



U.S. NUCLEAR REGULATORY COMMISSION

STANDARD REVIEW PLAN

13.3 EMERGENCY PLANNING

REVIEW RESPONSIBILITIES

Primary - Organization responsible for the review of emergency planning

Secondary - None

I. AREAS OF REVIEW

This standard review plan (SRP) section addresses the applicant's emergency planning, as described in the safety analysis report (SAR). The areas of review will depend on the specific application. For an application submitted under 10 CFR Part 50, this primary review responsibility involves evaluation of evidence of preliminary planning (in the Preliminary Safety Analysis Report, PSAR) or substantive evidence of planning (in the Final Safety Analysis Report, FSAR) for emergency preparedness directed at situations involving real or potential radiological hazards. For an application submitted under 10 CFR Part 52, the review involves evaluation of various aspects of emergency planning, which will depend on whether the application is for an early site permit (ESP), design certification, or combined license (COL).

The review is conducted against the applicable standards and requirements in 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47, 10 CFR 50.54, 10 CFR 50.72, Appendix E to 10 CFR Part 50, 10 CFR Part 52, 10 CFR 73.71, and 10 CFR Part 100. The review is also conducted against any additional requirements that impact emergency planning and preparedness, including those associated with security, and are imposed through Nuclear Regulatory Commission (NRC) Orders. The review addresses plans for emergency response activities, including emergency

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USNRC STANDARD REVIEW PLAN

This Standard Review Plan, NUREG-0800, has been prepared to establish criteria that the U.S. Nuclear Regulatory Commission staff responsible for the review of applications to construct and operate nuclear power plants intends to use in evaluating whether an applicant/licensee meets the NRC's regulations. The Standard Review Plan is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide an acceptable method of complying with the NRC regulations.

The standard review plan sections are numbered in accordance with corresponding sections in Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)." Not all sections of Regulatory Guide 1.70 have a corresponding review plan section. The SRP sections applicable to a combined license application for a new light-water reactor (LWR) are based on Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)."

These documents are made available to the public as part of the NRC's policy to inform the nuclear industry and the general public of regulatory procedures and policies. Individual sections of NUREG-0800 will be revised periodically, as appropriate, to accommodate comments and to reflect new information and experience. Comments may be submitted electronically by email to NRR_SRP@nrc.gov.

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planning zones (EPZs), emergency action levels (EALs), evacuation time estimates (ETEs), and emergency response facilities. If applicable, the reviewer also evaluates proposed inspections, tests, and analyses applicable to emergency planning that the licensee shall perform, and the associated acceptance criteria (i.e., ITAAC¹).

For a construction permit (CP) application, the applicant is required by 10 CFR 50.34(a)(10) to include in the PSAR a discussion of the applicant's preliminary plans for coping with emergencies, which shall include the applicable items in Appendix E to 10 CFR Part 50,² as well as the means by which the standards of 10 CFR 50.47(b) will be met. For an operating license (OL) application, the applicant is required by 10 CFR 50.34(b)(6)(v) to include in the FSAR the plans for coping with emergencies, which shall include the applicable items in Appendix E to 10 CFR Part 50. The review is made against 10 CFR 50.47 and Appendix E, which establishes the requirements for emergency plans for use in attaining an acceptable state of emergency preparedness.

For an ESP application, the review is made against the requirements in 10 CFR 52.17 and 10 CFR 52.18. At a minimum, the review includes physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans, and the description of contacts and arrangements made with local, State, and Federal governmental agencies with emergency planning responsibilities. If the applicant submits additional information to address either major features of emergency plans, or to provide complete and integrated emergency plans, the staff reviews that information.

For a design certification application, the review is conducted against the requirements in 10 CFR 52.47 and 10 CFR 52.48, and only addresses those design features, facilities, functions, and equipment that are technically relevant to the design and are not site-specific, and which affect some aspect of emergency planning or the capability of a licensee to cope with plant emergencies. The review addresses such areas as a habitable technical support center (TSC) with adequate space, data retrieval capabilities and dedicated communications equipment, and an operational support center (OSC) with adequate communications. Additional design-related features associated with emergency planning, such as EALs, may also be included in the application for review. There is no minimum amount of design-related emergency planning for the proposed reactor that must be addressed in an application. The applicant may choose the extent to which emergency planning features are included in the application to be reviewed as part of the certified design.

For a COL application, the review is conducted against the requirements in 10 CFR Part 52.77, 10 CFR 52.79, and 10 CFR 52.80, and includes, if referenced in the application, an evaluation of emergency plans that are approved in connection with the issuance of an ESP and/or design features contained in a certified design. The review of the previously approved referenced information is to confirm it is appropriately incorporated into the emergency plans contained in

¹ITAAC – Inspections, Tests, Analyses, and Acceptance Criteria

²10 CFR 50.34(a), footnote 5, allows an applicant for a CP to provide required information in the form of a discussion, with specific references, of similarities to and differences from, facilities of similar design for which applications have previously been filed with the Commission.

the COL application. Regulatory Guide 1.206, "Combined License Applications for Nuclear Power Plants (LWR Edition)," provides specific guidance related to the development of a COL application.

In general, if an application is for an additional reactor at an operating reactor site, and the application proposes to incorporate and extend elements of the existing emergency planning program to the new reactor (including by reference), those existing elements should be considered acceptable and adequate. The reviewer will generally focus the review on the extension of the existing program to the new reactor, and will determine whether the incorporated emergency planning program information from the existing reactor site (1) is applicable to the proposed reactor, (2) is up-to-date when the application is submitted, and (3) reflects use of the site for construction of a new reactor (or reactors) and appropriately incorporates the new reactor(s) into the existing plan.

The safety evaluation report (SER) should document the bases for concluding that included (or referenced) information from an existing emergency preparedness program satisfies the applicable acceptance criteria. The reviewer will also examine how the existing elements are incorporated into the application, determine the acceptability of expanding the existing program to include one or more additional reactors, and determine the acceptability of the applicant's identification of any impact on the adequacy of the existing emergency preparedness program for the operating reactor (or reactors). The reviewer will confirm that the applicant has appropriately identified whether any updates are required to existing emergency facilities and equipment, including the Alert and Notification System (ANS), in order to accommodate extension to the proposed new reactor. If appropriate, the reviewer will determine whether the applicant has addressed the exercise requirements for co-located licensees, in accordance with Section IV.F.2.c of Appendix E to 10 CFR Part 50, and the conduct of emergency preparedness activities and interactions discussed in Regulatory Guide 1.101, Rev. 5.

For all reactor license applications (excluding standard design certifications), submitted pursuant to 10 CFR Part 50 or 10 CFR Part 52, the NRC consults with the Federal Emergency Management Agency (FEMA) regarding offsite emergency planning and preparedness. Certified designs are design-specific (i.e., pertain to a licensee's facilities and equipment), and do not address site-specific emergency planning, which is programmatic in nature. FEMA is the Federal agency with the lead responsibility for oversight of offsite emergency planning and preparedness. These responsibilities are now executed by the Radiological Emergency Preparedness (REP) Program. While the responsibility for evaluating the emergency plans and procedures is shared between the FEMA and the NRC under a Memorandum of Understanding (MOU), the final decision-making authority on the overall adequacy of emergency planning and preparedness rests with the NRC.

In general, the NRC reviews include consideration of the FEMA findings and determinations on the level of preparedness of State, tribal, and local governments with responsibility for taking protective measures in the plume exposure pathway EPZ and the ingestion control pathway EPZ. The level of review by FEMA will vary, as will its findings, depending upon the specific application. For example, FEMA's review and findings for a CP or ESP application may be less than that for an OL or COL application. The specific FEMA reviews are detailed below under the respective applications.

COL Action Items and Certification Requirements and Restrictions. For a DC application, the review will also address COL action items and requirements and restrictions (e.g., interface requirements and site parameters).

For a COL application referencing a DC, a COL applicant must address COL action items (referred to as COL license information in certain DCs) included in the referenced DC. Additionally, a COL applicant must address requirements and restrictions (e.g., interface requirements and site parameters) included in the referenced DC.

Operational Programs. For a COL application, the staff reviews the Emergency Planning program description and the proposed implementation milestones. The staff also reviews final safety analysis report (FSAR) Table 13.x to ensure that the Emergency Planning program and associated milestones are included.

Review Interfaces

Other SRP sections interface with this section as follows:

1. Review of the site location and pertaining to the natural and manmade features and physical characteristics unique to the site to identify those that could pose a significant impediment to the development of emergency plans, is performed under SRP Section 2.1.1.
2. Review of the exclusion area, including provisions for control of activities in the exclusion area in the event of an emergency, and provisions to control traffic in the exclusion area if the area is traversed by a transportation corridor, is performed under SRP Section 2.1.2.
3. Review of the population distribution and use characteristics of the exclusion area and the accidental releases of liquid effluents in ground and surface waters is performed under SRP Sections 2.1.3 and 2.4.13, respectively.
4. Review of the meteorological instrumentation and information, including atmospheric diffusion estimates, is performed under SRP Sections 2.3.1 through 2.3.5.
5. Review of the provisions for protection of the control room during an emergency is performed under SRP Section 6.4.
6. Review of information systems important to safety, including instrumentation to assess plant conditions during and following an accident and information systems associated with emergency response facilities, is performed under SRP Section 7.5. This review includes meteorological instrumentation and the safety parameter display system (SPDS).
7. Review of those portions of the communications systems that are used in intra-plant and plant-to-offsite communications during accident conditions is performed under SRP Section 9.5.2.
8. Review of post-accident sampling systems is performed under SRP Section 9.3.2.

9. Review of the provisions for accident protection is performed under SRP Sections 12.3 and 12.4.
10. Review of the training programs is performed under SRP Section 13.2.2.
11. For COL reviews of operational programs, the review of the applicant's implementation plan is performed under SRP Section 13.4, "Operational Programs."
12. Review of security-based events and considerations are performed under SRP Section 13.6.
13. Review of human factors related aspects of the emergency response facility features (e.g., SPDS, meteorological instrumentation, communications/information systems, facility arrangement/environment, etc.), to verify that human factors engineering (HFE) principles have been or will be taken into account in their design, is performed under SRP Section 18.0.

II. ACCEPTANCE CRITERIA

Requirements

Acceptance criteria are based on meeting the relevant requirements of the following Commission and FEMA regulations:³

- A. 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47, 10 CFR 100.1, 10 CFR 100.3, 10 CFR 100.20, and 10 CFR 100.21(g), as they relate to emergency planning and preparedness.
- B. 10 CFR Part 50, Appendix E, as it relates to emergency planning and preparedness, and the emergency response data system (ERDS) [or successor system to ERDS].
- C. 10 CFR 52.17 and 10 CFR 52.18, as they relate to emergency planning information submitted in an ESP application. 10 CFR 52.17(b)(3) provides the requirement for ITAAC in an ESP application submitted under 10 CFR 52.17(b)(2).
- D. 10 CFR 52.47 and 10 CFR 52.48, as they relate to emergency planning information submitted in a standard design certification application. 10 CFR 52.47(b)(1), which requires that a DC application contain the proposed inspections, tests, analyses, and acceptance criteria (ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a plant that incorporates the design certification is built and will operate in accordance with the design certification, the provisions of the Atomic Energy Act, and the NRC's regulations.
- E. 10 CFR 52.77, 10 CFR 52.79, 10 CFR 52.80, 10 CFR 52.81, and 10 CFR 52.83, as they relate to emergency planning and preparedness associated with a COL application.

³The applicable emergency planning requirements for applications submitted pursuant to 10 CFR Part 52 are contained in both 10 CFR Part 52 and 10 CFR Part 50, and the specific cross-references are provided in the respective sections.

10 CFR 52.80(a), which requires that a COL application contain the proposed inspections, tests, and analyses, including those applicable to emergency planning, that the licensee shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations.

- F. 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), 10 CFR 50.72(c)(3), and 10 CFR 73.71(a), as they relate to notification of NRC for an emergency class declaration, ERDS notification, and requirements for reporting safeguards events and maintaining an open emergency notification system (ENS) line.⁴
- G. Interim Compensatory Measures (ICMs) B.5.c, B.5.d, and B.5.e of Commission Orders of February 25, 2002, to all operating commercial nuclear power plants, relating to security-based emergency plans and preparedness.⁵
- H. 44 CFR Parts 350, 351, and 352, including applicable FEMA policies, REP-series guidance documents and associated memoranda, as they relate to offsite radiological emergency planning and preparedness.

SRP Acceptance Criteria

Specific SRP acceptance criteria acceptable to meet the relevant requirements of the NRC's regulations identified above are as follows for the review described in this SRP section. The SRP is not a substitute for the NRC's regulations, and compliance with it is not required. However, an applicant is required to identify differences between the design features, analytical techniques, and procedural measures proposed for its facility and the SRP acceptance criteria and evaluate how the proposed alternatives to the SRP acceptance criteria provide acceptable methods of compliance with the NRC regulations.

- 1. All of the standards of 10 CFR 50.47(b), as supported by the guidance in the corresponding planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, (including the March 2002 addenda) must be met before an OL is issued pursuant to 10 CFR 50.57 or a COL is issued pursuant to 10 CFR 52.97. In addition, for the first reactor at a site, Appendix E to 10 CFR Part 50 requires that a full participation exercise be conducted within 2 years before NRC issuance of an operating license for full power (i.e., one authorizing operation above 5 percent of rated power). Because this

⁴NRC Bulletin 2005-02 outlined enhancements to emergency preparedness programs in response to the potential for security events. The Nuclear Energy Institute (NEI) White Paper, entitled "Enhancement to Emergency Preparedness Programs for Hostile Actions," dated November 18, 2005, was endorsed by the staff in RIS 2006-12, which outlines industry actions in support of the implementation of these enhancements.

⁵See also, SECY-06-0098, "Licensee Response to Demand for Information Regarding Mitigation Strategies Required Under Section B.5.b of the Orders Dated February 25, 2002, and Staff Recommendations for Follow-up Action," issued May 2, 2005 (Safeguards document).

exercise would be included in the ITAAC required for a COL, its acceptance criteria would have to be satisfied before fuel loading pursuant to a COL (see Table 14.3.10-1).

2. The onsite and, except as provided in 10 CFR 50.47(d), offsite emergency response plans for nuclear power reactors must meet the standards established in 10 CFR 50.47(b) and applicable requirements of Appendix E to 10 CFR Part 50. Compliance with these regulations is determined by using the guidance in Regulatory Guide (RG) 1.101, Rev. 2, which endorses NUREG-0654/FEMA-REP-1, Rev. 1, and through it NUREG-0396, and NUREG-0696. NUREG-0654/FEMA-REP-1, Rev. 1, establishes an acceptable basis for NRC licensees and State, tribal and local governments to develop radiological emergency plans and procedures, and improve their overall state of emergency preparedness. NUREG-0696 discusses the facilities and systems to be provided by nuclear power plant licensees to aid the licensee's response to emergency situations. Additional guidance is provided in NUREG-0718,⁶ NUREG-0737, Supplement 1 to NUREG-0737, NUREG-0814, and Supplement 3 to NUREG-0654/FEMA-REP-1, Rev. 1.
3. 10 CFR 50.47(b)(4) requires a standard emergency classification and action level scheme. Section IV.C, "Activation of Emergency Organization," of Appendix E identifies the four emergency classes. Section IV.B, "Assessment Actions," of Appendix E to 10 CFR Part 50 also requires emergency action levels. The emergency plan should include the emergency classification level scheme described in Appendix 1 and Supplement 3 to NUREG-0654. The staff anticipates that any new application will use an emergency action level scheme similar to that described in Revision 4 of NEI 99-01, "Methodology for Development of Emergency Action Levels," dated January 2003, which was endorsed in Revision 4 Regulatory Guide (RG) 1.101, "Emergency Planning and Preparedness for Nuclear Power Reactors," dated October 2003. However, Revision 4 of NEI 99-01, "Methodology for Development of Emergency Action Levels," dated January 2003, is not considered to be entirely applicable to advanced light water reactor designs. Even though the majority of Revision 4 of NEI 99-01 may be applicable to any reactor design and should be used, the unique characteristics of the new reactor should be addressed in the development of emergency action levels specific to the new plant and the site. The format of the emergency action level scheme should follow the convention established in Regulatory Information Summary 2003-18, "Use of Nuclear Energy Institute (NEI) 99-01, Methodology for Development of Emergency Action Levels," Revision 4, dated January 2003, and its supplements. Section IV.B, "Assessment Actions," of Appendix E to 10 CFR Part 50 also requires that the initial emergency actions be discussed and agreed on by the State and local governmental authorities. The applicant should provide some form of confirmation of the agreement, such as a letter signed by State and local governmental authorities, in the emergency plan, if the applicant provides emergency action levels different from those for the existing reactor(s) on the site.
4. Appendix 2, "Meteorological Criteria for Emergency Preparedness at Operating Nuclear Power Plants," to NUREG-0654/FEMA-REP-1, Rev. 1, provides guidance related to the

⁶The applicability of NUREG-0718, Rev. 2, "Licensing Requirements for Pending Applications for Construction Permits and Manufacturing Licenses," January 1982, is addressed in 10 CFR 50.34(f).

planning standards codified in 10 CFR 50.47(b)(8) and (9) and the requirements of Section IV.E.2 of Appendix E to 10 CFR Part 50. Proposed revision 1 to Regulatory Guide 1.23, "Meteorological Programs in Support of Nuclear Power Plants," is referenced in Appendix 2 to NUREG-0654 as a source of acceptance criteria for meteorological measurements. Since Appendix 2 was issued, additional guidance related to meteorological systems has been developed. NUREG-0696, "Functional Criteria for Emergency Response Facilities," refers to the guidance in proposed Revision 1 to Regulatory Guide 1.23, Revision 2 to Regulatory Guide 1.97, and Appendix 2 to NUREG-0654/FEMA-REP-1, Rev. 1. Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements," (Generic Letter 82-33) clarifies the guidance in Revision 2 of Regulatory Guide 1.97, "Instrumentation for Light-water-cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," and contains guidance related to the need to provide reliable indication of meteorological variables in the control room, Technical Support Center, and Emergency Operations Facility in the vicinity (up to about 10 miles) of the plant site. Revision 3 of Regulatory Guide 1.97 was issued in May 1983 and Revision 4 was issued in June 2006. Revision 1 to Regulatory Guide 1.23 was issued in March 2007.

5. Supplement 1 to NUREG-0737, "Clarification of TMI Action Plan Requirements," (Generic Letter 82-33) clarifies the guidance in Revision 2 of Regulatory Guide 1.97, "Instrumentation for Light-water-cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," and contains guidance related to upgrading emergency response facilities and meeting the requirements of 10 CFR 50.47(b)(6), (8), (9) and Section IV.E of 10 CFR Part 50.
6. Appendix 3, "Means for Providing Prompt Alerting and Notification of Response Organizations and the Population," to NUREG-0654/FEMA-REP-1, Rev. 1, provides guidance related to 10 CFR 50.47(b)(5) and (6).
7. Supplement 3, "Criteria for Protective Action Recommendations for Severe Accidents," to NUREG-0654/FEMA-REP-1, Rev.1, provides guidance for the development of protective action recommendations for the public for severe reactor accidents. The guidance updates and simplifies the decision-making process for protective actions for severe reactor accidents given in Appendix 1 to NUREG-0654/FEMA-REP-1, Rev.1.
8. RG 1.101, Rev. 2, states that the criteria and recommendations in NUREG-654/FEMA-REP-1, Rev. 1, are considered by the NRC staff to be acceptable methods for complying with the standards in 10 CFR 50.47. Except in those cases in which the applicant or licensee proposes acceptable alternative methods for complying with specific portions of the regulations, the methods described in NUREG-0654/FEMA-REP-1, Rev. 1, will be used as a basis for evaluating the adequacy of the emergency plans. If an applicant chooses to propose an alternative practice or method for complying with the regulations, the application should provide an appropriate justification.

9. In addition to NUREG-0654/FEMA-REP-1, Rev. 1, FEMA will evaluate State, tribal, and local government planning and preparedness on the basis of applicable policies and guidance,⁷ including approved alternative approaches and methods. FEMA will base its findings and determinations, relating to the adequacy of offsite radiological emergency planning and preparedness, on these evaluations.
10. 10 CFR 50.33(g), 10 CFR 50.47(c)(2), and Section I of Appendix E to 10 CFR Part 50 require that the size of the EPZ for a nuclear power plant shall be determined in relation to local emergency response needs and capabilities, as they are affected by such conditions as demography, topography, land characteristics, access routes, and jurisdictional boundaries. 10 CFR 52.77 requires that the COL application must contain all of the information required by 10 CFR 50.33. 10 CFR 50.33(g) requires that an applicant for an operating license submit radiological emergency response plans of State and local government entities that are wholly or partially within the 10-mile plume exposure EPZ, as well as the plans of State governments wholly or partially within the 50-mile ingestion pathway EPZ. An applicant should also submit plans for tribal governmental entities affected by the 10-mile EPZ. NUREG-0396 provides additional guidance relating to the definition of the EPZs.
11. Section IV of Appendix E to 10 CFR Part 50, through 10 CFR 52.79(a)(21) and 10 CFR 50.34, requires that an application for an OL or COL provide an analysis of the time required to evacuate various sectors and distances within the plume exposure pathway EPZ; i.e., an ETE. The NRC regulations do not specify a limit for such estimated evacuation times. An ETE can identify physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. An ETE provides an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure EPZ. This information can be used by decision makers in responding to an actual emergency to aid in deciding what protective actions to implement. Appendix 4 to NUREG-0654/FEMA-REP-1, Rev. 1, and Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, provide guidance relating to performing an ETE analysis. NUREG/CR-6863 provides additional information on ETEs.
12. Section VI of Appendix E to 10 CFR Part 50 requires an emergency response data system (ERDS). The ERDS is a direct near real-time electronic data link between a licensee's onsite computer system and the NRC Operations Center, and provides for the automated transmission of a limited data set of selected parameters from a licensee's installed onsite computer system in the event of an emergency. NUREG-1394 provides the minimum standards and acceptable methods that may be used to implement and comply with the ERDS requirements.

⁷In addition to the current REP-series guidance documents and associated memoranda, offsite plans and procedures are reviewed against the requirements and policies incorporated in the REP Program Planning Guidance Document: "Radiological Emergency Preparedness: Planning Guidance" (see 68 FR 9669, February 28, 2003).

13. Insofar as emergency planning and preparedness requirements are concerned, 10 CFR 50.47(d) provides that a license authorizing fuel loading and/or low-power testing and training (up to 5 percent of the rated power) may be issued after a finding is made by the NRC that the state of onsite emergency preparedness provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency. The assessment of the applicant's onsite emergency plan will be based on the pertinent standards in 10 CFR 50.47(b) and the requirements of Appendix E to 10 CFR Part 50. However, the acceptability of an applicant's emergency plans will be reviewed against the standards with offsite aspects presented in 10 CFR 50.47(d)(1)-(7).
14. Where an applicant for an OL or COL asserts that its inability to demonstrate compliance with the offsite emergency planning requirements of 10 CFR 50.47(b) is wholly or substantially the result of the non-participation of State and/or local governments, an operating license may be issued if the applicant demonstrates to the Commission's satisfaction those elements listed in 10 CFR 50.47(c)(1)(i)-(iii). (See 10 CFR 50.47(c)(1) and 10 CFR 52.79(a)(22)(ii).) Supplement 1 to NUREG-0654/FEMA-REP-1, Rev. 1, provides guidance for the development, review, and evaluation of utility offsite radiological emergency response planning and preparedness, for those situations in which State and/or local governments decline to participate in emergency planning.
15. The minimum acceptance criteria for all ESP applications, located in 10 CFR 52.17(b)(1), require that ESP applications identify physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. If such physical characteristics are identified, the applicant must also identify measures that would, when implemented, mitigate or eliminate the significant impediment. Applications providing only the information required by 10 CFR 52.17(b)(1) must also include a description of contacts and arrangements (preferably letters of agreement) made with local, State, and Federal governmental agencies with emergency planning responsibilities, in accordance with 10 CFR 52.17(b)(4). The applicant may choose to submit additional emergency planning information in the ESP application to address the two options in 10 CFR 52.17(b)(2). The two options allow an ESP applicant to propose either major features of the emergency plans, or to provide complete and integrated emergency plans. While neither option is required, each would provide for a more definitive finding concerning emergency plans and preparedness at the ESP stage than would be the case for submittal of only the minimum required information. Complete and integrated emergency plans in an ESP application will be reviewed in accordance with the applicable requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50. Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, provides guidance relating to emergency planning information in an ESP application.
16. For an ESP application, a preliminary analysis of evacuation times is one example of how some significant impediments to the development of emergency plans may be identified. Other factors, such as the availability of adequate shelter facilities, in consideration of local building practices and land use (e.g., outdoor recreation facilities, including camps, beaches, hunting or fishing areas), and the presence of large institutional or other special needs populations (e.g., schools, hospitals, nursing homes, prisons) should also be addressed when identifying significant impediments to the development of emergency plans. Any ETE analysis or other identification of physical impediments should include the latest population census numbers and reflect the most recent local conditions.

Appendix 4 to NUREG-0654/FEMA-REP-1, Rev. 1, and Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, provide guidance relating to performing an ETE analysis. NUREG/CR-6863 provides additional information on ETEs.

17. For applications that require site approval for a stationary power reactor subject to 10 CFR Part 50 or 10 CFR Part 52 (e.g., CP, OL, ESP and COL), 10 CFR 100.1 and 10 CFR 100.21(g) require the identification of physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. This siting requirement is similar to that in 10 CFR 52.17(b)(1) for an ESP application, and the means for identifying significant impediments (e.g., an analysis of evacuation times or ETE) could apply to non-ESP applications. Further, if such physical characteristics are identified, the application must also identify measures that would, when implemented, mitigate or eliminate the significant impediment. Where unfavorable physical characteristics of the site exist, the proposed site may nevertheless be found to be acceptable if the design of the facility includes appropriate and adequate compensating engineering safeguards (see 10 CFR 100.10(d), which applies to applications submitted before January 10, 1997). The application should provide a projection of the population within the 10-mile EPZ throughout the requested duration of the application; including a discussion of the sources of information and methodology that supports the population projection. The application should specifically address whether the projected population creates a significant impediment to the development of emergency plans over the requested duration of the ESP or COL application, including how it would affect the ETE. If a significant impediment is created, then the applicant should identify measures that would, when implemented, mitigate or eliminate the significant impediment. Additional site-related guidance is provided in RG 4.7, and in ESP-related guidance documents (e.g., Supplement 2 to NUREG-654/FEMA-REP-1, Rev. 1).⁸
18. Copies of letters of agreement or other certifications, reflecting contacts and arrangements made with local, State, and Federal agencies with supporting emergency responsibilities, should be included in a CP, OL, ESP or COL application, as required by 10 CFR 52.17(b)(4), 10 CFR 52.79(a)(22), or Section II.B of Appendix E to 10 CFR Part 50.⁹ The agreement information should be up-to-date when the application is submitted, and should reflect use of the proposed site for possible construction of a new reactor (or reactors). In addition, a discussion of the details associated with any ambiguous or incomplete language in the letters of agreement should be provided in the application.

⁸The identification of significant impediments, while common to all site approval decisions (per 10 CFR 100.21(g)), is more fully addressed for an ESP application under 10 CFR 52.17, which also requires that the applicant identify measures to mitigate or eliminate any identified significant impediment (see 10 CFR 52.18). The adequate compensating engineering safeguards language, which is taken from 10 CFR 100.10(d) and applies to applications prior to January 10, 1997, is intended to address this societal risk siting factor for emergency planning, and is included in order to determine the acceptability of the site if significant impediments are identified.

⁹Agreements or other arrangements with tribal agencies and private organizations should also be included in the application.

For an existing reactor site, the letters of agreement or other certifications¹⁰ should clearly address the presence of an additional reactor (or reactors) at the site, and any impact that would have on governmental agency or private organization emergency planning responsibilities, including acknowledgment by the agencies or organization of the proposed expanded responsibilities. If the applicant is unable to make arrangements with local, tribal, State, and Federal governmental agencies with emergency planning responsibilities, for whatever reason, the applicant should discuss its efforts to make such arrangements and describe any compensatory measures the applicant has taken or plans to take because of the lack of such arrangements. Supplement 1 to NUREG-654/FEMA-REP-1, Rev. 1, provides guidance for the development, review, and evaluation of utility offsite radiological emergency response planning and preparedness (i.e., a utility plan), for those situations in which State and/or local governments decline to participate in emergency planning. (See also 10 CFR 50.47(c)(1).)

19. Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, will be used as the primary guidance for the review of emergency preparedness information and plans submitted with an ESP application pursuant to Subpart A of 10 CFR Part 52. For a pre-existing nuclear facility, all major features of the emergency plan (i.e., all 14 planning standards) identified in Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, should be addressed in the ESP application. The detailed, specific evaluation criteria for each of the major features in Supplement 2 should be addressed for both a pre-existing nuclear facility, as well as for applicable major features associated with a site without a pre-existing nuclear facility. If emergency planning information is not provided on all 14 major features (including the detailed, specific evaluation criteria) in Section V of Supplement 2, the ESP application will not be rejected. The review and evaluation will, however, only be based on, and specifically limited to, the submitted information that relates to the guidance in Supplement 2 of NUREG-0654/FEMA-REP-1, Rev. 1.
20. The planning standards and evaluation criteria for preparing and evaluating an ESP application containing complete and integrated emergency plans are provided in NUREG-0654/FEMA-REP-1, Rev. 1. Under this ESP option, the applicant should make a good-faith effort to obtain from the government agencies certifications that (1) the proposed emergency plans are practicable; (2) these agencies are committed to participating in any further development of the plans, including any required field demonstrations; and (3) these agencies are committed to executing their responsibilities under the plans in the event of an emergency. The application must contain any certifications that have been obtained. If these certifications cannot be obtained, the application must contain information, including a utility plan pursuant to 10 CFR 50.47(c)(1), sufficient to show that the proposed plans nonetheless provide reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the site. The utility-prepared emergency plans and preparedness will be reviewed and evaluated using the guidance in Supplement 1 to NUREG-0654/FEMA-REP-1, Rev. 1.

¹⁰Another acceptable method of addressing this issue would be through the use of separate correspondence. Such correspondence might be appropriate, for example, in a case for which an existing letter of agreement is written in a way that is broad enough to cover an expanded site use, and does not need to be revised. The correspondence would identify this fact.

21. 10 CFR 52.17(b)(3) allows an applicant for an ESP, that proposes major features of the emergency plans or complete and integrated emergency plans, to include proposed ITAAC which are necessary and sufficient to provide reasonable assurance that, if the inspections, tests and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the NRC's regulations.
22. 10 CFR 52.47(b)(1) allows an applicant for a design certification to include proposed ITAAC, including those applicable to emergency planning, which are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, a plant that incorporates the design certification is built and will operate in accordance with the design certification, the provisions of the Atomic Energy Act, and the NRC's regulations.
23. 10 CFR 52.80(a) requires that an application for a combined license includes proposed emergency planning ITAAC which are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the facility has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations.
24. Table 14.3.10-1¹¹ provides an acceptable set of generic emergency planning ITAAC that an applicant may use to develop application-specific ITAAC, tailored to the specific reactor design and emergency planning program requirements. A smaller set of ITAAC is acceptable if the application contains information that fully addresses emergency preparedness requirements associated with any of the generic ITAAC in Table 14.3.10-1 that are not used. Table 14.3.10-1 is not all-inclusive, or exclusive of other ITAAC an applicant may propose. Additional plant-specific emergency planning ITAAC (i.e., beyond those listed in Table 14.3.10-1) may be proposed, and they will be examined to determine their acceptability on a case-by-case basis. In general, ITAAC are inappropriate for procedure-level details associated with the emergency plans, in that procedure adequacy and implementation can be evaluated under the exercise ITAAC, and should be limited to those aspects of emergency planning and preparedness that can not reasonably be addressed prior to construction of the plant. Each EP-ITAAC must have an objective acceptance criteria stated.

¹¹See SECY-05-0197, "Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria," October 28, 2005; and SRM SECY-05-0197, February 22, 2006. The generic EP ITAAC in SECY-05-0197 formed the basis for Table 14.3.10-1.

25. For those licensees subject to 10 CFR 50.34(f),¹² 10 CFR 50.34(f)(2)(xxv) requires that an applicant provide a TSC, OSC, and, for a CP application only, a near-site emergency operations facility (EOF) (TMI Item III.A.1.2¹³). NUREG-0696, Appendix B to NUREG-0718, NUREG-0737, and Supplement 1 to NUREG-0737 provide guidance relating to the design and implementation of emergency response facilities (e.g., TSC, OSC, EOF). In addition, 10 CFR 50.47(b)(8) and Subsection IV.E.8 of Appendix E to 10 CFR Part 50 requires that the design should include adequate emergency facilities and equipment to support emergency response. NUREG-0696, NUREG-0737, and Supplement 1 to NUREG-0737 provide guidance relating to occupancy and radiological habitability of vital areas (including the TSC), which aid in the mitigation of or recovery from an accident.
26. For those licensees subject to 10 CFR 50.34(f), 10 CFR 50.34(f)(2)(iv) requires that an applicant seeking an operating license shall provide an SPDS in both the TSC and EOF (TMI Item I.D.2). The SPDS includes the minimum set of plant parameters needed to assess the safety status of the plant in a timely manner, and is capable of indicating when process limits are being approached or exceeded. Supplement 1 to NUREG-0737, NUREG-0696, and NUREG-0814 provide guidance regarding the SPDS. (The SPDS is reviewed under SRP Sections 7.5 and 18.2.)
27. For those licensees subject to 10 CFR 50.34(f), 10 CFR 50.34(f)(2)(viii) requires that an applicant provide a capability to promptly obtain and analyze samples from the reactor coolant system and containment that may contain accident source term radioactive materials, while ensuring that no individual receives radiation exposure in excess of 0.05 Sv (5 rem) to the whole body or 0.5 Sv (50 rem) to the extremities (TMI Item II.B.3). In addition, 10 CFR 50.47(b)(9) requires adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition. To address this regulation, the NRC has concluded that source term information should be obtained and analyzed, to continuously assess and refine dose assessments and confirm or modify initial protective action recommendations. Finally, 10 CFR 50.47(b)(11) requires the establishment of the means for controlling radiological exposure to emergency workers. Post-accident sampling systems are discussed in the October 31, 2000, Model Safety Evaluation, as it relates to the development of contingency plans for sampling and analysis of highly radioactive samples from the reactor coolant system, containment sump, and containment atmosphere.
28. For those licensees subject to 10 CFR 50.34(f), 10 CFR 50.34(f)(2)(xvii) requires instrumentation to measure, record and readout of various containment parameters, including noble gas effluents at all potential, accident release points. In addition, an

¹²NUREG-0933, "A Prioritization of Generic Safety Issues," August 2004, presents priority rankings for generic safety issues, and is periodically updated. 10 CFR 50.34(f) identifies the pending applications that are subject to additional Three Mile Island (TMI)-related requirements.

¹³Alphanumeric designations correspond to the related action plan items in NUREG-0718 and NUREG-0660, relating to the TMI accident in 1979 (see 10 CFR 50.34(f)(a)(1), footnote 10).

applicant must provide for continuous sampling of radioactive iodines and particulates in gaseous effluents from all potential accident release points, and for onsite capability to analyze and measure these samples (TMI Item II.F.1). RG 1.97 provides guidance relating to instrumentation to assess plant and environmental conditions during and following an accident.

29. 10 CFR 50.72(a)(3) and (c)(3) require the notification of the NRC Operations Center following the declaration of an emergency in accordance with the licensee's approved emergency plans, and the establishment of an open and continuous communications channel when requested by the NRC. 10 CFR 50.72(a)(4) establishes requirements for the activation of the ERDS following the licensee's declaration of an alert, site area emergency, or general emergency. NUREG-1022 provides the minimum standards and acceptance methods that may be used to comply with these NRC reporting requirements. 10 CFR 73.71(a) requires the notification of the NRC Operations Center, after the discovery of an imminent or actual safeguards threat against the facility or other safeguards events. Regulatory Guide 5.62 provides the minimum standards and acceptance methods that may be used to comply with these NRC reporting requirements.
30. The emergency planning and preparedness standards and requirements in 10 CFR Part 50, 10 CFR Part 52, and 10 CFR Part 100 are supplemented by various generic communications and Commission Orders.¹⁴ Those generic communications that relate to emergency planning and are currently in effect are identified in Subsection VI (below). They provide additional guidance and criteria for meeting the relevant emergency planning standards and requirements. Any subsequently issued generic communications or Commission Orders that pertain to emergency planning and preparedness and are relevant to the application should also be addressed by the applicant.
31. Operational Programs. For COL reviews, the description of the operational program and proposed implementation milestone(s) for the Emergency Planning program are reviewed in accordance with 10 CFR 50.47, Part 50 Appendix E. The implementation milestones are as follows: full participation exercise conducted within 2 years of scheduled date for initial loading of fuel per 10 CFR 50, Appendix E.IV.F.2a(ii); onsite exercise conducted within 1 year before the schedule date for initial loading of fuel per 10 CFR Part 50, Appendix E.IV.F.2a(ii); and applicant's detailed implementing procedures for its emergency plan submitted no less than within 180 days prior to scheduled date for initial loading of fuel per 10 CFR Part 50, Appendix E.V.

Technical Rationale

The technical rationale for application of the above acceptance criteria to the review of emergency planning and preparedness is discussed in the following paragraphs.

¹⁴See also 10 CFR 52.79(a)(37), which requires that a COL application contain information which demonstrates how operating experience insights.

1. On May 21, 1970, the Atomic Energy Commission published in the Federal Register (35 FR 7818) proposed emergency planning amendments to 10 CFR Part 50, which would amend 10 CFR 50.34 and add a new Appendix E to 10 CFR Part 50. The proposed amendments, which were adopted, required the submission of certain information pertaining to licensee's emergency plans to the Commission for facility CPs and OLs. On December 19, 1979, following the TMI-2 accident, the NRC upgraded its emergency planning regulations in order to assure that adequate protective measures can and will be taken in the event of a radiological emergency. The final regulations, effective November 3, 1980, served to clarify and upgrade the requirements in 10 CFR Part 50 and Appendix E thereto.¹⁵
2. The Commission's final rules are based on the significance of adequate emergency planning and preparedness, in order to ensure adequate protection of the public health and safety. Onsite and offsite emergency preparedness, as well as proper siting and engineered design features, are needed to protect the health and safety of the public. The protection provided by siting and engineered design features is bolstered by the ability to take protective measures during the course of an incident. In order to discharge effectively its statutory responsibilities, the Commission must know that proper means and procedures will be in place to assess the course of an incident and its potential severity, that NRC and other appropriate authorities and the public will be notified promptly, and that adequate protective actions in response to actual or anticipated conditions can and will be taken.
3. 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47, Appendix E to 10 CFR Part 50, 10 CFR 52.77, 10 CFR 52.79, 10 CFR 52.80, 10 CFR 52.81, and 10 CFR 100.21(g) establish the requirements to be met in emergency planning and preparedness at various stages of the licensing process. The issuance of a CP, OL, or COL for a nuclear power plant, is based in part on findings made by the NRC that adequate protection can and will be taken in the event of a radiological incident. Many of the emergency planning and preparedness requirements are a direct result of lessons learned from the TMI-2 accident. Proper emergency response actions are critical to mitigating the potential adverse impact that a reactor incident may have on the local population and/or the environment.
4. Various requirements in 10 CFR Part 52 supplement the basic emergency planning requirements in 10 CFR 50.47 and Appendix E to 10 CFR Part 50. The applicable emergency planning requirements for an application under 10 CFR Part 52 will be determined by the specific application. 10 CFR Part 52 governs the issuance of an ESP, certified standard design, and COL for nuclear power facilities. Compliance with the requirements in 10 CFR Part 52, as it relates to emergency planning and preparedness, requires that various aspects of emergency planning and preparedness be addressed in

¹⁵See 10 CFR Parts 50 and 70, Emergency Planning, Statements of Consideration, 45 FR 55402, August 19, 1980. The final rules were determined to be consistent with the NRC Authorization Act for fiscal year 1980, Pub. L. No. 96-295.

an application prior to construction of a nuclear power facility. These requirements are imposed to ensure that site-specific, design related, or comprehensive emergency plans and preparedness are addressed, consistent with the timing aspect and desired level of detail in the specific application.

5. Subpart A of 10 CFR Part 52 sets out the requirements applicable to issuance of ESPs for approval of a site or sites for one or more nuclear power facilities, separate from the filing of an application for a CP or COL. 10 CFR 52.17 and 10 CFR 52.18 identify required and optional site-specific emergency planning elements. The requirements vary, depending upon whether the application (1) only identifies significant impediments to developing emergency plans, and describes offsite contacts and arrangements; (2) also proposes major features of emergency plans; or (3) proposes complete and integrated emergency plans. For major features of an emergency plan or complete and integrated emergency plans, 10 CFR 52.17(b)(3) addresses the requirements for ITAAC. The applicability of these requirements to an ESP application will depend on the chosen ESP application option, and extent of emergency planning information in the application.
6. Subpart B of 10 CFR Part 52 sets out the requirements applicable to issuance of rules granting standard design certification for a nuclear power facility, separate from the filing of an application for a CP, OL, or COL. A standard design is one which is sufficiently detailed and complete, and which is usable for a multiple number of units or at a multiple number of sites. 10 CFR 52.47 and 10 CFR 52.48 require, in part, that the application contains the technical information required of CP and OL applicants by 10 CFR Part 50 and its appendices, and which is technically relevant to the design proposed for the facility and not site-specific. This includes the relevant emergency planning elements in 10 CFR 50.47 and Appendix E to 10 CFR Part 50. In addition, 10 CFR 52.47(b)(1) addresses the requirement for proposed ITAAC, including design related emergency planning ITAAC.
7. Subpart C of 10 CFR Part 52 sets out the requirements applicable to issuance of COLs for nuclear power facilities. 10 CFR 52.77, 10 CFR 52.79, 10 CFR 52.81, 10 CFR 52.83, and 10 CFR 52.97 identify emergency planning elements that are required for a COL application. 10 CFR 52.80(a) addresses the requirement for emergency planning ITAAC related to COL applications. Unless otherwise specifically provided for in this subpart, all provisions of 10 CFR Part 50 and its appendices applicable to holders of a CP or OL also apply to holders of a COL. This includes the relevant emergency planning requirements in 10 CFR 50.47 and Appendix E to 10 CFR Part 50.
8. Security-related requirements to be met in emergency planning and preparedness are provided in 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), 10 CFR 50.72(c)(3), and 10 CFR 73.71(a). In addition, the Commission Orders of February 25, 2002, ensure that the emergency plan has considered the adequacy of site emergency evacuation strategies, onsite staffing, facilities, procedures, and EALs for security events, in order to accomplish necessary response actions.

9. 44 CFR Parts 350, 351, and 352, including applicable FEMA policies, REP-series guidance documents and associated memoranda, establish policy and procedures for review and evaluation of the adequacy of offsite radiological emergency plans and procedures by FEMA. In addition, they set out Federal agency roles and assign tasks regarding Federal assistance to State, tribal, and local governments in their radiological emergency planning and preparedness activities.

Meeting these requirements provides reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency.

III. REVIEW PROCEDURES

The reviewer will select material from the procedures described below, as may be appropriate for a particular case.

These review procedures are based on the identified SRP acceptance criteria. For deviations from these acceptance criteria, the staff should review the applicant's evaluation of how the proposed alternatives provide an acceptable method of complying with the relevant NRC requirements identified in Subsection II.

General Review Procedures¹⁶

1. Following the acceptance of each safety analysis report (SAR), the application review is conducted on a schedule that is established by Office of Nuclear Reactor Regulation (NRR) for each SAR. The reviewer should examine the overall review schedule and identify the key milestones that are related to the review of emergency planning information in the application. The reviewer should determine the specific milestones and/or deliverables that apply to the review of onsite information, and to the review of offsite information. The reviewer should become familiar with and follow the record-keeping requirements, as directed by the project manager, including entering relevant documents or records into ADAMS under the appropriate application docket number.
2. The emergency plan should be a physically separate document identified as Section 13.3 of the SAR, and may incorporate into the application by reference various State and local emergency plans and other relevant materials. The reviewer should confirm that the application includes a copy of all referenced plans and procedures or other materials, which serve to establish compliance with the applicable emergency planning standards and requirements. The application should include a table of contents and a cross-reference to applicable regulatory requirements, criteria contained in guidance documents, generic communications, Commission Orders, and other criteria that are addressed. For multi-unit sites, the reviewer should also carefully distinguish whether the emergency plans are applicable only to one unit, or to subsequent units as well as any existing units at the site.

¹⁶Some of the general review procedures in this section may have been performed as part of the application acceptance review; others that are site-related may not apply to standard design certification applications.

3. The extent of the review will depend upon the specific application (i.e., whether the application is for a CP, OL, ESP, standard design certification, or COL). In addition to the general review areas common to most applications, various application-specific review procedures are provided below. If applicable, the reviewer should examine relevant sections of the SAR, particularly sections found in Chapters 1, 2, 6, 7, 9, 11, and 15. The reviewer should examine Chapter 1, or other relevant chapters, to identify the industry standards and regulatory guidance the applicant has committed to that are related to emergency planning and preparedness. The reviewer should also gain familiarity with proposed radiation protection activities and other operational matters that interface with emergency plans; particularly, as described in the SAR in sections of Chapters 12 and 13.
4. Although the bulk of the emergency planning information should be found in Section 13.3 of the SAR (or referenced therein), the reviewer should gain familiarity with the site, including the emergency planning zones, demography, land use, plant design and layout, and major accidents and/or incidents postulated by the applicant. The reviewer may supplement this information by a personal visit to the site and meetings with the applicant. If the applicant is a licensee for a previously licensed plant, the reviewer should review recent NRC emergency planning and health physics inspection reports, and discuss any identified concerns with appropriate regional inspectors.
5. The reviewer should confirm that the application addresses physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans, as required by 10 CFR 100.1, 10 CFR 100.3, 10 CFR 100.20, and 10 CFR 100.21(g). If such physical characteristics are identified, the reviewer should determine whether the application identifies measures that would, when implemented, mitigate or eliminate the significant impediment.
6. In consultation with the assigned reviewer for SRP Section 2.1, the reviewer should determine whether the area surrounding the reactor and exclusion zone comply with the definition of "exclusion area" and "low population zone" in 10 CFR 100.3. While the exclusion area and low population zone are reviewed in SRP Section 2.1, the relationship of the population and characteristics within these areas to emergency planning should also be examined. Specifically, the reviewer should confirm that the following are adequately addressed as part of the review under SRP Section 2.1:
 - a. The applicant has the authority to determine all activities, including exclusion or removal of personnel and property, from the exclusion area;
 - b. The applicant has made appropriate and effective arrangements to control traffic on the highways, railroads, or waterways within the exclusion area in case of emergency;
 - c. Residents within the exclusion area are subject to ready removal in case of necessity; and
 - d. The total number and density of residents within the low population zone is such that there is a reasonable probability that appropriate protective measures could be taken in their behalf in the event of a serious incident.

7. The reviewer should determine whether the application provides a projection of the population within the 10-mile EPZ throughout the requested duration of the application; including a discussion of the sources of information and methodology that supports the population projection. The application should specifically address whether the projected population creates a significant impediment to the development of emergency plans over the requested duration of the ESP or COL application, including the effect on the ETE. If a significant impediment is created, then the review should determine whether the identified measures to mitigate or eliminate the significant impediment, are reasonable. Identified measures to mitigate or eliminate possible significant impediments should be reflected as either permit conditions or COL action items.
8. The reviewer should determine whether the applicant is subject to 10 CFR 50.34(f), and if so, whether the application complies with the technically relevant portions of the TMI requirements set forth in 10 CFR 50.34(f)(2)(iv), (viii), (xvii), and (xxv), as they pertain to emergency preparedness and response. These requirements may be met by satisfying the requirements in 10 CFR 50.47(b) and Appendix E to 10 CFR Part 50.
9. In general, if an application is for an additional reactor at an operating reactor site, and the application proposes to incorporate and extend elements of the existing emergency planning program to the new reactor (included by reference), those existing elements should be considered acceptable and adequate. The reviewer should generally focus the review on the extension of the existing program to the new reactor, and should determine whether the incorporated emergency planning program information from the existing reactor site (1) is applicable to the proposed reactor, (2) is up-to-date when the application is submitted, and (3) reflects use of the site for construction of a new reactor (or reactors) and appropriately incorporates the new reactor(s) into the existing plan. This includes examining how the existing elements have been incorporated into the application, determining the acceptability of expanding the existing program to include one or more additional reactors, and determining the acceptability of the applicant's identification of any impact on the adequacy of the existing emergency preparedness program. The reviewer should confirm that the applicant has appropriately identified whether any updates are required to existing emergency facilities and equipment, including the Alert and Notification System (ANS), in order to accommodate extension to the proposed new reactor. If appropriate, the reviewer should determine whether the applicant has addressed the exercise requirements for co-located licensees, in accordance with Section IV.F.2.c of Appendix E to 10 CFR Part 50, and the conduct of emergency preparedness activities and interactions discussed in Regulatory Guide 1.101, Rev. 5. When appropriate, the reviewer should also evaluate any proposed changes that the licensee submits that involve a decrease in effectiveness of the existing emergency preparedness program.
10. The reviewer should determine whether the application includes copies of the applicable letters of agreement or other certifications, required by 10 CFR 52.17, 10 CFR 52.79, or Appendix E to 10 CFR Part 50. The reviewer should confirm that the agreement information is up-to-date when the application is submitted, and reflects use of the proposed site for possible construction of a new reactor (or reactors). The applicant should clarify any ambiguous or incomplete language in the letters of agreement or

certifications. For an existing reactor site, the description of contacts and arrangements¹⁷ should clearly address the presence of an additional reactor (or reactors) at the site, and any impact that would have on governmental agency or private organization emergency planning responsibilities, including acknowledgment by the agencies or organizations of the proposed expanded responsibilities. If the applicant is unable to make arrangements with local, tribal, State, or Federal governmental agencies with emergency planning responsibilities, for whatever reason, the applicant should discuss its efforts to make such arrangements and describe any compensatory measures the applicant has taken or plans to take because of the lack of such arrangements.

11. The review consists of an evaluation of the emergency planning and preparedness information submitted by the applicant, using the foregoing acceptance criteria. The reviewer must determine whether the applicable acceptance criteria identified in Subsection II (above) have been satisfactorily met. The reviewer should identify any deficiencies, and use them to form the basis for requests for additional information (RAIs), discussed below. The reviewer should discuss proposed RAIs or position statements with the appropriate project manager and technical manager. Such further review may result in a determination that (a) the acceptance criterion in question does not apply; (b) the applicant has proposed an acceptable alternative; (c) the proposed alternative is unacceptable; or (d) no acceptable alternative has been proposed or identified. For deviations from the specific acceptance criteria, the reviewer should review the applicant's evaluation of how the proposed alternative to the SRP criteria provides an acceptable method of complying with the relevant rules or regulations of the Commission, or portions thereof, that underlie the corresponding SRP acceptance criteria. The reviewer should make an explicit finding in the appropriate sections of the SER of how the proposed alternative meets the applicable regulations. If any deficiencies remain in category (c) at the conclusion of the review, the reviewer should follow established NRC processes to attempt to resolve them.
12. Requests for additional information (RAIs) serve the purpose of enabling the staff to obtain all relevant information needed to make a decision on a licensing action request that is fully informed, technically correct, and legally defensible. RAIs are necessary when the information was not included in the initial submittal or is not contained in any other docketed correspondence. RAIs should be directly related to the applicable requirements related to the application, and consistent with the applicable codes, standards, regulatory guides, and/or the applicable Standard Review Plan (SRP) sections. RAIs should not be used as general information requests or as a means to encourage commitments from licensees. (See Section 4.3 of LIC-101, Rev. 3, "License Amendment Review Procedures.")

¹⁷Another acceptable method of addressing this issue would be through the use of separate correspondence. Such correspondence might be appropriate, for example, in a case for which an existing letter of agreement is written in a way that is broad enough to cover an expanded site use, and does not need to be revised. The correspondence would identify this fact.

13. The detailed application of the acceptance criteria will in many instances require the exercise of judgement on the part of the reviewer. The reasonableness and adequacy of the factors involved should be viewed in the light of general emergency planning and response experience, bearing in mind that the broad objective of radiological emergency plans is to provide for dose savings in order to protect the public by mitigating the potential health consequences of radiation exposure. Ideally, such plans would ensure neither an over reaction nor an under reaction to unexpected events. The content of the application and emergency plans should be based upon the broad objective of providing reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency to protect individuals onsite and offsite and the environment.
14. Formal consultation with FEMA is necessary, with respect to the relevant State, tribal, and local government emergency response capabilities.¹⁸ In accordance with the general principles established in the 1993 MOU between the NRC and the FEMA relating to radiological emergency planning and preparedness, FEMA takes the lead for assessing offsite radiological emergency response plans and preparedness, makes findings and determinations as to the adequacy and capability of implementing offsite plans, and communicates those findings and determinations to the NRC. NRC reviews the FEMA findings in conjunction with the NRC onsite findings, in order to determine the overall state of emergency preparedness, in support of a radiological health and safety decision associated with issuance of a license or permit. Through the NRC/DHS(FEMA) Steering Committee, the reviewer should formally request FEMA to review offsite plans and supporting procedures, and provide findings and determinations of this review to the NRC on a schedule agreed upon between the two agencies. The FEMA review should be performed pursuant to 44 CFR Part 350, "Review and Approval of State and Local Radiological Emergency Plans and Preparedness," and in accordance with the NRC/FEMA MOU. At the conclusion of the review, the NRC reviewer should prepare findings on the acceptability of the applicant's proposed plans for coping with emergencies, for input to the SER.
15. The reviewer should examine the generic communications identified in Subsection VI (below) to determine which ones are relevant to the specific application that is being reviewed, consistent with the applicable requirements in 10 CFR Part 50, 10 CFR Part 52, 10 CFR Part 73, and 10 CFR Part 100. In addition, the reviewer should identify any subsequently issued Generic Letters and Commission Orders that pertain to emergency planning and preparedness and are applicable to the application. The reviewer should review the application against all relevant Generic Letters and Commission Orders, and confirm that the applicable requirements have been adequately addressed in the application.

¹⁸An application for a certified standard design under Subpart B of 10 CFR Part 52 deals solely with plant features and does not address offsite emergency plans. As such, FEMA review and consultation is not involved.

16. The reviewer should verify that the application addresses the NRC reporting requirements in 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), and 10 CFR 50.72(c)(3).

Security-Based Considerations¹⁹

17. The reviewer should verify that the required NRC reporting requirements associated with discovery of an actual or imminent safeguards threat against the facility, or other safeguards event, are reflected in the site emergency plan and/or procedures.
18. The reviewer should verify that the applicant has determined the potential effect on the plant, onsite staffing and augmentation, and on site evacuation strategies from damage to nearby hazardous facilities, dams, and other nearby sites, with consideration of a security event, and has reflected this, as appropriate, in the plans and preparedness measures.
19. If available, the reviewer should verify that onsite staffing, facilities, and procedures are adequate to accomplish actions necessary in response to a security event, and the emergency plan and/or procedures reflect the specific site needs.
20. The reviewer should verify that the application contains EALs to ensure that a site-specific, security event results in an emergency classification declaration of at least a notification of unusual event. The classification scheme should also reflect the strategy for escalation to a higher-level event classification.
21. The reviewer should verify that the relevant requirements in 10 CFR 50.72(a)(3), 10 CFR 50.72(a)(4), 10 CFR 50.72(c)(3), and 10 CFR 73.71(a) are adequately addressed.
22. The reviewer should consult ICMs B.5.c, B.5.d, and B.5 e, contained in the February 25, 2002, Commission Orders, and the security-related emergency preparedness enhancements outlined in NRC Bulletin 2005-02 (referenced in RIS 2006-12). Only ICM B.5.c applies to applications for a Construction Permit.
23. The reviewer should review SRP Section 13.6, as it relates to consultation with DHS concerning the potential vulnerabilities of the location of the proposed facility to terrorist attack, as required by Section 657 of the Energy Policy Act of 2005.

Construction Permit

1. For the CP applicant, the reviewer should assess the applicant's plans as they relate to Section II of Appendix E to 10 CFR Part 50, and NUREG-0718, Appendix B, Sections I.D.2 and III.A.1.2 (Section I.D.2 is reviewed only to ensure that SPDS information capabilities are available in the TSC and EOF).
2. The reviewer should request a status report from FEMA on the State, tribal, and local planning and preparedness in support of the application, but should emphasize that

¹⁹Any information submitted to the NRC that is proprietary, sensitive or safeguards information should be marked appropriately.

formal FEMA findings are not required for this review, and FEMA participation in CP hearings is not contemplated.

Operating License

1. At the beginning of the OL application review, the reviewer should examine the CP docket record, including PSAR, staff SER(s), recommendations of the Advisory Committee on Reactor Safeguards (ACRS), and the public hearing record, for information that may bear on the FSAR review of plans for coping with emergencies. For multi-unit sites, the reviewer should also carefully distinguish whether the plans are applicable only to one unit, or to subsequent units as well.
2. The emergency plan should be a physically separate document, as identified in Section 13.3 of the SAR. Copies of applicable State, tribal, and local radiological emergency response plans, procedures and other relevant materials, including supporting letters of agreement or certifications from local and State governmental agencies with emergency planning responsibilities, should be submitted as part of the application. The reviewer should confirm that the plans, procedures, and other materials are current and the latest revisions, as appropriate, and are applicable to the proposed reactor site. If the required agreements or certifications cannot be obtained from State and local organizations, the application must contain information and a utility plan, in accordance with the requirements of 10 CFR 50.47(c)(1).

Early Site Permit

1. The reviewer should examine the relevant requirements in 10 CFR 52.17 and 10 CFR 52.18, including the referenced sections of 10 CFR 50.33, 10 CFR 50.47, and Appendix E to 10 CFR Part 50 for proposed complete and integrated emergency plans, and confirm that the required emergency plan information is included in the application. The NRC and FEMA will use Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, as the primary guidance for the review of radiological emergency preparedness information and plans submitted with an ESP application, pursuant to Subpart A of 10 CFR Part 52.
2. If the applicant chooses to provide only the minimum required information, NRC will review, in consultation with FEMA, the feasibility of emergency planning for the site. The review will examine the anticipated support from various governmental agencies and the adequacy of the information provided in the application, concerning whether there are any physical characteristics unique to the proposed site that could pose a significant impediment to the development of emergency plans. If a significant impediment is identified, the review will also determine whether the applicant has adequately identified measures that would, when implemented, mitigate or eliminate the significant impediment. Additional guidance concerning identifying physical characteristics unique to the propose site, and describing agency contacts and arrangements, is provided in Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1.

3. An ESP application that proposes major features of the emergency plans will be reviewed by NRC, in consultation with FEMA, and evaluated against the selected and modified planning standards and evaluation criteria from Section II of NUREG-0654/FEMA-REP-1, Rev. 1. These planning standards and evaluation criteria for major features of the emergency plans, which are provided in Section V of Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, have been selected to:
 - a. highlight the need for cooperation among the applicant, Federal, State, and local agencies, as addressed in 10 CFR 52.17(b)(4);
 - b. address potential emergency planning issues early in the licensing process, before large commitments of resources are made; and
 - c. reflect that an ESP applicant may not have certain information and resources, or should not be expected to expend resources on various aspects of emergency planning and preparedness that will be required, and may best be addressed at the COL stage.

In addition, the standards and criteria that refer to facilities, systems, and equipment have been modified to address only descriptions, rather than in-place capabilities. The modifications to the emergency planning standards and evaluation criteria in Section V of Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, apply only to an ESP application for major features of the emergency plans.

4. As indicated in 10 CFR 52.17(b)(2)(ii), an ESP application may propose complete and integrated emergency plans for review and approval by NRC, in consultation with FEMA, in accordance with the applicable provisions of 10 CFR 50.47. The review will use the guidance provided in the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, as clarified, interpreted, and modified by FEMA, to determine whether the plans meet the applicable regulatory requirements.
5. The reviewer should examine the specific emergency planning ITAAC in the application, and confirm that they are consistent with the ITAAC contained in Table 14.3.10-1, which provides an acceptable set of generic emergency planning ITAAC. The reviewer should confirm that the proposed ITAAC have been tailored to the specific reactor design and emergency planning program requirements. A smaller set of COL ITAAC is acceptable if the application contains information that fully addresses emergency preparedness requirements associated with any of the generic ITAAC in Table 14.3.10-1 that are not used. Table 14.3.10-1 is not all-inclusive, or exclusive of other ITAAC an applicant may propose. If the applicant proposes additional plant-specific emergency planning ITAAC (i.e., beyond those listed in Table 14.3.10-1), the reviewer should examine them and determine their acceptability on a case-by-case basis.

Standard Design Certification

1. The reviewer should examine the requirements in 10 CFR 52.47 and 10 CFR 52.48, relating to the application contents and standards for review, respectively. Emergency planning basically consists of facilities, equipment, personnel and training. The majority of emergency planning requirements are programmatic in nature and supplement

physical facilities and equipment. The reviewer should confirm that any emergency planning features addressed in the application are technically relevant to the design (i.e., facilities and equipment) proposed for the facility and not site-specific (i.e., programmatic in nature), and are usable for a multiple number of units or at a multiple number of sites. In general, programmatic aspects of emergency planning and preparedness are the responsibility of a COL applicant that references the certified standard design. The application may, but is not required to, identify such programmatic responsibilities as COL action or information items. Although the COL applicant will address most aspects of emergency planning, the standard design may consider design features, facilities, functions, and equipment necessary to support emergency preparedness and response.

2. If applicable, the reviewer should confirm that the application identifies the technically relevant portions of the requirements in 10 CFR 50.34(f)(1) through 10 CFR 50.34(f)(3), and determine whether the application demonstrates compliance with them (see 10 CFR 52.47(a)(17)).
3. The reviewer should examine the relevant sections of the SAR that address facilities, equipment, and systems that support the emergency preparedness and response capabilities of the proposed reactor design. The application may, but is not required to, address facilities that support emergency response. These facilities include, but are not limited to, the TSC, OSC, and decontamination facilities. The reviewer should determine whether the proposed facilities satisfactorily meet the relevant acceptance criteria, which address location, size, and habitability during an emergency.
4. The reviewer should determine whether the proposed equipment and system designs that support the facilities satisfactorily meet the relevant acceptance criteria. For example, the reviewer should examine, at a minimum, the proposed ventilation system that ensures the habitability of the TSC. To the extent that the TSC shares a common ventilation system with the control room or other area of the plant, the reviewer should also examine that aspect of the design to determine any impact on TSC habitability. In addition, if addressed in the application, and to the extent that it is related to the non-site-specific design, the reviewer should also examine the ERDS, SPDS, voice and data communications capabilities, and radiological protection, monitoring and decontamination equipment. The application may, but is not required to, address these additional equipment and system descriptions. Further, the application may, but is not required to, identify these additional descriptions as COL action or information items.
5. The reviewer should examine the proposed ITAAC, and should determine whether the ITAAC are necessary and sufficient to provide reasonable assurance that, if the tests, inspections and analyses are performed and the acceptance criteria met, a plant which references the design will be built, and will operate, in accordance with the design certification.
6. The procedures above should be followed, as modified by the procedures in SRP Section 14.3, to verify that the design set forth in the standard SAR (including ITAAC), site interface requirements and COL action or information items, meet the acceptance criteria given in Subsection II. SRP Section 14.3 contains procedures for the review of certified design material for the standard design, including the site parameters, interface criteria, and ITAAC.

Combined License

1. The reviewer should examine the relevant requirements in 10 CFR 52.77, 10 CFR 52.79 and 10 CFR 52.80, including the referenced sections of 10 CFR 50.33, 10 CFR 50.47, and Appendix E to 10 CFR Part 50, and confirm that the required emergency plan information is included in the application. The relevant requirements of 10 CFR 50.34 should also be examined. 10 CFR 52.81 indicates the standards for review of a COL application.
2. The emergency plans, including associated implementing procedures (if appropriate), should be a physically separate document, as identified in Section 13.3 of the SAR. Copies of applicable State, tribal, and local radiological emergency response plans, and procedures, if appropriate, including supporting letters of agreement or certifications from local, tribal, and State governmental agencies with emergency planning responsibilities, should be submitted as part of the application. The reviewer should confirm that the plans, procedures, and other materials are current and the latest revisions, as appropriate, and are applicable to the proposed reactor site. If the required agreements or certifications cannot be obtained from State, tribal, and local organizations, the application must contain information and a utility plan, in accordance with the requirements of 10 CFR 52.79(a)(22)(ii) and 10 CFR 50.47(c)(1).
3. The reviewer should determine whether the application has incorporated by reference an ESP that has been issued for the proposed COL site or a certified standard design, pursuant to 10 CFR 52.73. If so, the application need not contain information submitted in connection with the ESP or certified design, but must contain emergency planning information required of applicants for an OL, when combined with that approved in the ESP and/or certified design. The emergency planning information approved in connection with the issuance of the ESP or certified design should not be re-examined for adequacy, but should be reviewed to determine that it is still valid, e.g., the ESP has not expired; and it has been incorporated into the application to form a complete and integrated plan.
4. For a referenced ESP or certified design, the reviewer should confirm that the SAR addresses any conditions or requirements in the referenced ESP or certified design that relate to emergency planning, such as COL action or information items, permit conditions, or ITAAC. For a referenced ESP, the reviewer should determine whether the application includes any new or additional information that updates or corrects the information that was provided under 10 CFR 52.17(b), and if so, whether the applicant discusses whether the new or additional information materially changes the bases for compliance with the applicable requirements, as required by 10 CFR 52.79(b)(4). If the proposed facility emergency plans incorporate existing emergency plans or major features of emergency plans, the reviewer should confirm that the application identifies changes to the emergency plans or major features of emergency plans that have been incorporated into the proposed facility emergency plans, and that constitute a decrease in effectiveness under 10 CFR 50.54(q). 10 CFR 52.79(b)(5) provides that if complete and integrated emergency plans are approved as part of the ESP, new certifications meeting the requirements of 10 CFR 52.79(a)(22) are not required. The reviewer should determine if the applicant has provided updates to the certifications to incorporate new and significant information, if required.

5. The reviewer should confirm that the application identifies the technically relevant portions of the requirements in 10 CFR 50.34(f)(1) through 10 CFR 50.34(f)(3), and determine whether the application demonstrates compliance with them (see 10 CFR 50.34(f)).
6. The reviewer should identify the EAL scheme proposed in the application, and determine whether it is consistent with methods that have been found acceptable by the NRC staff for complying with NRC regulations; i.e., Appendix 1 to NUREG-0654/FEMA-REP-1, Rev. 1, NUMARC/NESP-007, or NEI 99-01 (as endorsed by the applicable revision of RG 1.101). If the applicant proposes an EAL scheme that differs from those acceptable for the existing light water reactors, the reviewer should examine the technical basis for the EALs and determine whether the alternative scheme is acceptable.
7. The reviewer should confirm that the emergency planning ITAAC contained in a referenced standard design certification apply to those portions of the facility design that are approved in the design certification, as required by 10 CFR 52.80(a)(2). Further, pursuant to 10 CFR 52.80(a)(3), if the application references an ESP with ITAAC or a standard design certification, or both, the application may include a notification that a required inspection, test, or analysis in the ITAAC has been successfully completed, and that the corresponding acceptance criterion has been met. The Federal Register notification required by 10 CFR 52.85 must indicate that the application includes this notification.
8. 10 CFR 52.80(a) requires that an application must include the proposed ITAAC, including those applicable to emergency planning. The reviewer should examine the specific emergency planning ITAAC in the application, and confirm that they are consistent with the ITAAC contained in Table 14.3.10-1, which provides an acceptable set of generic emergency planning ITAAC. The reviewer should confirm that the proposed ITAAC have been tailored to the specific reactor design and emergency planning program requirements. A smaller set of COL ITAAC is acceptable if the application contains information that fully addresses emergency preparedness requirements associated with any of the generic ITAAC in Table 14.3.10-1 that are not used. Table 14.3.10-1 is not all-inclusive, or exclusive of other ITAAC an applicant may propose. If the applicant proposes additional plant-specific emergency planning ITAAC (i.e., beyond those listed in Table 14.3.10-1), the reviewer should examine them and determine their acceptability on a case-by-case basis.

Operational Programs. The reviewer verifies that the Emergency Preparedness Program is fully described and that implementation milestones have been identified. The reviewer verifies that the program and implementation milestones are included in FSAR Table 13.x.

Implementation of this program will be inspected in accordance with NRC Inspection Manual Chapter IMC-2504, "Construction Inspection Program - Non-ITAAC Inspections."

IV. EVALUATION FINDINGS

The SERs and evaluation findings for each of the application types should address how the emergency plans meet the applicable licensing requirements. The reviewer verifies that the applicant has provided sufficient information and that the evaluation supports findings and conclusions of the types indicated below. The SER provides the detailed bases for the findings and conclusions, which are summarized in the evaluation finding. The evaluation finding may also be included in the permit or license that the Commission issues.

1. Construction Permit

The SER at the CP stage should indicate the specific bases for the findings and conclusions, including how the plans meet Section II of Appendix E to 10 CFR Part 50, 10 CFR 50.34,²⁰ and 10 CFR 100.21(g). In addition, the SER should include the results of the interim findings and/or status report submitted by FEMA. The desired evaluation findings at the CP stage should be substantially equivalent to the following:

The staff reviewed the applicant's onsite preliminary plans for coping with emergencies, required by 10 CFR 50.34(a)(10), and FEMA's interim finding and/or status report on currently available offsite plans and procedures. The staff concludes that the preliminary plans are acceptable and meet the requirements of Section II of Appendix E to 10 CFR Part 50, 10 CFR 50.34, and 10 CFR 100.21(g). In addition, the staff concludes that the PSAR contains sufficient information to ensure the compatibility of proposed emergency plans for both onsite areas and the EPZs, with facility design features, site layout, and site location with respect to such considerations as access routes, surrounding population distributions, land use, and local jurisdictional boundaries for the EPZs, by which the standards of 10 CFR 50.47(b) will be met.

The staff reviewed the emergency plans and preparedness against the Commission Orders of February 25, 2002, relating to security-based events and considerations, and concludes that they adequately address Interim Compensatory Measures (ICMs) B.5.c, B.5.d, and B.5.e, to the extent necessary at the CP stage.

The permit holder has committed to meet the following permit conditions, consistent with the dates indicated, for the emergency preparedness program:

[List the permit conditions.]

²⁰10 CFR 50.34(f), "Additional TMI-related requirements," only applies to those applicants for a light-water-reactor construction permit whose application was pending as of February 16, 1982. 10 CFR 50.34(f)(2)(iv), if applicable, only applies to a review to assure that safety parameter display system (SPDS) information capabilities are available in the Technical Support Center (TSC) and Emergency Operations Facility (EOF). The bases for compliance with the additional TMI-related requirements should also be included in the SER.

2. Operating License

The SER at the OL stage should summarize the specific bases for the findings and conclusions, including how the plans meet each of the standards of 10 CFR 50.47(b), 10 CFR 50.34²⁰, and Appendix E to 10 CFR Part 50. The findings should generally adhere to the format of Part II of NUREG-0654/FEMA-REP-1, Rev. 1. In addition, the SER should include a summary of the results of the offsite findings and determinations submitted by FEMA, which may be combined with the NRC's onsite findings under the respective planning standard discussion. The desired evaluation finding at the OL stage should be substantially equivalent to the following:

The staff has reviewed the radiological emergency response plans provided in the [applicant's name] operating license (OL) application for the [plant name]. The staff reviewed the onsite plan against the requirements of 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47, 10 CFR 50.72, Appendix E to 10 CFR Part 50, 10 CFR 73.71, and 10 CFR 100.21, using the applicable guidance criteria, the results of onsite inspections of the emergency preparedness program, and an evaluation of the performance of the onsite emergency response organization in implementing the plans during a full or partial participation exercise. The staff concludes that, provided the items identified below as required conditions for the full power license are met, the [plant name] onsite emergency plan provides an adequate planning basis for an acceptable state of onsite emergency preparedness, and there is reasonable assurance that it can be implemented.

The Federal Emergency Management Agency (FEMA) has provided its findings and determinations on the adequacy of offsite emergency planning and preparedness, which are based on its review of State, tribal, and local emergency plans and procedures, offsite inspections, and an evaluation of the performance of the offsite emergency response organizations in implementing the plans and procedures during a full or partial participation exercise. FEMA concludes that the offsite State, tribal, and local emergency plans and procedures are adequate to cope with an incident at the [plant name], and that there is reasonable assurance that they can be implemented. On the basis of the staff review of these FEMA findings and determinations, the staff concludes that, provided the items identified below as required conditions and limitations are met, the [plant name] offsite emergency plans provide an adequate planning basis for an acceptable state of offsite emergency preparedness, and there is reasonable assurance that they can be implemented.

The staff reviewed the emergency plans and preparedness against the Commission Orders of February 25, 2002, relating to security-based events and considerations, and concludes that they adequately address Interim Compensatory Measures (ICMs) B.5.c, B.5.d, and B.5.e.

The staff concludes that the emergency plans describe the overall concept of operation, the essential elements of advanced planning that have been considered, and the provisions that have been made to cope with emergency situations. As such, the staff concludes that the overall state of onsite and offsite emergency preparedness meets the

requirements of 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47,²¹ 10 CFR 50.72, Appendix E to 10 CFR Part 50, 10 CFR 73.71, and 10 CFR 100.21. Further, pursuant to 10 CFR 50.47(a), the staff concludes that, subject to the required conditions of the full-power license, there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the [plant name] site, and that emergency preparedness at [plant name] is adequate to support full-power operations.

The licensee has committed to meet the following license conditions for full-power operation, consistent with the dates indicated, for the emergency preparedness program:

[List the license conditions.]

3. Early Site Permit

The evaluation findings for an ESP will vary, depending upon the ESP application option chosen by the applicant. All ESP applications must address the significant impediments and contacts and arrangements requirements. An applicant may also choose to submit either major features or complete and integrated emergency plans. The desired evaluation findings at the ESP stage for the three ESP options should be substantially equivalent to the following:

a. Significant Impediments/Contacts and Arrangements

The staff has reviewed the physical characteristics unique to the proposed site, and the description of contacts and arrangements made with Federal, State, and local governmental agencies with emergency planning responsibilities, for the [indicate applicant] early site permit (ESP) application for [indicate site names].

The staff concludes, after consultation with the Federal Emergency Management Agency (FEMA), the following:

[Summarize important NRC and FEMA review findings.]

Therefore, on the basis of the review and for the reasons set forth above, the staff finds that there are no significant impediments to the development of emergency plans, and that the emergency planning information meets the requirements of 10 CFR 52.17(b)(1), 10 CFR 52.17(b)(4), 10 CFR 52.18, and 10 CFR 100.21(g).

When referenced by a combined license (COL) applicant pursuant to 10 CFR 52.73, this ESP is subject to the following permit conditions, COL action items, and ITAAC for the emergency preparedness program:

[List the permit conditions, COL action items, and ITAAC.]

b. Major Features of the Emergency Plans

²¹For an applicant subject to non-participation by State and/or local governments in emergency planning under 10 CFR 50.47(c)(1), the evaluation findings should reflect the staff's review of the applicant's emergency plan (i.e., utility plan), pursuant to 10 CFR 50.47(c)(1)(iii).

The staff has reviewed the proposed major features of the emergency plans for the [indicate applicant] early site permit (ESP) application for [indicate site name]. The staff concludes, after consultation with the Federal Emergency Management Agency (FEMA), the following:

[Summarize important NRC and FEMA review findings; including the extent to which the emergency plans do, or do not, satisfy the planning standards and evaluation criteria in Section V of Supplement 2 to NUREG-0654/FEMA-REP-1, Rev. 1, and applicable FEMA criteria.]

Therefore, on the basis of the review and for the reasons set forth above, the staff finds that the major features of the emergency plans proposed in the [applicant] [plant name] ESP application, and indicated above as having satisfied applicable guidance, are acceptable, and meet the requirements of 10 CFR 52.17(b)(2)(i), 10 CFR 52.17(b)(4), 10 CFR 52.18, 10 CFR 50.47, Appendix E to 10 CFR Part 50, and 10 CFR 100.21(g).

When referenced by a combined license (COL) applicant pursuant to 10 CFR 52.73, this ESP is subject to the following permit conditions and COL action items for the emergency preparedness program:

[List the permit conditions and COL action items.]

c. Complete and Integrated Emergency Plans

The SER at the ESP stage should summarize the specific bases for the findings and conclusions, including how the plans meet each of the standards of 10 CFR 50.47(b), 10 CFR 50.34,²⁰ and Appendix E to 10 CFR Part 50. The findings should generally adhere to the format of Part II of NUREG-0654/FEMA-REP-1, Rev. 1. In addition, the SER should include a summary of the results of the offsite findings and determinations submitted by FEMA, which may be combined with the NRC's onsite findings under the respective planning standard discussion. The desired evaluation finding at the ESP stage should be substantially equivalent to the following:

The staff has reviewed the complete and integrated radiological emergency response plans provided in the [applicant] early site permit (ESP) application for the [plant name]. The staff reviewed the onsite emergency plan against the requirements of 10CFR52.17, and 10CFR52.18, and through those requirements 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47, 10 CFR 50.72, Appendix E to 10 CFR Part 50, 10 CFR 73.71, and 10 CFR 100.21, using the applicable guidance criteria. The staff concludes that, provided the items identified below as required conditions and ITAAC are met, the [plant name] onsite emergency plan provides an adequate planning basis for an acceptable state of onsite emergency preparedness, and there is reasonable assurance that it can be implemented.

The Federal Emergency Management Agency (FEMA) has provided its findings and determinations on the adequacy of offsite emergency planning and preparedness, which are on the basis of its review of State, tribal, and local emergency plans and procedures. FEMA concludes that the offsite State, tribal, and local emergency plans and procedures are adequate to cope with an incident at the [plant name], and that there is reasonable

assurance that they can be implemented. On the basis of the staff review of these FEMA findings and determinations, the staff concludes that, provided the items identified below as required conditions and limitations are met, the [plant name] offsite emergency plans provide an adequate planning basis for an acceptable state of offsite emergency preparedness, and there is reasonable assurance that they can be implemented.

Pursuant to 10 CFR 52.17(b)(3), the [plant name] emergency plan includes the proposed inspections, tests, and analyses that the holder of a combined license referencing the [plant name] ESP shall perform, and the acceptance criteria that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met (i.e., ITAAC), the [plant name] has been constructed and will operate in conformity with the license, the provisions of the Atomic Energy Act, and the NRC's regulations.

The staff reviewed the emergency plans and preparedness against the Commission Orders of February 25, 2002, relating to security-based events and considerations, and concludes that they adequately address Interim Compensatory Measures (ICMs) B.5.c, B.5.d, and B.5.e.

The staff concludes that the emergency plans describe the overall concept of operation, the essential elements of advanced planning that have been considered, and the provisions that have been made to cope with emergency situations. As such, the staff concludes that the overall state of onsite and offsite emergency preparedness, when fully implemented, will meet the requirements of 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47,²² 10 CFR 50.72, Appendix E to 10 CFR Part 50, 10 CFR 52.17(b)(2)(ii), 10 CFR 52.17(b)(4), 10 CFR 52.18, 10 CFR 73.71, and 10 CFR 100.21. Further, pursuant to 10 CFR 50.47(a), the staff concludes that, subject to the required conditions and limitations of the full-power license and satisfactory completion of the ITAAC, there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the [plant name] site, and that emergency preparedness at [plant name] is adequate to support full-power operations.

When referenced by a combined license (COL) applicant pursuant to 10 CFR 52.73, this ESP is subject to the following permit conditions, COL action items, and ITAAC for full power, consistent with the dates indicated, for the emergency preparedness program:

[List the permit conditions, COL action items, and ITAAC.]

4. Standard Design Certification

The SER for a certified design should summarize the specific bases for the findings and conclusions, including how the plans meet each of the applicable standards of 10 CFR 50.34, 10 CFR 50.47(b), and Appendix E to 10 CFR Part 50. The findings may vary, depending upon the level of detail in the application and the extent to which an applicant chooses to address

²²For an applicant subject to non-participation by State and/or local governments in emergency planning under 10 CFR 50.47(c)(1), the evaluation findings should reflect the staff's review of the applicant's emergency plan (i.e., utility plan), pursuant to 10 CFR 50.47(c)(1)(iii).

certain design related aspects of emergency planning in the application. These should be limited to non-site-specific emergency planning features that are technically relevant to the design, usable for a multiple number of units or sites. The desired evaluation findings at the standard design certification stage should be substantially equivalent to the following:

a. Emergency Planning Responsibilities

The staff concludes that the COL applicant referencing the [reactor] design will be the primary party addressing emergency planning, and that emergency planning information submitted in the application will largely depend on plant- and site-specific characteristics. As such, the staff finds that [COL Action Item 13.3-x] is acceptable, in that it complies with the requirements set forth in 10 CFR 52.79(a)(22), and through it the applicable requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50. It is consistent with the extent to which certain emergency planning design features, facilities, functions, and equipment are more appropriately addressed by the COL applicant.

b. General Description of Facilities

The staff concludes that the information provided in the application pertaining to the [TSC, OSC, decontamination room, etc.] is consistent with the guidance identified in RG 1.101 and NUREG-0696. As such, the staff finds this information meets the applicable requirements of 10 CFR 50.47(b)(8), 10 CFR 50.47(b)(11), and Subsections IV.E.3 and IV.E.8 of Appendix E to 10 CFR Part 50, and if applicable 10 CFR 50.34(f)(2)(xxv).

c. Technical Support Center Size

The staff concludes that the information provided in the application pertaining to TSC size is consistent with guidance identified in RG 1.101. Specifically, the size conforms with the specifications of NUREG-0696 and is sufficient to accommodate and support NRC and licensee predesignated personnel, equipment, and documentation, in conformance with Supplement 1 to NUREG-0737. As such, the staff finds that this information meets the applicable requirements of 10 CFR 50.47(b)(8) and Subsection IV.E.8 of Appendix E to 10 CFR Part 50.

d. Technical Support Center Habitability

The staff concludes that the information provided in the application pertaining to the habitability of the TSC is consistent with the guidance identified in RG 1.101. As such, the staff finds that the DCD meets the applicable requirements of 10 CFR 50.47(b)(8) and (b)(11), Subsection IV.E.8 to 10 CFR Part 50, Appendix E, and if applicable 10 CFR 50.34(f)(2)(xxv).

e. Post-accident Sampling and Analysis – Radiation Exposure

The staff concludes that the information provided in the application pertaining to controlling radiation exposures to individuals involved in post-accident sampling is acceptable and meets the applicable requirements of 10 CFR 50.47(b)(8), 10 CFR 50.47(b)(9), 10 CFR 50.47(b)(11), and if applicable 10 CFR 50.34(f)(2)(xxv).

Subsequent findings can address additional design related aspects of emergency planning that the applicant chooses to address, e.g., EALs. The findings should also summarize, to the extent that the review is not discussed in other SER sections, the staff's evaluation of the ITAAC, and as applicable, design acceptance criteria (DAC), interface requirements, and COL action or information items that are relevant to this SRP section.

5. Combined License

The SER at the COL stage should summarize the specific bases for the findings and conclusions, including how the plans meet each of the standards of 10 CFR 50.47(b), 10 CFR 50.34,²⁰ and Appendix E to 10 CFR Part 50. The findings should generally adhere to the format of Part II of NUREG-0654/FEMA-REP-1, Rev. 1. In addition, the SER should include a summary of the results of the offsite findings and determinations submitted by FEMA, which may be combined with the NRC's onsite findings under the respective planning standard discussion. The desired evaluation finding at the COL stage should be substantially equivalent to the following:

The staff has reviewed the radiological emergency response plans provided in the [indicate applicant] combined license (COL) application for [indicate site name]. The staff reviewed the onsite emergency plan against the requirements of 10 CFR 52.77, 10 CFR 52.79, 10 CFR 52.80, 10 CFR 52.81, and 10 CFR 52.83, and through those requirements, 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47, 10 CFR 50.72, Appendix E to 10 CFR Part 50, 10 CFR 73.71, and 10 CFR 100.21, using the applicable guidance. The staff concludes that, provided the items identified below as required conditions, limitations, and ITAAC are met, the [plant name] onsite emergency plan provides an adequate planning basis for an acceptable state of onsite emergency preparedness, and there is reasonable assurance that it can be implemented.

The Federal Emergency Management Agency (FEMA) has provided its findings and determinations on the adequacy of offsite emergency planning and preparedness, which are based on its review of State, tribal, and local emergency plans and procedures. FEMA concludes that the offsite State, tribal, and local emergency plans and procedures are adequate to cope with an incident at the [plant name], and that there is reasonable assurance that they can be implemented. On the basis of the staff review of these FEMA findings and determinations, the staff concludes that, provided the items identified below as required conditions and limitations are met, the [plant name] offsite emergency plans provide an adequate planning basis for an acceptable state of offsite emergency preparedness, and there is reasonable assurance that they can be implemented.

Pursuant to 10 CFR 52.80(a), the [plant name] emergency plan includes the proposed inspections, tests, and analyses that the licensee shall perform, and the acceptance criteria (i.e., ITAAC) that are necessary and sufficient to provide reasonable assurance that, if the inspections, tests, and analyses are performed and the acceptance criteria met, the [plant name] has been constructed and will operate in conformity with the combined license, the provisions of the Atomic Energy Act, and the NRC's regulations.

The staff reviewed the emergency plans and preparedness against the Commission Orders of February 25, 2002, relating to security-based events and considerations, and

concludes that they adequately address Interim Compensatory Measures (ICMs) B.5.c, B.5.d, and B.5.e.

The staff concludes that the emergency plans describe the overall concept of operation, the essential elements of advanced planning that have been considered, and the provisions that have been made to cope with emergency situations. As such, the staff concludes that the overall state of onsite and offsite emergency preparedness, when fully implemented, will meet the requirements of 10 CFR 50.33, 10 CFR 50.34, 10 CFR 50.47,²³ 10 CFR 50.72, Appendix E to 10 CFR Part 50, 10 CFR 73.71, 10 CFR 52.77, 10 CFR 52.79, 10 CFR 52.80, 10 CFR 52.81, 10 CFR 52.83, and 10 CFR 100.21. Further, pursuant to 10 CFR 50.47(a), the staff concludes that, subject to the required conditions and limitations of the license and satisfactory completion of the ITAAC, there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency at the [plant name] site, and that emergency preparedness at [plant name], when fully implemented, is adequate to support operations.

The applicant described the Emergency Planning and its implementation in conformance with 10 CFR 50.47 and Part 50, Appendix E

The applicant has committed to meet the following license conditions and ITAAC, consistent with the dates indicated, for the emergency preparedness program:

[List the license conditions and ITAAC.]

The findings should also summarize, to the extent that the review is not discussed in other SER sections, the staff's evaluation of the ITAAC, and as applicable, DAC, interface requirements, and COL action or information items that are relevant to this SRP section.

V. IMPLEMENTATION

The staff will use this SRP section in performing safety evaluations of DC applications and license applications submitted by applicants pursuant to 10 CFR Part 50 or 10 CFR Part 52. Except when the applicant proposes an acceptable alternative method for complying with specified portions of the Commission's regulations, the staff will use the method described herein to evaluate conformance with Commission regulations.

The provisions of this SRP section apply to reviews of applications submitted six months or more after the date of issuance of this SRP section, unless superseded by a later revision.²⁴

VI. REFERENCES

²³For an applicant subject to non-participation by State and/or local governments in emergency planning under 10 CFR 50.47(c)(1), the evaluation findings should reflect the staff's review of the applicant's emergency plan (i.e., utility plan), pursuant to 10 CFR 50.47(c)(1)(iii).

²⁴See 10 CFR 50.34(h), 10 CFR 52.17(a)(1)(xiii), 10 CFR 52.47(a)(26), and 10 CFR 52.79(a)(41).

1. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities"
2. 10 CFR 50.33, "Contents of applications; general information"
3. 10 CFR 50.34, "Contents of applications; technical information"
4. 10 CFR 50.47, "Emergency plans"
5. 10 CFR 50.54, "Conditions of licenses"
6. 10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors"
7. 10 CFR Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants"
8. 10 CFR Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities"
9. 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants"
10. 10 CFR Part 52, Subpart C, "Combined Licenses"
11. 10 CFR 52.24, "Issuance of early site permit"
12. 10 CFR 52.77, "Contents of application; general information"
13. 10 CFR 52.79, "Contents of application; technical information"
14. 10 CFR 52.81, "Standards for review of applications"
15. 10 CFR 52.83, "Applicability of part 50 provisions"
16. 10 CFR 52.97, "Issuance of combined licenses"
17. 10 CFR 73.71, "Reporting of safeguards events"
18. 10 CFR Part 100, "Reactor Site Criteria"
19. 10 CFR 100.21, "Non-seismic siting criteria"
20. 44 CFR Part 350, "Review and Approval of State and Local Radiological Emergency Plans and Preparedness"
21. 44 CFR Part 351, "Radiological Emergency Planning and Preparedness"
22. 44 CFR Part 352, "Commercial Nuclear Power Plants: Emergency Preparedness Planning"

23. 44 CFR Part 353, Appendix A, "Memorandum of Understanding Between NRC and FEMA Relating to Radiological Emergency Planning and Preparedness"
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PAPERWORK REDUCTION ACT STATEMENT

The information collections contained in the Standard Review Plan are covered by the requirements of 10 CFR Part 50 and 10 CFR Part 52, and were approved by the Office of Management and Budget, approval number 3150-0011 and 3150-0151.

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