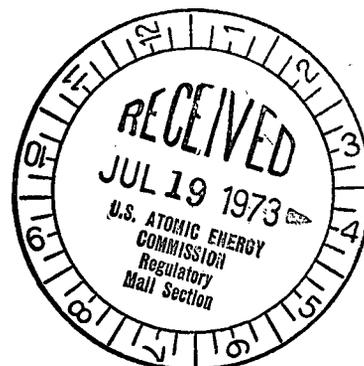


Description of Con Edison Quality Assurance  
Program for Operation of Indian Point Unit No. 2



Indian point Unit No. 2  
License No. DPR-26  
Docket No. 50-247

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A. Appendix B to 10CFR Part 50

Con Edison has established a quality assurance program for operating nuclear plants. This program is in effect at Indian Point Unit No. 1 and is being implemented at Indian Point Unit No. 2. Incorporated into the design are procedures for the continuous review of the quality assurance program.

The quality assurance program for the operation of Indian Point Unit No. 2 meets 10CFR50, Appendix B.

The quality assurance program description is presented below under headings which correspond to those set forth in 10CFR50, Appendix B.

I. ORGANIZATION

Two organizational charts are attached.

Attachment I indicates the overall corporate organizational arrangement and includes some detail of the structure of the Quality Assurance and Reliability organization and the Power Supply organization. Attachment II provides further detail of the Nuclear Power Generation Department, and illustrates the independence of Quality

Assurance and Reliability (QA&R) from production and operation responsibilities. QA&R is responsible for assuring that the necessary quality assurance programs are established, consistent with Company policy and Commission regulations, and that these programs are properly implemented. QA&R carries out these responsibilities primarily by monitoring and auditing those activities which are significant to plant safety. The Vice President, QA&R, reports directly to the Executive Vice President, Central Operations. This provides QA&R with the authority and organizational independence to identify quality problems; to initiate, recommend or provide solutions; and to verify implementation of solutions.

As shown in Attachment I, a Director, Quality Assurance and a Director, Quality Standards & Reliability report to the Vice President, QA&R. Reporting to the Director, Quality Assurance are: Quality Assurance Engineering; and QA Project Engineers. Personnel are assigned to effectively carry-put the various responsibilities noted above. Reporting to the Director, Quality Standards & Reliability, are QA consultants whose backgrounds provide specialized, in-depth knowledge in various

disciplines such as Metallurgy, Welding; and Nondestructive Examination, Reliability, Quality Systems, Mechanical Engineering and Electrical Engineering.

Attachment II defines the Nuclear Power Generation organization which operates under the Vice President, Power Supply, who is responsible for operating and maintaining all of Con Edison's electric and steam plants including the Indian Point plants. The Station Quality Assurance Engineer is the Power Supply representative for quality assurance at Indian Point. The Station Quality Assurance Engineer reports to the Manager, Nuclear Power Generation Department and is responsible for the effective implementation of QA and QC functions. His responsibilities include both inspection and audit. He oversees implementation of all station quality control measures as required by the Quality Assurance Manual; assures that materials received on site for structures, systems, and components that prevent or mitigate the consequences of postulated accidents meet the required standards and are properly identified; insures that all work on these structures, systems and components is properly accomplished; develops and maintains an in-service inspection program for each operating plant; maintains a filing system and assures that pertinent records

are retained for the operating life of each plant; coordinates non-destructive examination arrangements for operating Indian Point plants; participates in work planning sessions for plant outages; develops quality control plans, for the work scheduled and assure that written quality-related procedures are developed when necessary; provides consultation regarding quality control aspects for the work to be undertaken. When technical support is required or necessary, he has direct access to the centralized quality assurance organization under the Vice President, QA&R, through a QA&R representative assigned to Indian Point. The QA&R site representative reports directly to the Manager of QA Engineering and performs the following duties:

- a. Provides guidance for the Station Quality Assurance Engineer.
- b. Coordinates overall QA involvements.
- c. During plant outages and system modification reviews QA planning, and monitors procedures, work and records.
- d. During normal station maintenance, reviews, QA systems, monitors procedures, work and records.

- e. Selectively audits station work to assure that only properly authorized modifications are accomplished.
- f. Coordinates QA&R involvement on procurement.
- g. Monitors planning and implementation of in-service inspections.
- h. Advises QA&R on QA Manual changes required to improve the QA program.
- i. Performs selective informal evaluations of QA Manual program implementation.

QA&R interfaces with other main office and site organizations such as Construction, Engineering, Purchasing, and Power Supply by reviewing specifications design drawings and modification procedures for adequacy of quality assurance provisions, and by verifying conformance to quality assurance procedures.

The Nuclear Facilities Safety Committee is involved with facility operations and will advise the Executive Vice President, Central Operations concerning the nuclear safety aspects of plant operations.

## II. QUALITY ASSURANCE PROGRAM

The Con Edison Quality Assurance Program is established as a Corporate Instruction under a policy set forth by the President. The program identifies those structures,

systems and components which are to be covered by the Quality Assurance Program. This scope includes those structures, systems and components of the plant that prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public - (see Attachment III)

The function of each major organization (QA&R, Power Supply, Construction, Purchasing, Engineering and the Nuclear Facilities Safety Committee) participating in the Quality Assurance Program is defined. The Program establishes controls over activities affecting quality which include inspections and tests at the site and in support of the site. The charter of the Nuclear Facilities Safety Committee is included in the Quality Assurance Manual. Responsibilities are defined for the indoctrination and training of personnel performing activities affecting quality. The Station Quality Assurance Engineer has this responsibility for personnel under his control. QA&R has this responsibility for personnel under its control but also includes the responsibility for certifying non-destructive examination personnel.

QA&R regularly reviews the status and adequacy of the entire Quality Assurance Program through a planned audit program.

### III. DESIGN CONTROL

The QA Program sets forth methods for the preparation, review and control of design documents. Engineering is assigned the responsibility for translating applicable regulatory requirements into procedures, specifications and drawings for plant design modifications. Reviews are performed within Engineering to verify and check design adequacy by persons other than those performing the original calculations. QA&R also reviews these documents to assure that appropriate quality standards are specified and that deviations are controlled.

Power Supply is responsible for correctly translating applicable requirements into operating, maintenance, and test procedures and instructions. Operating procedures and changes thereto are reviewed and approved as required by the Technical Specifications. Each procedure has a title page with the procedure title, date prepared and the signature of the approval authority. This then constitutes a procedure approved for implementation.

These methods assure the proper selection and review for suitability of application of materials, parts, equipment and processes. Engineering is responsible for the identification and control of design interfaces and for coordination among participating design organizations.

These methods assure the proper selection and review for suitability of application of materials, parts, equipment and processes. Engineering is responsible for the identification and control of design interfaces and for coordination among participating design organizations.

Design controls are established by Engineering. Design changes are processed in the same manner as described above. Field changes are approved by the Field Engineering representative in consultation with the cognizant engineer within Engineering and the Station Quality Assurance Engineer. Field changes are incorporated into drawing revisions. These drawing revisions are prepared and reviewed in the same manner as the design changes discussed above.

#### IV. PROCUREMENT DOCUMENT CONTROL

Procurement documents receive a quality assurance review for applicable regulatory requirements, design bases, and other requirements which are necessary to assure quality. This review also assures that, where required, a quality assurance program is required of the vendor. In these cases, the quality assurance program is reviewed by QA&R prior to the approval of that vendor.

V. INSTRUCTION, PROCEDURES AND DRAWINGS

Power Supply has a Station Quality Assurance Engineer who inspects and monitors activities affecting quality to assure the proper use of instructions, procedures or drawings. The instructions, procedures or drawings include appropriate quantitative or qualitative acceptance criteria. The controls on instruments, procedures, and drawings are described under Criterion III:

VI. DOCUMENT CONTROL

The preparation of instructions, procedures and drawings is described under Criterion III. Inspections by the Station Quality Assurance Engineer's inspectors verify that appropriate documents are used. Engineering distributes drawings to the site. The distribution and control of approved drawings for use at the site is controlled by the Station Central Files Controller.

VII. CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

Purchase orders can only be placed with vendors who are approved. This approval requires concurrence by QA&R, Engineering, and Purchasing for the placement of a vendor on a bidders' list. The

quality assurance review of procurement documents assures that objective evidence of quality is requested from a vendor. In order for a vendor to remain approved, he must be reviewed at a specified minimum frequency consistent with the critical nature of the material being procured and with the supplier's quality history. QA&R is responsible for vendor surveillance. A receipt inspection is performed on incoming material by inspectors reporting to the Station Quality Assurance Engineer. This inspection includes a verification of the acceptability of the objective evidence of quality furnished by the vendor. This documentary evidence is a part of the site quality assurance records.

VIII. IDENTIFICATION AND CONTROL OF MATERIALS, PARTS AND COMPONENTS

The proper identification and marking is verified at receipt inspection by personnel assigned to the Station QA Engineer. The purchase order specifies required vendor marking and identification. Marking done at the site is controlled by a procedure which is approved by Engineering. A tagging system is used to identify items which have been accepted at receipt inspection. Only properly tagged items may be installed.

Each piping weld joint is given a unique identification number. This number is referenced on weld documentation. When required by specifications, weld material traceability is maintained throughout fabrication. Weld material heat number is recorded on inspection documentation.

#### IX. CONTROL OF SPECIAL PROCESSES

Control procedures for special processes, except welding and non-destructive examination, are prepared by Power Supply with the concurrence of Engineering. The procedures include personnel training and procedural qualification requirements.

Weld procedures are prepared by Engineering.

Welders and weld procedures are qualified in accordance with the latest code requirements.

Inspections of each weld, including non-destructive examinations, are documented.

The acceptance of a weld is the responsibility of the Station Quality Assurance Engineer.

Con Edison non-destructive examination (NDE) procedures are approved by QA&R. Con Edison personnel are qualified by QA&R in accordance with the latest applicable standard. The Station Quality Assurance Engineer verifies that NDE services are performed in accordance with approved procedures. Processes such as

chemical sampling are defined in operating procedures which are approved in accordance with the Technical Specifications.

#### X. INSPECTION

The Station Quality Assurance Engineer is responsible for inspections performed at the nuclear power plant site. Maintenance and modification work is performed by personnel reporting to the Plant Engineer or by personnel under the direction of the Construction Department. The Station Quality Assurance Engineer is independent of each of these groups (see organization charts).

The quality requirements are established by the Engineering or the Plant Engineer organizations depending on whether the work is a major modification or repair or maintenance. The Station Quality Assurance Engineer assures that these requirements are provided and determines the amount of inspection to be performed to assure compliance. QA&R's involvement in this is one of monitoring and auditing to assure that in-line quality assurance people satisfactorily discharge their duties.

The Station Quality Assurance Engineer is responsible for deciding the extent and type of inspection required and for preparing work inspection instructions.

Work inspection instructions specify the inspections, documentation and hold points for a job. For large and complex work, Travelers are issued by the project managing activity (Construction or Power Supply). The Station Quality Assurance Engineer approves the Traveler. The Travelers control a series of operations performed on an item after it is drawn from stores. Inspection hold points can be designated on the Traveler. In accordance with special procedures set forth in the quality assurance program, the Nuclear Power Generation Department may authorize emergency repairs which, due to their urgent nature, cannot follow normal review and control requirements. Such urgent repair work shall be released only by specified Nuclear Power Generation Department management personnel. Such action involving plant modifications shall be reported verbally to QA&R no later than the first working day following work release. The Station Quality Assurance Engineer shall also issue a deficiency report detailing conditions, details of repair, and recommendations for corrective or preventative action.

#### XI. TEST CONTROL

For major outages, such as for a refueling, a test program is developed by Power Supply personnel based on a review by the Director of Technical Engineering,

Plant Engineer, and the Unit's Chief Engineer. Written test procedures are approved by the Director of Technical Engineering, and as required by the Technical Specifications. The procedures include prerequisites, plant conditions, special test equipment and materials, inspection requirements, and acceptance criteria. The test results are documented by operations personnel. The Director of Technical Engineering monitors tests and reviews test results to assure that the data meet acceptance requirements.

XII. CONTROL OF MEASURING AND TEST EQUIPMENT

Measuring tools and gauges are controlled to assure that accuracy is maintained within necessary limits. Measuring tools and gauges, and test equipment, are controlled and recalled for calibration at prescribed intervals. A master list of items requiring periodic calibration is maintained by the Station Quality Assurance Engineer. Items on the master list are given a unique identification code. Recall lists are developed from the master list. Items are recalled at a prescribed frequency which depends upon the type of equipment, usage, and any other conditions which might affect the accuracy of a given item. At calibration, stickers are placed on the item. The sticker specifies the next calibration date.

Examples of items which require calibration are micrometers, torque wrenches, and voltmeters. The Station Quality Assurance Engineer audits assure that items which are used are on the master list and that a current calibration sticker is on the item. The Director of Technical Engineering is responsible for establishing and conducting a periodic test and calibration program for critical plant equipment listed in the Technical Specifications. This program assures that the Technical Specification requirements of scope and calibration frequencies are met. Tools, gauges, and test equipment used for this calibration program are on the station periodic calibration program described above. Calibrations are conducted by Power Supply in accordance with written procedures. In the event a device is found out of calibration, measurements made with the device since its previous calibration are evaluated and appropriate corrective action is undertaken. Standards used for direct measurement of temperature, length, weight, resistance, and voltage, and for measurements related to temperature, length, weight, resistance and voltage are traceable to the National Board of Standards. The Standards Laboratory of Con Edison is currently approved by the Public Service Commission.

#### XIII. HANDLING, STORAGE AND SHIPPING

Materials and equipment are stored in separate storage areas controlled by Power Supply. Power Supply is responsible for preparing procedures for special handling or storage. The procedures include the control and verification of special protective environments such as inert gas atmosphere specific moisture content levels, and temperature levels, where necessary. Storeroom personnel monitor the general condition of stored items and report problems to the Station Quality Assurance Engineer for further review. Items are cleaned and shipped in accordance with the provisions of the purchase order.

#### XIV. INSPECTION, TEST AND OPERATING STATUS

Periodic test functions are administered by the Director of Technical Engineering and executed per a master schedule. In-service inspections are administered by the Station Quality Assurance Engineer in accordance with the Technical Specifications. Preventative maintenance inspections will be administered by the Plant Engineer. At monthly intervals, a report is issued by the Director of Technical Engineering describing the tests required for the period and their disposition.

The inspection and test procedures are performed utilizing procedures approved by the Station Staff and contain provisions for signature blocks verifying that key steps in the procedure have been performed.

The Station Quality Assurance organization reviews those procedures requiring quality control action. Following the inspection or test of an individual component, the Watch Foreman reviews the completed procedure in order to determine whether the affected component is operable or inoperable.

Control switches, circuit breakers, valves, locks, or other suitable devices that permit operation of a component are positioned in such a manner that defective or inoperable components will be prevented from operating. Each of the devices positioned in the above manner is then affixed with a tag prohibiting the operation of the device. Meters and gauges of instrumentation systems not working properly are affixed with a tag or sticker indicating that they are not working properly.

The above tags remain until the component is no longer inoperative or defective, or it is desired to be operated for test purposes.

Watch personnel log the status of all safety-related components determined to be defective or inoperative.

XV. NON-CONFORMING MATERIALS, PARTS OR COMPONENTS

Incoming items are tagged as received. The items are receipt-inspected, in accordance with written instructions, by an inspector reporting to the Station Quality Assurance Engineer. Items which are acceptable are given an "accept" tag and put in separate locked storage. Items which cannot be accepted are "hold" tagged and stored in separate locked storage to await disposition. Items which are to be scrapped or returned to the vendor are "reject" tagged and kept in separate locked storage.

Items which do not meet acceptance criteria are evaluated for disposition. The Station Quality Assurance Engineer prepares a Deficiency Report; see Criterion XVI.

XVI. CORRECTIVE ACTION

Conditions adverse to quality are normally identified by shift personnel (the watch) or by QA personnel. A Maintenance Work Request (MWR) is then completed outlining the problem. This document is initiated by designated supervisory personnel in accordance with Station Administrative Orders and a priority level is established for correction of the problem.

The MWR, and the proposed repair procedure are reviewed by the Station Quality Assurance Engineer so proper inspections can be performed. In cases of significant conditions adverse to quality, a Deficiency Report (DR) will be initiated and corrective actions taken will include the determination of cause and measures taken to preclude repetition. The DR identifies the deficiency and requests corrective action of the organization (action addressee) responsible for action to resolve the deficiency.

The action addressee on the DR is responsible for either correcting the deficiency or designating the organization responsible for completing the necessary corrective actions. When corrective action has been completed, this is identified on the DR and forwarded to Quality Assurance personnel by the action addressee for necessary inspection, concurrences and acceptance. After completion of the work, the Station Quality Assurance Engineer maintains the documentation that the problem has been properly corrected.

The Station Quality Assurance Engineer at Indian Point is responsible for assuring that corrective actions are implemented at the site. QA&R has overall responsibility for assuring that corrective

action is taken and reviews corrective action statements during auditing operations. QA&R prepares and distributes a monthly report indicating the status of all unresolved DR's. This report is routed to senior company management.

#### XVII. QUALITY ASSURANCE RECORDS

The Station Quality Assurance Engineer maintains records which include inspection results, test completion, audits, monitoring activities, personnel qualification records, purchase orders, receipt inspection results and backup data, and deficiency reports. Operating logs are maintained by the Chief Engineer of the unit. Test procedures and results are maintained by the Director of Technical Engineering.

Inspection and test results include the signature of the inspector or data recorder, the type of observation, the results, the acceptability, and the action taken in connection with any deficiencies noted.

Power Supply is responsible for maintaining record retention programs in accordance with written procedures. The active files are maintained at the site for three years. The required records are filed systematically and are retrievable for the life of the plant.

## XVIII. AUDITS

All activities which are concerned with operation, modification, maintenance, and repair are subject to periodic audit to determine specification compliance. Primary responsibility for audits at the Indian Point site is embodied within the scope of two Con Edison organizations. These are the Quality Assurance and Reliability (QA&R) Group and the Nuclear Facilities Safety Committee (NFSC).

The Quality Assurance and Reliability Group, under its Vice President, consists of two departments: Quality Assurance and Quality Standards & Reliability. The Quality Standards and Reliability Department is responsible for preparing audit plans and performing audits on nuclear QA activities. The Quality Assurance Department also conducts its own surveys and vendor QA/QC activities.

The Nuclear Facilities Safety Committee performs independent review and evaluates QA&R operational audits. It is constituted to advise the Executive Vice President, Central Operations, concerning the nuclear power facilities. Audits of operational facilities encompass:

- a. Conformance of the facility to the provision of the Technical Specification, applicable

license requirements and other appropriate requirements.

- b. Performance of Con Edison Staff
- c. Results of actions taken to correct anomalies.
- d. The adequacy of the program to meet the criteria specified in 10CFR50, Appendix B.
- e. Any other area of facility operation considered appropriate by the Committee or the Executive Vice President-Central Operations.

Audits evaluate all concerned Con Edison organizational activities both at the Indian Point site and at the home office. QA&R audits to verify the compliance of the program to the criteria of Appendix B (to 10CFR50 include the following items: Quality Assurance records: preparation, review and control of design documents; requisitioning and procurement; vendor approval and surveillance; receiving inspections; identification and marking; handling and storing requirements; control of measuring and test equipment; maintenance and modification controls; operating and test procedures; in-service inspection; audits; deficiency reports and corrective action; welding; and non-destructive examination.

These items are audited in accord with a prepared schedule based upon a two-year cycle time. The NFSC will at least semi-annually review the adequacy of the audit program.

Selected procedures are evaluated in the various areas of operation so that an evaluation of the effectiveness of the program can be made. The audit team that implements this schedule consists of a chairman from QA&R with technical assistance from other departments. Sufficient notice is given of the audit so that a representative from the area to be audited will be available.

A set of audit procedures has been developed to assess implementation of the quality assurance program. These procedures will require that verifiable evidence of adherence or compliance be obtained. If not, the element under evaluation is considered "not satisfactory". At the completion of the survey, a tabulation of the "not satisfactory" items, recommended corrective action and due dates is reviewed with the management of the audited area.

Upon completion of the audit, the Chairman prepares a written report identifying all discrepancies found, the recommended corrective action and response due dates. This is submitted to the management of the audited activity with copies to the Chairman of the NFSC, the Vice President to QA&R, and other Company Officers as appropriate.

The management of the audited activities reviews the recommended corrective action and replies in writing to the Vice President, QA&R, concerning proposed actions.

QA&R is responsible for assuring that these actions are implemented and shall initiate followup audits when appropriate for this purpose.

B. Regulatory Guide 1.33 (Safety Guide No. 33)

The quality assurance program for the operation of Indian Point Unit No. 2 has been compared with the guidelines expressed in Regulatory Guide 1.33 (Safety Guide No. 33). The program is responsive to ANSI N45.2. In addition the supporting procedures of Regulatory Guide 1.33 and the requirements and recommendations of ANSI N18.7, "Administrative Controls for Nuclear Power Plants" with the following modification are being implemented at Indian Point Unit No. 2:

ANSI N18.7, Section 5.3.8.1, contains a recommendation that "a precaution that the operator not place a system in "manual" unless misoperation in "automatic" is apparent. . ." be included in every procedure.

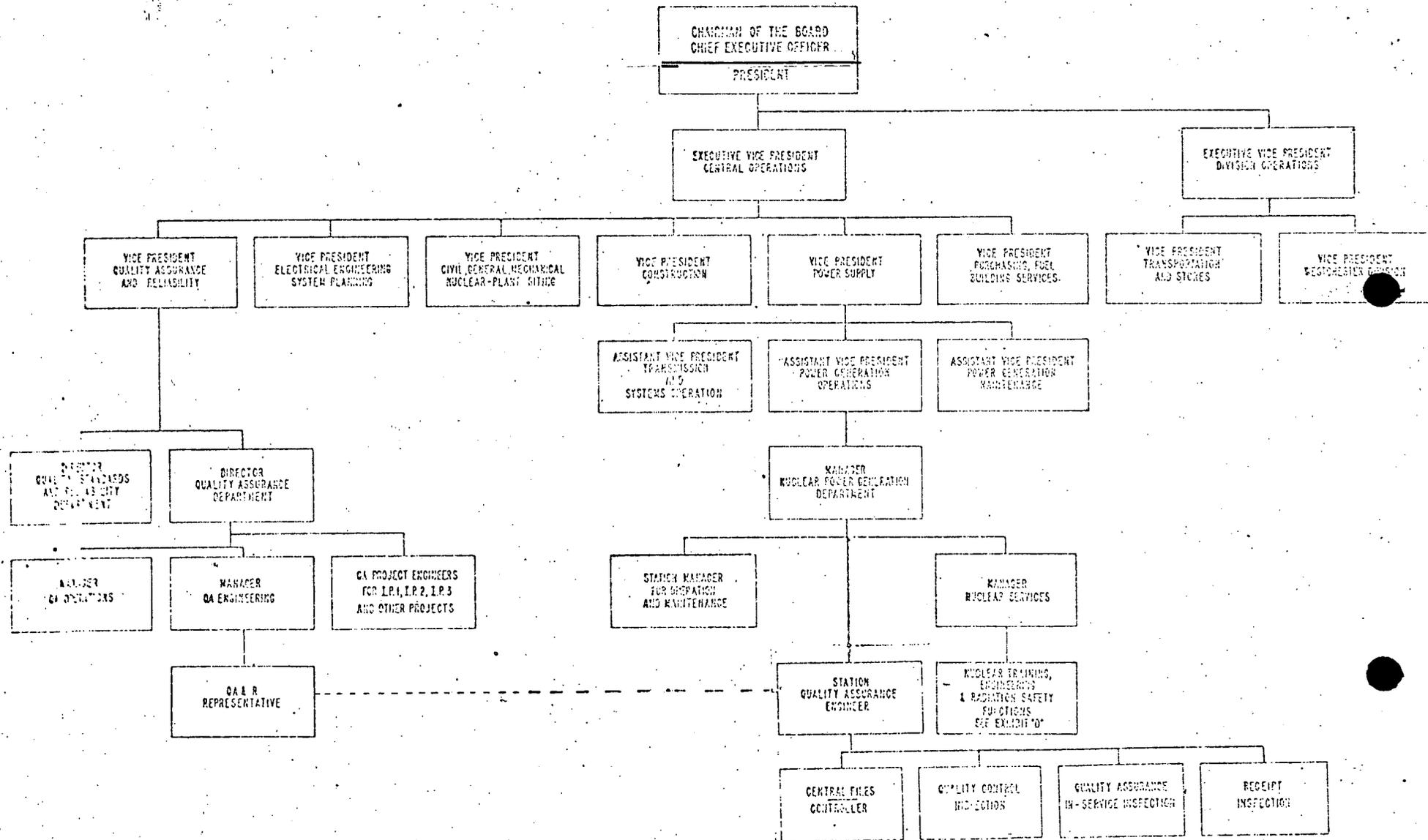
Rather than state this precaution in every emergency procedure, it is felt more appropriate to address the section of ANSI N18.7 in a statement on operating policy as part of an Administrative Directive. This approach will serve to keep procedures brief and concise and thus allow for more efficient use of the operator's time in situations where time is of the essence.

Furthermore, ANSI N18.7, Section 5.3.8.1, recommends "that probable magnitudes of parameter changes" should be included in the symptoms section of emergency procedures.

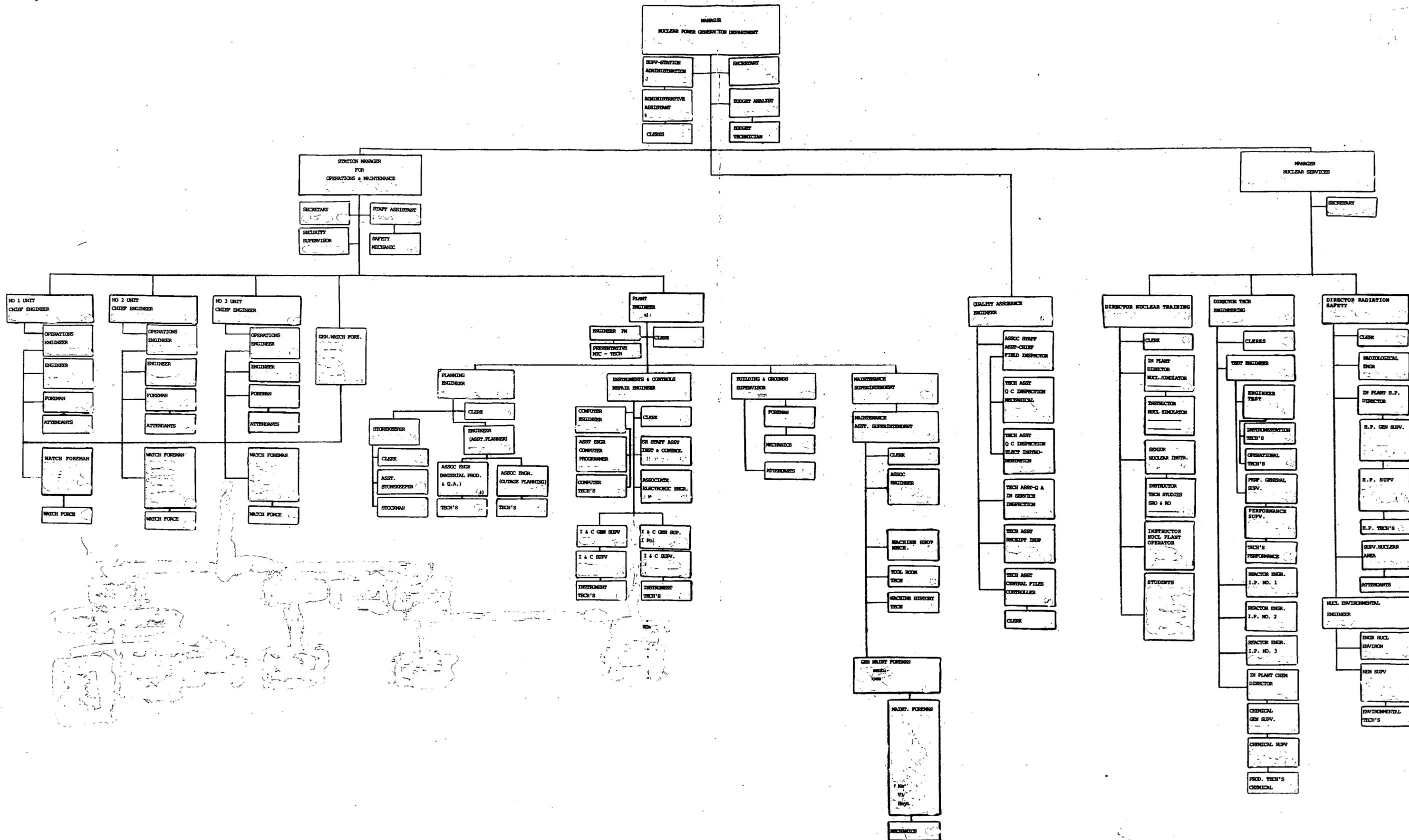
To include magnitudes of parameter changes in the emergency procedures, unless they are highly probable, would tend to provide misleading information to the operators since they would come to expect only these magnitudes of change. This could possibly result in a relatively minor malfunction not being handled as soon as possible.

Additionally, the alarm procedures detail alarm setpoints and the log sheets detail the normal operating ranges for logged parameters. Through these, the operator will become aware of off-normal conditions and by monitoring pertinent parameters, will be able to judge the severity of the condition.

Therefore, magnitudes of parameter changes in emergency procedures are only listed when they can be predicted with a high degree of certainty.



ATTACHMENT I



ATTACHMENT II  
Indian Point Station Organization

### ATTACHMENT III

The Quality Assurance Program covers those systems and components listed below:

#### Indian Point Unit No. 2

1. Core and Reactor Internals
2. Control Rods and Drives
3. Primary Coolant System (Includes Pressurizer System and Primary Relief System)
4. Secondary Coolant System up to Second Isolation Valve (Includes Secondary Relief, Auxiliary Feedwater and Boiler Blowdown).
5. Chemical and Volume Control System
6. Sampling System
7. Auxiliary Coolant System
8. Containment
9. Containment Isolation System
10. Containment Ventilation
11. Containment Spray System
12. Containment Air Recirculation Cooling and Filtration System
13. Waste Disposal System
14. Service Water - Essential Header
15. Instrument Air
16. Fuel-Handling System
17. Reactor Protection System
18. Engineering Safety Systems Protective System
19. Regulating Systems
20. Functional and Area Radiation Monitoring System

21. Emergency Power System
22. Containment Penetration and Weld Channel Pressurization System
23. Isolation Valve Seal Water System
24. Hydrogen Recombiner System
25. Safety Injection System
26. All items designated in Design Specifications as ASME Section III, Classes 1, 2 and 3

Not every portion of each of the listed systems and components affects the safety-related function. Therefore, allowance is made for Power Supply and Engineering to jointly agree that particular parts or subcomponents do not contribute to preventing or mitigating the consequences of accidents. When such is the case, the agreement is appropriately documented, identifying the part or subcomponents concerned and showing concurrence of the Unit Chief Engineer, Station QA Engineer, and Engineering. The documented agreement is filed with the Stations' Central Files Controller and a copy provided to QA&R.

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**PLANT NAME:** Indian Point Unit No. 2

**ENCLOSURES:**  
Description of Con Ed Quality Assurance Program for Operation of Indian Point Unit No. 2

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