

UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001



October 4, 2005

MEMORANDUM TO: Roy P. Zimmerman, Director  
Office of Nuclear Security and Incident Response

FROM: Bruce A. Boger, Director *BABoger*  
Division of Inspection Program Management  
Office of Nuclear Reactor Regulation

SUBJECT: POTENTIAL FORCE ON FORCE PROGRAM ENHANCEMENTS

In a memorandum dated January 24, 2005, you appointed me as Chairman of the ad hoc review panel for the Differing Professional Opinion (DPO) involving Force-on-Force (FOF) evaluation criteria. The Panel's response has been provided to you under separate cover. While reviewing information related to the DPO submitter's concerns, the Panel developed insights on the FOF program that were beyond the scope of the Panel's review. Some of these insights are provided in the attachment to this memorandum. While not fully researched or developed, in the spirit of continuous program improvement, the Panel offers for your consideration the following as potential FOF program enhancements:

1. Develop performance attributes and evaluation criteria to assess performance of the composite adversary force (CAF). Incorporate these performance attributes and evaluation criteria into inspection procedures, assessment tools (including significance determination process (SDP) and industry feedback), and guidance documents. Document assessments in inspection reports.
2. Ensure that FOF program documents are complete and provide guidance to ensure that performance issues are identified, developed into findings, and documented in inspection reports in accordance with Reactor Oversight Process principles.
3. Assess the adequacy of the deployment of shadow force members and live weapons during FOF exercise through benchmarking activities with other federal agencies.

The Panel would be pleased to meet with you to discuss these potential enhancements and other insights (such as discrepancies in various communication tools [e.g. web site information]) the Panel gained during its review.

Attachment: Panel Insights

## Panel Insights

### Evaluation of CAF

The Panel noted NRC documents that cite the efforts to work with industry to develop a composite adversary force (CAF) that is trained to standards issued by the Commission and that will be evaluated at each exercise using vigorous NRC performance standards issued in April 2004. The Panel was informed that these standards are used in concert with the Adversary Characteristics Document. The Panel noted that these documents address CAF qualifications and capabilities. The Panel also noted that pre-exercise evaluations of the CAF are required by IP 71130.03 and are documented in inspection reports. However, these documents do not address how the CAF's performance during a FOF exercise should be assessed to determine whether it provided a credible representation of the Design Basis Threat. It is the Panel's understanding that post-exercise CAF performance is an expected discussion topic during FOF critique sessions. The Panel was also told that unacceptable CAF performance is expected to be documented in the associated inspection report. The Panel believes that addressing CAF post-exercise evaluations in a more formal manner (e.g. define CAF performance attributes, require an evaluation in IP 71130.03 and document in inspection reports) would be beneficial in consistently documenting NRC oversight of this area.

### Reactor Oversight Process (ROP) Treatment

According to Inspection Manual Chapter (IMC) 0305, "Operating Reactor Assessment Program," the ROP "integrates the NRC's inspection, assessment, and enforcement programs. 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 inspections 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 NRC determines the appropriate level of agency response, including supplemental inspection and pertinent regulatory actions ranging from management meetings up to and including orders for 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."

In SECY 04-0198, "Redeveloping the Assessment Process for the Physical Protection Cornerstone of the Reactor Oversight Process," transmitted to the Commission on October 22, 2004, the staff informed the Commission of its intentions and direction in implementing Option 5 of SECY-04-0020, "Treatment of Physical Protection Under the Reactor Oversight Process," dated February 5, 2004. The staff indicated the following:

The staff considered what elements an assessment process must have to be considered as part of, or parallel to, the ROP. The staff determined that such a process should have the same basic objectives as the ROP, contain the same basic components as the ROP, and use objective measures to determine agency response based on licensee performance. The ROP is a regulatory framework

that includes licensee performance indicator data, NRC inspections, determinations of significance of inspection findings, and assessment based on the combination of PIs and inspection data. The goals of the process are for it to be objective, risk-informed, understandable, and predictable.

SECY-04-0198 further stated:

The basic elements of the ROP that the physical protection assessment process would need to maintain are:

- PIs and inspection findings that feed into an assessment program
- a defined, repeatable, objective process to determine the significance of inspection findings

In SECY-05-0082, "Revised Assessment Process for the Security Cornerstone of the Reactor Oversight Process," transmitted to the Commission on May 12, 2005, the staff indicated the following:

The staff followed the process described in SECY-04-0198 in developing a process to assess security performance of power reactor licensees.... Objectives of developing this process included providing valid indications of licensee performance, integrating with the ROP, and minimizing as much as possible impact on the regions. That is, the new process should use as much of the existing programs as possible to prevent duplication or performing the same function in different ways. The process the staff developed is based on the ROP and follows ROP principles, but separates the security-related assessment from the assessments of the other six cornerstones. The new process uses the same assessment inputs (i.e., inspection findings and performance indicators) as the ROP and combines the inputs in a separate action matrix to determine the appropriate agency response.

The staff reviewed three recent FOF inspection reports to see how the assessments were developed and documented. Two of the reports appeared to be written in accordance with ROP guidance (IMC 0612). No significant licensee performance deficiencies were identified in these reports. The third inspection report documented a FOF exercise with significant performance issues. However, only one green non-cited violation was identified for failure to adequately develop target sets in accordance with the licensee's security plan. The inspection report indicates that two target sets were protected and one target set was destroyed. The Panel understands through interviews that protracted discussions among the team members, team leader, and DNS management ensued, and a conclusion was reached to characterize the exercise as indeterminate. Senior NSIR officials promptly visited the site to assess the situation. Although significant discussion of the artificialities and their impact on the exercise outcome was provided in the inspection report, neither the destroyed target set nor the performance deficiencies were developed as findings and evaluated in accordance with the FOF SDP.

It appeared to the Panel that expert judgement and management discretion were applied, resulting in an outcome (including a site visit by senior NSIR/DNS managers and plans for a follow-up inspection) that was responsive to public health and safety, but could be viewed as

outside the formal process (i.e., not in accordance with IMC 0612 and the FOF SDP). The extent to which the formal assessment process relies on expert judgement is described in the FOF inspection guidance. Section 05.21, "Inspection Team Meeting," of IP 71130.03 states:

An adverse conclusion could be either a finding or an observation, which may only need to be passed on to security personnel. The team should reach a consensus on any potential finding and its relative importance.

However, IP 71130.03 does not offer guidance on what constitutes a finding; the distinction between a finding and an observation; or how a finding is developed and dispositioned. Rather, IMC 0612 is the governing ROP guidance document for issue screening. According to IMC 0612, a finding is defined as:

An issue of concern that is related to a licensee performance deficiency. Findings may or may not be related to regulatory requirements and, therefore, may or may not be related to a violation.

Although the SDP for FOF Exercises focuses on target set loss or protection and radiological release in determining a finding's significance, it refers the NRC inspector to IMC 0612, Appendix B, "Issue Screening," for detailed analysis of an issue. The SDP appears to categorize these "issues" as FOF Process Deficiencies and characterize them as green findings. The SDP defines a finding as:

An issue with some significance that has been placed in context and determined either to be of sufficient significance to warrant more detailed analysis using the SDP or to have extenuating circumstances warranting its documentation in an inspection report. To be a finding, it must pass through the threshold screening process described in MC 0612. Findings may or may not be related to requirements including requirements imposed by order.

As such, the Panel would have expected the inspection report to have included multiple findings, not just the one green NCV for exercise process issues involving selection of a target set. However, performance deficiencies during this FOF exercise were not identified, developed, characterized using a significance determination process, and documented in the associated inspection report as findings. The lost target set identified in this exercise did not result in an inspection finding. Similarly, the level of regulatory response did not appear to be commensurate with the documented findings. In the Panel's view, this was not in conformance with the ROP.

During interviews, DNS staff and management confirmed their reliance on expert judgement to assess protective force performance and identify findings. The Panel determined that, in practice, findings were specifically tied to lost target sets. In one interview, the Panel was told that any compliance issue identified during a FOF exercise would not be characterized and developed as a finding unless one or more target sets were destroyed. A senior DNS manager confirmed that this was the practice. As such, it became apparent to the Panel that performance deficiencies would not be developed as FOF inspection findings, documented in inspection reports, communicated to licensees for corrective action, and revisited during future inspections to ensure they were adequately corrected, unless target sets were lost. In the Panel's view, this also was not in conformance with the ROP.

SECY-05-0082 states that an objective of the new security oversight process is to provide valid indications of licensee performance. In reviewing the Commission Paper, it appeared to the Panel that FOF exercise outcomes (target set defense or loss) are a dominant input to the Security Cornerstone Action Matrix. The Panel concluded that the current FOF program (as defined in program guidance documents) is potentially susceptible to unreliable or incomplete conclusions regarding licensee (protective force) performance because it focuses on bottom line outcomes. It appears that the premise of the current FOF program is that significant performance issues will result in target set losses. The Panel considered this premise to have a weakness, because performance issues may not necessarily translate into drill outcomes if they are neutralized or masked by artificialities. As such, the NRC's ability to maintain an appropriate level of oversight might be vulnerable to invalid assessments of protective force performance during FOF exercises. Specifically, a protective force that protects target sets fortuitously rather than through a strong defensive strategy and robust skills and abilities might not receive the appropriate level of NRC oversight to effect improvement. Likewise, a protective force with a strong defensive strategy and robust skills and abilities might lose a target set because of the impact of artificialities on drill outcomes and could receive a heightened level of assessment that is unwarranted and inefficient.

The Panel concluded that IP 71130.03 addresses the licensee's responsibility to limit artificialities before initiation of a FOF exercise, but it does not provide guidance on how to consider artificialities that are identified during an exercise. The focus of the current program is on the bottom line: target set protection. As such, inspection findings are not identified to address performance issues unless target sets are lost. Expert judgement and management discretion are applied to determine an appropriate agency response when poor performance is exhibited. And the goals of having a process that is "objective, risk-informed, understandable, and predictable" cannot be consistently ensured. This is not compatible with the ROP philosophy, framework, or guidance documents.

#### Personnel Safety

Both DOE and NRC consider personnel safety to be of foremost importance, however, during the Panel's review it was noted that DOE and NRC deploy shadow force members and live weapons differently during FOF exercises. Although there may be legitimate reasons for these differences, this is an area where DOE has incorporated personnel safety lessons learned stemming from a significant accident. Thus, the Panel believes that the deployment of shadow force members and live weapons should be assessed for adequacy during the benchmarking activities with other federal agencies.