

**TECHNICAL BASIS FOR THE PROPOSED GUIDANCE IN
NUREG-0654/FEMA-REP-1, SECTION II.B, “EMERGENCY RESPONSE
ORGANIZATION”**

1. BACKGROUND

Section 50.47, “Emergency Plans,” of Title 10 of the *Code of Federal Regulations* (10 CFR) sets forth the U.S. Nuclear Regulatory Commission’s (NRC) emergency plan requirements for nuclear power plant facilities. The regulation in 10 CFR 50.47(a)(1)(i) states, in part:

[N]o initial operating license for a nuclear power reactor will be issued unless a finding is made by the NRC that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

Section 50.47(b) establishes the standards that the onsite and offsite emergency response plans must meet for NRC staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. Emergency response staffing is addressed in Planning Standard (2) of this section (10 CFR 50.47(b)(2)):

On-shift facility licensee responsibilities for emergency response are unambiguously defined, adequate staffing to provide initial facility accident response in key functional areas is maintained at all times, timely augmentation of response capabilities is available, and the interfaces among various onsite response activities and offsite support and response activities are specified.

Section IV.A of Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities,” to 10 CFR Part 50, provides specific regulatory requirements for licensee emergency response organizations (EROs).

Revision 1 to NUREG-0654/FEMA-REP-1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants,” dated November 1980, was intended to aid licensees, applicants for licenses, or State and local emergency response organizations in the development of their Radiological Emergency Response Plans. The NRC endorsed this document for use in this effort via Revision 2 to Regulatory Guide (RG) 1.101, “Emergency Planning and Preparedness for Nuclear Power Reactors,” dated October 1981.

1.1. PLANNING BASIS

While the guidance provided in NUREG-0654/FEMA-REP-1, Revision 1, is an acceptable method for licensees to develop their emergency plans, the NRC and licensees have experienced many improvements and lessons learned since 1980. Additionally, the NRC and licensees have had difficulties in consistently interpreting the technical basis for many of the staffing guidelines provided in Section II.B of NUREG-0654/FEMA-REP-1, Revision 1. Therefore, the NRC is proposing to revise NUREG-0654/FEMA-REP-1, Section II.B, (hereafter referred to as Section II.B (Proposed)) to enhance the guidance with the accumulated

knowledge and experience obtained since 1980, and to provide a technical basis for why the ERO positions and/or functions are beneficial and why the timing associated with the ERO response is adequate.

The planning basis for radiological emergency response plans was documented in NUREG-0654/FEMA-REP-1, Revision 1, Section I.D. This planning basis, which was verified after the events of September 11, 2001, states, in part (footnotes omitted):

The overall objective of emergency response plans is to provide dose savings (and in some cases immediate life savings) for a spectrum of accidents that could produce offsite doses in excess of Protective Action Guides (PAGs). No single specific accident sequence should be isolated as the one for which to plan because each accident could have different consequences, both in nature and degree. Further, the range of possible selection for a planning basis is very large, starting with a zero point of requiring no planning at all because significant offsite radiological accident consequences are unlikely to occur, to planning for the worst possible accident, regardless of its extremely low likelihood.

...

The range of times between the onset of accident conditions and the start of a major release is of the order of one-half hour to several hours.

The planning basis above provides two key messages for purposes of this technical basis: (1) Licensees must develop an ERO (on-shift and augmented) that is comprehensive enough to respond to "a spectrum of accidents" and thereby support the NRC's reasonable assurance finding in accordance with 10 CFR 50.47(a); and (2) With a comprehensive on-shift ERO staff available, it is reasonable to develop an ERO staffing plan that has augmentation timing of 60 and 90 minutes from event declaration.

Since 1980, the EP community has learned many lessons related to ERO staffing and augmentation and benefitted from significant advancements in technology. The NRC is therefore proposing to update the ERO staffing and augmentation guidance, including the timing of the ERO augmented response, to reflect the significant amount of experience and improvements in technology, as well updating what the staff has determined to be an acceptable approach to meeting the regulations. However, NUREG-0654/FEMA-REP-1, Revision 1, continues to be an acceptable approach for meeting applicable regulatory requirements,

1.2. REGULATIONS VERSUS GUIDANCE

The guidance provided in NUREG-0654/FEMA-REP-1 is not considered by the NRC to be regulations, and as such, licensees may choose to submit alternatives to the guidance for staff review and approval.

1.3. OBJECTIVE

Given the complexity and probable site-specific implementation of Section II.B (Proposed), providing the technical basis for Section II.B (Proposed) may assist licensees in their development of site-specific staffing plans, particularly when the licensee may want to develop an alternative approach.

1.4. PROCESS

The NRC's review of licensee ERO staffing and augmentation plans (hereafter called the ERO staffing plan) identified areas where the current guidance could be enhanced. In addition, a review of inspection findings related to development of an effective ERO staffing plan, as well as implementing the plan, identified recurring issues related to timing and ambiguity. Lessons learned from licensee ERO activations (drills, etc.) also were considered in the development of Section II.B (Proposed).

The staff decided to re-evaluate what an acceptable ERO staffing plan is, using all the information available, rather than limit itself to how the previous version of NUREG-0654 was developed and organized and how individual licensees may have developed their ERO staffing plans.

2. TECHNICAL BASIS FOR SECTION II.B

Section II.B (Proposed) provides a method the staff considers to be acceptable for developing an ERO staffing plan in accordance with 10 CFR 50.47(b)(2) and Appendix E to 10 CFR Part 50, Section IV.A.

2.1 EXPLANATION OF SECTION II.B EVALUATION CRITERIA (criteria numbering is as reflected in Section II.B).

- B.1 This criterion ensures the licensee's plan meets the regulations. Since this proposed guidance is intended to support licensee development of site-specific emergency plans, criteria B.1 and B.1.a reinforce the regulatory requirements of 10 CFR 50.47(b)(2) and the applicable sections of Appendix E to 10 CFR Part 50. While it may appear redundant or unnecessary guidance, staff experience with licensees, and applicant questions, has shown that some licensees and applicants believe that the staff considers NUREG-0654/FEMA-REP-1 to be a set of regulations rather than a method for emergency plan development which can provide an acceptable reasonable assurance finding in accordance with 10 CFR 50.47(a). These evaluation criteria ensure that, however a licensee decides to develop it, the site-specific emergency plan will specify how the regulations are met.
- B.1.a On-shift staff assigned functions other than EP are not required to be addressed in the emergency plan. Only when an EP function is assigned do the requirements of the regulations, and therefore this guidance, become applicable. For on-shift staff, the assignment of EP functions requires the licensee to perform an on-shift staffing analysis via 10 CFR Part 50, Appendix E, Section IV.A.9. Operations and security force staffing, as well as the composition of the licensee's fire brigade, are controlled and evaluated by other regulations and programs.
- B.2 This criterion reinforces the importance of an effective command and control strategy by ensuring that the command and control function is available at all times.
- B.2.a This criterion clarifies that all functional responsibilities for the ERO are identified and that responsibilities that may not be delegated to other members of the ERO

are clearly specified in the emergency plan. This criterion is intended to provide reasonable assurance that planning efforts are made prior to an event in order to provide an effective response to the radiological emergency.

- B.3 This criterion recommends that licensees develop a table, such as the example provided in Table B-1 of NUREG-0654, to describe the licensee's ERO staffing plan. The technical analysis of Table B-1 is provided in Section 2.4. A table like Table B-1 would be an effective method of capturing the licensee's ERO staffing plan because a table should be easily and quickly understood.
- B.4 This criterion suggests the development of a block diagram to highlight the interfaces between the licensee, local emergency services/support, and state/local/tribal government response organizations. A block diagram is an effective method of capturing these interfaces.
- B.5 This criterion advises that outside organizations considered to be the licensee's staff, including contractors, be specified in the emergency plan if they would be called upon to support EP. [Note that many licensees consider contractors to be external organizations while some consider them to be internal. The NRC's position is that contractors, if part of the response, should be specified in the site-specific emergency plan.]

2.2 TABLE B-1 PREFACE NOTES (preface note numbering is as reflected in Section II.B). The intent of these preface notes are to reinforce the general principals of ERO staffing plan development using the proposed guidance.

- i This note emphasizes that the minimum number of personnel assigned EP functions is as stated in the site-specific emergency plan, as approved. This note also acknowledges the fact that augmentation has two separate functions: relieve the on-shift staff of assigned EP functions so that they may return their focus to their assigned, non-EP, responsibilities; and to provide support staff for effective emergency response.
- ii This note reinforces the position that this table is guidance and that the actual ERO staffing plan developed, approved, and implemented by the licensee should be described in the site-specific emergency plan.
- iii This note emphasizes the distinction between ERO minimum staffing and the ERO as a whole. The licensee's emergency plan should describe the ERO staffing plan that is the minimum the licensee needs to implement their emergency plan (i.e., if any position or function is not staffed then the emergency plan cannot be effectively implemented). Licensees may have additional ERO staff trained, qualified, and available to ensure all available licensee resources are used when a radiological emergency occurs and to provide for staff relief on a 24 hour / 7 days a week extended basis. However, this additional ERO staff need not be reflected in the site-specific ERO staffing plan, if the emergency plan could effectively be implemented without them. Lower level emergency procedures should be used to effectively describe this tier of ERO staffing and augmentation.

This note also emphasizes that the augmentation times provided are a model for consideration, not a requirement for implementation. Licensees may consider alternatives to this proposed guidance for staff review if desired.

- iv This note clarifies that the exact position titles depicted in Table B-1 are the ones that are defined in the licensee's emergency plan and are not necessarily the same as those listed. This is intended to provide some site-specific flexibility in nomenclature while maintaining an appreciation for the functional description as stated in the proposed guidance.
- v This note clarifies that licensees understand that the exact location in an emergency response facility (ERF) for the positions depicted in Table B-1, and the emergency classification level (ECL), when the positions are mobilized, are the ones that are defined in the licensee's emergency plan and not necessarily the same as those listed in Section II.B (proposed). This provides some site-specific flexibility while maintaining an appreciation for the functional description as stated in the proposed guidance.
- vi This note highlights that, for the assignment of collateral duties to someone assigned an EP function, a detailed evaluation should be performed to ensure that the individual will be able to perform the assigned EP function(s) when needed, and that competing priorities will not preclude effective performance.
- vii This note encourages a performance-based approach to ERO staffing plan development, and that an approved ERO staffing and augmentation plan, as stated in the site-specific emergency plan, is controlled and maintained in accordance with 10 CFR 50.54(q).
- viii This note emphasizes that on-shift operations staff, security staff, and fire brigade staff (as applicable) are controlled by other non-EP processes. It is only when EP functions are assigned to on-shift staff that the requirements of 10 CFR Part 50, Appendix E, Section IV.A.9 apply, thus requiring an on-shift staffing analysis be performed.

2.3 TABLE B-1 TIMING AND ERF ACTIVATION

Revision 1 of NUREG-0654/FEMA-REP-1 did not address other ERFs in any significant detail, and it did not provide a model that staggered ERO response based upon an escalation of the ECL. In addition, it did not provide clear guidance as to the critical functions for which each ERO position is to be responsible.

An important consideration in the development of this revision to Table B-1 is the timing of the response. Revision 1 of NUREG-0654/FEMA-REP-1 had two distinct stages of response: those within 30 minutes of the ECL classification, and those within 60 minutes of ECL classification; however, the actual ECL was not stated.

The NRC's review of approved licensee emergency plans, as well as an effort to re-evaluate the purpose of a 30/60 minute response, led to the proposal to have the first stage of response be within 60 minutes of an Alert ECL or greater, with the next stage to occur within 90 minutes of an Alert ECL or greater, for positions in the Technical Support Center (TSC) and Operations Support Center (OSC). In addition, the table describes the staggered ERF activation based

upon ECL level for the Emergency Operations Facility (EOF) and the Joint Information Center/System (JIC/JIS), which should be staffed within 60 minutes of a Site Area Emergency (SAE) ECL or greater. This approach is considered to be an effective method for meeting the applicable regulations, but licensees are not required to change their emergency plans based upon this revised guidance. The basis for this proposed revision is that licensees have demonstrated through drills and exercises that effective on-shift ERO staffing is adequate to maintain responsibilities for ERO functions for an additional 30 minutes (as compared to NUREG-0654/FEMA-REP-1, Revision 1) without compromising the staff's reasonable assurance finding (10 CFR 50.47(a)). In addition, drills and exercises have demonstrated that EOF and JIC/JIS minimum staffing is important to document in licensee emergency plans and that effective emergency plans already reflect EOF and JIC/JIS minimum staffing. This revision to Table B-1 aligns NUREG-0654/FEMA-REP-1 with this best practice.

NUREG-0696, "Functional Criteria for Emergency Response Facilities," dated February 1981 (ADAMS Accession Number ML051390358), provides guidance for ERFs, including the intent of the facility and when they should be activated. NUREG-0654/FEMA-REP-1 does not revise this guidance, but in order to effectively understand the ERFs and the timing associated with them, each ERF is described below, in part, from NUREG-0696. Note that the JIC/JIS was developed after 1981 and is therefore not specifically discussed in NUREG-0696, however the timing of JIC/JIS staffing should be similar to the EOF.

- TSC: "The TSC shall be the emergency operations work area for designated technical, engineering, and senior licensee management personnel; any other licensee designated personnel required to provide the needed technical support; and a small staff of NRC personnel."
- OSC: "The operational support center (OSC) is an onsite area separate from the control room and the TSC where licensee operations support personnel will assemble in an emergency. The OSC shall: provide a location where plant logistic support can be coordinated during an emergency, and restrict control room access to those support personnel specifically requested by the shift supervisor."
- EOF: "It shall be the location where the licensee provides overall management of licensee resources in response to an emergency having actual or potential environmental consequences. A designated senior licensee official will manage licensee activities in the EOF to support the designated official in the TSC and the senior reactor operator designated the shift supervisor in the control room. ... Licensee personnel in the EOF will use the evaluations of offsite effects to make protective action recommendations for the public to State and local emergency response agencies."

NUREG-0696 further states, in part, that "Activation of the onsite TSC and OSC is optional for a Notification of Unusual Event emergency class, and is required for Alert and higher classes. Activation of the [EOF] is optional for Notification of Unusual Event and Alert emergency classes, and is required for Site Area Emergency and General Emergency classes." The ERO positions, timing, and applicable ERFs described below for each Table B-1 Function/Position is in alignment with NUREG-0696.

2.4 TABLE B-1 FUNCTIONS/POSITIONS

The functions/positions listed in Table B-1 are discussed below.

1. Command & Control

This function is important for effective emergency response because adequate command and control enables a licensee to effectively develop priorities for response planning and corrective action(s) and to provide a unified approach to the event response by providing a single individual with overall command and control authority. This function is also consistent with the Incident Command portion of the National Incident Management System (NIMS), dated December 2008. It should be staffed and maintained at all times. This function is typically assigned to the Operations Shift Manager (OSM). The augmentation (relief) of this position is intended to relieve the OSM of EP functions so that the OSM can focus on the event response from an operations perspective. This should occur within 60-minutes of an Alert ECL declaration, or greater, and is typically a position staffed within the TSC. For a SAE ECL, or greater, these functions (or a subset of them), typically those associated with protective action recommendations (PARs), should be assigned to an Emergency Director located in the EOF within 60-minutes of the SAE ECL, or greater, being declared.

2. Communications

This function is important for effective emergency response because licensees must be able to adequately communicate onsite and offsite to successfully implement their emergency plans. This function is consistent with the Communications and Information Management portion of NIMS. The ability to staff this position should be maintained at all times. This function is typically assigned to a pre-existing on-shift staff member as a collateral duty thus necessitating an on-shift staffing analysis, via 10 CFR Part 50, Appendix E, Section IV.A.9, to ensure that this EP function can be performed when needed without any additional competing priorities. The augmentation (relief) of this position should occur within 60-minutes of an Alert ECL, or greater, and is intended to relieve the on-shift staff of this EP function. This function should consist of 2 staff members to fulfill the communication needs, at a minimum: 1 for the NRC and 1 for ORO notification and status updates. Additional communicators may be called upon as needed, and at the discretion of the licensee. These are typically located in the TSC. For an SAE ECL, or greater, at least 1 additional communicator should be staffed in the EOF.

3. Radiation Protection (RP)

The ability to provide radiological expertise when the plant is experiencing an event with serious radiological consequences is crucial, due to the unknown radiological environment faced by emergency workers, particularly at the onset of the event. This function should be staffed by 2 qualified RP staff members on-shift (or 1 per unit for multi-unit sites). These staff members should not have any collateral duties during emergency response. While not all Alert ECLs (or lower) have radiological consequences, licensees should develop their ERO staffing plans for a worst-case scenario from a radiological risk perspective, i.e., an event which results in the immediate (within 60-minutes) loss of 2 or more fission product barriers leading to significant and unknown radiological conditions. The augmentation (support) of this position should occur in two stages: within 60 minutes of an Alert ECL or greater, 3 additional qualified RP staff should be available, and within 90 minutes of an Alert ECL, or greater, an additional 3 additional qualified RP staff should be available, and both are typically staffed in the OSC. The total number of qualified RP staff recommended for the ERO is 8 for a single unit site, or 6 plus 1 for each unit.

Based upon staff review and approval of ERO staffing plans, and the evaluation of licensee exercises, the staff has determined that expecting 2 qualified RP staff on-shift is reasonable for the increased time period (30 minutes to 60 minutes), at which point additional RP resources would become available, and that 3 additional RP staff in 60 minutes and 3 additional RP staff in 90 minutes is acceptable to ensure the staff can maintain its reasonable assurance finding (10 CFR 50.47(a)). In addition, the staff has determined that field monitoring teams (FMTs) (onsite and offsite) can function with limited RP expertise while under the direct supervision of senior RP staff in the TSC or EOF, thus removing the need for a fully qualified RP staff member being a part of the FMT when their expertise is better suited supporting the ERO on-site. The senior RP staff supervising the FMTs is responsible for directing the FMTs as well as providing direction for their safety from the radiological event.

The Chemistry/Rad Chemistry function listed in Table B-1 to Revision 1 of NUREG-0654/FEMA-REP 1, is no longer needed as the need for immediate reactor coolant sampling has been reduced due to the variety of plant indications of fuel damage available to licensees.

Overall, the ERO functions assigned to qualified RP staff are more clearly defined in Table B-1 to Revision 2 and reduce the overall staffing levels for qualified RPs. The staff has found that these proposed changes continue to provide an acceptable reasonable assurance finding in accordance with 10 CFR 50.47(a).

4. Supervision of RP Staff and Site Radiation Protection

This function is important for effective emergency response to a radiological event because the management of RP resources, and the assistance this position provides the Emergency Coordinator, is crucial for response to radiological events. Radiological events can be very significant and constantly evolving, and require significant expertise in radiation and radiological consequences. The evaluation of radiological events, and the development of effective protective action recommendations, requires this expertise to support the Emergency Coordinator in making these decisions. This position is also responsible for the direction and protection of FMTs. The augmentation (relief) of this function should occur within 60-minutes of an Alert ECL, or greater, and is typically staffed in the TSC. For an SAE ECL, or greater, an RP Manager position should be staffed in the EOF. Note that since this position is primarily tasked with providing the applicable command and control position relevant expertise on radiological events, having this position available in the EOF is expected when the EOF Director is in command.

5. Dose Assessments/Projections

This function is important for effective emergency response to a radiological event because timely dose assessments/projections ensure accurate and timely PARs can be developed, when necessary. The ability to staff this position should be maintained at all times. This function is typically assigned to a pre-existing on-shift staff member as a collateral duty, thus necessitating an on-shift staffing analysis under 10 CFR Part 50, Appendix E, Section IV.A.9 to ensure that this EP function can be performed when needed without any additional competing priorities. The augmentation (relief) of this function should occur within 60-minutes of an Alert ECL, or greater, and is typically staffed in the TSC. For an SAE ECL, or greater, this

position should be staffed in the EOF as the EOF is primarily intended to coordinate with offsite response officials when developing protective action strategies for the public.

Maintaining the ability to perform dose assessments/projections at all times ensures that the consequences of a radiological event, to the public, are effectively mitigated by providing timely dose related information to the Emergency Coordinator (TSC) or Emergency Director (EOF) depending on which position is in command and control. As a result, this position (function) is expected to be available on shift, in the TSC, and in the EOF depending on the ECL declared.

6. Emergency Classification

This function is important for prompt and effective emergency response. Because the impetus for implementing the emergency plan is the determination of an emergency action level (EAL) at the correct ECL, having this ability maintained at all times is essential. This function is typically assigned to a pre-existing on-shift staff member as a collateral duty, thus necessitating an on-shift staffing analysis under 10 CFR Part 50, Appendix E, Section IV.A.9 to ensure that this EP function can be performed when needed without any additional competing priorities. The augmentation (relief) of this function should occur within 60-minutes of an Alert ECL, or greater, and is typically staffed in the TSC.

Maintaining the ability to perform this function at all times ensures that ECL decisions, and as applicable, the PAR decisions, are timely and accurate as these decisions have a direct relationship to public health and safety from the consequences of a radiological event. This function shall work in coordination with the OSM, or Emergency Coordinator, depending on which position is in command and control, and as a result should be available on shift and in the TSC.

7. Engineering

An engineer to monitor and evaluate changing core/thermal hydraulic issues is important to effective emergency response because monitoring and evaluating core conditions, or thermal hydraulic conditions of the reactor coolant system, can support timely corrective action(s), ECL declarations, and subsequent PARs. Radiological events from a power reactor come from damage to an operating reactor core, or the systems used to cool the core, and engineering expertise in this area can greatly benefit the licensee's response. This function is typically assigned to a pre-existing on-shift staff member as a collateral duty thus necessitating an on-shift staffing analysis under 10 CFR Part 50, Appendix E, Section IV.A.9 to ensure that this EP function can be performed when needed without any additional competing priorities. The augmentation (relief) of this function should occur within 60-minutes of an Alert ECL, or greater, and is typically staffed in the TSC as explained in Section 2.3 above.

An engineer to provide expertise in electrical/instrumentation and control (I&C) systems and equipment supports the evaluation of these systems/equipment and supports the development of repair plans if necessary. The augmentation (support) of this function should occur within 60-minutes of an Alert ECL, or greater, and is typically staffed in the TSC as explained in Section 2.3 above.

An engineer to provide expertise in mechanical systems and equipment supports the evaluation of these systems/equipment and supports the development of repair plans if necessary. The augmentation (support) of this function should occur within 60-minutes of an Alert ECL, or greater, and is typically staffed in the TSC as explained in Section 2.3 above.

8. Security

The licensee's Security Force is controlled and maintained by the licensee's NRC-approved physical security plan and does not need to be reflected in the Emergency Plan. However, the establishment of a Security Liaison position in the TSC is advantageous to ensure effective coordination between the security force and the ERO, particularly for events where offsite resources are necessary as well as for security related events and site personnel accountability. The augmentation (support) of this function should occur within 60-minutes of an Alert ECL, or greater, and is typically staffed by a Security Liaison in the TSC to coordinate security-related activities with that of the ERO. The command and control staff of the TSC all respond within 60-minutes of an Alert ECL, or greater, to ensure that the Emergency Coordinator has access to the resources and expertise of the site staff in order to develop response plans for a wide-spectrum of events.

9. Repair Team Activities

Revision 1 of NUREG-0654/FEMA-REP-1 did not describe why maintenance personnel were expected to be on-shift. This has led to issues related to consistency in interpretation and the expected qualification of these personnel, primarily on-shift. The NRC has determined that, from an EP perspective, the ability to get emergency core cooling system (ECCS) equipment operational was the primary basis for necessitating maintenance expertise while on-shift. Maintenance staff expertise may be advantageous for licensees to consider for other reasons, and at their discretion; however, for the purposes of NUREG-0654/FEMA-REP-1, the only area where maintenance availability should typically be necessary on-shift is for ECCS issues. However, a licensee's ECCS is designed to be redundant and diverse such that common mode failures are very unlikely. As a result, the need to accommodate maintenance functionality on-shift is unnecessary. Nevertheless, a minimum number of maintenance personnel should respond to an event as part of the ERO, with more personnel available on an as-needed basis depending on the event. The augmentation (support) of the electrician and mechanic positions should occur within 60-minutes of an Alert ECL, (or greater), and is typically staffed in the OSC. The augmentation (support) of the I&C position should occur within 90-minutes of an Alert ECL, or greater, and is typically staffed in the OSC. The OSC is the emergency response facility associated with maintenance tasks, as directed by the command and control staff in the TSC.

10. Supervision of Repair Team Activities

The ability to effectively supervise repair team personnel during emergency response is important. The augmentation (support) of these functions is as follows:

- An OSC Supervisor should be staffed within 60-minutes of an Alert ECL, (or greater), and is typically staffed in the OSC. The OSC Supervisor is

considered part of the Emergency Coordinator's command and control staff, and should respond within 60-minutes of an Alert ECL, or greater, to ensure that the Emergency Coordinator has access to the resources and expertise of the site staff in order to develop response plans for a wide-spectrum of events

- An Electrical Supervisor, a Mechanical Supervisor, an I&C Supervisor, and an RP Supervisor should be staffed within 90-minutes of an SAE ECL, or greater, and is typically staffed in the OSC. The OSC Supervisor can effectively manage the maintenance resources for the additional 30-minutes prior to the specific craft (mechanical, electrical, or I&C) respond, as demonstrated through drills and exercises, without compromising the staff's reasonable assurance finding in accordance with 10 CFR 50.47(a).

11. Field Monitoring Teams (FMTs)

The ability to locate, monitor, and track a radioactive plume is important to ensure appropriate protective measures are taken in response to a radiological event. The ability to staff these teams before they may be needed (i.e., before a radiological release) greatly enhances the ability of the licensee to provide timely and accurate PARs. The augmentation (support) for these teams are as follows:

- An onsite FMT should be staffed, consisting of a monitor and a driver. This onsite FMT is responsible for radiological monitoring of the site's Protected Area. This team should be staffed within 60-minutes of an Alert ECL, or greater, in order to be ready to respond to a radiological release, or to detect radiation in the field thus confirming and quantifying the release. This supports the applicable PAR decision-makers in developing effective PARs.
 - i. The monitor should be qualified to assess radiation and contamination levels, but need not be an American National Standards Institute (ANSI) qualified RP Technician as long as the FMT is under the direct supervision of senior staff in the TSC or EOF.
 - ii. The onsite FMT should not be staffed if the radiological conditions jeopardize the safety of the FMT, typically after a Site Area Emergency has been declared.
 - iii. The driver should be knowledgeable about the vehicle and the proposed routes to be traversed.
- An offsite FMT should be staffed, consisting of a monitor and a driver. This offsite FMT is responsible for locating, monitoring, and tracking a radioactive plume, as well as obtaining environmental samples as necessary (air, water, vegetation, etc.). This team should be staffed within 60-minutes of an Alert ECL, or greater, in order to be ready to respond to a radiological release, or to detect radiation in the field thus confirming and quantifying the release. This supports the applicable PAR decision-makers in developing effective PARs.

- i. The monitor should be qualified to assess radiation and contamination levels, but need not be an ANSI qualified RP Technician as long as the FMT is under the direct supervision of senior staff in the TSC or EOF.
 - ii. The driver should be knowledgeable about the vehicle and the proposed routes to be traversed.
- Another offsite FMT should be staffed, consisting of a monitor and a driver. This offsite FMT is also responsible for locating, monitoring, and tracking a radioactive plume, as well as obtaining environmental samples (air, water, vegetation, etc.). This team should be staffed within 90-minutes of an Alert ECL, or greater, in order to be ready to respond to a radiological release, or to detect radiation in the field thus confirming and quantifying the release. This supports the applicable PAR decision-makers in developing effective PARs. An additional 30-minutes in response is acceptable in that this second FMT is a backup to the first FMT, and while both FMTs are expected to respond to an event to better coordinate radioactive plume tracking action(s), allowing for an additional 30-minutes provides licensees some flexibility in staffing this ERO function without compromising the reasonable assurance finding in accordance with 10 CFR 50.47(a).
 - i. The monitor should be qualified to assess radiation and contamination levels, but need not be an ANSI qualified RP Technician as long as the FMT is under the direct supervision of senior staff in the TSC or EOF.
 - ii. The driver should be knowledgeable about the vehicle and the proposed routes to be traversed.

12. Media Information (Joint Information Center/Joint Information System (JIC/JIS))

Revision 1 of NUREG-0654/FEMA-REP-1 did not address the importance of media relations as an aspect of emergency planning. While the exact staffing composition is left to the licensee to determine, with input from applicable OROs, and from the Federal Emergency Management Agency, media relations is an important part of effective emergency response and is consistent with the Joint Information System and Joint Information Center portion of NIMS. As such, the need for media support should be part of the licensee's ERO. The augmentation (support) of this function should, at a minimum, be whatever is absolutely needed to support this function, i.e., without those positions this function could not occur. This should be staffed within 60-min of an Alert ECL, or greater, to address media inquiries; and within 60-minutes of an SAE ECL, or greater, to support media related tasks.

13. Information Technology (IT)

Advances in technology have led to significant enhancements in many areas of emergency response, such as communications, monitoring, displays, digital procedures, etc. Licensees should consider the use of this technology whenever it enhances their ability to protect the health and safety of the public. However, if the implementation of the emergency plan is so reliant on this technology that without it,

the emergency plan could not be implemented, then an IT Lead should augment (support) the response within 60-minutes of an Alert ECL, or greater, if the TSC/OSC has this technology; and within 60-minutes of an SAE ECL, or greater, if the EOF or JIC/JIS has this technology. If the licensee has capable backup plans for if/when this technology fails, then this function is not necessary. In other words, if the ERO is reliant upon technology such that its loss would prevent the ERO from functioning, then a support position should be part of the ERO to assist in recovery of this technology. If the loss of this technology would lead to the implementation of backup strategies, then this position would not need to be part of the ERO and can be called upon as-needed. Licensees should consider using the listing of critical digital assets, identified in accordance with 10 CFR 73.54, as the basis for determining if this position should be considered part of the EROs augmented response.

2.5 TABLE B-1 END NOTES

There are several notes at the end of Table B-1. All of them are intended to reinforce certain aspects of the guidance as it relates to an ERO staffing plan.

1. This note emphasizes that the assignment of collateral duties to an individual must be evaluated to ensure that the EP function(s) can occur without any competing priorities.
2. This note clarifies the timing associated with TSC/OSC minimum staffing. The timing is between when the ECL is declared and when the position is staffed.
3. This note clarifies the timing associated with EOF/JIC/JIS minimum staffing. The timing is between when the ECL is declared and when the position is staffed.
4. This note clarifies the RP functional criteria of 2 qualified RP staff on-shift for single unit sites, and 1 per unit for multi-unit sites.
5. This note clarifies that the JIC/JIS function need not be located in the TSC/OSC for an Alert ECL, or greater.
6. This note provides the rationale for determining if IT support is necessary. This position should be considered necessary when there are critical digital assets identified per 10 CFR 73.54.

3. CONCLUSION

NUREG-0654/FEMA-REP-1, and in particular the revision to Section II.B, represents a significant change from Revision 1 of NUREG-0654/FEMA-REP-1. The intent of Section II.B is to bring the staff position up to date, and to provide licensees a consistent model upon which they could consider revisions to their ERO staffing plan.

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*Email dated 7/28/2017

OFFICIAL AGENCY RECORD

References

1. Nuclear Regulatory Commission and Federal Emergency Management Agency, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," NUREG-0654/FEMA-REP-1, November 1980 (ADAMS Accession No. ML040420012).
2. Nuclear Regulatory Commission Staff Practice and Procedure Digest: Commission, Appeal Board and Licensing Board Decisions — July 1972 – September 2010 (NUREG-0386, Digest 16). [Retrieved from <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0386/d16/sr0386d16.pdf>]
3. Regulatory Guide 1.101, "Emergency Response Planning and Preparedness for Nuclear Power Reactors," Various Revisions, ADAMS Accession No. ML003740302 (Revision 3), ML032020276 (Revision 4), ML050730286 (Revision 5).
4. SECY-06-0200, "Results of the Review of Emergency Preparedness Regulations and Guidance," September 20, 2006, ADAMS Accession No. ML061910707.
5. U.S. Department of Homeland Security, "National Incident Management System," December, 2008. [Retrieved from <http://www.fema.gov/national-incident-management-system>]
6. NUREG-0696, "Functional Criteria for Emergency Response Facilities," dated February 1981, ADAMS Accession No. ML051390358.