equivalence relationship between White-to-Yellow findings is changed from two to three.
4. The action to make the Significance Determination Process more timely is beneficial.

## BACKGROUND

The ROP is the foundational program that enables the NRC to successfully complete its reactor oversight mission. It was introduced for use in 2000 and has been the process by which the NRC marshals and deploys its resources to conduct risk-informed, performance-based inspections and monitor safety performance at the nation's nuclear power reactors. The ROP is organized around seven cornerstones, three of which are designed to be quantitative with respect to risk analysis. Action thresholds, based on event significance, are defined that cause escalation of NRC attention beyond baseline inspections.

The ROP uses risk information, when available, informed by expert judgment, to evaluate inspection findings. In the original design of the ROP, a calculus was developed based on what seemed reasonable engineering judgment to define thresholds for additional regulatory oversight based on multiple findings within a specific cornerstone or based on findings across multiple cornerstones. The idea was that multiple findings might be indicative of systemic problems at the plant, and expanded oversight could avert future problems. It was anticipated at the outset that these thresholds and the associated calculus would evolve as experience was gained and as more extensive plant-specific risk information became available.

In the past 15 years, sufficient experience has accumulated to allow refinement of the thresholds requiring escalation of NRC attention in response to licensee performance. The staff has formulated a rational means for assessing the current thresholds. Among other activities, the staff examines occasions of escalation, whether escalation was effective, and whether escalation would have occurred for various levels of events in enhancing licensee performance.

The staff has undertaken significant actions to enhance the ROP. These enhancements result from ongoing programmatic assessment and feedback processes, the ROP Independent Assessment directed by the Commission, the ROP self-assessment process enhancements as proposed in COMSECY-14-0030, and recommendations in GAO-13-743 and OIG-14-A-12. Also included as consideration for enhancement actions are lessons learned from the Browns Ferry Column 4 assessment, the Fort Calhoun Inspection Manual Chapter 0350 implementation, and the San Onofre steam generator tube degradation event.

## DISCUSSION

The staff's ROP enhancement actions are focused on five major topical areas: Baseline Inspections, Licensee Assessment Program, the Significance Determination Process (SDP), Communications, and ROP Self-Assessment.

### BASELINE INSPECTION PROGRAM ENHANCEMENTS

Enhancements to the Baseline Inspection Program (BIP) include incorporation of inspection areas needed for the current regulatory environment and elimination of redundant inspection areas. All actions in response to recommendations for enhancements to the BIP are to be

complete by the end of 2015. BIP enhancements with broad scope and longer schedules include revisions to the Component Design Basis Inspections (CDBI) and revisions to the Problem Identification and Resolution (PI&R) process.

The present CDBI is an intrusive 7-week inspection campaign that includes 3 weeks onsite and 4 weeks offsite, and is designed to inspect 15 to 25 components. The proposed CDBI will be a 5-week inspection campaign that includes 2 weeks onsite and 3 weeks offsite. This review will focus on the licensee's engineering programs and inspect 10 to 17 components. The basis for the changes is to retain the NRC's ability to independently verify that licensees are maintaining their licensed design basis and to reduce unnecessary regulatory burden on the licensee. These changes will be piloted at two sites in each region from November 2015 to June 2016. Experience with the current CDBI is that it has yielded meaningful findings that have enhanced nuclear safety. The addition of the reviews of the engineering programs in lieu of the extra focus on individual components is an appropriate enhancement.

The PI&R process provides early warning of potential performance issues that could result in crossing thresholds in the ROP Action Matrix. The PI&R process itself is not specifically assessed by other inspections or Performance Indicators. It provides routine reviews of matters pertaining to problem identification and resolution, semi-annual trend reviews, annual follow-up on selected issues, and biennial team inspections using Inspection Procedure 71152. The staff made changes in a February 2015 revision to the inspection procedure and expects to further enhance the procedure in the summer of 2016.

The proposed enhancements to the BIP with changes to the CDBI and PI&R will increase the effectiveness of the licensees' overall engineering programs.

#### LICENSEE ASSESSMENT PROGRAM ENHANCEMENTS

The staff completed major revisions to the 'substantive cross-cutting issue' process. The first application of the new guidelines will be during mid-cycle assessments in late 2015. Part of the ROP enhancement is addressing the number of White findings that should be considered equivalent to one Yellow finding for the purpose of the definition of "degraded cornerstone". The working group found no compelling technical basis for the current value of two White findings equivalent to one Yellow finding and recommended changing to three White findings as equivalent to one Yellow finding. We note that this modification represents a small change in absolute values of both Core Damage Frequency and Large Early Release Frequency such that the change is not significant. Adjustment of the 'finding' data relative to degraded cornerstones was anticipated by the original designers of the ROP. We have no objection to the adjustment. It will be necessary to continue to accumulate and refine data on the selected thresholds to maintain the ROP as an effective tool for applying resources for inspections.

## SIGNIFICANCE DETERMINATION PROCESS ENHANCEMENTS

The action to enhance the SDP, by reducing the time from issue discovery to regulatory action, is particularly important because of the value that timely decisiveness provides to the process. Rather than obligating by 'process design' an arduous and often lengthy examination that requires potentially distracting precision, instead, the process provides tools for a reasonable and timely determination and conclusion. Increased timeliness will be of greater value than a significantly more precise conclusion that may take months, or years, to finalize.

The staff explained that there will be revisions to the SDP program documents intended to improve the timeliness for assessing the significance of inspection findings. These revisions add a new timeliness metric to Inspection Manual Chapter 0307's Appendix A. They also clarify Inspection Manual Chapter 0308's Attachment 3. In many cases, reasonable confidence in the proximate cause for an inspection finding is sufficient for the staff and the licensee to assign significance to the associated degraded condition without waiting for the formal root cause assessment. This will enable a timely initial conclusion of the SDP.

## COMMUNICATION ENHANCEMENTS

The staff has undertaken enhancements to improve communications including use of plain language, centralizing a point of contact for all ROP communication initiatives, refining language used in all public ROP communications, developing a redesigned external and internal webpage, and seeking new and better ways to obtain internal and external stakeholder feedback.

## SELF-ASSESSMENT PROGRAM ENHANCEMENTS

The staff communicated their development of a new self-assessment process that includes metrics to assess compliance with and drive accountability to ROP governance, to evaluate the effectiveness of recent program changes, and to perform targeted, in-depth assessments. The enhanced self-assessment program will be transmitted to the Commission this fall.

We encourage the staff to ensure that proposed changes to the ROP take into consideration oversight for plants now being built and for future plants, particularly new designs with passive heat removal capability. The overall ROP enhancement actions proposed by the staff are timely and beneficial, and should be implemented. We commend the staff for their actions to enhance the ROP.

Sincerely,

**/RA/**

John W. Stetkar  
Chairman

## REFERENCES

1. NRC, "Reactor Oversight Process Independent Assessment," 2013 (ML14035A571)
2. COMSECY-14-0030, "Proposed Suspension of the Reactor Oversight Process Self-Assessment for Calendar Year 2014," August 5, 2014 (ML14168A532)
3. NRC Audit Report, OIG-14-A-12, "Survey of NRC's Support Provided to Resident Inspectors," March 18, 2014 (ML14077A293)
4. General Accounting Office, GAO-13-743, "Nuclear Power: Analysis of Regional Differences and Improved Access to Information Could Strengthen NRC Oversight," September 2013 (ML14059A299)
5. NRC Memorandum, "Review of Lessons Learned from the San Onofre Steam Generator Tube Degradation Event," March 6, 2015 (ML15015A419)
6. NRC Memorandum, "Lessons Learned from Implementing Inspection Manual Chapter 0350 at Fort Calhoun Station and Recommended Changes and Inspection Procedure 95003: Evaluation of NRC Assessment Process and Recommendations," May 8, 2014 (ML14128A376)
7. NRC Memorandum, "Inspection Procedure 95003: Evaluation of NRC Assessment and Inspection Processes at Browns Ferry Unit 1," September 27, 2013 (ML13270A473)
8. NRC Inspection Procedure, IP-71152, "Problem Identification and Resolution," (ML14316A042)
9. NRC Inspection Manual Chapter 0307, Appendix A, "ROP Self-Assessment Metrics," (ML12355A458)
10. NRC Inspection Manual Chapter 0308, Attachment 3, "Significance Determination Process Basis Document," (ML062890430)

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1. NRC, "Reactor Oversight Process Independent Assessment," 2013 (ML14035A571)
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