



# REGULATORY GUIDE

## OFFICE OF NUCLEAR REGULATORY RESEARCH

### REGULATORY GUIDE 1.101, REVISION 5

## EMERGENCY RESPONSE PLANNING AND PREPAREDNESS FOR NUCLEAR POWER REACTORS

### A. INTRODUCTION

In §50.54, "Conditions of licenses," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities," paragraph (q) states that, "A licensee authorized to possess and operate a nuclear power reactor shall follow and maintain in effect emergency plans which meet the standards in §50.47(b) and the requirements in Appendix E of this part." Likewise, 10 CFR 50, Appendix E, paragraph IV.F.2.c. requires:

"c. Offsite plans for each site shall be exercised biennially with full participation by each offsite authority having a role under the plan. Where the offsite authority has a role under a radiological response plan for more than one site, it shall fully participate in one exercise every two years and shall, at least, partially participate in other offsite plan exercises in this period.

If two different licensees' whose licensed facilities are located either on the same site or on adjacent, contiguous sites, and that share most of the elements defining co-located licensees, each licensee shall:

- (1) conduct an exercise biennially of its onsite emergency plan; and
- (2) participate quadrennially in an offsite biennial full or partial participation exercise; and
- (3) conduct emergency planning activities and interactions in the years between its participation in the offsite full or partial participation exercise with offsite authorities to test and maintain interface among the affected state and local authorities and the licensee."

Whereas, "Partial participation" is defined in a footnote as "when used in conjunction with emergency preparedness exercises for a particular site means appropriate offsite authorities shall actively take part in the exercise sufficient to test direction and control

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functions; i.e., (a) protective action decision making related to emergency action levels, and (b) communication capabilities among affected State and local authorities and the licensee.” Likewise, “co-located licensees” is also defined in a footnote as, “two different licensees whose licensed facilities are located either on the same site or on adjacent, contiguous sites, and that share most of the following emergency planning and siting elements:

- (c) Plume exposure and ingestion emergency planning zones,
- (d) Offsite governmental authorities,
- (c) Offsite emergency response organizations,
- (d) Public notification system, and/or
- (e) Emergency facilities”

This regulatory guide provides guidance to co-located licensees and co-located applicants on methods acceptable to the NRC staff for complying with the NRC’s regulations for emergency response plans and preparedness relative to conducting emergency response planning activities and interactions (A&I) in the years between participation in the offsite full or partial participation exercises with offsite authorities. Licensees and applicants may propose means other than those specified by the provisions of the Regulatory Position of this guide for meeting applicable regulations. No new positions or requirements are being imposed by this regulatory guide.

The information collections contained in this regulatory guide increases the burden on co-located licensees to log activities and interactions with offsite agencies during the years that full or partial participation emergency preparedness exercises are not conducted and to prepare a one-time change to procedures to reflect the revised exercises requirements. The public burden for this information is estimated to average 30 hours per year. Because the burden for this information collection is insignificant, Office of Management and Budget (OMB) clearance is not required. Existing requirements were approved by the Office of Management and Budget, approval number 3150-0011. The NRC may not conduct or sponsor, and a person is not required to respond to, a request for information or an information collection requirement unless the requesting document displays a currently valid OMB control number.

## **B. Discussion**

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,”<sup>1</sup> was published in November 1980 to provide specific acceptance criteria for complying with the standards set forth in 10 CFR 50.47. FEMA, NRC, and other involved Federal agencies use the guidance contained in Revision 1 of NUREG-0654/FEMA-REP-1 in their individual and joint reviews of the radiological emergency response plans and preparedness of State and local governments and the plans and preparedness of applicants for and holders of a license to operate a nuclear power reactor. Revisions 2 and 3 of Regulatory Guide 1.101 endorsed Revision 1 of NUREG-0654/FEMA-REP-1.

In January 1992, the Nuclear Utilities Management and Resource Council (NUMARC) issued Revision 2 of NUMARC/NESP-007, “Methodology for Development for Emergency

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<sup>1</sup>Copies are available at current rates from the U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20402-9328 (telephone (202)512-1800); or from the National Technical Information Service by writing NTIS at 5285 Port Royal Road, Springfield, VA 22161; (telephone (703)487-4650; <<http://www.ntis.gov/ordernow>>. Copies are available for inspection or copying for a fee from the NRC Public Document Room at One White Flint North, 11555 Rockville Pike, Rockville, MD 20852; the PDR’s mailing address is US NRC Public Document Room, Washington, DC 20555; telephone(301)415-4737 or (800)397-4209; fax (301)415-3548; email is PDR@NRC.GOV.

Action Levels,”<sup>2</sup> which contained guidance on EAL development that accounted for lessons learned from ten years of using the NUREG-0654 guidance. The NRC stated in Revision 3 of Regulatory Guide 1.101 (August 1992), that Revision 2 of NUMARC/NESP-007 was considered to be an acceptable alternative to the guidance provided in NUREG-0654 for development of EALs to comply with 10 CFR 50.47 and Appendix E to 10 CFR Part 50.

In Revision 3 to Regulatory Guide 1.101, the NRC stated that “Licensees may use either NUREG 0654/FEMA-REP-1 or NUMARC/NESP-007 in developing their EAL scheme but may not use portions of both methodologies.” The staff stated in EPPOS No. 1, “Emergency Preparedness Position (EPPOS) on Acceptable Deviations from Appendix 1 of NUREG-0654 Based Upon the Staff’s Regulatory Analysis of NUMARC/NESP-007, ‘Methodology for Development of Emergency Action Levels,’”<sup>3</sup> that it recognizes that licensees who continue to use EALs based upon NUREG-0654 could benefit from the technical basis for EALs provided in NUMARC/NESP-007. However, the staff also recognized that the classification scheme must remain internally consistent.

In January 2003, the Nuclear Energy Institute submitted guidance (NEI 99-01, Revision 4, January 2003, “Methodology for Development of Emergency Action Levels”)<sup>4</sup> for developing EALs applicable in the shutdown and refueling modes of plant operations. NEI 99-01 also provided new guidance for developing EALs for permanently shutdown reactors and dry cask spent fuel storage at nuclear power plants. In addition, improvements to the NUMARC/NESP-007 EAL guidance were incorporated into NEI 99-01; these improvements were first developed (and the rationale behind the revision discussed) in NEI 97-03, Draft Final Revision 3, “Methodology for Development of Emergency Action Levels” (December 1998). NEI 97-03 was not endorsed by the NRC because the NRC applied its resources to the review of NEI 99-01, which incorporates the guidance in NEI 97-03.

Revision 4 endorsed the guidance in NEI 99-01 (Revision 4, January 2003), “Methodology for Development of Emergency Action Levels,” as acceptable to the NRC staff as an alternative method to that described in Appendix 1 to NUREG-0654/FEMA REP-1 and NUMARC/NESP-007 for developing EALs required in Section IV.B of Appendix E to 10 CFR Part 50 and 10 CFR 50.47 (b)(4).

The NRC is revising RG 1.101 to set forth guidance on the conduct of activities and interactions, (A&I) to reflect the provisions of the regulations addressing co-located licensees.

The Commission finds that where two nuclear power plants are licensed to different licensees and meet the definition of being co-located, reasonable assurance of emergency preparedness exists where:

1. The co-located licensees would exercise their onsite plans biennially;
2. The offsite authorities would exercise their plans biennially; and,
3. The interfaces between offsite plans and the respective onsite plans would be exercised biennially in a full or partial participation exercise alternating between each licensee.

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<sup>3</sup>Electronic copies (Accession Number ML022970165) are available in NRC’s Public Electronic Reading Room, which can be accessed through the NRC’s web site. <WWW.NRC.GOV>.

<sup>4</sup>Electronic copies (Accession Number ML030300486) are available in NRC’s Public Electronic Reading Room, which can be accessed through the NRC’s web site. <WWW.NRC.GOV>.

Thus, each co-located licensee would participate in a full or partial participation exercise quadrennially. In addition, when one of the co-located licensees is participating in a full or partial participation exercise, the final rule requires any other co-located licensees to participate in activities and interaction (A&I) with offsite authorities. For the period between exercises the final rule also requires the licensees to conduct emergency preparedness A&I. The purpose of these A&I would be to test and maintain the interface among the affected state and local authorities and the licensees.

Table 1 provides a graphical description of one possible way of meeting the requirements of the regulations.

**Table 1**                      **Example of Emergency Preparedness Training for Two (2) Co-located Licensees**

Year	1	2	3	4	5	6	7	8	9
Licensee 1	X	A&I	A&I	A&I	X	A&I	A&I	A&I	X
Licensee 2	A&I	A&I	X	A&I	A&I	A&I	X	A&I	A&I

Notes:                      X = Full or partial participation exercise (with appropriate activities and interactions with offsite authorities).  
                                   A&I = Activities and interactions with offsite authorities

The substance of this guidance is set forth below:

1. When one licensee hosts the two-year full or partial participation exercise, the other licensee is involved in the following activities:
  - (a) Scenario preparation;
  - (b) Meetings with State, and local governmental personnel to develop extent of play document;
  - (c) License to conduct training at state/local centers such as reception centers, congregate care centers, and local emergency operations center; and
  - (d) Provide controllers and observers for the full-participation exercise.
2. Provide for the staffing of the State and local emergency operations centers (EOC) such as dose assessment and communications personnel as well as the staffing of the Joint News Center.
3. Hospital drills are conducted with alternating localities; if applicable.
4. The notification process and the emergency action level scheme should be exercised.
5. Protective action recommendations methodology for the 10-mile emergency planning zone and the dose assessment methodology should be exercised.
6. Licensee/Offsite training:
  - Annual State/local training (Examples: Reactor Systems, Dry Cask Storage, EALs).
  - Licensee provided Fire Service Training.
  - Licensee provided Ambulance Training.
  - Licensee provided Hospital Training.
  - Licensee provided Dose Assessment training, including dose assessment software.
7. Licensee/Offsite Meetings and Conferences:
  - Ad hoc meetings with county emergency management staff.

- Local government emergency planning committee meetings.
  - License security meetings with offsite law enforcement and other federal agencies.
  - Licensee assistance in the development of the emergency planning public information booklet.
8. Licensee/Offsite drills and exercises:
- Local and/or State partial participation in licensee drills and biennial exercises.
  - Participation in local/State FEMA evaluated drill.
  - Local fire department support during licensee on-site fire drills.
9. Licensee/Offsite support services:
- Licensee support at local government reception center training and practice drills.
  - Licensee provides dosimeters and processing services to local government.
  - Licensee provide radiological instrument calibration services to local government.
  - Licensee support of local government during public notification system test.
  - Licensee provides use of weapons firing range to local and state law enforcement (Sheriff, State Police), if available.

### **C. REGULATORY POSITION**

The criteria and recommendations in this Regulatory Guide are methods acceptable to the NRC staff for complying with the requirements in 10 CFR Part 50, Appendix E, and the planning standards in 10 CFR 50.47(b) that must be met in onsite and offsite emergency response plans. These criteria provide a basis for NRC co-located licensees and State and local governments to develop acceptable radiological emergency plans and improve emergency preparedness.

### **D. IMPLEMENTATION**

The purpose of this section is to provide information to co-located licensees and applicants regarding the NRC staff plans for using this regulatory guide.

Except when a co-located applicant or licensee proposes an acceptable alternative method for complying with specified portions of the NRC's regulations, the methods described in this guide will be used in the evaluation of emergency plans and preparedness for co-located licensees.