POLICY ISSUE
(Information)

November 2, 2021 SECY-21-0092

FOR: The Commissioners

FROM: Mirela Gavrilas, Director
Office of Nuclear Security and Incident Response

SUBJECT: ANNUAL UPDATE ON THE STATUS OF EMERGENCY PREPAREDNESS AND INCIDENT RESPONSE PROGRAMS' ACTIVITIES

PURPOSE:

The purpose of this paper is to provide the Commission with the results of the annual assessment of the U.S. Nuclear Regulatory Commission's (NRC) Emergency Preparedness (EP) and Incident Response (IR) Programs for fiscal year (FY) 2021. The assessment covers current and planned activities. This paper does not address any new commitments or resource implications.

SUMMARY:

This paper provides the staff's annual self-assessment of its EP and IR programs in FY 2021. The self-assessment looks at efficiency and effectiveness through the prism of foundational activities that enable the successful accomplishment of the mission. Specifically, the paper leads off with a discussion of staff retention, recruitment and development across EP and IR. Innovation, risk-informed decision making, and the use of technology are covered separately for EP and IR. The paper also reviews interagency and international activities that support EP and IR. Finally, the paper presents the basis for providing future annual papers to the Commission by December 31, as opposed to October 30. The self-assessment concludes that, for FY 2021, the staff demonstrated its ability to maintain a stable and predictable EP program, as well as a reliable and effective IR program.

CONTACT: Sophie J. Holiday, NSIR/DPR
301-415-7865

DISCUSSION:

The NRC staff assesses the agency's EP and IR programs on an annual basis to ensure alignment with NRC's strategic security and safety goals. The NRC staff provided the last annual update in October 2020.[1]

Self-Assessment

NRC's EP and IR programs continue to align with the agency's strategic security and safety goals[2] identified in the FY 2018-2022 Strategic Plan. The staff assessed the FY 2021 EP and IR programs' performance against the FY 2021 priorities as outlined in the October 2020 paper.

Staff retention, recruitment and development

The staff utilized several processes to maintain an engaged and highly skilled EP and IR workforce now and for the future. The NRC's Strategic Workforce Planning process identified that the agency will soon experience numerous EP and IR staffing losses due to attrition. EP and IR need the skills and knowledge to ensure continued: (1) timely completion of EP-related licensing activities for operating, new, and advanced reactors, including decommissioning-related reviews; (2) maintenance of NRC headquarters (HQ) and regional IR capabilities, including facilities, systems, procedures, and processes; and (3) support for EP policy oversight and development. To address staffing gaps, concerted efforts were made in the following:

- Ensuring current EP and IR staff and potential internal and external candidates understand the viable pathways for future career growth through the EP and IR programs;
- Putting in place effective knowledge management programs and developing Nuclepedia[3] pages.
- Hosting summer hires and co-ops and utilizing the Nuclear Regulatory Apprenticeship Network;
- Facilitating succession planning by increasing the use of rotational opportunities and job shadowing as tools to enhance knowledge transfer and to build bench strength;
- Creating diverse teams and providing leadership opportunities to junior staff;
- Focusing on enhancing culture by implementing changes following staff feedback and Federal Employee Viewpoint Survey results; and
- Embracing the NRC's Evidence-Building and Evaluation Policy Statement to make informed evidence-based decisions and communicating the bases to internal and external stakeholders.

[1] SECY-20-0101 (ADAMS Accession No. ML20280A780), "Annual Update on the Status of Emergency Preparedness and Incident Response Programs' Activities."
[2] These goals include maintaining readiness to respond to accidents, integrating safety and security considerations in EP licensing activities, and maintaining and further risk-informing a stable and predictable EP regulatory infrastructure.
[3] Nuclepedia is the NRC's knowledge resource wiki, a continuously evolving online encyclopedia of nuclear regulatory information including articles, documents, graphics, animations, and presentations.

Emergency Preparedness Program

Innovation

The EP program staff came up with numerous recommendations for how to improve NRC's existing operations, processes, and programs. The EP program staff used crowdsourcing campaigns and facilitated open discussions on how to improve the agency's processes and day-to-day business. As an example, the EP program adapted its licensing and oversight approach to respond to the Coronavirus Disease 2019 (COVID-19) pandemic. Specifically, in FY 2021, the staff granted 17 exemptions from onsite EP exercise requirements. Similarly, the staff granted 21 exemptions from offsite EP exercise requirements to mitigate the impacts of the COVID-19 pandemic. In November 2020, staff issued temporary staff guidance (TSG),[4] which provided guidance for the conduct of EP-related inspection activities throughout a variety of disruptive situations, including a pandemic, while maintaining employee health and safety and maintaining the stated objectives of the EP cornerstone in the reactor oversight process and the cornerstone performance expectation as stated in Inspection Procedure 71114, "Reactor Safety-Emergency Preparedness."

Risk-informed decision making

Staff risk-informed licensing reviews, inspection/oversight activities, rulemaking, and guidance development. Notable activities in FY 2021 included:

- Issuance of Revision 1 to NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies,"[5] on February 9, 2021, which addressed the size of the evacuation models, the impact of a shadow evacuation, modeling adverse weather, the use of manual traffic control, and various other parameters of importance. The format and criteria provided in the guidance will support consistent application of the evacuation time estimate (ETE) methodology and will facilitate consistent NRC review of ETE studies.
- Issuance of two licensing amendments on September 21, 2021,[6] and September 27, 2021,[7] respectively, to revise the emergency plans for the Southern Nuclear Corporation fleet, which adjusts the emergency response organization staffing composition as well as the response time.
- Continued development of: (1) the Emergency Preparedness Requirements for Small Modular Reactor and Other New Technologies Rulemaking (final rule due to the Commission December 2021); (2) Alignment of Licensing Processes and Lessons Learned from New Reactor Licensing Rulemaking (proposed rule due to the

[4] TSG-NSIR-2020-02 (ADAMS Accession No. ML20288A523), "Additional Guidance for EP Inspections During the Public Health Emergency."
[5] The guidance reflects the importance of various evacuation time estimate (ETE) model parameters based on the results of an applied research study on ETEs published in NUREG/CR-7269, "Enhancements to Evacuation Time Estimate Guidance."
[6] License Amendment for six units: Joseph M. Farley Nuclear Plant, Units 1 and 2; Edwin I. Hatch Nuclear Plant, Unit 1 and 2; and Vogtle Electric Generating Plant, Units 1 and 2 (ADAMS Accession No. ML21217A091).
[7] License Amendment for Vogtle Electric Generating Plant, Units 3 and 4 (ADAMS Accession No. ML21217A021).

Commission May 2022); and (3) the Risk-Informed, Technology Inclusive Regulatory Framework for Advanced Reactors Rulemaking (proposed rule due to the Commission May 2022). [8]

The use of technology

The EP program staff continue to use data analytics to highlight areas for regulatory attention and improvement. While working remotely during the COVID-19 pandemic, the EP staff used various electronic communication applications, such as Microsoft (MS) Teams and WebEx, to effectively and efficiently conduct government-to-government meetings and public meetings with international, industry, and public stakeholders. The staff, in collaboration with the Office of Nuclear Reactor Regulation's Mission Analytics Portal Team, are developing dashboards for EP licensing actions and full-time equivalent utilization. Both dashboards, expected to be completed in FY 2022, will enable staff to monitor performance, manage workload, identify potential areas of risk, and learn from historical experience. Lastly, the NRC and the Federal Emergency Management Agency (FEMA) began utilizing the FEMA Preparedness Toolkit web interface to jointly review licensee requests related to EP exercises. This toolkit was expanded to include interagency reviews for revisions to licensee Alert and Notification System Design Reports as sites implemented the Integrated Public Alert and Warning System.

Incident Response Program

Innovation

In November 2020, the NRC completed its transition to the enhanced IR program, which: aligns the NRC's response structure with those of other Federal response organizations; allows a flexible, scalable response structure; incorporates regional and HQ responders; and (4) expands the program from a small response to a full agency response. While finalizing the transition, the IR program remained agile and functional while performing IR exercises in a virtual environment due to the COVID-19 pandemic. In February 2021, as a follow-up to the 2004 Office of the Inspector General (OIG) audit of the IR Program,[9] the staff completed a self-assessment (Enclosure) of the newly updated IR program and determined that the changes aligned with OIG's recommendations. The self-assessment also concluded that the NRC's IR program continues to be effective.

In FY 2021, the NRC conducted 13 exercises with NRC power reactor licensees. Historically, HQ staff only participated in one exercise per region. In FY 2021, HQ staff participated in all but two of the regional exercises, resulting in a 200-percent increase in exercise participation. Following each exercise, the staff conducted after-action report (AAR) meetings to assess and identify areas for improvement or clarity. As an example, two new products were developed, the response status report (RSR) and the event status board (ESB). The RSR and ESB are used as the basis for briefings of events within the NRC and with external stakeholders. As the IR program matures, the staff will continue to refine it to respond to all potential hazards.

Risk-informed decision making

In response to the COVID pandemic, the staff used tools and flexibilities from the agency's pandemic plan and made changes to mitigative action based on Federal guidance. Moreover,

[8] The staff has requested a 9-month extension, which is pending Commission approval.
[9] OIG-04-A-0020, "Audit of NRC's Incident Response Program." ADAMS Accession No. ML042790283.

the IR program staff used initial lessons learned from the COVID-19 pandemic response to inform its 2021 updates to the NRC's continuity of operations program and pandemic plans and procedures.

The use of technology

The staff coordinated actions across the agency to review, evaluate, and plan for updates to the current IR needs and requirements such as space, technologies, and processes. The plan addressed mission and business drivers for the NRC's Headquarters Operations Center and the regional incident response centers. Focus areas included: assessment and planning to optimize the remote functionality; integrate technology to identify resource and productivity efficiencies; and optimization of space planning. Some of the more innovative ideas included multi-purpose space use and leveraging technology to bring in specialized responders. The staff recognized that a hybrid (in-person and virtual) response can be effective and efficient.

The staff used four exercises to validate the new IR program. Because of the NRC facility occupancy restrictions resulting from the COVID-19 pandemic, the staff responded to three of these exercises virtually. A hybrid response, with minimal in-person staff, was applied for the fourth exercise. The staff used the AARs from these exercises to identify strengths and areas for improvement. The staff also evaluated multiple virtual meeting platforms[10] and concluded that MS Teams provides the best flexibility and functionality for virtual and hybrid response.

Following the transition period, the staff conducted an additional hybrid response exercise to evaluate the minimum in-person position requirements. The staff has not conducted a full in-person response exercise. Therefore, the staff will continue its evaluation to determine if additional changes are warranted to the IR program following the conduct of FY 2022 in-person exercises. In August 2021,[11] the staff successfully employed a hybrid approach in real-time during its Hurricane Ida response.

The staff also developed an IR dashboard to determine if there were any weaknesses or challenges that could potentially impact the agency's readiness to respond to a nuclear or terrorist emergency situation or other events of national interest.

Lastly, the staff completed a project to modernize the HQ operational officer (HOO) database used to store, retrieve, and develop reports for various emergency and non-emergency notification requirements. The new database, which is interfaced to a web-based client, increases the ability of the HOOs to enter and retrieve data more efficiently and streamline the development of reports. The staff has also begun exploring the use of technology to automate reports made to the HOOs by licensees. This is expected to be completed in FY 2022.

Interagency and International Partnerships

The staff continued its engagement with its interagency and international partners to accomplish the NRC's EP and IR goals. In FY 2021, the staff increased its communication efforts with State and local organizations, FEMA, the Federal Radiation Protection Coordinating Committee, the U.S. Navy, and the U.S. Environmental Protection Agency (EPA). In addition to regularly scheduled meetings, the staff ought opportunities for information sharing, collaboration and to clarify positions and authorities.

[10] Virtual meeting platforms included Skype, WebEx, and MS Teams.
[11] Notice of Unusual Event declared at Waterford Nuclear Generating Station.

The staff participated in internationally sponsored Webinars, training, and meetings to stay informed. The staff made presentations and initiated outreach on topics ranging from to advanced reactors to plume exposure pathway and emergency planning zone size. Staff engaged with the Japanese-led Emergency Management Working Group and the International Atomic Energy Agency (IAEA)'s Emergency Preparedness and Response Standards Committee to exchange lessons learned from to the COVID-19 pandemic. The staff ensured that positions taken in IAEA international safety standards and guides remain consistent with NRC's EP and IR programs.

In FY 2021, the staff conducted four exercises with the IAEA's Incident and Emergency Center and several interagency partners: two of the exercises simulated emergencies at U.S. nuclear power plants and two simulated emergencies in other countries. In addition, staff participated in two other international exercises, where another IAEA Member State simulated a reactor accident. In those exercises, the IAEA coordinated the sharing of technical information and requests for assistance and the NRC worked with its Federal response organization partners[12]. All exercises validated the NRC's procedures for conducting and providing accident analysis to the IAEA and strengthened the staff's understanding of sharing information.

In moving forward with policy development for advanced reactors, by way of the "Risk-Informed, Technology Inclusive Regulatory Framework for Advanced Reactors" rulemaking, the staff engaged the United Kingdom and Canada to share knowledge and experience. The staff also discussed non-radiological health impacts due to a radiological emergency with the Nuclear Energy Agency.

Path Forward

Agency activities, including EP and IR, are planned and implemented on a FY cycle. The staff wants to synchronize the periodicity of the annual update on the status of EP and IR programs with the FY cycle of these activities. Moreover, the end of the FY coincides with administrative activities which compete with generating the annual update. Therefore, the staff intends to submit future annual papers by December 31st as opposed to October 30th.

CONCLUSION:

The NRC's EP and IR programs satisfied priorities in FY 2021 that directly supported the NRC's mission and strategic plan. The staff continues to demonstrate their ability to maintain a stable and predictable EP program, as well as a reliable and effective IR program. Furthermore, the staff continues to maintain and enhance the NRC's readiness to respond to events at licensee facilities and to support international emergencies. The NRC is capable of fulfilling its responsibilities in the national response structure.

[12] Federal response organization partners include Department of State, Department of Energy, and the EPA.

COORDINATION:

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

Mirela Gavrilas
Digitally signed by Mirela Gavrilas
Date: 2021.11.02 15:37:02 -04'00'

Mirela Gavrilas, Director
Office of Nuclear Security
and Incident Response

Enclosure: As stated

SUBJECT: ANNUAL UPDATE ON THE STATUS OF EMERGENCY PREPAREDNESS AND INCIDENT RESPONSE PROGRAMS' ACTIVITIES DATED NOVEMBER 2, 2021

NSIR-08-0015

ADAMS Accession Numbers: **ML21274A015 (Pkg), ML21274A049 (Paper), ML21274A016 (Encl)**

OFFICE	NSIR/DPR	NSIR/DPR	OGC	Tech Editor	NSIR
NAME	SHoliday	KBrock	HBenowitz	CRaynor	MGavrilas
DATE	10/5/21	10/6/21	10/14/21	10/20/21	11/02/21

OFFICIAL RECORD COPY