

February 2, 1987

Docket Nos. 50-254/265

Mr. Dennis L. Farrar
Director of Nuclear Licensing
Commonwealth Edison Company
Post Office Box 767
Chicago, Illinois 60690

Dear Mr. Farrar:

SUBJECT: ADMINISTRATIVE CONTROLS (TAC 57015, 57016, 55733, 55734)

Re: Quad Cities Nuclear Power Station, Units 1 and 2

The Commission has issued the enclosed Amendment Nos. 100 and 97 to Facility Operating License Nos. DPR-29 and DPR-30 for the Quad Cities Nuclear Power Station, Units 1 and 2. The amendments are in response to your application dated February 17, 1983, and supplemented and superseded by letters dated August 23, 1984 and January 20, 1986, respectively.

The amendments incorporate numerous miscellaneous changes to Section 6, Administrative Controls, of the Technical Specifications. The amendments also reflect both organizational changes and changes necessitated by revisions to 10 CFR 50.54 and 50.72 and a new section 50.73, on minimum operator staffing requirements, immediate notification requirements, and the Licensee Event Reporting system, respectively. These revisions to 10 CFR Part 50 are reflected in these amendments.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's biweekly Federal Register notices.

Sincerely,

Original signed by

John A. Zwolinski, Director
BWR Project Directorate #1
Division of BWR Licensing

Enclosures:

1. Amendment No. 100 to License No. DPR-29
2. Amendment No. 97 to License No. DPR-30
3. Safety Evaluation

cc w/enclosures:
See next page

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Mr. Dennis L. Farrar
Commonwealth Edison Company

Quad Cities Nuclear Power Station
Units 1 and 2

cc:

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

COMMONWEALTH EDISON COMPANY

AND

IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

DOCKET NO. 50-254

QUAD CITIES NUCLEAR POWER STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 100
License No. DPR-29

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Commonwealth Edison Company (the licensee) dated February 17, 1983, as supplemented and superseded August 24, 1984 and January 20, 1986, respectively, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-29 is hereby amended to read as follows:

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B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 100, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John A. Zwolinski, Director
BWR Project Directorate #1
Division of BWR Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 2, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 100

FACILITY OPERATING LICENSE NO. DPR-29

DOCKET NO. 50-254

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

v
vi
1.0-4
3.12/4.12-1
3.12/4.12-2
3.12/4.12-3
3.12/4.12-4
6.1-1
6.1-2
6.1-3
6.1-4
6.1-5
6.1-6
Fig 6.1-1
Fig 6.1-2
Fig 6.1-3
6.2-1
6.3-1
6.4-1
6.5-1
6.6-1
6.6-2
6.6-3
6.6-4
6.6-5
6.6-6
6.6-7
6.7-1

INSERT

v
vi
1.0-4
3.12/4.12-1
3.12/4.12-2
3.12/4.12-3
3.12/4.12-4
6.1-1
6.1-2
6.1-3
6.1-4*
6.1-5
6.1-6
Fig 6.1-1
Fig 6.1-2
Fig 6.1-3
6.2-1
6.3-1
6.4-1
6.5-1
6.6-1
6.6-2
6.6-3*
6.6-4
6.6-5
-
-
6.7-1

*Pagination change only

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4.8-2	Maximum Permissible Concentration of Dissolved or Entrained Noble Gases Released from the Site to Unrestricted Areas in Liquid Waste	3.8/4.8-21a
4.8-3	Radioactive Liquid Waste Sampling and Analysis Program	3.8/4.8-22
4.8-4	Radiological Environmental Monitoring Program	3.8/4.8-24
4.8-5	Reporting Levels for Radioactivity Concentrations in Environmental Samples	3.8/4.8-27
4.8-6	Practical Lower Limits of Detection (LLD) for Standard Environmental Monitoring Program	3.8/4.8-28
4.11-1	Surveillance Requirements for High Energy Piping Outside Containment	3.11/4.11-3
3.12-1	Fire Detection Instruments	3.12/4.12-7
3.12-2	Sprinkler Systems	3.12/4.12-8
3.12-3	CO ₂ Systems	3.12/4.12-8
3.12-4	Fire Hose Stations	3.12/4.12-9
6.6-1	Special Reports	6.6-5

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TECHNICAL SPECIFICATIONS

APPENDIX A

LIST OF FIGURES

Number	Title
2.1-1	APRM Flow Reference Scram and APRM Rod Block Settings
2.1-2	Deleted
2.1-3	APRM Flow Bias Scram Relationship to Normal Operating Conditions
4.1-1	Graphical Aid in the Selection of and Adequate Interval Between Tests
4.2-1	Test Interval vs. System Unavailability
3.4-1	Standby Liquid Control Solution Requirements
3.4-2	Sodium Pentaborate Solution Temperature Requirements
3.5-1	Maximum Average Planar Linear Heat Generation Rate (MAPLHGR) vs. Planar Average Exposure
3.5-2	K factor
3.6-1	Minimum Temperature Requirements per Appendix G of 10 CFR 50
4.6-1	Chloride Stress Corrosion Test Results at 500°F
4.8-1	Locations of Fixed Environmental Radiological Monitoring Stress
6.1-1	Corporate Organization
6.1-2	Station Organization Chart
6.1-3	Minimum Shift Manning Chart

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- Y. Shutdown - The reactor is in a shutdown condition when the reactor mode switch is in the Shutdown position and no core alterations are being performed.
1. Hot Shutdown means conditions as above, with reactor coolant temperature greater than 212°F
 2. Cold Shutdown means conditions as above, with reactor coolant temperature equal to or less than 212°F.
- Z. Simulated Automatic Actuation - Simulated automatic actuation means applying a simulated signal to the sensor to actuate the circuit in question.
- AA. Transition Boiling - Transition boiling means the regime between nucleate and film boiling. Transition boiling is the regime in which both nucleate and film boiling occur intermittently, with neither type being completely stable.
- BB. Critical Power Ratio (CPR) - The critical power ratio is the ratio of that assembly power which causes some point in the assembly to experience transition boiling to the assembly power at the reactor condition of interest as calculated by application of the GEXL correlation (reference NEDO-10958).
- CC. Minimum Critical Power Ratio (MCP) - The minimum incore critical power ratio corresponding to the most limiting fuel assembly in the core.
- DD. Surveillance Interval - Each surveillance requirement shall be performed within the specified surveillance with:
- a. A maximum allowable extension not to exceed 25% of the surveillance interval.
 - b. A total maximum combined interval time for any 3 consecutive surveillance intervals not to exceed 3.25 times the specified surveillance interval.
- EE. Fraction of Limiting Power Density (FLPD) - The fraction of limiting power density is the ratio of the linear heat generation rate (LHGR) existing at a given location to the design LHGR for that bundle type.
- FF. Maximum Fraction of Limiting Power Density (MFLPD) - The maximum fraction of limiting power density is the highest value existing in the core of the fraction of limiting power density (FLPD).
- GG. Fraction of Rated Power (FRP) - The fraction of rated power is the ratio of core thermal power to rated thermal power of 2511 MWth.
- HH. Reportable Event - Any of those conditions specified in Section 50.73 to 10 CFR Part 50.

3.12/4.12 FIRE PROTECTION SYSTEMS

LIMITING CONDITIONS FOR OPERATIONS

Applicability:

Applies to the fire protection systems whenever the equipment or systems being protected are required to be operable.

Objective:

To ensure that adequate protection against fires is maintained during all modes of facility operation.

SURVEILLANCE REQUIREMENTS

Applicability:

Applies to the periodic testing requirements of the fire protection systems whenever the fire protection systems are required to be operable.

Objective:

To verify operability of the fire protection systems.

SPECIFICATIONS

A. Fire Detection Instrumentation

1. As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.12-1 shall be operable at all times when equipment in that fire detection zone is required to be operable.
2. With the number of operable fire detection instruments less than required by Table 3.12-1:
 - a. Perform an inspection of affected zone, within 1 hour. Perform additional inspections at least once per hour except in inaccessible areas.
 - b. Restore the inoperable instrument(s) to operable status within 14 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the cause of the malfunction, the action taken, and the plans for restoring the instrument(s) to operable status.
3. The provisions of Specification 3.0.A are not applicable.

A. Fire Detection Instrumentation

1. Each of the fire detection instruments given by Table 3.12-1 shall be demonstrated operable at least once per 6 months by a channel functional test.
2. All non-supervised circuits shall be demonstrated operable once per month.

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B. Fire Suppression Water System

1. The Fire Suppression Water System shall be operable at all times with;
 - a. Two (2) high pressures pumps each with a capacity of 2000 gpm with their discharge aligned to the fire suppression header.
 - b. Automatic initiation logic for each fire pump.
 - c. An operable flow path capable of taking suction from the Mississippi River and transferring the water through distribution piping with operable sectionalizing control or isolation valves to the yard hydrant curb valves and the front valve ahead of the water flow alarm device on each sprinkler, hose stand pipe, or spray system riser.
2. With inoperable fire pumps or associated water supply, restore the inoperable equipment to operable status within 7 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the plans and procedures to be used to provide for the loss of redundancy in this system.
3. With no Fire Suppression Water System operable, within 24 hours;
 - a. Establish a backup Fire Suppression Water System.
 - b. Notify the Commission pursuant to Specification 6.3.A.1 outlining the actions taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.
4. If the requirements of Specification 3.12.B.3.a cannot be met, an orderly shut down shall be initiated, and the reactor shall be in a cold shut down condition within 24 hours.

B. Fire Suppression Water System

1. The Fire Suppression Water System shall be demonstrated operable:
 - a. At least once per 31 days on a staggered test basis by starting each pump and operating it for at least 20 minutes on recirculation flow.
 - b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path is in the correct position.
 - c. At least once per year by performance of a system flush.
 - d. At least once per year by cycling each testable valve in the flow path through at least one complete cycle of full travel.
 - e. At least once per operating cycle
 - (1) By performing a system functional test which includes

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simulated automatic actuation of the system throughout its operating sequence and verifying that each automatic valve in the flow path actuates to its correct position.

- (2) By verifying that each pump develops at least 2000 gpm at a system head of 123 psig.
- (3) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel, and

f. At least once per 3 years by performing flow tests of the system in accordance with Chapter 5, Section II, NFPA Fire Protection Handbook.

C. Sprinkler Systems

1. The sprinkler systems given in Table 3.12-2 shall be operable at all times when equipment in the areas spray/sprinkler protected is required to be operable.
2. With a sprinkler system inoperable, establish back up fire suppression equipment and inspect the area twice per shift.
3. Restore the system to operable status within 14 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the cause of inoperability, the action taken, and the plans for restoring the system to operable status.
4. The provisions of Specification 3.0.A are not applicable.

C. Sprinkler Systems

1. At least once per year by cycling each testable valve in the flow path through at least one complete cycle of full travel.
2. At least once per operating cycle:
 - a. A system functional test shall be performed which includes simulated automatic actuation of the system and verifying that the automatic valves in the flow path actuate to their correct positions.
 - b. The sprinkler headers shall be inspected to verify their integrity.
 - c. Each nozzle shall be inspected to verify no blockage.
3. At least once per 3 years by performing an air flow test through each open head spray/sprinkler header and verifying each open head spray/sprinkler nozzle is unobstructed.

D. CO₂ Systems

1. The CO₂ Storage Tank shall have a minimum stand by level of 50 percent and a minimum pressure of 250 psig.
2. The CO₂ Systems given in Table 3.12-3 shall be operable.
3. Specifications 3.12.D.1 and 3.12.D.2 above apply when the equipment in the areas given in Table 3.12.3 is required to be operable.
4. With a CO₂ System inoperable, establish backup fire suppression equipment for the unprotected area(s) within 1 hour and inspect the area twice per shift.
5. Restore the system to operable status within 14 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the cause of inoperability, the action taken, and the plans and schedule for restoring the system to operable status.
6. If actuated, the storage tank will be restored to greater than the minimum level within 48 hours.
7. The provisions of Specification 3.0.A are not applicable.

E. Fire Hose Stations

1. The Fire Hose Stations given in Table 3.12-4 shall be operable at all times when the equipment in the areas protected by the fire hose is required to be operable.
2. With a hose station inoperable, route an additional equivalent capacity hose to the unprotected area from an operable hose station within 1 hour.
3. The provisions of Specification 3.0.A are not applicable.

F. Penetration Fire Barriers

1. All penetration fire barriers protecting safety related areas shall be intact except as stated in Specification 3.12.F.2.

D. CO₂ Systems

1. At least once per 7 days the CO₂ Storage Tank level and pressure will be verified.
2. At least once per operating cycle, the system valves and associated dampers will be verified to actuate automatically and manually. A brief flow test shall be made to verify flow from each nozzle.

E. Fire Hose Stations

1. At least once per 31 days, a visual inspection of each fire hose station shall be made to assure all equipment is available at the station.
2. At least once per operating cycle, the hose will be removed for inspection and reroaked. Degraded gaskets in the couplings will be replaced.
3. At least once per 3 years, each hose station valve will be partially opened to verify valve operability and no blockage.
4. At least once per 3 years a hydrostatic test will be conducted on each hose at a pressure at least 50 psig greater than the maximum pressure available at the hose station.

F. Penetration Fire Barriers

1. Each of the penetration fire barrier shall be verified to be intact by visual inspection;

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6.0 ADMINISTRATIVE CONTROLS

6.1 ORGANIZATION, REVIEW, INVESTIGATION, AND AUDIT

- A. The Station Manager shall have overall full-time responsibility for safe operation of the facility. During periods when the Station Manager is unavailable, he shall designate this responsibility to an established alternate who satisfies the ANSI N18.1 of March 8, 1971 experience requirements for plant manager.
- B. The organization chart of the corporate management which relates to the operation of this station and the normal functional organization chart for operation of the station are shown in Figures 6.1-1 and 6.1-2, respectively.
- C. The shift manning for the station shall be as shown in Figure 6.1-3. The Assistant Superintendent Operating, Operating Engineer, Shift Engineers, and Shift Foremen shall have a senior operator's license. The Fuel Handling Foreman has a limited Senior Operator's License. The Assistant Vice President and General Manager Nuclear Stations on the corporate level has responsibility for the Fire Protection Program. The Assistant Superintendent Maintenance will be responsible for implementation of the Fire Protection Program. A fire brigade of a least 5 member shall be maintained on-site at all times. This excludes the shift crew necessary for safe shutdown of the plant, and any personnel required for other essential functions during a fire emergency.
- D. Qualifications of the station management and operating staff, excluding the Rad-Chem supervisor and the Radiation/Chemical Technicians, shall meet minimum acceptable levels as described in ANSI N18.1, "Selection and Training of Nuclear Power Plant Personnel", dated March 8, 1971. The Rad-Chem Supervisor or the Lead Health Physicist shall meet the requirements of radiation protection manager of Regulatory Guide 1.8. The individual filling the position of Assistant Superintendent - Technical Services shall meet the minimum acceptable level for "Technical Manager" as described in Section 4.2.4 of ANSI N18.1-1971. The Shift Technical Advisor shall have a bachelor's degree or equivalent in a scientific or engineering discipline with specific training in plant design, and response and analysis of the plant for transients and accidents.

The Radiation/Chemical Technicians shall have successfully completed the established Radiation/Chemical Technician training program, and shall have at least a total of one year of general power plant, chemical, or radiation protection experience, or equivalent training. The Radiation/Chemical Technicians shall meet the criteria for "Individuals Qualified in Radiation Protection Procedures", as described in the D. L. Ziemann (NRC) letter to R. L. Bolger (CECo.) dated March 15, 1977. The Radiation/Chemical Technician training program consists of the following:

1. Satisfactory completion of a 12-week academic program. Topics of this course include mathematics, nuclear physics, radioactive decay, chemistry, sampling techniques, reactor coolant parameters, radiation exposure, shielding, biological effects of radiation exposure, radiation survey techniques, personnel monitoring, and emergency procedures.
 2. Satisfactory performance on a comprehensive examination following completion of academic training.
 3. On-Shift training under the supervision of a qualified Radiation/Chemical Technician.
- E. Retraining and replacement training of Station personnel shall be in accordance with ANSI N18.1, "Selection and Training of Nuclear Power Plant Personnel", dated March 8, 1971.

A training program for the fire brigade shall be maintained under the direction of the Station Fire Marshal and shall meet or exceed the requirements of Section 27 of the NFPA Code-1975 except that training sessions shall be at least quarterly.
 - F. Retraining for licensed operators, senior operators, and senior operators (limited) shall be conducted at intervals not exceeding 2 years.
 - G. The Review and Investigative Function and the Audit Function of activities affecting quality during facility operations shall be constituted and have the responsibilities and authorities outlined below:
 1. The Supervisor of the Offsite Review and Investigative Function shall be appointed by the Chairman and President. The Audit Function shall be the responsibility of the Manager of Quality Assurance and shall be independent of operations.

a. Offsite Review and Investigative Function

The Supervisor of the Offsite Review and Investigative Function shall (1) provide directions for the review and investigative function and appoint a senior participant to provide appropriate direction (2) select each participant for this function. (3) select a complement of more than one participant who collectively possess background and qualifications in the subject matter under review to provide comprehensive interdisciplinary review coverage under this function (4) independently review and approve the findings and recommendations developed by personnel performing the review and investigative function. (5) approve and report in a timely manner all findings of noncompliance with NRC requirements to the Station Manager, Assistant Vice President and General Manager Nuclear Stations, Manager of Quality Assurance, and the Vice President of Nuclear Operations. During periods when the Supervisor of Offsite Review and Investigative Function is unavailable he shall designate this responsibility to an established alternate, who satisfies the formal training and experience requirements for the Supervisor of the Offsite Review and Investigative Function. The responsibilities of the personnel performing this function are stated below. The Offsite Review and Investigative Function shall review:

- 1) The safety evaluations for (1) changes to procedures, equipment, or systems as described in the safety analysis report and (2) tests or experiments completed under the provision of 10 CFR 50.59 to verify that such actions did not constitute an unreviewed safety question. Proposed changes to the Quality Assurance Program description shall be reviewed and approved by the Manager of Quality Assurance.
- 2) Proposed changes to procedures, equipment or systems which involve an unreviewed safety question as defined in 10 CFR 50.59.
- 3) Proposed tests or experiments which involve an unreviewed safety question as defined in 10 CFR 50.59.
- 4) Proposed changes in Technical Specification NRC operating licenses.
- 5) Noncompliance with NRC requirements, or of internal procedures, or instructions causing nuclear safety significance.
- 6) Significant operating abnormalities or deviations from normal and expected performance of plant equipment that affect nuclear safety as referred to it by the Onsite Review and Investigative Function.
- 7) Reportable events.
- 8) All recognized indications of an unanticipated deficiency in some aspect of design or operation of safety-related structures, systems, or components.
- 9) Review and report findings and recommendations regarding all changes to the Generating Stations Emergency Plan prior to the implementation of such change.
- 10) Review and report findings and recommendations regarding all items referred by the Technical Staff Supervisor, Station Manager, Assistant Vice President and General Manager Nuclear Stations, and Manager of Quality Assurance.

b. Audit Function

The Audit Function shall be the responsibility of the Manager of Quality Assurance independent of the Production Department. Such responsibility is delegated to the Director of Quality Assurance for Operating and to the General Supervisor Quality Assurance Maintenance for maintenance quality assurance activities.

Either shall approve the audit agenda and checklists, the findings and the report of each audit. Audits shall be performed in accordance with the Company Quality Assurance Program and Procedures. Audits shall be performed to assure that safety-related functions are covered within a period of 2 years or less as designated below.

- 1) Audit of the conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions at least once per year.

- 2) Audit of the adherence to procedures, training and qualification of the station staff at least once per year.
- 3) Audit of the results of actions taken to correct deficiencies occurring in facility equipment, structures, systems, or methods of operation that affect nuclear safety at least once per 6 months.
- 4) Audit of the performance of activities required by the Quality Assurance Program to meet the Criteria of Appendix "B" 10 CFR 50.
- 5) Audit of the Facility Emergency Plan and implementing procedures at least once per year.
- 6) Audit of the Facility Security Plan and implementing procedures at least once per year.
- 7) Audit onsite and offsite reviews.
- 8) Audit of Facility Fire Protection Program and implementing procedures at Least once per 24 months.
- 9) The radiological environmental monitoring program and the results thereof at least once per 12 months.
- 10) The ODCM and implementing procedures at least once per 24 months.
- 11) The PCP and implementing procedures for solidification of radioactive waste at least once per 24 months.
- 12) Report all findings of noncompliance with MRC requirements and recommendations and results each audit to the Station Manager, Assistant Vice President and General Manager Nuclear Stations, Manager of Quality Assurance, Vice President of Nuclear Operations, and to the Executive Vice President of Construction, Production, and Engineering.

c. Authority

The Manager of Quality Assurance and the Supervisor of the Offsite Review and Investigative Function reports to the Chairman and President. Either the Manager of Quality Assurance or the Supervisor of the Offsite Review and Investigative Function has the authority to order unit shutdown or request any other action which he deems necessary to avoid unsafe plant conditions.

d. Records

- 1) Reviews, audits, and recommendations shall be documented and distributed as covered in 6.1.G.1.a and 6.1.G.1.b.
- 2) Copies of documentation, reports, and correspondence shall be kept on file at the station.

e. Procedures

Written administrative procedures shall be prepared and maintained for the offsite reviews and investigative functions described in Specifications 6.1.G.1.a. Those procedures shall cover the following:

- 1) Content and method of submission of presentations to the Supervisor of the Offsite Review and Investigative Function.
- 2) Use of committees and consultants.
- 3) Review and approval.
- 4) Detailed listing of items to be reviewed.
- 5) Method of (1) appointing personnel, (2) performing reviews, investigations, (3) reporting findings and recommendations of reviews and investigations, (4) approving reports, and (5) distributing reports.
- 6) Determining satisfactory completion of action required based on approved findings and recommendations reported by personnel performing the review and investigative function.

f. Personnel

- 1) The persons, including consultants, performing the review and investigative function, in addition to the Supervisor the Offsite Review and Investigative Function, shall have expertise in one or more of the following disciplines as appropriate for the subject or subjects being reviewed and investigated:
 - a) nuclear power plant technology,
 - b) reactor operations,
 - c) utility operations,
 - d) power plant design,
 - e) reactor engineering,
 - f) radiological safety,
 - g) reactor safety analysis,
 - h) instrumentation and control,
 - i) metallurgy,
 - j) any other appropriate disciplines required by unique characteristics of the facility.

- 2) Individuals performing the Review and Investigative Function shall possess a minimum formal training and experience as listed below for each discipline.
 - a) **Nuclear Power Plant Technology**
Engineering graduate or equivalent with 5 years experience in the nuclear power field design and/or operations.
 - b) **Reactor Operations**
Engineering graduate or equivalent with 5 years experience in nuclear power plant operations.
 - c) **Utility Operations**
Engineering graduate or equivalent with at least 5 years of experience in utility operation and/or engineering.
 - d) **Power Plant Design**
Engineering graduate or equivalent with at least 5 years of experience in power plant design and/or operation.
 - e) **Reactor Engineering**
Engineering graduate or equivalent. In addition, at least 5 years of experience in nuclear plant engineering, operation, and/or graduate work in nuclear engineering or equivalent in reactor physics is required.
 - f) **Radiological Safety**
Engineering graduate or equivalent with at least 5 years of experience in radiation control and safety.
 - g) **Reactor Safety Analysis**
Engineering graduate or equivalent, with at least 5 years of experience in nuclear engineering.
 - h) **Instrumentation and Control**
Engineering graduate or equivalent with at least 5 years of experience in instrumentation and control design and/or operation.
 - i) **Metallurgy**
Engineering graduate or equivalent with at least 5 years of experience in the metallurgical field.

- 3) The Supervisor of the Offsite Review and Investigative Function shall have experience and training which satisfy ANSI N18.1-1971 requirements for plant managers.

2. The Onsite Review and Investigative Function shall be supervised by the Station Manager.

- a) Onsite Review and Investigative Function

The Station Manager shall: (1) provide direction for the Review and Investigative Function and appoint the Technical Staff Supervisor, or other comparably qualified individual as a senior participant to provide appropriate directions, (2) approve participants for this function; (3) assure that a complement of more than one participant who collectively possess background and qualifications in the subject matter under review are selected to provide comprehensive interdisciplinary review coverage under this function; (4) independently review and approve the findings and recommendations developed by personnel performing the Review and Investigative Function; (5) report all findings of noncompliance with NRC requirements, and provide recommendations to the Assistant Vice President and General Manager Nuclear Stations and the Supervisor of the Offsite Review and Investigative Function; and (6) submit to the Offsite Review and Investigative Function for concurrence in a timely manner, those items described in Specification 6.1.G.1.a which have been approved by the Onsite Review and Investigative Function.

The responsibilities of the Personnel performing this function are stated below:

- 1) Review of (1) procedures required by Specification 6.2 and changes thereto and (2) any other proposed procedures or changes thereto as determined by the Station Manager to affect nuclear safety.
- 2) Review of all proposed tests and experiments that affect nuclear safety.
- 3) Review of all proposed changes to the Technical Specifications.
- 4) Review of all proposed changes or modifications to plant systems or equipment that affect nuclear safety.
- 5) Investigation of all noncompliance with NRC requirements and shall prepare and forward a report covering evaluation and recommendations to prevent recurrence to the Assistant Vice President and General Manager Nuclear Stations and to the Supervisor of the Offsite Review and Investigative Function.
- 6) Review of facility operations to detect potential safety hazards.
- 7) Performance of special reviews and investigations and reports thereon as requested by the Supervisor of the Offsite Review and Investigative Function.
- 8) Review of the Station Security Plan and shall submit recommended changes to the Assistant Vice President and General Manager Nuclear Stations.
- 9) Review of the Emergency Plan and station implementing procedures and shall submit recommended changes to the Assistant Vice President and General Manager Nuclear Stations.
10. Review of reportable events and actions taken to prevent recurrence.
11. Review of any unplanned on-site release of radioactive material to the environs, including the preparation and forwarding of reports covering evaluation recommendations and disposition of the corrective action to prevent recurrence to the Assistant Vice President and General Manager Nuclear Stations, and to the Supervisor of the Offsite Review and Investigative Function.
12. Review of changes to the PCP and ODCM, and major changes to the radwaste treatment systems.

b. Authority

The Technical Staff Supervisor is responsible to the Station Manager and shall make recommendations in a timely manner in all area of review, investigations, and quality control phases of plant maintenance, operation, and administrative procedures relating to facility operations and shall have the authority to request the action necessary to ensure compliance with rules, regulations and procedures when in his opinion such action is necessary. The Station Manager shall follow such recommendations or select a course of action that is more conservative regarding safe operation of the facility. All such disagreements shall be reported immediately to the Assistant Vice President and General Manager Nuclear Stations and the Supervisor of the Offsite Review and Investigative Function.

c. Records

- 1) Reports, reviews, investigations, and recommendations shall be documented with copies to the Assistant Vice President and General Manager Nuclear Stations, the Supervisor of the Offsite Review and Investigative Function, the Station Manager, and the Manager of Quality Assurance.
- 2) Copies of all records and documentation shall be kept on file at the station.

d. Procedures

Written administrative procedures shall be prepared and maintained for conduct of the Onsite Review and Investigative function. These procedures shall include the following:

- 1) Content and method of submission and presentation to the Station Manager, Assistant Vice President and General Manager Nuclear Stations, and the Supervisor of the Offsite Review and Investigative Function.
- 2) Use of committees when necessary.
- 3) Review and approval.
- 4) Detailed listing of items to be reviewed.
- 5) Procedures for administration of the quality control activities.
- 6) Assignment of responsibilities.

e. Personnel

- 1) The personnel performing the Onsite Review and Investigative Function, in addition to the Station Manager shall consist of persons having expertise in:
 - a) nuclear power plant technology,
 - b) reactor operations,
 - c) reactor engineering,
 - d) radiological safety and chemist,
 - e) instrumentation and control, and
 - f) mechanical and electric systems.
- 2) Personnel performing the Onsite Review and Investigative Function shall meet minimum acceptable levels as described in ANSI N18.1 1971, Sections 4.2 and 4.4.

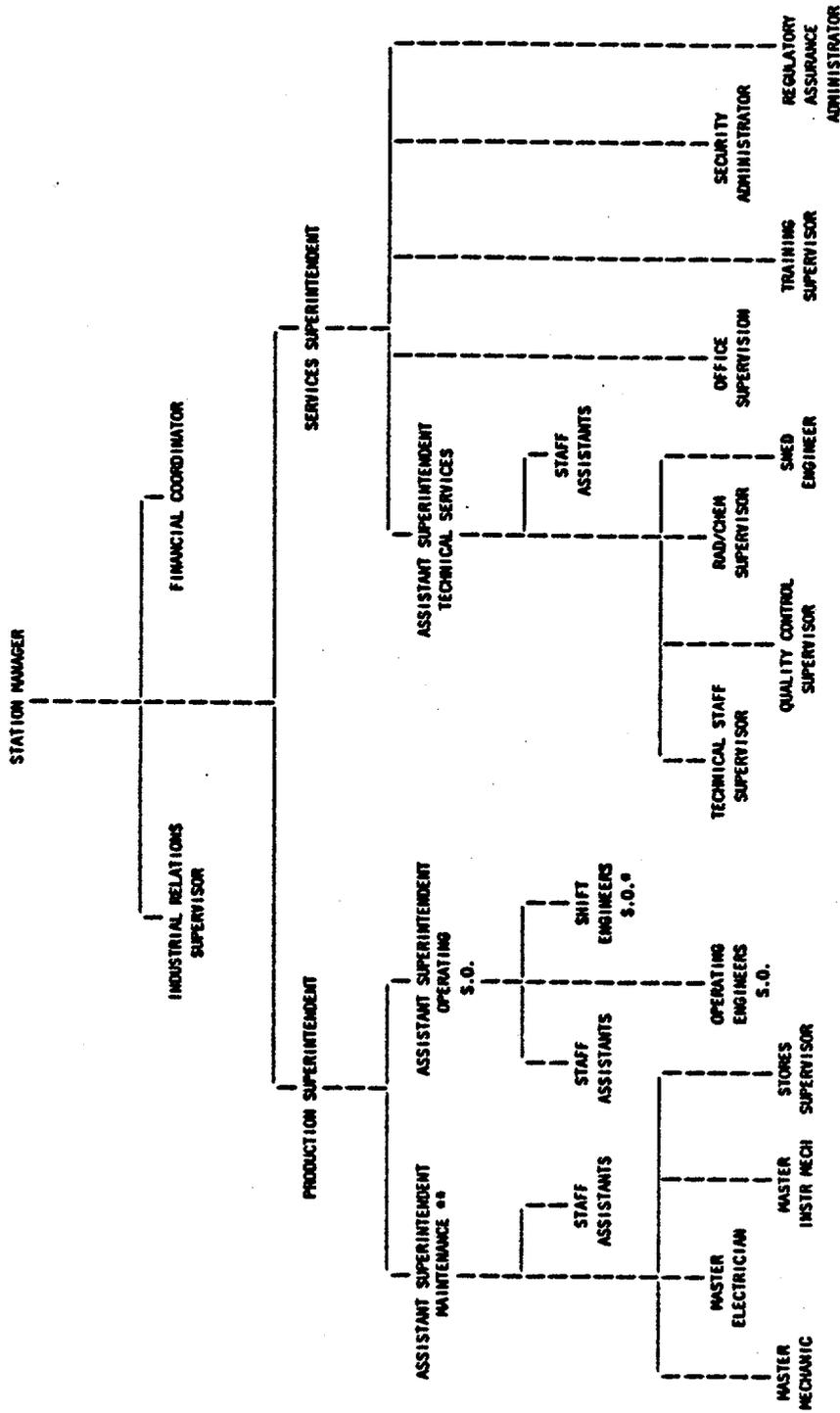
H. Fire Protection Program

An independent fire protection and loss prevention program inspection and audit shall be performed at least once per 12 months utilizing either qualified offsite licensee personnel or an outside fire protection firm.

An inspection and audit of the fire protection and loss prevention program shall be performed by a qualified outside fire consultant at least once per 36 months.

QUAD-CITIES

DPR-29



S.O. - Senior Operator's License
 * - For number per shift, see "Shift Merging Chart", Figure 6.1-3
 ** - Responsible for implementing the Fire Protection Program

MINIMUM SHIFT MANNING CHART#

CONDITION OF ONE UNIT (No Fuel in Second Unit)			
License Category	Initial Fuel Loading or During Refueling	Cold Shutdown or Refueling Shutdown	Above Cold Shutdown
Senior Operator License	2	1	2
Operator License	2	2	3
Rad. Prot. Man	1	1	1
Non-Licensed	(As Required)	1	2
Shift Technical Advisor	None Required	None Required	1

CONDITION OF SECOND UNIT (One Unit at Hot Shutdown or at Power)			
License Category	Initial Fuel Loading or During Refueling	Cold Shutdown or Refueling Shutdown	Above Cold Shutdown
Senior* Operator License	2	2	2
Operator* License	3	3	3
Rad. Prot. Man	1	1	1
Non-Licensed	3+ (As Required)	3	4
Shift Technical Advisor	1	1	1

CONDITION OF SECOND UNIT (One Unit at Cold Shutdown or Refueling Shutdown)			
License Category	Initial Fuel Loading or During Refueling	Cold Shutdown or Refueling Shutdown	Above Cold Shutdown
Senior* Operator License	2	1	2
Operator* License	3	2	3
Rad. Prot. Man	1	1	1
Non-Licensed	3+ (As Required)	3	3
Shift Technical Advisor	None Required	None Required	1

* Assumes each individual is licensed on each facility. During initial fuel loading or during refueling, one senior engineer (limited license) will supervise fuel handling.

Shift crew composition may be less than the minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Figure 6.1-3.

Figure 6.1-3

6.2 PLANT OPERATING PROCEDURES

- A. Detailed written procedures, including applicable checkoff lists covering items listed below shall be prepared, approved, and adhered to:
1. Normal startup, operation, and shutdown of the reactor, and other systems and components involving nuclear safety of the facility.
 2. Refueling operations.
 3. Actions to be taken to correct specific and foreseen potential malfunctions of systems or components, including responses to alarms, suspected primary system leaks, and abnormal reactivity changes.
 4. Emergency conditions involving potential or actual release of radioactivity - "Generating Station Emergency Plan" and station emergency and abnormal procedures.
 5. Instrumentation operation which could have an effect on the safety of the facility.
 6. Preventive and corrective maintenance operations which could have an effect on the safety of the facility.
 7. Surveillance and testing requirements.
 8. Tests and experiments.
 9. Procedure to ensure safe shutdown of the plant.
 10. Station Security Plan and implementation procedures.
 11. Fire Protection Program implementation.
 12. OOCM implementation.
 13. PCP implementation.
 14. Working hours of the Shift Engineer, Station Control Room Engineer, Shift Foreman and the Nuclear Station Operator job classifications such that the heavy use of overtime is not routinely required.
- B. Radiation control procedures shall be maintained, made available to all station personnel, and adhered to. The procedures shall show permissible radiation exposure and shall be consistent with the requirements of 10 CFR 20. This radiation protection program shall be organized to meet the requirements of 10 CFR 20.
- C.
1. Procedures for items identified in Specification 6.2-A and any changes to such procedures shall be reviewed and approved by the Operating Engineer and the Technical Staff Supervisor in the areas of operation or fuel handling and by Asst. Supt. Maintenance and Technical Staff Supervisor in the areas of plant maintenance and plant inspection. Procedures for items identified in Specification 6.2.B and any changes to such procedures shall be reviewed and approved by the Technical Staff Supervisor and the Radiation-Chemistry Supervisor. At least one person approving each of the above procedures shall hold a valid senior operator's license. In addition, these procedures and changes thereto must have authorization by a Station Superintendent before being implemented.
 2. Work and instruction type procedures which implement approved maintenance or modification procedures shall be approved and authorized by the Asst. Supt. Maintenance where the written authority has been provided by a Station Superintendent. The "Maintenance Modification Procedure" utilized for safety related work shall be so approved only if procedures referenced in the "Maintenance Modification Procedure" have been approved as required by 6.2.A. Procedures which do not fall within the requirement of 6.2.A or 6.2.B may be approved by the Department Heads.
- D. Temporary changes to procedures 6.2.A and 6.2.B above may be made provided:
1. The intent of the original procedure is not altered.
 2. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's license on the unit affected.

3. The change is documented, reviewed on the Onsite Review and Investigative Function, and approved by the Station Manager within 14 days of implementation.
- E. Drills of the emergency procedures described in Specification 6.2.A. shall be conducted in accordance with the GSEP Manual.

6.3 REPORTABLE EVENT ACTION

- A. The following actions shall be taken for Reportable Events:
 1. The Commission shall be notified and a report submitted pursuant to the requirements of Section 50.73 of 10 CFR Part 50.
 2. Each Reportable Event shall be reviewed by the On-Site Review Committee, and the results of this review shall be submitted to the Off-Site Review and Investigative Function and to the Assistant Vice President and General Manager, Nuclear Stations.

6.4 ACTION TO BE TAKEN IN THE EVENT A SAFETY LIMIT IS EXCEEDED

If a safety limit is exceeded, the reactor shall be shut down immediately, and reactor operation shall not be resumed until authorized by the NRC. The conditions of shutdown shall be promptly reported to the Assistant Vice President and General Manager Nuclear Stations or his designated alternate. The incident shall be reviewed pursuant to Specifications 6.1.G.1.a. and 6.1.G.2.a and a separate report for each occurrence shall be prepared in accordance with Specification 6.3.A.1.

6.5 PLANT OPERATING RECORDS

- A. Records and/or logs relative to the following items shall be kept in a manner convenient for review and shall be retained for at least 5 years.
1. Records of normal plant operation, including power levels and periods of operation at each power level.
 2. Records of principal maintenance and activities, including inspection and repair, regarding principal items of equipment pertaining to nuclear safety.
 3. Records and reports of reportable events and safety limit occurrences.
 4. Records and periodic checks, inspection and/or calibrations performed to verify that the surveillance requirements (see Section 4 of these specifications) are being met (all equipment failing to meet surveillance requirements and the corrective action taken shall be recorded).
 5. Records of changes made to the equipment or reviews of tests and experiments to comply with 10 CFR 50.59.
 6. Records of radioactive shipments.
 7. Records of physics tests and other tests pertaining to nuclear safety.
 8. Records of changes to operating procedures.
 9. Shift engineers' logs, and
 10. Byproduct material inventory records and source leak test results.
- B. Records and/or logs relative to the following items shall be recorded in a manner convenient for review and shall be retained for the life of the plant.
1. Substitution or replacement of principal items of equipment pertaining to nuclear safety.
 2. Changes made to the plant as it is described in the SAR.
 3. Records of new and spent fuel inventory and assembly histories.
 4. Updated, corrected, and as-built drawings of the plant.
 5. Records of plant radiation and contamination surveys.
 6. Records of offsite environmental monitoring surveys.
 7. Records of radiation exposure for all plant personnel including all contractors and visitors to the plant, in accordance with 10 CFR 20.
 8. Records of radioactivity in liquid and gaseous wastes released to the environment.
 9. Records of transient or operational cycling for those components that have been designed to operate safely for a limited number of transient or operational cycles.
 10. Records of individual staff members indicating qualifications, experience, training, and retraining.
 11. Inservice inspections of the reactor coolant system: and
 12. Minutes of meetings and results of reviews and audits performed by the offsite and onsite review and audit functions.
 13. Records for Environmental Qualification which are covered under the provisions of paragraph 6.7.

Order dated October 24, 1980
Amendment No. 38, 100

6.6 REPORTING REQUIREMENTS

In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following identified reports shall be submitted to the administrator of the appropriate Regional Office unless otherwise noted.

A. Routine Reports

1. Startup Report

A summary report of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal, or hydraulic performance of the plant. The report shall address each of the tests identified in the SAR and shall in general include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details required in license conditions based on other commitments shall be included in this report.

Startup reports shall be submitted within (1) 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If the startup report does not cover all three events (i.e., initial criticality, completion of startup test program, and resumption or commencement of commercial power operation), supplementary reports shall be submitted at least every 3 months until all three events have been completed.

2. A tabulation shall be submitted on an annual basis of the number of station utility, and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man rem exposure according to work and job function (Note: this tabulation supplements the requirements of Section 20.407 of 10 CFR 20), e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignments to various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements. Small exposures totaling less than 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total whole body dose received from external sources shall be assigned to specific major work functions.

3. Monthly Operating Report

Routine report of operating statistics and shutdown experience shall be submitted on a monthly basis to the Director, Office of Management Information and Program Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555, with a copy to the appropriate Regional Office, to arrive no later than the 15th of each month following the calendar month covered by the report. In addition, any changes to the ODCM shall be submitted with the Monthly Operating Report within 90 days of the effective date of the change.

A report of major change to the radioactive waste treatment systems shall be submitted with the Monthly Operating Report for the period in which the evaluation was reviewed and accepted by the onsite review function. If such change is re-evaluated and not installed, notification of cancellation of the change should be provided to the NRC.

B. Unique Reporting Requirements

1. Radioactive Effluent Release Report (Semi-Annual)

A semi-annual report shall be submitted to the Commission within 60 days after January 1 and July 1 of each year specifying the quantity of each of the radionuclides released to unrestricted areas in liquid and gaseous effluents during the previous 6 months. The format and content of the report shall be in accordance with Regulatory Guide 1.21 (Revision 1) dated June, 1974. Any changes to the PCP shall be included in this report.

2. Environmental Program Data (Annual Report)

An annual report containing the data taken in the standard radiological monitoring program (Table 4.8-4) shall be submitted prior to May 1 of each year. The content of the report shall include:

- a. Results of all environmental measurements summarized in the format of Regulatory Guide 4.8 Table 1 (December 1975). (Individual sample results will be retained at the Station). In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. Summaries, interpretations, and analysis of trends of the results are to be provided.
- b. As assessment of the monitoring results and radiation dose via the principal pathways of exposure resulting from plant emissions of radioactivity including the maximum noble gas gamma and beta air doses in the unrestricted area. The assessment of radiation doses shall be performed in accordance with the Offsite Dose Calculation Manual (ODCM).
- c. Results of the census to determine the locations of nearest residences and of nearby animals producing milk for human consumption.
(Table 4.8-4).
- d. The reason for the omission if the nearest dairy to the station is not in the monitoring program (Table 4.8-4).
- e. An annual summary of meteorological conditions concurrent with the releases of gaseous effluents in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability.
- f. The results of the Interlaboratory Comparison Program described in section 3.8.D.7.
- g. The results of the 40 CFR 190 uranium fuel cycle dose analysis for each calendar year.
- h. A summary of the monitoring program, including maps showing samplings locations and tables giving distance and direction of sampling locations from the Station.

3. If a confirmed measured radionuclide concentration in an environmental sampling medium averaged over any calendar quarter sampling period exceeds the reporting level given in Table 4.8-5 and if the radioactivity is attributable to plant operation, a written report shall be submitted to the Administrator of the NRC Regional Office, with a copy to the Director, Office of Nuclear Reactor Regulation, within 30 days from the end of the quarter.

a. When more than one of the radionuclides in Table 4.8-5 are detected in the medium, the reporting level shall have been exceeded if

$$\sum \frac{C_i}{R.L.i} > 1$$

where C_i is the average quarterly concentration of the i^{th} radionuclide in the medium and RL is the reporting level of radionuclide i .

b. If radionuclides other than those in Table 4.8-5 are detected and are due to plant effluents, a reporting level is exceeded if the potential annual dose to an individual is equal to or greater than the design objective doses of 10 CFR 50, Appendix I.

c. This report shall include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous effect.

4. Special Reports

Special Reports shall be submitted as indicated in Table 6.6-1.

TABLE 6.6-1
SPECIAL REPORTS

<u>Area</u>	<u>Specification Reference</u>	<u>Submittal Date</u>
a. Secondary containment leak rate test (1)	4.7.C	Upon completion of each test.
b. Summary status of fuel performance	1.1 Bases	After each refueling outage.
c. Materials radiation surveillance specimens	4.6.B.2	After each specimen removal and completion of analyses.
d. Radioactive Source Leak Testing (2)	4.8.F.	Annual Report
e. Special Effluents Reports	3.8.A. 3.8.B. 3.8.D. 6.6.C.3	30 days following occurrence.

NOTES

1. Each integrated leak rate test of the secondary containment shall be the subject of a summary technical report. This report should include data on the wind speed, wind direction, outside and inside temperatures during the test, concurrent reactor building pressure, and emergency ventilation flow rate. The report shall also include analyses and interpretations of those data which demonstrate compliance with the specified leak rate limits.
2. This report is required only if the tests reveal the presence of 0.005 microcuries or more of removable contamination.

6.7 ENVIRONMENTAL QUALIFICATION

- A. All safety-related electrical equipment in the facility shall be qualified in accordance with the provisions of: Assistant of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors" (DOR Guidelines); or, NUREG-0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment", December 1979. Copies of these documents are attached to Order for Modification of License DPR-29 dated October 24, 1980.
- b. Complete and auditable records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

COMMONWEALTH EDISON COMPANY

AND

IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

DOCKET NO. 50-265

QUAD CITIES NUCLEAR POWER STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 97
License No. DPR-30

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Commonwealth Edison Company (the licensee) dated February 17, 1983, as supplemented and superseded August 24, 1984 and January 20, 1986, respectively, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 3.B of Facility Operating License No. DPR-30 is hereby amended to read as follows:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 97, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



John A. Zwolinski, Director
BWR Project Directorate #1
Division of BWR Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 2, 1987

ATTACHMENT TO LICENSE AMENDMENT NO. 97

FACILITY OPERATING LICENSE NO. DPR-30

DOCKET NO. 50-265

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change.

REMOVE

v
1.0-4
3.12/4.12-1
3.12/4.12-2
3.12/4.12-3
3.12/4.12-4
6.1-1
6.1-2
6.1-3
6.1-4
6.1-5
6.1-6
Fig 6.1-1
Fig 6.1-2
Fig 6.1-3
6.2-1
6.3-1
6.4-1
6.5-1
6.6-1
6.6-2
6.6-3
6.6-4
6.6-5
6.6-6
6.6-7
6.7-1

INSERT

v
1.0-4
3.12/4.12-1
3.12/4.12-2
3.12/4.12-3
3.12/4.12-4
6.1-1
6.1-2
6.1-3
6.1-4*
6.1-5
6.1-6
Fig 6.1-1
Fig 6.1-2
Fig 6.1-3
6.2-1
6.3-1
6.4-1
6.5-1
6.6-1
6.6-2
6.6-3*
6.6-4
6.6-5
-
-
6.7-1

*Pagination change only

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4.8-2	Maximum Permissible Concentration of Dissolved or Entrained Noble Gases Released from the Site to Unrestricted Areas in Liquid Waste	3.8/4.8-21a
4.8-3	Radioactive Areas in Liquid Waste Sampling and Analysis Program	3.8/4.8-22
4.8-4	Radiological Environmental Monitoring Program	3.8/4.8-24
4.8-5	Reporting Levels for Radioactivity Concentrations in Environmental Samples	3.8/4.8-27
4.8-6	Practical Lower Limits of Detection (LLD) for Standard Environmental Monitoring Program	3.8/4.8-28
4.11-1	Surveillance Requirements for High Energy Piping Outside Containment	3.11/4.11-3
3.12-1	Fire Detection Instruments	3.12/4.12-7
3.12-2	Sprinkler Systems	3.12/4.12-8
3.12-3	CO ₂ Systems	3.12/4.12-8
3.12-4	Fire Hose Stations	3.12/4.12-9
6.6-1	Special Reports	6.6-5

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- Y. Shutdown - The reactor is in a shutdown condition when the reactor mode switch is in the Shutdown position and no core alterations are being performed.
1. Hot Shutdown means conditions as above, with reactor coolant temperature greater than 212°F
 2. Cold Shutdown means conditions as above, with reactor coolant temperature equal to or less than 212°F.
- Z. Simulated Automatic Actuation - Simulated automatic actuation means applying a simulated signal to the sensor to actuate the circuit in question.
- AA. Transition Boiling - Transition boiling means the regime between nucleate and film boiling. Transition boiling is the regime in which both nucleate and film boiling occur intermittently, with neither type being completely stable.
- BB. Critical Power Ratio (CPR) - The critical power ratio is the ratio of that assembly power which causes some point in the assembly to experience transition boiling to the assembly power at the reactor condition of interest as calculated by application of the GEXL correlation (reference NEDO-10958).
- CC. Minimum Critical Power Ratio (M CPR) - The minimum incore critical power ratio corresponding to the most limiting fuel assembly in the core.
- DD. Surveillance Interval - Each surveillance requirement shall be performed within the specified surveillance with:
- a. A maximum allowable extension not to exceed 25% of the surveillance interval.
 - b. A total maximum combined interval time for any 3 consecutive surveillance intervals not to exceed 3.25 times the specified surveillance interval.
- EE. Fraction of Limiting Power Density (FLPD) - The fraction of limiting power density is the ratio of the linear heat generation rate (LHGR) existing at a given location to the design LHGR for that bundle type.
- FF. Maximum Fraction of Limiting Power Density (MFLPD) - The maximum fraction of limiting power density is the highest value existing in the core of the fraction of limiting power density (FLPD).
- GG. Fraction of Rated Power (FRP) - The fraction of rated power is the ratio of core thermal power to rated thermal power of 2511 MWth.
- HH. Reportable Event - Any of those conditions specified in Section 50.73 to 10 CFR Part 50.

3.12/4.12 FIRE PROTECTION SYSTEMS

LIMITING CONDITIONS FOR OPERATIONS

Applicability:

Applies to the fire protection systems whenever the equipment or systems being protected are required to be operable.

Objective:

To ensure that adequate protection against fires is maintained during all modes of facility operation.

SURVEILLANCE REQUIREMENTS

Applicability:

Applies to the periodic testing requirements of the fire protection systems whenever the fire protection systems are required to be operable.

Objective:

To verify operability of the fire protection systems.

SPECIFICATIONS

A. Fire Detection Instrumentation

1. As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.12-1 shall be operable at all times when equipment in that fire detection zone is required to be operable.
2. With the number of operable fire detection instruments less than required by Table 3.12-1;
 - a. Perform an inspection of affected zone, within 1 hour. Perform additional inspections at least once per hour except in inaccessible areas.
 - b. Restore the inoperable instrument(s) to operable status within 14 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the cause of the malfunction, the action taken, and the plans for restoring the instrument(s) to operable status.
3. The provisions of Specification 3.0.A are not applicable.

A. Fire Detection Instrumentation

1. Each of the fire detection instruments given by Table 3.12-1 shall be demonstrated operable at least once per 6 months by a channel functional test.
2. All non-supervised circuits shall be demonstrated operable once per month.

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B. Fire Suppression Water System

1. The Fire Suppression Water System shall be operable at all times with;
 - a. Two (2) high pressures pumps each with a capacity of 2000 gpm with their discharge aligned to the fire suppression header.
 - b. Automatic initiation logic for each fire pump.
 - c. An operable flow path capable of taking suction from the Mississippi River and transferring the water through distribution piping with operable sectionalizing control or isolation valves to the yard hydrant curb valves and the front valve ahead of the water flow alarm device on each sprinkler, hose stand pipe, or spray system riser.
2. With inoperable fire pumps or associated water supply, restore the inoperable equipment to operable status within 7 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the plans and procedures to be used to provide for the loss of redundancy in this system.
3. With no Fire Suppression Water System operable, within 24 hours;
 - a. Establish a backup Fire Suppression Water System.
 - b. Notify the Commission pursuant to Specification 6.3.A.1 outlining the actions taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.
4. If the requirements of Specification 3.12.B.3.a cannot be met, an orderly shut down shall be initiated, and the reactor shall be in a cold shut down condition within 24 hours.

B. Fire Suppression Water System

1. The Fire Suppression Water System shall be demonstrated operable:
 - a. At least once per 31 days on a staggered test basis by starting each pump and operating it for at least 20 minutes on recirculation flow.
 - b. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path is in the correct position.
 - c. At least once per year by performance of a system flush.
 - d. At least once per year by cycling each testable valve in the flow path through at least one complete cycle of full travel.
 - e. At least once per operating cycle
 - (1) By performing a system functional test which includes

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simulated automatic actuation of the system throughout its operating sequence and verifying that each automatic valve in the flow path actuates to its correct position.

(2) By verifying that each pump develops at least 2000 gpm at a system head of 123 psig.

(3) Cycling each valve in the flow path that is not testable during plant operation through at least one complete cycle of full travel, and

f. At least once per 3 years by performing flow tests of the system in accordance with Chapter 5, Section II, NFPA Fire Protection Handbook.

C. Sprinkler Systems

1. The sprinkler systems given in Table 3.12-2 shall be operable at all times when equipment in the areas spray/sprinkler protected is required to be operable.
2. With the cable tunnel sprinkler system inoperable, establish a continuous fire watch with back up fire suppression equipment for the unprotected area within 1 hour.
3. With any other sprinkler system inoperable, establish back up fire suppression within 1 hour and inspect the area twice per shift.
4. Restore the system to operable status within 14 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the cause of inoperability, the action taken, and the plans for restoring the system to operable status.
5. The provisions of Specification 3.0.A are not applicable.

C. Sprinkler Systems

1. At least once per year by cycling each testable valve in the flow path through at least once complete cycle of full travel.
2. At least once per operating cycle:
 - a. A system functional test shall be performed which includes simulated automatic actuation of the system and verifying that the automatic valves in the flow path actuate to their correct positions.
 - b. The sprinkler headers shall be inspected to verify their integrity.
 - c. Each nozzle shall be inspected to verify no blockage.
3. At least once per 3 years by performing an air flow test through each open head spray/sprinkler header and verifying each open head spray/sprinkler nozzle is unobstructed.

D. CO₂ Systems

1. The CO₂ Storage Tank shall have a minimum stand by level of 50 percent and a minimum pressure of 250 psig.
2. The CO₂ Systems given in Table 3.12-3 shall be operable.
3. Specifications 3.12.D.1 and 3.12.D.2 above apply when the equipment in the areas given in Table 3.12.3 is required to be operable.
4. With a CO₂ System inoperable, establish backup fire suppression equipment for the unprotected area(s) within 1 hour and inspect the area twice per shift.
5. Restore the system to operable status within 14 days, or prepare and submit a report to the Commission pursuant to Specification 6.3.A.1 within the next 30 days outlining the cause of inoperability, the action taken, and the plans and schedule for restoring the system to operable status.
6. If actuated, the storage tank will be restored to greater than the minimum level within 48 hours.
7. The provisions of Specification 3.0.A are not applicable.

E. Fire Hose Stations

1. The Fire Hose Stations given in Table 3.12-4 shall be operable at all times when the equipment in the areas protected by the fire hose is required to be operable.
2. With a hose station inoperable, route an additional equivalent capacity hose to the unprotected area from an operable hose station within 1 hour.
3. The provisions of Specification 3.0.A are not applicable.

F. Penetration Fire Barriers

1. All penetration fire barriers protecting safety related areas shall be intact except as stated in Specification 3.12.F.2.

D. CO₂ Systems

1. At least once per 7 days the CO₂ Storage Tank level and pressure will be verified.
2. At least once per operating cycle, the system valves and associated dampers will be verified to actuate automatically and manually. A brief flow test shall be made to verify flow from each nozzle.

E. Fire Hose Stations

1. At least once per 31 days, a visual inspection of each fire hose station shall be made to assure all equipment is available at the station.
2. At least once per operating cycle, the hose will be removed for inspection and reracked. Degraded gaskets in the couplings will be replaced.
3. At least once per 3 years, each hose station valve will be partially opened to verify valve operability and no blockage.
4. At least once per 3 years a hydrostatic test will be conducted on each hose at a pressure at least 50 psig greater than the maximum pressure available at the hose station.

F. Penetration Fire Barriers

1. Each of the penetration fire barrier shall be verified to be intact by visual inspection;

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6.0 ADMINISTRATIVE CONTROLS

6.1 ORGANIZATION, REVIEW, INVESTIGATION, AND AUDIT

- A. The Station Manager shall have overall full-time responsibility for safe operation of the facility. During periods when the Station Manager is unavailable, he shall designate this responsibility to an established alternate who satisfies the ANSI N18.1 of March 8, 1971 experience requirements for plant manager.
- B. The organization chart of the corporate management which relates to the operation of this station and the normal functional organization chart for operation of the station are shown in Figures 6.1-1 and 6.1-2, respectively.
- C. The shift manning for the station shall be as shown in Figure 6.1-3. The Assistant Superintendent Operating, Operating Engineer, Shift Engineers, and Shift Foremen shall have a senior operating license. The Fuel Handling Foreman has a limited Senior Operating License. The Assistant Vice President and General Manager Nuclear Stations on the corporate level has responsibility for the Fire Protection Program. The Assistant Superintendent Maintenance will be responsible for implementation of the Fire Protection Program. A fire brigade of a least 5 member shall be maintained on-site at all times. This excludes the shift crew necessary for safe shutdown of the plant, and any personnel required for other essential functions during a fire emergency.
- D. Qualifications of the station management and operating staff, excluding the Rad-Chem supervisor and the Radiation/Chemical Technicians, shall meet minimum acceptable levels as described in ANSI N18.1, "Selection and Training of Nuclear Power Plant Personnel", dated March 8, 1971. The Rad-Chem Supervisor or the Lead Health Physicist shall meet the requirements of radiation protection manager of Regulatory Guide 1.8. The individual filling the position of Assistant Superintendent - Technical Services shall meet the minimum acceptable level for "Technical Manager" as described in Section 4.2.4 of ANSI N18.1-1971. The Shift Technical Advisor shall have a bachelor's degree or equivalent in a scientific or engineering discipline with specific training in plant design, and response and analysis of the plant for transients and accidents.

The Radiation/Chemical Technicians shall have successfully completed the established Radiation/Chemical Technician training program, and shall have at least a total of one year of general power plant, chemical, or radiation protection experience, or equivalent training. The Radiation/Chemical Technicians shall meet the criteria for "Individuals Qualified in Radiation Protection Procedures", as described in the D. L. Ziemann (NRC) letter to R. L. Bolger (CECo.) dated March 15, 1977. The Radiation/Chemical Technician training program consists of the following:

1. Satisfactory completion of a 12-week academic program. Topics of this course include mathematics, nuclear physics, radioactive decay, chemistry, sampling techniques, reactor coolant parameters, radiation exposure, shielding, biological effects of radiation exposure, radiation survey techniques, personnel monitoring, and emergency procedures.
 2. Satisfactory performance on a comprehensive examination following completion of academic training.
 3. On-Shift training under the supervision of a qualified Radiation/Chemical Technician.
- E. Retraining and replacement training of Station personnel shall be in accordance with ANSI N18.1, "Selection and Training of Nuclear Power Plant Personnel", dated March 8, 1971.

A training program for the fire brigade shall be maintained under the direction of the Station Fire Marshal and shall meet or exceed the requirements of Section 27 of the NFPA Code-1975 except that training sessions shall be at least quarterly.
 - F. Retraining for licensed operators, senior operators, and senior operators (limited) shall be conducted at intervals not exceeding 2 years.
 - G. The Review and Investigative Function and the Audit Function of activities affecting quality during facility operations shall be constituted and have the responsibilities and authorities outlined below:
 1. The Supervisor of the Offsite Review and Investigative Function shall be appointed by the Chairman and President. The Audit Function shall be the responsibility of the Manager of Quality Assurance and shall be independent of operations.

a. Offsite Review and Investigative Function

The Supervisor of the Offsite Review and Investigative Function shall (1) provide directions for the review and investigate function and appoint a senior participant to provide appropriate direction (2) select each participant for this function. (3) select a complement of more than one participant who collectively posses background and qualifications in the subject matter under review to provide comprehensive interdisciplinary review coverage under this function (4) independently review and approve the findings and recommendations developed by personnel performing the review and investigative function. (5) approve and report in a timely manner all findings of noncompliance with NRC requirements to the Station Manager, Assistant Vice President and General Manager Nuclear Stations, Manager of Quality Assurance, and the Vice President of Nuclear Operations. During periods when the Supervisor of Offsite Review and Investigative Function is unavailable he shall designate this responsibility to an established alternate, who satisfies the formal training and experience requirements for the Supervisor of the Offsite Review and Investigative Function. The responsibilities of the personnel performing this function are stated below. The Offsite Review and Investigative Function shall review:

- 1) The safety evaluations for (1) changes to procedures, equipment, or systems as described in the safety analysis report and (2) tests or experiments completed under the provision of 10 CFR

50.59 to verify that such actions did not constitute an unreviewed safety question. Proposed changes to the Quality Assurance Program description shall be reviewed and approved by the Manager of Quality Assurance.

- 2) Proposed changes to procedures, equipment or systems which involve an unreviewed safety question as defined in 10 CFR 50.59.
- 3) Proposed tests or experiments which involve an unreviewed safety question as defined in 10 CFR 50.59.
- 4) Proposed changes in Technical Specification NRC operating licenses.
- 5) Noncompliance with NRC requirements, or of internal procedures, or instructions causing nuclear safety significance.
- 6) Significant operating abnormalities or deviations from normal and expected performance of plant equipment that affect nuclear safety as referred to it by the Onsite Review and Investigative Function.
- 7) Reportable events.
- 8) All recognized indications of an unanticipated deficiency in some aspect of design or operation of safety-related structures, systems, or components.
- 9) Review and report findings and recommendations regarding all changes to the Generating Stations Emergency Plan prior to the implementation of such change.
- 10) Review and report findings and recommendations regarding all items referred by the Technical Staff Supervisor, Station Manager, Assistant Vice President and General Manager Nuclear Stations, and Manager of Quality Assurance.

b. Audit Function

The Audit Function shall be the responsibility of the Manager of Quality Assurance independent of the Production Department. Such responsibility is delegated to the Director of Quality Assurance for Operating and to the General Supervisor Quality Assurance Maintenance for maintenance quality assurance activities.

Either shall approve the audit agenda and checklists, the findings and the report of each audit. Audits shall be performed in accordance with the Company Quality Assurance Program and Procedures. Audits shall be performed to assure that safety-related functions are covered within a period of 2 years or less as designated below.

- 1) Audit of the conformance of facility operation to provisions contained within the Technical Specifications and applicable license conditions at least once per year.

- 2) Audit of the adherence to procedures, training and qualification of the station staff at least once per year.
- 3) Audit of the results of actions taken to correct deficiencies occurring in facility equipment, structures, systems, or methods of operation that affect nuclear safety at least once per 6 months.
- 4) Audit of the performance of activities required by the Quality Assurance Program to meet the Criteria of Appendix "B" 10 CFR 50.
- 5) Audit of the Facility Emergency Plan and implementing procedures at least once per year.
- 6) Audit of the Facility Security Plan and implementing procedures at least once per year.
- 7) Audit onsite and offsite reviews.
- 8) Audit of Facility Fire Protection Program and implementing procedures at Least once per 24 months.
- 9) The radiological environmental monitoring program and the results thereof at least once per 12 months.
- 10) The ODCM and implementing procedures at least once per 24 months.
- 11) The PCP and implementing procedures for solidification of radioactive waste at least once per 24 months.
- 12) Report all findings of noncompliance with NRC requirements and recommendations and results each audit to the Station Manager, Assistant Vice President and General Manager Nuclear Stations, Manager of Quality Assurance, Vice President of Nuclear Operations, and to the Executive Vice President of Construction, Production, and Engineering.

c. Authority

The Manager of Quality Assurance and the Supervisor of the Offsite Review and Investigative Function reports to the Chairman and President. Either the Manager of Quality Assurance or the Supervisor of the Offsite Review and Investigative Function has the authority to order unit shutdown or request any other action which he deems necessary to avoid unsafe plant conditions.

d. Records

- 1) Reviews, audits, and recommendations shall be documented and distributed as covered in 6.1.G.1.a and 6.1.G.1.b.
- 2) Copies of documentation, reports, and correspondence shall be kept on file at the station.

e. Procedures

Written administrative procedures shall be prepared and maintained for the offsite reviews and investigative functions described in Specifications 6.1.G.1.a. Those procedures shall cover the following:

- 1) Content and method of submission of presentations to the Supervisor of the Offsite Review and Investigative Function.
- 2) Use of committees and consultants.
- 3) Review and approval.
- 4) Detailed listing of items to be reviewed.
- 5) Method of (1) appointing personnel, (2) performing reviews, investigations, (3) reporting findings and recommendations of reviews and investigations, (4) approving reports, and (5) distributing reports.
- 6) Determining satisfactory completion of action required based on approved findings and recommendations reported by personnel performing the review and investigative function.

f. Personnel

- 1) The persons, including consultants, performing the review and investigative function, in addition to the Supervisor the Offsite Review and Investigative Function, shall have expertise in one or more of the following disciplines as appropriate for the subject or subjects being reviewed and investigated:
 - a) nuclear power plant technology.
 - b) reactor operations.
 - c) utility operations.
 - d) power plant design.
 - e) reactor engineering.
 - f) radiological safety.
 - g) reactor safety analysis.
 - h) instrumentation and control.
 - i) metallurgy.
 - j) any other appropriate disciplines required by unique characteristics of the facility.

- 2) Individuals performing the Review and Investigative Function shall possess a minimum formal training and experience as listed below for each discipline.
 - a) Nuclear Power Plant Technology
Engineering graduate or equivalent with 5 years experience in the nuclear power field design and/or operations.
 - b) Reactor Operations
Engineering graduate or equivalent with 5 years experience in nuclear power plant operations.
 - c) Utility Operations
Engineering graduate or equivalent with at least 5 years of experience in utility operation and/or engineering.
 - d) Power Plant Design
Engineering graduate or equivalent with at least 5 years of experience in power plant design and/or operation.
 - e) Reactor Engineering
Engineering graduate or equivalent. In addition, at least 5 years of experience in nuclear plant engineering, operation, and/or graduate work in nuclear engineering or equivalent in reactor physics is required.
 - f) Radiological Safety
Engineering graduate or equivalent with at least 5 years of experience in radiation control and safety.
 - g) Reactor Safety Analysis
Engineering graduate or equivalent, with at least 5 years of experience in nuclear engineering.
 - h) Instrumentation and Control
Engineering graduate or equivalent with at least 5 years of experience in instrumentation and control design and/or operation.
 - i) Metallurgy
Engineering graduate or equivalent with at least 5 years of experience in the metallurgical field.

- 3) The Supervisor of the Offsite Review and Investigative Function shall have experience and training which satisfy ANSI N18.1-1971 requirements for plant managers.

2. The Onsite Review and Investigative Function shall be supervised by the Station Manager.

- a) Onsite Review and Investigative Function

The Station Manager shall: (1) provide direction for the Review and Investigative Function and appoint the Technical Staff Supervisor, or other comparably qualified individual as a senior participant to provide appropriate directions, (2) approve participants for this function; (3) assure that a complement of more than one participant who collectively possess background and qualifications in the subject matter under review are selected to provide comprehensive interdisciplinary review coverage under this function; (4) independently review and approve the findings and recommendations developed by personnel performing the Review and Investigative Function; (5) report all findings of noncompliance with NRC requirements, and provide recommendations to the Assistant Vice President and General Manager Nuclear Stations and

the Supervisor of the Offsite Review and Investigative Function; and (6) submit to the Offsite Review and Investigative Function for concurrence in a timely manner, those items described in Specification 6.1.G.1.a which have been approved by the Onsite Review and Investigative Function.

The responsibilities of the Personnel performing this function are stated below:

- 1) Review of (1) procedures required by Specification 6.2 and changes thereto and (2) any other proposed procedures or changes thereto as determined by the Station Manager to affect nuclear safety.
- 2) Review of all proposed tests and experiments that affect nuclear safety.
- 3) Review of all proposed changes to the Technical Specifications.
- 4) Review of all proposed changes or modifications to plant systems or equipment that affect nuclear safety.
- 5) Investigation of all noncompliance with NRC requirements and shall prepare and forward a report covering evaluation and recommendations to prevent recurrence to the Assistant Vice President and General Manager Nuclear Stations and to the Supervisor of the Offsite Review and Investigative Function.
- 6) Review of facility operations to detect potential safety hazards.
- 7) Performance of special reviews and investigations and reports thereon as requested by the Supervisor of the Offsite Review and Investigative Function.
- 8) Review of the Station Security Plan and shall submit recommended changes to the Assistant Vice President and General Manager Nuclear Stations.
- 9) Review of the Emergency Plan and station implementing procedures and shall submit recommended changes to the Assistant Vice President and General Manager Nuclear Stations.
10. Review of reportable events and actions taken to prevent recurrence.
11. Review of any unplanned on-site release of radioactive material to the environs, including the preparation and forwarding of reports covering evaluation recommendations and disposition of the corrective action to prevent recurrence to the Assistant Vice President and General Manager Nuclear Stations, and to the Supervisor of the Offsite Review and Investigative Function.
12. Review of changes to the PCP and ODCM, and major changes to the radwaste treatment systems.

b. Authority

The Technical Staff Supervisor is responsible to the Station Manager and shall make recommendations in a timely manner in all area of review, investigations, and quality control phases of plant maintenance, operation, and administrative procedures relating to facility operations and shall have the authority to request the action necessary to ensure compliance with rules, regulations and procedures when in his opinion such action is necessary. The Station Manager shall follow such recommendations or select a course of action that is more conservative regarding safe operation of the facility. All such disagreements shall be reported immediately to the Assistant Vice President and General Manager Nuclear Stations and the Supervisor of the Offsite Review and Investigative Function.

c. Records

- 1) Reports, reviews, investigations, and recommendations shall be documented with copies to the Assistant Vice President and General Manager Nuclear Stations, the Supervisor of the Offsite Review and Investigative Function, the Station Manager, and the Manager of Quality Assurance.
- 2) Copies of all records and documentation shall be kept on file at the station.

d. Procedures

Written administrative procedures shall be prepared and maintained for conduct of the Onsite Review and Investigative function. These procedures shall include the following:

- 1) Content and method of submission and presentation to the Station Manager, Assistant Vice President and General Manager Nuclear Stations, and the Supervisor of the Offsite Review and Investigative Function.
- 2) Use of committees when necessary.
- 3) Review and approval.
- 4) Detailed listing of items to be reviewed.
- 5) Procedures for administration of the quality control activities.
- 6) Assignment of responsibilities.

e. Personnel

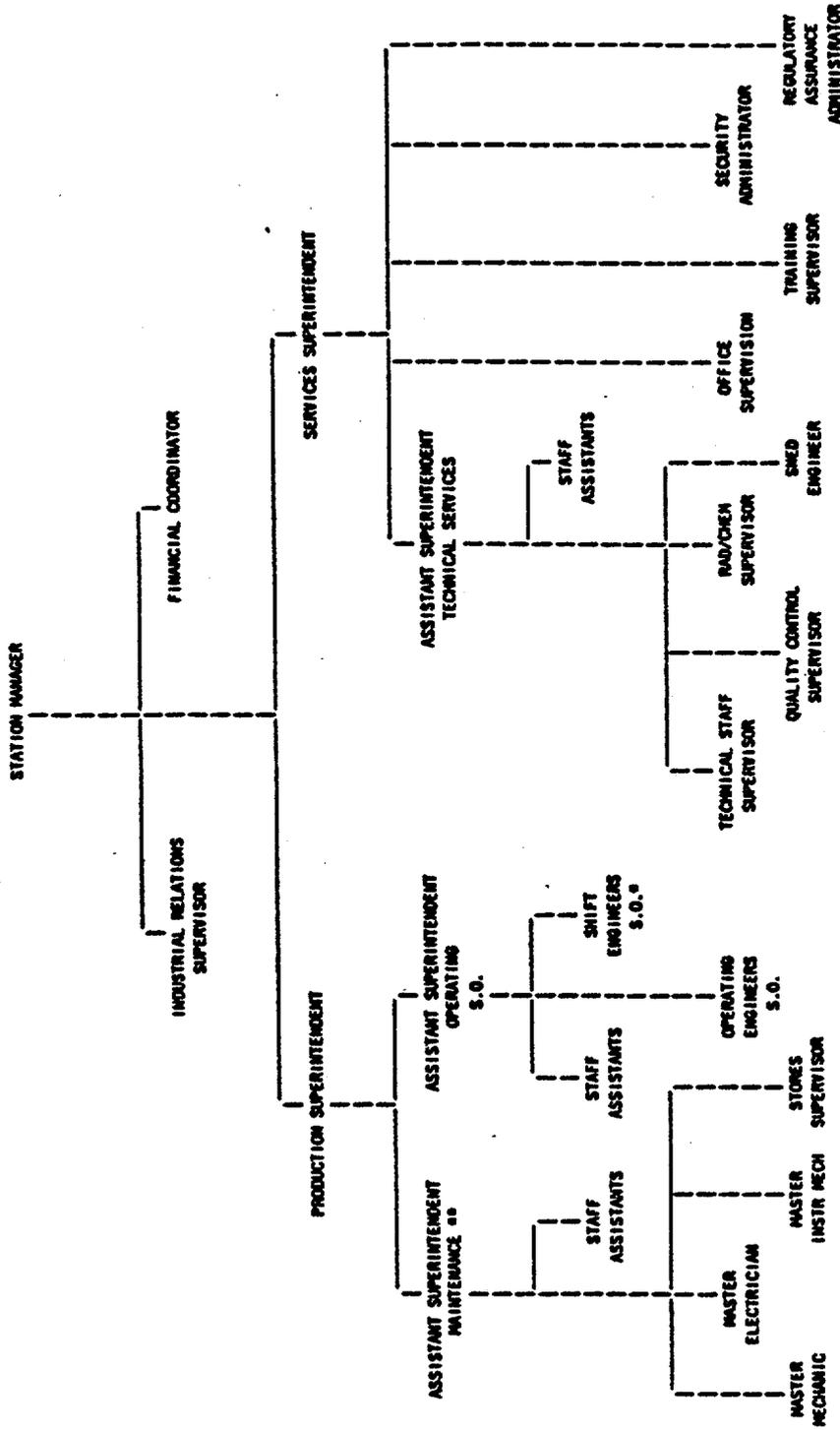
- 1) The personnel performing the Onsite Review and Investigative Function, in addition to the Station Manager shall consist of persons having expertise in:
 - a) nuclear power plant technology.
 - b) reactor operations.
 - c) reactor engineering.
 - d) radiological safety and chemist.
 - e) instrumentation and control, and
 - f) mechanical and electric systems.
- 2) Personnel performing the Onsite Review and Investigative Function shall meet minimum acceptable levels as described in ANSI N18.1 1971, Sections 4.2 and 4.4.

H. Fire Protection Program

An independent fire protection and loss prevention program inspection and audit shall be performed at least once per 12 months utilizing either qualified offsite licensee personnel or an outside fire protection firm.

An inspection and audit of the fire protection and loss prevention program shall be performed by a qualified outside fire consultant at least once per 36 months.

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S.O. - Senior Operator's License
 * - For number per shift, see "Shift Rearing Chart", Figure 6.1-3
 ** - Responsible for implementing the Fire Protection Program

Quad-Cities Station Organization
Figure 6.1-2

MINIMUM SHIFT MANNING CHART#

License Category	CONDITION OF ONE UNIT (No Fuel in Second Unit)		
	Initial Fuel Loading or During Refueling	Cold Shutdown or Refueling Shutdown	Above Cold Shutdown
Senior Operator License	2	1	2
Operator License	2	2	3
Rad. Prot. Man	1	1	1
Non-Licensed	(As Required)	1	2
Shift Technical Advisor	None Required	None Required	1

License Category	CONDITION OF SECOND UNIT (One Unit at Hot Shutdown or at Power)		
	Initial Fuel Loading or During Refueling	Cold Shutdown or Refueling Shutdown	Above Cold Shutdown
Senior* Operator License	2	2	2
Operator* License	3	3	3
Rad. Prot. Man	1	1	1
Non-Licensed	3+ (As Required)	3	4
Shift Technical Advisor	1	1	1

License Category	CONDITION OF SECOND UNIT (One Unit at Cold Shutdown or Refueling Shutdown)		
	Initial Fuel Loading or During Refueling	Cold Shutdown or Refueling Shutdown	Above Cold Shutdown
Senior* Operator License	2	1	2
Operator* License	3	2	3
Rad. Prot. Man	1	1	1
Non-Licensed	3+ (As Required)	3	3
Shift Technical Advisor	None Required	None Required	1

* Assumes each individual is licensed on each facility. During initial fuel loading or during refueling, one senior engineer (limited license) will supervise fuel handling.

Shift crew composition may be less than the minimum requirements for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on duty shift crew members provided immediate action is taken to restore the shift crew composition to within the minimum requirements of Figure 6.1-3.

Figure 6.1-3

6.2 PLANT OPERATING PROCEDURES

- A. Detailed written procedures, including applicable checkoff lists covering items listed below shall be prepared, approved, and adhered to:
1. Normal startup, operation, and shutdown of the reactor, and other systems and components involving nuclear safety of the facility.
 2. Refueling operations.
 3. Actions to be taken to correct specific and foreseen potential malfunctions of systems or components, including responses to alarms, suspected primary system leaks, and abnormal reactivity changes.
 4. Emergency conditions involving potential or actual release of radioactivity - "Generating Station Emergency Plan" and station emergency and abnormal procedures.
 5. Instrumentation operation which could have an affect on the safety of the facility.
 6. Preventive and corrective maintenance operations which could have an affect on the safety of the facility.
 7. Surveillance and testing requirements.
 8. Tests and experiments.
 9. Procedure to ensure safe shutdown of the plant.
 10. Station Security Plan and implementation procedures.
 11. Fire Protection Program implementation.
 12. ODCM implementation.
 13. PCP implementation.
 14. Working hours of the Shift Engineer, Station Control Room Engineer, Shift Foreman and the Nuclear Station Operator job classifications such that the heavy use of overtime is not routinely required.
- B. Radiation control procedures shall be maintained, made available to all station personnel, and adhered to. The procedures shall show permissible radiation exposure and shall be consistent with the requirements of 10 CFR 20. This radiation protection program shall be organized to meet the requirements of 10 CFR 20.
- C.
1. Procedures for items identified in Specification 6.2-A and any changes to such procedures shall be reviewed and approved by the Operating Engineer and the Technical Staff Supervisor in the areas of operation or fuel handling and by Asst. Supt. Maintenance and Technical Staff Supervisor in the areas of plant maintenance and plant inspection. Procedures for items identified in Specification 6.2.B and any changes to such procedures shall be reviewed and approved by the Technical Staff Supervisor and the Radiation-Chemistry Supervisor. At least one person approving each of the above procedures shall hold a valid senior operator's license. In addition, these procedures and changes thereto must have authorization by a Station Superintendent before being implemented.
 2. Work and instruction type procedures which implement approved maintenance or modification procedures shall be approved and authorized by the Asst. Supt. Maintenance where the written authority has been provided by a Station Superintendent. The "Maintenance Modification Procedure" utilized for safety related work shall be so approved only if procedures referenced in the "Maintenance Modification Procedure" have been approved as required by 6.2.A. Procedures which do not fall within the requirement of 6.2.A or 6.2.B may be approved by the Department Heads.
- D. Temporary changes to procedures 6.2.A and 6.2.B above may be made provided:
1. The intent of the original procedure is not altered.
 2. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's license on the unit affected.

3. The change is documented, reviewed on the Onsite Review and Investigative Function, and approved by the Station Manager within 14 days of implementation.
- E. Drills of the emergency procedures described in Specification 6.2.A. shall be conducted in accordance with the GSEP Manual.

6.3 REPORTABLE EVENT ACTION

- A. The following actions shall be taken for Reportable Events:
 1. The Commission shall be notified and a report submitted pursuant to the requirements of Section 50.73 of 10 CFR Part 50.
 2. Each Reportable Event shall be reviewed by the On-Site Review Committee, and the results of this review shall be submitted to the Off-Site Review and Investigative Function and to the Assistant Vice President and General Manager, Nuclear Stations.

6.4 ACTION TO BE TAKEN IN THE EVENT A SAFETY LIMIT IS EXCEEDED

If a safety limit is exceeded, the reactor shall be shut down immediately, and reactor operation shall not be resumed until authorized by the NRC. The conditions of shutdown shall be promptly reported to the Assistant Vice President and General Manager Nuclear Stations or his designated alternate. The incident shall be reviewed pursuant to Specifications 6.1.G.1.a. and 6.1.G.2.a and a separate report for each occurrence shall be prepared in accordance with Specification 6.3.A.1.

6.5 PLANT OPERATING RECORDS

- A. Records and/or logs relative to the following items shall be kept in a manner convenient for review and shall be retained for at least 5 years.
1. Records of normal plant operation, including power levels and periods of operation at each power level.
 2. Records of principal maintenance and activities, including inspection and repair, regarding principal items of equipment pertaining to nuclear safety.
 3. Records and reports of reportable events and safety limit occurrences.
 4. Records and periodic checks, inspection and/or calibrations performed to verify that the surveillance requirements (see Section 4 of these specifications) are being met (all equipment failing to meet surveillance requirements and the corrective action taken shall be recorded).
 5. Records of changes made to the equipment or reviews of tests and experiments to comply with 10 CFR 50.59.
 6. Records of radioactive shipments.
 7. Records of physics tests and other tests pertaining to nuclear safety.
 8. Records of changes to operating procedures.
 9. Shift engineers' logs, and
 10. Byproduct material inventory records and source leak test results.
- B. Records and/or logs relative to the following items shall be recorded in a manner convenient for review and shall be retained for the life of the plant.
1. Substitution or replacement of principal items of equipment pertaining to nuclear safety.
 2. Changes made to the plant as it is described in the SAR.
 3. Records of new and spent fuel inventory and assembly histories.
 4. Updated, corrected, and as-built drawings of the plant.
 5. Records of plant radiation and contamination surveys.
 6. Records of offsite environmental monitoring surveys.
 7. Records of radiation exposure for all plant personnel including all contractors and visitors to the plant, in accordance with 10 CFR 20.
 8. Records of radioactivity in liquid and gaseous wastes released to the environment.
 9. Records of transient or operational cycling for those components that have been designed to operate safely for a limited number of transient or operational cycles.
 10. Records of individual staff members indicating qualifications, experience, training, and retraining.
 11. Inservice inspections of the reactor coolant system; and
 12. Minutes of meetings and results of reviews and audits performed by the offsite and onsite review and audit functions.
 13. Records for Environmental Qualification which are covered under the provisions of paragraph 6.7.

6.6 REPORTING REQUIREMENTS

In addition to the applicable reporting requirements of Title 10, Code of Federal Regulations, the following identified reports shall be submitted to the administrator of the appropriate Regional Office unless otherwise noted.

A. Routine Reports

1. Startup Report

A summary report of plant startup and power escalation testing shall be submitted following (1) receipt of an operating license, (2) amendment to the license involving a planned increase in power level, (3) installation of fuel that has a different design or has been manufactured by a different fuel supplier, and (4) modifications that may have significantly altered the nuclear, thermal, or hydraulic performance of the plant. The report shall address each of the tests identified in the SAR and shall in general include a description of the measured values of the operating conditions or characteristics obtained during the test program and a comparison of these values with design predictions and specifications. Any corrective actions that were required to obtain satisfactory operation shall also be described. Any additional specific details required in license conditions based on other commitments shall be included in this report.

Startup reports shall be submitted within (1) 90 days following completion of the startup test program, (2) 90 days following resumption or commencement of commercial power operation, or (3) 9 months following initial criticality, whichever is earliest. If the startup report does not cover all three events (i.e., initial criticality, completion of startup test program, and resumption or commencement of commercial power operation), supplementary reports shall be submitted at least every 3 months until all three events have been completed.

2. A tabulation shall be submitted on an annual basis of the number of station utility and other personnel (including contractors) receiving exposures greater than 100 mrem/yr and their associated man rem exposure according to work and job function (Note: this tabulation supplements the requirements of Section 20.407 of 10 CFR 20), e.g., reactor operations and surveillance, inservice inspection, routine maintenance, special maintenance (describe maintenance), waste processing, and refueling. The dose assignments to various duty functions may be estimates based on pocket dosimeter, TLD, or film badge measurements. Small exposures totaling less than 20% of the individual total dose need not be accounted for. In the aggregate, at least 80% of the total whole body dose received from external sources shall be assigned to specific major work functions.

3. **Monthly Operating Report**

Routine report of operating statistics and shutdown experience shall be submitted on a monthly basis to the Director, Office of Management Information and Program Control, U.S. Nuclear Regulatory Commission, Washington, DC 20555, with a copy to the appropriate Regional Office, to arrive no later than the 15th of each month following the calendar month covered by the report. In addition, any changes to the ODCM shall be submitted with the Monthly Operating Report within 90 days of the effective date of the change.

A report of major change to the radioactive waste treatment systems shall be submitted with the Monthly Operating Report for the period in which the evaluation was reviewed and accepted by the onsite review function. If such change is re-evaluated and not installed, notification of cancellation of the change should be provided to the MRC.

B. Unique Reporting Requirements

1. Radioactive Effluent Release Report (Semi-Annual)

A semi-annual report shall be submitted to the Commission within 60 days after January 1 and July 1 of each year specifying the quantity of each of the radionuclides released to unrestricted areas in liquid and gaseous effluents during the previous 6 months. The format and content of the report shall be in accordance with Regulatory Guide 1.21 (Revision 1) dated June, 1974. Any changes to the PCP shall be included in this report.

2. Environmental Program Data (Annual Report)

An annual report containing the data taken in the standard radiological monitoring program (Table 4.8-4) shall be submitted prior to May 1 of each year. The content of the report shall include:

- a. Results of all environmental measurements summarized in the format of Regulatory Guide 4.8 Table 1 (December 1975). (Individual sample results will be retained at the Station). In the event that some results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. Summaries, interpretations, and analysis of trends of the results are to be provided.
- b. As assessment of the monitoring results and radiation dose via the principal pathways of exposure resulting from plant emissions of radioactivity including the maximum noble gas gamma and beta air doses in the unrestricted area. The assessment of radiation doses shall be performed in accordance with the Offsite Dose Calculation Manual (ODCM).
- c. Results of the census to determine the locations of nearest residences and of nearby animals producing milk for human consumption.

(Table 4.8-4).
- d. The reason for the omission if the nearest dairy to the station is not in the monitoring program (Table 4.8-4).
- e. An annual summary of meteorological conditions concurrent with the releases of gaseous effluents in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability.
- f. The results of the Interlaboratory Comparison Program described in section 3.8.D.7.
- g. The results of the 40 CFR 190 uranium fuel cycle dose analysis for each calendar year.
- h. A summary of the monitoring program, including maps showing samplings locations and tables giving distance and direction of sampling locations from the Station.

3. If a confirmed measured radionuclide concentration in an environmental sampling medium averaged over any calendar quarter sampling period exceeds the reporting level given in Table 4.8-5 and if the radioactivity is attributable to plant operation, a written report shall be submitted to the Administrator of the MRC Regional Office, with a copy to the Director, Office of Nuclear Reactor Regulation, within 30 days from the end of the quarter.

- a. When more than one of the radionuclides in Table 4.8-5 are detected in the medium, the reporting level shall have been exceeded if

$$\sum \frac{C_i}{R.L.i} > 1$$

where C_i is the average quarterly concentration of the i^{th} radionuclide in the medium and RL is the reporting level of radionuclide i .

- b. If radionuclides other than those in Table 4.8-5 are detected and are due to plant effluents, a reporting level is exceeded if the potential annual dose to an individual is equal to or greater than the design objective doses of 10 CFR 50, Appendix I.
- c. This report shall include an evaluation of any release conditions, environmental factors, or other aspects necessary to explain the anomalous effect.
4. Special Reports

Special Reports shall be submitted as indicated in Table 6.6-1.

TABLE 6.6-1
SPECIAL REPORTS

<u>Area</u>	<u>Specification Reference</u>	<u>Submittal Date</u>
a. Secondary containment leak rate test (1)	4.7.C	Upon completion of each test.
b. Summary status of fuel performance	1.1 Bases	After each refueling outage.
c. Materials radiation surveillance specimens	4.6.B.2	After each specimen removal and completion of analyses.
d. Radioactive Source Leak Testing (2)	4.8.F.	Annual Report
e. Special Effluents Reports	3.8.A. 3.8.B. 3.8.D. 6.6.C.3	30 days following occurrence.

NOTES

1. Each integrated leak rate test of the secondary containment shall be the subject of a summary technical report. This report should include data on the wind speed, wind direction, outside and inside temperatures during the test, concurrent reactor building pressure, and emergency ventilation flow rate. The report shall also include analyses and interpretations of those data which demonstrate compliance with the specified leak rate limits.
2. This report is required only if the tests reveal the presence of 0.005 microcuries or more of removable contamination.

6.7 ENVIRONMENTAL QUALIFICATION

- A. All safety-related electrical equipment in the facility shall be qualified in accordance with the provisions of: Assistant of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors" (DOR Guidelines); or, NUREG-0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment", December 1979. Copies of these documents are attached to Order for Modification of License DPR-30 dated October 24, 1980.
- b. Complete and auditable records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified.

Order dated 10/24/80
Amendment No. 84, 97



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 100 TO FACILITY OPERATING LICENSE NO. DPR-29
AND AMENDMENT NO. 97 TO FACILITY OPERATING LICENSE NO. DPR-30
COMMONWEALTH EDISON COMPANY
AND
IOWA-ILLINOIS GAS AND ELECTRIC COMPANY
QUAD CITIES NUCLEAR POWER STATION, UNITS 1 AND 2
DOCKET NOS. 50-254/265

1.0 INTRODUCTION

By letter dated February 17, 1983, the licensee, Commonwealth Edison Company, proposed changes to Section 6, Administrative Controls, of the Technical Specifications (TS) for Quad Cities Units 1 and 2. On August 29, 1983, in Federal Register, Vol. 48, No. 168, the Commission amended its regulations, 10 CFR 50.72 and 50.73, to revise immediate reporting requirements and to establish a new reporting system for significant events at nuclear power plants. On December 19, 1983, the Division of Licensing issued Generic Letter No. 83-43, "Reporting Requirements of 10 CFR 50, Sections 50.72 and 50.73, and Standard Technical Specifications (STS), informing all licensees of the revision to Section 50.72, Immediate Notification Requirements, and the addition of a new Section 50.73, Licensee Event Report System. Licensees were requested to update their TSs to include the new requirements, and model STS were provided showing the revisions that should be made in the "Administrative Controls" and "Definitions" sections. The letter also requested the licensees to review and update other areas of the TS concerning reportability, as required.

By letter dated August 23, 1984, the licensee again submitted proposed amendments with revisions to Facility Licenses DPR-29 and DPR-30. The proposed amendments contained several miscellaneous changes to the facilities' TS and (1) changes to reporting requirements to reflect the requirements of 10 CFR 50.73, (2) changes to position titles and organizational changes, (3) additional Senior Operator (SO) requirements of 10 CFR 50.54(m)(2)(i) and (ii), (4) changes to reflect the current NRC organization, (5) corrections of miscellaneous descriptions, grammar and typographical errors.

After our initial review of the August 23, 1984 and February 17, 1983 applications, the licensee, by letter dated January 20, 1986, submitted a revised TS amendment proposal which consolidated the requested changes in the aforementioned letters and addressed minor concerns identified during the initial review.

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This safety evaluation is a review of the requested changes submitted in the January 20, 1986, submittal and their impact on the operation and administration of plant activities.

2.0 EVALUATION

The changes proposed by the licensee are administrative in nature and do not adversely affect the safety of the plant nor the general public. Some of the changes modify the TS to conform with 10 CFR 50.54 and 10 CFR 50.73 for shift manning and reporting requirements, respectively. Revised organization charts for the licensee and associated text changes are also incorporated.

- A. Changes to Reporting Requirements (TS Sections 3.12/4.12.A.2.b; 3.12/4.12.B.2; 3.12/4.12.C.4 for Unit 2; 3.12/4.12.C.3 for Unit 1; 3.12/4.12.D.5; 6.1.G.a.7; 6.1.G.f.2.a.10; 6.3.A.1 and deletion of 6.6.B)

The above tabulated sections of the TS are revised to require that reports be submitted per the requirements of 10 CFR 50.73. Report content is revised to include a description of actions taken associated with inoperable equipment. In addition, former sections describing previous requirements (TS section 6.6.B) are deleted and the word "event" replaces the word "occurrence."

These changes bring the facilities into conformance with 10 CFR 50.73, and are therefore acceptable.

- B. Changes to Position Titles and Organization (TS Sections 6.1.C; 6.1.D; 6.1.G; 6.1.G.a; 6.1.G.1.a.10; 6.1.G.1.b; 6.1.G.1.b.12; 6.1.G.1.c; 6.1.G.1.f.2.a; 6.1.G.f.2.a.1; 6.1.G.f.2.a.5; 6.1.G.f.2.a.8; 6.1.G.f.2.a.9; 6.1.G.f.2.a.11; 6.1.G.f.2.b; 6.1.G.f.2.c; 6.1.G.f.2.d.1; 6.1.G.f.2.e; 6.2.A.14; 6.2.C.1; 6.2.D.3; 6.3.A.2; 6.4; Figures 6.1-1 and 6.1-2)

Figure 6.1-1, "Corporate Organization," and Figure 6.1-2, "Station Organization," have been revised. These changes reflect the current Commonwealth Edison (CECo) organization as depicted in CECo Quality Assurance Manual, Revision 12. Changes reflecting new titles delineated in the organization charts are made. The changes are appropriate and in agreement with the Quality Assurance Manual, and are therefore acceptable.

- C. Shift Manning Requirements (TS Table 6.1-3)

The table delineating minimum shift manning requirements is revised to agree with the requirements of 10 CFR 50.54(m)(2)(i) and (ii). The TS is revised to increase the number of SOs per the guidance specified in 10 CFR 50.54, and is therefore acceptable.

D. Designation of NRC Regional Administrator (6.6.C.3)

The word "Administrator" replaces the former designation of "Director" to properly reflect this NRC organizational change in the TS. This change is therefore acceptable.

- E. Miscellaneous Grammatical and Typographical Errors (TS Sections 1.0.AA through 1.0.HH; 6.1.B; 6.1.C; 6.1.D; 6.1.F; 6.1.G.1.b.5; 6.1.G.1.b.6; 6.1.G.f.2.d.2; 6.4; 6.5.A.3; 6.6.C; Table 6.6-1) The majority of these changes address renumbering TS sections due to the deletion of the reportable occurrences and changing the term "reportable occurrences" to "reportable events." Several of these changes elaborate on the qualifications of members of the plant staff which, although addressed in various regulations, standards and previous correspondence, were previously not included in the TS. The requirement for reporting Economic Generation Control System performance at the completion of initial testing has been met, so the current requirement which is delineated in Table 6.6-1 is therefore deleted, and the change is therefore acceptable.

F. Clarification of Environmental Qualification Requirements (TS Section 6.7)

Section 6.7 has been changed to reflect Environmental Qualification (EQ) Requirements which were in place at the time of application. These changes are therefore acceptable. In a future TS change submittal, the EQ TS should be requested to be deleted since the EQ rule has been established in 10 CFR 50.49. The record keeping portion of the new TS is, however, referenced in TS 6.5.B.13.

3.0 ENVIRONMENTAL CONSIDERATION

This amendment relates to changes in recordkeeping, reporting, or administrative procedures or requirements. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(10). Pursuant to 10 CFR 51.22(b), no environmental impact statement nor environmental assessment need be prepared in connection with the issuance of this amendment.

4.0 CONCLUSION

The staff has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (2) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributors: Patricia L. Eng, T. Rotella

Dated: February 2, 1987