

## REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

Secondary - None

## I. AREAS OF REVIEW

The QAB will review the management and technical organization of the applicant (and applicants for a manufacturing license, or the review of a standardized design) and his major contractors, including the NSSS vendor, and architect/engineer for the project. These organizations are typically located offsite, in contrast to the onsite plant operating organization, reviewed under SRP Section 13.1.2. The review of offsite organizations includes their responsibilities and technical capability to engage in the activities proposed in the application. These activities include items such as reactor design, facility design, design review, design approval, manufacturing, construction management, testing and operation of the facility.

- A. The PSAR's, SSAR's and "Design Report" for the manufacturing license (see Appendix M of Part 50) should provide the following information:

The applicant's past experience in the design and construction of nuclear power plants, and past experience in activities of similar scope and complexity should be described. A description of the applicant's (utilities) management, engineering, and technical support organization, including organizational charts reflecting the applicant's current headquarters and engineering structure and planned modifications and additions to it to reflect the added functional responsibilities associated with the addition of the nuclear plant to the applicant's power generation capacity. These added responsibilities should be identified and should include items listed in 1 and 2 below. The description should include how these responsibilities are delegated and implemented within and from the headquarters staff and identify the working or performance level and responsible organization unit. The description should include an estimate of the number of persons expected to be assigned to each of various units with responsibility for the project.



U.S. NUCLEAR REGULATORY COMMISSION  
**STANDARD REVIEW PLAN**  
 OFFICE OF NUCLEAR REACTOR REGULATION

## REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

Secondary - None

## I. AREAS OF REVIEW

The applicant's management and technical support organization as described in his safety analysis report (SAR) is reviewed. These organizational units are typically located offsite, in contrast to the plant operating organization onsite, reviewed under Standard Review Plan (SRP) 13.1.2. The review of the management and technical support organization includes its responsibilities and the technical qualifications of the organization, including personnel, to engage in the activities proposed in the application. These activities may include items such as facility design, design review, design approval, construction management, testing, and operation of the facility.

In the preliminary safety analysis report (PSAR) the description of the management and technical support organization should include organization charts reflecting the applicant's current headquarters and engineering structure, and planned modifications and additions to it to reflect the added functional responsibilities associated with the addition of the nuclear plant to the applicant's power generation capacity. These added responsibilities should be identified and should include those listed in (1), (2), and (3) below. The description should show how these responsibilities are delegated and assigned within and from the headquarters staff, identify and describe the qualifications of the working or performance level organization unit responsible for each. ~~A schedule, relative to the construction permit (CP) and expected fuel loading date for each unit covered by the application, for implementing these responsibilities should be included along with an estimate of the number of persons expected to be assigned to the various units at each stage of the schedule.~~

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## 1. Design and Construction Responsibilities (Project Phase)

These responsibilities are generally defined prior to submittal of the application to the Nuclear Regulatory Commission (NRC) and usually continue until the plant is turned over to the operating organization. A description of the implementation or delegation of the following areas of responsibilities should be included.

- a. Principal site-related engineering work 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.
- d. Site layout in respect to environmental effects and security provisions.
- e. Development of safety analysis reports.
- f. Material and components specification review and approval.
- g. Procurement of materials and equipment.
- h. Management of construction activities.

## 2. Technical Support for Operations

Technical services and backup support for the operating organization should become available prior to the initial testing program and continue throughout the life of the plant. The special capabilities that should be included are:

- a. Nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgical and materials, and instrumentation and controls engineering.
- b. Plant chemistry.
- c. Health physics.

## 1. Design and Construction Responsibilities (Project Phase)

These are functions that are decided and defined almost totally prior to submittal of the application to the Nuclear Regulatory Commission (NRC) and may continue until the plant is turned over to the operating organization. The extent and assignment of these functions are generally contractual in nature and determined by the applicant. (Note: QA aspects should be described in Section 17.1.)

- a. Principal site-related engineering work such as meteorology, geology, seismology, hydrology, demography, and environmental effects.
- b. Design of plant and ancillary systems.
- c. Review and approval of plant design features.
- d. Site layout in respect to environmental effects and security provisions.
- e. Development of safety analysis reports.
- f. Material and components specification review and approval.
- g. Procurement of materials and equipment.
- h. Management and review of construction activities.

## ~~2. Preoperational Responsibilities~~

~~These are functions which should be substantially accomplished before preoperational testing begins and generally be a submittal of the final safety analysis report (FSAR).~~

- ~~a. Development of human engineering design objectives and design-phase review of proposed control room layouts.~~
- ~~b. Development and implementation of staff recruitment and training programs.~~
- ~~c. Development of plans for initial testing.~~
- ~~d. Development of plant maintenance programs.~~

## 3. Technical Support for Operations

Technical services and backup support for the operating organization should become available prior to the initial testing program and continue throughout the life of the plant. The special capabilities that should be included are:

- a. Nuclear, mechanical, structural, electrical, thermal-hydraulic, metallurgical and materials, and instrumentation and controls engineering.
- b. Plant chemistry.
- c. Health physics.

d. Fueling and refueling operations support.

e. Maintenance support.

f. Fire protection

The PSAR should also identify general qualification requirements in terms of numbers, educational backgrounds, and experience for identified positions or classes of positions; and specific educational and experience background for assigned management and supervisory positions relative to Item 1 above.

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. In addition, the plans for providing technical support for the operation of the facility (Item 2 above) should be described.

The CP-stage review (PSAR) of the NSSS and A/E organizations (and applicants for a manufacturing license and the review of standardized designs) includes a review of their technical staff to perform the activity related to the application. The information submitted should include a description of the specific activity (including scope) to be engaged in, organizational description and charts reflecting their lines of authority and responsibility for the project, the number of persons assigned to the project, and qualification requirements for principal management positions related to the project. For those NSSS and A/E 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.

B. The FSAR should provide the following information:

Organizational charts of the applicant showing the management and technical support headquarters structure, and a description of the specific provisions which have been made for technical support for operations (see A.2 above). The FSAR should (1) identify qualification requirements for headquarters staff personnel, in terms of numbers, educational background and experience requirements for each identified position or class of positions providing headquarters technical support for operations, and (2) include specific educational and experience background for individuals holding the management and supervisory positions identified for Item A.2 above.

d. Fueling and refueling operations support.

e. Maintenance support.

The PSAR should also identify general qualification requirements in terms of numbers, educational backgrounds, and experience for identified positions or classes of positions, and personnel resumes of assigned persons holding key or supervisory positions in disciplines or job functions unique to the nuclear field or this project relative to items (1) and (2) above. 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.

In the final safety analysis report, the description should include organization charts showing the management and technical support headquarters structure, ~~summarize the degree to which the proportional responsibilities of (2) above have been accomplished~~, and describe the provisions which have been made for technical support for operations, per (3) above.

The FSAR should identify qualification requirements for headquarters staff personnel, 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 resumes of individuals already employed by the applicant to fulfill responsibilities identified in (3), above, ~~including that individual whose job position corresponds most closely to that identified as "Engineer in Charge" at Section 4.6.1 of ANSI N10.1-1971.~~



## II. ACCEPTANCE CRITERIA

The applicant's description of his resources to deal with safety-related problems connected with the proposed addition of nuclear generating capacity should provide contributory evidence as to the technical qualifications of the applicant, as required by 10 CFR 50.34(a)(9) and (b)(7) or 10 CFR 50, Appendices M.5.e., N.2, and O.3. Criteria for acceptability include the following:

- A. The applicant has identified and described the organizational groups responsible for implementing responsibilities for the project (CP) and/or operation of the facility (OL).
- B. The applicant has described his method of implementing his responsibilities for dealing with the safety-related aspects of the project (CP) and operation of the facility (OL).
- C. Clear management control and effective lines of authority and communications exist between (1) the organizational units involved in the design and construction of the project (CP); and (2) the organizational units involved in the management, operation, and technical support for the operation of the facility (OL).
- D. Substantive breadth and level of experience and availability of manpower exist to implement the responsibility for the project, and technical support for its operation.
- E. Qualifications of the "Engineer in Charge" should meet or exceed those given in Section 4.6.1 of ANSI N18.1, as endorsed by Regulatory Guide 1.8. (appropriate issue of regulatory guide and standard).
- F. Responsibilities for fire protection should conform to BTP ASD 9.5-1.

## II. ACCEPTANCE CRITERIA

This section of the SAR should demonstrate the applicant's recognition of the commitment to fulfill corporate responsibilities to deal with safety-related problems connected with the proposed addition of nuclear generating capacity. It should be significant contributory evidence as to the technical qualifications of the applicant, as required by 10 CFR 50.34(a)(9) and (b)(7).

Criteria for acceptability include the following:

1. ~~Evidence of this commitment should include additions to the applicant's headquarters staff, as distinct from reliance upon personnel of vendors and consultants, and adequate personnel to support the identified responsibilities for the project.~~
2. ~~Recommendations contained in the AEC document WASH-1120, Revised, Section IV-B, "Headquarters Staff," are generally acceptable for this section of the SAR.~~
3. Qualifications of the "Engineer in Charge" should meet or exceed those given in Section 4.6.1 of ANSI N18.1-1971.



### III.

#### REVIEW PROCEDURES

Each element of the SAR information is to be reviewed against this SRP section. The reviewer's judgment during the review is to be based on an inspection of the material presented, whether items of special safety significance are involved, and the magnitude and uniqueness of the project. Any exceptions or alternatives are to be carefully reviewed to assure that they are clearly defined and that an adequate basis exists for acceptance. The applicant should identify the revision of references, Regulatory Guides, and Codes and Standards used. The reviewer should identify the revision of references, Regulatory Guides, and Codes and Standards used in the review.

In the review and evaluation of the subject matter of this section of the SAR, the following points should be taken into consideration.

The management and technical support headquarters structure, as demonstrated by organizational charts and descriptions of functions and responsibilities, should be free of ambiguous assignments of primary responsibility. Design and construction responsibilities should be reasonably well defined in both numbers and experience of persons required to implement their responsibilities. The reviewer must recognize that there are many acceptable ways to define and delegate job responsibilities. At the CP stage with respect to technical support for operations, the applicant's plans for headquarters staffing may not yet be firm. It is acceptable, therefore, if these plans are not fully specific in terms of numbers of people, provided the commitment made is sufficiently firm to assure the responsibility can be met. Variations in staffing may also be expected between applicants who lack prior experience with nuclear plant operation and those who have such experience. It is important that the reviewer assure himself that applicants in the former category do not under-estimate the magnitude of the task. The reviewer should be alert to the possibility that excessive work loads may be placed upon too small a number of individuals.

If the application involves the addition of more than one unit, the reviewer should assure that headquarters staffing plans take this fact into account. This is particularly important if additional units are scheduled to come on line at intervals of about one year or less, since the shakedown period for the operation of a new plant can be expected to produce quite heavy workloads. In some of these cases, the applicant may plan to bolster the plant staff organization during such periods, so that it is necessary to evaluate headquarters staffing plans in conjunction with those for the plant staff organization.

#### III. REVIEW PROCEDURES

Selection and emphasis of various aspects of the areas covered by this review plan will be made by the reviewer on each case. The judgment on the areas to be given attention during the review is to be based on an inspection of the material presented, the similarity of the material to that recently reviewed on other plants, and whether items of special safety significance are involved.

In the review and evaluation of the subject matter of this section of the SAR, the following specific points should be taken into consideration. The management and technical support headquarters structure, as demonstrated by organization charts and descriptions of functions and responsibilities, should be free of ambiguous assignments of primary responsibility. Design and construction responsibilities should be reasonably well defined in both numbers and experience of persons required to implement their responsibilities. The reviewer must recognize, however, that there are many acceptable ways to define and delegate job responsibilities. In respect to item (1) above, the applicant's plans for headquarters staffing may not yet be firm. It is acceptable, therefore, if these plans are not fully specific in terms of numbers of people, provided the commitment made is sufficiently firm to assure the responsibility can be met. ~~It should also be noted (with respect to criterion (2) above) that some additions to staff may already have taken place prior to submittal of the PSAR. Credit should be given for such prior additions to the extent they involve job responsibilities identified in 1 above.~~ Variations in staffing may also be expected between applicants who lack prior experience with nuclear power plant operation and those who have such experience. It is important that the reviewer assure himself that applicants in the former category do not underestimate the magnitude of the task. The reviewer should be alert to the possibility that excessive work loads may be placed upon too small a number of individuals.

If the application involves the addition of more than one unit, the reviewer should assure that headquarters staffing plans take this fact into account. This is particularly important if additional units are scheduled to come on line at intervals of about one year or less, since the shakedown period for the operation of a new plant can be expected to produce quite heavy workloads. In some of these cases, the applicant may plan to bolster the plant staff organization during such periods, so that it is necessary to evaluate headquarters staffing plans in conjunction with those for the plant staff organization.

The reviewer should assess the degree of participation in the "project phase" of that headquarters group that typically has plant operating (generating) responsibility. Interfaces between such a group and those with project engineering responsibilities should be examined.

The review procedure for this section consists, therefore, of:

1. An examination of the information submitted to determine that all subject matter identified in subsection I above has been addressed, and
2. A comparison of the information with the acceptance criteria of subsection II above in the light of the additional points set forth earlier in this SRP section.

In addition, if the applicant, as of the time the review takes place, has had experience in the operation of a previously licensed nuclear power plant, the reviewer may seek independent information relative to headquarters staffing and qualifications through the Office of Inspection and Enforcement, e.g., by discussion with inspection personnel, or review of inspection reports.

The reviewer then determines, based on the foregoing, the overall acceptability of the applicant's management and technical support organization and staffing plans.

The reviewer should assess the degree of participation in the "project phase" of that headquarters group that typically has plant operating (generating) responsibility. Interfaces between such a group and those with project engineering responsibilities should be examined. ~~If project engineering groups are assigned any of the preoperational responsibilities identified in (2) above, their qualifications to represent the operator's viewpoint should be examined.~~

~~Schedules for staffing should be provided with a time scale that is fixed with regard to the expected fuel loading date. Criteria useful for judging the adequacy of such schedules are in NASH-1130. The reviewer must also be alert to the fact that some of the preoperational responsibilities identified must be discharged before designs are frozen, e.g., design reviews for operability and maintainability.~~

~~An important element of the review of this section of the SAR is the evaluation of the qualification requirements and qualifications (FSAR) of technical support personnel. This group probably will be involved in the independent review of plant operations. Their qualifications should, therefore, be judged in the light of the review mechanism and responsibilities described in SAR section 12.4.1. Additional guidance on this point in ANSI-N18.2-1972, as Section 4.7, should be used, as well as ANSI-N18.1-1971, Section 4.6.1.~~

The review procedure for this section consists, therefore, of:

1. An examination of the information submitted to determine that all subject matter identified in I above has been addressed, and
2. A comparison of the information with the acceptance criteria of II above in the light of the specific points set forth earlier in this section.

In addition, if the applicant, as of the time the review takes place, has had experience in the operation of a previously licensed nuclear power plant, the reviewer may seek independent information relative to headquarters staffing and qualifications through the Office of Inspection and Enforcement; e.g., by discussion with inspection personnel, or review of inspection reports.

The reviewer then determines, based on the foregoing, the overall acceptability of the applicant's management and technical support organization and staffing plans.



#### IV. EVALUATION FINDINGS

The reviewer verifies that the information presented and his review support conclusions of the following type, to be used in the staff's safety evaluation report:

1. CP Safety Evaluation Report. "The applicant has described his responsibilities for the design and construction of the facility and his plans for management and technical support for such activities and for utilization of this organization to support operations. These plans have been reviewed and give adequate assurance that such persons are technically qualified, ~~that the applicant has identified operational responsibilities for the operation of the plant and has provided reasonable assurance that they will be satisfactorily discharged, and that the applicant is technically qualified to engage in the proposed activities.~~"
2. UL Safety Evaluation Report. "The applicant has ~~described the extent to which his preoperational responsibilities have been accomplished and~~ described his means for providing technical support for the plant staff during operation of the facility. These measures have been reviewed and provide reasonable assurance that the technical support will be provided by technically qualified persons, ~~and provide in conjunction with the findings of Sections 13.1.2 and 13.1.3 of this Safety Evaluation Report that the applicant is technically qualified to operate the facility safely.~~"

#### V. REFERENCES

1. "Utility Staffing and Training for Nuclear Power," WASH-1130, Revised, U.S. Atomic Energy Commission, June 1973.
2. ~~ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel," American National Standards Institute (1971).~~
3. ~~ANSI N18.7-1972, "Standard for Administrative Controls for Nuclear Power Plants," American National Standards Institute (1972).~~
4. 10 CFR 50.34(a)(9) and (b)(7).



#### IV. EVALUATION FINDING

The reviewer verifies that the information presented and his review support conclusions of the following type, to be used in the staff's safety evaluation report:

##### A. CP Safety Evaluation Report

"The applicant has described clear responsibilities and associated resources for the design and construction of the facility and has described his plans for management of the project and for utilization of the NSSS and A/E. These plans have been reviewed and give adequate assurance that an acceptable organization and staff resources have been established to satisfy the applicant's commitments for the design and construction of the facility."

##### B. OL Safety Evaluation Report

"The applicant has described his organization for the management of, and his means for providing technical support for the plant staff during operation of the facility. These measures have been reviewed and we conclude that the applicant has an acceptable organization and adequate resources to provide offsite technical support for the operation of the facility."

#### V. REFERENCES

- A. "Utility Staffing and Training for Nuclear Power," WASH-1130, Revised, U. S. Atomic Energy Commission, June 1973.
- B. 10 CFR 50.34(a)(9) and (b)(7).
- C. 10 CFR 50 Appendices M(5.), H(2.) and O(3.).
- D. USNRC Branch Technical Position ASB 9.5-1.
- E. Regulatory Guide 1.8, "Personnel Selection and Training."



U.S. NUCLEAR REGULATORY COMMISSION  
**STANDARD REVIEW PLAN**  
 OFFICE OF NUCLEAR REACTOR REGULATION

## SECTION 13.1.2 OPERATING ORGANIZATION

REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

## I. AREAS OF REVIEW

The applicant's operating organization, as described in his safety analysis report (SAR), is reviewed. This section of the SAR (PSAR and FSAR) should describe the structure, functions, and responsibilities of the onsite organization established to operate and maintain the plant. Specific information to be reviewed is as follows:

- A. An organization chart showing the title of each position, the ~~minimum~~ number of persons to be assigned to common or duplicated positions, 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 changes and additions as new units are added to the station.
- B. The schedule, relative to fuel loading for each unit, for filling all positions should be presented.
- C. The functions, responsibilities, and authorities of plant positions corresponding to the following should be described.
  1. Overall plant management
  2. Operations supervision
  3. Operating shift crew supervision
  4. Licensed operators
  5. Non-licensed operators
  6. Technical supervision
  7. Radiation protection supervision
  8. Instrumentation and controls maintenance supervision
  9. Equipment maintenance supervision
  10. Fire protection supervision

## SECTION 13.1.2

## OPERATING ORGANIZATION

REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

Secondary - Radiological Assessment Branch (RAB)

I. AREAS OF REVIEW

The applicant's operating organization, as described in his safety analysis report (SAR), is reviewed. This section of the SAR should describe the structure, functions, and responsibilities of the onsite organization established to operate and maintain the plant. Specific information to be included is as follows:

1. An organization chart showing the title of each position, the number of persons assigned to common or duplicated positions, 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 changes and additions as new units are added to the station.
2. The schedule, relative to fuel loading for each unit, for filling all positions should be displayed.
3. The functions, responsibilities, and authorities of plant positions corresponding to the following should be described.
  - a. Overall plant management.
  - b. Operations supervision.
  - c. Operating shift crew supervision.
  - d. Licensed operators.
  - e. Non-licensed operators.
  - f. Technical supervision.
  - g. Radiation protection supervision.
  - h. Instrumentation and controls maintenance supervision.
  - i. Equipment maintenance supervision.
  - j. ~~Quality assurance and quality control supervision.~~



For each position, where applicable, required interfaces with offsite personnel or positions identified in SAR Section 13.1.1 should be described. Such interfaces include defined lines of reporting responsibilities, e.g., from the plant manager to his immediate superior, as well as functional or communication channels. In the final safety analysis report (FSAR), the following should also be described: (1) the line of succession of authority and responsibility for overall station operation in the event of unexpected contingencies of a temporary nature, and (2) the delegation of authority that may be granted to operating supervisors and to shift supervisors, including the authority to issue standing or special orders.

If the station contains or is planned to contain power generating facilities other than those relating to the application in question and including fossil-fueled units, this section should also describe interfaces with the organizations operating such other facilities. The description should include any proposed sharing of persons between the units, a description of their duties, and the proportion of their time they will routinely be assigned to the other unit.

- D. The position titles, applicable operator licensing requirements for each, and the total numbers of people planned to man each shift should be described for all combinations of units proposed to be at the station in either operating or cold shutdown modes. Shift crew staffing plans unique to refueling operations should be described. The proposed means of assigning shift responsibility for implementing the radiation protection and fire protection programs on a round-the-clock basis should also be described.

RAB reviews the function, responsibility, authority, and reporting line for the radiation protection supervision, against acceptance criteria stated in SRP Section 12.5; the results of this evaluation are reported in Section 12 of the SER.

## II. ACCEPTANCE CRITERIA

This section of the SAR should demonstrate the applicant's commitment to (PSAR) and implementation of (FSAR) plans to staff the onsite operating organization and to define and delegate responsibilities to provide assurance that the plant can be operated safely. It should be significant contributory evidence as to the technical qualifications of the applicant, as required by 10 CFR 50.34(a)(9) and (b)(7).

for each position, where applicable, required interfaces with offsite personnel or positions identified in SAR 13.1.1 should be described. Such interfaces include defined lines of reporting responsibilities, e.g., from the plant manager to his immediate superior, as well as functional or communication channels. In the final safety analysis report (FSAR), the following should also be described: (1) the line of succession of authority and responsibility for overall station operation ~~through at least three persons~~ in the event of unexpected contingencies of a temporary nature, and (2) the delegation of authority to operating supervisors and to shift supervisors, including the authority to issue standing or special orders.

If the station contains or is planned to contain power generating facilities other than those relating to the application in question and including fossil fueled units, this section should also describe interfaces with the organizations operating such other facilities. The description should include any proposed sharing of persons between the units and the proportion of their time that they will routinely and non-routinely be assigned to the other unit.

4. The position titles, applicable operator licensing requirements for each, and the total numbers of people planned to man each shift should be described for all combinations of units proposed to be at the station in either operating or cold shutdown modes. Shift crew staffing plans unique to refueling operations should be described. The proposed means of assigning shift responsibility for implementing the radiation protection program on a round-the-clock basis should also be described.

RSB reviews the function, responsibility, authority, and reporting line for the radiation protection supervision, against acceptance criteria stated in Standard Review Plan 12.5.

## II. ACCEPTANCE CRITERIA

This section of the SAR should demonstrate the applicant's commitment to (PSAR) and implementation of (FSAR) plans to staff the onsite operating organization and to define and delegate responsibilities to provide assurance that the plant can be operated safely. It should be significant contributory evidence as to the technical qualifications of the applicant, as required by 10 CFR 50.34(a)(9) and (b)(7).



Criteria for acceptability include the following: NOTE: below references to regulatory guide and standards reflect appropriate issue.

A. The requirements of ANSI N18.7, Section 3.4, "Operating Organization," as endorsed by Regulatory Guide 1.33, should be met.

B. Responsibilities and authorities of operating organization personnel should conform to the requirements of ANSI N18.7, Section 5.2, "Rules of Practice," Section 4.4, "Onsite Review," as endorsed by Regulatory Guide 1.33, Branch Technical Position ASD 9.5-1, ANSI N18.1, Section 3.2, "Operating Organization," as endorsed by Regulatory Guide 1.8, and Regulatory Guide 8.8, Section C.1.b(2) and (3).

C. 1. Assignments of onsite shift operating crews should be made in numbers not less than the following:

For a station having one licensed unit, each shift crew should have at least three persons at all times, plus two additional persons when the unit is operating. For a multi-unit station, each shift crew should have at least three persons per licensed unit at all times, plus one additional person per operating unit.

2. Operator license qualifications of persons assigned to operating shift crews should be as follows:

- (a) A licensed senior operator who is also a member of the station supervisory staff should be onsite at all times when at least one unit is loaded with fuel.
- (b) For any station with more than one reactor containing fuel, (1) the number of licensed senior operators onsite at all times should not be less than the number of control rooms from which the fueled units are monitored, and (2) the number of licensed senior operators should not be less than the number of reactors operating.
- (c) For each reactor containing fuel, there should be at least one licensed operator in the control room at all times. Shift crew compositions should be specified such that this condition can be satisfied independently of licensed senior operators assigned to shift crews to meet the criteria of (a) and (b) above.

Criteria for acceptability include the following:

1. ~~Recommendations contained in the AEC document NASH 1130, Revised, Section IV-B, "Plant Staff," are generally acceptable guides for this section of the SAR.~~
2. The requirements of ANSI N18.7-1972, Section 3.3, "Operating Organization," should be met.
3. Responsibilities and authorities of operating organization personnel should conform to the requirements of ANSI N18.7-1972, Section 5.1, "Rules of Practice," and Section 4.5, "Onsite Review."
4. a. Assignments of personnel meeting ANSI N18.1-1971 qualifications, Section 1.3.1 or Section 4.5.1, should be made to onsite shift operating crews in numbers not less than the following:

For a station having one licensed unit, each shift crew should have at least three persons at all times, plus two additional persons when the unit is operating. For a multi-unit station, each shift crew should have at least three persons per licensed unit at all times, plus one additional person per operating unit.

- b. Operator license qualifications of persons assigned to operating shift crews should be as follows:
  - (1) A licensed senior operator who is also a member of the station supervisory staff should be onsite at all times when at least one unit is loaded with fuel.
  - (2) For any station with more than one reactor containing fuel, (1) the number of licensed senior operators onsite at all times should not be less than the number of control rooms from which the fueled units are monitored, and (2) the number of licensed senior operators should not be less than the number of reactors operating.
  - (3) For each reactor containing fuel, there should be at least one licensed operator in the control room at all times. Shift crew compositions should be specified such that this condition can be satisfied independently of licensed senior operators assigned to shift crews to meet the criteria of (1) and (2) above.

(d) For each control room from which one or more reactors are in operation, an additional operator should be onsite and available to serve as relief operator for that control room. Shift crew compositions should be specified such that this condition can be satisfied independently of (a), (b), and (c), and for each such control room.

3. Radiation protection qualifications of at least one person on each operating shift should be as follows:

The management of each station having one or more units containing fuel should either, (1) qualify and designate at least one member of each shift operating crew to implement radiation protection procedures, including routine or special radiation surveys using portable radiation detectors, use of protective barriers and signs, use of protective clothing and breathing apparatus, performance of contamination surveys, checks on radiation monitors, and limits of exposure rates and accumulated dose, or (2) assign a health physics technician to each shift, such assignment to be in addition to those assigned to shift operating crews in accordance with (1) and (2) above.

4. Assignments of persons to implement the fire brigade requirements of the fire protection program should meet the following:

(a) The responsibilities of the fire brigade members under normal conditions should not conflict with their responsibilities during a fire emergency.

(b) The minimum number of fire brigade members available onsite for each shift operation crew should be consistent with the activities required to combat the most significant fire.

(4) For each control room from which one or more reactors are in operation, an additional operator should be onsite and available to serve as relief operator for that control room. Shift crew compositions should be specified such that this condition can be satisfied independently of (1), (2), and (3), and for each such control room.

c. Radiation protection qualifications of at least one person on each operating shift should be as follows:

The management of each station having one or more units containing fuel should either, (1) qualify and designate at least one member of each shift operating crew to implement radiation protection procedures, including routine or special radiation surveys using portable radiation detectors, use of protective barriers and signs, use of protective clothing and breathing apparatus, performance of contamination surveys, checks on radiation monitors, and limits of exposure rates and accumulated dose, or (2) assign a health physics technician to each shift, such assignment to be in addition to those assigned to shift operating crews in accordance with (a) and (b) above.

### III: REVIEW PROCEDURES

Each element of the SAR information is to be reviewed against this SRP Section. The reviewer's judgment during the review is to be based on an inspection of the material presented, whether items of special safety significance are involved, and the uniqueness of the facility. Any exceptions or alternatives are to be carefully reviewed to assure that they are clearly defined and that an adequate basis exists for acceptance.

The applicant should identify the revision of references, Regulatory Guides and Codes and Standards used. The reviewer should identify the revision of references, Regulatory Guides and Codes and Standards used in the review.

In the review and evaluation of the subject matter of this section of the SAR, the following points should be taken into consideration.

Plant staff organizational structures are not rigidly fixed; however, experience has shown that certain components are common to and necessary for all plants. Among these are an operational, onsite technical support, and maintenance groups, under the direction and supervision of a plant manager. For multi-unit sites, consideration must be given to the possibility that off-shift supervision may be stretched too thin to provide effective supervision. For example, a single operations manager may have difficulty covering more than two units. For on-shift persons, the total manpower available should be reviewed to assure that in excess of four full operating shift crews are planned so that excessive overtime is not routinely scheduled for these crews. For multi-unit sites, overall site responsibilities should be checked for clarity during those periods of time when senior level supervision is not onsite.

The operating organization, as demonstrated by organization charts and descriptions of functions and responsibilities, should be free of ambiguous assignments of primary responsibility. Operating responsibilities should be reasonably well defined in both numbers and experience of persons required to implement their responsibilities. The reviewer must recognize, that there are many acceptable ways to define and delegate job responsibilities. Variations in staffing may also

### III. REVIEW PROCEDURES

Selection and emphasis of various aspects of the areas covered by this review plan will be made by the reviewer on each case. The judgment on the areas to be given attention during the review is to be based on an inspection of the material presented, ~~the similarity of the material to that recently reviewed on other plants~~, and whether items of special safety significance are involved.

In the review and evaluation of the subject matter of this section of the SAR, the following specific points should be taken into consideration.

Plant staff organizational structures are not rigidly fixed; however, experience has shown that certain components are common to and necessary for all plants. Among these are an operational group, an onsite technical support group, and a maintenance group, under the direction and supervision of a plant manager. For multi-unit sites, consideration must be given to the possibility that off-shift supervision may be stretched too thin to provide effective supervision. In particular, the operations manager function should not be stretched to cover more than two units. For on-shift persons, there should be manpower available in excess of four full operating shift crews so that excessive overtime is not routinely scheduled for these crews. For multi-unit sites, a shift supervisor should be designated in charge of the station during those periods of time when senior level supervision is not on site.



be expected between applicants who lack prior experience with nuclear plant operation and those who have such experience. It is important that the reviewer assure himself that applicants in the former category do not underestimate the magnitude of the task. The reviewer should be alert to the possibility that excessive work loads may be placed upon too small a number of individuals.

The structure of onsite technical support and maintenance groups may depend somewhat on headquarters staffing and the division of effort between onsite and offsite personnel.

With respect to shift assignments, the reviewer should determine that persons assigned to implement the radiation protection program are adequately trained and qualified for this task, and that it is a clearly defined part of the job function. Assignments to shift crews for refueling operations should be examined to assure adequate supervisory attention is given to all operations associated with fuel handling.

The review procedure for this SRP section consists, therefore, of:

1. An examination of the information submitted to determine that all subject matter identified in Section I above has been addressed.
2. A comparison of the information with the acceptance criteria of Section II above in the light of the additional points set forth earlier in this SRP section.

In addition, if the applicant, as of the time the review takes place, has had experience in the operation of previously licensed nuclear power plant, the reviewer may seek independent information relative to plant staffing and qualifications through the Office of Inspection and Enforcement, e.g., by discussion with inspection personnel, or review of inspection reports.

The reviewer then determines, based upon the foregoing, the overall acceptability of the applicant's operating organizations and plant staffing plans.

The structure of onsite technical support and maintenance groups may depend somewhat on headquarters staffing and the division of effort between onsite and offsite personnel.

With respect to shift assignments, the reviewer should determine that persons assigned to implement the radiation protection program are adequately trained and qualified for this task, and that it is a clearly defined part of the job function. Assignments to shift crews for refueling operations should be examined to assure adequate supervisory attention is given to all operations associated with fuel handling.

The review procedure for this section consists, therefore, of:

1. An examination of the information submitted to determine that all subject matter identified in I above has been addressed.
2. A comparison of the information with the acceptance criteria of II above in the light of the specific points set forth earlier in this section.

In addition, if the applicant, as of the time the review takes place, has had experience in the operation of a previously licensed nuclear power plant, the reviewer may seek independent information relative to plant staffing and qualifications through the Office of Inspection and Enforcement; e.g., by discussion with inspection personnel, or review of inspection reports.

The reviewer then determines, based upon the foregoing, the overall acceptability of the applicant's operating organizations and plant staffing plans.

#### IV. EVALUATION FINDINGS

The reviewer verifies that the information presented and his review support conclusions of the following type, to be used in the staff's safety evaluation report:

"The applicant has described the assignment of plant operating responsibilities; the reporting chain up through the chief executive office of the company (applicant); the proposed size of the regular plant staff; the functions and responsibilities of each major plant staff group; and the proposed shift crew complement for single unit or multiple unit operation. This information has been reviewed, and it is the conclusion of the staff that the proposed organization is acceptable."

#### V. REFERENCES

- A. "Utility Staffing and Training of Nuclear Power," WASH-1130, Revised, U. S. Atomic Energy Commission, June 1973.
- B. Regulatory Guide 1.8, "Personnel Selection and Training."
- C. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."
- D. 10 CFR 50.34(a)(6) and (b)(6).
- E. U. S. NRC Branch Technical Position ASB 9.5-1.
- F. Regulatory Guide 8.8, "Information Relevant to Ensuring that Occupational Radiation Exposures at Nuclear Power Stations Will be as Low as is Reasonably Achievable" (Rev. 2).

#### IV. EVALUATION FINDINGS

The reviewer verifies that the information presented and his review support conclusions of the following type, to be used in the staff's safety evaluation report:

"The applicant has described the assignment of plant operating responsibilities; the reporting chain up through the chief executive officer of the company (applicant); the proposed size of the regular plant staff, ~~total and by major sub-divisions; the character and responsibilities of each major plant staff group~~; and the proposed shift crew complement for single unit or multiple unit operation. This information has been reviewed, and it is the conclusion of the staff that proposed organization is acceptable. ~~Major elements of this organization including key positions, license requirements, and shift composition will be incorporated in the administrative controls section of the technical specifications.~~"

#### V. REFERENCES

1. "Utility Staffing and Training of Nuclear Power," WASH-1130, Revised, U.S. Atomic Energy Commission, June 1973.
2. ~~ANSI N18.1-1971, "Selection and Training of Nuclear Power Plant Personnel," American National Standards Institute (1971).~~
3. ~~ANSI N18.7-1972, "Standard for Administrative Controls for Nuclear Power Plants," American National Standards Institute (1972).~~

## SECTION 13.4 OPERATIONAL REVIEW

### REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

Secondary - None

#### 1. AREAS OF REVIEW

QAB reviews and evaluates the applicant's plan for conducting reviews of operating phase activities that are important to safety, as described in the applicant's final safety analysis report (FSAR). The primary focus of attention should be on the provisions that will be used to implement the licensee's responsibility pursuant to 10 CFR 50.59 relating to proposed changes, tests, and experiments, and on the procedures for after-the-fact review evaluation of unplanned events, such as Licensee Event Reports. No information is required in the PSAR.

The FSAR should describe provisions for review by plant staff members and for independent review of plant operations. Specific information to be reviewed is as follows:

- A. How the onsite organization functions with respect to review of proposed changes to systems or procedures, tests, and experiments, and of unplanned events that have operational safety significance. This will include subject matter to be reviewed, organizational provisions for conducting the reviews including personnel, and the documentation and reporting of review activities.
- B. The procedure and organization employed to examine safety-related operating activities independent of the operating organization. This will include how and when such a program is to be implemented, relative to fuel loading of the first unit, and include subject matter to be reviewed, organizational provisions for conducting the review including personnel, and the documentation and reporting of review activities.



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## SECTION 13.4

## REVIEW AND AUDIT

### REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

Secondary - None

#### 1. AREAS OF REVIEW

QAB reviews and evaluates the applicant's plan for conducting reviews and audits of operating phase activities that are important to safety, as described in the applicant's ~~preliminary safety analysis report (PSAR)~~ or final safety analysis report (FSAR). The primary focus of attention should be on the procedures that will be used to implement the licensee's responsibility pursuant to 10 CFR 50.59 relating to proposed changes, tests, and experiments, and on the procedures for after-the-fact review evaluation of unplanned events, such as ~~abnormal occurrences~~. At the PSAR review stage, the applicant's commitment to follow the recommendations of Regulatory Guide 1.33 is examined. At the FSAR stage, the applicant's proposed implementation plan for conducting reviews ~~and audits~~ is evaluated. Procedures for both onsite/offsite (Independent) review should be described, as follows:

1. ~~Qualified members of the onsite operating organization and persons independent of the onsite organization should participate in the review of safety-related operating activities. The PSAR should provide a clear commitment for the applicant to meet Section 4 of ANSI N18.7-1972.~~
2. ~~Qualified members of the onsite operating organization are expected to participate in the review of operating activities to assist the plant manager either as part of their individual job responsibilities or as members of a functional review group. The FSAR should describe how the onsite organization functions with respect to review of proposed changes to systems or procedures, tests, and experiments, and of unplanned events that have operational safety significance.~~
3. The FSAR should provide a detailed description of the procedure and organization employed to examine safety-related operating activities independent of the operating organization. The information should be sufficient to describe how and when such a program is to be implemented, relative to fuel loading of the first unit.



## II. ACCEPTANCE CRITERIA

The staff positions applicable to this section are as follows for 1 and 2 above respectively: NOTE: below references to regulatory guides and standards reflect appropriate issues.

### A. Plant Staff Review

1. Scope of this review should include that of 10 CFR 50.59 and Section 4.4 of ANSI N18.7 as endorsed by Regulatory Guide 1.33.
2. Organizational arrangements should provide for interdisciplinary review of subject matter.
3. Qualification levels for plant staff personnel performing reviews should be at least equivalent to those described in Section 4.4 of ANSI N18.7 as endorsed by Regulatory Guide 1.8.
4. Review activities should be documented and results forwarded to appropriate members of management.

### B. Independent Review

Provisions for independent review should meet that described in Sections 4.1 - 4.3 of ANSI N18.7.

## III. REVIEW PROCEDURES

Each element of the FSAR information is to be reviewed against this SAR section. The reviewer's judgment during the review is to be based on an inspection of the material presented, whether items of special safety significance are involved, and the magnitude and uniqueness of the project. Any exceptions or alternatives are to be carefully reviewed to assure they are clearly defined and that an adequate basis exists for acceptance. The applicant should identify the revision of references, regulatory guides and codes and standards used. The reviewer should identify the revision of references, regulatory guides and codes and standards used in the review.

The review of this section of the FSAR consists of an analysis of the information submitted by detailed comparison with the acceptance criteria of subsection II, above. When the reviewer has determined that the acceptance criteria stated above or their equivalent have been satisfactorily addressed in the applicant's plans for conducting reviews, the review of this section of the SAR is complete.

## II. ACCEPTANCE CRITERIA

The staff position applicable to this section of the FSAR is the set of requirements and recommendations found in ANSI N18.7-1972 at Sections 4.1-4.5, as endorsed by Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."

## III. REVIEW PROCEDURES

~~Selection and emphasis of various aspects of the areas covered by this review plan will be made by the reviewer on each case.~~ The judgment on the areas to be given attention during the review is to be based on an inspection of the material presented, ~~the similarity of the material to that recently reviewed on other plants,~~ and whether items of special safety significance are involved.

~~The review of this section of the FSAR consists of determining that the applicant has committed to meeting the acceptance criteria of II, above.~~

The review of this section of the FSAR consists of an analysis of the information submitted by detailed comparison with the acceptance criteria of II, above. When the reviewer has determined that the ~~requirements and recommendations of the referenced sections of the standard have been implemented in the applicant's plans for conducting reviews and audits,~~ the review of this section of the SAR is complete.

#### IV. EVALUATION FINDINGS

The reviewer verifies that the information presented and his review support conclusions of the following type, to be used in the staff's safety evaluation report: NOTE: appropriate issue of regulatory guide and standard should be stated.

"The applicant's program for the review of plant operations is in conformance with staff positions described in Regulatory Guide 1.33 and applicable industry standards (ANSI N18.7), and is acceptable."

#### V. REFERENCES

- A. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."
- B. Regulatory Guide 1.8, "Personnel Selection and Training."
- C. 10 CFR 50.59, "Authorization of Changes, Tests and Experiments."

#### IV. EVALUATION FINDINGS

The reviewer verifies that the information presented and his review support conclusions of the following type, to be used in the staff's safety evaluation report:

"The applicant's program for review ~~and audit~~ of plant operations is in conformance with staff positions described in Regulatory Guide 1.33 and applicable industry standards (ANSI N18.7-1972), and is acceptable. ~~The major features of the review and audit program will be incorporated in the administrative controls section of the plant technical specifications.~~"

~~The evaluation finding for this section should also include the following:~~

- ~~1. A brief description of the two-level review process.~~
- ~~2. A statement of the applicant's commitment to perform independent reviews and audits in accordance with a written charter.~~

#### V. REFERENCES

1. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)."
2. ANSI N18.7-1972, "Standard for Administrative Controls for Nuclear Power Plants," American National Standards Institute (1972).
3. 10 CFR 50.59, "Authorization of Changes, Tests, and Experiments."

## SECTION 13.1.3 QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL

### REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

Secondary - None

### I. AREAS OF REVIEW

The qualifications established for the applicant's plant personnel as described in his safety analysis report (SAR), are reviewed. This section of the SAR should describe the education, training, and experience requirements established by the applicant for filling each management, operating, technical, and maintenance position category in the operating organization described in SAR Section 13.1.2. At the PSAR stage, it is recognized that many details of the plant organization and staffing have not been finalized. Consequently, the information to be reviewed should demonstrate an understanding of and commitment to the acceptance criteria below. At the final safety analysis report (FSAR) stage, this section should in addition provide evidence, in the form of personnel resumes, that the initial selections made for management and principal supervisory positions down through the shift supervisory level, conform to those requirements.

### II. ACCEPTANCE CRITERIA

Regulatory Guide 1.8, "Personnel Selection and Training," sets forth the staff position on plant personnel qualifications and indicates that the criteria for selection (qualifications) contained in ANSI N18.1 are generally acceptable, except as noted in the Regulatory Position section of Regulatory Guide 1.8, (appropriate issue).

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## SECTION 13.1.3 QUALIFICATIONS OF NUCLEAR PLANT PERSONNEL

### REVIEW RESPONSIBILITIES

Primary - Quality Assurance Branch (QAB)

Secondary - Radiological Assessment Branch (RAB)

### I. AREAS OF REVIEW

The qualifications of the applicant plant personnel, as described in his safety analysis report (SAR), are reviewed. This section of the SAR should describe the education, training, and experience requirements established by the applicant for filling each management, operating, technical, and maintenance position category in the operating organization described in SAR Section 13.1.2. At the final safety analysis report (FSAR) stage, this section should in addition provide evidence, in the form of personnel resumes, that the initial selections made for key management and supervisory positions down through the shift supervisory level, conform to those requirements. ~~The RAB reviews the qualifications of the reactor protection supervisor against the acceptance criteria in Standard Review Plan 12.6.~~

### II. ACCEPTANCE CRITERIA

Regulatory Guide 1.8, "Personnel Selection and Training," sets forth the staff position on plant personnel qualifications and indicates that the criteria for selection (qualifications) contained in ANSI N18.1-1971 are generally acceptable.



### III. REVIEW PROCEDURES

Each element of the SAR information is to be reviewed against this SRP section. The reviewer's judgment during the review is to be based on an inspection of the material presented, whether items of special safety significance are involved, and the magnitude and uniqueness of the facility. Any exceptions or alternatives are to be carefully reviewed to assure that they are clearly defined and that an adequate basis exists for acceptance. The applicant should identify the revision of references, regulatory guides and codes and standards used. The reviewer should identify the revision of references, regulatory guides and codes and standards used in the review.

At the construction permit (CP) stage, the applicant will generally not have made selections for plant staff positions. The review procedure, therefore, is to examine this section of the SAR for a commitment on the part of the applicant to conform to the stated acceptance criteria. This commitment should be unambiguous and, when such is the case, the review is completed.

Where a clear comparison cannot be made between the proposed plant staff positions and those defined at Section 4 of ANSI N18.1, the applicant should list each position on his plant staff and designate the corresponding position of Section 4 of ANSI N18.1, or describe in detail his proposed qualifications for each position on his plant staff.

The review of the FSAR, at the operating license (OL) stage, consists first of the same examination as made at the CP stage, and secondly, of an analysis of each resume. The reviewer should make an explicit comparison of the educational and experience records obtained from each resume with the corresponding requirements set forth for the applicable position in Section 4 of ANSI N18.1 or other approved qualifications. "Applicable experience" should be judged in the light of the position responsibility. Credit for experience which may not be entirely applicable should be weighed to a degree commensurate with its applicability. The bases for such weighed judgments should be documented in the reviewer's notes. When the resumes for persons initially selected to fill all management and principal supervisory positions from the plant superintendent down through each shift supervisor, including technical support personnel, have been analyzed and these persons found to have qualifications equal to or greater than those specified in Regulatory Guide 1.8 and other approved qualifications, the review is completed.

### III. REVIEW PROCEDURES

~~Selection and emphasis of various aspects of the areas covered by this review plan will be made by the reviewer on each case. The judgment on the areas to be given attention during the review is to be based on an inspection of the material presented, the similarity of the material to that recently reviewed on other plants, and whether items of special safety significance are involved.~~

At the construction permit (CP) stage, the applicant will generally not have made selections for plant staff positions if the application is for a new station. The review procedure, therefore, is to examine this section of the SAR for a commitment on the part of the applicant to conform to the stated acceptance criteria. This commitment should be unambiguous and should appear also in the applicant's proposed technical specifications. When such is the case, the review is completed.

Where a clear comparison cannot be made between the proposed plant staff positions and those defined at Section 4 of ANSI N18.1, the applicant should list each position on his plant staff and designate the corresponding position of Section 4 of ANSI N18.1, or describe in detail his proposed qualifications for each position on his plant staff.

The review of the FSAR, at the operating license (OL) stage, consists first of the same examination as made at the CP stage, and second of an analysis of each resume. The reviewer should make an explicit comparison of the educational and experience records obtained from each resume with the corresponding requirements set forth for the applicable position in Section 4 of ANSI N18.1 or other approved qualifications. "Applicable experience" should be judged in the light of the position responsibility. Credit for experience which is not directly applicable should be weighted to a degree commensurate with its applicability. The bases for such weighted judgments should be documented in the reviewer's notes. When the resumes for persons initially selected to fill all key management and supervisory positions from the plant superintendent down through each shift supervisor have been analyzed and these persons found to have qualifications equal to or greater than those specified in ANSI N18.1, the review is completed.