November 18, 1991

Docket Nos. 50-254
and 50-265

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Mr. Thomas J. Kovach
Nuclear Licensing Manager
Commonwealth Edison Company-Suite 300
OPUS West III
1400 OPUS Place
Downers Grove, Illinois 60515

Dear Mr. Kovach:

SUBJECT: ISSUANCE OF AMENDMENTS (TAC NOS. M81560 AND M81561)

The Commission has issued the enclosed Amendment No. 133 to Facility Operating License No. DPR-29 and Amendment No. 128 to Facility Operating License No. DPR-30 for the Quad Cities Nuclear Power Station, Units 1 and 2, respectively. The amendments are in response to your application dated September 24, 1991.

The amendments change Technical Specification 4.8.H.2.b(2) which defines a differential temperature criteria for the control room emergency filtration system heater. The proposed change establishes a differential temperature requirement based upon flow.

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

Sincerely,

R. Barrett for

Leonard N. Olshan, Project Manager
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 133 to DPR-29
2. Amendment No. 128 to DPR-30
3. Safety Evaluation

cc w/enclosures:
See next page

*see previous page for concurrence

OFFICIAL RECORD COPY
DOCUMENT NAME: [AMENDMENT 81560/61]

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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. 133
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 September 24, 1991, 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:

B. Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 133 , 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

Richard J. Barrett, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 18, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 133

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	INSERT
3.8/4.8-20	3.8/4.8-20

2) In-place test the charcoal adsorber banks with halogenated hydrocarbon tracer to verify leak tight integrity.

3) Remove one carbon test canister from the charcoal adsorber. Subject this sample to a laboratory analysis to verify methyl iodide removal efficiency.

b. The results of in-place halogenated hydrocarbon tests at 2000 cfm (± 10%) on the charcoal banks shall show ≤ 1% penetration.

b. At least once per operating cycle, but not to exceed 18 months, the following conditions shall be demonstrated:

1) Pressure drop across the combined filters is less than 6 inches of water at 2000 cfm (± 10%) flow rate.

2) Operability of inlet heater demonstrates heater ΔT determined by the following formula: $\Delta T \geq 28.5-(0.0075F)$; where ΔT is the differential temperature and F is the flow (cfm) at which the test is performed.

c. The results of laboratory carbon sample analysis shall show ≥ 90% methyl iodide removal efficiency when tested at 130°C and 95% R.H.

3. Postmaintenance Requirements

a. After any maintenance or heating that could affect the HEPA filter or HEPA filter mounting frame leaked tight integrity, the results of the in-place DOP tests at 2000 cfm (± 10%) on HEPA filters shall show ≤ 1% DOP penetration.

3. Postmaintenance Testing

a. After any maintenance or testing that could affect the leak tight integrity of the HEPA filters, perform in-place DOP tests on the HEPA filters in accordance with Specification 3.8.H.2.a.

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. 128
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 September 24, 1991, 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-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. 128 , 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

Richard J. Barrett, Director
Project Directorate III-2
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: November 18, 1991

ATTACHMENT TO LICENSE AMENDMENT NO. 128

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	INSERT
3.8/4.8-14b	3.8/4.8-14b

3) Remove one carbon test canister from the charcoal absorber. Subject this sample to a laboratory analysis to verify methyl iodine removal efficiency.

b. At least once per operating cycle, but not to exceed 18 months, the following conditions shall be demonstrated:

1) Pressure drop across the combined filters is less than 6 inches of water at 2000 cfm (±10%) flow rate.

2) Operability of inlet heater demonstrates heater ΔT determined by the following formula:
$\Delta T \geq 28.5-(0.0075F)$;
where ΔT is the differential temperature and F is the flow (cfm) at which the test is performed.

3. Postmaintenance Requirements

a. After any maintenance or heating that could affect the HEPA filter or HEPA filter mounting frame leak-tight integrity, the results of the in-place DOP tests at 2000 cfm (± 10%) on HEPA filters shall show ≤ 1% DOP penetration.

b. After any maintenance or testing that could affect the charcoal absorber leaktight integrity, the results of in-place halogenated hydrocarbon tests at 2000 cfm (± 10%) shall show ≤ 1% penetration.

3. Postmaintenance Testing

a. After any maintenance or testing that could affect the leaktight integrity of the HEPA filters, perform in-place DOP tests on the HEPA filters in accordance with Specification 3.8.H.2.a.

b. After any maintenance or testing that could affect the leaktight integrity of the charcoal absorber banks, perform halogenated hydrocarbon tests on the charcoal absorbers in accordance with Specification 3.8.H.2.b.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 133 TO FACILITY OPERATING LICENSE NO. DPR-29

AND AMENDMENT NO. 128 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 AND 50-265

1.0 INTRODUCTION

By submittal dated September 24, 1991, Commonwealth Edison Company (the licensee) proposed a Technical Specification (TS) change for Quad Cities Nuclear Power Station, Units 1 and 2. Specifically, the licensee requested to change TS 4.8.H.2.b(2), which defines a differential temperature criteria for the control room emergency filtration system (CREFS) heater's operability requirement. The licensee is requesting a variable differential temperature criteria that is a function of the air flow rate as opposed to a constant differential temperature criteria that is presently being used.

2.0 EVALUATION

The CREFS safety function is to ensure that the operators are adequately protected from the effects of an accidental release of toxic and radioactive gases and that the nuclear power plant can be operated safely or shut down under design basis accident conditions as required by General Design Criteria (GDC) 19. The CREFS consists of a roughing filter, an electrical heater, a pre-HEPA filter, a charcoal adsorber, a post-HEPA filter, two 100% booster fans, a fire suppression v[illegible]e, and inlet and outlet dampers. The CREFS heater is required to ensure that air at the inlet of the charcoal adsorber has a relative humidity (RH) of less than 70%. This is necessary so that the maximum removal efficiency of radioactive iodine is achieved by the charcoal adsorber.

Current TS 4.8.H.2.b(2) requires that the heater produce a change in air temperature (ΔT) of 15°F in order to demonstrate that the heater is operable. The ΔT of 15°F ensures that the RH of the air at the inlet of the charcoal adsorber is less than 70%. The TS ΔT requirement of 15°F is independent of the air flow rate. The licensee has proposed a TS change which requires the differential temperature change to be dependent upon air flow rate. The proposed TS change is based upon the ΔT necessary to maintain a RH of less

than 70% at a given flow rate. The licensee has determined a ΔT ranging from 15°F to 12°F, depending upon the flow rate, that will ensure a RH of less than 70%. In its rationale for the proposed TS change, the licensee stated that ΔT is a linear function between 1800 cubic feet per minute (cfm) and 2200 cfm (assuming a constant heater output at different flows). Therefore, the ΔT limit can be determined by the following formula:

$$\Delta T \geq 28.5 - (0.0075F)$$

where F is the air flow rate (in cfm) and ΔT is expressed in °F.

The design basis criteria for the CREFS heater is to ensure the RH at the inlet of the charcoal adsorber is less than 70%. The proposed TS change considers the most limiting climatic conditions of 95°F wet bulb (95°F and RH 100%) to establish the ΔT boundary. With an air flow rate of 2200 cfm at 95°F wet bulb, a ΔT of 12°F is necessary to change the RH from 100% to 70%. At 1800 cfm, a ΔT of 15°F is needed to demonstrate that the heater is producing the same power needed to change a flow of 2200 cfm from 100% to 70%. However, when climatic conditions are less severe, a ΔT of 12°F at 2200 cfm will reduce the RH to some value less than 70%. For example a wet bulb temperature of 78°F requires a ΔT of approximately 10.8°F to change the RH from 100% to 70% at 2200 cfm, a ΔT of 12°F would yield a RH of approximately 67%. Published climatic conditions contained in the ASHRAE Handbook of Fundamentals indicate that the wet bulb temperature in the Quad Cities area is below 78°F approximately 99% of the time. Specifically, during 1990, the wet bulb temperature at Quad Cities airport was greater than 78°F approximately 1.75% of the time. The maximum wet bulb temperature during 1990 was 82°F and this occurred approximately 0.14% of the time. From the weather data and the bounding conditions used it is evident that a sufficient margin to ensure a RH of less than 70% is built into the proposed TS change.

In order to ensure that the RH at the inlet of the charcoal adsorber is less than 70%, with worst case conditions, the heater must deliver at least 8.14 kW under full range conditions (1800 cfm to 2200 cfm). However, in order to meet TS requirements under all inlet conditions (-10°F to 95°F) the heater must deliver 10.1 kW. The heater must deliver more power at lower temperatures to heat the cold, dense air to the required ΔT, however the RH is much lower than 70% when the required ΔT is reached.

At the nominal voltage of 480V AC, the 12 kW heater provides approximately 50% margin to design basis requirement (RH less than 70%) and a 20% margin to the TS requirement. To ensure the heater can produce the necessary output to meet the TS requirements the licensee has analyzed the effects of degraded voltage on the heater's performance. Under worst-case conditions which include a loss-of-coolant accident (LOCA), loss of off-site power on Unit 2, with all auxiliary power on Unit 1 and emergency loads on Unit 2 fed from the Unit 1 auxiliary transformer, without emergency power supplied from the emergency diesel generators and assuming maximum summer thermal loads will cause the 480V AC bus to degrade to 381.6V AC. The resultant heater output at this voltage (381.6V AC) would be 7.58 kW, which would result in a RH of 72% at worst

case conditions and a flow of 2200 cfm. At 95°F the heater output would produce a ΔT of 12°F and RH of 70% for approximately 93% of the flow conditions. The licensee has stated that, based upon calculations that indicated the charcoal adsorber efficiency is not impacted until the RH reaches 90%, a slight increase in RH due to the postulated degraded voltage conditions would have a negligible impact upon the charcoal adsorber's efficiency. Therefore, the heater should be able to provide the output necessary to achieve the TS ΔT requirements. Since the proposed TS change still ensures a RH of less than 70% at the inlet of the charcoal adsorber, it allows the CREF system to achieve its safety objective.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Illinois State official was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (56 FR 51937). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

Based upon the above findings, the staff concludes that the licensee's proposed changes to Quad Cities, Units 1 and 2, TS 4.8.H.2.b(2) dealing with the differential temperature criteria for the control room emergency filtration system heater are acceptable and, therefore, should be granted.

The Commission 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, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Flanders

Date: November 18, 1991