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Docket No. 50-254

JAN 21 1977

Commonwealth Edison Company
 ATTN: Mr. R. L. Bolger
 Assistant Vice President
 Post Office Box 767
 Chicago, Illinois 60690

Gentlemen:

The Commission has issued the enclosed Amendment No. 36 to Facility Operating License No. DPR-29 for Unit No. 1 of the Quad Cities Nuclear Power Station. This amendment is in response to your request dated December 7, 1976.

This amendment authorized operation of the reactor beyond the previously analyzed end-of-cycle scram reactivity conditions and is based upon new analyses.

Copies of the Safety Evaluation and the Notice of Issuance also are enclosed.

Sincerely,

Original signed by
 Dennis L. Ziemann

Dennis L. Ziemann, Chief
 Operating Reactors Branch #2
 Division of Operating Reactors

Enclosures:

1. Amendment No. 36 to License No. DPR-29
2. Safety Evaluation
3. Notice

cc w/enclosures:
 See next page

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SURNAME →	RMDiggs	PO'Connor	M.Molkey	DLZiemann	RBaer <i>RB</i>	DEisenhut
DATE →	1/12/77	1/13/77	1/19/77	1/21/77	1/21/77	1/21/77

January 21, 1977

cc w/enclosures:

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

Mr. John W. Rowe
Isham, Lincoln & Beale
Counselors at Law
One First National Plaza, 42nd Floor
Chicago, Illinois 60603

Anthony Z. Roisman, Esquire
Roisman, Kessler and Cashdan
1025 15th Street, N. W., 5th Floor
Washington, D. C. 20005

Moline Public Library
504 - 17th Street
Moline, Illinois 61265

Chief, Energy Systems
Analyses Branch (AW-459)
Office of Radiation Programs
U. S. Environmental Protection Agency
Room 645, East Tower
401 M Street, S. W.
Washington, D. C. 20460

U. S. Environmental Protection Agency
Federal Activities Branch
Region V Office
ATTN: EIS COORDINATOR
230 South Dearborn Street
Chicago, Illinois 60604

Mr. Marcel De Jaegher, Chairman
Rock Island County Board of
Supervisors
Rock Island County Court House
Rock Island, Illinois 61201

cc w/enclosures and copy of CECo
filing dated 12/7/76:
Department of Public Health
ATTN: Chief, Division of
Radiological Health
535 West Jefferson
Springfield, Illinois 62706



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 UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 36
License No. DPR-29

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by the Commonwealth Edison Company (the licensee) dated December 7, 1976, 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, Facility Operating License No. DPR-29, as amended, is hereby further amended by revising in its entirety Paragraph 3.C thereof to read as follows:

"3.C Restriction

At the point in the fuel cycle at which the reactivity reduction rate during a scram is less than that of Curve B in Figure 1 of "Supplement B to Dresden Special Report 29" dated March 29, 1974, the reactor power level shall be limited to the power profile shown on Figure 1 of the "Quad Cities Station Unit No. 2 Proposed Amendment to Facility Operating License No. DPR-30" dated June 11, 1976. Reduced power operation, during the coastdown, shall not exceed the power vs. flow conditions defined by the nominal flow control line for the maximum coastdown power permitted by Figure 1 of the licensee's filing dated June 11, 1976." The coastdown from 100% power to 90% power and the coastdown from 90% power shall be accomplished at 100% core flow. Operation at 90% power level shall not exceed the power vs. flow conditions defined by the nominal 90% flow control line. Operation of the reactor is not permitted after the coastdown to 70% has been completed."

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

FOR THE NUCLEAR REGULATORY COMMISSION



Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors

Date of Issuance: January 21, 1977



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 36 TO FACILITY OPERATING LICENSE NO. DPR-29

COMMONWEALTH EDISON COMPANY
AND
IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

QUAD CITIES STATION UNIT NO. 1

DOCKET NO. 50-254

INTRODUCTION

By application dated December 7, 1976, Commonwealth Edison Company (CECo) requested authorization, with appropriate restrictions, for reactor power operation beyond the previously analyzed end-of-cycle scram reactivity conditions. Amendment No. 25 to Facility License No. DPR-29 issued March 12, 1976, did not authorize operation beyond that point in the fuel cycle where reactivity reduction rates during scram were less than that of the end-of-cycle curve on Figure 1.1 of the CECo letter (J. S. Abel to D. L. Ziemann) dated February 27, 1975.

DISCUSSION

As discussed in our previous Safety Evaluation, supporting Amendment No. 25, issued March 12, 1976, Quad Cities Unit No. 1 is currently authorized to operate beyond the scram reactivity reduction rate described in the generic B curve^{1/} with the power and flow conditions specified by the "Nominal Expected 90% Flow Control Line" on Figure 2.1-3 of the CECo letter (J. S. Abel to Benard C. Rusche) dated June 24, 1975.

Operation in this manner was analyzed to establish the effect of anticipated transients and accidents and normal operations. The turbine trip with failure of the bypass valves was determined to be the most limiting transient. This analysis assumed operation with the end-of-cycle "C" scram reactivity curve described in Figure 1.1 of CECo's February 27, 1975 letter (J. S. Abel to D. L. Ziemann). The analysis showed that operation

^{1/} "Dresden Station Special Report 29, Supplement B" dated March 29, 1974.

of Quad Cities Unit No. 1 with the actual end-of-cycle scram reactivity reduction rate will maintain the safety margins previously determined for anticipated transients with scram.

CECo has provided in its submittal of June 11, 1976 (filed in Docket No. 50-265 for Unit No. 2 and incorporated by reference in CECo's request dated December 7, 1976, for Unit No. 1), a reanalysis of the limiting transient, a turbine trip without bypass, at burnup conditions beyond the point in the fuel cycle at which the reactivity reduction rate during a scram (scram reactivity) is less than that of the "End-of-Cycle" curve previously provided by CECo on February 27, 1975^{2/}. This new analysis evaluated the limiting transient at reduced power levels of 90%, 80% and 70% with core average burnups of 12,593 MWd/t, 13,041 MWd/t and 13,514 MWd/t, respectively. The maximum burnup that will be achieved in any fuel assembly in Quad Cities Unit No. 1 will be less than 21,000 MWd/t. The control rods are at their fully withdrawn position for these analyses, and new scram reactivity curves^{3/} have been calculated for the three power and burnup conditions analyses. Other primary cycle dependent input parameters such as the doppler and void coefficients were recomputed for the burnup and reduced power levels used in the Unit No. 2 analysis and do not differ significantly for Unit No. 1.

The CECo analysis for operation with the new scram reactivity reduction rates^{3/} is based upon operation at 100% of rated flow during coastdown and operation on or below the nominal 90% power operation between coastdown periods. Provided that reactor operation does not exceed these boundary conditions, the results of the most severe transient, the turbine trip with failure of bypass, will be less severe than the previously analyzed and approved operating condition. The NRC staff has modified Commonwealth Edison's proposed license restriction to incorporate these boundary conditions. The maximum burnup to be achieved by any fuel assemblies during the coastdown is less than that previously approved for other similar reactors and is less than the fuel design burnup criteria for this fuel. This change has been discussed with Commonwealth Edison's representatives and has been agreed to by them.

ENVIRONMENTAL CONSIDERATION

We have determined that this amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this

^{2/} Letter J. S. Abel, CECo, to D. L. Ziemann, NRC, February 27, 1975.

^{3/} Figure 2, Quad Cities 2 EOC; All Rods Out Scram Reactivity at Rated Conditions submitted by CECo letter dated June 11, 1976.

determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of the amendment.

CONCLUSIONS

We have concluded that the proposed amendment to license for Quad Cities Unit No. 1 for operation beyond the end-of-cycle scram reactivity reduction rate curve "C" will maintain the safety margins previously determined for anticipated transients with scram.

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) 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 or to the health and safety of the public.

Date: January 21, 1977

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-254

COMMONWEALTH EDISON COMPANY AND

IOWA-ILLINOIS GAS AND ELECTRIC COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY
OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 36 to Facility Operating License No. DPR-29, issued to Commonwealth Edison Company (acting for itself and on behalf of the Iowa-Illinois Gas and Electric Company) (the licensee), for operation of the Quad Cities Unit No. 1 (the facility) located in Rock Island County, Illinois. The amendment is effective as of its date of issuance.

The amendment authorized operation of the reactor beyond the previously analyzed end-of-cycle scram reactivity conditions in accordance with Commonwealth Edison's request dated December 7, 1976.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. Prior public notice of this amendment was not required since the amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment will not result in any significant environmental impact and that pursuant to 10 CFR 51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of this amendment.

For further details with respect to this action, see (1) the application for amendment dated December 7, 1976, (2) the licensee's filing dated June 11, 1976, in Docket No. 50-265, (3) Amendment No. 36 to DPR-29, and (4) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at the Moline Public Library, 504 - 17th Street, Moline, Illinois 60265. A single copy of items (3) and (4) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 21st day of January, 1977.

FOR THE NUCLEAR REGULATORY COMMISSION



Dennis L. Ziemann, Chief
Operating Reactors Branch #2
Division of Operating Reactors