Preliminary Work Product to Support February 13, 2007 Public Meeting
RG 1.206 Sections 13.1 and 13.2 - Organization & Training

WordPerfect Document Compare Summary

Original document: C:\NRO RG1-206\DG1145 for compare\C-I-13-1 and 2.wpd
Revised document:
Deletions are shown with the following attributes and color:
~~Strikeout~~, Blue RGB(0,0,255).
Deleted text is shown as full text.
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C.I.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 final safety analysis report (FSAR) 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 FSAR 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.\ Applicants have the choice of including information which is site specific or different from a generic FSAR section 13.1 in this section or an appendix to this section.\

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.\ This information can be contained in this section or an appendix to this section.\

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

(1) how these responsibilities are assigned by the headquarters staff and implemented within the organizational units

(2) the responsible working- or performance-level organizational unit

(3) the estimated number of persons to be assigned to each unit with responsibility for the project

(4) the general educational and experience requirements for identified positions or classes of positions

~~[(5) education and experience required for management and supervisory positions~~

~~]~~(5) 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

(6) 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

(f) review and approval of material and component specifications

~~[(2) Pre-Operational Responsibilities~~

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

~~]~~([~~3~~]\2\) 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

(l) outside contractual assistance

13.1.1.2 ***Organizational Arrangement***

In the FSAR, 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 FSAR, 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 FSAR 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 FSAR 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. 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 FSAR 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 FSAR should include qualification requirements for individuals assigned to fulfill responsibilities identified in item 3 of Section 13.1.1.1, including the job position that corresponds most closely to that identified as "engineer in charge."

The FSAR 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 <u>Operating Organization</u>

This section of the FSAR 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 filling all positions

(8) the applicant's commitment to meet the applicable requirements for a physical protection program

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 minimum number of persons to be assigned to 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 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 FSAR 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 FSAR 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 qualification requirements of the initial appointees to (or incumbents of) plant positions should be presented for key plant managerial and supervisory personnel through shift supervisory level. The qualification requirements should be identified by position, title and, as a minimum, formal education, training, and experience (including 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 FSAR 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.\ Within three (3) months after either the issuance of an operating license or the date the Commission makes the finding under §52.103(g) of this chapter for a combined operating license, as applicable, the licensee shall have in effect an operator requalification program. \

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

13.2.1 Plant Staff Training Program

The FSAR 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 FSAR 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]~~\2\.

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:]~~\

13.2.1.1.1 Licensed Plant Staff Training Program (To be verified during construction)

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(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 formal instruction, 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 functions.~~

~~Contingency plans for additional training (i.e., requalification and/or retraining) 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 FSAR]~~.

(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\ to be verified during construction\.

(4) The applicant should describe its program for providing simulator capability for its 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 its program meets these requirements and regulatory guidance. In addition, the applicant should describe how it will ensure that its proposed simulator will correctly model its control room.

(5) The applicant should describe the means for evaluating training program effectiveness for all licensed operators, in accordance with a systems approach to training.

(6) COL applicants should provide implementation milestones for the reactor operator training program~~[~~.

~~The training program description for nonlicensed plant staff should include the following elements:]~~\ to be verified during construction.

13.2.1.1.2 Nonlicensed Plant Staff Training Program

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(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 formal instruction and on-the-job training, before and after fuel loading. The description should include contingency plans for additional training (i.e., requalification and/or retraining) in the event that fuel loading is significantly delayed until after the date indicated in the FSAR. The program should also include provisions for training on modifications to plant systems or functions.

The COL applicant should identify 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

The program should include a commitment to conduct an onsite formal training program and on-the-job training such that sufficient plant staff to ensure safe plant operations 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

(g) 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 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 FSAR 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.

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

(9) The proposed means for evaluating the training program effectiveness for all employees \and personnel covered by 10 CFR 50.120 \in accordance with the systems approach to training.

(10) A description of the training program for employees and non-employees to assure the effective implementation of the physical protection program.

13.2.1.2 ***Coordination with Preoperational Tests and Fuel Loading***

The FSAR 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 FSAR.

13.2.2 Applicable NRC Documents

The NRC regulations, regulatory guides, and reports listed below provide information pertaining to the training of nuclear power plant personnel. The FSAR 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 FSAR 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."~~
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