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Robert L. Mittl General Manager
Nuclear Assurance and Regulation

August 3, 1984

Director of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20814

Attention: Mr. Albert Schwencer, Chief
Licensing Branch 2
Division of Licensing

Gentlemen:

HOPE CREEK GENERATING STATION
DOCKET NO. 50-354
FSAR CHANGES RESULTING FROM QUALITY ASSURANCE BRANCH
MEETING JULY 18, 1984, AND LICENSEE QUALIFICATIONS BRANCH
MEETING JULY 23, 24, & 25, 1984

Enclosed as Attachment I are responses to the NRC Quality Assurance Branch open items as discussed at the NRC/PSE&G Quality Assurance meeting held July 18, 1984. Also included are the FSAR modifications to Sections 1.8 and 17.2, Table 3.2-1 and the 260 series question/responses which will be incorporated into FSAR Amendment 8.

Enclosed as Attachment II are the modifications to FSAR Chapter 13 and Section 1.10 which were discussed at the NRC/PSE&G Licensee Qualifications Branch meeting held July 23, 24, and 25, 1984. Please note the modifications to FSAR Section 13.4 and Table 13.1-4 will be submitted at a later date.

Should you have any questions or require any additional information, please contact us.

Very truly yours,

R. L. Mittl
General Manager -
Nuclear Assurance and
Regulation - 22A

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Attachment I - FSAR Changes Resulting from Quality Assurance Branch Meeting - July 18, 1984

Attachment II - FSAR Changes Resulting from Licensee Qualifications Branch Meeting - July 23, 24, and 25, 1984

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ATTACHMENT I

FSAR CHANGES RESULTING FROM QUALITY ASSURANCE BRANCH MEETING - JULY 18, 1984

Item 1

Commitments to Regulatory Guides in Section 1.8 need revision as noted below:

a. Commitment to Regulatory Guide 1.33 needs clarification regarding "event based" vs "functional" emergency procedures.

b. Commitment to Regulatory Guides 1.29 and 1.64 needs to address the operations phase.

c. Commitment to Regulatory Guide 1.94 and 1.144 needs to be clarified to show commitment during the operations phase.

d. First paragraph of the commitment to Regulatory Guide 1.123 needs grammatical clarification. Item a clarificationunacceptable during the operations phase. Delete or provide additional justification.

Response

a. NRC is requested to provide additional information on the basis for this requirement.

b. Compliance with Regulatory Guide 1.29 during the operations phase is as stated in Section 1.8.1.39 (see Section 1.8.1, Ammendment 6). Section 1.8.1.64 will be revised to more clearly reflect compliance with Regulatory Guide 1.64 during the operations phase.

c. Compliance with Regulatory Guide 1.94 during the operations phase is as stated in Section 1.8.1.94. Section 1.8.1.144 will be revised to more clearly reflect compliance with Regulatory Guide 1.144 during the operations phase.

d. The first paragraph of the commitment to Regulatory Guide 1.123 will be revised to correct a typographical error. In addition, the commitment to Regulatory Guide 1.123 has been revised to supplement ASME Code procurements with Regulatory Guide 1.38, where required to assure safe shipment.

Item 2

The first sentence of the third paragraph of Section 17.2.16 is garbled.

Response

This sentence should read:

For significant conditions adverse to quality not identified by NQA, such as LERs, NRC/INPO/CMAP findings, NQA is involved in the review of such conditions and provides oversight to assure timely follow-up and close out through monitoring, auditing, and commitment verification.

This change will be incorporated in Ammendment 8.

Item 3

The "as applicable" on the third line of page 17.2-29 needs to be deleted or defined.

Response

This change (i.e., to delete "as applicable") will be incorporated in Amendment 8.

Item 4

"Periodically" in the last paragraph of Section 17.2.18 needs to be defined.

Response

The introduction to Section 17.2 (page 17.2-1) states, in part:

To assess the effectiveness of the PSE&G quality assurance program, independent auditors from outside the company periodically audit the program for compliance with 10 CFR 50, Appendix B, and other regulatory commitments. Independent audits shall be conducted at least every two years. Reports of such audits are made directly to upper management.

Section 17.2.18 will also be revised in Ammendment 8 to include this information.

Item 5

Response to Q260.12 and FSAR text needs commitment to one year minimum experience in a nuclear QA organization or an acceptable alternative.

Response

Section 17.2.1.1.4.1 has been revised to include the information requested.

This change will be incorporated in Amendment 8.

Item 6

Response to Q260.15 which applies Regulatory Guides to ASME Code covered items "following receipt at the station" is unacceptable.

Response

It is felt that the following PSE&G position, as presented to NRC at the 3/15/84 Hope Creek QA Program review meeting, is consistent with good industry practices and hence does not result in a compromise of controls affecting safety.

PSE&G will comply with applicable supplemental ANSI standards during procurement of Section III components to the extent that such ANSI standards are contained in the applicable ASME edition which the supplier has in effect at the time of procurement. In addition, applicable requirements of Regulatory Guide 1.38 will be applied to ASME Code procurements where necessary to assure safe shipment. Response to Question 260.15 will be revised accordingly.

It should be noted that NCA-4000, 1983 edition, endorses the 18 criteria of NQA-1, 1979 for N, NV, NPT and NA certificate holders for class 1, 2, 3, MC, CS, CB and CC construction. Therefore, elements of the 10 CFR 50, Appendix B program, not currently included in the ASME QA program for suppliers of the above code items, will be addressed as each supplier updates the latest edition of the Code.

Item 7

The sentence of the response to Q260.32 which states "the designation of those activities..." should be incorporated into the FSAR text.

Response

The requested information will be incorporated in Section 17.2.5 and included in Amendment 8.

Item 8

The response to Q260.50 needs to be revised to clarify that inspection of operating activities are not performed by personnel within the same group as those performing the activity.

Response

The information requested was incorporated in Section 17.2.10 (page 17.2-27) of Amendment 5. In addition, response to Question 260.50 will be corrected to reference 17.2.10. The latter revision will be included in Amendment 8.

Item 9

The response to Q260.60 should reference Technical Specification requirements.

Response

Response to Question 260.60 and Section 17.2.11 will be revised to include the requested information. This revision will be included in Amendment 8.

Item 10

The response to Q260.65 should include the commitment incorporated into FSAR Section 17.2.16 that: "For significant conditions adverse to quality not identified by action requests, such as LERs, and NRC/INPO/CMAP findings, NQA is involved in the review of such conditions and provides oversight to assure timely follow-up and close out through monitoring, auditing, and commitment verification."

Response

As stated in response to Question 260.65, the information has been included in Section 17.2.16 (page 17.2-32) as part of Amendment 5. In addition, minor revisions to this information, as previously described in response to Item 2, will be included in Amendment 8.

ITEM 11

The issues below relate to the scope of the operational QA program as described in Tables 3.2-1 and 17.2-1 through 17.2-4.

Response

a (1) Table 3.2-1 Item I.f has been revised to provide the requested information.

a (2) Table 3.2-1 Item XIX.1 has been revised to provide the requested information.

a (3) SRAI (a) and Table 3.2-1 Item XIX has been revised to provide the requested information.

a (4) SRAI (a) and Table 3.2-1 Items V.c.4 and VI.11 have been revised to provide the requested information.

a (5) Table 3.2-1 Item XV.d has been revised to provide this information. SRAI (1) has been revised to indicate that the SPDS is covered by the operational QA program.

(b) Table 3.2-1 Item XVIII.j has been revised to provide the requested information.

(c) Table 3.2-1, Footnote (57) has been provided in response to this item.

(d) Table 3.2-1. Item XIX.g has been revised to indicate that the unit vent stacks are subject to the pertinent provisions of 10 CFR 50 Appendix B.

Item 12

Page 28 of FSAR Table 1.11-1 should be revised to reflect the response to NRC Questions 260.14, 260.29, and 260.55. If this does not result in the deletion of page 28 of the table, the response to the questions listed should be revised such that the page can be deleted.

Response

Information contained on page 28 (Amendment 6), Table 1.11-1 with respect to differences between the FSAR and SRP Sections II-2A1, II-3E4 and II-12.6, will be deleted in its entirety.

TABLE 1.11-1 (cont)

SRP Section	Specific SRP Acceptance Criteria	Summary Description of Differences	FSAR Section(s) Where Discussed
3.2.1 (Rev. 2)	II-2A1 QA program to include commitment that the development, control and use of computer code programs be conducted in accordance with the QA program and a description of how the QA program will be applied.	QA program presently does not include commitment that the development, control and use of computer code programs be conducted in accordance with the QA program.	17.2.6
	II-3E4 Procedures be established to assure that verified computer codes be certified for use and that their use be specified.	No procedures have currently been established to assure that verified computer codes be certified for use and that their use be specified.	17.2.6
	II-12.6 Calibration of this equipment should be against standards that have an accuracy of at least four times the required accuracy of the equipment being calibrated or, when this is not possible, have an accuracy that assures the equipment being calibrated will be within required tolerance and that the basis of acceptance is documented and authorized by responsible management.	Primary standards used to perform calibrations are at least greater than the accuracy of the devices being calibrated.	17.2.12

DELETE

1.8.1.63 Conformance to Regulatory Guide 1.63, Revision 2, July 1978: Electric Penetration Assemblies in Containment Structures for Light-Water-Cooled Nuclear Power Plants

Although Regulatory Guide 1.63 is not applicable to HCGS, per its implementation section, HCGS complies with the design, qualification, construction, installation, and testing requirements of IEEE 317-1976, as modified by Regulatory Guide 1.63, subject to the clarification in Section 8.1.4.12.

1.8.1.64 Conformance to Regulatory Guide 1.64, Revision 2, June 1976: Quality Assurance Requirements for the Design of Nuclear Power Plants

~~Although Regulatory Guide 1.64 does not apply to HCGS, per its implementation section, HCGS complies with it~~
HCGS complies with Regulatory Guide 1.64

~~The architect-engineer indicates that their design verification procedures conform to ANSI 45.2.11-1974 and also that compliance with this standard is as modified and interpreted by Revision 1 of Regulatory Guide 1.64. However, the architect-engineer did not comply with Revision 2 in that it allowed checking of the design output documents by the originator's supervisor.~~

See Section 17.2 for further discussion of quality assurance procedures and Section 1.8.2 for the NSSS assessment of this Regulatory Guide.

1.8.1.65 Conformance to Regulatory Guide 1.65, Revision 0, October 1973: Materials and Inspections for Reactor Vessel Closure Studs

Regulatory Guide 1.65 is not applicable.

See Section 1.8.2 for the NSSS assessment of this Regulatory Guide.

1.8.1.87 Conformance to Regulatory Guide 1.87, Revision 1, June 1975: Guidance for Construction of Class 1 Components in Elevated-Temperature Reactors (Supplement to ASME Section III Code Cases 1592, 1593, 1594, 1595, and 1596)

Regulatory Guide 1.87 is not applicable to HCGS.

1.8.1.88 Conformance to Regulatory Guide 1.88, Revision 2, October 1976: Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records

During the operations phase, HCGS complies with ANSI N45.2.9-1974, as modified and interpreted by Regulatory Guide 1.88 Rev 2 and NUREG 0800 (Standard Review Plan) Revision 2, Section II.17.4. During the construction and startup phases, compliance is subject to the following specific changes.

The architect-engineer indicates that the original HCGS project commitment, via the Bechtel nuclear quality assurance manual (NQAM), was to ANSI N45.2.9 (Draft 11, Revision 0, January 17, 1973) rather than to ANSI N45.2.9-1974. The NQAM was revised to reference the 1974 document, as modified and interpreted by the guide, subject to the following specific changes:

a. ANSI Section 2.1, Quality Assurance Record System - Add the following sentence at the end of this section: "The procedures shall include control of records required during completion of the work activity."

b. ANSI Section 2.2.2, Nonpermanent Quality Assurance Records - Revise this section to read: "Nonpermanent records are those required to show evidence that an activity was performed in accordance with the applicable requirement but need not be retained for the life of the item and do not meet the criteria listed in Section 2.2.1."

c. ANSI Section 3.2.2, Index - Revise this section to read: "The quality assurance records shall be listed in an index. The index shall include, as a minimum, record retention times and the location of the records within the record system. The index system used by organizations for the retention of quality assurance

Although Regulatory Guide 1.122 is not applicable to HCGS, per its implementation section, HCGS complies with it.

For further discussion of seismic design, see Sections 3.7 and 3.10.

1.8.1.123 Conformance of Regulatory Guide 1.123, Revision 1, July 1977: Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants

HCGS complies with Regulatory Guide 1.123 during construction and startup phases, subject to clarifications stated below. During the operations phase, item a clarification applies ~~only~~ with the exception that applicable requirements of Regulatory Guide 1.38 will be applied to code procurements where necessary to assure safe shipment. The architect-engineer indicates that the original HCGS project commitment was to ANSI N45.2.13 (Draft October 1973) rather than to ANSI N45.2.13-1976. The architect-engineer NQAM has been revised to reference the 1976 document, as modified by the Regulatory Guide, subject to the following specific changes:

a. Regulatory Guide Section C.2 - This section requires the application of elements of the ASME B&PV Code, Section III, Divisions 1 and 2, and Section XI; and ANSI N45.2.13-1976; specifically, those elements not covered by the ASME B&PV Code for procurement of ASME B&PV Code items and services. The architect-engineer takes exception to the requirement, and has the following alternate position:

   The application of the ASME B&PV Code requirements above to the procurement of ASME B&PV Code items and services is adequate, based on the fact that ASME B&PV Code represents the composite knowledge and experience of a large segment of the nuclear industry, that the ASME B&PV Code is constantly being reevaluted for adequacy, that addenda are issued frequently, and that, to our knowledge, historical data do not exist that would indicate that the ASME B&PV Code quality assurance requirements, relative to the procurement of ASME B&PV items and services, are inadequate.

b. Regulatory Guide Section C.2 - This section of the regulatory position appears to be inconsistent. It states that the purchase should verify the implementation of the suppliers corrective action

Positions C.1.1.2, C.2.1.2, C.3.1.2, and Table 1 of Regulatory Guide 1.143 require that all material specifications for pressure-retaining components within the radioactive process boundary conform to ASME B&PV Code, Section II. In addition, they require that piping materials conform to both the ASME and the identical ASTM specification, and they permit substitution of manufacturers' standards, instead of the ASME specification, in the case of pump materials. Although Regulatory Guide 1.143 does not explicitly address in-line process components, sight flow glasses, Y-strainers, and steam traps procured by the architect-engineer, and the orifice plates and conductivity elements in the NSSS scope of supply do not have certificates of compliance for the materials specified. Also, the records of shop inspection, required by Table 1, for the Y-strainers and the steam traps are not available from the supplier.

Nevertheless, the quality assurance measures taken provide the reasonable assurance needed to protect the health and safety of the public and that of plant operating personnel.

Position C.1.2.1 requires that the designated high-liquid-level conditions should actuate alarms both locally and in the control room. For all tanks, a high-liquid-level condition actuates an alarm in the radwaste control room only. There are no local alarms since the tank rooms are controlled areas and normally unmanned.

Position C.4.3 requires that process lines should not be less than 3/4 inch (nominal). The crystallizer concentrates and slurry waste transfer lines to the extruder/evaporators are 1/2 inch nominal, in order to maintain acceptable flow velocities to prevent settling in the lines. The fluid flowrates are on the order of one (1) GPM as shown in Table 11.4-7 and on Figure 11.4-9.

1.8.1.144 Conformance to Regulatory Guide 1.144, Revision 1, September 1980: Auditing of Quality Assurance Programs for Nuclear Power Plants

HCGS complies with Regulatory Guide 1.144 during the operations phase. During the design and construction phase, the following clarifications apply:

The architect-engineer's quality program for safety-related items during the design and construction phases meets the requirements of ANSI N45.2.12-1977 as modified and interpreted by Regulatory

17.2 QUALITY ASSURANCE DURING THE OPERATIONS PHASE

Public Service Electric and Gas Company (PSE&G) is responsible for assuring that the operation, maintenance, refueling and modification of Hope Creek Generating Station (HCGS) is accomplished in a manner that protects public health and safety and that is in compliance with applicable regulatory requirements. To carry out this responsibility, PSE&G has developed and implemented a comprehensive quality assurance program that is applicable to the design, construction, and testing phases. The description of the quality assurance program provided herein parallels the operational quality assurance program currently being implemented at the Salem Generating Station.

This operational quality assurance program is documented in the nuclear department manual. This description is maintained by nuclear operations quality assurance (NQA). The program provides measures to assure the control of activities affecting the safety-related function of structures, systems, and components. The quality assurance program encompasses fire protection of safety-related areas and other activities enumerated in Regulatory Guide 1.33. A planned monitoring and audit program assures that specified requirements of the operational quality assurance program are met. The program provides coordinated and centralized quality assurance direction, control, and documentation, as required by the NRC criteria set forth in 10 CFR 50, Appendix B. Applicable NRC Regulatory Guides, codes, and standards, as well as the policy statements contained in the ~~PSE&G quality assurance~~ manual, are used by PSE&G organizations performing activities affecting safety to prepare appropriate implementing procedures. To assess the effectiveness of the PSE&G quality assurance program, independent auditors from outside the company periodically audit the program for compliance with 10 CFR 50, Appendix B, and other regulatory commitments. Independent audits shall be conducted at least every two years. Reports of such audits are made directly to upper management.

QA policy statements are issued by key management representatives including the Company Board Chairman/President, by the Senior Vice President - Energy Supply and Engineering and by the Vice President - Nuclear and, as such, are mandatory throughout the Company.

The PSE&G policies and organization structure assure that the manager - quality quality assurance nuclear operations has sufficient organizational freedom and independence to carry out his responsibilities.

17.2.1.1.4.1 Nuclear Operations Quality Assurance Personnel Qualifications

The manager - NQA and engineers reporting directly to him must each have a combination of 6 years of experience in the field of quality assurance and operations. At least 1 of these 6 years of experience must be in the overall implementation of a nuclear power plant quality assurance program. A minimum of 1 year and a maximum of 4 of the 6 years of experience may be fulfilled by related technical or academic training. Personnel performing inspections, examinations, and test activities are certified as Level I, Level II, Level III as appropriate to their responsibilities, also in accordance with Regulatory Guide 1.58, as noted.

The manager - nuclear operations quality assurance fulfills the above qualifications with the addition of the following:

a. Knowledge and experience in quality assurance,

b. High level of leadership with the ability to command the respect and cooperation of company personnel, vendors, and construction forces

c. Initiative and judgment to establish related policies to attain high achievements and economy of operations.

17.2.1.1.5 Independent Review Groups

Three advisory groups are responsible for reviewing and evaluating items related to nuclear safety. The overall responsibilities of these groups are included in the following sections. More detailed descriptions are contained in Section 13.4.

The SORC is an in station advisory group. Composed of key station personnel, its responsibilities include review of plant

and Maintenance Department personnel who perform 4/84
visual inspection as part of the Inservice Inspection program.

Personnel requiring certification are evaluated to establish their qualifications for their respective level and discipline. Recertification is based upon demonstrated continued proficiency or requalification, if necessary. Personnel requiring certification in accordance with Regulatory Guide 1.58 are limited to NQA personnel who perform inspection and test activities, ~~and~~ members of the Operational Test Group (OTG) who perform post-design modification testing ~~NQA and OTG and These calibration~~ personnel receive a periodic training needs assessment to identify additional supportive training needs as well as to evaluate individual post-training performance. The assessment period is three years or less. Inspection and test activities not requiring personnel certification per Regulatory Guide 1.58 include Technical Specification surveillances and periodic inspection and test of fire protection equipment. These personnel are qualified and retrained in accordance with applicable requirements of Regulatory Guide 1.8.

Training programs of supporting organizations are described in their manuals, which are required to comply with the quality assurance program.

The Nuclear Training Center is responsible for the licensed operator training and retraining, in addition to other technical and supervisory training programs, including General Employee Indoctrination, which is required for all personnel having access to the station.

17.2.3 DESIGN CONTROL

The design control program includes activities such as field design engineering, associated computer programs, compatibility of materials, and accessibility for inservice inspection, maintenance, and repair.

During the operations phase, issuance of new drawings and revisions to existing drawings require the implementation of a design change.

The nuclear support division procedures, approved by the manager - nuclear operations QA, provide implementation guidance for the intent of Regulatory Guide 1.64 "Quality Assurance Requirements for the Design of Nuclear Power Plants." Within that division, the nuclear engineering section has the following responsibilities:

(The scope of the design control program includes design activities associated with the preparation and review of design documents, including the correct translation of applicable regulatory requirements into design modification, procurement and procedural documents.

The designation of those activities requiring detailed procedures is made by cognizant department heads and as a minimum, complies with applicable requirements of Regulatory Guide 1.33.

c. Provide right of access for source surveillance and audit by NQA or its agents

d. Provide for required supplier documentation to be submitted to PSE&G or maintained by the supplier, as appropriate

e. Provide for PSE&G review and approval of critical procedures prior to fabrication, as appropriate.

Procurement documents require suppliers and contractors of other than commercial grade items to provide services or components in accordance with a quality assurance program that complies with applicable parts of 10 CFR 50, Appendix B. The requirement for notifying PSE&G of procurement requirements that have not been met is conveyed to the supplier through the standard warranty provision contained in each Purchase Order. In addition, where 10 CFR 21 is imposed, suppliers are required to comply with applicable reporting requirements.

17.2.5 INSTRUCTIONS, PROCEDURES, AND DRAWINGS

Organizations engaged in Q- and F-designated activities are required to perform these activities in accordance with written and approved procedures, instructions, or drawings, as appropriate.

Simple routine activities that can be performed by qualified personnel with normal skills do not require a detailed written procedure. Complex activities require detailed instructions. ~~An activity is defined as complex upon the designation of the responsible department manager~~.

Procedures include, as appropriate, scope, statement of applicability, references, prerequisites, precautions, limitations, and checkoff lists of inspection requirements, in addition to the detailed steps required to accomplish the activity. Instructions, procedures, and drawings also contain acceptance criteria where appropriate.

The general manager - Hope Creek operations is responsible for assuring that station procedures are prepared, approved, and implemented in compliance with the station administrative procedures. Documents affecting nuclear safety are reviewed by

the station operations review committee (SORC) for technical content, by NQA for quality assurance requirements, and are approved by the responsible station department manager or his designee.

The general manager - nuclear support is responsible for issuing specifications, drawings, blueprints, and instruction and technical manuals associated with Q- and F-designated structures, systems, and components. Approved and implemented modifications and design changes are incorporated to these reference documents for the life of the station. Master lists of current editions or revisions of these documents are periodically issued by the general manager - nuclear support to the general manager - Hope Creek operations to periodically assure that only current and approved referenced documents are used at the station.

NQA reviews and approves station inspection plans and procedures that implement the quality assurance program, including testing, calibration, maintenance, modification, and repair. Changes to these documents are also reviewed and approved. In addition, NQA is responsible for review and approval of PSE&G specifications, test procedures, and results of testing.

17.2.6 DOCUMENT CONTROL

Instructions, procedures, drawings, and changes thereto are reviewed for inclusion of appropriate quality assurance requirements and are approved by apppropriate levels of management of the PSE&G organizations producing such documents, and distributed on a timely basis to using locations. Measures are provided for the timely removal of obsoleted or superseded documents from the using location. Supplier documents are controlled according to contractual agreements with suppliers.

The following is a generic listing of documents for the operational phase, showing organization responsibility for review and approval, including changes thereto:

a. Design specification - nuclear ~~department~~, NQA

b. Design ~~manufacturing, construction, and installation drawings~~ - nuclear ~~department~~, NQA

c. Procurement documents - initiating nuclear department, purchasing organization department, NQA nuclear services,

d. ~~Quality assurance manual - NQA~~ Revise per Insert 17.2-21A

e. ~~Station administrative procedures - general manager - Hope Creek operations, NQA~~ Revise per Insert 17.2-21B

f. Maintenance, modification, and calibration procedures for Q- and F-designated station work activities - ~~general manager~~ Hope Creek operations, NQA

g. Operating procedures - ~~general manager~~ Hope Creek operations, SORC

h. FSAR - ~~nuclear department, NQA~~ Revise per Insert 17.2-21C

i. Maintenance, inspection, and testing instruction - nuclear department, NQA implementing organizations

j. ~~Q-listed test procedures - nuclear department, NQA~~

k. ~~Design change requests - nuclear department, NQA~~

{ Post modification test procedures - nuclear services, NQA.

In addition, NQA involvement in the work activity includes a review of nonsafety-related work orders for proper classification prior to conducting the activity and a review of completed safety-related work orders.

The establishment and maintenance of a document control system for all instructions, procedures, specifications, and drawings received from the nuclear department, or prepared at the station for use in operating, maintaining, refueling, or modifying items and services covered by the quality assurance program, is the responsibility of the general manager - Hope Creek operations. The administrative procedures manual describes the control of specific documents. Control of station practices is included in the administrative procedures and in department directives authorized by the responsible station department managers. Measures are established to assure that the administrative procedures and department directives are up-to-date, are properly

Insert 17.2-21A

d. Nuclear Department Manual - nuclear department organizations responsible for implementation, NQA

Insert 17.2-21B

e. Nuclear department second-tier manuals, including station administrative procedures - cognizant department head, NQA

Insert 17.2-21C

h. FSAR - nuclear services and other nuclear department organizations responsible for implementing applicable sections. In addition, NQA reviews all FSAR sections and subsequent changes for compliance with applicable QA Program requirements

In addition, station administrative procedures provide for the use of temporary changes which are controlled in accordance with Technical Specifications. Detail instructions for implementation of temporary changes are provided.

e. Critical test sequence

f. Acceptance criteria.

Test results, including verification of above items, ~~as applicable~~ are documented and reviewed for acceptability by the qualified department representative. System tests performed following modifications to Q- and F-designated systems require review of test procedures and test results by the SORC.

NQA ~~maintains~~ monitoring over the conduct of post modification ~~the design change acceptance~~ tests to assure compliance with the test procedure. Test results are reviewed for the following:

a. Presentation of proper documentation

b. Assurance that tests meet objectives

c. Identification and reporting of unacceptable results and initiation of corrective measures.

17.2.12 CONTROL OF MEASURING AND TEST EQUIPMENT

Test equipment, instrumentation, and controls used to monitor and measure activities affecting quality and personnel safety are identified, controlled, and calibrated at specific intervals by cognizant nuclear department personnel. Written procedures for meeting these requirements include provisions for:

a. Specifying calibration frequency

b. Recording and maintaining calibration records

c. Controlling and calibrating primary and secondary standards

d. Determining methods of calibration

e. Tracing use on safety-related items.

repair or "use-as-is" are required to be approved by the responsible engineering representative. Rework or repair of nonconforming material, parts, or components is inspected and/or retested in accordance with specified test and inspection requirements established by the cognizant engineer, based on applicable ~~code~~ requirements.

NQA and the nuclear department review nonconformance reports for quality problems, including adverse quality trends, and initiate reports to higher management, identifying significant quality problems with recommendations for appropriate action.

17.2.16 CORRECTIVE ACTION

Organizations involved in activities covered by the quality assurance program are required to maintain corrective action programs commensurate with their scope of activity. Noncompliances with the quality assurance program identified by NQA are documented and controlled by issuing an action request. NQA reviews responses to action requests for adequacy and monitors these action requests through periodic summary and status reports to management.

Responses to action requests are based on the four elements of corrective action, which are:

a. Identification of cause of deficiency

b. Action to correct deficiency and results achieved to date

c. Action taken or to be taken to prevent recurrence

d. Date when full compliance was or will be achieved.

For significant conditions adverse to quality not identified by NQA, such as LERs, NRC/INPO/CMAP findings, NQA is involved in the review of such conditions and provides oversight to assure timely follow-up and close out through monitoring, auditing, and commitment verification.

Items 3 and 4 are optional for noncompliances that do not have a significant effect on the quality assurance program.

d. Indoctrination and training

e. Implementation of operating and test procedures

f. Calibration of measuring and test equipment

g. Fire protection

h. Other applicable activities delineated in Table 17.2-2.

The audit data is analyzed and a written report of the results of each audit is distributed to appropriate management representatives of the organization(s) audited, as well as to other affected management personnel. Included in the report is a statement of QA program effectiveness. Periodically, NQA is audited by independent auditors to verify implementation of the corporate quality assurance program. Reports of these audits are directed to appropriate PSE&G management personnel.

at least every two years

QUESTION 260.15

The fourth paragraph of FSAR Section 17.2.2 refers to Section 1.8 for commitments to Regulatory Guides. Section 1.8 primarily addresses Regulatory Guide commitments during design and construction, and the staff review of the FSAR is concerned with Regulatory Guide commitments during the operations phase. With any proposed clarifications or exceptions, provide a commitment in the FSAR to the effect that: "During the operations phase of HCGS, PSE&G commits to comply with the regulatory position in ..." the appropriate issue of the Regulatory Guide listed on pages 17.1-26 and 17.1-27 (with RG 1.33 replacing RG 1.28) or NUREG-0800 (Rev. 2 - July 1981). For systems, components, and structures covered by the ASME Boiler and Pressure Vessel Code Section III (Classes 1, 2 and 3), the code QA requirements should be supplemented by the specific guidance addressed in the regulatory positions of the applicable Regulatory Guides. (2B3)

RESPONSE

Section 17.2.2 lists regulatory guidance applicable to the QA program. This list has been revised to include Regulatory Guides 1.116, 1.123, and 1.144. PSE&G will revise section 1.8 to reflect compliance with listed Regulatory Guides which are applicable during the operations phase, along with any clarification, modifications, etc. by June 1984.

The code QA requirements are used for the procurement of systems, components and structures covered by the ASME Boiler and Pressure Vessel Code Section III (classes 1, 2, and 3). The standard QA program controls apply to Q-Listed code items following receipt at the station. In addition, applicable requirements of Regulatory Guide 1.38 will be applied to ASME Code procurements where necessary to assure safe shipment.

QUESTION 260.50 (SECTION 17.2)

Describe the provisions which assure that when inspections associated with normal operations of the plant (such as routine maintenance, surveillance, and tests) are performed by individuals other than those who performed or directly supervised the work, but are within the same group, the following controls are met: (SRP Section 17.2.10, item 2)

a. The quality of the work can be demonstrated through a functional test when the activity involves breaching a pressure retaining item.

b. The qualification criteria for inspection personnel are reviewed and found acceptable by QANO prior to initiating the inspection.

RESPONSE

See response to Questions 260.7 and 260.19.

Section 17.2.10 ~~(Page 17.2-25)~~ has been revised to provide additional information requested.

QUESTION 260.60 (SECTION 17.2)

Describe those provisions which assure that procedures are established to control altering the sequence of required tests, inspections, and other safety-related operations. Such actions should be subject to the same controls as the original review and approval. (14.3)

RESPONSE

Section 17.2.11 states in part:

Test procedures prescribe, as applicable:

(d) Critical test sequence

.....Test results are documented and reviewed for acceptability by the qualified department representative.

In addition, station administrative procedures provide for the use of temporary changes. Detail instructions for implementation of temporary changes are provided.

which are controlled in accordance with Technical Specifications

HCGS CLASSIFICATION OF STRUCTURES, SYSTEMS, AND COMPONENTS

Principal Components (57)	FSAR Section	Source of Supply (1)	Location (2)	Quality Group Classification (3)	Principal Construction Codes and Standards (5)	Seismic Category (6)	QA Requirements (7)	Comments
I. Reactor System	4.1							
a. Reactor vessel and head		GE	A	A	III-A(9)	I	Y	(9)
b. Reactor vessel support skirt		GE	A	NA	III-A(9)	I	Y	(9)
c. Reactor vessel appurtenances, pressure retaining portions		GE	A	A	III-A(9)	I	Y	
d. CRD housing supports		GE	A	NA	III-NF	I	Y	
e. Reactor internal structures, engineered safety features		GE	A	NA	None	I	Y	(13)
f. Reactor internal structures, other		GE	A	NA	None	NA	N	(13) (55)
g. Control rods		GE	A	NA	None	I	Y	
h. Control rod drives		GE	A	NA	III-A(9)	I	Y	
i. Core support structure		GE	A	NA	None	I	Y	
j. Power range detector hardware		GE	A	B	III-2	I	Y	(10)
k. Fuel assemblies		GE	A	NA	None	I	Y	
l. Reactor vessel stabilizer		GE	A	NA	III-NF	I	Y	
II. Nuclear Boiler System	5.1							
a. Vessels, level instrumentation condensing chambers		GE	A	A	III-1	I	Y	
b. Vessels, air accumulators		P	A,C	C	III-3	I	Y	
c. Air supply check valves and piping downstream of air supply check valves		P	A,C	C	III-3	I	Y	
d. Piping, safety relief valve discharge		P	A	C	III-3	I	Y	
e. Piping, main steam, within outboard isolation valves		GE/P	A,C	A	III-1	I	Y	
f. Piping, feedwater, within outboard isolation valves		P	A,C	A	III-1	I	Y	
g. Piping, main steam, between outboard and outermost isolation valves		P	C	B	III-2	I	Y	(12)
h. Piping, feedwater, between outboard and outermost isolation valves		P	C	B	III-2	I	Y	(12)

Principal Components	FSAR Section	Source of Supply (1)	Location (2)	Quality Group Classification (3)	Principal Construction Codes and Standards (5)	Seismic Category (6)	QA Requirements (7)	Comments
isolation valves								
3. Pumps		GE	C	B	P&V-II(9)	I	Y	
4. Pump motors		GE	C	NA	NEMA MG-1(9)	I	Y	(40)
5. Valves, inboard isolation		GE	A	A	III-1	I	Y	(40)
6. Valves, outboard isolation and within		P	C	A	III-1	I	Y	(40)
7. Valves, beyond outermost containment isolation valves		P	C	B	III-2	I	Y	(10)
8. Electrical modules with safety function (27)		GE	A,C	NA	IEEE-279/323	I	Y	
9. Cable with safety function		P	A	NA	IEEE-279/323	NA	Y	(18)
10. ECCS jockey pump		P	C	B	III-2	I	Y	
11. ECCS jockey pump motors		P	C	NA	IEEE-323/344	I	Y	
c. High pressure coolant injection (HPCI) system:	6.3							
1. Piping, within outermost containment isolation valves		P	A,C	A	III-1	I	Y	(10)
2. Piping, test return line to condensate storage tank up to second isolation valve		P	C	B	III-2	I	Y	
3. Pumps (main and booster)		GE	C	B	P&V-II(9)	I	Y	
4. HPCI turbine		GE	C	NA	VIII-1	I	Y	(11)(59)
5. HPCI barometric condenser		GE	C	NA	VIII-1(9)	NA	N	
6. HPCI vacuum pump & condensate pump		GE	C	NA	None	NA	N	
7. Vacuum pump & condensate pump motors		GE	C	NA	None	NA	N	
8. Piping, valve leakoff and cooling lines to barometric condenser		P	C	B	III-2	I	Y	
9. Piping, other		P	C	B	III-2	I	Y	(10)(40)
10. Valves, containment isolation and within		P	A,C	A	III-1	I	Y	(10)(40)
11. Valves, other		P	C	B	III-2	I	Y	(10)(40)
12. Electrical modules with safety function (27)		GE	C	NA	IEEE-279/323	I	Y	
13. Electrical auxiliary equipment		GE	C	NA	None	I	Y	

Principal Components	FSAR Section	Source of Supply (1)	Location (2)	Quality Group Classification (3)	Principal Construction Codes and Standards (5)	Seismic Category (6)	QA Requirements (7)	Comments
e. Primary containment leakage rate testing system:	6.2.6							
1. Piping and valves, containment penetration & isolation		P	C	B	III-2	I	Y	(48)
f. MSIV sealing system:	6.7							
1. Valves, outermost isolation		P	C	A	III-1	I	Y	(48)
2. Valves, other, and piping		P	C	B	III-2	I	Y	(48)
3. Electrical modules with safety function (27)		P	C	NA	IEEE-279/323	I	Y	
VI. Reactor core isolation cooling (RCIC) system:	5.4.6							
1. Piping, within outermost containment isolation valves		P	A,C	A	III-1	I	Y	(10)
2. Piping, beyond outermost containment isolation valves		P	C	B	III-2	I	Y	(10)
3. Piping, test return to condensate storage tank up to second isolation valve		P	C	B	III-2	I	Y	
4. Piping, valve leakoff & cooling lines to barometric condenser		P	C	B	III-2	I	Y	
5. RCIC pump		GE	C	B	P&V-II(9)	I	Y	
6. RCIC barometric condenser		GE	C	NA	VIII-1(9)	NA	N	
7. RCIC condensate pump and vacuum pump		GE	C	NA	None	NA	N	
8. Condensate and vacuum pump motors		GE	C	NA	None	NA	N	
9. Valves, containment isolation and within		P	A	A	III-1	I	Y	(10)(48)
10. Valves, other		P	C	B	III-2	I	Y	(10)(48)
11. RCIC turbine		GE	C	NA	VIII-1	I	Y	(11) (59)
12. Electrical modules with safety function (27)		GE	C	NA	IEEE-279/323	I	Y	
13. Cable with safety function		P	C	NA	IEEE-279/323	NA	Y	(15)

Principal Components	FSAR Section	Source of Supply (1)	Location (2)	Quality Group Classification (3)	Principal Construction Codes and Standards (5)	Seismic Category (6)	QA Requirements (7)	Comments
h. Reactor building/including pressure-retaining doors		P	C	NA	AISC/ACI-318	I	Y	
i. Plant cancelled area		P	All	NA	AISC/ACI-318	I	Y	
j. Shore protection at intake structure (including sheetpile retaining wall and quarrystone revetments)		P	O,W	NA	None	II/I		(50)
XIX. Structures (58)	3.8							(20)
a. Station service water intake structure		P	O,W	NA	AISC/ACI-318	I	Y	
b. Deleted								
c. Diesel generator fuel tank room		P	G	NA	None	I	Y	
d. Station battery rooms		P	B	NA	None	I	Y	
e. Spent fuel pool, reactor well, new fuel vault, dryer separator pool, and cask pit	9.1.1, 9.1.2	P	C	NA	None	I	Y	
f. Deleted								
g. Unit vent stack, North & South		P	O	NA	ACI-307	I	Y	
h. Condensate storage tank dike		P	O	NA	ACI-318	I	Y	
i. Spent fuel pool liner	9.1.2	P	C	NA	None	NA	N	(56)
j. Skimmer surge tanks	9.1.1	P	C	NA	None	NA	N	(44)
k. Missile/jet barriers		P	A,B,C,G, R,W	NA	AISC/ACI-318	I	Y	
l. Structural backfill		P	O	NA	None	I	Y	
m. Post accident shielding		P	A,B,C,G, R,T	NA	ACI-318	I	Y	
n. Seismic Category I electrical duct bank manholes		P	O	NA	ACI-318	I	Y	

(47) Duct work is of non-Seismic Category I design, but is installed and supported as Seismic Category I.

(48) Valve operators on safety related valves that must function are Q-listed and Seismic Category I

(49) Equipment is classified in accordance with the conformance statements made in Sections 7.2, 7.3, 7.4, 7.5 and 7.6 in reference to IEEE 279 paragraph 4.4 and IEEE-323.

(50) The QA Program controls applicable to equipment classified as Seismic II/I are in accordance with Regulatory Guide 1.29 commitments contained in FSAR Section 1.8

(51) No QA Program controls applied during Design and Construction Phase. QA Programs controls during operation are applied to an extent consistent with the items importance to safety.

(52) QA Program controls for the fire protection program, including emergency lighting and communications, are applied to the extent of the ten quality assurance criteria of Appendix A to Branch Technical Position 9.5-1 and to an extent consistent with the item's/activity's importance to safety.

(53) The recirculation system piping was built to both ASME Section III and B31.7 codes as required by the GE design specification. The ASME Section III NPP-1 report requires signatures by a qualified inspector and also indicates that the pipe was built to the requirements of B31.7.

(54) Except north radwaste area of auxiliary building, since there are no Seismic Category I components in this area.

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(55) The reactor pressure vessel internal structures which are accessible are included in the ISI program, which is covered by the operational QA program.

(56) Any Modifications or repair work to the liner will be conducted under the operational QA program.

(57) Containment isolation valves that are required per GDC 54-56 and are not part of the principal components shown, are subject to the pertinent provisions of 10CFR 50 Appendix B

(58) Modifications to roof parapet and openings of Q structures will be conducted under the operational QA program.

(59) The governor valves for HPCI and RCIC turbines are part of the operational QA program.

for HCGS, an appropriate safety classification will be determined.

c.1 The HCGS position on TMI Item I.D.2 is given in Section 1.10. The safety parameter display system is part of the Control Room Integrated Display System (Item XV.d of revised Table 3.2-1).

c.2 The HCGS position on TMI Item II.B.1 is given in Section 1.10. The HPCI, RCIC, ADS, and containment instrument gas systems are Q-listed, as shown in Items V.c, VI, XV.b.1, and XVII.b of Table 3.2-1. The RPV head vent is Q-listed but not Class IE (Item I.c of Table 3.2-1).

c.3 The HCGS position on TMI Item II.B.2 is given in Section 1.10. The post-accident shielding is Q-listed (Item XIX.m of revised Table 3.2-1).

c.4 The HCGS position on TMI Item II.B.3 is given in Section 1.10. The post accident sampling system (PASS) is not Q-listed with the exception of the primary containment isolation and reactor coolant pressure boundary piping and valves.

c.5 The HCGS position on TMI Item II.D.3 is given in Section 1.10. The SRV position indication system is Q-listed (Item XV.d of revised Table 3.2-1).

c.6 The HCGS position on TMI Item II.E.4.1 is given in Section 1.10. The dedicated hydrogen control penetrations are Q-listed (Item V.d.4.g and h of Table 3.2-1).

c.7 The HCGS position on TMI Item II.E.4.2 is given in Section 1.10. Containment isolation valves are Q-listed (See Table 3.2-1 under applicable system).

c.8 The HCGS position on TMI Item II.F.1 is given in Section 1.10. Accident monitoring instrumentation will be designed in accordance with the guidance provided in Regulatory Guide 1.97, Rev 2. This instrumentation will be reviewed for classification as Q-listed, and Table 3.2-1 will be modified as necessary.

c.9 The HCGS position on TMI Item II.F.2 is given in Section 1.10. No additional instrumentation was identified as a result of this required study, and therefore no changes to Table 3.2-1 are necessary at this time.

c.10 The HCGS position on TMI Item II.K.3.13 is given in Section 1.10. No change was made to the HPCI and RCIC initiation levels and, therefore no change to Table 3.2-1 are necessary.

c.11 The HCGS position on TMI Item II.k.3.15 is given in Section 1.10. The HPCI and RCIC leak detection systems are Q-listed (Item XV.e.2 of Table 3.2-1).

c.12 The HCGS position on TMI Item II.k.3.16 is given in Section 1.10. HCGS is reviewing the modifications proposed by the BWROG to meet the requirements. This review will be completed by December, 1983. Table 3.2-1 will be modified as appropriate.

c.13 The HCGS position on TMI Item II.k.3.18 is given in Section 1.10. BWROG response to this TMI study is still under evaluation by NRC. HCGS design will be modified to comply with the NRC's acceptable position. Table 3.2-1 will be modified as appropriate.

c.14 The HCGS position on TMI Item II.k.3.21 is given in Section 1.10. No change was made to the core spray and LPCI logic and therefore no change to Table 3.2-1 is necessary.

c.15 The HCGS position on TMI Item II.k.3.22 is given in Section 1.10. The RCIC suction transfer is Q-listed (Item XV.c.1 of Table 3.2-1).

c.16 The HCGS position on TMI Item II.k.3.24 is given in Section 1.10. The HPCI and RCIC room unit coolers are Q-listed (Item XIII.c.2 of revised Table 3.2-1).

c.17 The HCGS position on TMI Item II.k.3.25 is given in Section 1.10. The recirculation pump sealing cooling water supply system (RAC and CRD) are not Q-listed (Item XI.c and IV of Table 3.2-1).

c.18 The HCGS position on TMI Item II.k.3.27 is given in Section 1.10. See Table 3.2 for listing of existing level instrumentation.

c.19 The HCGS position on TMI Item II.k.3.28 is given in Section 1.10. The ADS valves, accumulators and associated equipment and instrumentation are Q-listed (Item II.1, II.b, II.c XV.b.1 & 11 and XVII.b of Table 3.2-1).

c.20 The HCGS position on TMI Items III.a.1.1/III.a.2 is given in Section 1.10. Activities covered by the QA program are delineated in Table 17.2-1 and include emergency plans under, "combating emergencies and other significant events."

c.21 The HCGS position on TMI Item III.a.1.2 is given in Section 1.10. The Emergency Response Facilities Data Acquisition System (ERFDAS) is shown in (Item XV.d of revised Table 3.2-1).

of revised Table 3.2-1). However, it is designed to accommodate design flood and seismic event.

e) The roof drainage system and modifications to the roof drainage system are not Q-listed and are not a "structure system or component" that should be included in Table 3.2-1. Roof drainage cannot adversely impact safety-related equipment because of flood protection measures discussed in Section 3.4.1.1. Modifications of roof parapet and openings is Q-listed as part of the Q structure. Site grading should not be included in Table 3.2-1 as discussed in the response to item a.20 of SRAI(1).

f) The purge (containment inerting) system is described under the containment atmosphere control system (Item V.d.3), not the reactor building ventilation system (Item VIII.c).

g) Containment isolation valves used at HCGS meet the requirements outlined in GDCs 54-56 of 10 CFR 50 Appendix A as outlined in Table 6.2-16.

h) Table 3.2-1, Item V.a has been revised to clearly identify piping, valves and other equipment used for suppression pool cooling, steam condensing and suction lines for the shutdown cooling modes of the RHR system.

i) There are no nuclear codes and standards applicable to the design and manufacture of the HPCI and RCIC turbines. Approximately 50 to 75 components of the turbines' lubricating oil systems contribute to the electrohydraulic control of the governing valves. Footnotes (11) [redacted] (48) and (59) provide the applicable quality assurance, documentation, maintenance, and material fabrication information.

j) Process and effluent radiation monitoring systems are listed in Item X.d of Table 3.2-1. See Sections 7.6 and 11.5 for the differences between the process radiation monitoring systems and the process and effluent radiation monitoring systems.

k) Table 3.2-1 will be revised to incorporate the Emergency Response Facilities Data Acquisition System (ERFDAS). This system is non-Q, non-class 1E and non-seismic, except for the Class 1E isolation devices supplied with the ERFDAS.

l) The MSIV sealing system consists of valves, valve operators, and piping only; the sealing system is supplied by the instrument gas system (see Item XVIII.b).

m) The unit vent stacks are Q-listed as shown in revised Table 3.2-1, Item XIX.g.

Principal Components	FSAR Section	Source of Supply (1)	Location (2)	Quality Group Classification (3)	Principal Construction Codes and Standards (5)	Seismic Category (6)	QA Requirements (7)	Comments
6. Containment atmosphere control system		P	A,B,C	NA	IEEE-279	I	Y	
7. Main steam isolation valve sealing system		P	C	NA	IEEE-279	I	Y	
8. Filtration, recirculation, and ventilation system		P	B,C	NA	IEEE-279	I	Y	
9. Reactor building ventilation isolation system		P	C	NA	IEEE-279	I	Y	
10. Main control room habitability and isolation system		P	B	NA	IEEE-279	I	Y	
11. Essential auxiliary supporting systems for engineered safety features control		P	All	NA	IEEE-279	I	Y	
c. Controls and instrumentation associated with safe shutdown systems:	7.4							
1. Reactor core isolation cooling system (RCIC)		GE	C	NA	IEEE-279	I	Y	
2. Standby liquid control (SLC) system		GE	C	NA	IEEE-279	I	Y	
3. RHR, reactor shutdown cocling mode		GE	C	NA	IEEE-279	I	Y	
4. Remote shutdown systems		P	R	NA	IEEE-279	I	Y	
5. Essential auxiliary supporting systems for the safe shutdown systems		GE/P	All	NA	IEEE-279	I	Y	
d. Safety-related display instrumentation		[illegible]		NA	IEEE-279	I	Y	[illegible]

ATTACHMENT A

ATTACHMENT A

	FSAR Section	Source of Supply	Location	Quality Group	Codes and Standards	Seismic Class	Quality Assurance	Comments
1 SAFETY RELATED DISPLAY INSTRUMENTATION								
1 CONTROL ROD POSITION INDICATION SYSTEM (CRPIS) (NON SAFETY RELATED)	7.5	GE	B	NA		I	N	
2 BYPASS AND INOPERABLE STATUS INDICATION SYSTEM (BISIS) (SAFETY RELATED)	7.5	P	B	NA	IEEE 279	I	Y	(49)
ISOLATION DEVICE	7.5	P	B	NA	IEEE 279	I	Y	(49)
CRIDS COMPUTER	7.5	P	B	NA		NA	N	
3 PLANT COMPUTER SYSTEM (PCS)								
a NSSS (NON SAFETY RELATED)	7.5	GE	B	NA		NA	N	
b CRIDS (NON SAFETY RELATED)	7.5	P	B	NA		NA	N	(51)
c RMS (NON SAFETY RELATED) NOTE: SAFETY RELATED PORTION OF THE RMS SYSTEM IS FOUND IN SECTION XVE OF THIS TABLE	7.5	P	B	NA		NA	N	
e ERF DAS (SAFETY RELATED)								
ISOLATION DEVICE	7.5	P	B	NA	IEEE 279	I	Y	(49)
DATA CONCENTRATOR PORTION	7.5	P	B					(51)
4 START UP TRANSIENT MONITORING SYSTEM (STMS) (NON SAFETY RELATED)	7.5	P	B	NA		I	N	
5 SAFETY RELIEF VALVE POSITION INDICATION SYSTEM (SRVPIS) (NON SAFETY RELATED)	7.5	P	B	NA		I	N	
6 LOOSE PARTS MONITORING SYSTEM (LPMS) (NON SAFETY RELATED)	7.5	P	B	NA		I	N	
7 POST ACCIDENT MONITORING INSTRUMENTATION (PAMI) (SAFETY RELATED)	7.5	P	B	NA	IEEE 279	I	Y	(49)
ISOLATION DEVICE	7.5	P	B	NA	IEEE 279	I	Y	(49)
CRIDS COMPUTER	7.5	P	B	N/A		NA	N	

ATTACHMENT II

FSAR CHANGES RESULTING FROM LICENSEE QUALIFICATIONS BRANCH MEETING - JULY 23, 24&25, 1984

1.10 TMI-2 RELATED REQUIREMENTS FOR NEW OPERATING LICENSES

1.10.1 NUREG-0737, CLARIFICATION OF THE TMI ACTION PLAN REQUIREMENTS

Following the accident at Three Mile Island (TMI) Unit 2, the Nuclear Regulatory Commission (NRC) developed the TMI Action Plan, NUREG-0660, to provide a comprehensive and integrated plan for improving the safety of power reactors. NUREG-0737 was issued with an October 31, 1980 letter from D.G. Eisenhut, NRC, to licensees of operating power reactors and applicants for operating licenses forwarding specific TMI-related requirements from NUREG-0660 which have been approved by the NRC for implementation at this time. In this NRC report, these specific requirements comprise a single document which includes additional information about implementation schedules, applicability, method of implementation review by the NRC, submittal dates, and clarification of technical positions. The total set of TMI-related actions have been documented in NUREG-0660, but only those items that the NRC has approved for implementation to date are included in NUREG-0737.

Enclosure 2 to NUREG-0737 lists TMI Action Plan requirements for operating license applicants. FSAR Section 1.10.2 itemizes these requirements sequentially according to the NUREG-0737 number. Each item is accompanied by a response and/or reference to a section in the FSAR that further discusses how Public Service Electric and Gas Company (PSE&G) or the Hope Creek Generating Station (HCGS) design complies with the requirement. These responses will be revised periodically as ongoing efforts to address each requirement are completed.

1.10.2 TMI ACTION PLAN REQUIREMENTS FOR APPLICANTS FOR AN OPERATING LICENSE (ENCLOSURE 2 TO NUREG-0737)

I.A.1.1 SHIFT TECHNICAL ADVISOR

Position

Each applicant shall provide an on-shift technical advisor to the shift supervisor. The shift technical advisor (STA) may serve more than one unit at a multiunit site if qualified to perform the advisor function for the various units.

The STA shall have a bachelor's degree or equivalent in a scientific or engineering discipline and have received specific training in the response and analysis of the plant for transients and accidents. The STA shall also receive training in plant design and layout, including the capabilities of instrumentation and controls and the control room. The applicant shall assign normal duties to the STAs that pertain to the engineering aspects of assuring safe operations of the plant, including the review and evaluation of operating experience.

Clarification

(1) Due to the similarity in the requirements for dedication to safety, training, and onsite location and the desire that the accident assessment function be performed by someone whose normal duties involve review of operating experiences, our preferred position is that the same people perform the accident and operating experience assessment function. The performance of these two functions may be split if it can be demonstrated the persons assigned the accident assessment role are aware, on a current basis, of the work being done by those reviewing operating experience.

(2) To provide assurance that the STA will be dedicated to concern for the safety of the plant, our position has been the STAs must have a clear measure of independence from duties associated with the commercial operation of the plant. This would minimize possible distractions from safety judgments by the demands of commercial operations. We have determined that, while desirable, independence from the operations staff of the plant is not necessary to provide this assurance. It is necessary, however, to clearly emphasize the dedication to safety associated with the STA position both in the STA job description and in the personnel filling this position. It is not acceptable to assign a person who is normally the immediate supervisor of the shift supervisor to STA duties as defined herein.

(3) It is our position that the STA should be available within 10 minutes of being summoned and therefore should be onsite. The onsite STA may be in a duty status for periods of time longer than one shift, and therefore asleep at some times, if the 10-minute availability is assured. It is preferable to locate those doing the operating experience assessment onsite. The desired exposure to the operating plant and contact with the STA (if these functions are to

be split) may be able to be accomplished by a group, normally stationed offsite, with frequent onsite presence.

We do not intend, at this time, to specify or advocate a minimum time onsite.

Response

The STA function will be provided, on shift, by an individual meeting the experience, education, and training requirements as specified in NUREG-0737 and ANS 3.1-1981. The proposed supervisory shift crew composition for conditions 1 through 3 consists of one senior nuclear shift supervisor (SNSS-SRO), one nuclear shift supervisor (NSS-SRO), and two nuclear control operators (NCO-RO). In the event that neither the SNSS nor the NSS are STA qualified, an additional person who is STA qualified will be assigned.

Various proposals for meeting the STA on shift requirement are currently under review by the Institute for Nuclear Power Operations (INPO) and the NRC. The final recommendations of these studies will be incorporated into station procedures.

The STA will have a bachelors degree or equivalent in a scientific engineering discipline with specific training in plant design and response and analysis of the plant for transients and accidents in accordance with the requirements of NUREG-0737, Section I.A.1.1.

During normal operations, the STA may be assigned responsibilities that pertain to the engineering aspects of ensuring safe operations of the plant.

See Section 13.1 for further discussion.

Training procedure TP-303, Shift Technical Advisor Training and Certification, meets the requirements of NUREG-0737, ANSI 3.1-1981, and 10CFR55. The Hope Creek specific TP-303 will be in place by March, 1985. The content of this program is described in FSAR Section 13.2.1.

I.A.1.2 SHIFT SUPERVISOR RESPONSIBILITIES

Position

Review the administrative duties of the shift supervisor and delegate functions that detract from or are subordinate to the management responsibility for assuring safe operation of the plant to other personnel not on duty in the control room.

Clarification

(1) The highest level of corporate management of each licensee shall issue and periodically reissue a management directive that emphasizes the primary management responsibility of the shift supervisor for safe operation of the plant under all conditions on his shift and that clearly establishes his command duties.

(2) Plant procedures shall be reviewed to assure that the duties, responsibilities, and authority of the shift supervisor and control room operators are properly defined to effect the establishment of a definite line of command and clear delineation of the command decision authority of the shift supervisor in the control room relative to other plant management personnel. Particular emphasis shall be placed on the following:

(a) The responsibility and authority of the shift supervisor shall be to maintain the broadest perspective of operational conditions affecting the safety of the plant as a matter of highest priority at all times when on duty in the control room. The principle shall be reinforced that the shift supervisor should not become totally involved in any single operation in times of emergency when multiple operations are required in the control room.

(b) The shift supervisor, until properly relieved, shall remain in the control room at all times during accident situations to direct the activities of control room operators. Persons authorized to relieve the shift supervisor shall be specified.

(c) If the shift supervisor is temporarily absent from the control room during routine operations, a lead control room operator shall be designated to assume the control room command function. These temporary duties, responsibilities, and authority shall be clearly specified.

(3) Training programs for shift supervisors shall emphasize and reinforce the responsibility for safe operation and the management function that the shift supervisor is to provide for assuring safety.

(4) The administrative duties of the shift supervisor shall be reviewed by the senior officer of each utility responsible for plant operations. Administrative functions that detract from or are subordinate to the management responsibility for assuring the safe operation of the plant shall be delegated to other operations personnel not on duty in the control room.

Response

A written policy describing the primary management responsibilities of SS-SROs and establishing their command duties was placed in effect September 12, 1979, and reissued by the vice president - nuclear as VPN-PLP-01.

The guidance of this policy, along with duties, responsibilities, and authority of the SS-SRO is promulgated in Administrative Procedure SA-AP.ZZ-002(Q), Station Organization and Responsibilities.

The shift command function responsibilities are promulgated in Operations Department Administrative Procedure OP-AP.ZZ-002(Q), Conduct of Operations.

Shift administrative duties which detract from the SS-SROs responsibility for safe operation of the plant will be assigned to the shift clerks and/or the Operations Staff Group as appropriate.

See Section 13.1.2 for further discussion.

- I.A.1.3 SHIFT MANNING

Position

Assure that the necessary number and availability of personnel to man the operations shifts have been designated by the licensee. Administrative procedures should be written to govern the movement of key individuals about the plant to assure that qualified individuals are readily available in the event of an abnormal or emergency situation. This should consider the recommendations on overtime in NUREG-0578. Provisions should be made for an aide to the shift supervisor to assure that, over the long term, the shift supervisor is free of routine administrative duties.

Clarification

At any time a licensed nuclear unit is being operated in Modes 1-4 for a pressurized water reactor (power operation, startup, hot standby, or hot shutdown, respectively) or in Modes 1-3 for a boiling water reactor (power operation, startup, or hot shutdown, respectively), the minimum shift crew shall include two licensed senior reactor operators, one of whom shall be designated as the shift supervisor, two licensed reactor operators, and two unlicensed auxiliary operators. For a multi-unit station, depending upon the station configuration, shift staffing may be adjusted to allow credit for licensed senior reactor operators and licensed reactor operators to serve as relief operators on more than one unit; however, these individuals must be properly licensed on each such unit. At all other times, for a unit loaded with fuel, the minimum shift crew shall include one shift supervisor who shall be a licensed senior reactor operator, one licensed reactor operator, and one unlicensed auxiliary operator.

Adjunct requirements to the shift staffing criteria stated above are as follows:

(1) A shift supervisor with a senior reactor operator's license, who is also a member of the station supervisory staff, shall be onsite at all times when at least one unit is loaded with fuel.

(2) A licensed senior reactor operator shall, at all times, be in the control room from which a reactor is being operated. The shift supervisor may from time to time act as relief operator for the licensed senior reactor operator assigned to the control room.

(3) For any station with more than one reactor containing fuel, the number of licensed senior reactor operators onsite shall, at all times, be at least one more than the number of control rooms from which the reactors are being operated.

(4) In addition to the licensed senior reactor operators specified in (1), (2), and (3) above, for each reactor containing fuel, a licensed reactor operator shall be in the control room at all times.

(5) In addition to the operators specified in (1), (2), (3), and (4) above, for each control room from which a reactor is being operated, an additional licensed reactor operator shall be onsite at all times and available to serve as relief operator for that control room. As noted above, this individual may serve as relief operator for each unit being operated from that control room, provided he holds a current license for each unit.

(6) Auxiliary (non-licensed) operators shall be properly qualified to support the unit to which assigned.

(7) In addition to the staffing requirements stated above, shift crew assignments during periods of core alterations shall include a licensed senior reactor operator to directly supervise the core alterations. This licensed senior reactor operator may have fuel handling duties but shall not have other concurrent operational duties.

Licensees of operating plants and applicants for operating licenses shall include in their administrative procedures (required by license conditions) provisions governing required shift staffing and movement of key individuals about the plant. These provisions are required to assure that qualified plant personnel to man the operational shifts are readily available in the event of an abnormal or emergency situation.

These administrative procedures shall also set forth a policy, the objective of which is to operate the plant with the required staff and develop working schedules such that use of overtime is avoided, to the extent practicable, for the plant staff who perform safety-related functions (e.g., senior reactor operators, health physicists, auxiliary operators, instrumentation and control technicians, and key maintenance personnel).

IE Circular No. 80-02, "Nuclear Power Plant Staff Work Hours," dated February 1, 1980, discusses the concern of overtime work for members of the plant staff who perform safety-related functions.

We recognize that there are diverse opinions on the amount of overtime that would be considered permissible and that there is a lack of hard data on the effects of overtime beyond the generally recognized normal 8-hour working day, the effects of shift rotation, and other factors. We have initiated studies in this area. Until a firmer basis is developed on working hours, the administrative procedures shall include as an interim measure the following guidance, which generally follows that of IE Circular No. 80-02.

In the event that overtime must be used (excluding extended periods of shutdown for refueling, major maintenance, or major plant modifications), the following overtime restrictions should be followed.

(1) An individual should not be permitted to work more than 12 hours straight (not including shift turnover time).

(2) There should be a break of at least 12 hours (which can include shift turnover time) between all work periods.

(3) An individual should not work more than 72 hours in any 7-day period.

(4) An individual should not be required to work more than 14 consecutive days without having 2 consecutive days off.

However, recognizing that circumstances may arise requiring deviation from the above restrictions, such deviation shall be authorized by the plant manager or his deputy or higher levels of

management in accordance with published procedures and with appropriate documentation of the cause. If a reactor operator (RO) or senior reactor operator (SRO) has been working more than 12 hours during periods of extended shutdown (e.g., at duties away from the control board), such individuals shall not be assigned shift duty in the control room without at least a 12-hour break preceding such an assignment. We encourage the development of a staffing policy that would permit the licensed reactor operators and senior reactor operators to be periodically relieved of primary duties at the control board, such that periods of duty at the board do not exceed about 4 hours at a time. If a reactor operator is required to work in excess of 8 continuous hours, he shall be periodically relieved of primary duties at the control board, such that periods of duty at the board do not exceed about 4 hours at a time.

The guidelines on overtime do not apply to the STA provided that the STA is provided sleeping accommodations and 10-minute availability is assured.

Operating license aplicants shall complete these administrative procedures before fuel loading. Development and implementation of the administrative procedures at operating plants will be reviewed by the Office of Inspection and Enforcement beginning 90 days after July 31, 1980.

Response

See Section 13.1.2 for discussion on shift manning and operating shift crews.

Operations Department Procedure OP-AP.ZZ-002(Q), Conduct of Operations, establishes maximum work hours for licensed operators and implements current NRC policy including policy statement on nuclear power plant staff working hours dated 2/11/82 and Generic Letter 82-12.

Adequate shift coverage shall be maintained without routine excessive use of overtime. The objective shall be to have operating personnel work a normal 8-hour day while the plant is operating to meet the rotating schedule requirements of the department. However, in the event that unforeseen problems require substantial amcunts of overtime to be used; or during

extended periods of shutdown for refueling, major maintenance, or major plant modifications, on a temporary basis; the following guidelines shall be followed:

a. An individual should not be permitted to work more than 16 hours straight, excluding shift turnover time.

b. An individual should not be permitted to work more than 16 hours in any 24-hour period, nor more than 24 hours in any 48-hour period, nor more than 72 hours in any 7-day period, all excluding shift turnover time.

c. A break of at least 8 hours should be allowed between work periods, including shift turnover time.

d. Except during extended shutdown periods, the use of overtime should be considered on an individual basis and not for the entire staff on a shift.

Any deviation from the above guidelines shall be authorized by the operations manager or higher levels of management, with documentation of the basis for granting the deviation.

Overtime shall be reviewed monthly by the general manager or his designee.

Shift manning is described in Section 13.1.2 and procedure OP-AP.ZZ-002(Q), Conduct of Operations.

I.A.2.1 IMMEDIATE UPGRADING OF OPERATOR AND SENIOR OPERATOR TRAINING AND QUALIFICATION

Position

Applicants for SRO license shall have 4 years of responsible power plant experience, of which at least 2 years shall be nuclear power plant experience (including 6 months at specific plant) and no more than 2 years shall be academic or related technical training. After fuel loading, applicants shall have 1 year of experience as a licensed operator or equivalent.

Response

See Section 13.1 for discussion of the PSE&G and HCGS organizations.

General Manager - nuclear safety review group reports directly to the Vice President - nuclear as discussed in Section 13.4.4 and shown on Figure 13.1-8.

I.C.1 SHORT-TERM ACCIDENT ANALYSIS AND PROCEDURE REVIEW

Position

In our letters of September 13 and 27, October 10 and 30, and November 9, 1979, we required licensees of operating plants, applicants for operating licenses, and licensees of plants under construction to perform analyses of transients and accident, prepare emergency procedure guidelines, upgrade emergency procedures, and to conduct operator retraining (see also Item I.A.2.1 of this report). Emergency procedures are required to be consistent with the actions necessary to cope with the transients and accidents analyzed. Analyses of transients and accidents were to be completed in early 1980, and implementation of procedures and retraining were to be completed 3 months after emergency procedure guidelines were established; however, some difficulty in completing these requirements has been experienced. Clarification of the scope of the task and appropriate schedule revisions were included in NUREG-0737, Item I.C.1.

Pending staff approval of the revised analysis and guidelines, the staff will continue the pilot monitoring of emergency procedures described in Item I.C.8 (NUREG-0660). The adequacy of the boiling water reactor vendor's guidelines will be identified to each near-term operating licensee during the emergency procedure review.

Response

All emergency procedures will be written following the guidelines of the BWR Owners Group-Emergency Procedures Committee, as long as the guidelines do not contradict existing NRC directives. These procedures will be available March 1, 1985.

Corrections will be made, as necessary based on any NRC audits of these procedures.

The Emergency Operating Procedures for HCGS will comply with NUREG-0737, Supplement 1, Section 7.0.

I.C.2 SHIFT RELIEF AND TURNOVER PROCEDURES

Position

The licensee shall review and revise as necessary the plant procedure for shift and relief turnover to assure the following:

(1) A checklist shall be provided for the oncoming and offgoing control room operators and the oncoming shift supervisor to complete and sign. The following items, as a minimum, shall be included in the checklist:

(a) Assurance that critical plant parameters are within allowable limits (parameters and allowable limits shall be listed on the checklist).

(b) Assurance of the availability and proper alignment of all systems essential to the prevention and mitigation of operational transients and accidents by a check of the control console. What to check and criteria for acceptable status shall be included on the checklist.

(c) Identification of systems and components that are in a degraded mode of operation permitted by the Technical Specifications. For such systems and components, the length of time in the degraded mode shall be compared with the Technical Specifications action statement. (This shall be recorded as a separate entry on the checklist.)

(2) Checklists or logs shall be provided for completion by the offgoing and oncoming auxiliary operators and technicians. Such checklists or logs shall include any equipment under maintenance or test that by itself could degrade a system critical to the prevention and mitigation of operational transients and accidents or initiate an operational transient (what to check and criteria for acceptable status shall be included on the checklist; and

(3) A system shall be established to evaluate the effectiveness of the shift and relief turnover procedures (for example, periodic independent verification of system alignments).

Response

The required checklists and logs addressing shift turnover are specified in Operations Department Procedure OP-AP.ZZ-107(Q), Shift Relief and Turnover.

The effectiveness of, and compliance with the shift turnover procedure shall be audited in accordance with procedure OP-AP.ZZ-017(Q), Operations Department Management Audit Program.

I.C.3 SHIFT SUPERVISOR RESPONSIBILITIES

This item is included with Item I.A.1.2, Shift Supervisor Duties.

Response

A discussion of this item is provided in the response to Item I.A.1.2.

I.C.4 CONTROL ROOM ACCESS

Position

The licensee shall make provisions for limiting access to the control room to those individuals responsible for the direct operation of the nuclear power plant (e.g., operations supervisor, shift supervisor, and control room operators), to technical advisors who may be requested or required to support operation, and the predesignated NRC personnel. Provisions shall include the following:

(1) Develop and implement an administrative procedure that establishes the authority and responsibility of the person in charge of the control room to limit access.

(2) Develop and implement procedures that establish a clear line of authority and responsibility in the control room in the event of an emergency. The line of succession for the person in charge of the control room shall be established and limited to persons possessing a current senior reactor operator's license. The plan shall clearly define the lines of communication and authority for plant management personnel not in direct command of operations, including those who report to stations outside the control room.

Response

The lines of responsibility and authority of the SNSS-SRO, or the individual assuming the control room command function (as promulgated in procedure VPN-PLP-01) permit limited access to the control room area. This authority is delineated in SA-AP.ZZ-002(Q), Station Organization and Operating Practices, and OP-AP.ZZ-002(Q), Conduct of Operations. This item is also discussed in the response to item I.A.1.2.

Chapter 13

I.C.5 FEEDBACK OF OPERATING EXPERIENCE

Position

Each licensee will review its administrative procedures to assure that operating experience from within and outside the organization is continually provided to operators and other operational personnel and is incorporated in training programs.

Response

An integrated nuclear department procedure is being prepared, and will be available by March 1, 1985. When issued, station procedures will be revised to incorporate the prescribed procedure. Operating department procedure OP-AP.ZZ-105(Q) will be used to disseminate information to Operating department personnel.

Industry operating experiences including events occurring within the organization are reviewed for applicability to Hope Creek by the Reliability and Assessment Department. Pertinent information is communicated to the appropriate department for their information and any actions required are tracked until they have been satisfactorily completed. In addition, information is communicated to the Manager - Nuclear Training for incorporating new material into the Training Programs. The activities of the Reliability and Assessment Department with respect to operating experiences (i.e., INPO's SEE-IN Program) are governed by procedure M3-POP-001 "Operating Experience Review Program"

Vendor technical documents describing the operation and maintenance of installed equipment and components associated with Hope Creek Generating Station shall be controlled in the following manner;

1) When vendor documents are received by disciplines within the Nuclear Department, these documents will be forwarded to the Nuclear Engineering Department for review and approval for inclusion into the Vendor Document Control System.

2) Once approved by the cognizant engineer they will be assigned a unique number and distributed to all user departments, and incorporated in procedures and training as necessary.

Information on operating experience provided by the NRC through the I & E Bulletins/Information Notices, generic letters and letters on the docket are processed by nuclear licensing and regulation department within the nuclear department. These letters are distributed to various disciplines within nuclear department for feedback of information. Response action form is utilized when a response or action is required and is monitored through the response tracking system to completion.

In addition, the Nuclear Department Training Center has revised the two procedures pertaining to this subject to include HCGS. The procedures are TP-306HC, Plant Design Review Program, and TP-307HC, Operational Experience Review Program. These procedures will be revised as necessary to incorporate the integrated nuclear department procedure.

I.C.6 VERIFY CORRECT PERFORMANCE OF OPERATING ACTIVITIES

Position

It is required (from NUREG-0660) that licensees' procedures be reviewed and revised, as necessary, to assure that an effective system of verifying the correct performance of operating activities is provided as a means of reducing human errors and improving the quality of normal operations. This will reduce the frequency of occurrence of situations that could result in or contribute to accidents. Such a verification system may include automatic system status monitoring, human verification of operations, and maintenance activities independent of the people performing the activity (see NUREG-0585, Recommendation 5), or both.

Response

Verification of operating activities to provide a means of reducing human errors and to improve the quality of normal operations shall be assured by the following procedures:

a) OP-AP.ZZ-108(Q) Removal and Return of Equipment to Service shall be used to track equipment out of service, determine if the equipment is safety-related, determine if a Limiting Condition for Operation exists, determine if independent verification is required, and determine the pre and post testing requirements.

b) OP-AP.ZZ-109(Q) Equipment Operational Contract shall contain the requirements to prevent unauthorized operation of equipment by establishing panel and valve lock and tagging control.

c) OP-AP.ZZ-002(Q) Conduct of Operations will be revised to include independent verification requirements for safety related system line-ups.

d) SA-AP.ZZ-12(Q) Surveillance Program shall contain the requirements for independent verification of safety related system line-up and temporary modification for testing. In addition this procedure will require, prior to start of testing, permission from designated operations personnel holding an SRO license.

e) SA-AP.ZZ-15(Q) Safety Tagging shall include reference to OP-AP.ZZ-108(Q) and independent verification of. installation and removal of Temporary Grounding Tags used on safety-related equipment.

f) SA-OP.ZZ-009 Control of Station Maintenance shall include requirements to obtain prior permission to work on plant equipment from designated operations personnel holding an SRO license.

g) SA-AP.ZZ-13(Q) Jumper and Lifted Leads shall include independent verification requirements for installation of temporary modification on safety related systems.

The above procedures shall contain identification of activities requiring independent verification, responsible person to perform the verification, and the method of documenting the performance verification for safety-related equipment. In addition an Operating Department audit procedure OP-AP.ZZ-017(Q) shall specify periodic audit requirements of operational activities included but not limited to the above procedures.

I.C.7 NSSS VENDOR REVIEW OF PROCEDURES

Position

Obtain nuclear system supply system vendor review of power-ascension and emergency operating procedures to further verify their adequacy.

Response

All startup test procedures from core load through power ascension will be reviewed by GE. This review, as well as vendor review of tests results, will be documented prior to commercial operation.

Chapter 13

CONDUCT OF OPERATION

13.1 ORGANIZATION STRUCTURE

Public Service Electric and Gas Company (PSE&G) is an investor-owned public utility providing reliable generation, transmission, and sale of gas and electric energy in the State of New Jersey. In meeting these responsibilities to our customers, we have developed experience and expertise in the design, construction, startup, and operation of both fossil and nuclear generation facilities. In continuing these commitments, PSE&G is dedicated to the safe, reliable, and efficient operation of Hope Creek Generating Station (HCGS).

Figures 13.1-1 and 13.1-2 are organization charts showing the corporate structure and the office of the senior vice president of nuclear and engineering, respectively.

13.1.1 MANAGEMENT AND TECHNICAL SUPPORT ORGANIZATION

The management and technical support organization is as follows:

a. Senior vice president - nuclear and engineering - As shown on Figure 13.1-2, the senior vice president - nuclear and engineering is responsible for the direction and management of engineering and construction, nuclear, and nuclear assurance and regulation departments.

b. Vice president - engineering and construction - The vice president - engineering and construction is responsible for the engineering, design and construction services required to build new facilities. Similar services are rendered to support major modifications to existing facilities. Planning and executing this work to meet schedules, budgets, and technical requirements are major commitments. Figures 13.1-3 and 13.1-4 identify the engineering and construction department.

c. Vice president - nuclear - The vice president - nuclear, as the senior nuclear manager, is responsible for the overall direction and control of the company's nuclear program. Besides having responsibility for the operations and maintenance of the nuclear facilities, he directs services, technical, and engineering support for the operating nuclear plants. Figure 13.1-6 identifies the nuclear department.

d. General manager - nuclear assurance and regulation - The general manager - nuclear assurance and regulation is responsible for providing management with an independent assessment of the effectiveness of nuclear safety and quality programs, managing licensing and analysis efforts for facilities under construction, and managing environmental efforts to obtain approvals for existing and new facilities. He provides an independent assessment of regulatory requirements and developments relevant to energy supply and engineering activities (Reference Figure 13.1-14).

13.1.1.1 Design and Operating Responsibilities

For the Hope Creek project, the principal site engineering design of the plant, procurement of material and equipment, and construction of the plant are performed by Bechtel Power Corporation. A project team, under the vice president - engineering and construction, has been established to direct and manage the construction efforts through preoperational testing to fuel load.

The vice president - nuclear provides an experienced and trained staff for Hope Creek to support preoperational testing, core load, power ascension testing, and the continued safe, reliable, and efficient commercial operation of the nuclear facility.

13.1.1.1.1 Design and Construction Activity (Project Plans)

The vice president - engineering and construction has the corporate responsibility and authority of the completion of HCGS. He has extended his authority to the project manager of

Hope Creek and established a project team to support this effort. The project organization enables the Hope Creek project to use the resources and experience of PSE&G engineering and construction departments and divisions. This project organization is identified on Figure 13.1-5. All of the Bechtel Power Corporation functions are performed in cooperation with the PSE&G organization of like functions, under the management supervision of the Hope Creek project team, which has four major project objectives:

a. To complete HCGS on schedule and within budget

b. To ensure that all necessary organizations support the project in an effective and timely manner

c. To ensure that quality assurance is being effectively addressed within the project

d. To ensure that adequate safety and reliability criteria for engineering, design, and installation are met.

The project team provides the detailed management for the project and consists of the project manager, chief project engineer, project construction manager, project licensing manager, startup manager, and assistant project manager. Each of these team members is responsible for coordinating his organization's management and efforts with other PSE&G departments. The responsibilities of the project team members are as follows:

a. Project manager - The project manager has the management responsibility and necessary authority to complete the Hope Creek project. In doing so, he is accountable for overall project performance to the vice president of engineering and construction. The project manager is the chief spokesman for the project as the head of the project team until fuel load.

b. Chief project engineer - The chief project engineer is responsible for the coordination of Bechtel and PSE&G engineering. He is responsible for providing Bechtel with design criteria, licensing and

environmental requirements. This assures PSE&G that the plant design is in accordance with regulatory requirements, good engineering practices, and good operating and maintenance characteristics.

The chief project engineer is also responsible for approving Bechtel bidder's lists and procurement recommendations.

c. Project construction manager - The project construction manager is responsible for construction and site activities up to fuel load. He directs and coordinates construction activities with Bechtel to ensure the work is being performed in accordance with the terms of the contract, procedures, drawings, and specifications and within budget and schedule. This also includes reviews of construction manpower use.

d. Project licensing manager - The project licensing manager is responsible for applying for all necessary licenses. He directs the work of personnel in studies and tasks supporting the licensing efforts. All his activities are conducted in accordance with the project licensing plan.

He is the principal contact with the NRC on licensing issues. He must maintain himself current with licensing requirements and operating experiences, as well as coordinating the development of the final safety analysis report (FSAR).

e. Project startup manager - The project startup manager is responsible for the development and implementation of the preoperational testing program. This includes the administrative procedures, technical requirements, and personnel resources to ensure a safe startup.

f. Assistant project manager - The assistant project manager assists the project manager in all phases of the project, but specifically in coordination with other departments. He acts as the project manager in his absence.

g. Manager - Quality Assurance Engineering and construction ~~the~~ manager - quality assurance engineering and construction is responsible for the direction, control, and documentation of the quality assurance program for HCGS during the design, procurement, fabrication, and construction of the plant.

13.1.1.1.2 Preoperational Activities

The design of the Hope Creek advanced control room included a control room complex operability analysis. This was used to finalize the basic design of the main control panels.

As part of the analysis, a team of experienced power plant personnel and specialists verified the adequacy and acceptability of system control and monitoring functions. Simulated plant operation was performed using a full-scale pictorial mockup presentation. The human engineering, device and panel visibility, and simplification of operator movements and sequence for normal and abnormal conditions are the basis for optimizing the control room. Further studies are performed associated with improving the information provided the control operators based on a reanalysis of transients, accidents, and the safety parameter display system function for determining the safe status of the reactor core.

An independent consultant is used to perform the final humanistic analysis of the control room complex to ensure the highest standards of human factors engineering.

In recruiting the staff for Hope Creek, starting 1981-83, PSE&G has used nuclear experienced personnel from within the company in key positions, who are supplemented by experienced personnel from outside the company to provide the required depth in plant management and staff. At the time of fuel load, all personnel filling plant organization positions will meet the requirements as identified as ANSI/ANS 3.1 1981. The training of licensed and nonlicensed personnel is outlined in Section 13.2.

The development of plans for the preoperational and initial test program are identified in Section 14.2. The preoperational test program is directed, coordinated, and implemented by the startup manager of the Hope Creek project team. Station personnel provide checkout tests, calibration, and operation of the systems during the test program. The initial testing (Phase III) program is the responsibility of Hope Creek operations. These responsibilities are identified in Section 13.1.2 under the responsibilities of the technical manager.

The operating and maintenance programs are in effect to support the preoperational test program and are further identified in Section 13.1.2.

13.1.1.1.3 Technical Support for Operations

Vice president - nuclear - As the senior nuclear manager in overall charge of the company nuclear program, the vice president - nuclear provides the management direction and control over the activities of the operating nuclear plants and their needed services and support as shown on Figures 13.1-6a, 13.1-7, 13.1-7a, 13.1-8 and 13.1-8a and as described below.

a. Assistant Vice President - Nuclear Operations. The assistant Vice President - Nuclear Opertions provides the day-to-day direction and control of the nuclear operations functions directly related to plant operations, maintenance, outage management and industrial relations.

b. Assistant Vice President - Nuclear Operations Support. The Assistant Vice President - Nuclear Operations Support provides the day-to-day direction and control of the support functions necessary for the safe and reliable operation of the plants including engineering, licensing and reliability, nuclear fuel technology, methods and systems, public affairs, and personnel affairs.

c. General Manager - Nuclear Quality Assurance. The General Manager - Nuclear Quality Assurance provides the day-to-day direction and control of functions which assess the safe operation of the nuclear stations, quality of work performed by support personnel and compliance of all departments with QA program requirements, regulatory commitments and other company and governmental policies and regulations.

d. General Manager - Nuclear Safety Review. The General Manager - Nuclear Safety Review provides management direction and control over on-site and off-site independent safety review functions, including technical staff work for the Nuclear Safety Advisory Board, an independent committee which provides an overview of Nuclear Department operations for the Vice President - Nuclear.

e. General Manager - Nuclear Engineering. The General Manager - Nuclear Engineering directs and controls engineering services for operating nuclear plants; provides engineering services for plant modifications and operations/maintenance activities; establishes criteria and specifications for systems and equipment performance; directs and oversees the performance of safety evaluations on all design changes and abnormal plant occurrences.

f. Manager - Nuclear Licensing and Reliability. The Manger - Nuclear Licensing and Reliability directs and controls all nuclear licensing, fuel design and reliability assessment activities to support operating nuclear plants; coordinates regulatory and environmental program activities and all company involvement with regulatory agencies.

g. General Manager - Hope Creek Operations. The General Manager - Hope Creek Operations is the senior manager located within the nuclear station and provides management direction and control for the safe and efficient operations of the station.

h. General Manager - Nuclear Services. The General Manager - Nuclear Services directs and controls all

nuclear service functions which include maintenance services, training, site protection, radiation protection services, procurement and material control, and emergency preparedness.

i. Manager - Methods and Systems. The Manager - Methods and Systems directs and controls the development and implementation of effective Nuclear Deartment-wide services for information systems, cost and scheduling methods, records management systems and the promulgation of Nuclear Department policies and procedures.

j. Public Affairs Manager - Nuclear. The Public Affairs Manager - Nuclear is responsible for the management and direction of public affairs activities for the Nuclear Department and for the preparation, updating and sign-off of the public information section of the emergency plan. He presents the Company's position on relevant public policy or legislative issues.

k. Personnel Affairs Manager - Nuclear. The Personnel Affairs Manager - Nuclear directs and controls the human resources and administration functions for the Nuclear Department which include employee benefits, medical services, employment and placement, equal opportunity activities, employee compensation, management resource development, personnel development, personnel administration and administrative services.

l. Manager - Outage Services. The Manager - Outage Services is responsible to manage, direct and control the outage committee in all matters related to the planning, scheduling, conduct and control of outages. He is responsible to minimize the outage duration with good management and safety practices and to assure that outage activities are in compliance with facility license, Company and governmental regulations.

m. Nuclear Industrial Relations Manager. The Nuclear Industrial Relations Manager is the chief interpreter and spokesman for the Nuclear Department on all matters pertaining to Company/Union agreements and management labor relations, and ensures consistent Nuclear Department-wide adherence to Company/Union agreements and good labor relations practices.

n. Assistant General Manager - Joint Owners and Regulatory Affairs. The Assistant General Manager - Joint Owners and Regulatory Affairs serves as the chief coordinator and spokesperson for the Nuclear Department on aspects of Nuclear Department activities involving Co-owners and State regulatory bodies; assists in the preparation for rate case proceedings; and testifies for the Nuclear Department before the New Jersey Board of Public Utilities and other similar regulatory agencies.

o. Special Projects Administrator. The Special Projects Administrator provides technical research, writing, liaison and special projects assignments for the Vice President - Nuclear; investigates and reviews nuclear industry and regulatory concerns and recommends appropriate Company responses to the Vice President.

p. Operations Technical Staff Support. The Operations Technical Staff Support provides the Assistant Vice President - Nuclear Operations with technical review of operations related concerns and handles special inquiries and projects regarding technical operation functions or interfaces.

q. Nuclear Safety Advisory Board. The Nuclear Safety Advisory Board is a senior level management oversight committee. It is charged with providing an overview of the company's nuclear safety program; reviewing the policies and processes to identify issues or trends requiring management attention; and advising the Vice President - Nuclear accordingly.

r. Manager - Nuclear Maintenance Services - The Manager-Nuclear Maintenance Services provides the personnel and technical expertise to augment the nuclear station mechanical, electrical, and instrument and control maintenance. This includes the maintenance and technical support of the inservice inspection program, insurance inspection program, and code requirements. He also provides integrated testing of plant modifications.

s. Manager - Nuclear Site Protection - The manager - nuclear site protection develops, implements, and maintains a comprehensive program for emergency preparedness designed to protect the health and safety of the public during nuclear plant emergencies; implements and maintains a comprehensive program of security measures of the nuclear station; and develops, implements, and maintains fire protection and industrial safety programs to meet federal regulations.

t. Manager - Nuclear Training - The Manager - Nuclear Training is responsible for the training programs for nuclear plant NRC licenses and requalification; provides apprentice and advanced training for personnel in operating, maintenance, chemistry, and radiation protection; and ensures that nuclear training meets industry standards and INPO criteria.

u. Manager - Radiation Protection Services - The Manager - Radiation Protection Services is responsible for the corporate radiation protection program to endure personnel exposures and releases to the environment are as low as is reasonably achievable (ALARA); and provides a centralized facility for dosimetry, radiation protection, instrumentation calibration and repair, respirator protection, and laundry services.

v. Manager - Nuclear Licensing and Regulation - The Manager - Nuclear Licensing and Regulation is responsible for overall management of licensing and regulation activities associated with PSE&G operating nuclear facilities. He manages the preparation, review, and approval of licensing documents and coordination of PSE&G involvement with

regulatory agencies and provides licensing direction within PSE&G and to vendor and consultant personnel to ensure that regulatory requirements are met.

w. Manager - Nuclear Fuel - The Manager - Nuclear Fuel is responsible for providing the nuclear physics, thermal hydraulics, safety and transient analysis expertise to ensure safe and economical use of nuclear fuel. He formulates operating strategies and schedules for nuclear units, provides technical assistance for plant operations pertaining to the reactor core, and develops mathematical computer models and monitors core performance. In addition, he evaluates fuel performance and verifies core design with nuclear fuel vendors, as well as prepares design data, specifications, and analyses required for core reload licensing.

x. Manager - Reliability and Assessment - The Manager-Reliability and Assessment directs the activities of the reliability and assessment group, which performs the review of industry operating experiences including events which occur at PSE&G facilities and disseminates information to the appropriate departments. He provides a technical service in the equipment reliability program. He evaluates the failure data and trends and initiates corrective recommendations to improve equipment reliability.

y. Assistant General Manger - Nuclear Engineering - The Assistant General Manager - Nuclear Engineering directs those engineering activities necessary to furnish engineering and design services required to support operating nuclear generating stations. He provides technical consultation and engineering services for plant modifications, and maintenance. He also establishes general criteria for systems and equipment performance, application, and operation in accordance with regulatory and PSE&G requirements. Nuclear engineering responsibilities are delegated as follows, indicated in z through cc.

z. Manager - Hope Creek (Salem) Systems Engineering[1] - The Manager - Hope Creek (Salem) Systems Engineering is responsible for providing engineering services necessary to study, design, specify, evaluate, modify, and maintain process systems for nuclear power production. He performs systems and plant interaction analyses in support of plant operations, problems, and modifications. He also provides technical direction on process systems, water chemistry, and radioactive waste treatment systems. In addition, he establishes system design criteria and safety classifications and performs safety evaluations for design changes and abnormal plant occurrences.

aa. Manager - Mechanical/Civil (I&C/Electrical) Engineering[2] - The Manager - Mechanical/Civil (I&C/Electrical) Engineering is responsible for providing engineering services necessary to study, design, specify, evaluate, modify, and maintain plant components and hardware. He establishes component and/or hardware specifications, safety classifications, and performs detailed engineering for design changes. He evaluates component and/or hardware malfunctions and provides technical direction for corrective action when appropriate and provides technical direction in the development and maintenance of computer process and control systems. He also establishes and maintains plant site arrangements.

bb. Manager - Nuclear Engineering Design - The Manager - Nuclear Engineering Design performs detail design and prepares drawings, models, charts, etc., as required. He establishes design standards and controls design document distribution and maintains records; reproduces tracings, prints and documents; and controls microfilming of design documents. He also administers a computerized drafting program.

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(1) This position is presently titled Manager - Nuclear Systems Engineering. The position will be retitled Salem Systems Engineering and an additional organization titled Hope Creek Systems Engineering will be in place prior to fuel load.

(2) This position is presently titled Manager - Nuclear Plant Engineering and will be divided into two separate organizations prior to fuel load.

cc. Manager - Nuclear Engineering Control - The Manager - Nuclear Engineering Control establishes and maintains engineering work procedures and job control systems for assigning, monitoring, and closing out all work projects within the engineering organizaiton. He establishes work priorities and schedules and coordinates job assignments among engineering organizations. He coordinates and prepares engineering estimates and coordinates implementation of the engineering assurance program.

A breakdown of the nuclear department present and anticipated staffing level is provided in Table 13.1-1.

13.1.1.2 Organization Arrangement

As identified in Section 13.1.1.1, the Hope Creek project is the responsibility of the vice president - engineering and construction, with the project team established to direct nd manage the construction effort until core load. During this period, the nuclear department, as identified in Section 13.1.1.3, will provide technical support and backup for the operating organization. At the time for core load, the nuclear department will be in a position to technically support the facility during the startup testing program and throughout the life of the plant. This will permit the vice president of engineering and construction to conclude the responsibility for technical support of the project.

Figure 13.1-3 identifies the engineering and construction department and the Hope Creek project manager. Figure 13.1-4 identifies the engineering department, which provides the technical support to the project team during the construction phase.

Figures 13.1-7, 13.1-7a, 13.1-8 and 13.1-8a identify the nuclear department staff providing nuclear service and nuclear support to the facility during startup and throughout the life of the plant.

13.1.1.3 Qualifications

For staffing the technical support organization PSE&G uses qualification requirements similar to those of other major engineering firms, which consist primarily of individuals having college degrees or the equivalent in appropriate science or engineering disciplines. In certain instances, technicians who by virtue of formal education, training programs, or experience have acquired special expertise in particular areas, are involved in providing technical support. In keeping with responsible management practices, the capabilities of individuals and necessary supervision are appropriately considered in making personnel assignments.

Resumes for the individuals holding these positions are in Table 13.1-1a.

a. Vice President - Nuclear. The Vice President - Nuclear shall hold a bachelors degree in engineering or related technical discipline generally associated with power production; have training in nuclear science, nuclear power plant operations and maintenance; and have a minimum of eighteen years of progressively more responsible power plant experience, of which at least eight years shall be experience in nuclear power generation and/or related nuclear fields. In addition, the Vice President - Nuclear shall be familiar with regulatory requirements and applicable codes and standards.

b. Assistant Vice President - Nuclear Operations. The Assistant Vice President - Nuclear Operations shall hold a bachelors degree in engineering, science or a related technical discipline generally associated with power production, and have at least sixteen years of experience in progressively more responsible positions in power plant engineering, construction or operation. A minimum of eight years of this experience shall consist of providing day-to-day direction and control of nuclear operation functions directly related to plant operation, maintenance, and/or outage management. In addition, the Assistant Vice President - Nuclear Operations shall be familiar with regulatory requirements, applicable codes and standards and good industrial relations practices.

f. General Manager - Nuclear Engineering. The General Manager - Nuclear Engineering shall hold a bachelors degree in engineering or science, be a licensed Professional Engineer, and have at least fifteen years experience in progressively more responsible positions in power plant engineering, construction or operation. A minimum of seven years of this experience shall be in nuclear plant construction, engineering, or plant operating experience. In addition, the General Manager - Nuclear Engineering shall be familiar with regulatory requirements and applicable codes and standards.

g. Manager - Nuclear Licensing and Reliability. The Manager - Nuclear Licensing and Reliability shall hold a bachelors degree in engineering or science and have at least ten years of experience in power plant engineering, construction, quality assurance or operations. A minimum of five years of this experience shall be nuclear power plant construction, engineering, or plant operating experience. In addition, the Manager - Nuclear Licensing and Reliability shall be familiar with regulatory requirements, the regulatory process, overall plant operation, applicable codes and standards, and quality assurance functions.

h. General Manager - Hope Creek Operations. The General Manager - Hope Creek Operations or the Assistant General Manager - Hope Creek Operations shall hold a bachelors degree in engineering or a related science and hold an NRC Senior Operator License, (or have held a license or been certified at the plant or at an appropriate simulator) and shall have at least fiften years of experience in progressively more responsible positions in power plant engineering, construction, operation, or quality assurance. A minimum of three years of this experience shall be nuclear power plant operating experience.

i. General Manager - Nuclear Services. The General Manager - Nuclear Services shall hold a bachelors degree in engineering or science and have at least fifteen years of experience in progressively more responsible positions in power plant engineering, construction or operation. A minimum of seven years of this experience shall be nuclear power plant construction, engineering or plant operating experience. Familiarity with regulatory requirements and applicable codes and standards is required.

j. Manager - Methods and Systems. The Manager - Methods and Systems shall hold a bachelors degree in engineering, computer sciences, business administration or a related discipline and have a minimum of ten years of experience in the development and implementation of information systems, including a minimum of five years in responsible supervisory positions.

k. Public Affairs Manager - Nuclear. The Public Affairs Manager - Nuclear shall hold a bachelors degree in public relations, communication sciences, business, or engineering, and have a minimum of five years of experience in the public relations field. This experience shall be in progressively more responsible positions, including supervisory roles, and include at least three years of experience in the nuclear power industry.

l. Personnel Affairs Manager - Nuclear. The Personnel Affairs Manager - Nuclear shall hold a bachelors degree in personnel management, business or engineering, and have at least five years of experience in the personnel management field. This experience shall be in progressively more responsible positions including supervisory roles and shall include at least three years of experience in the nuclear power industry.

m. Manager - Outage Services. The Manager - Outage Services shall hold a bachelors degree in engineering or a related physical science and have at least ten years of experience in progressively more responsible supervisory positions in power plant maintenance, operations or maintenance engineering support. A minimum of five years of this experience shall be in nuclear power plant operations or operations support.

n. Nuclear Industrial Relations Manager. The Nuclear Industrial Relations Manager shall hold a bachelors degree in industrial and labor relations or M.B.A. with a major in industrial relations, and shall have at least five years of experience in industrial relations with emphasis on grievance processing, arbitration preparation and presentation, and contract negotiation and labor law.

o. Manager - Nuclear Maintenance Services - The Manager - Nuclear Maintenance Services shall hold a bachelors degree in engineering or a related physical science and have at least ten years experience in progressively more responsible supervisory positions in power plant maintenance, operations or maintenance engineering support. A minimum of three years of this experience shall be nuclear power plant maintenance experience. He shall be familiar with regulatory requirements, the regulatory process, overall plant operation, applicable codes and standards, quality assurance, non-destructive examination and craft techniques associated with plant maintenance.

p. Manager-Nuclear Site Protection - The Manager-Nuclear Site Protection shall hold a bachelor's degree in engineering, science, or associated technical field. He shall have at least 8 years of experience in the nuclear power industry with a strong working knowledge of nuclear plant security, nuclear fire protection, and nuclear emergency preparedness.

q. Manager - Nuclear Training - The Manager - Nuclear Training shall hold a bachelor's degree, preferably with an advanced degree in engineering, science, or education. In addition, he shall have training in educational concepts and shall have at least 8 years of appropriate professional experience. The manager of nuclear training, or his designee responsible for the technical content of the licensed operator training programs, shall have at least 3 years of nuclear experience where he was a participant in the operations or training activities of an operating nuclear power plant.

r. Manager - Radiation Protection Services - Manager - Radiation Protection Services shall hold a bachelors degree in a science or engineering subject, preferably related to radiation protection. He shall have 5 years of experience in the nuclear power reactor field. Three years of this experience shall be working with radiological problems at an actual nuclear power facility.

s. Manager - Nuclear Licensing and Regulation - The Manager - Nuclear Licensing and Regulation shall hold a bachelors degree in engineering or science. He shall have a minimum of 10 years of experience in the nuclear industry, of which at least 3 years shall be experience in a licensing organization. He shall be familiar with regulatory requirements, the regulatory process, overall plant operation, applicable codes and standards, and quality assurance functions.

t. Manager - Nuclear Fuel - The Manager - Nuclear Fuel shall hold a bachelor's degree in engineering or science, or have equivalent educational background. He shall have at least 10 years of experience in progressively more responsible roles of which at least 5 years must be nuclear-related experience. He must have knowledge of the nuclear fuel cycle and experience in nuclear core analysis and nuclear fuel management.

u. Manager - Reliability and Assessment shall hold a bachelor's degree in engineering or science, or have equivalent educational background. He shall have at least 10 years experience in progressively more responsible positions of which at least 5 years must be nuclear power plant construction, engineering or operations experience.

v. Assistant General Manager - Nuclear Engineering - The Assistant General Manager - Nuclear Engineering shall hold a bachelor's degree in engineering or science and have at least 12 years of experience in progressively more responsible and supervisory roles in power plant engineering, construction, or operation. A minimum of 5 years of this experience shall be nuclear plant construction, engineering, or operating experience. Familiarity with regulatory requirements and applicable industry codes and standards is desirable.

w. Manager - (Hope Creek) Salem Systems Engineering[3] - The Manager - (Hope Creek) Salem Systems Engineering shall hold a bachelor's degree in engineering or related physical science and have a minimum of 10 years of nuclear-related experience, including a minimum of 3 years in responsible supervisory positions.

This position corresponds to the "Engineer in Charge" as described in Section 4.6.1 of ANSI/ANS-3.1-1978.

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(3) See Footnote (1), Section 13.1.1.1.3

x. Manager - Mechanical/Civil (I&C/Electrical) Engineering[4] - The Manager - Mechanical/Civil (I&C/Electrical) engineering shall hold a bachelor's degree in engineering or related physical science and have a minimum of 10 years of nuclear-related experience including a minimum of 3 years in responsible supervisory positions.

This position corresponds to the "Engineer in Charge" as described in Section 4.6.1 of ANSI/ANS-3.1-1978.

y. Manager - Nuclear Engineering Design - The Manager Nuclear Engineering Design shall hold a bachelor's degree in engineering or related physical science, or have equivalent related experience with a minimum of 10 years of nuclear power generating facilities experience, including a minimum of 3 years in responsible supervisory positions.

z. Manager - Nuclear Engineering Control. The Manager - Nuclear Engineering Control shall hold a bachelors degree in engineering or related physical science and have a minimum of eight years of nuclear-related experience, including a minimum of two years in responsible supervisory positions.

13.1.2 OPERATING ORGANIZATION

This section describes the organizational functions and responsibilities of the onsite organization, Hope Creek Operations.

13.1.2.1 PLANT ORGANIZATION

The station organization charts for Hope Creek Generating Station (HCGS), Figures 13.1-9 through 13.1-13, indicate the title of each position, the number of personnel assigned, and the positions for which reactor operator and senior reactor operator licenses are required. Table 13.1-2 identifies the schedule for assigning personnel to the identified position.

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(4) See Footnote (2), Section 13.1.1.1.3

13.1.2.2 PLANT PERSONNEL RESPONSIBILITIES AND AUTHORITY

The General Manager of Hope Creek Operations is responsible for all plant organizational activities. As the senior manager located at the station, he provides the management direction and control of the day to day operations. In the event of an unexpected contingency, the succession of authority and responsibility for the overall operation is in the following order:

a. Assistant general manager

b. Technical manager

c. Operations manager.

13.1.2.2.1 Overall Station Management

The General Manager - Hope Creek Operations reports directly to the Assistant Vice President - Nuclear Operations, and is responsible for the overall management, direction, and control of station activities. In fulfilling these responsibilities he ensures the safe and efficient operation of the HCGS. These functions include but are not limited to general administration, liaison activities with regulatory and other agencies, approving and implementing programs and procedures, and acting on matters pertaining to Company policies and practices. He acts as the chairman of the Station Operations Review Committee (SORC). He is responsible for ensuring compliance with the requirements of the technical specifications, operating license, and all other applicable government regulations.

The General Manager - Hope Creek Operations also ensures the station's commitment to the PSE&G Operational Quality Assurance Program by maintaining close liaison with the Station Quality Assurance Engineer.

The Assistant General Manager - Hope Creek Operations reports directly to the General Manager. He assists the General Manager in all of his principal accountabilities and assumes responsibilites for station management in the General Manager's absence.

The Assistant General Manager's functional management responsibilities include the direction and coordination of the Operations, Technical, Maintenance, and Radiation Protection Departments' daily activities. He serves as the Vice - Chairman of the SORC and maintains contact with the NRC Resident Inspector.

The Office Supervisor also reports directly to the General Manager and is responsible for clerical support; operation of the word processing center; control of plant costs and budgeting; and liaison with the Nuclear Service organizations for the control and procurement of plant materials, equipment and operating supplies.

13.1.2.2.2 Operating Department

The operating department is responsible for safe and efficient plant operation. The operations manager reports to the assistant general manager and is responsible for managing, directing, and controlling the department activities. The operations manager ensures that plant operation complies with the facility operating license, technical specifications, and all government and company regulations. He ensures that a properly trained, licensed and non-licensed staff is available to provide safe and efficient operation which in turn ensures plant availability and reliability.

Administratively, the operations manager is responsible for the approval of all operating procedures and the review of incident reports, reportable occurrences, and other correspondence.

The operations manager interfaces with the following managers of nuclear department [ ] organizations as mentioned in Section 13.1.1.1.3 in the performance of the department activities:

a. Manager - Nuclear Site Protection - To provide emergency preparedness, safety, and fire protection coordination

b. Manager - Nuclear Training - To ensure training of licensed and nonlicensed personnel

c. Manager - Nuclear Reliability and Assessment - To establish a criteria of operational assessment and reliability

d Manager - Nuclear Licensing and Regulation - To provide licensing and regulatory guidance

e. Manager - Radiation Protection Services - To ensure that plant operation is aligned to ALARA and environmental programs.

The operations manager is assisted by the operating engineer. The operating engineer will assume the authority and responsibility of the department in the absence of the operations manager. The operating engineer assists the operations manager in the implementation of his responsibilities by directing and controlling the work of the department. Reporting to the operating engineer are the: Senior operating supervisor who provides routine direction to the operating shift; the senior operating support supervisor who oversees radioactive waste management; and the senior operating technical supervisor who provides technical and administrative support to the department.

The functions of the senior operating technical supervisor include:

a. Reviewing incident reports, reportable occurrences, departmental accident reports, and other NRC correspondence

b. The preparation and maintenance of necessary operating, abnormal, emergency, and other departmental procedures

c. Implementation and tracking of the safety tagging program, equipment unavailability, and surveillance scheduling.

The functions of the senior operating support supervisor include:

a. Providing overall waste management program direction to the shift support supervisors in their work associated with the handling, processing and storing of all process generated radioactive waste.

b. Ensuring that radwaste activities are in compliance with facility operating license, technical specifications, and government regulations

c. Development and maintenance of radwaste procedures to ensure that activities are conducted safely and efficiently by trained personnel.

d. Implementing a program to minimize generation of liquid, solid, and gaseous wastes.

13.1.2.2.3 Operating Shift Supervision

Supervision of the shift personnel is under the direction of the senior nuclear shift supervisor who reports directly to the senior operating supervisor. The senior nuclear shift supervisor "On Duty" is directly responsible for the operation of the unit. He has the authority to take any action necessary, including plant shutdown, to protect equipment or personnel and to act in accordance with approved procedures.

During off-normal hours, he assumes responsibility for all plant functions in the absence of senior plant management. The senior nuclear shift supervisor supervises the operating department shift personnel and inspects equipment to ensure that operations are conducted safely and efficiently in compliance with technical specifications and the operating license. He also reviews and approves completed checkoff lists, logs, and other shift data to detect abnormal trends or potential operating problems. He approves removal of equipment from service and performance of safety tagging in support of the plant surveillance and maintenance program.

The senior nuclear shift supervisor is assisted by the nuclear shift supervisor and shift support supervisor. The nuclear shift supervisor assumes the senior nuclear shift supervisors' responsibilities in the event of his unavailability. As assigned, the nuclear shift supervisor reviews procedures which apply to startup, power operation, shutdown, emergency, and abnormal conditions. The nuclear shift supervisor provides direct supervision of the operating crews. The shift support supervisor provides direct supervision to the equipment operators and utility operators and utility operators assigned to radwaste.

Personnel qualified as shift technical advisor shall be assigned on shift. The shift technical advisor (STA) may be senior reactor operator (SRO)-licensed. If so, they may function as a nuclear shift supervisor. The STA responsibilities include:

a. Providing an independent objective assessment concerning plant safety

b. Providing technical assistance to shift supervision during normal and abnormal conditions

c. Comparing operating to design parameters during transient or accident conditions to determine adequate core cooling and providing recommendations to prevent loss of adequate core cooling

d. Determining critical parameters in the event of instrument failure

e. Investigating and assessing recommendations of all incident reports and reportable occurrences

f. Evaluating effectiveness of emergency procedures and recommending revisions.

13.1.2.2.4 Licensed Operators

Nuclear control operators (NCO) report to the senior nuclear shift supervisor through the nuclear shift supervisor and perform all shift operations from the main control room. The NCO is

responsible for manipulating controls for startup, changing electrical output and reactor power, and plant shutdown as required. These functions are in compliance with the facility operating license and technical specifications to ensure safe and efficient operations. To meet these requirements, the licensed operator must:

a. Remain knowledgeable of all operating, emergency and abnormal procedures

b. Complete checkoff lists, logs, and other required shift data

c. Initiate immediate action necessary to maintain the plant in a safe condition during normal, abnormal, and emergency operation and shut the reactor down when he determines that the safety of the reactor is in jeopardy or whenever operating parameters exceed reactor protection system setpoints and an automatic shutdown or station response fails to occur.

d. Routinely observe plant equipment and parameters

e. Direct the activities of the nonlicensed operators in support of plant operation

f. Provide an adequate shift turnover to ensure continuity of safe operation.

13.1.2.2.5 Unlicensed Operators

The equipment operator and utility operator perform routine duties outside of the main control room necessary for safe continuous operation of the plant as directed by the nuclear control operator or nuclear shift supervisor. Their duties also include:

a. Completing checkoff lists, logs, and other shift data

b. Initiating immediate actions necessary to maintain equipment assigned in a safe condition during normal, abnormal, and emergency operations

c. Routinely observe equipment assigned

d. Operating auxiliary equipment as assigned to support plant operations.

Equipment operators and utility operators assigned to radwaste report directly to the shift support supervisor and perform all shift radioactive waste operations required to support plant operations. The shift support supervisor receives administrative and scheduling direction from the senior operating support supervisor. Responsibilities of the operators assigned to radwaste include:

a. Completing checkoff lists, logs, and other shift data associated with radwaste operations to provide continuous surveillance of the equipment assigned

b. Manipulating controls, valves, and equipment to support liquid radwaste processing and storing

c. Initiating immediate actions necessary to maintain radwaste equipment in a safe condition during normal, abnormal, and emergency operations.

Shift electrician, instrumentation and control (I&C) technicians and radiation protection technicians are assigned to shift schedule to report to the nuclear shift supervisor. These personnel perform support functions associated with electrical, I&C, and radiation monitoring disciplines. During normal operation, they are available to perform surveillance, preventative, and corrective maintenance. When periods of emergency or abnormal operating conditions exist, they are available as part of the plant emergency preparedness program for emergency response and technical assistance.

13.1.2.2.6 Technical Department

The technical department is responsible for performing functions in the areas of chemistry, I&C, reactor engineering, technical reports and procedures, thermal performance, equipment reliability monitoring and document control.

The technical manager directs and controls the activities of the department through the chemistry engineer, instrumentation and control engineer, and technical engineer. The technical engineer assumes authority and responsibility for the department in his absence. The technical manager reports to the assistant general manager of operations and is responsible for all activities of the technical department.

The technical manager interfaces with the following managers of the nuclear department organizations as mentioned in Section 13.1.1.1.3 in the performance of the department activities:

a. Manager - Nuclear Fuel - For reactor engineering and the nuclear fuel analysis

b. Manager - Nuclear Engineering Control - To provide plant modification and technical assistance

c. Manager - Nuclear Training - To ensure department training and development

d. Manager - Nuclear Reliability and Assessment - To assess operating experience and reliability

e. Manager - Nuclear Licensing and Regulation - To coordinate station response to license event reports

f. Manager - Methods and Systems - To coordinate computer application and software maintenance.

g. Startup Manager - To coordinate preoperational testing (Phase II) activities.

The startup organization, as defined in Section 14.2, uses the chemistry, I&C, maintenance, and reactor engineering groups during preoperational and startup testing phases. These groups perform sampling and analysis of fluids, tests and calibration of plant-installed instrumentation, initial criticality, physics, and power ascension testing. Individual responsibilities are described below:

a. Principal startup engineer - The principal startup engineer - testing reports to the startup manager during preoperational testing and then reports to the technical manager during Phase III (initial operations). His responsibility during Phase III is the overall planning and implementation of the testing program, including core load, initial criticality, and low power physics and power ascension testing. These activities include:

   1. Procedure preparation and revisions

   2. Determining manpower support

   3. Test scheduling

   4. Personnel qualifications

   5. Analysis of test results

   6. Test report preparation.

b. Chemistry engineer - The chemistry engineer is responsible for the development and implementation of the chemistry, radiochemistry and effluent monitoring programs. The senior chemistry supervisor reports to the chemistry engineer and assumes authority and responsibility in his absence. The senior chemistry supervisor, through chemistry supervisors, implements the following activities:

   1. Sampling of plant fluid systems

   2. Laboratory analysis

   3. Result reporting

   4. Evaluation of laboratory techniques

   5. Operation of the demineralized water plant

   6. Maintaining the chemistry of in-plant fluid systems and effluents within established limits.

c. Instrumentation and Control Engineer - The I&C Engineer is responsible for the development and implementation of the instrument and control maintenance and surveillance programs. Reporting to the I&C engineer are the senior I&C supervisors and the senior engineer I&C staff. The senior I&C supervisor directs the I&C supervisors, the computer supervisor, and the craft workers. The senior engineer - I&C staff directs the I&C staff engineers in support of the line activities and controls the administrative functions of the department. The senior I&C supervisor normally assumes authority and responsibility in the absence of the I&C engineer. However, the senior engineer - I&C staff may be delegated this responsibility directly and also assumes this responsibility when both the I&C engineer and the senior I&C supervisor are absent.

Responsibilities of the group include:

1. Preventive maintenance
2. Corrective maintenance
3. Control and calibration of test equipment
4. Implementation of design modifications
5. Support of initial startup test program (Phase II/III)
6. Assurance of adequate procedural support
7. Planning and scheduling of department activities.

d. Technical Engineer - The Technical Engineer is responsible for the areas of reactor engineering, technical reports and procedures, thermal performance, equipment reliability monitoring and testing, and document control. Reporting to the technical engineer are the senior reactor supervisor, senior engineer - technical and the senior engineer technical staff. The senior reactor supervisor assumes authority and responsibility in his absence.

e. Senior reactor supervisor - The senior reactor supervisor is responsible for reactor engineering and thermal performance and equipment reliability monitoring. Engineers are assigned to the senior reactor supervisor to develop and implement the details of the programs. The reactor engineering group assists the principal startup engineer in the development and implementation of initial criticality, low power physics and power ascension test programs and provides technical direction to the operations for thermal and nuclear operation of the reactor and initial core loading and refueling operations. The reactor engineering group also monitor, collect, trend, and analyze performance data for systems important to plant efficiency and reliability.

f. Senior engineer - technical staff - The senior engineer - technical staff is responsible for the administrative procedures, technical responses, and reports leaving the station in support of facility license and review of operating experiences. Reporting to the senior engineer - technical staff are the staff engineers and the technical document room supervisor.

g. Senior engineer - technical - The senior engineer - technical is responsible for providing support and services to all station departments in the area of computer based information systems. He interfaces with the methods and systems department and maintains the plant process computer software and works closely with the computer supervisor to maintain the processing computer in operable status.

h. Technical document room supervisor - The Technical document room supervisor directs the operation of the technical document room, which includes centralized control of designated plant documents and records management. He reports to the senior engineer - technical.

13.1.2.2.7 Maintenance Department

The maintenance department is responsible for the performance and monitoring of the electrical and mechanical preventive and corrective maintenance work of the station.

The maintenance manager reports directly to the assistant general manager and has the overall responsibility of managing, directing, and controlling all activities of the maintenance department in accordance with the facility license and federal regulations. He is responsible for the development and approval of departmental procedures and ensures that department personnel are trained and certified. He is also responsible to ensure that his department is accomplishing their work safely and efficiently in support of plant availability and reliability.

The maintenance manager interfaces with the following nuclear department organizations as mentioned in Section 13.1.1.1.3 concerning maintenance problems:

a. Manager - Nuclear Maintenance Services - To provide technical expertise for inservice inspection, code and jurisdictional activities, instrument calibration, design change requests (DCRs), post-design modification testing, and general maintenance support.

b. Manager Site Maintenance - To provide implementation of plant betterment items and supervision of contractors support personnel.

c. Manager - Procurement and Material Control - To coordinate spare parts and other equipment purchases.

d. Manager - Nuclear Training - To ensure departmental training and development

e. Manager - Nuclear Engineering and Control - To provide plant modifications and technical support

f. Manager - Methods and Systems - To provide computer application and budgeting coordination

g. Startup Manager - To support preoperational testing (Phase II) activities.

Responsibilities of maintenance department personnel are as follows:

a. Maintenance engineer - The maintenance engineer assists the maintenance manager in the execution of his duties and is responsible to plan, construct, and oversee daily maintenance functions. He is responsible to ensure that identified maintenance activities are completed in a safe, timely, and efficient manner. He provides direct supervision to the senior nuclear maintenance supervisors and the senior maintenance planning supervisor. The maintenance engineer assumes the duties of the maintenance manager in his absence.

   Additional responsibilities of the maintenance engineer include the implementation of the following:

   1. Preventive maintenance program

   2. Corrective maintenance program

   3. Equipment and test equipment calibration program

   4. Department commitment to the as-low-as-is-reasonably-achievable (ALARA) program

   5. Technical specification surveillance program

   6. Support of initial startup test program.

b. Senior nuclear maintenance supervisor - The senior nuclear maintenance supervisor is responsible for assisting the maintenance engineer in planning and executing maintenance repair and inspection activities. He is responsible for the effective use of materials and manpower while conducting maintenance repairs. He directs the activities of the nuclear maintenance supervisors and assumes the authority and responsibilities of the maintenance engineer in his absence.

The senior nuclear maintenance supervisor's responsibilities include the following:

1. Scheduling and coordinating department work assignments

2. Determining the department training requirements

3. Ensuring personnel certification is maintained

4. Determining tool requirements.

c. Senior maintenance planning supervisor - The senior maintenance planning supervisor reports to the maintenance engineer and assists the maintenance manager in the direction of the department administrative and planning functions. He is responsible for the maintenance history records, repair and maintenance procedure system (RAMPS), maintenance procedure preparation, and maintenance planning for both the daily and outage activities.

13.1.2.2.8 Radiation Protection Department

The radiation protection department, under the direction of the radiation protection engineer ensures conduct of the plant radiological safety program and the radiological material control programs in accordance with the facility license, government regulations and the nuclear department radiation protection plan. These programs require that personnel exposure to radiation and releases of radioactive material to the environment are ALARA. The radiation protection program and organization are described in Section 12.5.

Reporting to the radiation protection engineer are the senior radiation protection supervisor and a staff of supervisors and engineers for implementing the following programs:

a. An effective radiation exposure control and measurement program

b. Preparation and review of procedures for implementing the ALARA program

c. Surveys of radiation, surface contamination, and airborne activity to identify locations, operation, and conditions that have potential for significant personnel exposure

d. The radiation surveillance and personnel exposure tracking program

e. The emergency response and preparedness manning, procedures, and coordination responsibilities.

f. An effective radioactive material control and accountability program.

13.1.2.9 Quality Assurance Program

The quality assurance/control personnel assigned to the station do not report to onsite management. The quality assurance/control program is described in Chapter 17.2.

13.1.2.3 Operating Shift Crews

Shift manning is based on an 8-hour shift, 6-days-on/2-days-off schedule (4 shifts) with a fifth shift scheduled for training or requalification. The actual shift complement for various operational modes is as follows:

Position	Operating Modes 1-3	Not Operating Mode 4	Refueling Mode 5
Senior nuclear shift Supervisor (SRO)	1	1	1
Nuclear shift supervisor (SRO) supervises fuel handling operation in Refueling Mode 5	1	1	1
STA/nuclear shift supervisor-(STA-qualified)	1	-	-

Nuclear control Operator (RO)	2	2	2
Equipment operators	4	2	2
Shift electrician	1	-	-
Shift I&C technician	1	-	-
Radiation protection technician	1	1	1
Chemistry technician	1	-	-
Utility operators - fire brigade	2	2	2

The above manning is in accordance with Supplement No. 1 of NUREG-0737 and, in addition, the following adjunct requirements will be incorporated in the administrative control of shift manning:

a. A licensed senior reactor operator will be in the main control room area at all times when the unit is in Mode 1, 2, or 3.

b. A licensed reactor operator will be in the main control room at all times whenever there is fuel in the reactor.

c. The licensed senior reactor operator assigned to supervise core alterations in Mode 5 may have no concurrent operational duties.

d. The qualified shift technical advisor required in Modes 1, 2, and 3 shall have a bachelors degree in an engineering discipline and shall have received training as specified in NUREG-0737.

e. In addition to the radiation protection technician required to be on shift whenever there is fuel in the reactor, all shift personnel will be trained in basic radiation protection.

f. Shift hours will be administratively controlled to ensure compliance with current NRC policy.

g. In addition to the specified on-shift fire brigade, the site fire protection program will provide for a full-time site fire brigade consisting of fire protection operators and fire fighters trained in firefighting and first aid. Fire brigade training will follow the guidelines of branch technical position CMEB 9.5-1.

13.1.3 QUALIFICATION OF NUCLEAR PLANT PERSONNEL

13.1.3.1 Qualification Requirements

The qualification requirements for the onsite plant personnel are in accordance with Regulatory Guide 1.8 and ANSI/ANS 3.1-1981. The education, experience, and training requirements of the plant personnel meet the criteria of Section 4 of ANSI/ANS 3.1 at the time of initial core load. Table 13.1-3 relates to the plant staff positions to the corresponding positions of ANSI/ANS 3.1.

The general manager may authorize deviations from a qualification requirement for subordinate positions when the combined education, experience, and managerial competency of an individual is judged sufficient to endure adequate performance of designated responsibilities. Such judgement will be documented in writing and will not be used to degrade the staff overall qualification.

13.1.3.2 Qualification of Plant Personnel

The resumes of the initial key managerial and supervisory staff for Hope Creek Operations are identified in Table 13.1-4.

TABLE 13.1-1

NUCLEAR DEPARTMENT
SUMMARY STAFFING REPORT

	On Payroll Present Staffing Level	1984 Approved Staffing Level	Anticipated Staffing 12/31/85
VICE PRESIDENT & STAFF	7	4	14
NUCLEAR OPERATIONS SUPPORT			
Nuclear Engineering	210	251	359
Licensing & Reliability	30	45	75
Methods & Systems	43	73	105
Public Affairs	1	2	5
Personnel Affairs	38	52	54
NUCLEAR QUALITY ASSURANCE	60	93	98
NUCLEAR SAFETY REVIEW	6	8	12
NUCLEAR OPERATIONS			
Salem Operations	496	558	558
Hope Creek Operations	247	345	370
Nuclear Services	222	325	368
Industrial Relations	3	3	3
Outage Services		1	2
Total Department	**1363**	**1760**	***2023**

* Includes approximately 175 to be transferred from Site Engineering, Startup, Construction and Project Management who are currently working on Hope Creek.

RESUMES OF NUCLEAR DEPARTMENT MANAGEMENT
AND TECHNICAL SERVICES AND SUPPORT PERSONNEL

TITLE

Vice president - Nuclear

Assistant vice president - nuclear operations

Assistant vice president - nuclear operations support

General manager - nuclear quality assurance

General manager - nuclear safety review

General manager - nuclear services

General manager - nuclear engineering

Assistant general manager - joint owners and regulatory affairs

Manager - methods and systems

Manager - nuclear licensing and reliability

Public affairs manager

Personnel affairs manager

Manager - outage services

Nuclear industrial relations manager

Special projects administrator

Manager - nuclear maintenance services

Manager - nuclear site protection

Manager - nuclear training

Manager - radiation protection services

Manager - nuclear fuel

Manager - Hope Creek (Salem) systems engineering

Manager - mech/civil (I&C/electrical) engineering

Manager - nuclear engineering design

Manager - nuclear engineering control

VICE PRESIDENT - NUCLEAR

NAME: Richard A. Uderitz

LICENSES AND CERTIFICATES:

1971	New Jersey Stationary Engineer Gold Seal License

EDUCATION:

1958	Clarkson College BS Science

EXPERIENCE:

1958 - Present	Public Service Electric and Gas Company
1981 - Present	Vice president - nuclear
1980 - 1981	General manager - nuclear production
1977 - 1980	General manager - fuel supply
1975 - 1977	Assistant to general manager - electric production
1973 - 1975	Superintendent - central maintenance
1972 - 1973	Chief engineer - Essex Generating Station
1968 - 1972	Master mechanic - Sewaren Generating Station: Overall responsibility of plant mechanical and electrical maintenance
1968	Operating engineer - Kearny Generating Station: Responsible for daily plant operation
1965 - 1967	Maintenance supervisor - Sewaren Generating Station
1961 - 1965	Maintenance foreman - Linden Generating Station: Supervised activities of electricians, boiler repairmen, and machinists in the varied aspects of plant maintenance

1960 - 1961	Assistant engineer - Linden Generating Station
1958 - 1960	Cadet engineer - general office training program with assignment for familiarization of the company functions
1949 - 1953	U.S. Navy

ASSISTANT VICE PRESIDENT - NUCLEAR OPERATIONS SUPPORT

NAME: John T. Boettger

LICENSES AND CERTIFICATES:

Professional Engineer, New Jersey

EDUCATION:

1955 - 1959	Lehigh University BS, Electrical Engineering
1965	Westinghouse Electric Corporation Pressurized Water Reactor Seminar
1966	General Electric Company Boiling Water Reactor Seminar
1968	NUS Corporation Nuclear Power for Engineers
1969	General Electric Company Fundamentals of Boiling Water Reactor Plant Operations
1969	University of Tennessee Protection Systems for Nuclear Plants
1981	Westinghouse Electric Corporation Pressurized Water Reactor Simulator, Executive Training
1981	Gilbert Associates, Inc Executive Seminar on Quality Assurance

EXPERIENCE:

1960 - Present	Public Service Electric and Gas Company
1984 - Present	Assistant vice president - nuclear operations support
1981 - Present	General manager - nuclear support: Responsible for engineering, licensing, and fuel design services to support the operation, maintenance, and modifications of operating nuclear power generating stations. Oversee the performance of independent safety reviews of operational activities.
1980 - 1981	General manager - corporate quality assurance: General supervision of the corporate quality assurance department. This department interprets regulations, codes, and standards. It also formulates and approves corporate QA programs and implements assurance functions of these programs.
1972 - 1980	Project manager - Hope Creek: Responsible for the licensing, engineering/design, construction, and startup of two 1100-MWe boiling water reactor power plants
1970 - 1972	Senior engineer: Responsible for licensing and system analysis for nuclear plant control and protection systems
1960 - 1970	Various: Assignments in the engineering department related to the design, construction, and startup of new electrical generating stations
1960 - 1961	Management training program for engineers

PROFESSIONAL AFFILIATIONS:

Past/present member of ANS, IEEE and PMI

Member of IEEE Standards Board

Member of Industry Steering Committee on PRA Procedures Guide

Past chairman of IEEE/PES Nuclear Power Engineering Committee

ASSISTANT VICE PRESIDENT - NUCLEAR OPERATIONS

(Will be provided later)

GENERAL MANAGER - NUCLEAR SERVICES

NAME: Henry J. Midura

LICENSES AND CERTIFICATES:

Reactor Operator Certification
Saxton Experimental Reactor

Senior Reactor Operator
Salem Unit 1
SOP 2723

EDUCATION:

1955	Rensselaer Polytechnic Institute B.E.E
1969 - 1970	Westinghouse Reactor Operator Training Program - Phase I, II, III (Waltz Mills, Saxton, Design Series)
1972	Startup Training - Surry No. 1 Nuclear Power Plant
1973	Westinghouse - Simulator Training Option II
1974	Westinghouse - Simulator Training Option II

EXPERIENCE:

1955 - 1983	Public Service Electric & Gas Company
1983 - Present	General manager - nuclear services at Artificial Island: Responsible for providing technical and manpower (craft) services to support the operation/maintenance of the Nuclear Units that are either beyond the individual station manpower capabilities or lend themselves to consolidation for improved on-site manpower use. Specific areas of involvement are as follows: radiation protection; site protection including fire, security and emergency preparedness; planning and

	scheduling of activities in support of the station requirements; and inservice inspections and nondestructive examinations. The nuclear services department also provides the station with instrument calibration and repair services, overall radioactive waste management, ALARA reviews and maintenance support services and is responsible for the nuclear department material procurement and material control/warehousing services and the coordination and training of nuclear department personnel in conjunction with operating the nuclear training center.
1982 - 1983	General manager - Salem Operations
1978 - 1981	Manager - Salem Generating Station
1971 - 1978	Chief engineer - Salem Generating Station
1969 - 1971	Master mechanic - Salem Generating Station
1967 - 1968	Master mechanic - Linden Generating Station
1966	Chief electrician - Essex Generating Station
1965	Operating engineer - Sewaren Generating Station
1961 - 1964	Maintenance Supervisor - Mercer Generating Station
1959 - 1960	Maintenance foreman - Bergen Generating Station
1957 - 1958	Assistant engineer - Linden Generating Station
1955 - 1956	Cadet Engineer Training program

GENERAL MANAGER - NUCLEAR ENGINEERING

NAME: R. A. Burricelli

LICENSES AND CERTIFICATES:

Professional Engineer, New Jersey

EDUCATION:

1970 - 1973	Rutgers University, Master of Business Administration
1967 - 1969	Rose Hulman Institute of Technology, BS, Mechanical Engineering
1962 - 1964	Newark College of Engineering, Two years study toward BSME

EXPERIENCE:

1976 - Present	Public Service Electric and Gas Company
1981 - Present	Manager of methods and administration-nuclear: Responsible for methods and administration activities in the areas of cost and scheduling human resources, computer system applications, and management methods and system activities in support of corporate nuclear activities.
1980 - 1981	Manager of emergency preparedness: Responsible for the development of emergency preparedness activities in accordance with the requirements of NUREG-0654 to provide for the licensing of Salem Generating Station Unit 2
1979 - 1980	Assistant manager of project control services: Responsible for cost and scheduling activities associated with the construction and operation support of electric generating facilities.

1976 - 1979	Assistant project manager: Responsible for completion of Salem Unit 2, acting for the project manager in his absence. Provided direction for licensing, quality assurance, and startup activities. Prepared progress reports, conducted weekly project activity meeting, and developed estimate of time, hours, and cost.
1976	Project engineer: Responsible for providing projected direction to lead engineering personnel to ensure that engineering activities on the Salem project were accomplished in accordance with projected schedules. Acted for the project manager in his absence and was chief company spokesman on licensing matters. Directly supervised licensing coordinator and other project support personnel.
1969 - 1976	Associate engineer: Designed reactor safety systems for the Salem and Newbold Island Nuclear Generating Stations. Administrated company contract with nuclear steam supply system suppliers. Developed a program for nuclear plant protection against industrial sabotage. Developed conceptual layouts and arrangements for new generating facilities. Acted as a liaison between field startup personnel and system design engineers. Evaluated and approved design changes required by new regulatory requirements.

GENERAL MANAGER - NUCLEAR QUALITY ASSURANCE

NAME: Charles Peter Johnson

EDUCATION

1963	University of Southern California B.S., Industrial Engineering
1965	Completed Navy Officer's Nuclear Propulsion Training Program
1975	Drexel University MBA, Business Administration
1970	Westinghouse Design Lecture Series - Salem PWR

EXPERIENCE:

1970 - Present	Public Service Electric and Gas Company
11/1983 - Present	Manager - Nuclear Operations Quality Assurance: Responsible for planning, coordinating, directing and overseeing the functional implementation of QA/QC programs dedicated to operation of the Salem and Hope Creek Nuclear Generating Stations. Analyzes the state-of-the-art concerning Quality requirements and trends, and interfaces with interdepartmental management to ensure attainment of established Quality objectives.
1981 - 1983	Assistant to Vice President - Nuclear, Nuclear Department: Responsible to Vice president for General Office and corporate management liaison on all nuclear matters. Additionally, perform independent reviews of nuclear facilities and special projects. Chairman of Nuclear Review Board Audits Committee.

7/1979 - 12/1981	Nuclear Plant Engineer, Nuclear Production Department, General Office: Responsible to Manager - Nuclear Operations for evaluation of nuclear plant system operations and performance of design reviews on changes to operating plants and new nuclear plant designs.
4/1977 - 6/1979	Startup Engineer, Engineering and Construction Department, Salem Generating Station: Responsible to Project Construction Manager for all testing activities on Salem No. 2 Unit. As member of Project Team, report to home office Project Manager. Direct group of test engineers (approximately 25) whose activities include test planning and scheduling; monitoring, assisting, and controlling construction manager's verification test group; inspection and acceptance of all plant systems; and executing detailed preoperational and operational startup test program.
5/1974 - 3/1977	Startup Engineer, Electric Production Department, Salem Nuclear Generating Station: Responsible to Station Manager for developing, planning, executing and controlling Salem No. 1 Unit's test program. Directed group of test engineers (peak of 44) whose activities included system inspection and acceptance, hydrostatic test, flushing and cleaning, instrument calibrations and functional tests, system preoperational tests and intergrated operational tests. Primary company liaison with NRC for system inspection and test.
4/1971 - 4/1974	Associate Engineer, Electric Production Department, Salem Nuclear Generating Station: Responsible for the development of the Salem startup test program, including policy manual and detailed administrative procedures for system inspection and turnover, writing and executing test procedures, resolution of testing deficiencies, and maintenance of documentation. Defined testing sequence and generated detailed schedules (CPM). Conducted manpower study and recommended staffing. This work was similar to, but more preliminary than that described above.

2/1970 - 3/1971	Associate Engineer, Electric Production Department, Linden Generating Station: Orientation with company and commercial electric power generation at conventional steam power plant. Assigned various special projects including directing boiler chemical cleaning and instructor for boiler operator apprentice training program.
6/1967 - 1/1970	Lieutenant, U.S. Navy. Weapons Officer aboard nuclear attack submarine, USS SUNFISH (SSN 649): Responsible for initial testing, operation and maintenance of ship's torpedo, fire control and sonar systems during construction and through first year of operations. Administrator of department consisting of two other officers and twenty-four men. Received Commendation for highly successful weapon systems trials, acoustic trials, and nuclear weapons inspection. Engineering Officer of the Watch in naval nuclear power plant during the initial reactor plant test program.
4/1965 - 5/1967	Lieutenant, U.S. Navy, assigned to nuclear attack submarine, USS HADDO (SSN 604): As Auxiliary Division Officer, responsible to Engineer for operation and maintenance of submarine's hydraulic, air, atmosphere control, and other non-nuclear fluid systems. Related duties included responsibility for effective damage control and ship control procedures, and training and qualification of the crew in these areas. As Supply Officer, responsible for ordering, maintaining and issuing ship's repair parts. Qualified as Engineering Officer of the Watch, Officer of the Deck, and in Submarines.

GENERAL MANAGER - NUCLEAR SAFETY REVIEW

(Will be provided later)

ASSISTANT GENERAL MANAGER - JOINT OWNERS
AND REGULATORY AFFAIRS

(Will be provided later)

ASSISTANT GENERAL MANAGER - NUCLEAR ENGINEERING

NAME: Dennis J. Jagt

LICENSES AND CERTIFICATES:

Professional Engineer, New Jersey

EDUCATION:

1953 - 1957	Newark College of Engineering, BS Mechanical Engineering
1960	Leeds & Northrup Instrument School
1965	Bailey Meter Analog Control School
1975	General Electric, BWR Fundamentals
1975	PSE&G, Supervisory Training Course
1975	Sales Analysis Institute/PSE&G, Problem Analysis and Effective Communication of Idea Course
1976	AMR, Project Manager
1977	Rutgers University/PSE&G, Advanced Management Program
1979	PWR Fundamentals Westinghouse

EXPERIENCE:

1957 - Present	Public Service Electric and Gas Comapny
1982 - Present	Assistant general manager - nuclear engineering: Responsible for engineering and design services to support operation, maintenance, and modifications of operating nuclear power generating stations

1979 - 1982	Manager - Salem Project: Responsible for management of engineering and construction services to support modifications on an operating nuclear power generating plant
1976 - 1979	Project manager - Salem Unit 2: Responsible for engineering/design, construction, and startup of an 1100 MWe pressurized water reactor power plant
1976 - 1976	Assistant project manager - Hope Creek: Responsible for management of engineering/design for two 1100 MWe boiling water reactor power plants
1973 - 1976	Principal engineer: Responsible for engineering of turbine plant and water treatment systems for fossil and nuclear generating facilities
1957 - 1973	Various: Assignments in the engineering department related to engineering/design of new electric generating stations

PROFESSIONAL AFFILIATIONS:

Past member of ISA and PMI

Member of American Society of Mechanical Engineers

MANAGER - LICENSING AND RELIABILITY

(Will be provided later)

MANAGER - METHODS AND SYSTEMS

NAME: Robert E. Gehret

(Will be provided later)

PUBLIC AFFAIRS MANAGER - NUCLEAR

(Will be provided later)

PERSONNEL AFFAIRS MANAGER - NUCLEAR

NAME: Stanley M. Kosierowski

(Will be provided later)

NUCLEAR INDUSTRIAL RELATIONS MANAGER

(Will be provided later)

MANAGER - NUCLEAR MAINTENANCE SERVICES

NAME: Frederick Meyer

LICENSES AND CERTIFICATES:

Engineers License, New Jersey Gold Seal

EDUCATION:

1947 - 1949	Attended Montclair State College
1949 - 1953	U.S. Merchant Marine Academy, BS, Engineering

EXPERIENCE:

1957 - Present	Public Service Electric and Gas Company
1981 - Present	Manager of nuclear site maintenance in nuclear department at Artificial Island: Provide maintenance support and other services to the operation of nuclear plants
1981	Manager of QA operations and maintenance in general office, corporate quality assurance department: Responsible for directing the QA activities of an operating nuclear plant and supervising QA personnel
1980 - 1981	Mechanical plant engineer in general office, production department: Provided support and direction to the station's maintenance engineer in resolving problems and improving the operation of mechanical equipment
1974 - 1980	Chief engineer for Bergen Generating Station: Responsible for the safe and efficient operation of the station and the supervision of all operating, performance, and yard department personnel

1971 - 1974	Maintenance engineer for Bergen Generating Station: Responsible for the proper maintenance of all equipment at the generating station and the supervision of all maintenance employees
1970 - 1971	Senior engineer in Newark general office: Performed various projects to improve the operations or resolve problems associated with generating station equipment
1968 - 1971	Chief electrician for Essex Generating Station: Responsible for the maintenance and operation of all electrical equipment in the generating station and switching station
1967 - 1968	Maintenance foreman and supervisor for Bergen and Essex Generating Stations: Supervised electricians, machinists, boiler repairmen, custodians, etc., in performing station maintenance activities
1961 - 1967	Assistant engineer for Bergen Generating Station production department: Performed various projects in the maintenance, operations, and performance departments
1958 - 1961	Cadet engineer in electric department: Devised program to introduce newly hired engineers to the corporate structure and its functions
1953 - 1957	Marine engineer for United Fruit Company in New York: Licensed engineering watch officer, responsible for the maintenance and operations of the ship's boilers, turbines, and auxiliaries
1945 - 1947	Fireman for U.S. Navy: Performed various duties in the machinery spaces of U.S. Navy ships

MANAGER - NUCLEAR SITE PROTECTION

NAME: Peter A. Moeller

EDUCATION:

1965	U.S. Navy Electronics Technician "A" School
1967	U.S. Navy Nuclear Power Basic and Prototype
1978	New Jersey Institute of Technology, BS, Industrial Engineering (Cum Laude)

EXPERIENCE:

1971 - Present	Public Service Electric and Gas Company
1982 - Present	Manager of nuclear site protection: Responsible for emergency planning nuclear security, fire protection, and industrial safety
1980 - 1982	Responsible for emergency planning and security; developed Salem Emergency Plan
1978 - 1980	Responsible for all operating nuclear plant licensing; maintained Salem Technical Specifications and interfaced with NRC on licensing matters
1971 - 1978	Assisted in development of the Conduct of Operation section of the Salem FSAR; developed the Salem Security Plan and implementing documents; acted as secretary to the Nuclear Review Board
1968 - 1971	Reactor operator on USS Alexander Hamilton

MANAGER - NUCLEAR TRAINING

NAME: H. Denis Hanson

LICENSES AND CERTIFICATES:

Reactor operator trainee certification for operation of reactor at USN Postgraduate School

EDUCATION:

1953 - 1957	U.S. Coast Guard Academy New London, Connecticut, BS, General Engineering
1962 - 1964	U.S. Naval Postgraduate School Monterey, California, MS, Physics
1962 - 1964	Nuclear Engineering, Health Physics, and Weapons Effects
1966	George Washington University, Planning, Programming, and Budgeting Systems
1967 - 1968	Yale University, Administrative Sciences
1968 - 1970	Rensselaer Polytechnical Institute, Hartford, Connecticut, MS, Management Science
1976	Institutes for Academic Deans and Personnel Officers
1979	Personnel Administration Practices for Executives

1981 - Present	Manager - Nuclear training, PSE&G: Responsible for training personnel for three nuclear and six fossil electric generating stations for operations, performance, maintenance, and radiation protection departments at all levels. Managed a comprehensive training center and associated staff with an operating budget of $8 million and a capital budget of $30 million, including two control room simulators
1957 - 1981	Senior coast guard officer: General administration and management. The following is a brief description of activities performed with the Coast Guard from 1957 to 1981:
	Corporate and division level line and staff assignment is planning, program management, executive assistant, personnel, research and development, operations, and general administration
	Division officer, executive officer, and commanding officer responsibilities for both shore and ship facilities
	Administrative responsibilities for academic division staff of 115 professional (mostly faculty) and 55 technician and clerical personnel
	Chief negotiator for management with faculty union; negotiated initial and renewal contract
	Administered contract compliance, and trained supervisors and processed grievances
	Developed and coordinated recruiting efforts, including EEO and affirmative action procedures for professional employees
	Established annual employee counseling and evaluation programs

Provided rewards and discipline as required and appropriate for various personnel categories; effectively hired, fired, and promoted directly reporting staff

Served as director of computer center during 6-month absence of assigned director

Developed operational requirements and coordinated interior design and outfitting for science facility ($5 million) for physics, chemistry, and marine science disciplines

Responsible for professional and staff development for academic division (115 faculty plus support staff)

Assisted in annual institution-wide curriculum review and development

Promoted from assistsant professor (1967) to full professor (1978) with tenure granted in 1969

Presented leadership development, special skill, and group dynamics seminars

Taught courses in the global environment, systems technology, nuclear and modern physics, all topics in general physics, and officer professional programs

Established requirements and supervised specialized professional training activities for groups of up to 300 people for periods of 3 weeks to over 2 months

Served on Admissions Board, Faculty Senate, Academic Council, Planning Board, Executive Board and Budget Coordinating Committee

Responsible for annual budget development including all categories of personnel and funds for eight academic departments, library, learning center, computer center, and registrar function; maintained 5-year projections on staff and 2 to 15-year plan for major facility project; determined priorities, allocated resources (including reductions), and monitored operating budget

Prepared mid-term (2 to 3 years) request for resources for entire institution; developed criteria and priorities for staff, facilities, and funds; and coordinated a consultant-prepared comprehensive master plan for the Coast Guard Academy

Responsible for space allocation/use

Responsible for organizational development; coordinated all phases of division level reorganization and established institution-wide planning board

Program manager and responsibility for major training (1500 people per year) and operations (about $25 million per year) activities

Presented budget requirements at various levels, including program support requirements to members of Congress

Developed Agency Shore Facilities Plan for Northern California

Developed initial Disaster Relief and Recovery Plan for east coast activities of the Coast Guard, which included response to natural, civil, and nuclear disaster/disorder

In charge of disaster relief planning and response for entire Coast Guard

Coordinated the Coast Guard/Red Cross agreement for mutual support in times of disaster

Represented the U.S. Department of Treasury and the U.S. Coast Guard in the development of Inter-Angency Radiological Defense Plan

Developed emergency plans for large facilities; responsible for training various teams associated with potential nuclear disasters

Developed operations plans for routine, contingency, and wartime activities at district and area (east coast) levels

Completed 2-year nuclear engineering effects training, primarily weapons systems and radiation safety/protection

Technical advisor for nuclear affairs for Coast Guard commander of the eastern and gulf coast region of the US with primary responsibilities in passive defense planning and training, and in disaster control, relief, and recovery

Responsible for entire Coast Guard's radiological defense and recovery plans and training; represented agency on interservice and interagency committees and developed logistics plans, etc

Presented nuclear physics, radiation safety, decontamination procedures, etc, seminars, and courses

Custodian for radioisotopes and other nonexempt material requiring licenses

MANAGER - RADIATION PROTECTION SERVICES

NAME: Wayne Linden Britz

LICENSES AND CERTIFICATES:

1966 - 1970	US AEC Reactor Operators License

EDUCATION:

1966	US Merchant Marine Academy, BS, Commission as Ensign, USNR; US Merchant Marine, US Coast Guard License as Third Officer
1967	US Merchant Marine Academy, Certificate of Nuclear Power Technology
1971	Georgia Institute of Technology MS, Nuclear Engineering, (Atomic Energy Commission Followship Program)
1982	Wharton School, University of Pennsylvania, MBA

EXPERIENCE:

1980 - Present	Manager - radiation protection services, Public Service Electric and Gas Company: Responsible for corporate radiation protection program to ensure that the radiation exposure to personnel and releases of radioactive material to the environment are as low as is reasonably achievable (ALARA). Review radiological effluent and environmental monitoring system and measurements to ensure that the stations are being operated in a radiological ALARA manner

	Provide review and audit for Salem and Hope Creek Radiation Protection Programs to ensure proper and uniform programs. Ensure that radiation protection programs (including training) reflect contemporary industry practices. Develop and review programs and methods to reduce radiation exposure, reduce costs, and comply with regulations of state and federal agencies. Responsible for central radiation protection facilities for Salem and Hope Creek (dosimetry, ALARA coordination, contaminated laundry, instrument calibration and repair, respiratory program, records)
	Serve as radiation emergency manager in EOF for drills, exercises, and when the EOF is activated for emergencies. Supervise, train, and ensure readiness at all times for the support staff and function required (about 20 persons)
1971 - 1980	US Nuclear Regulatory Commision, Washington, DC (Headquarters) and Atlanta, Georgia (Regional Office): Experience in developing and implementing environmental programs. Coordinated and supervised research programs with federal laboratories, universities, and consulting firms. Experienced in developing and writing regulations. Testified in federal courts as expert on environmental program; worked with legal staff on case and testimony preparation.
	Represented the NRC on Federal Interagency Task Force for Emergency Preparedness. Detailed to International Atomic Energy Agency to provide assistance to the government of Brazil in developing their nuclear environmental progams. Coauthored several agency publications

1966 - 1970	Americam Export Isbrantsen Lines, Inc, New York, New York: Engineering officer, deck officer, and health physicist for a commercial firm operating the Nuclear Ship Savannah, a research and development project for the U.S. Department of Commerce. Experienced a large variety of the operations of a major firm, e.g., routine operation, repair and maintenance, emergency operations, scheduling, personnel, and research projects

MANAGER - NUCLEAR LICENSING AND REGULATION

NAME: Edwin A. Liden

LICENSES AND CERTIFICATES:

SRO license SOP-1048, Saxton Power Reactor Facility

Newport News Shipbuilding & Dry Dock Co, CVA (N) 65
Shift Test Engineer Qualification

Newport News Shipbuilding 7 Dry Dock Co, CG (N) 9
Shift Test Engineer Qualification

U.S. Coast Guard License, Third Assistant
Engineer-Steam and Motor Vessels, Oceans, Unlimited Horsepower

EDUCATION:

1956 - 1959	South Side Senior High School
1959 - 1963	State University of New York, Maritime College, BS, Marine Engineering
1968	U.S. Public Health Service Course, Management of Radiation Accidents
1973	MIT, Nuclear Power Reactor Safety Course
1974	PSE&G, Quality Assurance Orientation
1975	Sales Analysis Institute/PSE&G, Problem Analysis and Effective Communication of Ideas Course
1978	PSE&G, Supervisor/Management Skills Conference
1981	Drake Beam Morin, Inc, Interviewing Skills Workshop
1981	Rutgers University/PSE&G, Advanced Management Program

1970 - Present	Public Service Electric and Gas Company
1981 - Present	Manager - nuclear licensing and regulation: Provides overall management of licensing and regulatory activities associated with the company's operating nuclear facilities. Manages the preparation, review, and approval of licensing documents and coordination of company involvement with regulatory agencies. Provides licensing direction within the company and to vendor and consultant personnel to ensure that regulatory requirements are met. Alternate member of Corporate Nuclear Review Board
1980 - 1981	Manager - nuclear licensing: Provided overall management of licensing activities associated with the Salem and Hope Creek Generating Stations, including review and approval of licensing documents and coordination of company involvement with the NRC's Office of Nuclear Reactor Regulation
1977 - 1980	Project licensing manager: Responsible for all licensing activities pertaining to the Unit 2 of the Salem Generating Station
1976 - 1977	Senior engineer
1974 - 1977	Senior staff engineer
1970 -1974	Associate engineer: Participated in the licensing process for the Salem Generating Station, which included preparation of the FSAR, Environmental Report, and Safety and Environmental Technical Specifications
1967 - 1970	Supervisor of reactor plant services, Saxton Nuclear Experimental Corporation: Held SRO license. Responsibilities included nuclear plant maintenance, performance, health physics, radiochemistry, and radwaste operations. Responsible for all fuel handling operations, e.g., core loading, spent fuel examination, shipping. Extensively involved in training of personnel for RO an SRO examinations

1966 - 1967	Staff engineer, Combustion Engineering, Inc: Responsible for development and testing of reactor pressure tube components for the HWOCR project
1963 - 1966	Shift test engineer, Newport News Shipbuilding and Dry Dock Co: Senior shipyard management on shift, responsible for all shipyard activities during refueling, overhaul, and testing operations on the nuclear ship USS Enterprise and USS Long Beach
1963	Third assistant engineer, Military Sea Transportation Service: Licensed watch engineer aboard the USNS Upshur

PROFESSIONAL AFFILIATIONS:

Member of American Nuclear Society

MANAGER - NUCLEAR FUEL

NAME: Elliot S. Rosenfeld

EDUCATION:

New York University,
BS, Chemical Engineering

EXPERIENCE:

1981 - Present	Manager - nuclear fuel for PSE&G nuclear department: Responsibilities include directing and administering the PSE&G programs for nuclear core performance, core analysis, reload design, nuclear fuel related licensing, technical support to nuclear stations in matters relating to in-core fuel management, and nuclear fuel engineering and safety
1977 - 1981	Nuclear fuel cycle engineer for PSE&G general office: Supervised group of engineers responsible for development of fuel cycle operating strategy based on system operating and maintenance needs, technical support to nuclear stations in the reactor engineering area, and nuclear fuel related licensing, including reload licensing
1976 - 1977	Staff Engineer for Jersey Central Power and Light Company (JCP&L) at the Oyster Creek Nuclear Generating Station: Supervised group of engineers responsible for incore fuel management (functions listed under assistant accountability system, and technical advice to operations personnel in the area of core performance

MANAGER - RELIABILITY AND ASSESSMENT

(Will be provided later)

MANAGER - NUCLEAR PLANT ENGINEERING

NAME: Robert L. Gura

EDUCATION:

1956 - 1960	Stevens Institute of Technology, GS, Engineering
1960 - 1965	Stevens Institute of Technology, Master of Management Science
1961	PSE&G PUR Guide
1961	PSE&G Report Writing
1965	721 Analog Control School
1967	PSE&G Practical Politics
1967	Bailey
1968	PSE&G CPM
1969	Valve Control
1977	PSE&G PWR Information Course
1979	PSE&G Management Peformance Appraisal System
1981	PSE&G Interviewing Skills
1981	Human Factors Enhancement Approach for Nuclear Control Rooms
1981	IEEE Standard Workshop on Human Factors and Nuclear Safety

1960 - Present	Public Service Electric and Gas Company
1982 - Present	Manager - nuclear plant engineering, nuclear department: Responsible for providing engineering services associated with all engineering disciplines necessary to study, design, specify, evaluate, modify, and maintain plant components and hardware
1973 - 1982	Senior engineer/principal engineer - controls division, engineering and construction department: Responsible for direction of controls engineers who provided engineering services to study design, specify, evaluate, modify, and maintain control components and hardware for Salem Nuclear Generating Station
1972 - 1973	Engineer - controls division, engineering and construction department: Sponsor engineer for control systems associated with Salem Nuclear Generating Station; also coordinated work effort of other sponsor engineers
1969 - 1972	Associate engineer - controls division, engineering and construction department: Sponsor engineer responsible for design specification, purchase, and initial operation of control equipment for Salem Nuclear Generating Station
1966 - 1969	Associate engineer - controls division, engineering and construction department: Sponsor engineer for control systems at various fossil-fueled generating stations
1964 - 1966	Assistant engineer - mechanical division, engineering and construction department: Various engineering assignments associated with fossil-fueled generating stations
1962 - 1964	Associate engineer - mechanical division, engineering and construction department: Assigned to UE&C as a field engineer during construction of Sewaren Unit 5
1960 - 1962	Cadet engineer - training program: Assignment for familiarization of the company functions

MANAGER - ENGINEERING DESIGN

NAME: Alexander Thompson

EDUCATION:

1951	Graduated Leith Technical College, Edinburgh University, BS, General Engineering
1962 - 1967	IEEE special courses in Nuclear Plants, Extra High Voltage, and Ultra High Voltage
1962 - 1971	New Jersey Institute of Technology and Rutgers University
1967	Westinghouse PWR Fundamentals and Basis Plant Design
1969	CPM Scheduling Course
1974	Report Writing Course
1976	Quality Assurance Course
1976	Supervisory Skills Program
1976	General Electric BWR Basis Plant Design

EXPERIENCE:

1958 - Present	Public Service Electric and Gas Company
1982 - Present	Manager - nuclear engineering design
1967 - Present	Worked on nuclear power generating plants from initial conception through final design for Westinghouse PWR and General Electric BWR
1976 - 1982	Assistant Chief design engineer
1973 - 1976	Assistant to Chief design engineer
1969 - 1973	Senior designer

1962 - 1969	Designer: Worked on fossil-fuel generating plant and switching/substation facilities and gas turbine
1958 - 1962	Draftsman: Worked on fossil-fuel generating plant and switching/substation facilities and gas turbines
1957 - 1958	Consulting engineer: Petro-Chemical Industry (DuPont)
1953 - 1957	Junior engineer, design draftsman - electrical/mechanical: Worked on steam and hydroelectric power generating facilities
1951 - 1953	Engineer office for British Merchantile Marine: Junior, then senior, marine engineer in complete charge of 2 to 4-hour watches per day over engine, boilers, and all ancillary equipment

PROFESSIONAL AFFILIATIONS:

Member of Institute Electrical & Electronics Engineers

Senior member of National Society and New Jersey Society of Professional Engineers

MANAGER - ENGINEERING CONTROL

NAME: Timothy N. Taylor

LICENSES AND CERTIFICATES:

Professional Engineer, State of New Jersey, 19583

EDUCATION:

1964 - 1968	Stevens Institute of Technology, BS, Mechanical Engineering
1970 -1973	Stevens Institute of Technology MS, Mechnical Engineering
1971	Rutgers Continuing Engineering Studies, Piping engineering
1971	IEEE, Nuclear Power Plant Design & Environmental Control
1972	ASNDT, Nondestructive Testing
1973	MIT, Nuclear Power Reactor Safety Course
1979	westinghouse, PWR Information Course
1981 - Present	Public Service Electric and Gas Company
1981 - Present	Manager - nuclear enginering control, nuclear support department
1980 - 1981	Group head (principal engineer) - Salem nuclear systems group, mechanical division, engineering department
1978 - 1980	Job control engineer - Salem projects division, engineering department

1976 - 1978	Assistant group head - salem nuclear systems group, mechanical division, engineering department
1969 - 1976	Assignment in the piping group - mechanical division, engineering department
1968 - 1969	Cadet engineer - training program: Assignment for familiarization of the company functions

SPECIAL PROJECTS ADMINISTRATOR

NAME: Richard A. Silverio

LICENSES AND CERTIFICATES:

New Jersey Blue Seal Operating license
Senior Reactor Operator - Salem Station

EDUCATION

1954 - 1960	Drexel University BS, Electrical Engineering
1970	Westinghouse reactor generator or certification training program
1971	Observe start-up of H.B. Robinson plant and operations of Connecticut Yankee, Ginna & Surrey nuclear units
1973 - 1984	Senior Reactor Operator - Requalification Training including simulator training
1981	Executive Technique Communications Seminar

EXPERIENCE:

1967 - Present	Public Service Electric and Gas Company
1984 - Present	Special Projects Administrator: responsible to the Vice president - Nuclear for special projects including local governmental affairs
1982 - 1984	Public Affairs Manager - Nuclear: responsible for handling public information, environmental affairs, governmental affairs and employee communication programs. ACT is company spokesperson during emergencies
1977 - 1982	Assistant to Manager - Salem Operations
1974 - 1977	Master Mechanic: responsible for all maintenance operations of the Salem Station
1968 - 1974	Operations Engineer: responsible for startup and normal operation of the Salem Station

1967 - 1969	Engineer: Observed operation at Mercer Generating Station and was sponsor engineer for nuclear system in the Mechanical Engineering Section
1960 - 1967	Held portions of I&C sponsor engineer and shift test engineer: responsible for startup and testing of 5 manual nuclear power plants. New York ship Corp., Camden New Jersey

PROFESSIONAL AFFILIATIONS:

Past/Present member of ANS, IEEE

MANAGER - NUCLEAR SYSTEMS ENGINEERING

NAME: Robert T. Stanley

LICENSES AND CERTIFICATES:

Professional Engineers, New Jersey

EDUCATION:

1964 - 1968	Pratt Insitute BE, Mechanical Engineering
1977	Westinghouse Electric Corporation Pressurized Water Reactor Seminar
1979	PSE&G Management Training Program

EXPERIENCE:

1968 - Present	Public Service Electric and Gas Company
1984 - Present	Manager - Nuclear Systems Engineering Provide Management Control and Direction for the Engineering organization responsible for systems engineering for Nuclear balance of plant and radwaste systems
1982 - 1984	Assistant Manager Nuclear Systems Engineering: assist in management control for engineering review of modifications for NSSS systems, auxiliary Systems and Chemical Radwaste Systems representative for the company on the Westinghouse Owners Group
1979 - 1982	Principal Engineer: Responsible for site engineering group supporting construction on Unit 2 - Salem Generating Station and modifications of Unit 1 Salem Generating Station

1977 -1979	Senior Engineer: Responsible for mechanical engineering group of the site engineering organization supporting construction of Unit 2 Salem Generation Station. Chairman of the preoperational review committee which reviewed and approved all phase II startup test procedures for Unit 2
1974 - 1977	Lead Engineer: Responsible for solving engineering problems on site, particularly those in the startup area
1968 - 1974	Various assignments in engineering department both fossil and nuclear related to the design and modification of generating stations. Responsible for flush and cleaning programs for Salem Unit 1

MANAGER - OUTAGE SERVICES

NAME: Gordon E. Lipscy

LICENSES AND CERTIFICATES:

NONE

EDUCATION:

1965 - 1969	University of Minnesota Bachelor Electrical Engineering
1970	Bettis Reactor Engineering School
1971 - 1973	George Washington University Graduate Study - Electrical Engineering
	Various Project Management & Financial Courses & Seminars

EXPERIENCE:

1981 - Present	Management Analysis Company
1984 - Present	Manager - Outage services (contractor to PSE&G): Responsible for development of improved outage management planning, scheduling and control systems. Accountable for safe and economical completion of all planned nuclear facility outages.
1982 -1984	Projects manager (contractor to Toledo Edison) - responsible for developing and implementing systems and procedures to manage capital modification projects for Davis-Besse Nuclear Generating Station. Directed a MAC team integrated with client personnel to successfully manage projects and develop client project management skills.
1981 - 1982	Outage Manager (contractor to Toledo Edison) - Responsible for development of outage planning, control and reporting systems for the Davis-Besse Nuclear Generating Station. Successfully directed an integrated outage management organization of client and consultant personnel. Assisted client in selection, training and development of permanent outage management personnel.

1979 - 1981	Gulf Oil Corp: Director, configuration management - directed project control activities of work breakdown structures, contract and subcontract statements of work, baseline tending and change control for the $1.4 billion SRC-II Project to liquefy 6,000 tons coal per day.
1974 - 1979	General Atomic Company
1978 - 1979	Manager, Operations and Testing Support - Directed and manager operatins/testing staff of engineers and physicists in start-up, operations and maintenance of commercial nuclear power station. Responsible for safe operation of $900 million plant and annual operating budget.
1977 - 1978	Supervisor, Testing and Planning - Responsible for and directed planning and performance of commercial nuclear power plant start-up and special tests including commercial operation acceptable to the client.
1974 -1977	Operations Supervisor/Senior Engineer - Responsible for day shift and rotating shift crew to conduct, direct and expedite plant maintenance, outages, modifications and design change work in addition to accomplishing testing and operations for a commercial nuclear power station. Responsible for all contractor and subcontractor work in plant during shift up to 800 craftsmen involved.
1969 - 1974	U.S. Navy: Lieutenant - accomplished five-year assignment with Nuclear Navy as lead electrical and I&C engineer for NSSS propulsion plants on USS Nimitz. Trained senior crew members. Reported on Rickover's staff.

PROFESSIONAL AFFILIATIONS:

Member American Nuclear Society
Member IEEE
Member Project Management Institute

TABLE 13.1-2

PLANT STAFF MANNING

SCHEDULE

Position	Status
General manager	Assigned 1978
Assistant general manager	Assigned 1981
Technical manager	Assigned 1982
Operation manager	Assigned 1981
Maintenance manager	Scheduled 1984
Operating engineer	Assigned 1983
Maintenance engineer	Assigned 1982
Radiation protection engineer	Assigned 1983
I&C engineer	Assigned 1982
Chemistry engineer	Assigned 1983
Senior nuclear shift supervisor	Assigned 1984
Nuclear shift supervisors	Assigned 1982
Senior nuclear maintenance supervisors	Scheduled 1984
Senior I&C supervisor	Assigned 1983
Senior/Lead radiation protection supervisor	Scheduled 1984
Senior chemistry supervisor	Scheduled 1984
Senior radiological engineer	Scheduled 1985

HCGS FSAR

TABLE 13.1-3

HOPE CREEK OPERATIONS

MANNING CRITERIA

Hope Creek Operations Staff Position	ANSI/ANS-3.1 Equivalent
General manager	Plant manager (1)
Assistant general manager	Plant manager (1)
Technical manager	Technical manager (1)
Operations manager	Operation manager
Maintenance manager	Maintenance manager (1)
Technical engineer	Technical manager (1)
I&C engineer	Instrument & control
Chemistry engineer	Chemistry/radiation chemistry
Operating engineer	Operation manager (1)
Maintenance engineer	Maintenance manager
Radiation protection engineer	Radiation protection (3)(4)
Station planning engineer	Supervisor not requiring license
Office supervisor	Supervisor not requiring license
Senior operating supervisor	Shift supervisor
Nuclear shift technical advisors	Shift technical advisor
Senior nuclear shift supervisor	Shift supervisor
Nuclear shift supervisor	Senior operator
Shift supervisor-engineer	Senior operator (2)
Nuclear control operator	Nonlicensed operator
Equipment operator	Nonlicensed operator

TABLE 13.1-3 (cont)

Hope Creek Operations Staff Position	ANSI/ANS-3.1 Equivalent
Senior operating technical supervisor	Supervisor not requiring license
Senior operating support supervisor	Supervisor not requiring license
Senior reactor supervisor	Reactor engineering
TDR supervisor	Supervisor not requiring license
Senior I&C supervisor	Supervisor not requiring license
I&C supervisor	Supervisor not requiring license
I&C technician	Technician
I&C assistant	
Senior nuclear maintenance supervisor	Supervisor not requiring license
Nuclear maintenance supervisor	Supervisor not requiring license
Electrician	Maintenance personnel
Machinists	Maintenance personnel
Boiler repair mechanic	Maintenance personnel
Station mechanic	Maintenance personnel
Senior/lead radiation protection supervisor	Supervisor not requiring license (4)
Senior radiological engineer	Supervisor not requiring license (4)
Radiation protection supervisor	Supervisor not requiring license
Radiological engineer	Staff specialists
Radiation protection technician	Technician
Radiation protection assistant	

TABLE 13.1-3 (cont)

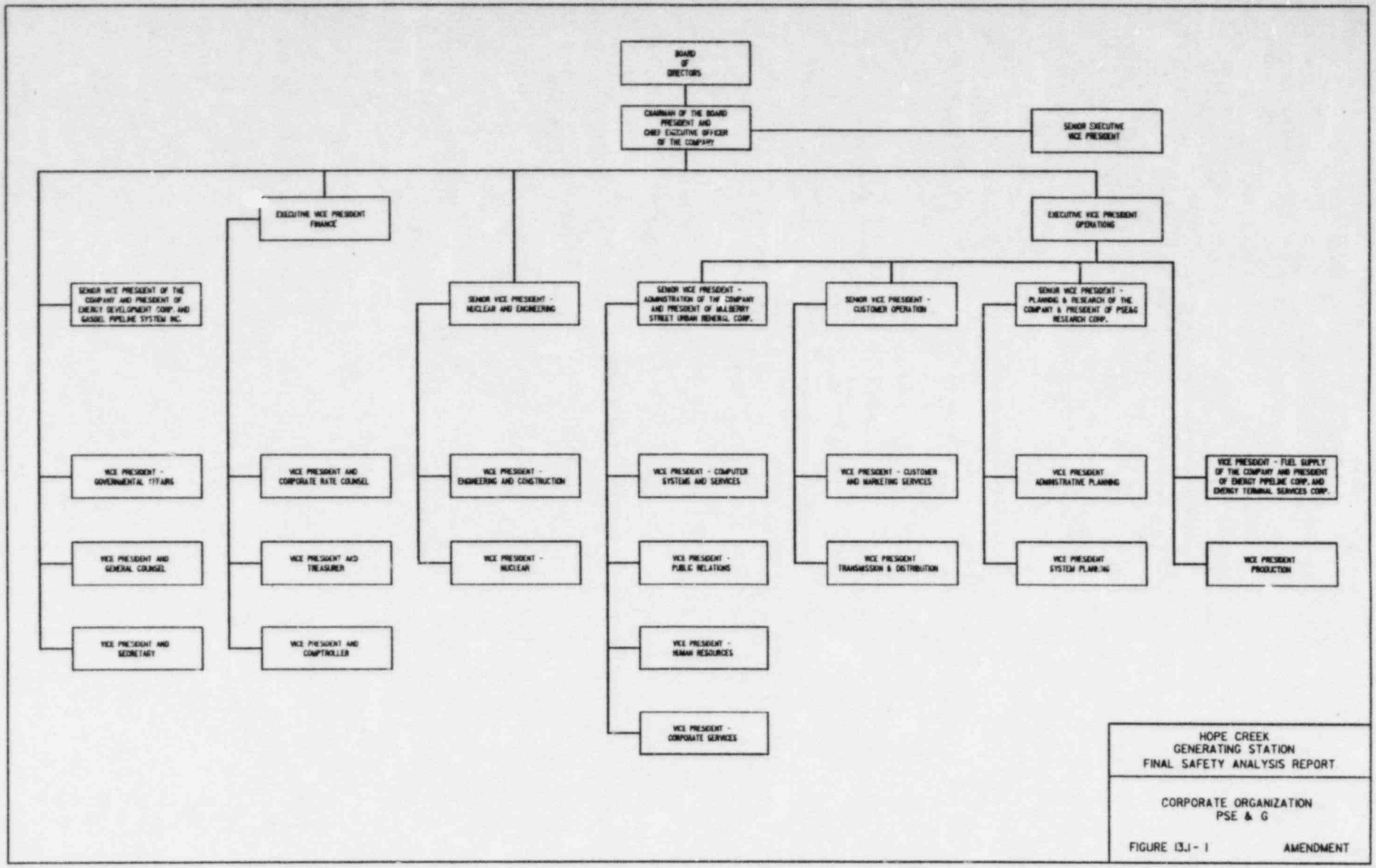
Hope Creek Operations Staff Position	ANSI/ANS-3.1 Equivalent
Senior chemistry supervisor	Supervisor not requiring license
Chemistry supervisor	Supervisor not requiring license
Chemistry technician	Technician
Chemistry assistant	

(1) The criteria are satisfied when one of the following plant staff meets the position qualifications:
General manager or assistant general manager
Technical manager or technical engineer
Operations manager or operating engineer
Maintenance manager or maintenance engineer.

(2) Shift supervisor-engineer is a degreed senior operator who is STA-trained and NRC-licensed as an SRO.

(3) RPE shall also meet Regulatory Guide 1.8 criteria.

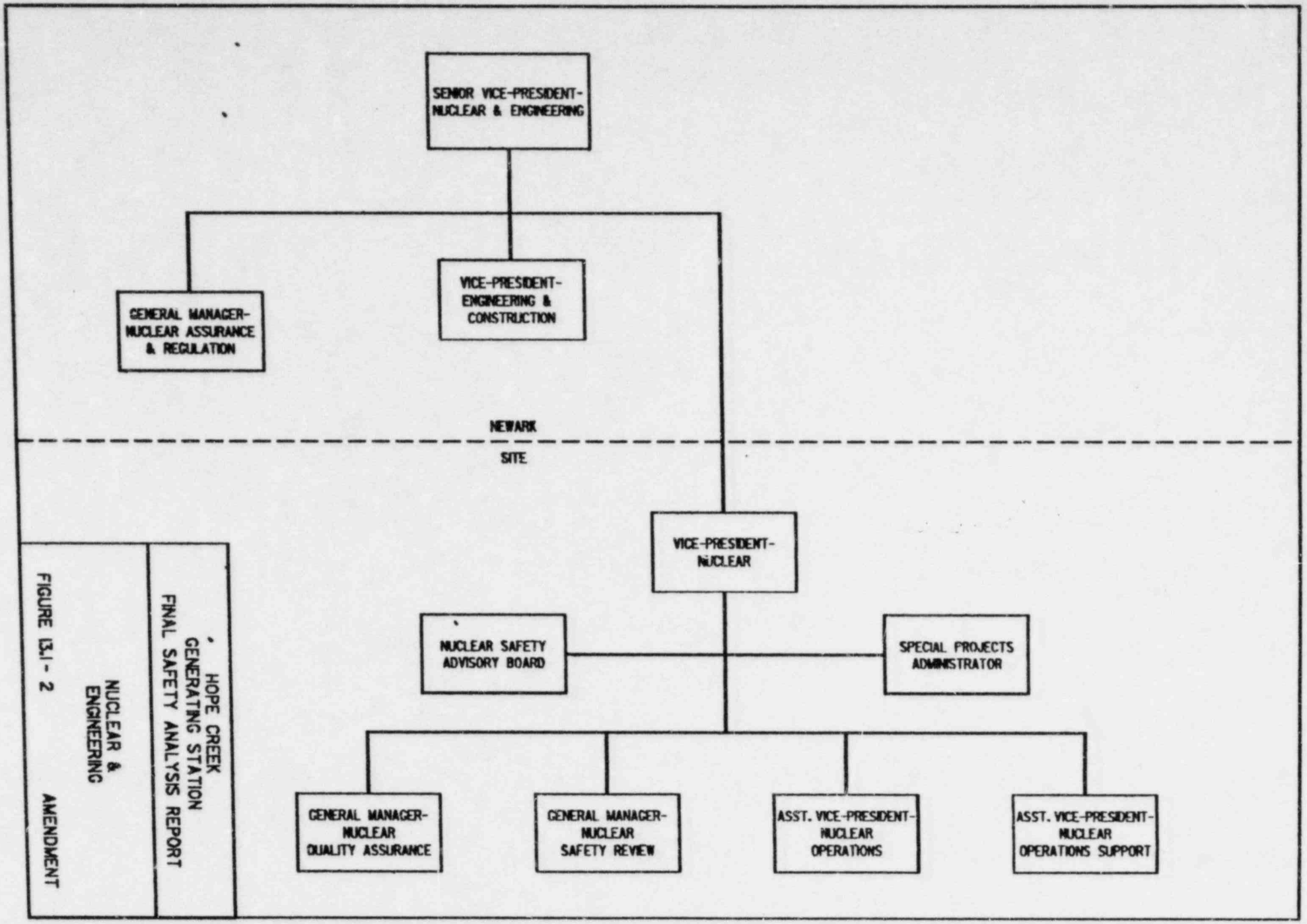
(4) The criteria of Regulatory Guide 1.8 are satisfied when one of the following plant staff meets the position qualifications:
Radiation protection engineer or senior/lead radiation protection supervisor, or senior radiological engineer.



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

CORPORATE ORGANIZATION
PSE & G

FIGURE 13.1 - 1 AMENDMENT

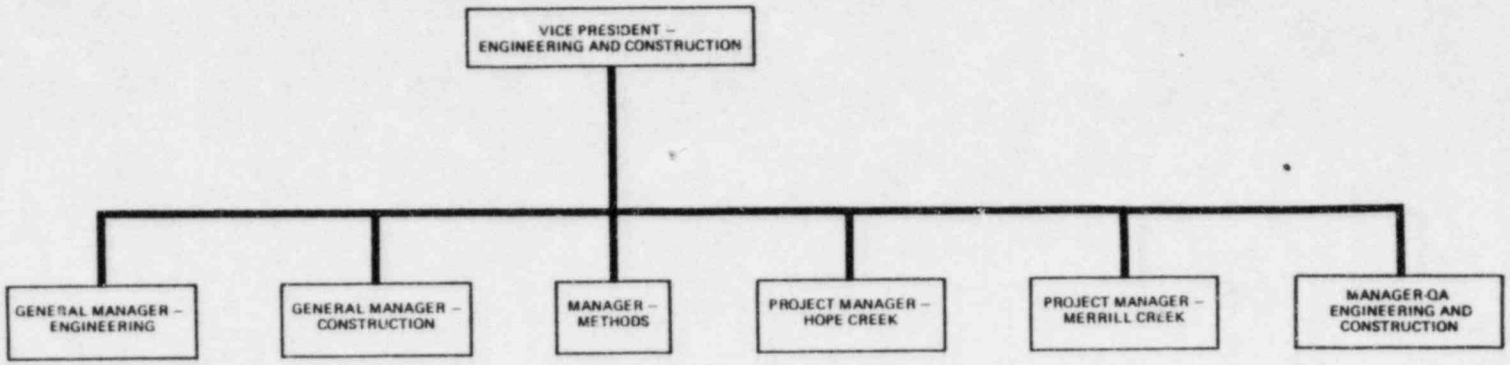


HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

NUCLEAR &
ENGINEERING

FIGURE 13.1-2

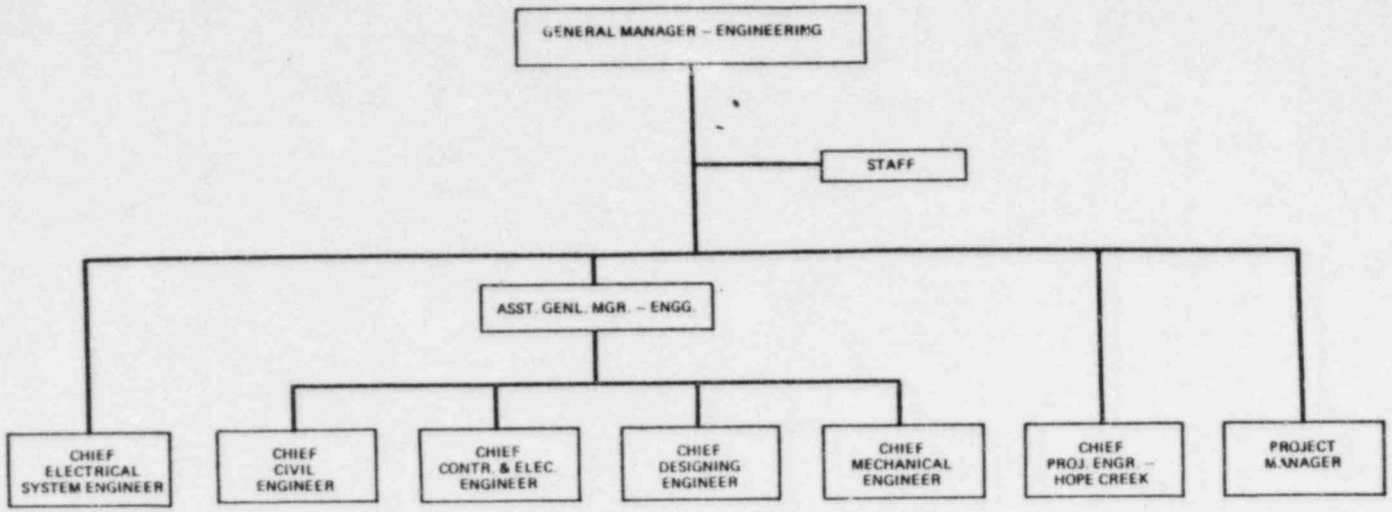
AMENDMENT



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

ENGINEERING AND CONSTRUCTION
DEPARTMENT
OVERALL ORGANIZATION

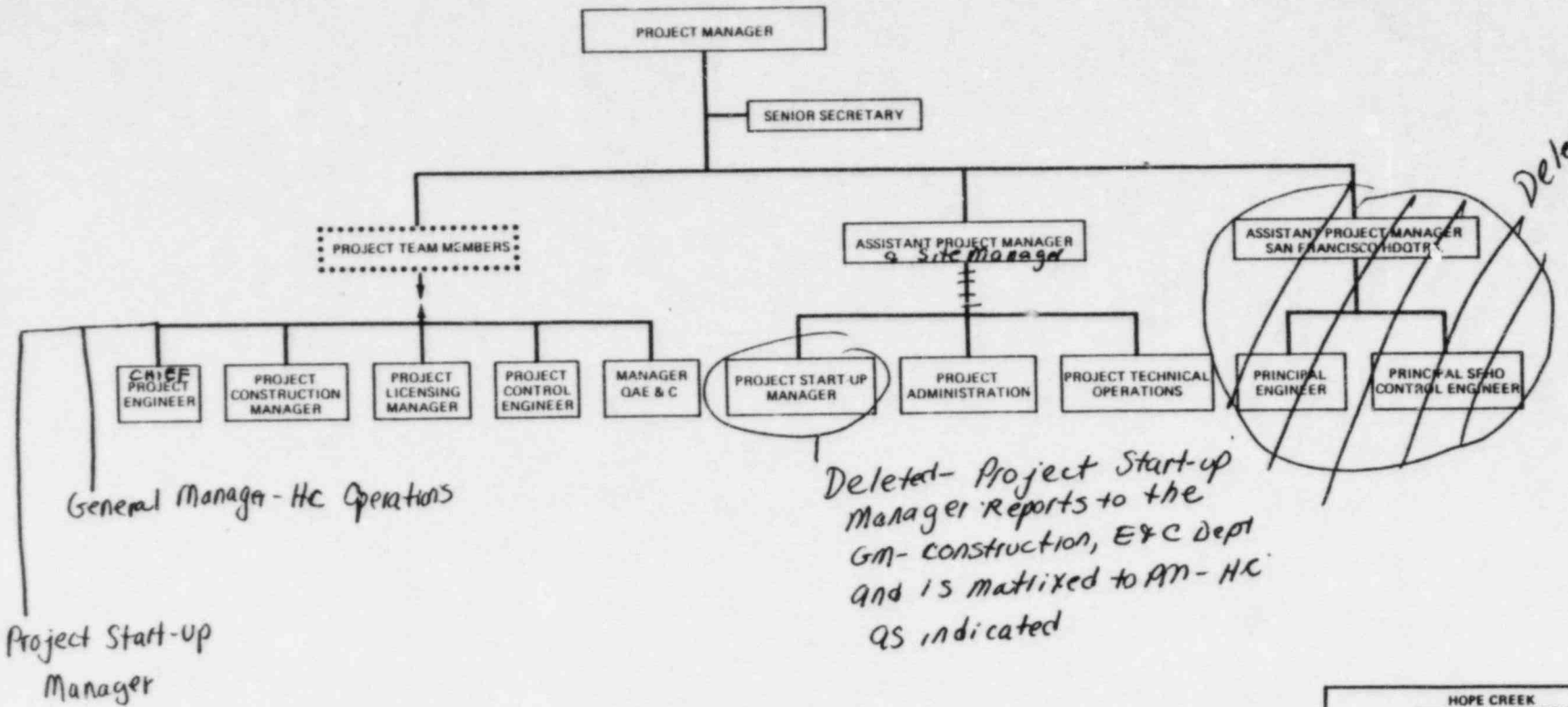
FIGURE 13.1-3 AMENDMENT 1, 8/83



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

ENGINEERING AND CONSTRUCTION
DEPARTMENT
ENGINEERING DEPARTMENT

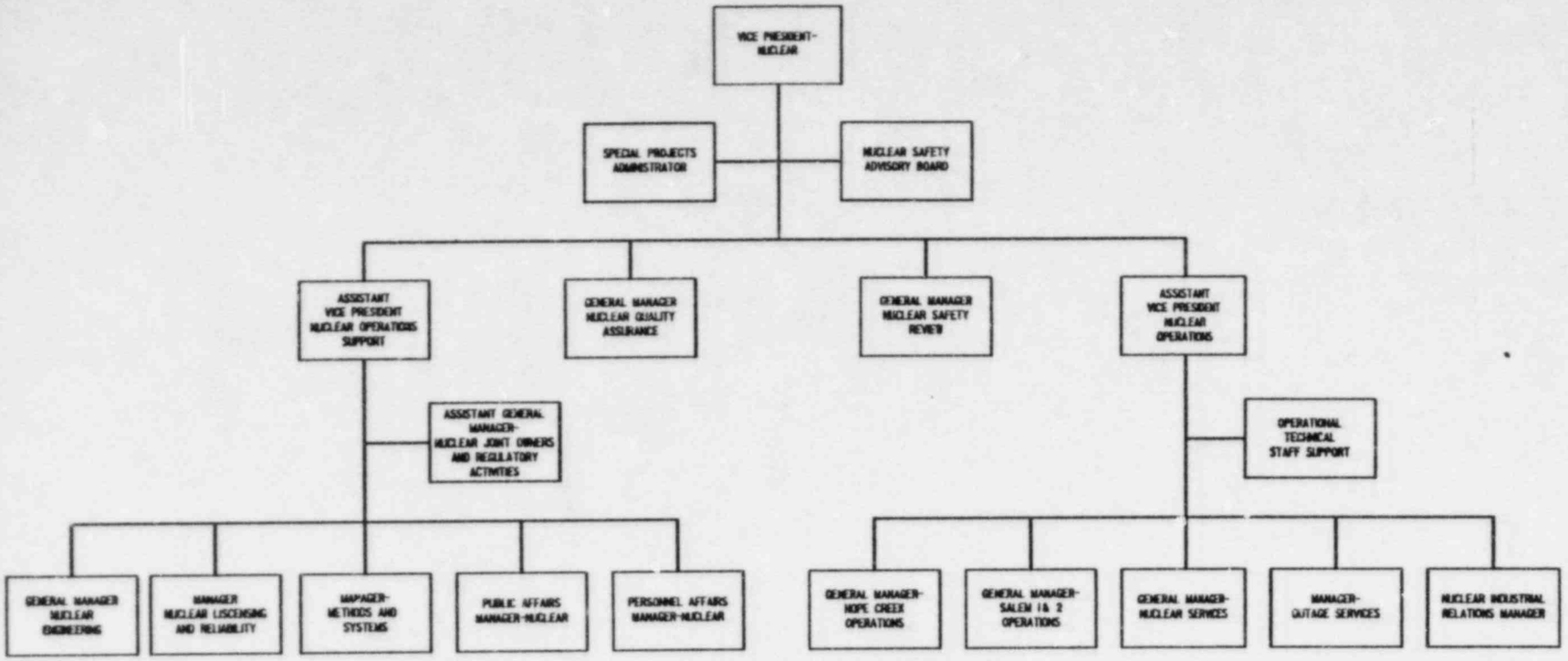
FIGURE 13.1-4



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

ENGINEERING AND CONSTRUCTION
DEPARTMENT
HOPE CREEK PROJECT

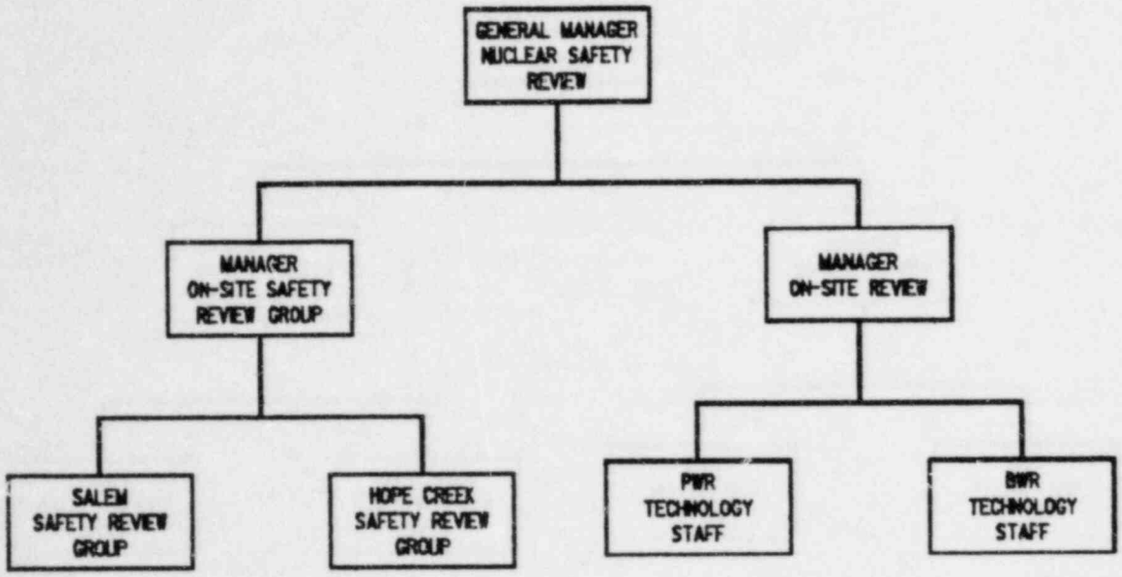
FIGURE 13.1-5 Amendment 4, 1/84



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

ORGANIZATION STRUCTURE
NUCLEAR DEPARTMENT

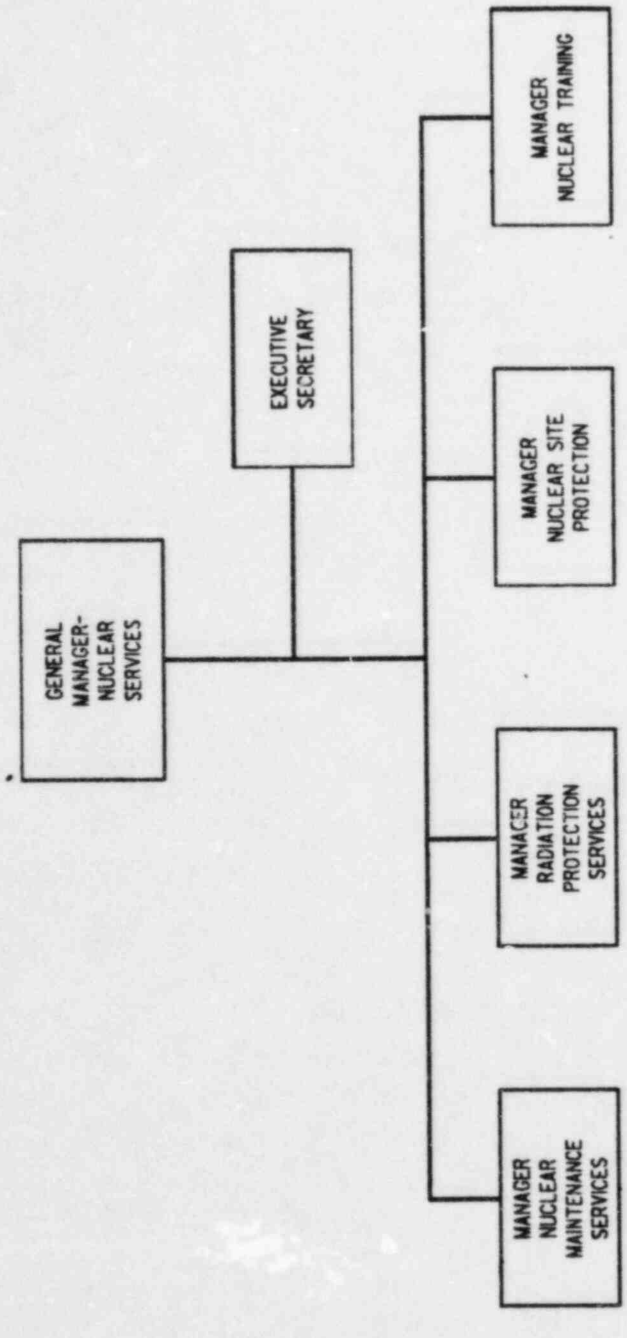
FIGURE 13.1- 6 AMENDMENT



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

NUCLEAR SAFETY REVIEW
NUCLEAR DEPARTMENT

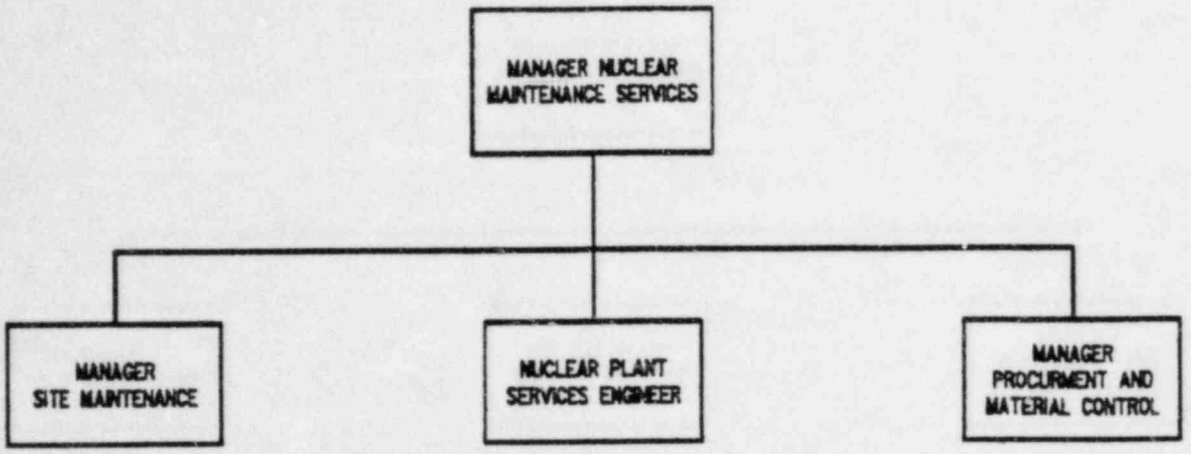
FIGURE 13.1 - 6A AMENDMENT



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

NUCLEAR SERVICES
NUCLEAR DEPARTMENT

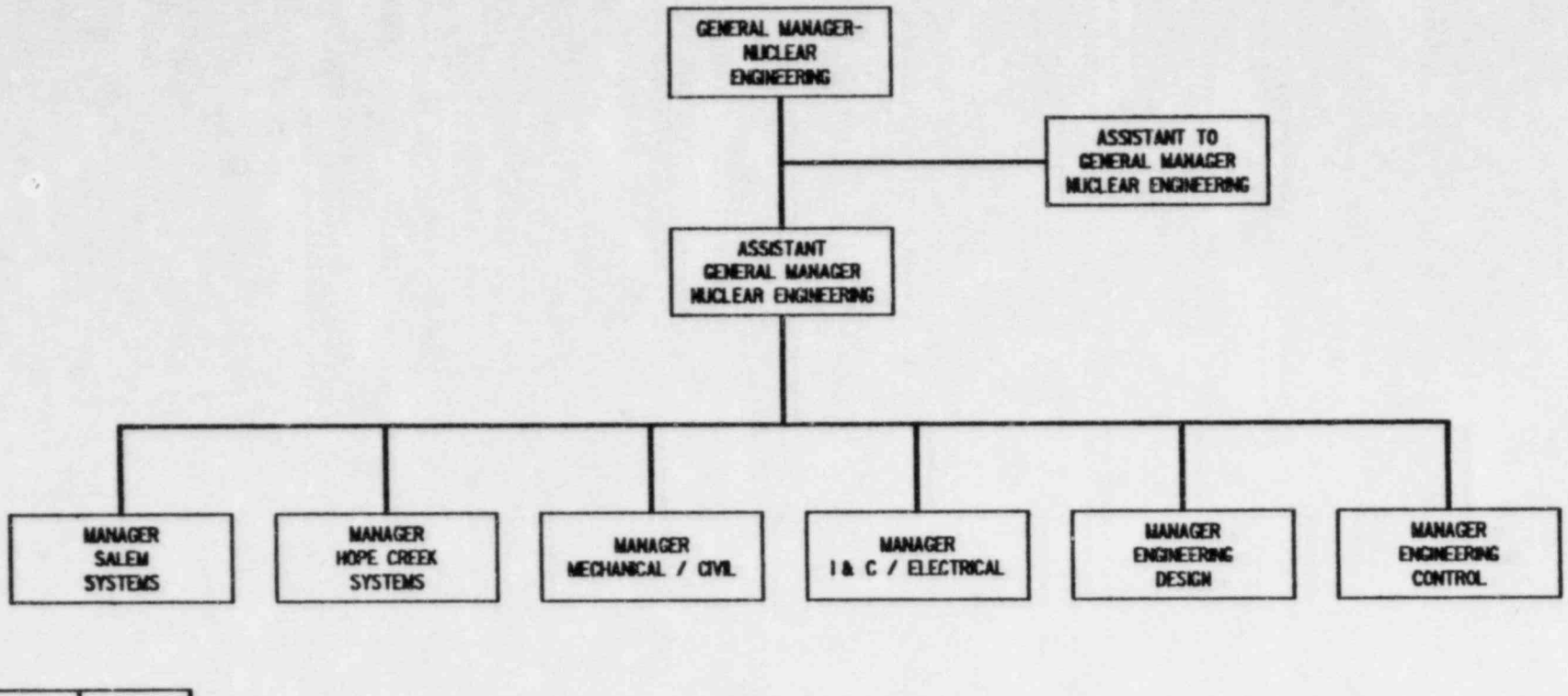
FIGURE 13.1 - 7 AMENDMENT



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

NUCLEAR MAINTENANCE SERVICES
NUCLEAR DEPARTMENT

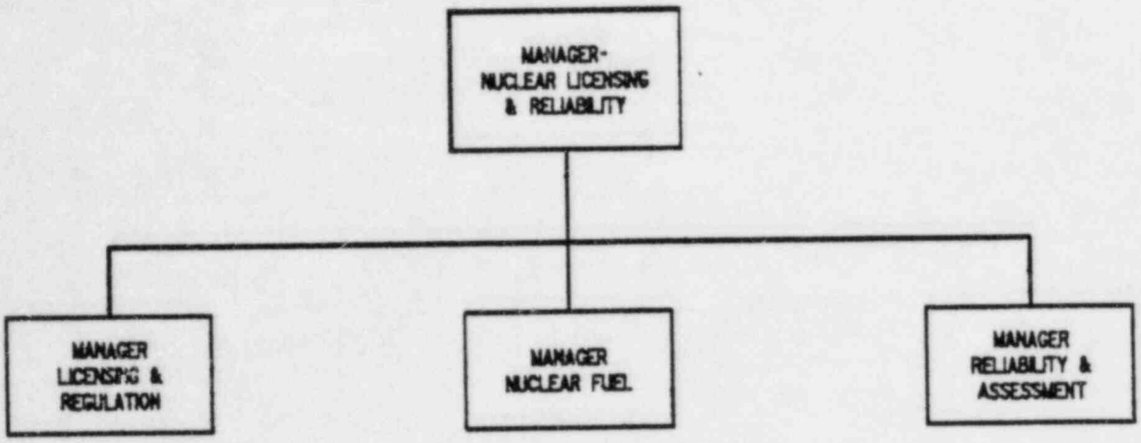
FIGURE 13.1 - 7A AMENDMENT



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

NUCLEAR ENGINEERING
NUCLEAR DEPARTMENT

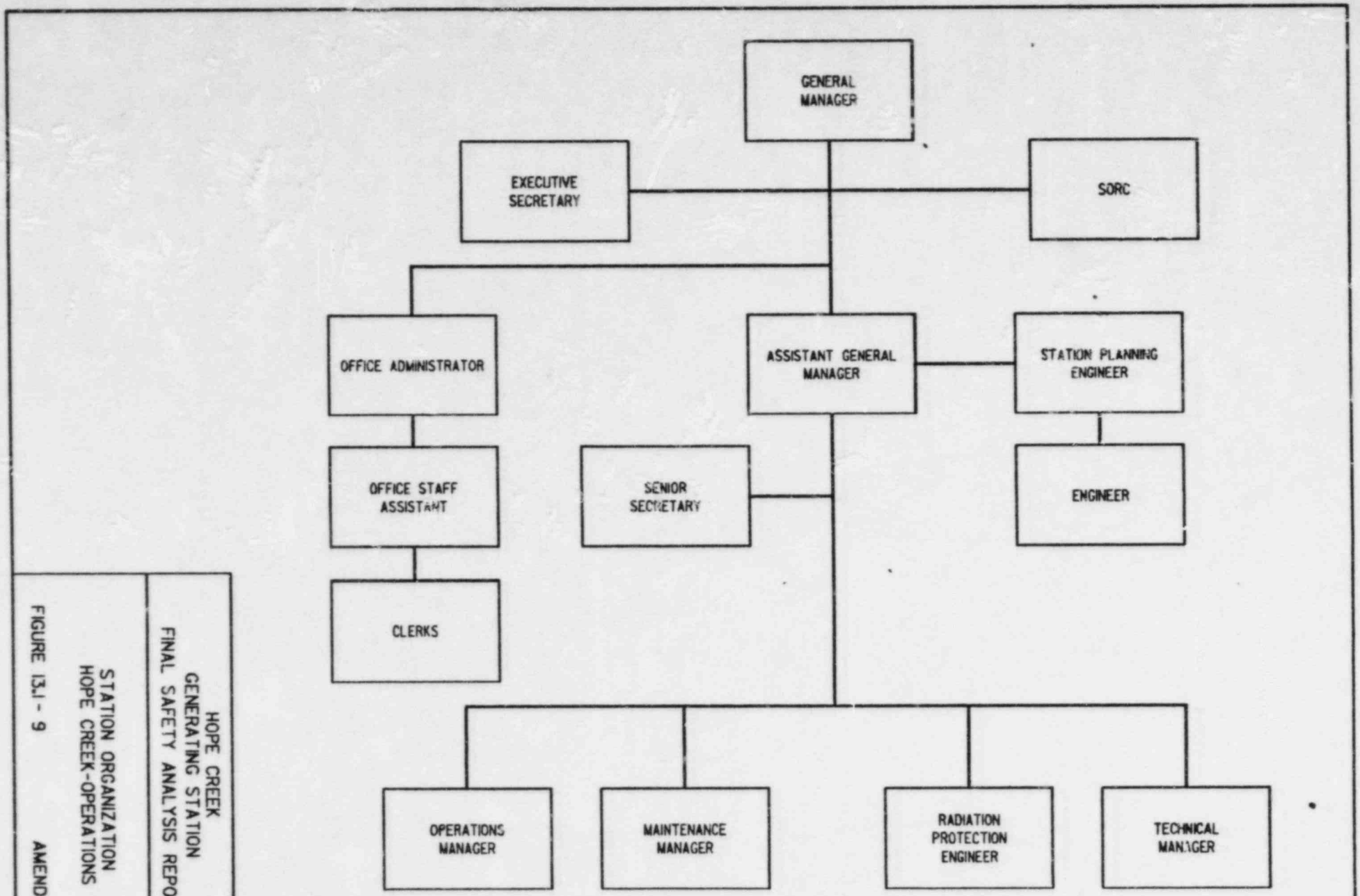
FIGURE 13.1 - 8 AMENDMENT



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

NUCLEAR LICENSING & RELIABILITY
NUCLEAR DEPARTMENT

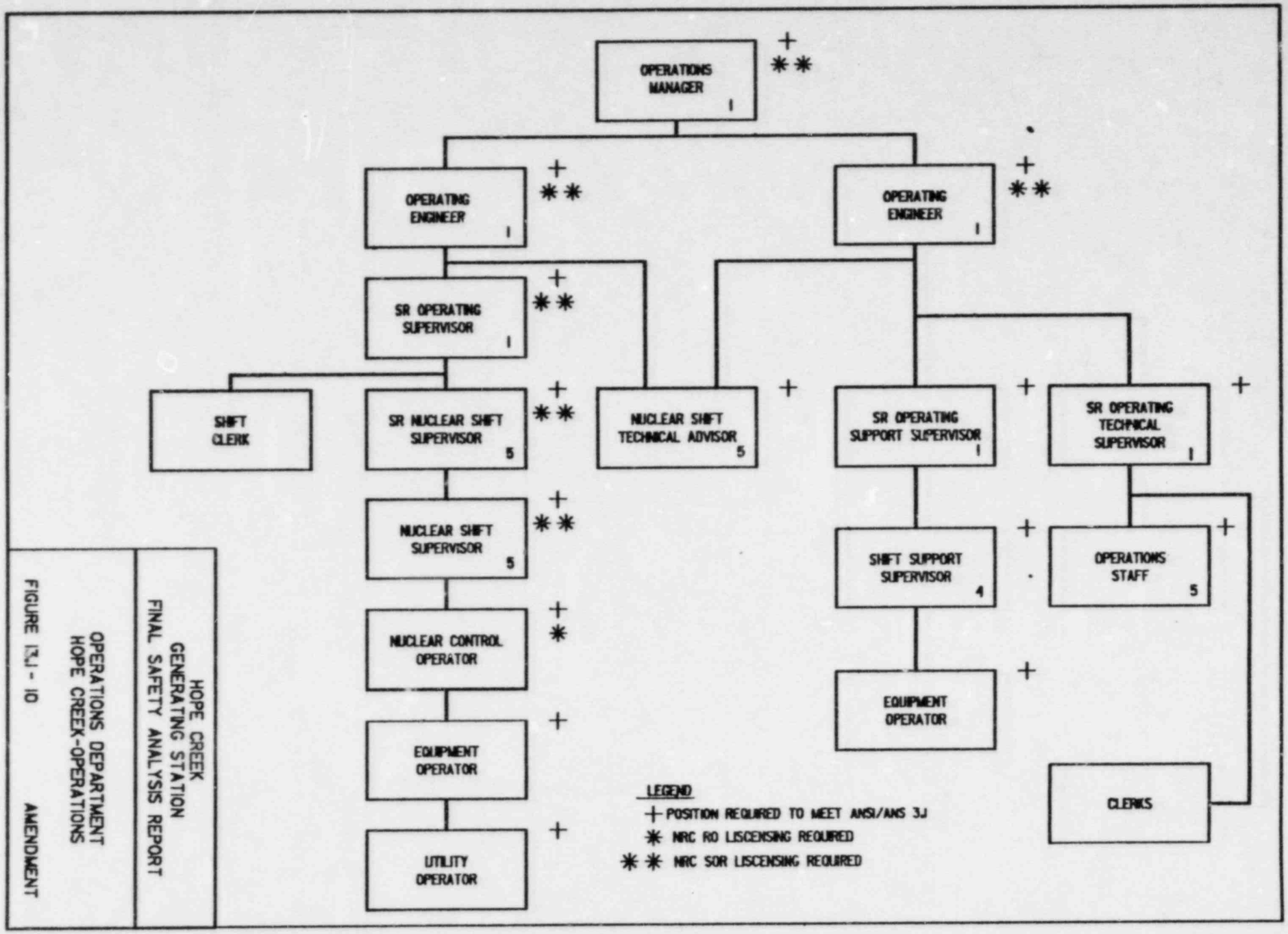
FIGURE 13.1 - 8A AMENDMENT



HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

STATION ORGANIZATION
HOPE CREEK-OPERATIONS

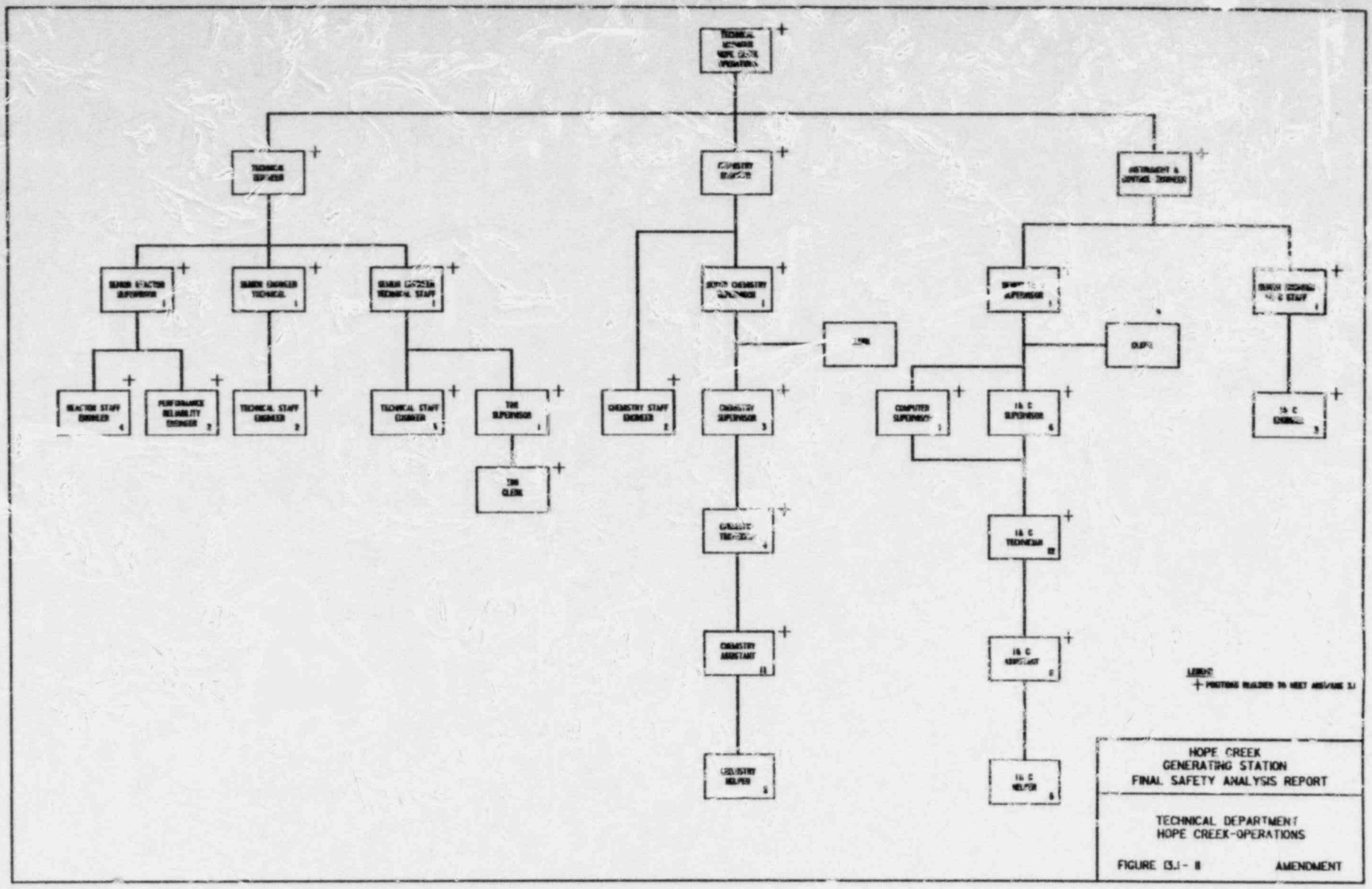
FIGURE 13.1 - 9 AMENDMENT



HOPE CREEK GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

OPERATIONS DEPARTMENT
HOPE CREEK-OPERATIONS

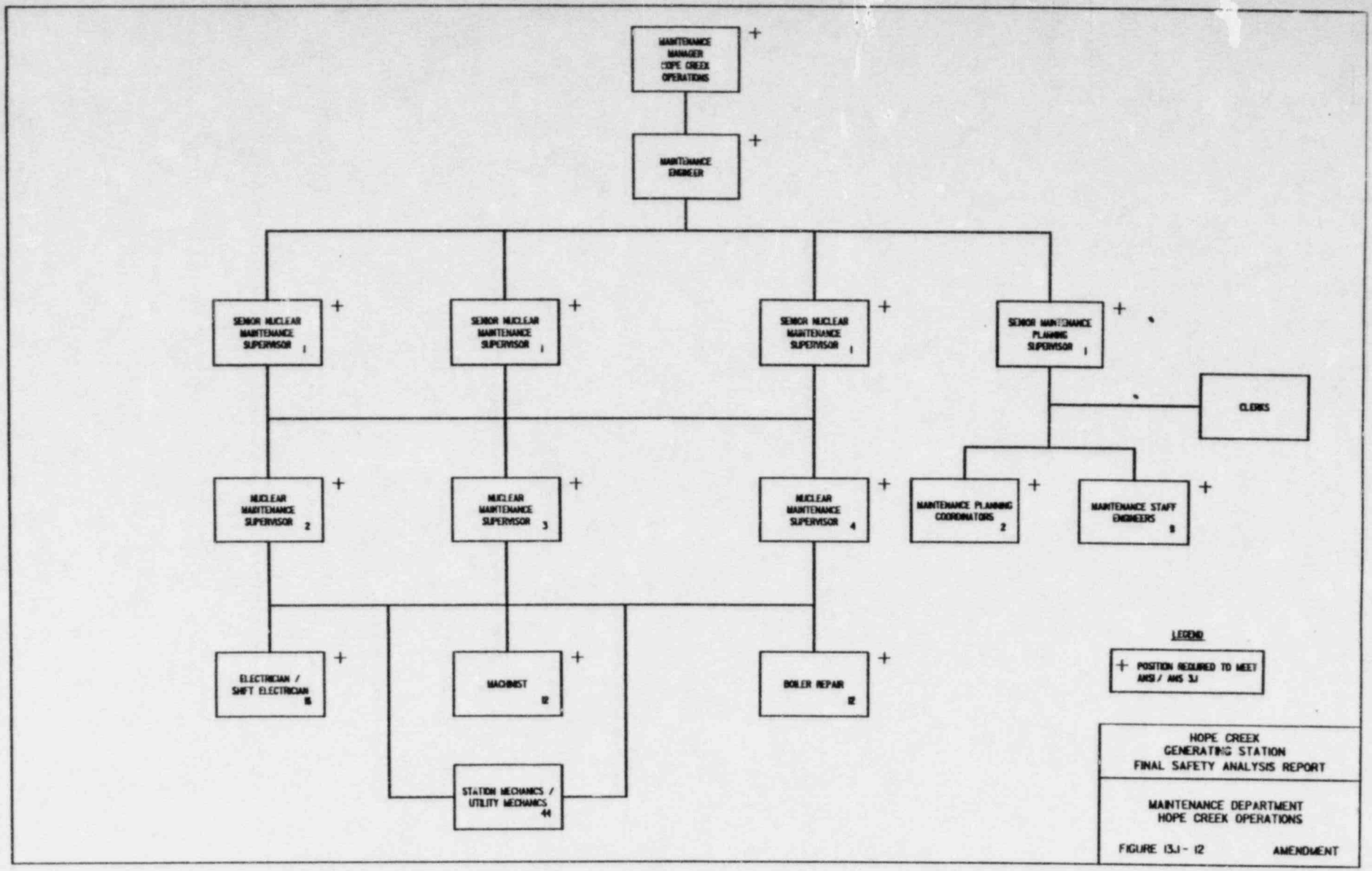
FIGURE 13.1 - 10 AMENDMENT

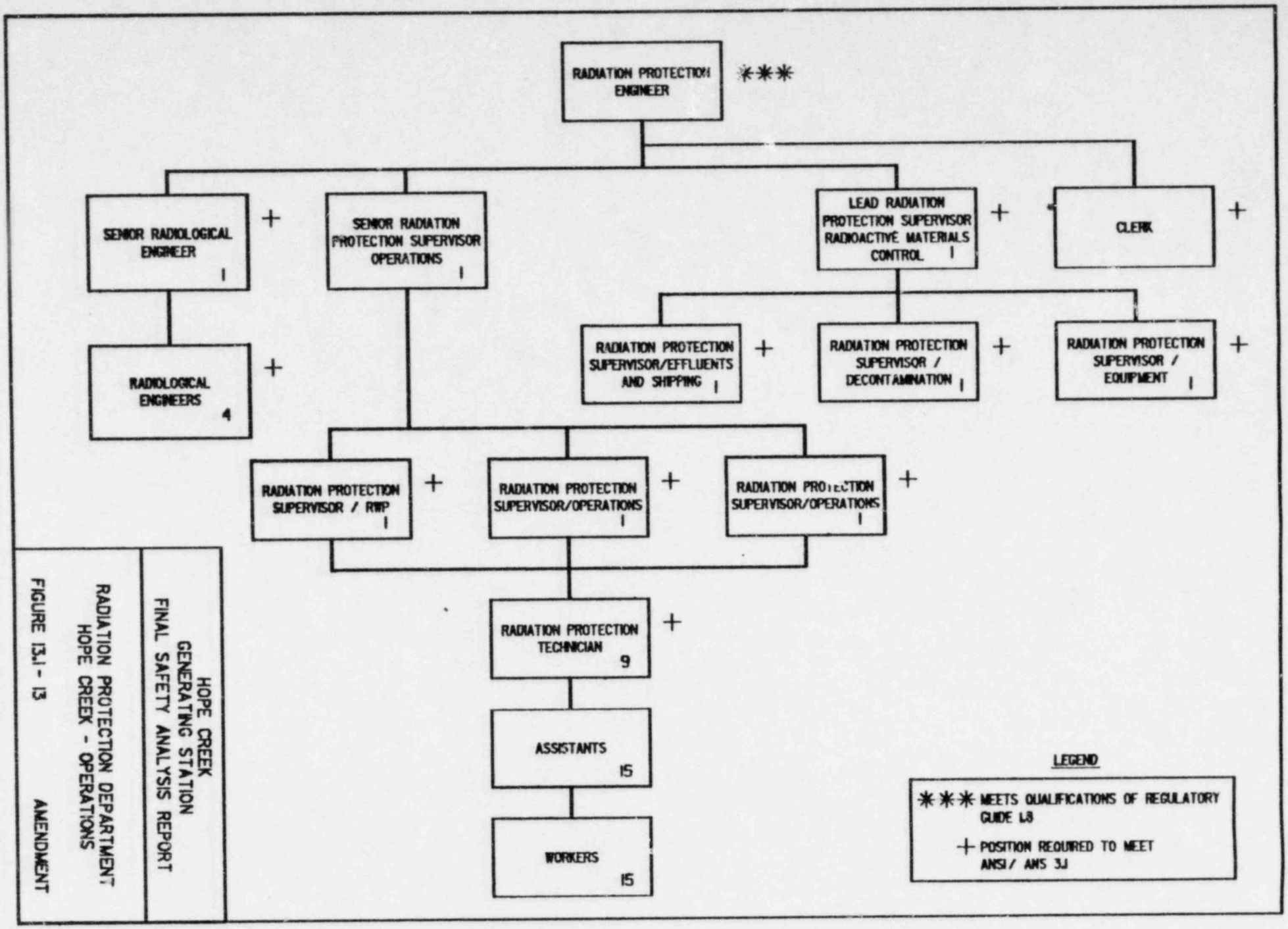


HOPE CREEK
GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

TECHNICAL DEPARTMENT
HOPE CREEK-OPERATIONS

FIGURE 13.1- 8 AMENDMENT

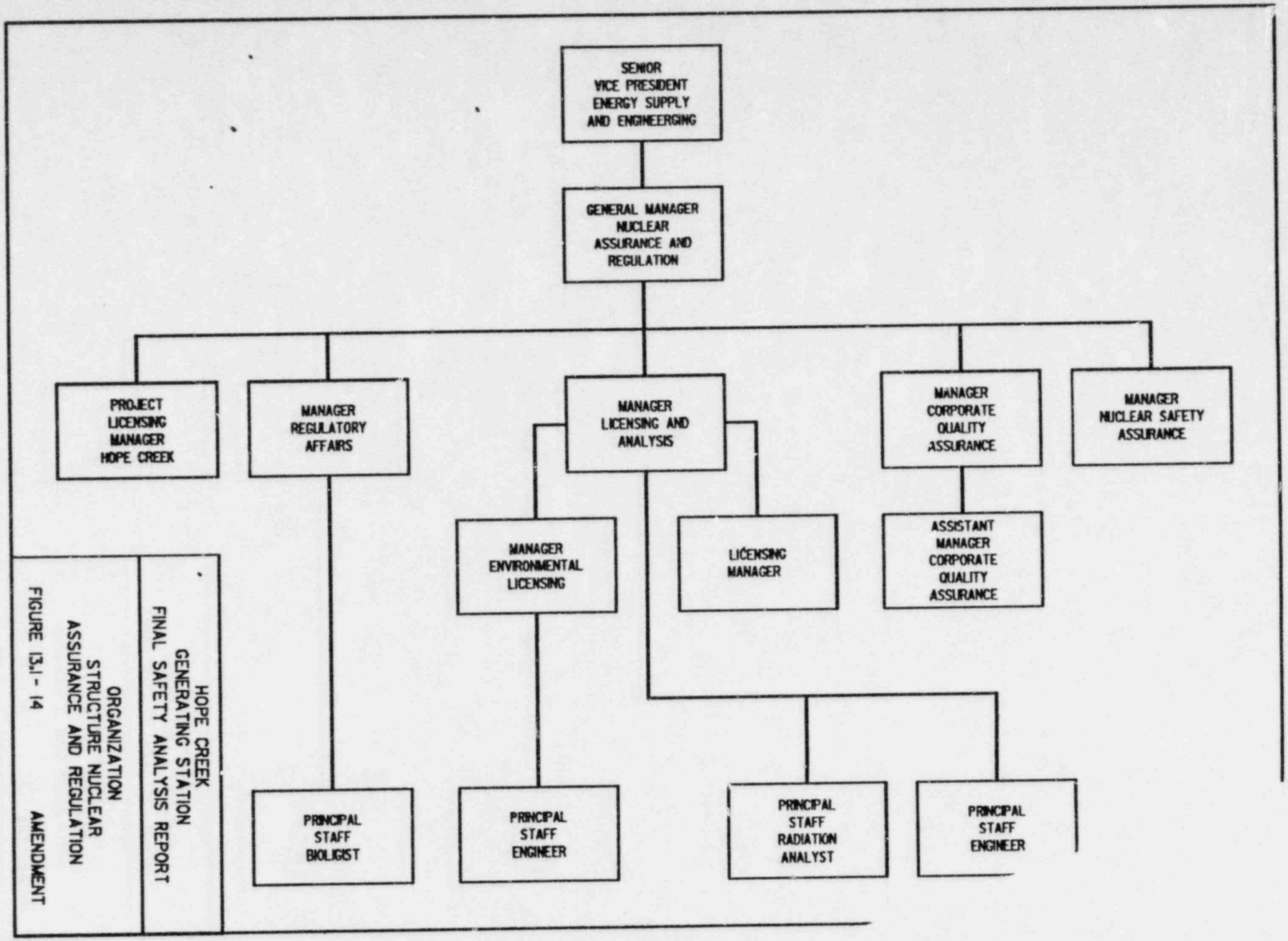

MAINTENANCE MANAGER HOPE CREEK OPERATIONS
MAINTENANCE ENGINEER
SENIOR NUCLEAR MAINTENANCE SUPERVISOR 1
SENIOR NUCLEAR MAINTENANCE SUPERVISOR 1
SENIOR NUCLEAR MAINTENANCE SUPERVISOR 1
SENIOR MAINTENANCE PLANNING SUPERVISOR 1
CLERKS
NUCLEAR MAINTENANCE SUPERVISOR 2
NUCLEAR MAINTENANCE SUPERVISOR 3
NUCLEAR MAINTENANCE SUPERVISOR 4
MAINTENANCE PLANNING COORDINATORS 2
MAINTENANCE STAFF ENGINEERS 8
ELECTRICIAN / SHIFT ELECTRICIAN 16
MACHINIST 12
BOILER REPAIR 12
STATION MECHANICS / UTILITY MECHANICS 44
LEGEND
+ POSITION REQUIRED TO MEET ANSI / ANS 3.1
HOPE CREEK GENERATING STATION FINAL SAFETY ANALYSIS REPORT
MAINTENANCE DEPARTMENT HOPE CREEK OPERATIONS
FIGURE 13.1 - 12
AMENDMENT



HOPE CREEK GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

RADIATION PROTECTION DEPARTMENT
HOPE CREEK - OPERATIONS

FIGURE 13.1 - 13 AMENDMENT



HOPE CREEK GENERATING STATION
FINAL SAFETY ANALYSIS REPORT

ORGANIZATION
STRUCTURE NUCLEAR
ASSURANCE AND REGULATION

FIGURE 13.1 - 14 AMENDMENT