POLICY ISSUE

Information

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FOR: The Commissioners

FROM: Victor M. McCree
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SUBJECT: STATUS OF IMPROVEMENTS TO THE FORCE-ON-FORCE INSPECTION PROGRAM IN RESPONSE TO SRM-SECY-14-0088

PURPOSE:

The purpose of this paper is to provide the Commission with an update on the status of the staff's commitments in SECY-14-0088, "Proposed Options to Address Lessons-Learned Review of the U.S. Nuclear Regulatory Commission's Force-on-Force Inspection Program in Response to Staff Requirements Memorandum – COMGEA/COMWCO-14-0001," (Agencywide Documents Access and Management System (ADAMS) Accession Number ML14139A215). This paper also addresses the Commission-directed actions on the Multiple Integrated Laser Engagement System (MILES) and unattended openings (UAOs) from SRM-SECY-14-0088, "Staff Requirements – SECY-14-0088 – Proposed Options to Address Lessons-Learned Review of the NRC's Force-on-Force Inspection Program in Response to Staff Requirements COMGEA/COMWCO-14-0001" (ADAMS Accession Number ML1435A433). This paper does not address any new commitments or resource implications.

SUMMARY:

In SECY-14-0088, the staff committed to take several actions, including:

1. Continuing to work with industry to review and reduce the number of extensive simulations used in developing and executing force-on-force (FOF) scenarios by identifying, validating, and benchmarking mechanisms, such as the use of simulation software, to evaluate potential vulnerabilities that may be inappropriate for performance testing during an NRC-conducted FOF exercise;

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2. Reviewing and updating the physical protection significance determination process (SDP);
3. Issuing a generic communication to licensees to clarify the U.S. Nuclear Regulatory Commission's (NRC's) expectations regarding the implementation of compensatory measures; and
4. Enhancing guidance, training, and inspection program documents in the effort to improve the realism and effectiveness of FOF exercises.

Consistent with Commission's direction, the staff has made progress on all of the commitments identified in SECY-14-0088. Specifically, the staff is working to understand the capabilities and limitations of simulation software and how these software tools can be used to evaluate potential vulnerabilities that may be inappropriate for performance testing during an NRC-conducted FOF exercise. The staff is also working to update the physical protection SDP and has included opportunities for stakeholder comment during the development of the SDP revisions. The staff developed a draft Regulatory Issue Summary (RIS) on compensatory measures, "Clarification on the Implementation of Compensatory Measures for Protective Strategy Deficiencies or Degraded or Inoperable Security Systems, Equipment, or Components," which will be issued for public comment in the first quarter of calendar year (CY) 2016. The staff has made updates to the FOF notification and inspection preparation process and is evaluating other enhancements to guidance, training, and inspection procedures to improve the realism and effectiveness of FOF exercises.

In SRM-SECY-14-0088, the Commission directed the staff to establish an NRC working group to determine how to better integrate knowledge of adversary training methodologies and actual attacks with the tactics, techniques, and procedures (TTPs) used by the NRC composite adversary force (CAF). The Commission also directed the staff to conduct a review of the MILES software and to evaluate the NRC's requirements for UAOs. The staff formed a FOF TTP Working Group (hereafter referred to as the Working Group). Findings and recommendations based on the results of the Working Group's effort will be reported to the Commission in a notation vote paper in June 2016. Additionally, the staff has completed its review of the MILES equipment and software. Based on this review, the staff has decided not to restore the software to its original configuration. Finally, the Working Group completed its review of the NRC's UAO requirements and issued an update to the SDP for UAOs. This SDP update takes into account the realistic ability for specific opening configurations to be exploited when evaluating inspection findings and assessing licensee corrective actions.

DISCUSSION:

In accordance with the Commission's direction, this paper provides the status of the staff's actions on the four commitments outlined above, as well as the status of the staff's efforts on MILES and UAOs.

Simulation Software

In SECY-14-0088, the staff committed to work with industry to identify, validate, and benchmark mechanisms, such as the use of simulation software, to evaluate potential vulnerabilities that may be inappropriate for performance testing during an NRC-conducted FOF exercise. The staff is enhancing its understanding of the uses and capabilities of simulation software tools. In September 2015, the staff worked with the Institute of Nuclear Materials Management (INMM) to conduct a 3-day Vulnerability Assessment Tools Workshop and is in the process of working with

INMM on a second, more detailed workshop. The staff's efforts to improve the realism and effectiveness of FOF exercises will also help to reduce the number of complex simulations in NRC-conducted FOF exercises.

This activity is ongoing.

Physical Protection Significance Determination Process

The staff performs an annual audit of SDPs and associated tools as part of the NRC's routine Reactor Oversight Process Self-Assessment Program. As part of this process, the staff initiated a review of all of the SDPs that support the Security Baseline Inspection Program. In December 2015, the Offices of Nuclear Security and Incident Response and Nuclear Reactor Regulation assembled a team, with representatives from headquarters and each regional office, to conduct an effectiveness review of the Security Baseline Inspection Program and to audit the security SDPs and associated tools. The team reviewed recent SDP revisions, including a revised SDP associated with the FOF program, issued in January 2014, and a revised SDP associated with UAOs, issued in October 2015. The team also considered possible revisions to other areas of the security assessment program, such as, physical protection, target sets, and the safeguards information decision tree. The team determined that all of these areas should be evaluated for possible SDP revisions. The staff will continue to engage NRC stakeholders during the first quarter of CY 2016. If the staff concludes that changes to the SDP are necessary, the staff will engage external stakeholders for input in the second quarter of CY 2016, with the goal of issuing the revised SDPs by the end of the CY.

This activity will be completed by the end of CY 2016.

Compensatory Measures

In SECY-14-0088 the staff recommended issuance of a generic communication clarifying when licensees should apply compensatory measures. Staff had previously identified that some licensees were applying immediate compensatory measures in certain cases where such measures were not required under NRC regulations. Staff has developed a draft RIS on compensatory measures. This draft RIS reiterates the NRC's position on the requirements for implementation of compensatory measures. Consistent with regulatory requirements, compensatory measures must provide a level of protection that is equivalent to the protection that was provided by the equipment, system, or component, before it was degraded or inoperable. Furthermore, they must be implemented within specific timeframes to ensure that the capability to detect, assess, interdict, and neutralize threats to the facility are maintained at all times. Additionally, compensatory measures must be described in the licensees' security plans.

Licensees are not required to immediately implement compensatory measures in all cases. However, they are required to take immediate action to assess any identified deficiency to determine the cause of the deficiency and the impact of the deficiency on the site's protective strategy. Based on this assessment, the licensee must determine if a compensatory measure is required and, if required, whether the compensatory measure must be immediately implemented.

The staff expects that the draft RIS will be issued for public comment in the first quarter of CY 2016, following the NRC's Generic Communications Process. The staff will consider comments received when finalizing the RIS.

The staff expects to issue the final RIS and complete this activity by the end of CY 2016.

Improved Realism and Effectiveness

In September 2015, the staff submitted COMSECY-15-0025, "Proposed Revision to the Notification Process for Force-on-Force Inspections," dated September 11, 2015, (ADAMS Accession Number ML15231A232) to the Commission, requesting approval to revise the advanced notification to licensees for FOF inspections from an 8- to 12-week period prior to the inspection to a new 9- to 15-month period prior to the inspection. The staff also committed to monitoring the FOF inspection program to ensure it accurately assesses licensee security force readiness and performance. The Commission approved the staff's request in SRM-COMSECY-15-0025, "Staff Requirements – COMSECY-5-0025 – Proposed Revision to the Notification Process for Force-on-Force Inspections" (ADAMS Accession Number ML115279A468). Consistent with these commitments, the staff made several changes to the FOF inspection scenario development process, which were implemented at the beginning of January 2016.

These changes:

- Reduce the burden associated with licensee inspection preparation and improve consistency and realism by replacing the licensee employee "insider" with a standard information request for both the NRC inspection team and the CAF;
- Improve the realism of FOF scenarios by providing a more thorough planning period for the inspection team before it arrives on site;
- Improve the NRC's ability to ensure an accurate representation of the licensee's typical security response force capabilities is tested during NRC-conducted FOF exercises by providing the team lead the ability to select the tested shift; and
- Improve NRC management oversight of NRC-conducted FOF exercise through standardized briefings on the inspection team's proposed scenarios and TTPs prior to the team arriving on site for planning week by conducting an introductory call.

Now that licensees are notified of their scheduled FOF inspection 9 to 15 months in advance through the Reactor Oversight Process notifications they no longer receive a separate FOF notification letter. Instead of this notification letter, the NRC FOF inspection team lead will conduct an introductory call with the licensee 15 weeks prior to the inspection. During this call, the team lead will discuss the inspection procedure, inspection information request, and will outline the inspection process for the licensee. Following the introductory call, the team lead will send the licensee a standard inspection information request. This information request will list the documents and information that the inspection team needs for planning and scenario development and will be standard across all licensees. As discussed in detail in Enclosure 1 to SECY-14-0088, under the old inspection preparation process, the NRC inspection team would select a licensee employee as an "insider" to simulate the information-gathering activities of the design basis threat (DBT) adversary. Under the new process, the information provided by the licensees will replace the licensee employee "insider" for the FOF inspection. The replacement of the "insider" with a standard information packet will provide the inspection team with more consistent and realistic information for mission planning. It will also prevent the appearance of

surreptitious testing of the licensee's insider mitigation program by removing the possibility that site personnel may report the insider's activity to licensee management through the behavioral observation program.

With the 15-week introductory call, the NRC inspection team will have additional time at headquarters to prepare for the first week of the FOF inspection. The inspection preparation process previously began with the transmission of the notification letter 8 to 12 weeks prior to the inspection. During this time, the inspection team will use the information provided by the licensee to identify possible scenarios, approaches, and tactics for use in the FOF inspection. The NRC inspection team will engage the U.S. Special Operations Command advisors during this planning process to help ensure that the possible scenarios are realistic, effective, and consistent with the DBT. NRC Headquarters Security Risk Analysts will provide assistance to the inspection team during the inspection preparations at headquarters but will no longer provide in-person support during the FOF planning week. This change will provide for more efficient pre-site planning and will reduce the costs to licensees by having fewer people on-site during the planning and exercise weeks of FOF inspections. The team lead will choose which response shift will be tested during the FOF exercise and communicate this information to the licensee. In making this selection, the team lead will ensure that the shift chosen to participate in the exercise is an accurate representation of the licensee's typical response force capabilities. Finally, the team lead will develop a briefing for NRC management prior to the on-site planning week. This briefing will ensure that NRC management is fully briefed on the inspection team's proposed scenarios and TTPs prior to the team arriving on site for planning week.

During the planning week of the FOF inspection, the CAF director and the NRC inspection team will receive joint pre-inspection mission and target briefings. This will allow the CAF director to conduct more realistic mission planning under the oversight of the NRC inspection team to ensure that the mission plan and proposed tactics are realistic and consistent with the DBT. The NRC inspection team will update NRC management on any changes to the proposed scenarios and tactics. The remainder of the inspection process will follow normal FOF procedures.

The staff discussed these proposed adjustments to the FOF inspection preparation process with representatives from the Nuclear Energy Institute (NEI) at the NEI FOF Working Group meeting on November 18, 2015, and a representative from the Union of Concerned Scientists (UCS) at a drop-in meeting on November 5, 2015. Feedback from NEI was generally positive, while the UCS representative raised some concerns. UCS was concerned that the increase in the notification period may provide potential adversaries with additional advantages by knowing the FOF inspection dates in advance. The staff examined the UCS concern and considers that the likelihood of potential adversary advantage is negligible because the schedules for security inspections, including FOF, are not released to the public.

Licensees were notified of this change in process by letter dated December 21, 2015 (ADAMS Accession Number ML15328A197). In this letter, licensees were encouraged to provide feedback on these changes as well as the Working Group's activities. The staff will use this feedback to assess further refinements to the inspection process and to inform the notation vote paper that the Commission, in SRM-SECY-14-0088, directed the staff to submit in June 2016.

In addition to the planned inspection procedure changes based on the change to the notification process, the Working Group continues to evaluate other NRC guidance, training, and inspection procedures for potential enhancement or development. The Working Group has conducted several public meetings and a Federal partners' briefing to solicit input on its review. The Working Group's initial recommendations will be provided in a report to the Director of the Division of Security Operations, in the Office of Nuclear Security and Incident Response, which will inform the June notation vote paper. The June 2016 notation vote paper will also include a discussion and analysis of feedback on the FOF program received from external stakeholders, including several white papers submitted by NEI as well as comments received by the UCS at the Working Group's public meetings.

This activity is ongoing. The staff will provide an update to the Commission in the June 2016 notation vote paper.

Multiple Integrated Laser Engagement System

The NRC uses MILES equipment to simulate combat between two or more forces (responder players and adversaries) and to record those engagements in an electronic format. The NRC purchased the current MILES equipment for use in NRC-conducted FOF exercises in 2009. The original programming of the equipment provided a realistic simulation of the realities of combat that included various combat injuries but was more complex for exercise controllers. In 2010, the NRC modified the configuration of the MILES equipment to provide a more basic simulation combat by providing only "kill," "miss," and "near miss" readings. This configuration simplified the control of players wearing MILES equipment but introduced a number of software errors that led to unplanned timeouts during NRC-conducted FOF exercises. In SECY-14-0088, the staff recommended restoring the MILES equipment to its original configuration in order to improve FOF exercise realism and reduce the number of exercise timeouts. In SRM-SECY-14-0088, the Commission directed the staff to fully evaluate the pros and cons of this change to determine whether the MILES equipment configuration change would result in an overall enhancement to FOF exercises.

In May 2015, the manufacturer provided an update to the software for the MILES equipment used during NRC-conducted FOF exercises. This software update has significantly reduced the incidents of software errors during NRC-conducted FOF exercises. While there have still been some anomalies in MILES performance, these anomalies have been rare and have not impacted NRC-conducted FOF exercises. All equipment anomalies are reviewed by contract engineers and the equipment is removed from service until an evaluation is completed. The NRC has conducted outreach with nuclear power plant licensees and found that there are no nuclear power plant licensee using the MILES equipment in its original configuration for their annual FOF drills and exercises. Licensees are not familiar with the more complex MILES configuration (the inclusion of "critical" and "light" wound readings); therefore, the staff has determined that restoring the equipment to its original configuration would be more costly and time-consuming to implement than the staff previously anticipated.

Based on these considerations, the staff no longer recommends restoring the MILES equipment software to its original configuration. The May 2015 software update has significantly reduced the errors caused by the modified MILES software configuration. Further, the staff has determined that the improvements to exercise realism are not sufficient to justify the costs and

additional training associated with restoring the MILES equipment used during NRC-conducted FOF exercises to its original configuration.

This activity is complete.

Unattended Openings

In SRM-SECY-14-0088, the Commission directed the staff to take into account the realistic ability for an adversary to exploit specific opening configurations when evaluating inspection findings and assessing licensee corrective actions. In the longer term, the Commission directed the staff to evaluate the NRC requirements for UAOs through the same NRC working group established to evaluate tactics and to evaluate any changes through a formal change control process with stakeholder input.

The Working Group reviewed the NRC's requirements for UAOs taking into consideration information that the staff had developed on the training and capabilities of real-world terrorists. The Working Group did not find a technical basis that would support changing the NRC's requirements for UAOs. The Working Group reaffirmed the staff's conclusion in SECY-14-0088 that the NRC's requirements for UAOs are consistent with the standards used by other Federal agencies and private industry. Additionally, the Working Group found that the NRC's requirements and guidance for UAOs are realistic because they only require protection of those UAOs that could reasonably be exploited by the DBT adversary. Rather than change the NRC's requirements for UAOs, the Working Group initiated an update to the SDP for UAOs. The revised UAO SDP was issued in October 2015.

The Working Group found that the subjectivity of the previous SDP for UAOs made it difficult for NRC inspectors to account for the possibility that specific opening configurations might be exploited by a DBT adversary. For example, the SDP evaluated the significance of UAO findings by determining the "probability of adversary effectiveness," but provided no objective means for an inspector to make this assessment. The inspector would characterize the exploitability of a specific UAO configuration as "very low," "low," "medium," or "high" and would use this characterization, along with the length of time that the vulnerability had existed, to determine the significance of the finding. Based on feedback from the Working Group, the staff determined that it should address this subjectivity through a revision to the SDP for UAOs that would provide inspectors with objective criteria for assessing UAO findings.

The staff conducted an analysis and developed an SDP that could appropriately characterize UAO findings in a predictable and repeatable fashion while reducing inspector subjectivity. The staff developed an SDP that allows for a more objective assessment of UAO findings by taking into account how physical barriers and intrusion detection systems might impact the ability of the DBT adversary to exploit a UAO. Under the revised SDP, the significance of a UAO finding is determined based on the number of physical barriers or intrusion detection systems that an adversary would encounter when using the UAO as a pathway to the desired target set equipment. These barriers and/or detection systems provide the licensee with opportunities to detect and interdict the adversary between the UAO and the target set equipment, thereby potentially reducing the significance of the finding.

A publicly-released version of the SDP was presented at a public meeting on May 26, 2015, without the Official Use Only – Security-Related Information (OUO-SRI) details, and received no comments. The meeting was attended by representatives from the nuclear industry, NEI, and UCS. The full version of the proposed SDP revision was also sent to industry for comment. The NEI responded back to the NRC with minimal comments, which were considered and addressed.

The staff issued the revised UAO SDP in October 2015. The revised SDP is considered OUO-SRI.

This activity is complete.

CONCLUSION:

The staff continues to make progress on the commitments identified in SECY-14-0088. The staff has addressed two of the items in the Commission's direction from SRM-SECY-14-0088 and will provide a notation vote paper in June 2016 to present the findings of the Working Group. The staff will continue to keep the Commission informed on its progress via CA Notes and this annual information paper.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection.

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