

POLICY ISSUE
(Information)

October 28, 2016

SECY-16-0125

FOR: The Commissioners

FROM: Victor M. McCree
Executive Director for Operations

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

PURPOSE:

The purpose of this paper is to update the Commission on the U.S. Nuclear Regulatory Commission's (NRC's) emergency preparedness (EP) and incident response (IR) program activities for fiscal year (FY) 2016, and provide an assessment of the NRC's EP and IR programs with a focus on current and projected activities. This paper does not address any new commitments or resource implications.

Included in this update, in Enclosure 1, is a final disposition of the eight medium and low priority EP rulemaking issues that the staff had previously committed (W200900090) to resolving in SECY-09-0152, "Annual Update on the Status of Emergency Preparedness Activities" (Agencywide Document Access and Management System (ADAMS) Accession No. ML091900372).

SUMMARY:

The NRC's EP and IR programs continue to align with the agency's strategic security and safety goals. During FY 2016, the staff completed multiple complex EP licensing, rulemaking and research actions, and IR activities. Some of these actions and activities included: developing safety evaluation input for independent spent fuel storage installation (ISFSI)-only emergency plan changes for Zion, Kewaunee, and Crystal River decommissioning sites; providing EP-specific support for the mandatory hearings for the South Texas Project and Levy combined operating license (COL) applications; successful completion of all the new regulatory

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requirements for hostile action-based (HAB) exercises; conducting research on offsite response organizations (OROs) to ensure NRC assumptions about OROs' intermediate-phase protective action decisions and associated capabilities are modeled as accurately as possible; and successful implementation of the Eagle Horizon 2016 evaluated exercise.

BACKGROUND:

In the staff requirements memorandum (SRM) to SECY-07-0182, "Semi-Annual Update on the Status of Emergency Preparedness Activities," dated December 21, 2007 (ADAMS Accession No. ML073550647), the Commission provided the following direction:

The annual paper should become more of a self-assessment and communication tool, perhaps summarizing accomplishments and providing a status on improvement initiatives within our EP programs. Such an assessment should be coordinated with and not overlap the Reactor Oversight Process self-assessment of the EP cornerstone, and should be designed to aid the staff in effecting continuous and coordinated improvements to the overall EP program, as well as to inform the Commission and the public of progress.

DISCUSSION:

Accomplishments

This paper provides an update on the major FY 2016 activities within the NRC's EP and IR programs, including regulatory oversight of licensee programs and internal preparedness to respond to events. The discussion that follows is organized by product lines in the NRC's 2016 budget structure, which includes licensing, oversight, rulemaking, event response, research, and international activities. Notable EP and IR accomplishments, program status, and improvements relevant to these product lines are described.

Key improvement initiatives and management goals for the EP and IR programs for FY 2016 included: maintaining readiness of the NRC IR organization and operations centers; completing EP licensing activities associated with decommissioning reactors; developing the EP-specific portions of the decommissioning rulemaking; and ensuring clear expectations and compatibility with stakeholders on broader all-hazards approaches. The accomplishments described below demonstrate a clear nexus to these goals.

Licensing — Emergency Preparedness Casework

The Office of Nuclear Security and Incident Response (NSIR) serves as a centralized agency resource for EP licensing support and technical reviews for operating reactors, decommissioning reactors, new reactors, research and test reactors, fuel facilities, and spent fuel facilities.

The staff completed the technical reviews and developed safety evaluation input for several EP-related license amendment requests associated with emergency action level (EAL) scheme changes adopting the latest NRC-endorsed guidance Revision 6 to the Nuclear Energy Institute (NEI) 99-01, "Methodology for Development of Emergency Action Levels." The staff also

evaluated license amendment requests on EAL scheme changes for Vogtle Units 3 and 4, and V.C. Summer Units 2 and 3, to address deviations and differences from the guidance provided in NEI 07-01, "Methodology for Development of Emergency Action Levels Advanced Passive Light Water Reactors."

A significant licensing activity included the review of a "fleet-wide" emergency plan for the Southern Nuclear Operating Company, Inc. (SNC). This action accomplished several things: re-baselined the common SNC emergency plan and respective annexes to remove extraneous detail from the plans, which facilitates licensee changes under Title 10 of the *Code of Federal Regulations* (10 CFR) 50.54(q) and integrated emergency plans for Vogtle Units 3 and 4, currently under construction, with operating Units 1 and 2.

The staff continues to evaluate a license amendment request from Duke Energy to incorporate the off-site emergency operations facility (EOF) for the recently acquired former Progress Energy sites (H.B. Robinson, Hatch, and Brunswick) into the existing Duke Energy Corporate EOF. The existing Duke Energy Corporate EOF serves as a common EOF for the Catawba, McGuire, and Oconee sites. Since the Duke Energy Corporate EOF is located greater than 25 miles from these sites, prior Commission approval is required under Appendix E to 10 CFR Part 50. If the staff finds the submittal acceptable, the staff will submit a SECY paper requesting Commission approval of the license amendment request.

The staff completed technical evaluations and development of safety evaluation input for license amendment requests for four decommissioning sites (Crystal River, Kewaunee, Vermont Yankee, and San Onofre) previously exempted from certain emergency planning standards of 10 CFR 50.47 and requirements of Appendix E to 10 CFR Part 50. Among these license amendment requests was the addition of an ISFSI to the permanently defueled emergency plan and EAL scheme for the Crystal River site. The staff also completed the technical evaluation and development of safety evaluation input for license amendment requests for ISFSI-only emergency plans for Zion, Kewaunee, and Crystal River decommissioning sites to address further reductions in on-shift and Emergency Response Organization (ERO) staffing and augmentation, as well as EALs, based on the removal and transfer of spent fuel from the spent fuel pool to dry cask storage.

The staff is also preparing for the technical reviews of potential decommissioning EP exemption requests for the Fort Calhoun, Clinton, Quad Cities, Oyster Creek, and Pilgrim sites. The staff will perform these reviews using the recently developed guidance in NSIR/DPR-ISG-02, "Interim Staff Guidance (ISG) on Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," issued May 11, 2015 (ADAMS Accession No. ML13304B442).

In FY 2016, the staff continued to conduct EP reviews on new reactor applications. Specifically, the staff completed reviews for three COLs, and two new reactor design certifications. EP staff from NSIR also served as members on the new reactor oversight working group; the Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants," update working group; the standardized inspections, tests, analyses, and acceptance criteria working group; and the radioisotope production facilities construction inspection procedure working group. In addition, the staff provided input to Chapter 1.5.5 (Receipt, Possession, Use, and Transportation of Source, Byproduct, and Special Nuclear Material Authorized by 10 CFR 52 Combined Licenses), Chapter 13.3 (Emergency Planning), Chapter 14.3 (Certified Design Material), and

Chapter 20.4 (Emergency Preparedness) for the final safety evaluation reports for the Levy, Lee, Turkey Point, and North Anna COLs, and Chapter 12.4.7 (Emergency Planning) for the final safety evaluation report for the SHINE Medical Technologies construction permit application. The staff also supported the mandatory hearings for the South Texas Project and Levy COLs, Public Service Enterprise Group early site permit, and the SHINE Medical Technologies construction permit applications. The staff continues to support EP reviews of the construction permit application for the Northwest Medical Isotopes Radioisotope production facility, certification of the Advanced Power Reactor 1400 design, recertification of the Advanced Boiling Water Reactor design certification, and pre-application activities for the NuScale small modular reactor design certification.

The staff completed technical evaluations and development of safety evaluation input on the research reactor license renewals for the University of Missouri, the University of Massachusetts, and the University of Florida. These reviews evaluated the emergency plans for these three facilities using the guidance provided in ANSI/ANS-15.16-2015, "Emergency Planning for Research Reactors." Additionally, the staff completed a technical evaluation and development of safety evaluation input for a change to the technical specifications for the University of Missouri Research Reactor.

The staff completed technical evaluations and development of safety evaluation input for five fuel cycle facility emergency plan changes, evaluating the changes made by the respective licensees against the regulations in 10 CFR 70.32(i). Additionally, the staff completed technical evaluations and development of safety evaluation input for license renewals for the General Electric Hitachi Nuclear Energy Vallecitos Nuclear Center and the Westinghouse Columbia Fuel Fabrication Facility. These reviews evaluated the emergency plans for these two facilities using the guidance provided in NUREG-1520, "Standard Review Plan for Fuel Cycle Facilities License Applications."

The staff is also supporting the EP acceptance review for a license application from Waste Control Specialists (WCS) to build and operate a Consolidated Interim Storage Facility for spent nuclear fuel and greater-than-class-C waste. A pre-application audit was held March 14, 2016, to discuss the application process and NRC expectations with WCS. WCS formally submitted their license application by letter dated April 28, 2016. To date, the staff has written several Requests for Supplemental Information (RSI) and are reviewing the responses. NSIR staff continues to support meetings with WCS to discuss RSI responses as part of the acceptance review.

Licensing — Regulatory Issue Summary on Emergency Response Organization Staffing

To promote better industry consistency in licensee ERO staffing and improved the quality of submittals, the staff published RIS 2016-10, "License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation" (ADAMS Accession No. ML16124A002), following public meetings with industry and lessons-learned from recent submittals. The regulatory issue summary (RIS) was developed in response to a number of license amendment requests that did not sufficiently justify requested changes to ERO staffing. The RIS will help ensure that future license amendment requests provide appropriate justification, and that staff can complete their review in a timely and predictable manner.

Licensing — Near-Term Task Force Emergency Preparedness Activities

On April 30, 2015, the staff provided the Commission with a proposed consolidated rulemaking package in SECY-15-0065, "Mitigation of Design-Basis Events" (ADAMS Accession No. ML15049A213). In the associated SRM, dated August 27, 2015, the Commission approved the publication of the proposed rule in the *Federal Register* (FR) for public comment, subject to changes directed by the Commission. The staff published this proposed rule for comment in November 2015. The comment period for the rule closed in February 2016 and the staff received a total of 20 comment submissions. The staff is in the process of responding to these comments and making revisions to the rule and supporting documents. The current timeline is to provide the final rule package to the Commission in December 2016.

In SECY-15-0137, "Proposed Plans for Resolving Open Fukushima Tier 2 and 3 Recommendations," dated October 29, 2015 (ADAMS Accession No. ML15254A006), the staff proposed closure plans for the following open Tier 2 and Tier 3 EP recommendations: 10.3, Emergency Response Data System Enhancements, 11.2, Evaluate Recovery and Reentry Insights from Fukushima, and 11.4, Training in the Local Community on Radiation, Radiation Safety, and the use of Potassium Iodide. The staff also included the proposed plan for closure of the Tier 3 Item "Basis of Emergency Planning Zone Size and Pre-staging Potassium Iodide Beyond 10-miles." The staff also proposed that Recommendation 11.3, "Study the efficacy of real-time radiation monitoring onsite and within the EPZs (including consideration of ac independence and real-time availability on the internet)" remain open for further evaluation and interaction with stakeholders.

On February 8, 2016, the Commission approved the staff's proposed closure plans for the open Tier 2 and 3 recommendations. Recommendation 11.3 remains open to facilitate further assessment and documentation and stakeholder engagement. The staff intends to provide the Commission with the resolution plan for Recommendation 11.3 before the end of calendar year (CY) 2016.

Licensing — Revision of NUREG-0654/FEMA-REP-1

NUREG-0654/FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," is a joint NRC and the Federal Emergency Management Agency (FEMA) guidance document originally issued in November 1980. Both agencies use the document to evaluate the adequacy of radiological emergency plans and preparedness: the NRC evaluates applicants and licensees, and FEMA evaluates State, local, and Tribal governments within the emergency planning zones (EPZs) surrounding nuclear power plants (NPP).

In 2012, the NRC and FEMA began a major effort to update NUREG-0654/FEMA-REP-1 to reflect current regulations (including the 2011 NRC EP final rule) and to integrate nearly 35 years of lessons learned in the EP program. One important aspect of the revision of NUREG-0654/FEMA-REP-1 is that it will enable better alignment between the radiological EP programs and the Comprehensive Emergency Management Programs or "all-hazards" programs, which are set forth in the National Preparedness Doctrine and supported by the National Preparedness System. This enhancement will help ensure that the NRC and licensee

programs remain reflective of broader emergency-management concepts that would be employed if there were an NPP incident with off-site radiological consequences.

In 2015, the NRC and FEMA achieved a major project milestone by jointly issuing draft Revision 2 of NUREG-0654/FEMA-REP-1 for a 135-day public comment period. The staff received 42 comment submissions from external stakeholders. Following the closure of the comment period, the NRC, in coordination with FEMA, considered the comments and revised the document, as appropriate. The NUREG is currently in concurrence at both agencies. The staff expects to issue the final version of Revision 2 of NUREG-0654/FEMA-REP-1 by the end of February 2017.

Licensing — the Federal Emergency Management Agency Interface

On December 7, 2015, an updated “Memorandum of Understanding [MOU] between the Department of Homeland Security/Federal Emergency Management Agency and Nuclear Regulatory Commission Regarding Radiological Response, Planning and Preparedness” (ADAMS Accession No. ML15344A371), was approved by NRC’s Executive Director of Operations and the FEMA Administrator. The MOU updates and consolidates three earlier MOUs that guide how NRC and FEMA cooperate on all aspects of radiological emergency response, planning, and preparedness. In addition, the updated MOU retains the Steering Committee for Emergency Planning. The revised MOU does not alter any existing agency roles, responsibilities, or commitments of resources.

Staff continues to use the Steering Committee for Emergency Planning to work with FEMA’s Technological Hazards Division to discuss, and as necessary, obtain resolution on joint issues regarding radiological EP. Notably, NRC is working with FEMA to better understand initiatives to change radiological EPs and potential implications on NRC-licensed facilities.

Rulemaking — Hostile Action-Based Exercises

The December 23, 2011, Emergency Preparedness rule (76 FR 72560) amended Appendix E to Part 50 to require that nuclear power reactor licensees consider hostile action and conduct hostile action based (HAB) exercises. In December 2015, Wolf Creek completed the HAB exercise scenario demonstration as required in 10 CFR 50 Appendix E.IV.F.2.j. This marked full implementation (across the industry) of the regulatory requirements in the 2011 EP rule.

Following completion of the Wolf Creek HAB exercise, the staff developed a HAB-exercise lessons-learned report that was completed on July 25, 2016 (ADAMS Accession No. ML16207A435). The report will enhance the planning, logistics, and demonstrations of future HAB exercises. Concurrently, the FEMA/NRC EP Steering Committee formed a joint FEMA/NRC Working Group to collect observations from all involved stakeholders, and to independently develop reports detailing significant observations captured during the first cycle of HAB exercises. The staff will next assess the independently developed report observations, make recommendations for those observations determined to need further action, and create an action plan to implement them.

Rulemaking — Decommissioning Rulemaking and Technical Basis

In SECY-15-0014, “Anticipated Schedule and Estimated Resources for a Power Reactor Decommissioning Rulemaking,” dated January 30, 2015 (ADAMS Accession No. ML15082A089), the NRC staff committed to proceed with a rulemaking on decommissioning and provided an anticipated schedule and estimate of the resources required for the completion of this rulemaking.

The Power Reactor Decommissioning Rulemaking Working Group developed an Advance Notice of Proposed Rulemaking (ANPR), which was issued on November 19, 2015. A public meeting was held on December 9, 2015, explaining the content of the ANPR to assist stakeholders in submitting informed comments. Public comments were accepted until March 18, 2016. The staff is proceeding with the development of a draft regulatory basis, which is scheduled to be issued for public comment in mid-December 2016. The proposed rulemaking package is scheduled to be provided to the Commission in CY 2018. The final rulemaking package is scheduled to be provided to the Commission in CY 2019.

Rulemaking — Emergency Preparedness for Small Modular Reactors and other New Technologies

In response to the SRM for SECY-15-0077, “Options for Emergency Preparedness for Small Modular Reactors and Other New Technologies,” dated August 4, 2015, (ADAMS Accession No. ML15216A492), an interagency working group developed SECY-16-0069, “Rulemaking Plan on Emergency Preparedness for Small Modular Reactors and Other New Technologies” (ADAMS Accession No. ML16020A388). The staff proposed a plan for rulemaking to address the growing need to define emergency planning for new reactor designs for light-water and non-light-water moderated advanced reactors, and for medical isotope production and utilization facilities.

Substantial public interest is expected on this rulemaking because of the potential to significantly change the traditional offsite EP requirements for SMRs and other new technologies. Staff has had extensive interactions with other Federal agencies, in different forums, to broaden the awareness of and seek the cooperation of NRC’s Federal partners. The staff will continue interactions with the Federal Radiological Preparedness Coordinating Committee (FRPCC) to discuss issues of mutual interest to the NRC, FEMA, and other government organizations. On August 22, 2016, the staff held a Category 3 public meeting to discuss and receive feedback about the merits of and challenges with a performance-based approach to this rulemaking. The staff anticipates issuing a draft regulatory basis for comment in March 2017.

Rulemaking — Appendix E Administrative Rule Change/Enforcement Guidance Memorandum and Regulatory Issue Summary

In 2013 licensees submitted to the NRC over 750 administrative changes to Emergency Plan Implementing Procedures (EPIPs), in accordance with Section V of Appendix E to 10 CFR Part 50. Staff determined that the submittal of emergency plan and EPIP changes, based solely on the Section V requirement, has no impact on the NRC’s regulatory oversight of licensees, and that the Section V submittals impose a significant and unnecessary administrative burden on the

licensees and NRC staff. In coordination with the Office of Enforcement, staff developed and issued an enforcement guide memorandum (EGM) to grant enforcement discretion to licensees for not submitting updates in accordance with Section V, and to provide temporary relief from the administrative burden. EGM 15-003 "Enforcement Discretion Not to Cite Certain Violations of Section V of Appendix E to 10 CFR Part 50 for Non-Submittal of Emergency Plan and Emergency Plan Implementing Procedure Changes by Operating Reactor Licensees, While Rulemaking Changes are Being Developed" (ADAMS Accession No. ML15223A098) was issued on October 23, 2015. Additionally, staff developed and issued an associated RIS to inform licensees and stakeholders of the issuance of EGM 15-003. RIS 2015-14 "Issuance of Enforcement Guidance Memorandum — Emergency Plan and Emergency Plan Implementing Procedure Updates" was issued on October 30, 2015 (ADAMS Accession No. ML15233A223).

EGM 15-003 was developed as an immediate measure to provide temporary relief from the reporting requirement in Section V of Appendix E to 10 CFR Part 50. The EGM was issued contingent upon the development and implementation of a final resolution that amends Section V to eliminate the reporting requirement from the regulations. Staff determined that the most expedient and efficient means to eliminate the requirement was to incorporate the change into the Miscellaneous Corrections Rulemaking that was being developed by the Office of Administration. The final rule was published on December 1, 2015, (80 FR 74974) and went into effect on December 31, 2015. As of the effective date, Section V of Appendix E no longer requires the reporting of EPIP changes, and the long-term resolution identified in EGM 15-003 has been implemented.

Event Response – U.S. Nuclear Regulatory Commission Incident Response Program and Exercises

The staff planned and participated in the Fitzpatrick/Nine Mile Point, Beaver Valley, and Arkansas Nuclear One evaluated reactor-licensee emergency exercises during FY 2016 from the Headquarters Operations Center (HOC); the regional offices also participated in 17 reactor licensee exercises. The evaluated exercise involving two separate NPPs, Fitzpatrick and Nine Mile Point, offered a unique opportunity to test and evaluate the response organization's ability to manage simultaneously occurring events at separated facilities.

In addition, the staff planned and participated in two exercises with fuel cycle facilities during FY 2016. On October 14, 2015, the NRC and URENCO USA participated in a limited scope exercise to examine both organizations' ability to establish and maintain communications, and for URENCO to train their staff on communications with the NRC's HOC during an event. On September 14, 2016, the NRC and Babcock & Wilcox Nuclear Operations Group, Inc. (BWXT NOG) participated in a full scope exercise.

Event Response – Southern Exposure 2015 Exercise Agency Recovery Plan

During the preparations for and execution of the Southern Exposure 2015 (SE15) exercise, staff identified needed improvements in the agency's readiness to support responsibilities under the Price-Anderson Act (PAA), and Federal doctrine/guidance for recovery from nuclear/radiological incidents. As a result, staff prepared and exercised capabilities in this area during the SE15 exercise and collected lessons learned that would inform continued development of the plan.

The PAA contains detailed requirements for the NRC to fulfill in the event of an incident at an operating reactor that results in offsite consequences. The staff is developing an agency recovery plan that will facilitate addressing the full scope of the NRC's recovery-related requirements.

Internal and external after action reports for the SE15 exercise were completed in spring 2016.

Event Response — Protective Action Guides Update Efforts

The NRC staff is participating in an effort by the FRPCC to update the U.S. Environmental Protection Agency (EPA) Protective Action Guides (PAG) manual, which was published in 1992. The updated PAG manual provides recommended numerical PAGs for the principal protective actions available to responsible officials during a radiological incident. A PAG is a specific protective action guideline designed to help reduce or avoid the projected dose to an individual from a release of radioactive material. A draft document for interim use was published in 2013 and included updated dosimetry, changes to the intermediate and late phase PAGs (i.e., removed the intermediate phase relocation PAG of 5 rem over 50 years and maintained the relocation PAG of 2 rem the first year and not to exceed 500 millirem in any subsequent year), and guidance on optimization for recovery. Although the EPA did not include drinking water PAGs in this draft for interim use, they requested input on the appropriateness of such PAGs. As a result of the comments received, the EPA developed a plan for drinking water PAGs that are consistent with the Food and Drug Administration food PAGs (500 millirem/yr). The draft drinking water PAGs were used in the SE15 exercise. The EPA published the draft drinking water PAGs for a 45-day public comment period in the *Federal Register* on June 10, 2016. The final PAG guidance, including the drinking water PAGs, is expected to be published in 2016.

Event Response — Nuclear Radiological Incident Annex Update Efforts

Staff participated in a FRPCC-led interagency effort to revise the nuclear radiological incident annex (NRIA). This annex to the Response and Recovery Federal Interagency Operational Plans, under the National Response Framework (NRF) and National Disaster Recovery Framework (NDRF), reflects existing authorities' roles and responsibilities for nuclear and radiological incidents (including, but not limited to, NRC-regulated activities). In addition, the revision reflects new response and recovery concepts from the revised NRF and NDRF and incorporates lessons learned from Fukushima, other events, and exercises. In 2016 the draft NRIA was used and validated during several exercises including Gradient Aspect, Eagle Horizon, and Vibrant Response.

The revision of the NRIA supports building more robust national communication with the "whole community" of responders. In addition, the NRC's participation helped to maintain cooperative intergovernmental relationships to ensure the NRC roles and responsibilities are considered and reflected in national resiliency capabilities. The NRC anticipates that the final NRIA will be issued in the near-term.

Event Response — Continuity of Operations Program

The staff continues to enhance the operational aspects of the Continuity of Operations Program (COOP) program. In FY 2016, the staff completed the annual update to the NRC COOP plan and procedures based on lessons learned during the Eagle Horizon 2015 exercise; in addition, the staff developed new planning tools. In coordination with Federal partners, the NRC planned, coordinated, and conducted the biennial, externally-evaluated, full-scale exercise Eagle Horizon 2016. The NRC received high marks for its participation from external evaluators. An after action report has been developed, and the lessons learned include enhancing employee accountability; clarifying the relationship between IR and COOP response activities; and enhancing communications with internal and external stakeholders. These and other lessons learned will be incorporated into the next annual update to the NRC COOP plan and procedures.

Event Response — Incident Response Standardization Project

In April 2015 staff initiated the Incident Response Standardization Project (IRSP) to identify opportunities for improving effectiveness and efficiency through the standardization of information technology (IT) and communication assets for the agency's IR program. The staff identified several areas for improvement, including the bolstering of the governance framework for procuring, servicing, and change control of IT and communication equipment for the HOC and the regional IR centers. The staff is further exploring additional opportunities and will complete its implementation of the IRSP by CY 2017.

Research — Offsite Response Organization Capabilities and Practices for Protective Actions in the Intermediate Phase of an Emergency Response Study

The NRC is sponsoring a study of probable Offsite Response Organization (ORO) decision-making in the intermediate phase of a radiological emergency, with offsite consequences, in order to more accurately model the potential dose and risk to the public from a range of scenarios and associated policy and operational responses. In its models, the NRC makes assumptions about the protective action decisions (PAD) and capabilities of OROs. The NRC is conducting this study to ensure NRC assumptions about OROs' intermediate-phase PADs and associated capabilities are modeled as accurately as possible. A key part of the study is voluntary interviews with ORO decision-makers and their staffs in various states. The study results are expected to advance NRC's understanding of ORO practices and capabilities, improve modeling assumptions (primarily addressing ORO actions), and identify best practices that can be shared. The study results are expected to be published in a NUREG/CR in CY 2017.

Research — Evacuation Time Estimate Study

The NRC enhanced the regulatory requirements for evacuation time estimate (ETEs) in 2011, requiring, in part, that licensees update ETEs after every decennial census and in between decennial censuses as necessary. Guidance for the development of ETEs is provided in NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies" (ADAMS Accession No. ML113010515). To further the technical basis for this guidance and enhance the staff's understanding of evacuation science, the staff is conducting a study of ETEs. This

study will provide an analysis of parameters important to ETEs and will examine, through modeling and simulation, the impact of evacuations outside declared evacuation zones (shadow evacuation) and the effect of manual traffic control. The staff presented the technical approach to this study as well as a validation of current ETEs at the National Evacuation Conference on March 1, 2016 (ADAMS Accession No. ML16054A042). The staff has a communication plan (ADAMS Accession No. ML16033A188) to explain the purpose of this study and FEMA has expressed support for this effort. The results of this study will be published in a NUREG/CR document in late CY 2018.

International — Emergency Preparedness and Incident Response Activities

In FY 2016, the staff maintained its relationships with international partners on both bilateral and multilateral bases. Relationships were enhanced through: conducting multiple meetings to discuss EP and IR issues and activities, hosting a foreign assignee in the EP area, conducting tours of the NRC HOC, and arranging for two foreign regulators to observe a U.S. nuclear power plant emergency exercise. Highlights of staff's FY 2016 international accomplishments include:

- In FY 2016, the Director, Division of Preparedness and Response, NSIR, served as the National Competent Authority at the eighth meeting for the Convention on Early Notification of a Nuclear Accident (Notification Convention), where NRC worked with other Member States to review and, where needed, strengthen commitments to early notification and assistance in the event of a nuclear or radiological emergency. The staff also participated in the technical meeting of the Notification Convention. At the technical meeting, the staff worked with other regulators to continue the development of standards and methods for information exchange during nuclear or radiological incidents and emergencies.
- In 2015 the International Atomic Energy Agency (IAEA) established the Emergency Preparedness and Response Standards Committee (EPRReSC) as the fifth IAEA Safety Standards Committee under the Commission on Safety Standards. The EPRReSC makes recommendations on the IAEA's program for the development, review, and revision of EP and response safety standards, and on activities to support the use and application of these standards. The EPRReSC provides feedback and recommendations to the IAEA on its EP safety programs and on areas for improvement, with a view to achieving greater transparency, consensus, quality, coherence, and consistency in the development of IAEA safety standards. The Deputy Director, Division of Preparedness and Response, NSIR, is the U.S. representative to this committee.
- In FY 2016, an EP staff member continued to participate in IAEA's Small Modular Reactor (SMR) Regulators' Forum, providing technical input related to EP reviews of SMR designs. In addition, a staff member continues to be the Group Chair of the EPZ Working Group (WG), under the Regulators' Forum. In September 2016, the EPZ WG provided a draft document to the Regulators' Forum that proposed a generic methodology to inform Member States' determinations of the EPZ size around any proposed SMR plant. The Regulators' Forum will review this draft report and make a recommendation to publish this report in spring 2017.

- In coordination with the Office of International Programs, staff worked with representatives from the regulatory bodies of Japan and China to assist them in arranging for observations of U.S. NPP EP/IR exercises. Representatives from China observed a plume exposure exercise in Pennsylvania, while representatives from Japan observed a HAB exercise in Illinois.

Self-Assessment

The NRC's EP and IR programs and activities continue to align with the agency's strategic security and safety goals. In the interests of continuous improvement, the NRC's FY 2016 EP and IR programs' performance was assessed using the following three performance measures:

- (1) Ensure the NRC emergency response capabilities for safety or security events at licensed facilities by maintaining the readiness of the HOC and response organizations.
- (2) Ensure safety and security considerations are appropriately integrated and reflected in EP regulatory activities related to decommissioning.
- (3) Maintain a stable and predictable EP regulatory program for licensing, oversight, and regulatory infrastructure.

Performance measure (1) is associated with the event response and training product lines. Successful demonstration of performance measure (1) is reflected in the staff maintaining response team qualifications and HOC response availability; annual participation in EP/IR exercises that involve a wide array of Federal, State, and local authorities; and overall maintenance of cooperative intergovernmental relationships to ensure NRC roles and responsibilities are considered in national resilience programs. Activities that demonstrate successful implementation of performance measure (1) include: maintaining a 99-percent rate of NRC qualified responders for the various IR teams; participation in three evaluated reactor licensee emergency exercises and two fuel facility licensee exercises; interagency coordination on the development of the NRIA and updates to the EPA's PAG manual, including the draft water PAGs; and participating in the Eagle Horizon 2016 COOP exercise.

Performance measures (2) and (3) are associated with the licensing, oversight, rulemaking, and research product lines. Successful demonstration of both performance measures are reflected in the staff's ability to complete, with greater than 85-percent timeliness and quality, technical evaluations of EP submittals for fuel cycle facilities, operating reactors, and new reactors; and technical reviews of licensee EP exemption requests and license amendment requests associated with existing emergency plans and EAL scheme changes for permanently defueled decommissioning sites. Successful performance is also reflected in recent rulemaking activities such as responding to EP-specific public comments received on the ANPR for decommissioning facilities and developing the draft regulatory basis for SMRs and other new technologies. Additionally, the staff is conducting research on OROs to ensure NRC assumptions about OROs' intermediate-phase protective action decisions and associated capabilities are modeled as accurately as possible. The staff maintains engagement with stakeholders by keeping an

open dialogue and integrating stakeholder concepts and language into guidance documents such as NUREG-0654/FEMA-REP-1, RIS 2016-10 "License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation," and RIS 2015-14 "Issuance of Enforcement Guidance Memorandum – Emergency Plan and Emergency Plan Implementing Procedure Updates."

In addition to successful implementation of the performance measures, staff achieved Project AIM efficiencies in the event response, licensing, and rulemaking product lines. Specifically, staff saved approximately \$650K by shedding low priority work. In addition to the \$650K contract savings, staff is working on identifying ways to streamline the NRC IR program, including making better use of Region IV's Operations Officer capabilities. This would allow for increased agency flexibility in responding to and participating in IR activities.

CONCLUSION:

The accomplishments of the NRC's EP and IR programs during FY 2016 supported the NRC's mission and strategic plan. The programs and activities performed by the staff have improved by incorporating lessons learned through operating experience, EP exercises, interagency IR activities, and stakeholder engagement. The staff continues to demonstrate an ability to develop and implement a stable and predictable EP regulatory program for licensing, oversight, and regulatory infrastructure. Further, the staff continues to participate in IR activities that help to maintain cooperative intergovernmental relationships to ensure that NRC roles and responsibilities are considered and reflected in national resiliency programs.

COORDINATION:

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

/RA Michael R. Johnson Acting For/
Victor M. McCree
Executive Director
for Operations

Enclosure:
Status of Medium and Low Priority EP
Topics Identified in SECY-06-0200

open dialogue and integrating stakeholder concepts and language into guidance documents such as NUREG-0654/FEMA-REP-1, RIS 2016-10 “License Amendment Requests for Changes to Emergency Response Organization Staffing and Augmentation,” and RIS 2015-14 “Issuance of Enforcement Guidance Memorandum – Emergency Plan and Emergency Plan Implementing Procedure Updates.”

In addition to successful implementation of the performance measures, staff achieved Project AIM efficiencies in the event response, licensing, and rulemaking product lines. Specifically, staff saved approximately \$650K by shedding low priority work. In addition to the \$650K contract savings, staff is working on identifying ways to streamline the NRC IR program, including making better use of Region IV’s Operations Officer capabilities. This would allow for increased agency flexibility in responding to and participating in IR activities.

CONCLUSION:

The accomplishments of the NRC’s EP and IR programs during FY 2016 supported the NRC’s mission and strategic plan. The programs and activities performed by the staff have improved by incorporating lessons learned through operating experience, EP exercises, interagency IR activities, and stakeholder engagement. The staff continues to demonstrate an ability to develop and implement a stable and predictable EP regulatory program for licensing, oversight, and regulatory infrastructure. Further, the staff continues to participate in IR activities that help to maintain cooperative intergovernmental relationships to ensure that NRC roles and responsibilities are considered and reflected in national resiliency programs.

COORDINATION:

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

***/RA Michael R. Johnson Acting for/
Victor M. McCree
Executive Director
for Operations***

Enclosure:
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Status of Medium and Low Priority Emergency Preparedness Topics Identified in SECY-06-0200

In September 2006 the staff submitted SECY-06-0200, "Results of the Review of Emergency Preparedness [EP] Regulations and Guidance," (Agencywide Document Access and Management System (ADMAS) Accession No. ML061910707), which identified several high, medium, and low priority areas for enhancing EP regulations and guidance. In SECY-06-0200, the staff recommended that rulemaking be initiated for 12 high priority topics and committed to revisit those issues that were determined to be less than a high priority at a later time.

In October 2009 the staff submitted SECY-09-0152, "Annual Update on the Status of Emergency Preparedness Activities," (ADAMS Accession No. ML091900372), which provided recommendations for resolving the remaining eight medium and low priority EP rulemaking issues identified in SECY-06-0200. The resolutions to the eight remaining items are outlined below. Staff considers these medium and low priority EP issues identified in SECY-06-0200 to be adequately addressed as discussed and therefore no further action is needed.

SECY-06-0200 Medium Priority Emergency Preparedness Issues

1. Emergency Response Organization Report-In and Call-In Drills

This issue pertains to a recommendation to expand the U.S. Nuclear Regulatory Commission (NRC) regulations and guidance to address the type and frequency of the Emergency Response Organization (ERO) augmentation drills in order to demonstrate EROs' ability to meet additional demands during drills/exercises. NRC staff determined that additional guidance specifying the type and frequency of drills would be sufficient to ensure that licensees are conducting an adequate number of effective Report-In and Call-in Drills to ensure successful ERO augmentation in the event of an emergency. Evaluation criteria N.4.g and N.4.h have been incorporated in Section II of NUREG-0654/FEMA-REP-1, Revision 2, to capture this additional guidance.

2. Emergency Preparedness Corrective Action Program

This issue stemmed from an observation during the EP review in SECY-06-0200 that EP program-related issues and changes were not being adequately evaluated. The staff determined that additional guidance will sufficiently address the issue. Staff is developing additional guidance to include formal critiques of drills and exercises, and to include EP program-related issues and changes into the site-wide corrective actions program. Resolution of corrective actions identified in drills and exercises is addressed in Title 10 of the *Code of Federal Regulations* (10 CFR), Section 50.47(b)(14), and Appendix E to 10 CFR Part 50. Evaluation criteria N.1.b and P.11 for use of the licensee's corrective action program to track and address EP drill, exercise, and program issues have been incorporated in Section II of NUREG-0654/FEMA-REP-1, Revision 2.

Enclosure

3. Emergency Preparedness Staff Training

This issue was identified as a result of inspection findings, where the staff noted that many of the root causes were related to inadequate training of licensees' EP staff. Additional guidance on initial training and periodic retraining of EP staff, in order to provide an adequate level of knowledge of NRC EP requirements so that an effective EP program is developed and maintained, has been incorporated in evaluation criterion P.1 in Section II of NUREG-0654/FEMA-REP-1, Revision 2.

4. Use of Systematic Approach to Training for Emergency Response Organizations

This issue was identified by internal and external stakeholders and is related to concerns that training programs for the ERO staff are not as robust and effective as training programs used for reactor operators. Additional guidance for enhancements to training programs will be incorporated in evaluation criterion O.2 in Section II of NUREG-0654/FEMA-REP-1, Revision 2, which encompasses designing and conducting ERO training using a systematic analysis of jobs and tasks from which learning objectives are derived.

5. Notification of Alert System Major Loss

This issue is related to a need for greater clarity regarding the definition of a major loss of alert and notification system capability in order to minimize potential for non-reporting of such events to the NRC. Recent guidance, clarifying what constitutes a major loss of a licensee's alert and notification system and reporting guidelines, have been provided in NUREG-1022, "Event Reporting Guidelines 10 CFR 50.72 and 50.73," Revision 3, Supplement 1, dated September 2014. This guidance endorses Nuclear Energy Institute (NEI) 13-01, "Reportable Action Levels for Loss of Emergency Preparedness Capabilities," dated July 2014 and provides specific guidance for reporting a failure of the primary alerting system under 10 CFR 50.72(b)(3)(xiii) which, as a result, reduces the need for engineering judgment.

6. Clarification of Consideration of Potassium Iodide Use and Other Protective Action Recommendations

During the EP review in SECY-06-0200, this issue arose from the concern that the rule language in 10 CFR 50.47(b)(10) was not clear on the need for licensees to include sheltering as a protective action recommendations (PAR) option in their emergency plans and to provide a range of protective actions for individuals onsite and in the owner controlled area. The staff subsequently recommended rulemaking to clarify the wording and intent of 10 CFR 50.47(b)(10). In the EP final rule that was published in the *Federal Register* (FR) on November 23, 2011, (76 FR 72560) and became effective on December 23, 2011, licensees are required to provide a range of protective actions for onsite personnel. The EP final rule also requires the use of evacuation time estimates (ETEs) in the development of protective action strategies. In November 2011 the NRC published NUREG/CR-7002, "Criteria for Development of Evacuation Time Estimate Studies," (ADAMS Accession No. ML113010515), and

Supplement 3, "Guidance for Protective Action Strategies," (ADAMS Accession No. ML113010596), to NUREG-0654/FEMA-REP-1, Revision 1, to provide guidance on how to develop and use ETEs in the formulation of these strategies. The guidance also addresses the use of sheltering, potassium iodide, and other protective action strategies. NUREG-0654/FEMA-REP-1, Revision 2, reflects changes in NRC EP regulations and guidance regarding the use of ETEs and PAR development.

SECY-06-0200 Low Priority Emergency Preparedness Issues

7. Joint Information Center Enhancements

This issue pertains to a recommendation to expand NRC regulations and guidance to demonstrate the effectiveness of numerous competencies necessary for emergency response, including the Joint Information Center (JIC). Two NUREG/CR documents were developed to address JIC enhancements to account for changes in media practices, advances in communications technology, and changes in public access to information. The documents are NUREG/CR-7032, "Developing an Emergency Risk Communication (ERC)/Joint Information Center (JIC) Plan for a Radiological Emergency," (ADAMS Accession No. ML110490119), and NUREG/CR-7033, "Guidance on Developing Effective Radiological Risk Communication Messages: Effective Message Mapping and Risk Communication with the Public in Nuclear Plant Emergency Planning Zones," (ADAMS Accession No. ML110490120), both published in February 2011. NUREG-0654/FEMA-REP-1, Revision 2, reflects changes in NRC guidance regarding the development of risk communications plans and messages for nuclear power plants.

8. License Transfer

This issue is related to a concern that there is no requirement for an acquiring entity to submit EP information at the time of a license transfer application. The staff determined that no additional requirement would be needed, as existing EP requirements are adequate. Specifically, any changes to a site's emergency plan would be evaluated per NRC requirements in 10 CFR 50.54(q), and any reduction in effectiveness submitted for prior NRC approval in accordance with 10 CFR 50.90, "Application for Amendment of License, Construction Permit, or Early Site Permit."