

AUG 15 1972

Docket Nos. 50-254 and 50-265

~~CONFIDENTIAL~~

Commonwealth Edison Company  
ATTN: Mr. Byron Lee, Jr.  
Assistant to the President  
P. O. Box 767  
Chicago, Illinois 60690

Gentlemen:

In response to your application dated July 7, 1972, as supplemented by letter dated August 3, 1972, enclosed are Amendments Nos. 4 and 2 to Facility Operating Licenses Nos. DPR-29 and DPR-30, respectively. These amendments authorize operation of the Quad-Cities Nuclear Power Station Units 1 and 2 each continuously at steady state power levels up to 2260 Mwt (90% of rated power) with the diffuser-pipe system in operation, and extend the licenses to October 30, 1973.

Because of the numerous changes to the Technical Specifications, including the nonradiological specifications, the Technical Specifications are being reissued in their entirety (with the amendments) as Change No. 3.

A copy of a notice regarding the issuance of these amendments, that is being filed with the Office of the Federal Register for publication, and a copy of the Commission's Discussion and Conclusions of Environmental Impact also are enclosed for your information.

Sincerely,

Original Signed By  
R. C. DeYoung

*for* A. Giambusso, Deputy Director  
for Reactor Projects  
Directorate of Licensing

Enclosures:

1. Amendment No. 4 to License  
No. DPR-29
2. Amendment No. 2 to License  
No. DPR-30
3. Federal Register Notice
4. Discussion and Conclusions

cc w/enclosures:  
See next page

AUG 15 1972

cc w/enclosures:

Mr. Charles Whitmore  
President and Chairman  
Iowa-Illinois Gas and Electric  
Company  
206 East Second Avenue  
Davenport, Iowa 52801

John W. Rowe, Esquire  
Isham, Lincoln & Beale  
Counselors at Law  
One First National Plaza, 42nd Floor  
Chicago, Illinois 60670

Distribution

- W. Dooly, DR
- RO (3)
- H. K. Shapar, OGC
- N. Dube, L (5)
- J. R. Buchanan, ORNL
- H. J. McAlduff, OROO
- T. W. Laughlin, DTIE
- AEC PDR
- Local PDR
- Docket File
- Branch Reading
- L Reading - RP Reading
- ACRS (16)
- J. Saltzman, L:OAI
- F. L. Ingram, OIS
- R. L. Leith, OC
- H. I. Mueller, GMR/H
- C. Hebron
- R. Boyd, L
- R. DeYoung, L
- R. Tedesco, L
- G. Lainas, L
- C. Long, L
- M. Karman, OGC
- M. Rowden, OGC
- A. A. Wells, ASLB
- N. H. Goodrich, ASLB
- D. J. Skovholt, L
- T. J. Carter, L
- D. L. Ziemann, L

*J. Riesland advised  
CEC (Byron de) that  
these amendments were  
signed. Re sigs  
8/15/72  
at 2:30 on 8/15/72*

*M. Grotenhuis, L:EP  
W. O. Miller, DL:AD  
J. I. Riesland, L  
R. M. Diggs, L  
Bernadine Scharf, DR (15)  
M. Jinks, DR (2)*

*1st paragraph of  
8/72 discussions per  
conclusions per J. Riesland  
8/9/72*

**EPRQ**  
9  
N. Grotenhuis  
8/2/72

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SURNAME ▶	RMDiggs:dc	JIRiesland	DLZiemann	MK 8/2/72	DJSkovholt	AGianbusso
DATE ▶	8/1/72	8/2/72 and 8/9/72	8/2/72 8/14/72	8/2/72	8/2/72 8/14/72	8/15/72

COMMONWEALTH EDISON COMPANY

AND

IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

DOCKET NO. 50-254

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 4  
License No. DPR-29

The Atomic Energy Commission (the Commission) having found that:

- a. the application dated July 7, 1972, as supplemented by letter dated August 3, 1972, for the license amendment complies with the requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
- b. there is reasonable assurance (i) that the activities authorized by this operating license, as amended, for operation at power levels not to exceed 2260 megawatts (thermal) with the diffuser-pipe system in operation can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;
- c. the issuance of this amendment for operation at power levels not to exceed 2260 megawatts (thermal) will not be inimical to the common defense and security or to the health and safety of the public;
- d. considering and balancing the factors as prescribed in the Commission's regulations in 10 CFR Part 50, Appendix D, Section D.3, the balance of such factors warrants the issuance of this license amendment.

Facility Operating License No. DPR-29, as amended, issued to Commonwealth Edison Company (Commonwealth Edison) and Iowa-Illinois Gas and Electric Company (Iowa-Illinois) is hereby further amended as indicated below:

1. Delete paragraphs 3.A and 3.B in their entirety and replace with:

"3.A Maximum Power Level

Commonwealth Edison is authorized to operate Quad-Cities Unit

No. 1 continuously at power levels not in excess of 2260 megawatts

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(thermal), 90% of the rated power level of Unit No. 1 with the diffuser-pipe system in operation."

- 2. Delete paragraph 3.C and replace with the following as paragraph 3.B:

"3.B Technical Specifications

The Technical Specifications contained in Appendices 'A and B' to this license, appended hereto as Change No. 3, are hereby incorporated in this license as the Technical Specifications. Commonwealth Edison shall operate the facility at the power level specified in condition 3.A of this license in accordance with these Technical Specifications. Commonwealth Edison may make changes in the Technical Specifications only when authorized by the Commission in accordance with the provisions of Section 50.59 of 10 CFR Part 50."

- 3. Delete paragraph 5 and replace with:

"5. This license is effective as of the date of issuance, and shall expire at midnight, October 30, 1973, unless extended for good cause shown or upon the earlier issuance of a superseding licensing action."

- 4. Change the "Enclosures" at the end of the license to read:

"Enclosures:  
Appendices A and B -- Technical Specifications"

This amendment is effective as of its date of issuance.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed By  
R. C. DeYoung

for A. Giambusso, Deputy Director  
for Reactor Projects  
Directorate of Licensing

Date of Issuance:

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COMMONWEALTH EDISON COMPANY

AND

IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

DOCKET NO. 50-265

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 2  
License No. DPR-30

The Atomic Energy Commission (the Commission) having found that:

- a. the application dated July 7, 1972, as supplemented by letter dated August 3, 1972, for the license amendment complies with the requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
- b. there is reasonable assurance (i) that the activities authorized by this operating license, as amended, for operation at power levels not to exceed 2260 megawatts (thermal) with the diffuser-pipe system in operation can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the rules and regulations of the Commission;
- c. the issuance of this amendment for operation at power levels not to exceed 2260 megawatts (thermal) will not be inimical to the common defense and security or to the health and safety of the public;
- d. considering and balancing the factors as prescribed in the Commission's regulations in 10 CFR Part 50, Appendix D, Section E.3, the balance of such factors warrants the issuance of this license amendment.

Facility Operating License No. DPR-30, as amended, issued to Commonwealth Edison Company (Commonwealth Edison) and Iowa-Illinois Gas and Electric Company (Iowa-Illinois) is hereby further amended as indicated below:

1. Delete paragraphs 3.A and 3.B in their entirety and replace with:

"3.A Maximum Power Level

~~Commonwealth Edison is authorized to operate Quad-Cities Unit~~  
No. 2 continuously at power levels not in excess of 2260 megawatts

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(thermal), 90% of the rated power level of Unit No. 2 with the diffuser-pipe system in operation."

- 2. Delete paragraph 3.C and replace with the following as paragraph 3.B:

"3.B Technical Specifications

The Technical Specifications contained in Appendices 'A and B' to this license, appended hereto as Change No. 3, are hereby incorporated in this license as the Technical Specifications. Commonwealth Edison shall operate the facility at the power level specified in condition 3.A of this license in accordance with these Technical Specifications. Commonwealth Edison may make changes in the Technical Specifications only when authorized by the Commission in accordance with the provisions of Section 50.59 of 10 CFR Part 50."

- 3. Delete paragraph 5 and replace with:

"5. This license is effective as of the date of issuance, and shall expire at midnight, October 30, 1973, unless extended for good cause shown or upon the earlier issuance of a superseding licensing action."

- 4. Change the "Enclosures" at the end of the license to read:

"Enclosures:  
Appendices A and B -- Technical Specifications"

This amendment is effective as of its date of issuance.

FOR THE ATOMIC ENERGY COMMISSION

Original Signed By  
R. C. DeYoung

*f* A. Giambusso, Deputy Director  
for Reactor Projects  
Directorate of Licensing

Date of Issuance: AUG 15 1972

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UNITED STATES ATOMIC ENERGY COMMISSION

DOCKET NOS. 50-254 AND 50-265

COMMONWEALTH EDISON COMPANY

AND

IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

(QUAD-CITIES UNITS 1 AND 2)

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

Notice is hereby given that the Atomic Energy Commission (the Commission) has issued Amendments Nos. 4 and 2 to Facility Operating Licenses Nos. DPR-29 and DPR-30, respectively. These licenses authorize the Commonwealth Edison Company and the Iowa-Illinois Gas and Electric Company to possess, use and operate the Quad-Cities Nuclear Power Station Units 1 and 2 (both single-cycle, boiling water reactors and located in Rock Island County, Illinois) each at steady state power levels up to ~~(1) 620 megawatts (thermal) at any time, (2) 1550 megawatts (thermal) when, in the judgment of the system load dispatcher, total demand is likely to exceed available capacity and other power sources are not available to meet system load demand, and (3) 2260 megawatts (thermal) if, after exhausting all means reasonably available, system load demand requires the facility to exceed 1550 megawatts (thermal).~~

The amendments that are the subject of this notice authorize Commonwealth Edison Company (acting for itself and Iowa-Illinois Gas and Electric Company) to operate Units 1 and 2 of the Quad-Cities Nuclear Power Station each at continuous power levels up to 2260 megawatts (thermal) <sup>with absolute limitations</sup> with the diffuser.

pipe system in operation. The amendments are effective as of the date

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of issuance since the diffuser-pipe system has been put into operation as noted in Commonwealth Edison Company's letter to the Commission dated August 3, 1972. The amendment also extends the licenses expiration date from September 15, 1972, to October 30, 1973, unless extended for good cause shown or upon the earlier issuance of a superseding licensing action.

The Commission has found that the application for the license amendment complies with the requirements of the Atomic Energy Act of 1954, as amended, and the Commission's regulations in 10 CFR Chapter I, and has made the remainder of the findings as set forth in the amendments and has concluded that the issuance of these license amendments will not be inimical to the common defense and security or to the health and safety of the public. The Commission also has found that (1) considering and balancing the factors as described in the Commission's regulations in 10 CFR Part 50, Appendix D, Section D.3, the balance of such factors warrants the issuance of these amendments, (2) the emergency demands for power in the area served by the Station warrant the issuance of these amendments, and (3) that the addition of and operation with the diffuser-pipe system provides protection to the environment prior to installation of the spray canals addressed in Commonwealth's Supplement 5 (dated April 24, 1972) to its Environmental Report for Quad-Cities Units 1 and 2. This Supplement and the Commission's analysis thereof, issued as Addendum I (dated June 1972) to its Draft Detailed Statement on Environmental Considerations, were noticed in the Federal Register on June 9, 1972 (37 F.R. 11598), and provided 30 days for comments.

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Notice of AEC Consideration of Issuance of Facility Operating Licenses for operation of each of the Quad-Cities Units 1 and 2 at 2511 megawatts (thermal), full-power, was published in the Federal Register on March 16, 1971 (36 F.R. 5008). However, licenses for full-power have not been issued pending review of the additional environmental considerations, including the balancing of factors, required by the September 9, 1971 revision of Appendix D to 10 CFR Part 50. On March 9, 1972, the Commission's Draft Detailed Statement on Environmental Considerations (which discusses, among other things, the diffuser-pipe system) was published in the Federal Register (37 F.R. 5073), and thereafter on March 24, 1972, a Supplementary Notice of AEC Consideration of Issuance of Facility Operating Licenses was published in the Federal Register (37 F.R. 6142). The supplementary notices provided 30 days for intervention on the environmental aspects of the operation of Quad-Cities Units 1 and 2. No request for a hearing by the applicants or petition for leave to intervene by any interested person have been filed following publication of the Notice of Consideration of Issuance of Facility Operating Licenses on March 16, 1971, and the publication of the supplementary notice thereby permitting the licensing actions that are herein being noticed.

For further information concerning these actions, see copies of the following items which are available for public inspection at the Commission's Public Document Room at 1717 H Street, N.W., Washington, D. C., and at the Moline Public Library at 504 - 17th Street, Moline, Illinois 61265: (1) Amendment No. 4 to Facility Operating License No. DPR-29 and Amendment No. 2

	to Facility Operating License No. DPR-30, (2) Change No. 3 to the Technical				
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Specifications (a reissuance of the Technical Specifications in their entirety) concurrently issued as part of Amendments 4 and 2, (3) Commonwealth Edison Company and Iowa-Illinois Gas and Electric Company's application for the amendments dated July 7, 1972, and supplement thereto dated August 3, 1972, (4) the Commission's Safety Evaluation for the Quad-Cities Units 1 and 2 dated August 25, 1971, (5) the report of the Advisory Committee on Reactor Safeguards dated March 9, 1971, (6) the Discussion and Conclusions of Environmental Impact by the USAEC Directorate of Licensing concerning the Proposed Issuance of Licenses to the Commonwealth Edison Company and Iowa-Illinois Gas and Electric Company dated May 4, 1972, (7) the Discussion and Conclusions pursuant to Appendix D to 10 CFR Part 50 dated January 24, 1972, and Supplement 1 thereto dated March 31, 1972, (8) the Commission's Draft Detailed Statement of Environmental Considerations dated March 6, 1972, and Addendum I thereto issued June 1972, and (9) the Discussion and Conclusions of Environmental Impact by the USAEC Directorate of Licensing concerning the Issuance of Licenses dated August 1972. A copy of each of the above items, except for item (3), may be obtained, as supply lasts, upon request sent to the Atomic Energy Commission, Washington, D. C. 20545, Attention: Deputy Director for Reactor Projects, Directorate of Licensing.

Dated at Bethesda, Maryland, this **AUG 15 1972**

FOR THE ATOMIC ENERGY COMMISSION

Original Signed By

*R.C. DeYoung*  
 R. C. DeYoung, Deputy Director  
 for Reactor Projects  
 Directorate of Licensing

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DISCUSSION AND CONCLUSIONS  
OF ENVIRONMENTAL IMPACT  
BY THE  
U. S. ATOMIC ENERGY COMMISSION  
DIRECTORATE OF LICENSING  
CONCERNING THE ISSUANCE OF LICENSES  
TO THE  
COMMONWEALTH EDISON COMPANY AND THE  
IOWA-ILLINOIS GAS AND ELECTRIC COMPANY  
FOR TEMPORARY OPERATION OF  
QUAD-CITIES NUCLEAR POWER STATION UNITS 1 AND 2  
DOCKET NOS. 50-254, 50-265

Issued August 1972

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## INTRODUCTION

On July 7, 1972 the Commonwealth Edison Company and the Iowa-Illinois Gas Company (applicants) in a letter from Mr. Byron Lee, Jr. to Mr. John F. O'Leary requested that the Quad-Cities Nuclear Power Station Units 1 and 2 (station) operating licenses be amended to authorize continuous operation of each of the units at 2260 Mwt, 90 percent of their rated capacity, after the diffuser-pipe is in operation. The applicants further requested that these amendments extend the effective date of the station licenses until such time as the AEC review process is completed and a final decision is entered as to full term licenses.

The application of the Commonwealth Edison Company and the Iowa-Illinois Gas and Electric Company (applicants) for licenses to operate the Quad-Cities Nuclear Power Station Units 1 and 2 (station) is presently under consideration by the Atomic Energy Commission (Commission) regulatory staff (AEC staff). Appendix D of 10 CFR Part 50 to the Commission's Regulations, which implements the National Environmental Policy Act of 1969 (NEPA), establishes procedures for an environmental review of such facilities. On March 6, 1972, the Draft Detailed Statement on the Environmental Considerations required by Appendix D was issued and circulated for comment.

Appendix D provides a procedure in Section D.3 for issuance of an interim operating license authorizing the loading of fuel in the reactor core and limited operation of the facility. This procedure may be applied to applications for an operating license for a nuclear facility for which the Commission published a notice of opportunity for hearing prior to October 31, 1971, and no hearing was requested. The limited license may be issued by the Commission, pending the completion of an ongoing NEPA environmental review of a full-power license application, upon a showing that such licensing action will not have a significant adverse impact on the quality of the environment, or after considering and balancing the factors described in Section D.2 of Appendix D, and upon the Commission's making appropriate findings on the matters specified in 10 CFR Part 50.57(a); provided, however, that operation beyond 20 percent (20%) of full power will not be authorized except in emergency situations or other situations where the public interest so requires. Any license so issued will be without prejudice to subsequent licensing action which may be taken by the Commission with regard to the environmental aspects of the facility, and any license issued will be conditioned to that effect.

This Discussion and Conclusions is based primarily on the Draft Detailed Statement on the Environmental Considerations issued on March 6, 1972. It is noted that on March 27, 1972 the applicants have entered into an agreement with the plaintiffs to the litigation in the U. S. District Court for the District of Columbia, The Isaac Walton League of America et al. vs. James Schlesinger et al.; People of the State of Illinois et al vs. U. S. Atomic Energy Commission et al.; Civil Action Nos. 2207-71 and 2208-71. On April 4, 1972 the Iowa Conservation Commission granted a permit to construct the diffuser-pipe.

On April 25, 1972 the Illinois Pollution Control Board issued an opinion and supplemental order that permitted a variation from the state water quality standards on an emergency basis until the diffuser is installed and operating but no later than August 15, 1972. It is further noted that on March 31, 1972, Facility Operating License No. DPR-29 was amended and No. DPR-30 was issued to Units 1 and 2 respectively to permit operation of each unit at power levels up to 502 Mwt, 20 percent of rated power.

On May 12, 1972 Operating Licenses DPR-29 and DPR-30 were amended to authorize operation of each of the station units to a power level of up to 2260 Mwt, 90 percent of rated power, to meet emergency power demands. These amendments will expire on September 15, 1972 unless extended for good cause shown or upon earlier issuance of superseding licensing action.

#### CONCLUSIONS\*

The Regulatory Staff is required to review the proposed operation of Units 1 and 2 as indicated above in the framework of the following factors specified in 10 CFR Part 50, Appendix D Section D.2:

"(a) Whether it is likely that limited operation during the prospective review period will give rise to a significant, adverse impact on the environment; the nature and extent of such impact, if any; and whether redress of any such adverse environmental impact can reasonably be effected should modification or termination of the limited license result from the ongoing NEPA review.

\* These conclusions are pursuant to 10 CFR Part 50, Appendix D. Findings required by the provisions of 10 CFR Part 50.57(a) have been set forth in the Safety Evaluation dated August 25, 1971.

"(b) Whether limited operation during the prospective review period would foreclose subsequent adoption of alternatives in facility design or operation of the type that could result from the ongoing NEPA environmental review.

"(c) The effect of delay in facility operation upon the public interest. Of primary importance under this criterion are the power needs to be served by the facility; the availability of alternative sources, if any, to meet those needs on a timely basis; and delay costs to the licensee and to consumers."

The Regulatory Staff has reviewed the applicants' request and, based on evaluations set forth in the March 6, 1972, Draft Detailed Statement of the Environmental Considerations and herein, has reached the following conclusions:

a. Termination of the use of the side-jet discharge and initiating the use of the diffuser-pipe discharge will lessen the impact of the station on the aquatic biota.

b. Operation of the station under the limited license would not foreclose subsequent adoption of alternatives in the facility design or in the operation of the Station of the type that could be required as a result of the ongoing supplemental NEPA environmental review.

c. There will be an adverse effect upon the public interest as a result of delay in facility operation. The Federal Power Commission (FPC), in its December 20, 1971 letter, has stated that it is essential that these units be available for power generation by this summer. This has been reaffirmed in the March 22, 1972 FPC comments on the Draft Detailed Statement on the Environmental Considerations. The FPC letter and supporting data confirm the applicants' statements to the effect that an emergency situation exists with regard to the public need for power.

After considering and balancing of the foregoing factors and making appropriate findings on the matters specified in 10 CFR Part 50.57(a), we therefore conclude that granting of the application for the interim operation of the Station would be consistent with the emergency requirements of Section D.3 of Appendix D of 10 CFR Part 50.

The foregoing operation is contingent upon the applicants' establishing and maintaining a monitoring program as delineated in the Technical Specifications. Furthermore, the Technical Specifications require a report on

the operations to be submitted after the limited operation is concluded identifying observed environmental effects and means to assist recovery of the environmental damage.

Any license for limited operation of the station will be without prejudice to subsequent licensing action which may be taken by the Commission.

### STATEMENT OF ENVIRONMENTAL CONSIDERATIONS

#### A. Biological Effects

##### 1. Heat Removal System Effects

###### a. Condenser Cooling Water Intake:

Regardless of the power level of operation, the ecological considerations of the water intake system discussed in the Draft Environmental Statement (V.C.2.a-1, p. 75) are applicable to this proposed license, assuming that all six intake pumps operate at full capacity (2270 cfs). Any reduced level of pumping would tend to reduce the impact of the water intake system. The staff concludes that the mechanical screening devices (floating barrier, trash racks, and traveling screens) will not prevent motile aquatic organisms from entering the intake canal and establishing "residence" in the canal, or protect some of the less-motile species from potential destruction due to impingement on travelling screens or condenser entrainment. These problems will occur to some extent which is not readily quantifiable, and determination of the degree of occurrence and the need for remedial action will be required by the Commission as part of the applicant's environmental surveillance program.

###### b. Condenser Passage:

In passing through the condensers and the discharge system, entrained organisms will be subjected to mechanical, thermal (up to 23°F temperature increase) and chlorine damage (intermittent). These effects are not readily separable from each other under routine operation.

When intake temperatures are relatively high (June, July, Aug., Sept.), maximum thermal damage to entrained organisms is expected and the potential exists for > 20 percent mortality of river plankton (based on low river

flows and maximum intake flow). However, studies conducted by Bio-Test Labs at the Riverside Generating Station (Pool 15)<sup>1</sup> showed that during May, June and July 1971, a  $\Delta T$  of up to 8°C (15°F) resulted in less than 10 percent mortality of entrained zooplankton. Other studies discussed in the Draft Environmental Statement indicate that although significant plankton mortality may occur at higher  $\Delta T$ 's (100 percent for fish larvae and >20 percent for zooplankton), no quantifiable adverse effects were observed on the aquatic system.

Based on the above considerations and the discussion in the Draft Environmental Statement (V.C.2.a-2, p. 76), the staff concludes that even if 100 percent of the condenser entrained plankton are lost (maximum of 20 percent of river plankton during low flow periods), a reduction in the number of species or individuals immediately downstream may occur, but the overall community structure of Pool 14 will not be adversely affected. However, the applicants will be required to determine the effects (immediate and long-term) of condenser entrainment on river biota and the community structure of Pool 14.

#### c. Condenser Cooling Water Discharge

The discharge of condenser cooling water from the diffuser-pipe will result in nearly complete mixing within 600 feet downstream. The resulting temperature increase after complete mixing will never exceed 5°F and will be only 1 to 2°F above ambient most of the time. This is based on the modeling studies as discussed in the Draft Environmental Statement (III.D.1.c-2, p. 44).

Organisms drifting downstream past the diffuser will be subjected to rather sudden increases in temperature (up to 23°F at full Station power) and turbulence. Fish attracted to the warmed diffuser discharge area will potentially be subjected to cold shock should the Station undergo a rapid shut down although this potential cold shock is not as likely to be as severe during the summer months as it would be during the winter months. In addition, such fish may be exposed to water supersaturated with gases, resulting in the development of gas-bubble disease. The possibilities of such damage will be taken into account by the applicants' monitoring program as indicated in the Technical Specifications.

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<sup>1</sup>Beer, L.P., and Pipes, W.O., A Practical Approach to the Preservation of the Aquatic Environment: the Effects of Discharge of Condenser Water into the Mississippi River, Commonwealth Edison Company, Chicago, Illinois 1968, 210 pp.

The staff concludes that the diffuser-pipe condenser cooling water discharge has a smaller environmental impact on the aquatic biota because it disperses the heat more rapidly throughout the river and has a smaller high-temperature-zone than the side-jet. Since the high temperature zone is likely to be the zone of maximum biological effect, the diffuser minimizes the above effects more than any other once-through cooling system. However, the diffuser-pipe, or any once-through cooling system after complete mixing, raises the temperature of the river. This temperature increase may tend to change the temperature character of the lower half of Pool 14 to the downstream pools of corresponding temperatures.

The applicants will be required, as indicated in the Technical Specifications, to determine the dimensions of the thermal plumes resulting from operation of the diffuser. In addition, the effects of discharged diffuser water on plankton and fish will be evaluated by the applicants.

## 2. Chlorination Effects

Sodium hypochlorite solution is added intermittently (40-minute periods, three times/day) to the condenser cooling water to reduce the growth of microorganisms in the system. Chlorine is known to be toxic to aquatic life. We have reviewed the literature as indicated in the Draft Detailed Statement and observed measurements of chlorine residual at the Station. The foregoing indicate to us that well-controlled chlorination, involving the mixing of chlorinated streams with larger volumes of unchlorinated water in the discharge system, can lead to little or no chlorine discharge to the rivers and lakes. However, there are no known published data which definitely establish this position. Because of the uncertainty involved and to assure that the environment is adequately protected, the applicants will be required to monitor for residual chlorine and its effects on the aquatic biota so that remedial action may be taken if necessary. The applicants will establish a test program to relate the total residual chlorine at the point of discharge to the sodium hypochlorite input and the monitored condenser concentration. The sodium hypochlorite input will be controlled such that the monitored condenser cooling water discharge level of total residual chlorine does not exceed 0.1 ppm for a cumulative period of time, not to exceed two hours per day.

No adverse effects are expected to result from the chlorination procedures to be utilized. However, the staff concludes that chlorine levels must be regulated as indicated in the Technical Specifications.

## B. RADIOLOGICAL EFFECTS

### 1. Normal Operation

As discussed in the Draft Detailed Statement (section V.D., p. 87) the staff has concluded that the releases of radioactive materials during full power operation of the Station will contribute only an extremely small

increment to the dose that area residents receive from natural background radiation. Since fluctuations in this background exceed this small increment, the dose will be immeasurable itself and constitute no meaningful risk. The staff has further concluded that there will be no adverse effects on species other than man due to radiation exposure caused by operation of the Station. Operation under the proposed interim license would result in lower average power, the fuel would be newer and less subject to failure, the fission product inventory would be lower, and consequently there would be a lesser environmental impact than at steady state fuel power operation.

## 2. Accidents

As discussed in the Draft Detailed Statement (section VI.A. p. 98), the staff has concluded that the environmental risks due to postulated radiological accidents are exceedingly small at full power operation. Operation under the proposed license will be with new fuel at a lower average power and consequently a lesser potential environmental impact.

### C. ADDITIONAL CONSTRUCTION EFFECTS

All construction needed for the requested testing and operation has been completed as confirmed by onsite review by AEC inspectors. Therefore, there will be no further impact on the environment from construction associated with this operation.

### D. OTHER EFFECTS

No new or spent fuel will be shipped for the requested operation, so there will be no environmental impact related to transportation. Similarly, no additional transmission lines are needed for this operation, so this will not lead to further environmental impact. The only other potential effect identified is that related to transportation of solid wastes. The Draft Detailed Statement (Section V.E., p. 91 and VI.B., p. 104) discusses this possibility for normal fuel power operation and finds that the risks to the general public would not result in a significant exposure to radiation.

### E. REDRESS OF IMPACTS

As indicated in the Draft Environmental Statement (section V.C.2., p. 73) the environmental impacts from the proposed operation are expected to involve mainly aquatic life and to be recoverable. The nature of these impacts, though not readily quantifiable, are such that full redress can be expected. That is, fish may relocate or benthic organisms be replaced

by other types, but resumption of normal temperatures will permit the reversal of these impacts. The staff has concluded that redress from the above effects can be expected.

F. FORECLOSURE OF ALTERNATIVES

The station is completed and already in the process of being tested up to 90 percent of full power under licenses DPR-29 and 30. No additional changes are proposed in connection with the requested amendment of the license which would lead to foreclosure of subsequent adoption of alternatives in facility design or operation of the types that could result from the ongoing NEPA review. The principal alternatives still practicable for the station appear to be those associated with the condenser cooling water system, and the ongoing development of the alternate cooling systems is not contingent upon the activities in the requested amendment. These alternatives are still being evaluated by the staff in the ongoing NEPA review.

G. VERIFICATION OF ENVIRONMENTAL IMPACTS

Any amended license issued to the applicants will include requirements for monitoring and evaluation programs to insure the necessary operating limitations to protect the environment are met. The applicants will be required to report the results of this program at the end of the period of operation under this amended license.

EFFECT OF DELAY

The staff discussion in the Draft Detailed Statement (I.A., p.1) points out the need for power. On the basis of the review of the data submitted by the applicants and the support of this data by the FPC, the staff has concluded that the effect of the delay of placing the Quad-Cities Station in service would lead to a serious power shortage in the area served by the station in the summer of 1972. FPC comments on the Draft Environmental Statement (March 22, 1972) reaffirm the urgency of getting the station on line and indicate that the Commonwealth Edison Company has a reserve margin of only 5.4 percent without Quad-Cities units or the Zion unit.

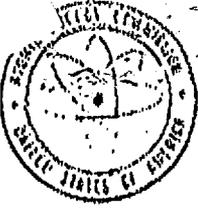
The Commonwealth Edison Company's reserve margin had been projected to be 23.5 percent. The Iowa Gas and Electric Company would have a deficit without the Quad-Cities power. However, these effects are spread over a much larger area through the applicants' participation in the MAIN power planning group and the Iowa Power pool; thus, the effects of delay are also spread over a larger area than that served by the applicants.

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UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

August 14, 1972

URGENT



File

CONSENT CALENDAR ITEM: LICENSE FOR CONTINUOUS OPERATION  
AT 90% RATED POWER FOR QUAD CITIES  
UNITS 1 AND 2 (DOCKET NOS. 50-254  
AND 50-265) (SECY-R-511)

SECY:GF

The Commissioners' approvals or statements of no objection  
have been received on this item.

The Director of Licensing is taking the appropriate action.

H. B. McCoy  
Secretary of the Commission

- cc:
- Chairman Schlesinger
- Commissioner Ramey
- Commissioner Larson
- Commissioner Doub
- General Manager
- Deputy Gen. Mgr.
- Exec. Asst. to GM
- General Counsel
- Controller
- Dir., Info. Serv.
- Dir., Insp.
- Dir., Ofc. of Plan. & Anal.
- Asst. GM for Admin.
- Dir. of Regulation
- Deputy Dir. of Reg.
- Asst. Dir. of Reg.
- Dir., Ofc. of Admin.
- Spec. Asst. to Dir. of Reg.
- Asst. Gen. Counsel for L&R
- Dir. of Reg. Operations
- Dir. of Licensing
- Dep. Dir. for Reactor Proj.

*Please deliver to Jean Cooper  
Ext 7585 immediately.*

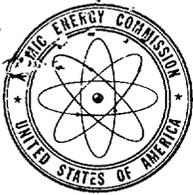
URGENT

OFFICIAL USE ONLY

CONSENT CALENDAR ITEM

Consent Requested By: \_\_\_\_\_

This memorandum proposes amendments to the operating licenses for the Quad-Cities Nuclear Power Station Units 1 and 2. The amendments are required by the addition of a diffuser-pipe condenser cooling water discharge to minimize the environmental impact to the Mississippi River.



UNITED STATES  
ATOMIC ENERGY COMMISSION  
WASHINGTON, D.C. 20545

Docket Nos. 50-254  
and 50-265

8/4/72

To Muntzing  
8/4/72

Chairman Schlesinger  
Commissioner Ramey  
Commissioner Larson  
Commissioner Doub

LICENSE FOR CONTINUOUS OPERATION AT 90% RATED POWER FOR QUAD CITIES  
UNITS 1 AND 2 (DOCKET NOS. 50-254 AND 50-265)

The staff proposes to issue amendments to the licenses for Quad Cities Units 1 and 2 to Commonwealth Edison Company and Iowa-Illinois Gas and Electric Company authorizing continuous operation at 90% rated power for each unit with the diffuser-pipe system in operation.

Presently, the licensees are permitted to operate each unit continuously up to 25% of rated power. The licensees are permitted to operate each unit up to 90% of rated power after exhausting all other means reasonably available to meet load demands. These limitations were required to keep thermal impact on the river to a minimum while utilizing the side jet discharge. Permission for the above operation will expire on September 15, 1972.

The enclosures contain the documents required for the proposed licensing action. The staff considers the action appropriate at this time as Commonwealth Edison Company has verified by telephone (to be followed by letter) that the diffuser-pipe system for diffusion of heated water discharged from the station into the Mississippi River has been in operation as of August 2, 1972.

L. Manning Muntzing  
Director of Regulation

*so?*  
*Consent granted*  
*Am. sent*  
*etc. etc.*  
*This is a written piece to chg in this*

*Consent granted*  
*8/14/72.*

Commissioners

-2-

Enclosures:

1. Letter to Commonwealth Edison  
Company from A. Giambusso,  
DDRP, L
2. Amendment No. 4 to License  
No. DPR-29
3. Amendment No. 2 to License  
No. DPR-30
4. Federal Register Notice
5. Discussion and Conclusions

CONTACT:

J. I. Riesland  
Directorate of Licensing  
x-7403

**MEMO ROUTE SLIP**

Form AEC-93 (Rev. May 14, 1947) AECM 0240

See me about this.  
Note and return.

For concurrence.  
For signature.

For action.  
For Information.

TO (Name and unit) R. Reid - f/conc.		INITIALS	REMARKS <del>Per a phone conversation w/ Jeanne Cook at 9:30 today (8/14/72), we have full Commission approval for issuance of the Quad-Cities amendments for 90% continuous operation. This is per her phone conversation w/ Secretariat. The written consent will follow late this afternoon.</del>
D. Skovholt - f/conc. in rev.		DATE	
TO (Name and unit) A. Giambusso - f/conc. & signs.		INITIALS	REMARKS All pages of the issuance package, except for pages 1 and 3 of the PR Notice were retyped as result of Commonwealth's letter of 8/3/72 that informed us of the diffuser-pipe system being in operation. The Technical Specifications are in the process of being reproduced since they are finalized and reproduction will take a few days.
R. Diggs -- f/Tech Specs, etc. -- Calling Mr. [unclear] Butler		DATE	Reba Diggs
FROM (Name and unit) Reba Diggs		REMARKS HOLD till get official word <i>[Signature]</i> Advised Byron Lee C.E. Co. at 2:30pm 8-15-72 what license was signed. JK	
PHONE NO. 7403	DATE 8-14-72		

USE OTHER SIDE FOR ADDITIONAL REMARKS

☆ GPO: 1971 O-42

CHECKLIST FOR ISSUANCE OF FACILITY LICENSE AMENDMENT

Applicant Commonwealth Edison Company  
Facility Quad-Cities Units 1 and 2  
Project Leader John Riesland  
Licensing Assistant Reba Diggs

Date

Notice of Intent to Issue License:  
Published in Federal Register  
Action Date 3-16-72 and 3-24-72

OR

Initial Decision or Order 5-14-72

Environmental Review:  
Final Environmental Statement (Draft ES 3/9/72 & 6/72 - Pending  
Published in Federal Register Suppl I)

Or

Mini-Review Discussion & Findings Issued 1/24/72, 3/31, 5/4 & 8/72

License Fee:  
Amount:  
Paid N/A

Indemnity Agreement:  
OAI Concurrence N/A

Regulatory Operations Final Report:  
(attach copy if available) N/A

Technical Specifications:  
RP Concurrence  
EP Concurrence 8/2/72

Public Announcement (to be released):  
(attach copy if available) 8/2/72 (attached)

Issuance Package: OGC Concurrence  
1. License Amendments 4 & 2 8/2/72 & 8/10\*  
2. Federal Register Notice " "  
3. Letter to applicant " "  
4. Letter to Joint Committee (To be done soon) " "

\*On 8/10/72 D. Ziemann told T. Eggehardt of our changes to issuance package as result of 8/3/72 from CommEd advising that diffuser-pipe system was in operation. T. Engelhardt said that

License Approved by: OGC did not need to see package again.  
R. C. DeYoung, Acting Deputy Director 8/15/72  
A. Giambusso, Deputy Director for RP Date

R.D. 8/15/72