DG-1145, Section C.I.13, Conduct of Operations

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13. Conduct of Operations

The regulatory requirements for the content of an application for a combined license pursuant to 10 CFR Part 52, Subpart C, are provided in §52.79. Section 52.79(b) specifies further that the application must contain the technically relevant information required of applicants for an operating license by 10 CFR 50.34. The requirements contained in 10 CFR 50.34 specify that each application shall include a safety analysis report (SAR) that provides information concerning facility design, construction, and operation. This chapter provides guidance on the information necessary in a combined license application for the NRC to perform its review of proposed facility design, construction, and operation in accordance with the regulatory requirements above.

This chapter of the SAR should provide information relating to the preparations and plans for design, construction, and operation of the plant. Its purpose is to provide adequate assurance that the combined license applicant will establish and maintain a staff of adequate size and technical competence and that operating plans to be followed by the licensee are adequate to protect public health and safety.

13.1 Organizational Structure of Applicant

13.1.1 Management and Technical Support Organization

A combined license applicant should provide a description in this section of the corporate or home office organization, its functions and responsibilities, and the number and the qualifications of personnel and should be directed to activities that include facility design, design review, design approval, construction management, testing, and operation of the plant.

The descriptions of the design and construction and preoperational responsibilities should include the following:

a. How these responsibilities are assigned by the headquarters staff and implemented within the organizational units
b. The responsible working- or performance-level organizational unit
c. The estimated number of persons to be assigned to each unit with responsibility for the project
d. The general educational and experience requirements for identified positions or classes of positions
e. Education and experience required for management and supervisory positions
f. For identified positions or classes of positions that have functional responsibilities other than for the COL application, the expected proportion of time assigned to the other activities
g. Early plans for providing technical support for the operation of the facility

The following specific information should be included.

13.1.1.1 Design, Construction and Operating Responsibilities

The combined license applicant's past experience in the design, construction, and operation of nuclear power plants and past experience in activities of similar scope and complexity should be described. The applicant's management, engineering, and technical support organizations should also be described. The description should include organizational charts for the current headquarters and engineering structure and planned modifications and additions to those organizations to reflect the added functional responsibilities with the nuclear plant.

1. Design and Construction Responsibilities

The extent and assignment of these activities are generally contractual in nature and determined by the combined license applicant. The following aspects of the implementation or delegation of design and construction responsibilities should be described (quality assurance aspects should be described in Chapter 17):

a. Principal site-related engineering studies such as meteorology, geology, seismology, hydrology, demography, and environmental effects,
b. Design of plant and ancillary systems, including fire protection systems
c. Review and approval of plant design features, including human factors engineering (HFE) considerations
d. Site layout with respect to environmental effects and security provisions,
e. Development of safety analysis reports, and
f. Review and approval of material and component specifications

2. Preoperational Responsibilities

A description of the proposed plans for the development and implementation of staff recruiting and training programs should be included and should be substantially accomplished before preoperational testing begins.

3. Technical Support for Operations

Technical services and backup support for the operating organization should be available before the preoperational and startup testing program begins and continue throughout the life of the plant. The following are special capabilities that should be included:

a. Nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgy and materials, and instrumentation and controls engineering,
b. Plant chemistry,
c. Health physics,
d. Fueling and refueling operations support,
e. Maintenance support,
f. Operations support,
g. Quality assurance,
h. Training,
i. Safety review,

j. Fire protection,
k. Emergency coordination, and
l. Outside contractual assistance

13.1.1.2 Organizational Arrangement

In the SAR, the description should include organization charts reflecting the current headquarters and engineering structure and any planned modifications and additions to reflect the added functional responsibilities (described in 13.1.1.1) associated with the addition of the nuclear plant to the applicant's power generation capacity. The description should show how these responsibilities are delegated and assigned or expected to be assigned to each of the working or performance level organizational units identified to implement these responsibilities.

In the SAR, the description should include organizational charts reflecting the current corporate structure and the specific working or performance level organizational units that will provide technical support for operation (Section 13.1.1.1, item 3). If these functions are to be provided from outside the corporate structure, the contractual arrangements should be described.

The information submitted should include a description of the activity (including its scope), an organizational description, with chart lines of authority and responsibility for the project, the number of persons assigned to the project, and qualification requirements for principal management positions for the project. For NSSS and AE organizations with extensive experience, a detailed description of this experience may be provided in lieu of the details of their organization as evidence of technical capability. However, the applicant should describe how this experience will be applied to the project.

The SAR should provide the following information:

1. Organizational charts of the applicant's corporate level management and technical support organizations
2. The relationship of the nuclear-oriented part of the organization to the rest of the corporate organization
3. A description of the provisions for technical support for operations

For new, multi-unit plant sites, the combined license applicant should describe the organizational arrangement and functions to meet the needs of the multiple units. The applicant should include in this discussion the extent to which the organizational arrangement and functions are shared between or among the units addressed in the application and describe the organizational arrangement and functional divisions or controls that have been established to preserve integrity between individual units and/or programs.

For plant sites with existing, operating nuclear units, the applicant should include in this discussion the extent to which the organizational arrangement and functions are shared between the new and existing units. In addition, the applicant should include a discussion of the organizational arrangement and functional divisions or controls that have been established

to preserve integrity between the new and existing, operational units and/or programs.

13.1.1.3 Qualifications

The SAR should describe general qualification requirements in terms of educational background and experience requirements for positions or classes of positions identified in 13.1.1.2. Personnel resumes should be provided for assigned persons identified in 13.1.1.2 holding key or supervisory positions in disciplines or job functions unique to the nuclear field of this project. For identified positions or classes of positions that have functional responsibilities for other than the identified application, the expected proportion of time assigned to the other activities should be described.

The SAR should identify qualification requirements for headquarters staff personnel, which should be described in terms of educational background and experience requirements, for each identified position or class of positions providing headquarters technical support for operations. In addition, the SAR should include resumes of individuals already employed by the applicant to fulfill responsibilities identified in item 3 of Section 13.1.1.1, including that individual whose job position corresponds most closely to that identified as “engineer in charge.”

The SAR should (1) give the approximate numbers of and describe educational and experience requirements for, each identified position or class of positions providing technical support for plant operations, and (2) include specific educational and experience requirements for individuals holding the management and supervisory positions in organizational units providing support in the areas identified below:

1. Nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgical, materials, and instrumentation and controls engineering
2. Plant chemistry
3. Health Physics
4. Fueling and refueling operations support
5. Maintenance support
6. Operations support
7. Quality assurance (addressed in 17.5)
8. Training
9. Safety review
10. Fire protection
11. Emergency coordination
12. Outside contractual assistance

13.1.2 Operating Organization

This section of the SAR should describe the structure, functions, and responsibilities of the onsite organization established to operate and maintain the plant. It is recognized that during the early stages of plant design and construction, many details of the plant organization and staffing have not been finalized and may be modified following issuance of a combined license,

during construction or preparation for plant operation. The organizational information provided as part of a combined license application should include the following elements:

1. The applicant's commitment to meet the guidelines of Regulatory Guide 1.33 for its operating organization

2. The applicant's commitment to meet the guidelines of Regulatory Guide 1.33 for onsite review and rules of practice (addressed in 17.5)

3. The applicant's commitment to meet the applicable requirements for a Fire Protection Program

4. The applicant's commitment to meet the guidelines of Regulatory Guide 1.8 for its operating organization

5. The applicant's commitment to be consistent with one of the options in the Commission's Policy Statement on Engineering Expertise on Shift

6. The applicant's commitment to meet TMI Action Plan items I.A.1.1 and I.A.1.3 of NUREG-0737 for shift technical advisor and shift staffing

7. A schedule, relative to fuel loading for each unit, for filing all positions

As applicable, the applicant should provide evidence that the initial personnel selections conform to the commitments made in the application.

13.1.2.1 Plant Organization

Provide an organization chart showing the title of each position, the number of persons assigned to common or duplicate positions (e.g., technicians, shift operators, repair technicians), the number of operating shift crews, and the positions for which reactor operator and senior reactor operator licenses are required. For multi-unit stations, the organization chart (or additional charts) should clearly reflect planned changes and additions as new units are added to the station. The schedule, relative to the fuel loading date for each unit, for filling all positions should be provided.

13.1.2.2 Plant Personnel Responsibilities and Authorities

In addition, the applicant should provide the provide the following organizational information:

1. The functions, responsibilities, and authorities of the following plant positions or their equivalents:

a. plant managers
b. operations supervisors

c. operating shift crew supervisors
d. shift technical advisors
e. licensed operators
f. non-licensed operators
g. technical supervisors
h. radiation protection supervisors
i. instrumentation and controls maintenance supervisors
j. equipment maintenance supervisors
k. fire protection supervisors
l. quality assurance supervisors (when part of the plant staff) (addressed in 17.5)

For each position, where applicable, required interfaces with offsite personnel or positions identified in Section 13.1.1 should be described. Such interfaces include defined lines of reporting responsibilities (e.g., from the plant manager to the immediate supervisor), lines of authority, and communication channels.

2. The line of succession of authority and responsibility for overall station operation in the event of unexpected contingencies of a temporary nature, and the delegation of authority that may be granted to operations supervisors and to shift supervisors, including the authority to issue standing or special orders.

3. If the station contains, or there are plans that it contain power generating facilities other than those specified in the application and including non-nuclear units, this section should also describe interfaces with the organizations operating the other facilities. The description should include any proposed sharing of personnel between the units, a description of their duties, and the proportion of their time they will routinely be assigned to non-nuclear units.

13.1.2.3 Operating Shift Crews

The position titles, applicable operator licensing requirements for each, and the minimum numbers of personnel planned for each shift should be described for all combinations of units proposed to be at the station in either operating or cold shutdown mode. Also describe shift crew staffing plans unique to refueling operations. In addition, the proposed means of assigning shift responsibility for implementing the radiation protection and fire protection programs on a round-the-clock basis should be described.

13.1.3 Qualifications of Nuclear Plant Personnel
13.1.3.1 Qualification Requirements

This section of the SAR should describe the education, training, and experience requirements (qualification requirements) established for each management, operating, technical, and maintenance position category in the operating organization described in Section 13.1.2. This includes personnel who will do the preoperational and startup tests. Regulatory Guide 1.8, “Qualification and Training of Personnel for Nuclear Power Plants,” contains guidance on selection and training of personnel. The SAR should specifically indicate a commitment to meet

the regulatory position stated in this guide or provide an acceptable alternative. Where a clear correlation cannot be made between the proposed plant staff positions and those referenced by Regulatory Guide 1.8, each position on the plant staff should be listed along with the corresponding position referenced by Regulatory Guide 1.8, or with a detailed description of the proposed qualifications for that position.

13.1.3.2 Qualifications of Plant Personnel

As applicable, the qualifications of the initial appointees to (or incumbents of) plant positions should be presented in resume format for key plant managerial and supervisory personnel through shift supervisory level. The resumes should identify individuals by position, title and, as a minimum, describe the individual's formal education, training, and experience (including any prior NRC licensing).

13.1.4 References

1. 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities."

2. Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants."

3. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."

4. Regulatory Guide 1.68, "Initial Test Programs for Water-Cooled Nuclear Power Plants."

5. Regulatory Guide 1.114, "Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit."

6. NUREG-0694, "TMI-Related Requirements for New Operating Licenses."

7. NUREG-0711, "Human Factors Engineering Program Review Model."

8. NUREG-0718, "Licensing Requirements for Pending Applications for Construction Permits and Manufacturing License."

9. NUREG-0737, "Clarification of TMI Action Plan Requirements."

10. NUREG/CR-6838, "Technical Basis for Regulatory Guidance for Assessing Exemption Requests from the Nuclear Power Plant Licensed Operator Staffing Requirements Specified in 10 CFR 50.54(m)."

11. Generic Letter 86-04, "Policy Statement on Engineering Expertise on Shift," February 1986.

13.2 Training

This section of the SAR should contain the description and schedule of the training program for

reactor operators and senior reactor operators. The licensed operator training program also includes the requalification programs as required in 10 CFR 50.54(i)(I-1) and 55.59.

In addition, this section of the SAR should contain the description and schedule of the training program for nonlicensed plant staff.

13.2.1 Plant Staff Training Program

The SAR should provide a description of the proposed training program in nuclear technology and other subjects important to safety for the entire plant staff. Regulatory Guide 1.8, "Qualification and Training of Personnel for Nuclear Power Plants," provides guidance on an acceptable basis for relating training programs to plant staff positions. The SAR should indicate whether this guidance will be followed. If such guidance will not be followed, specific alternative methods that will be used should be described along with a justification for their use. A list of Commission regulations, guides, and reports pertaining to training of licensed and unlicensed nuclear power plant personnel is provided in Section 13.2.3.

13.2.1.1 Program Description

The program description should include the following information with respect to the formal training program in nuclear technology and other subjects important to safety (related technical training) for all plant management and supervisory personnel, Licensed Senior Operator (SRO) and Licensed Operator (RO) candidates, technicians, and general employees.

The training program descriptions for licensed plant staff should contain the following elements:

1. A description of the proposed training program, including the subject matter of each initial licensed operator training course, the duration of the course (approximate number of weeks personnel are in full-time attendance), the organization teaching the course or supervising instruction, and the titles of the positions for which the course is given. The program descriptions should include a chart showing the proposed schedule for licensing personnel prior to criticality. The schedule should be relative to expected fuel loading and should display the preoperational test period. The submittal should contain a commitment to conduct formal licensed operator, on-the-job training, and simulator training before initial fuel load. The program should distinguish between classroom, on-the-job, and simulator training, before and after the initial fuel loading and it should include provisions for training on modifications to plant systems or functons.

Contingency plans for additional training for individuals to be licensed prior to criticality should be described in the event fuel loading is subsequently delayed until after the date indicated in the SAR.

2. The subjects covered in the training programs should include, as a minimum, the subjects in 10 CFR 55.31 (how to apply), 55.41 (written examination: operators), 55.43 (written examination: senior operators), 55.45 (operating tests), and Regulatory Guide 1.8 for reactor

operators and senior reactor operators as appropriate. The training program should also include provisions for upgrading reactor operator licenses and for licensing senior reactor operators who have not been licensed as reactor operators per Regulatory Guide 1.8. The training should be based on use of the systems approach to training (SAT) as defined in 10 CFR 55.4.

3. The licensed operator requalification program should include the content described in 10 CFR 55.59 or should be based on the use of a systems approach to training (SAT) as defined in 10 CFR 55.4.

4. Applicants should describe their program for providing simulator capability for their plants as described in 10 CFR 55.31 (how to apply), 55.45 (operating tests), 55.46 (simulation facilities), 50.34(f)(2)(I), and Regulatory Guide 1.149, and how their program meets these requirements. In addition, the applicant should describe how it will ensure that its proposed simulator will correctly model its control room.

5. The means for evaluating training program effectiveness for all licensed operators, in accordance with a systems approach to training.

6. For COL applicants provide implementation milestones for the reactor operator training program.

The training program description for nonlicensed plant staff should include the following elements:

1. A detailed description of the training programs for nonlicensed personnel and the applicant's commitment to meet the guidelines of Regulatory Guide 1.8 for nonlicensed personnel.

2. A detailed description of the training programs developed using a systems approach to training, as defined in 10 CFR 55.4, for all positions covered by 10 CFR 50.120, and a commitment to meet the requirements of 10 CFR 50.120 at least 18 months before fuel load.

3. For programs not covered under 10 CFR 50.120, the subject matter of each course, including a syllabus or equivalent course description, the duration of the course (approximate number of weeks personnel are in full-time attendance), the organization teaching the course or supervising instruction, and the titles of the positions for which the course is given. The program is verified to distinguish between classroom training and on-the-job training, before and after fuel loading. The description should include contingency plans for additional training in the event that fuel loading is significantly delayed until after the date indicated in the SAR. The program should also include provisions for training on modifications to plant systems or functions.

Any difference in the training programs for individuals based on the extent of previous nuclear power plant experience. The structuring of training based on experience groups should appropriately address the following categories of personnel experience:

a. Individuals with no previous experience
b. Individuals who have had nuclear experience at facilities not subject to licensing
c. Individuals who have had experience at comparable nuclear facilities

A commitment to conduct an onsite formal training program and on-the-job training such that the entire plant staff will be qualified before the initial fuel loading.

4. A detailed description of the fire protection training and retraining for the initial plant staff and replacement personnel and a commitment to conduct an initial fire protection training program. The program should address:

a. The training planned for each member of the fire brigade
b. The type and frequency of periodic firefighting drills, including during construction
c. The training provided for all remaining staff members, including personnel responsible for maintenance and inspection of fire protection equipment
d. The indoctrination and training provided for people temporarily assigned onsite duties during shutdown and maintenance outages, particularly persons allowed unescorted access
e. The training provided for the fire protection staff members. The program description is verified to include the course of instruction, the number of hours of each course, and the organization conducting the training.
f. Provisions for indoctrination of construction personnel, as necessary

A commitment to verify that initial fire protection training will be completed prior to receipt of fuel at the site.

5. The applicant's plans for conducting a position task analysis are reviewed to verify that the tasks performed by persons in each position are defined, and that the training, in conjunction with education and experience, is identified to provide assurance that the tasks can be effectively carried out.

6. For all plant personnel identified in SAR Section 13.1.2, the proposed subject matter of each course, the duration of the course (approximate number of weeks personnel are in full-time attendance), the organization teaching the course or supervising instruction, and the titles of the positions for which the course is given.

7. A description of the provisions for training employees and nonemployees whose assistance may be needed in a radiological emergency, as required by 10 CFR 50, Appendix E, Section II.F.

A description of the training program for the individual(s) responsible for the formulation and assurance of the implementation of the fire protection program.

a. The proposed means for evaluating the training program effectiveness for all employees in accordance with the systems approach to training.

b. For COL applicants provide implementation milestones for the training program.

13.2.1.2 Coordination with Preoperational Tests and Fuel Loading

The SAR should include a chart that shows the schedule of each part of the training program for each functional group of employees in the organization in relation to the schedule for preoperational testing, expected fuel loading, expected time for examinations prior to plant criticality for licensed operators following plant criticality. In addition, the applicant should include contingency plans for individuals applying for licenses prior to criticality in the event fuel loading is substantially delayed from the date indicated in the SAR.

13.2.2 Replacement and Retraining

This section should describe the applicant's plans for retraining of the plant staff, including requalification training for licensed operators and a commitment to provide training for replacement personnel.

13.2.2.1 Licensed Operators - Requalification Training

A detailed description of the applicant's licensed operator requalification training program should be provided. This description should show how the program will implement the requirements of 10 CFR 55.59, "Requalification Programs for Licensed Operators of Production and Utilization Facilities."

13.2.2.2 Refresher Training for Non-licensed Personnel

The additional position categories on the plant staff for which retraining will be provided should be identified, and the nature, scope, and frequency of such retraining should be described.

13.2.2.3 Replacement Training

The applicant should briefly describe the training program for replacement personnel.

13.2.3 Applicable NRC Documents

The NRC regulations, regulatory guides, and reports listed below provide information pertaining to the training of nuclear power plant personnel. The SAR should indicate the extent to which the applicable portions of the guidance provided will be used and should justify any exceptions. Material discussed elsewhere in the SAR may be referenced.

1. 10 CFR Part 19, "Notices, Instructions and Reports to Workers: Inspections and Investigations."

2. 10 CFR Part 26, "Fitness for Duty Programs."

3. 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities.”

4. 10 CFR Part 50, Appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities.”

5. 10 CFR Part 52, “Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants.”

6. 10 CFR Part 55, “Operators’ Licenses.”

7. Regulatory Guide 1.8, “Qualification and Training of Personnel for Nuclear Power Plants.”

8. Regulatory Guide 1.149, “Nuclear Power Plant Simulation Facilities for Use in Operator Training and Licensing Examinations.”

9. NUREG-0711, “Human Factors Engineering Program Review Model.”

10. NUREG-1021, “Operator Licensing Examination Standards for Power Reactors.”

11. NUREG-1220, “Training Review Criteria and Procedures.”

12. Generic Letter 86-04, “Policy Statement on Engineering Expertise on Shift,” February 1986.

13. Regulatory Guide 1.134, “Medical Evaluation of Licensed Personnel at Nuclear Power Plants”

13.3 Emergency Planning

This section of the SAR should describe the applicant's plans for coping with emergencies. Subpart C of 10 CFR Part 52 sets out the requirements and procedures applicable to issuance of combined licenses (COLs) for nuclear power facilities. Specifically, 10 CFR 52.77, 10 CFR 52.79, and 10 CFR 52.83 identify the requirements related to emergency plans that should be addressed in the COL application. The NRC's standards for review of applications and issuance of COLs are provided in 10 CFR 52.81 and 10 CFR 52.97.

The COL application, which includes the SAR and other information (e.g., State and local emergency plans), should also address the emergency planning requirements contained in 10 CFR 50.33(g), 10 CFR 50.34(b)(6)(v), 10 CFR 50.34(h), and applicable portions of Appendix E of 10 CFR Part 50, which are incorporated through a reference in 10 CFR 52.77 to 10 CFR 50.33, and a reference in 10 CFR 52.79(a)(21) and (a)(22). 10 CFR 52.83 applies all provisions of 10 CFR Part 50 and its appendices, applicable to holders of construction permits and operating licenses, to holders of combined licenses.

In addition, the application should address the requirements of 10 CFR 50.47, including the sixteen standards in 10 CFR 50.47(b) and the requirements in Appendix E of 10 CFR Part 50, in order for the staff to make a positive finding that there is reasonable assurance that adequate protective measures can and will be taken in the event of a radiological emergency, including a terrorist attack that does, or does not, involve a radiological release. NUREG-0654/FEMA-REP-1, Revision 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," which is a joint NRC and DHS document, establishes an acceptable basis for NRC licensees, and State and local governments to develop integrated radiological emergency plans and improve their overall state of emergency preparedness. Regulatory Guide 1.101 endorses the criteria and recommendations in NUREG-0654/FEMA-REP-1 as acceptable methods to the NRC staff for complying with the standards in 10 CFR 50.47. The applicant should specify the revision number and date of Regulatory Guide 1.101 used. The information provided should also contribute to a determination that the exclusion area and the low population zone (LPZ) for the site comply with 10 CFR Part 100, and address whether there are significant impediments to the development of emergency plans, as required by 10 CFR 100.21(g).

The Department of Homeland Security (DHS) is the Federal agency with the lead responsibility for offsite nuclear emergency planning and response. This responsibility was formerly held by the Federal Emergency Management Agency (FEMA), and was moved to DHS when it was established by the *Homeland Security Act of 2002*, and acquired the FEMA functions and responsibilities. While the responsibility for evaluating the emergency plans is shared between the DHS and the NRC under a Memorandum of Understanding, the final decision making authority on the overall adequacy of emergency plans rests with the NRC. In addition to the NRC's regulations (described above), the COL applicant needs to include State and local plans that address the relevant DHS requirements contained in 44 CFR Parts 350, 351, and 352, as well as associated guidance documents.

Where an applicant is unable to make arrangements with State and local governmental agencies with emergency planning responsibilities and obtain the certifications required by 10 CFR 52.79(a)(22), due to non-participation of State and/or local governments, the applicant should discuss its efforts to make such arrangements, along with a description of any compensatory measures the applicant has taken or plans to take because of the lack of such arrangements. To the extent that State and local governments fail to participate, the application must contain information and a utility plan in accordance with 10 CFR 52.79(a)(22) and 10 CFR 50.47(c). The utility plan must demonstrate compliance with the offsite emergency planning requirements, 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. Supplement 1 to NUREG-0654/FEMA-REP-1 should be consulted to develop offsite plans and preparedness when State and/or local governments decline to participate in emergency planning and preparedness.

Pursuant to 10 CFR 52.73, the SAR may reference an early site permit (ESP) for the proposed site and/or a certified design, and thereby incorporate the emergency planning aspects approved in those prior licensing actions into the COL application. The SAR should address any conditions or requirements in the referenced ESP or certified design that relate to emergency planning, such as COL action items, permit conditions, ITAAC, etc. For a referenced ESP, 10 CFR 52.79(b)(14) requires that the applicant must update and correct emergency preparedness information, if needed, and must discuss whether the new information could materially change the bases for compliance with the applicable NRC requirements. The application must also identify changes to the 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). If complete and integrated emergency plans are approved as part of the ESP, new certifications meeting the requirements of 10 CFR 52.79(b)(4) are not required, however, updates are required to incorporate new and significant information.

13.3.1 Emergency Plan

At the COL application stage, a comprehensive (i.e., complete and integrated) emergency plan should be submitted. This plan should be a physically separate document identified as Section 13.3 of the SAR, and may incorporate by reference various State and local emergency plans or other relevant materials. The application should include a copy of all referenced plans or other materials, which serve to establish compliance with the emergency planning standards and requirements, including an analysis of the time required to evacuate and for taking other protective actions for various sectors and distances within the plume exposure pathway emergency planning zone (EPZ) for transient and permanent populations; i.e., Evacuation Time Estimate (ETE). The application should also include a cross-reference to applicable regulatory requirements, guidance documents, generic communications, and other criteria that are used to develop the application; and more specifically, a cross-reference of the emergency plan to the evaluation criteria in NUREG-0654/FEMA-REP-1.

The emergency plan, including procedures, should address how the standards and requirements of 10 CFR 50.47 and Appendix E to 10 CFR Part 50 are to be implemented. If

detailed emergency plan implementing procedures are not submitted at the time of the COL application, the requirement in Part V of Appendix E for the submission of detailed emergency plan implementing procedures may be addressed as either a proposed license condition or an emergency planning ITAAC (*see* section 13.3.3, below, and ITAAC 9.1 in Table 13.3-1). For example, an applicant could propose an ITAAC for the licensee's onsite procedures, and a license condition for the offsite procedures.

The application should also address, as applicable, the various generic safety issues and generic communications that are in effect, and applicable to emergency planning in support of an Operating License. NUREG-0933, "A Prioritization of Generic Safety Issues," August 2004, provides the priority rankings for generic safety issues related to nuclear power plants, and should be consulted to determine the applicability to a COL application. Section C.I.1 provides guidance to the COL applicant for addressing generic safety issues and generic communications, some of which may be associated with emergency planning and preparedness requirements.

Under 10 CFR 52.79(a), an application for a combined license must contain the technically relevant information specified. This technical information is consistent with that required of applicants for an operating license by 10 CFR 50.34. For those applicants that are subject to 10 CFR 50.34(f), the application must address the TMI-related requirements in 10 CFR 50.34(f)(2)(iv), (viii), (xvii), and (xxv). These requirements may be met by satisfying the comparable requirements in 10 CFR 50.47 and Appendix E of 10 CFR Part 50. Supplement 1 to NUREG-0737 should be consulted regarding TMI-related items.

The SAR should also address the emergency classification and action level scheme, as required by 10 CFR 50.47(b)(4). The acceptability of the various methods to the development of emergency action levels (EALs), that have been found acceptable to the NRC staff for complying with NRC's regulations, are addressed Revisions 2, 3, and 4 of Regulatory Guide 1.101. The applicant may propose means other than those specified in Regulatory Guide 1.101. The proposal should describe and justify how the proposed method meets the applicable regulations.

The applicant should consult the NRC Order issued February 25, 2002, as well as any subsequent NRC guidance or any NRC endorsed industry guidance developed in response to issues related to implementation of the Order, to determine what security-related aspects of emergency planning and preparedness must be addressed in the emergency plan. The applicant should also consult Section C.I.13.6 of this Regulatory Guide for additional information on what must be addressed in the application related to the interface of security and emergency preparedness programs.

In accordance with 10 CFR 50.34(h), the application must include an evaluation of the facility against the Standard Review Plan (SRP) (NUREG-0800) revision in effect six months prior to the docket date of the application. For those aspects of the emergency plan which differ from the SRP acceptance criteria, the applicant must identify and describe the differences, and discuss how the proposed alternative provides an acceptable method of complying with the

applicable rules or regulations that underlie the corresponding SRP acceptance criteria.

Emergency planning information (including supporting organization agreements) submitted in support of a COL application, as well as incorporated elements of an existing emergency plan for multiunit sites (discussed below), should be (1) applicable to the proposed site, (2) up-to-date when the application is submitted, and (3) reflect use of the proposed site for possible construction of a new reactor (or reactors).

13.3.2 Emergency Plan - Multi-unit sites

If the new reactor will be located on, or near, an operating reactor site with an existing emergency plan (i.e., multi-unit site), and the emergency plan for the new reactor will include various elements of the existing plan, the application should discuss:

a. The extent to which the existing site's emergency plan will be credited for the new unit(s), including how the existing plan would be able to adequately accommodate an expansion to include one or more additional reactors, and any required modification of the existing emergency plan for staffing, training, EALs, etc.;

b. Any required updates to existing emergency facilities and equipment;

c. Any required changes to the existing onsite and offsite emergency response arrangements and capabilities with State and local authorities, or private organizations;

d. The applicability of the existing 10-mile plume exposure EPZ and 50-mile ingestion control EPZ;

e. The applicability of the existing ETE, including the need for it to be updated; and

f. When applicable, 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.

Copies of all letters of agreement (or other certifications) from the State and local governmental agencies with emergency planning responsibilities should be included in the application. The agreement information should be up-to-date when the application is submitted, and should reflect the use of the site for construction and operation of a new reactor (or reactors). The letters of agreement should clearly address the presence of an additional reactor (or reactors) at the site. The application should discuss any ambiguous or incomplete language in the letters of agreement. If an existing letter of agreement is broad enough to cover an expanded site use, and does not need to be revised, the application should also include a separate correspondence (or other form of communication with the organization) that addresses the new reactor(s) and the organization's acceptance of expanded responsibilities.

13.3.3 Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria (EP-ITAAC)

10 CFR 52.80(b) requires that an application for a combined license include proposed emergency planning inspections, tests, analyses, and acceptance criteria (ITAAC) which are necessary and sufficient to provide reasonable assurance that, if the inspections, tests and analyses are performed (by the licensee) 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.

The combined license applicant shall develop emergency planning ITAAC (EP-ITAAC) to address implementation of elements of the emergency plan, in accordance with the guidance provided in Section C.I.14 of this Regulatory Guide. A reference to the emergency planning ITAAC, developed for the combined license application, should be provided in this section of the SAR. Table 13.3-1 provides generic COL emergency planning ITAAC that an applicant may use to develop application-specific ITAAC. (*See* 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 the associated February 22, 2006, Staff Requirements Memorandum.)

Section C.I.14.3 provides discussion and guidance for the development of ITAAC proposed in a COL application. The COL applicant should also refer to Section C.II.2 for additional discussions and guidance on ITAAC.

13.3.4 References

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 Part 50, Appendix E, "Emergency Planning and Preparedness for Production and Utilization Facilities"

7. 10 CFR Part 52, "Early Site Permits; Standard Design Certifications; and Combined Licenses for Nuclear Power Plants."

8. 10 CFR Part 52, Subpart C, "Combined Licenses"

9. 10 CFR 52.77, "Contents of application; general information"

10. 10 CFR 52.79, "Contents of application; technical information"

11. 10 CFR 52.81, “Standards for review of applications”

12. 10 CFR 52.83, “Applicability of part 50 provisions”

13. 10 CFR 52.97, “Issuance of combined licenses”

14. 10 CFR Part 100, “Reactor Site Criteria”

15. 10 CFR Part 100.21, “Non-seismic siting criteria”

16. 44 CFR Part 350, “Review and Approval of State and Local Radiological Emergency Plans and Preparedness,” Final Rule, September 28, 1983.

17. 44 CFR Part 351, “Radiological Emergency Planning and Preparedness,” Final Regulations, March 11, 1982.

18. 44 CFR Part 352, “Commercial Nuclear Power Plants: Emergency Preparedness Planning,” Final Rule, August 2, 1989.

19. 44 CFR Part 353, Appendix A, “Memorandum of Understanding Between NRC and DHS Relating to Radiological Emergency Planning and Preparedness,” revised June 17, 1993.

20. Regulatory Guide 1.101, Rev. 2, “Emergency Planning and Preparedness for Nuclear Power Reactors,” October 1981.

21. Regulatory Guide 1.101, Rev. 3, “Emergency Planning and Preparedness for Nuclear Power Reactors,” August 1992.

22. Regulatory Guide 1.101, Rev. 4, “Emergency Planning and Preparedness for Nuclear Power Reactors,” July 2003.

23. Regulatory Guide 1.101, Rev. 5, “Emergency Planning and Preparedness for Nuclear Power Reactors,” September 2004.

24. NUREG-0654/FEMA-REP-1, Rev. 1, “Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants – Final Report,” November 1980 (supplemented by the March 2002 addenda).

25. Supplement 1 to NUREG-0654/FEMA-REP-1, Rev. 1, “Criteria for Utility Offsite Planning and Preparedness,” November 1987.

26. Supplement 1 to NUREG-0737, “Requirements for Emergency Response Capability,” January 1983.

27. NUREG-0800, “Standard Review Plan for the Review of Safety Analyses for Nuclear Power Plants”

28. NUREG-0933, “A Prioritization of Generic Safety Issues,” August 2004.

28. 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 (including associated February 22, 2006, SRM).

29. NRC/FEMA Memorandum of Understanding (MOU), September 7, 1993 (58 *FR* 47996, September 14, 1993).

30. H.R. 5005, *Homeland Security Act of 2002*, P.L. 107-296, enacted November 25, 2002.

Table 13.3-1
EMERGENCY PLANNING
*Generic Inspections, Tests, Analyses, & Acceptance Criteria (EP ITAAC)**
Combined License (COL) Application — Subpart C to 10 CFR Part 52

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
1.0 Emergency Classification System			
10 CFR 50.47(b)(4) – A standard emergency classification and action level scheme, the bases of which include facility system and effluent parameters, is in use by the nuclear facility licensee, and State and local response plans call for reliance on information provided by facility licensees for determinations of minimum initial offsite response measures.	1.1 A standard emergency classification and emergency action level (EAL) scheme exists, and identifies facility system and effluent parameters constituting the bases for the classification scheme. [D.1**] [**D.1 corresponds to NUREG-0654 /FEMA-REP-1 evaluation criteria.]	1.1 An inspection of the control room, technical support center (TSC), and emergency operations facility (EOF) will be performed to verify that they have displays for retrieving facility system and effluent parameters specified in the emergency classification and EAL scheme.	1.1 The specified parameters are retrievable in the control room, TSC and EOF, and the ranges of the displays encompass the values specified in the emergency classification and EAL scheme. [The COL applicant will adopt design certification criteria, if applicable, or otherwise identify specific capabilities.]
2.0 Notification Methods and Procedures			
10 CFR 50.47(b)(5) – Procedures have been established for notification, by the licensee, of State and local response organizations and for notification of emergency personnel by all organizations; the content of initial and follow-up messages to response organizations and the public has been established; and means to provide early notification and clear instruction to the populace within the plume exposure pathway Emergency Planning Zone have been established.	2.1 The means exists to notify responsible State and local organi-zations within 15 minutes after the licensee declares an emergency. [E.1] 2.2 The means exists to notify emergency response personnel. [E.2] 2.3 The means exists to notify and provide instructions to the populace within the plume exposure EPZ. [E.6]	2.1 – 2.3 A test will be performed of the capabilities.	2.1 The responsible State and local agencies receive notification within 15 minutes after the licensee declares an emergency. 2.2 Emergency response personnel receive the notification and mobilization communication. [The COL applicant will provide specific acceptance criteria.] 2.3 The means for notifying and providing instructions to the public are demonstrated to meet the design objectives, as stated in the emer-gency plan. [The COL applicant will identify specific capabilities.]

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
3.0 Emergency Communications			
10 CFR 50.47(b)(6) – Provisions exist for prompt communications among principal response organizations to emergency personnel and to the public.	3.1 The means exists for communications among the control room, TSC, EOF, principal State and local emergency operations centers (EOCs), and radiological field assessment teams. [F.1.d] 3.2 The means exists for communications from the control room, TSC, and EOF to the NRC headquarters and regional office EOCs (including establishment of the Emergency Response Data System (ERDS) between the onsite computer system and the NRC Operations Center.) [F.1.f]	3.1 & 3.2 A test will be performed of the capabilities.	3.1 Communications are established among the control room, TSC, EOF, principal State and local EOCs, and radiological field assessment teams. 3.2 Communications are established from the control room, TSC and EOF to the NRC headquarters and regional office EOCs, and an access port for ERDS is provided.
4.0 Public Education and Information			
10 CFR 50.47(b)(7) – Information is made available to the public on a periodic basis on how they will be notified and what their initial actions should be in an emergency (e.g., listening to a local broadcast station and remaining indoors), the principal points of contact with the news media for dissemination of information during an emergency (including the physical location or locations) are established in advance, and procedures for coordinated dissemination of information to the public are established.	4.1 The licensee has provided space which may be used for a limited number of the news media at the EOF. [G.3.b]	4.1 An inspection of the as-built facility/area provided for the news media will be performed.	4.1 The licensee has provided space, which may be used for a limited number of the news media. [The COL applicant will specify the number of news media to be accommodated.]

Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria
5.0 Emergency Facilities and Equipment			

10 CFR 50.47(b)(8) – Adequate emergency facilities and equipment to support the emergency response are provided and maintained.	5.1 The licensee has established a technical support center (TSC) and onsite operations support center (OSC). [H.1]	5.1 An inspection of the as-built TSC and OSC will be performed, including a test of the capabilities.	5.1.1 The TSC has at least 174 square meters (1,875 square feet) of floor space. 5.1.2 The TSC is close to the control room, and the walking distance from the TSC to the control room does not exceed two minutes. [The COL applicant will adopt design certification criteria, if applicable, or otherwise specify TSC location.] 5.1.3 The TSC has comparable habitability with the control room under accident conditions. [The COL applicant will adopt design certification criteria, if applicable, or otherwise identify specific capabilities.] 5.1.4 TSC communications equipment is installed, and voice transmission and reception are accomplished. [The COL applicant will adopt design certification criteria, if applicable, or otherwise identify specific capabilities.] 5.1.5 The TSC has the means to receive, store, process, and display plant and environmental information, and to initiate emergency measures and conduct emergency assessment. [The COL applicant will adopt design certification criteria, if applicable, or otherwise identify specific capabilities.]
Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria

			5.1.6 The OSC is located onsite, separate from the control room and TSC. [The COL applicant will adopt design certification criteria, if applicable, or otherwise specify OSC location and identify specific capabilities.] 5.1.7 OSC communications equipment is installed, and voice transmission and reception are accomplished. [The COL applicant will adopt design certification criteria, if applicable, or otherwise identify specific capabilities.]
	5.2 The licensee has established an emergency operations facility (EOF). [H.2]	5.2 An inspection of the as-built EOF will be performed, including a test of the capabilities.	5.2.1 The EOF working space is sized for at least 35 persons, and is large enough for required systems, equipment, records and storage. [The COL applicant will identify EOF size characteristics.] 5.2.2 The EOF habitability is consistent with Table 2 of NUREG-0696. [The COL applicant will specify the acceptance criteria for EOF habitability.] 5.2.3 EOF communications equipment is installed, and voice transmission and reception are accomplished with the control room, TSC, NRC, and State and local agencies. [The COL applicant will identify specific capabilities.]
Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria

			5.2.4 The EOF has the means to acquire, display and evaluate radiological, meteorological, and plant system data pertinent to determining offsite protective measures. [The COL applicant will identify specific capabilities.]
6.0 Accident Assessment			
10 CFR 50.47(b)(9) – Adequate methods, systems, and equipment for assessing and monitoring actual or potential offsite consequences of a radiological emergency condition are in use.	6.1 The means exists to provide initial and continuing radiological assessment throughout the course of an accident. [I.2] 6.2 The means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [I.3] 6.3 The means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [I.4]	6.1 – 6.7 A test will be performed of the capabilities.	6.1 The means exists to provide initial and continuing radiological assessment throughout the course of an accident. [The COL applicant will identify specific capabilities.] 6.2 The means exists to determine the source term of releases of radioactive material within plant systems, and the magnitude of the release of radioactive materials based on plant system parameters and effluent monitors. [The COL applicant will identify specific capabilities.] 6.3 The means exists to continuously assess the impact of the release of radioactive materials to the environment, accounting for the relationship between effluent monitor readings, and onsite and offsite exposures and contamination for various meteorological conditions. [The COL applicant will identify specific capabilities.]
Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria

	6.4 The means exists to acquire and evaluate meteorological information. [I.5] 6.5 The means exists to make rapid assessments of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways, including activation, notification means, field team composition, transportation, communication, monitoring equipment, and estimated deployment times. [I.8] 6.6 The capability exists to detect and measure radioiodine concentrations in air in the plume exposure EPZ, as low as 10^{-7} µCi/cc (microcuries per cubic centimeter) under field conditions. [I.9] 6.7 The means exists to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [I.10]		6.4 Meteorological data is available at the EOF, TSC, control room, offsite NRC center, and to the State. [The COL applicant will identify specific capabilities]. 6.5 The means exists to make rapid assessment of actual or potential magnitude and locations of any radiological hazards through liquid or gaseous release pathways. [The COL applicant will identify specific capabilities.] 6.6 Radioiodine can be detected in the plume exposure EPZ, as low as 10^{-7} µCi/cc. [The COL applicant will identify specific capabilities.] 6.7 The means exists to estimate integrated dose from the projected and actual dose rates, and for comparing these estimates with the EPA protective action guides (PAGs). [The COL applicant will identify specific capabilities.]
Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria

7.0 Protective Response			
10 CFR 50.47(b)(10) – A range of protective actions has been developed for the plume exposure EPZ for emergency workers and the public. In developing this range of actions, consideration has been given to evacuation, sheltering, and, as a supplement to these, the prophylactic use of potassium iodide (KI), as appropriate. Guidelines for the choice of protective actions during an emergency, consistent with Federal guidance, are developed and in place, and protective actions for the ingestion exposure EPZ appropriate to the locale have been developed.	7.1 The means exists to warn and advise onsite individuals of an emergency, including those in areas controlled by the operator, including: [J.1] 1. employees not having emergency assignments; 2. visitors; 3. contractor and construction personnel; and 4. other persons who may be in the public access areas, on or passing through the site, or within the owner controlled area.	7.1 A test will be performed of the capabilities.	7.1 The means exists to warn and advise onsite individuals. [The COL applicant will identify specific capabilities.]
8.0 Exercises and Drills			
10 CFR 50.47(b)(14) – Periodic exercises are (will be) conducted to evaluate major portions of emergency response capabilities, periodic drills are (will be) conducted to develop and maintain key skills, and deficiencies identified as a result of exercises or drills are (will be) corrected.	8.1 Licensee conducts a full-participation exercise to evaluate major portions of emergency response capabilities, which includes participation by each State and local agency within the plume exposure EPZ, and each State within the ingestion control EPZ. [N.1]	8.1 A full-participation exercise (test) will be conducted within the specified time periods of Appendix E to 10 CFR Part 50.	8.1.1 The exercise is completed within the specified time periods of Appendix E to 10 CFR Part 50, onsite exercise objectives have been met, and there are no uncorrected onsite exercise deficiencies. [The COL applicant will identify exercise objectives and associated acceptance criteria.] 8.1.2 Onsite emergency response personnel were mobilized in sufficient numbers to fill emergency response positions, and they successfully performed their assigned responsibilities. [The COL applicant will identify responsibilities and associated acceptance criteria.]
Planning Standard	EP Program Elements	Inspections, Tests, Analyses	Acceptance Criteria

			8.1.3 The e within the sp Appendix E offsite exerc met, and the uncorrected deficiencies requires offs corrected pr 5% of rated
9.0 Implementing Procedures			
10 CFR Part 50, App. E.V – No less than 180 days prior to the scheduled issuance of an operating license for a nuclear power reactor or a license to possess nuclear material, the applicant's detailed implementing procedures for its emergency plan shall be submitted to the Commission.	9.1 The licensee has submitted detailed implementing procedures for its emergency plan no less than 180 days prior to fuel load.	9.1 An inspection of the submittal letter will be performed.	9.1 The lice detailed imp the onsite e than 180 da COL applica implementin

Reference: SRM SECY-05-0197

*Standard design certification criteria may replace specific (generic) ITAAC in this table.

13.4 Review and Audit

Guidance for combined license applicants is provided in C.I.17.5. This section is being retained only to be consistent with the standard review plan format.

13.4.1 Onsite Review

Guidance for combined license applicants is provided in C.I.17.5. This section is being retained only to be consistent with the standard review plan format.

13.4.2 Independent Review

Guidance for combined license applicants is provided in C.I.17.5. This section is being retained only to be consistent with the standard review plan format.

13.4.3 Audit Program

Guidance for combined license applicants is provided in C.I.17.5. This section is being retained only to be consistent with the standard review plan format.

13.4.4 Operational Program Implementation

Operational programs are specific programs that are required by regulations. Further guidance on programs that are classified as operational programs is provided in Section C.IV.4 of this regulatory guide. Operational programs should be fully described, as defined in SECY-05-0197, in an application for a combined license. In accordance with Commission direction in SRM-SECY-05-0197, COL applicants should also provide schedules for implementation of these operational programs, as discussed below.

The combined license applicant should provide commitments for implementation of operational programs that are required by regulation and identified in the attached example table. Descriptions of these operational programs, consistent with the definition of “fully described” as discussed in Section C.IV.4, should be provided in this chapter of the SAR or in other, more applicable sections of the SAR. The implementation milestone commitments for these operational programs (e.g., prior to fuel load, at fuel load, prior to exceeding 5% power, etc.) should be provided in a table similar to the example table provided. In some instances, programs may be implemented in phases, where practical, and the phased implementation milestones should also be provided in the attached table by the applicant. For example, radiation protection program implementation milestones may be based on radioactive sources on site, fuel on site, fuel load, and first shipment of radioactive waste.

In lieu of providing implementation milestone commitments for operational programs required by regulations, the combined license applicant may propose ITAAC for implementation, using the guidance contained in C.IV.4. General guidance on ITAAC development is provided in

C.I.14.3 and more specific guidance on the scope of ITAAC development for COL applications that reference an early site permit, certified design, or both, is provided in C.II.2.

Sample SAR Table 13.4–X

Operational Programs Required by NRC Regulation and Subject to the License Condition on Program Implementation

Item	Program Title	Source (Required By)	SAR Section	Phased Implementation Milestones
1	Inservice Inspection Program	10 CFR 50.55a	3.6.2.4.x	Fuel load
2	Inservice Testing Program	10 CFR 50.55a	3.9.6.x	Fuel load
3	Environmental Qualification Program	10 CFR 50.49	3.11.x	Fuel load
4	Preservice Inspection Program	10 CFR 50.55a	5.2.4.x	Fuel load
5	Reactor Vessel Material Surveillance Program	10 CFR 50.60; 10 CFR 50.61; 10 CFR 50, Appendix A (GDC 32); 10 CFR 50, App. G 10 CFR 50, App. H	5.3.1.6.x	Fuel load
6	Preservice Testing Program	10 CFR 50.55a	5.4.8.x	Fuel load
7	Containment Leakage Rate Testing Program	10 CFR 50.54(o); 10 CFR 50, Appendix A (GDC 32); 10 CFR 50, App. J	6.2.6.x	Fuel load
8	Fire Protection Program	10 CFR 50.48	9.5.1.x	Fuel load
9	Process and Effluent Monitoring and Sampling Program	10 CFR 50, App. I	11.5.x	Fuel load
10	Radiation Protection Program	10 CFR 20.1101	12.5.x	1. Radioactive sources onsite 2. Fuel onsite 3. Fuel load 4. First shipment of radioactive waste
11	Plant Staff Training Program	10 CFR 50.120; 10 CFR 52.78	13.2.1.x	50.120(b): 18 months prior to fuel load
12	Operator Training Program	10 CFR 55.13; 10 CFR 55.31; 10 CFR 55.41; 10 CFR 55.43; 10 CFR 55.45	13.2.1.x	Within 3 months after issuance of an operating license

Item	Program Title	Source (Required By)	SAR Section	Phased Implementation Milestones
13	Operator Requalification Program	10 CFR 50.34(b); 10 CFR 50.54(l); 10 CFR 55.59	13.2.2.x	50.54(I-1): Within 3 months after issuance of an operating license
14	Emergency Plan	10 CFR 50.47; 10 CFR 50, App. E	13.3.x	Appendix E.IV.F.2.a: (1) full participation exercise within 2 years before issuance of first operating license for full power; and (2) onsite exercise within one year before issuance of operating license for full power. Appendix E.V: detailed implementing procedures submitted within 180 days prior to scheduled issuance of an operating license
15	Security: Physical Security Program Safeguards Contingency Program Training and Qualification Program	 • 10 CFR 50.54(p) • 10 CFR 73.55 • 10 CFR 73.56 • 10 CFR 73.57 • 10 CFR 26 • 10 CFR 50.34(d) • 10 CFR Part 73, Appendix C • 10 CFR Part 73, Appendix B	13.6	 • Prior to fuel being on-site • Prior to fuel being on-site • Prior to fuel being on-site
16	Quality Assurance Program - Operation	10 CFR 50.54(a); 10 CFR 50, Appendix A (GDC 1); 10 CFR 50, App. B	17.2.x	None specified
17	Monitoring the Effectiveness of Maintenance at Nuclear Power Plants	10 CFR 50.65	17.x	Fuel load
18	Motor-Operated Valve Testing	50.55a(b)(3)(ii)	3.9.6	Fuel load

13.4.5 References

1. 10 CFR 50, 50.40(b), “Common Standards.”

2. Regulatory Guide 1.33, “Quality Assurance Program Requirements (Operation).”

3. Regulatory Guide 1.8, “Qualification and Training of Personnel for Nuclear Power Plants.”

4. NUREG-0737, “Clarification of TMI Action Plan Requirements,” November 1980.

5. NUREG-0660, “NRC Action Plan Developed as a Result of the TMI 2 Accident,” revised August 1980.

6. ANSI N18.7-1976/ANS 3.2-1976, “Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants,” February 19, 1976.

7. ANSI/ANS-3.1, “Selection and Training of Nuclear Power Plant Personnel.”

8. Generic Letter 83-28, “Required Actions Based on Generic Implications of Salem ATWS Event,“ July 8, 1983.

9. SRM-SECY-05-0197, “Review of Operational Programs in a Combined License Application and Generic Emergency Planning Inspections, Tests, Analyses, and Acceptance Criteria”

13.5 Plant Procedures

This section of the SAR should describe administrative and operating procedures that will be used by the operating organization (plant staff) to ensure that routine operating, off-normal, and emergency activities are conducted in a safe manner. In general, the SAR is not expected to include detailed written procedures. The SAR should provide a brief description of the nature and content of the procedures and a schedule for the preparation of appropriate written administrative procedures (see Section 13.5.1.1). The SAR should identify the persons (by position) who have the responsibility for writing procedures and the persons who must approve the procedures before they are implemented.

13.5.1 Administrative Procedures

This section of the SAR should describe administrative procedures that provide administrative control over activities that are important to safety for operation of the facility. Regulatory Guide 1.33, “Quality Assurance Program Requirements (Operation),” contains guidance on facility administrative policies and procedures. The SAR should specifically indicate whether the applicable portions of Regulatory Guide 1.33 concerning plant procedures will be followed. If such guidance will not be followed, the SAR should describe specific alternative methods that will be used and the manner of implementing them.

13.5.1.1 Administrative Procedures - General

This section of the SAR should describe (a) those procedures which provide the administrative controls with respect to procedures and (b) those procedures which define and provide controls for operational activities of the plant staff:

Category (a) - Controls

1. Procedures review and approval
2. Equipment control procedures
3. Control of maintenance and modifications
4. Fire protection procedures
5. Crane operation procedures
6. Temporary changes to procedures
7. Temporary procedures
8. Special orders of a transient or self-cancelling character

Category (b) - Specific Procedures

1. Standing orders to shift personnel including the authority and responsibility of the shift supervisor, licensed senior reactor operator in the control room, control room operator, and shift technical advisor.
2. Assignment of shift personnel to duty stations and definition of “surveillance area”
3. Shift relief and turnover
4. Fitness for duty
5. Control room access
6. Limitations on work hours
7. Feedback of design, construction, and applicable important industry and operating experience
8. Shift supervisor administrative duties
9. Verification of correct performance of operating activities

13.5.2 Operating and Maintenance Procedures

13.5.2.1 Operating and Emergency Operating Procedures

This section should describe primarily the procedures that are performed by licensed operators in the control room. Each such operating procedure should be identified by title and included in a described classification system. The general format and content for each class should be described. The following categories should be included, but need not necessarily form the basis for classifying these procedures:

A. Procedure Classification

The SAR or other submittal should describe the different classifications of procedures the operators will use in the control room and locally in the plant for plant operations. The group within the operating organization responsible for maintaining the procedures should be

identified and the general format and content of the different classifications should be described. It is not necessary that each applicant's procedures conform precisely to the same classification since the objective is to ensure that procedures will be available to the plant staff to accomplish the functions contained in the listing of Regulatory Guide 1.33. For example, some licensees prefer a classification of abnormal operating procedures, whereas others may use off-normal condition procedures. Examples of classifications are as follows:

1. System Procedures. Procedures that provide instructions for energizing, filling, venting, draining, starting up, shutting down, changing modes of operation, returning to service following testing (if not given in the applicable procedure), and other instructions appropriate for operation of systems important to safety.

2. General Plant Procedures. Procedures that provide instructions for the integrated operation of the plant, e.g., startup, shutting down, shutdown, power operation and load changing, process monitoring, and fuel handling.

3. Off-normal Condition Procedures. Procedures that specify operator actions for restoring an operating variable to its normal controlled value when it departs from its normal range or to restore normal operating conditions following a transient. Such actions are invoked following an operator observation or an annunciator alarm indicating a condition which, if not corrected, could degenerate into a condition requiring action under an emergency operating procedure (EOP).

4. Emergency Operating Procedures. Procedures that direct actions necessary for the operators to mitigate the consequences of transients and accidents that cause plant parameters to exceed reactor protection system or engineered safety features actuation setpoints.

5. Alarm Response Procedures. Procedures that guide operator actions for responding to plant alarms.

B. Operating Procedure Program

The SAR or other submittal should describe the applicant's program for developing operating procedures (A.1 - 5 above).

C. Emergency Operating Procedure Program

The SAR or other submittal (e.g., the procedures generation package [PGP]) should describe the applicant's program for developing EOPs (A.4 above) as well as the required content of the EOPs.

The procedure development program, as described in the PGP for EOPs, should be submitted to the NRC at least 3 months prior to the date the applicant plans to begin formal operator training on the EOPs. The PGP should include:

1. Plant-specific technical guidelines (P-STGs), which are guidelines based on analysis of transients and accidents that are specific to the applicant's plant design and operating philosophy. The P-STGs will provide the basis for, and include reference to, generic guidelines if used.

For plants not referencing generic guidelines, this section of the submittal should contain the action steps necessary to mitigate transients and accidents in a sequence that allows mitigation without first having diagnosed the specific event, along with all supporting analyses, to meet the requirements of TMI Action Plan item I.C.1 (NUREG-0737 and Supplement 1 to NUREG-0737).

For plants referencing generic guidelines, the submitted documentation should include (1) a description of the process used to develop plant-specific guidelines from the generic guidelines, (2) identification of significant deviations from the generic guidelines (including identification of additional equipment beyond that identified in the generic guidelines), along with all necessary engineering evaluations or analyses to support the adequacy of each deviation, and (3) a description of the process used for identifying operator information and control requirements.

2. A plant-specific writer's guide (P-SWG) that details the specific methods to be used by the applicant in preparing EOPs based on P-STGs.

3. A description of the program for verification and validation (V&V) of EOPs.

4. A description of the program for training operators on EOPs.

13.5.2.2 Maintenance and Other Operating Procedures

This section should describe how other operating and maintenance procedures are classified, what group or groups within the operating organization have the responsibility for following each class of procedures, and the general objectives and character of each class and subclass. The categories of procedures listed below should be included. If their general objectives and character are described elsewhere in the SAR or the application, they may be described by specific reference thereto.

1. Plant radiation protection procedures.
2. Emergency preparedness procedures.
3. Instrument calibration and test procedures.
4. Chemical-radiochemical control procedures.
5. Radioactive waste management procedures.
6. Maintenance and modification procedures.
7. Material control procedures.
8. Plant security procedures.

13.5.3 References

1. 10 CFR 50.40, "Common Standard."

2. 10 CFR 50.54, “Conditions of Licenses.”

3. 10 CFR 26.20, “Written Policy and Procedures.”

4. NRC Policy Statement, “Nuclear Plant Staff Working Hours” (46 FR 23836), June 1, 1982.

5. Regulatory Guide 1.33, “Quality Assurance Program Requirements (Operation).”

6. Regulatory Guide 1.114, “Guidance to Operators at the Controls and to Senior Operators in the Control Room of a Nuclear Power Unit.”

7. Generic Letter 82-02, “Nuclear Plant Staff Working Hours,” February 8, 1982.

8. Generic Letter 82-12, “Nuclear Plant Staff Working Hours,” June 15, 1982.

9. Generic Letter 83-14, “Definition of ‘Key Maintenance Personnel’ (Clarification of Generic Letter 82-12),” March 7, 1983.

10. Generic Letter 89-23, “NRC Staff Responses to Questions Pertaining to Implementation of 10 CFR Part 26,” October 23, 1989.

11. Generic Letter 90-03, “Relaxation of Staff Position in Generic Letter 83-28, Item 2.2 Part 2 ‘Vendor Interface for Safety-Related Components’ (Generic Letter 90-03),” March 20, 1990.

12. Generic Letter 91-16, “Licensed Operators’ and other Nuclear Facility Personnel Fitness for Duty,” October 3, 1991.

13. NUREG-0578, “TMI-2 Lessons Learned Task Force Status Report and Short-Term Recommendations.”

14. NUREG-0694, “TMI-Related Requirements for New Operating Licenses.”

15. NUREG-0737, “Clarification of TMI Action Plan Requirements.”

16. NUREG-1385, “Fitness-for-Duty in the Nuclear Power Industry: Responses to Implementation Questions,” October 1989.

17. ANS 3.2-1976, “Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants.”

18. 10 CFR 50, Appendix A, Criterion I, “Quality Standards and Records”

19. 10 CFR 50, Appendix B, Criterion XI, “Test Control”

13.6 Security

13.6.1 Security Plans

This section of the combined license application should include a discussion indicating that a Security Plan has been prepared and submitted separately to the NRC. The details of the Security Plan should include a description of the elements of the Security Plans (physical security, training and qualification, and safeguards contingency - collectively the Security Plan) proposed by a combined license applicant. In addition, the Security Plan for a combined license applicant should describe the proposed site security provisions that will be implemented during construction of a new plant that is either inside an existing protected area, owner controlled area, or is a greenfield site.

Licensees of nuclear power plants that are licensed to 10 CFR Part 50 requirements have implemented security requirements based on a generic security plan template provided in NEI 03-12. The guidance provided in NEI 03-12 is considered acceptable and has been endorsed by the NRC (Ref. 12). Combined license applicants should provide information regarding their Security Plan that is consistent with NEI 03-12. In addition, guidance acceptable to the NRC has been provided in NEI 03-01 for Access Authorization and Fitness for Duty programs and in NEI 03-09 for Security Officer Training Programs (Ref. 12). The guidance provided in the above referenced NEI documents are not requirements and combined license applicants may follow alternative approaches to provide security information suitable for complying with the applicable regulations, however, applicants must describe and provide justification for the suitability of any alternative approaches.

In 2005, the Commission directed the staff to conduct a rulemaking to require applicants to submit a safety and security assessment. Although this assessment is not currently required by regulation, COL applicants should consider providing a security assessment. In addition, applicants should consider including schedule implementation milestones for the security assessment in the table provided in Section 13.4.

The combined license applicant should refer to their Security Plan and the security assessment in Chapter 13 of the SAR and incorporate it by reference in the combined license application. The Security Plan and security assessment information referenced in the combined license application should be submitted separately to the NRC. The combined license applicant's security plan information will be withheld from public disclosure in accordance with the provisions of 10 CFR 73.21.

The combined license applicant should identify the schedule implementation requirements associated with the elements of their Security Plan and security assessment, as discussed in Section 13.4.4, Operational Programs.

In addition, the combined license applicant should address, in this section, any COL action items or information items applicable to the Security Plan and security assessment that may

have been established for early site permits and/or certified designs that are referenced in the COL application.

The COL applicant should also submit the following information:

- a proposed schedule for implementing the site's operational security programs, security systems and equipment, and physical barriers, and
- proposed ITAAC for physical security hardware (guidance on development of ITAAC is provided in sections C.I.14.3 and C.II.2 of this regulatory guide)

13.6.2 References

1. 10 CFR 73.21, "Requirements for the Protection of Safeguards Information."

2. 10 CFR 8.5, "Interpretation by the General Counsel of §73.55 of this Chapter; Illumination and Physical Search Requirements."

3. 10 CFR Parts 73.56 and 73.57, "Access Authorization for Licensed Personnel."

4. 10 CFR Part 26, "Fitness for Duty."

5. 10 CFR 50.34(c), "Physical Security Plan."

6. 10 CFR 50.34(d), "Safeguards Contingency Plan."

7. 10 CFR 50.54(p), "Conditions of Licenses."

8. 10 CFR 50.70(b)(3), "Inspections."

9. 10 CFR Part 73, "Physical Protection of Plants and Materials."

10. 10 CFR Part 73, Appendices A, B, C, G and H.

11. Federal Register 50 FR 32138, 10 CFR 50, "Policy Statement on Severe Reactor Accidents in Regarding Future Designs and Existing Plants," August 8, 1985.

12. NRC Letter to Mr. Stephen D. Floyd, Vice President, Regulatory Affairs, Nuclear Generation Division, NEI, dated April 5, 2004, NRC Staff Review of NEI 03-12: Template for the Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, [and Independent Spent Fuel Storage Installation Security Program](Revision 1 - March 2004) ADAMS ML033640038.

13. NUREG - 1226, "Development and Utilization of the NRC Policy Statement on the Regulation of Advanced Nuclear Power Plants."