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JUL 5 1974

Docket No. '50-219

Jersey Central Power & Light Company  
ATTN: Mr. I. R. Finfrock, Jr.  
Vice President - Generation  
Madison Avenue at Punch Bowl Road  
Morristown, New Jersey 07960

STeets  
JRRiesland  
SKari  
WOMiller  
BScharf (15)  
TJCarter  
ACRS (16)  
PCollins

Gentlemen:

The Commission has issued the enclosed Amendment No. 5 to Facility License No. DPR-16. This Amendment includes Change No. 21 to the Technical Specifications, Appendix A, and is in response to your request dated July 3, 1974.

This amendment allows operation of the reactor for a specified period of time under the following conditions: (1) reactor power up to 50% rated power and (2) oxygen concentration greater than 5% in the primary containment. The specified period is 24 hours, from 10:15 p.m., July 2, 1974 until 10:15 p.m., July 3, 1974.

The Safety Evaluation Report and the Federal Register Notice relating to this action are also enclosed.

Sincerely,

Original Signed

Karl R. Goller, Assistant Director  
for Operating Reactors  
Directorate of Licensing

Enclosures:

- 1. Amendment No. 5
- 2. Safety Evaluation Report
- 3. Federal Register Notice

ccs: See next page

bccs: JRBuchanan, ORNL  
HJMcAlduff, ORO  
TBAbernathy, DTIE  
NHGoodrich, ASLBP

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*(TiEnglehardt)* *CP*

JUL 5 1974

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Ocean County Library

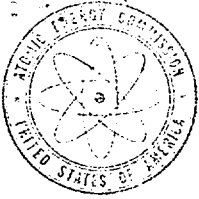
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Honorable William W. Mason  
Mayor, Lacey Township  
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Forked River, New Jersey 08731

OFFICE ➤						
SURNAME ➤						
DATE ➤						



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

JERSEY CENTRAL POWER & LIGHT COMPANY

DOCKET NO. 50-219

OYSTER CREEK NUCLEAR GENERATING STATION UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 5  
License No. DPR-16

1. The Atomic Energy Commission ("the Commission") has found that:
  - A. The application for amendment by Jersey Central Power & Light Company (the licensee) dated July 3, 1974, 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 license, 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. Prior public notice of this amendment is not required since the amendment does not involve a significant hazards consideration.
2. Accordingly, the license is amended by a change to the Technical Specification as indicated in the attachment to this license amendment and Paragraph 3.B of Facility License No. DPR-16 is hereby amended to read as follows:

"(B) Technical Specifications

The Technical Specifications contained in Appendix A, as revised, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications, as revised by

issued changes thereto through Change No. 21.

3. This license amendment is effective retroactively as of July 2, 1974.

FOR THE ATOMIC ENERGY COMMISSION

*Karl R. Goller*

Karl R. Goller, Assistant Director  
for Operating Reactors  
Directorate of Licensing

Attachment:

Change No. 21 to Appendix A  
Technical Specifications

Date of Issuance:

ATTACHMENT TO LICENSE AMENDMENT NO. 5

CHANGE NO. 21 TO APPENDIX A OF TECHNICAL SPECIFICATIONS

FACILITY OPERATING LICENSE NO. DPR-16

1. On page 35-1 of the Technical Specifications, add the following to the first sentence of paragraph 3.5.A.6:

"except that between 10:15 p.m., July 2, 1974 and 10:15 p.m., July 3, 1974, the reactor may be operated at power levels up to 50% of rated with oxygen in the primary containment greater than 5%."

SAFETY EVALUATION BY THE DIRECTORATE OF LICENSING  
SUPPORTING AMENDMENT NO. 5 TO LICENSE NO. DPR-16  
CHANGE NO. 21 TO APPENDIX A OF TECHNICAL SPECIFICATIONS  
JERSEY CENTRAL POWER AND LIGHT COMPANY  
OYSTER CREEK NUCLEAR GENERATING STATION, UNIT 1  
DOCKET NO. 50-219

Introduction

On July 2, 1974, following an outage to permit refueling, the Oyster Creek Nuclear Generating Station, Unit 1, was in the process of reactor startup when it became apparent that there was insufficient nitrogen in storage on-site to completely reduce the oxygen content in primary containment to 5% or less within the 24 hour period after placing the reactor mode selector switch in the RUN mode as required by Technical Specifications, paragraph 3.5.A.6. At about 9:00 p.m., July 2, 1974, the Jersey Central Power and Light Company (JCPL) made a verbal request to the Regulatory staff for authorization of a change in the Technical Specifications, paragraph 3.5.A.6, to permit operation at power levels up to 50% of rated with oxygen in the primary containment greater than 5% for a period of 24 hours or until the oxygen content was reduced to 5% or less. By 10:15 p.m., July 2, 1974, verbal authorization for the requested Technical Specification change was given by the Assistant Director for Operating Reactors, Directorate of Licensing. At the time of the approval, the drywell and torus had been inerted to 4.7% and 5.2% oxygen content, respectively. The licensee was directed to submit expeditiously a written request for the authorization to change the Technical Specifications; this request was received at 2:45 p.m., July 3, 1974, in a letter dated July 3, 1974 from JCPL.

Evaluation

Technical Specifications, paragraph 3.5.A.6, of the Oyster Creek Nuclear Generating Station, Unit 1, require the primary containment atmosphere to be reduced to less than 5.0% oxygen using nitrogen gas within 24 hours after the reactor mode selection switch is placed in the RUN mode. The purpose for reducing oxygen content is to provide added conservatism to the already conservative estimates that the hydrogen produced, consistent with the core cooling system provided, during the postulated loss-of-coolant accident (LOCA) is considerably below the flammability limit.<sup>1/</sup> These estimates of hydrogen production are based on metal-water reaction rates and the radiolysis of coolant water. Since reactor power level directly affects these hydrogen production rates, the estimates were based upon this parameter, as well as others.

<sup>1/</sup> Technical Specifications - Bases, page 3.5-4, Oyster Creek Nuclear Generating Station, Unit 1.

Moreover, the limiting of reactor power below 50% rated makes use of this power-dependent characteristic of the hydrogen generation rates and is an important aspect of the Technical Specification change request.

The licensee had submitted, in Amendments 67 and 68 to the Final Design Safety Analysis Report (FDSAR), information concerning metal-water reaction during the postulated LOCA. It may be determined that hydrogen generated, post-LOCA, after operation at 50% rated power does not result in a primary containment atmosphere which requires further dilution with nitrogen to prevent a flammable mixture from developing over a relatively long period of time (days). A similar determination may be made to show that the estimated 1% metal-water reaction rate (now being considered for adoption in AEC Regulatory Guide 1.7) will result, for 100% rated power, in the build-up of hydrogen in the containment in the post-LOCA period at such a low rate that nitrogen addition would not be needed until about 36 hours after the LOCA. These analyses, therefore, support the understanding of the conservative nature inherent in the primary containment condition with 4.7% and 5.2% oxygen in drywell and torus, respectively.

With regard to this conservatism inherent in the facility design, particularly the fact that operation at no greater than 50% rated power will add further conservatism to limit production of hydrogen in a post-LOCA environment, the operation of the reactor up to 50% power with 5.2% oxygen concentration in the torus and 4.7% oxygen concentration in the drywell is considered to be an acceptable and safe mode of operation. Limiting this mode of operation to a period no greater than 24 hours is also acceptable and introduces no additional safety concerns. As a matter of record, the Oyster Creek Generating Station had previously been authorized to operate for a period of 48 hours in this mode of operation.<sup>2/</sup>

The alternate to authorization of the requested Technical Specification change is a directive to the licensee to initiate an orderly shutdown. A shutdown requires power reduction and, ultimately, temperature and pressure transients that produce stresses within reactor metal components. This operational cycling caused by a reactor shutdown and another, later, reactor startup is considered to add unnecessary stress and strain that detract from the conservative design and operation of the facility. Accordingly, authority to operate up to 50% rated power pending completion of the inerting of primary containment is more desirable from the viewpoint of limiting the amount of stress cycles and associated metal fatigue over the lifetime of the facility.

<sup>2/</sup> Letter dated January 22, 1974 from the Atomic Energy Commission to Jersey Central Power and Light Company.

Conclusion

The staff concludes that: (1) the change does not involve a significant hazards consideration since it does not involve a substantial increase in the probability or consequences of accidents previously considered and does not involve a substantial decrease in the margin of safety; and (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner.

*John R. Riesland*  
John R. Riesland  
Operating Reactors Branch #3  
Directorate of Licensing

*George Lear*  
George Lear, Chief  
Operating Reactors Branch #3  
Directorate of Licensing



UNITED STATES ATOMIC ENERGY COMMISSION

DOCKET NO. 50-219

JERSEY CENTRAL POWER & LIGHT COMPANY

NOTICE OF ISSUANCE OF FACILITY LICENSE AMENDMENT

Notice is hereby given that the U. S. Atomic Energy Commission ("the Commission") has issued Amendment No. 5 to Facility Operating License No. DPR-16 to the Jersey Central Power & Light Company which revised Technical Specifications for operation of the Oyster Creek Nuclear Generating Station, Unit 1 located in Lacey Township, Ocean County, New Jersey. The amendment is effective retroactively as of July 2, 1974.

The amendment allows operation of the reactor for a specified period of time under the following conditions (1) reactor power up to 50% rated power, and (2) oxygen concentration greater than 5% in the primary containment. The specified period is 24 hours, from 10:15 p.m., July 2, 1974 until 10:15 p.m., July 3, 1974.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act, as amended ("the Act") and the Commission's rules and regulations and 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.

For further details with respect to this action, see (1) the application for amendment dated July 3, 1974, (2) Amendment No. 5 to License No. DPR-16, and Change No. 21, and (3) the Commission's related Safety Evaluation dated July 5, 1974. All of these are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the Ocean County Library, 15 Hooper Avenue, Toms River, New Jersey 08753.

A copy of items (2) and (3) may be obtained upon request addressed to the United States Atomic Energy Commission, Washington, D. C. 20545, Attention: Deputy Director for Reactor Projects, Directorate of Licensing - Regulation.

Dated at Bethesda, Maryland, this 5th day of July 1974.

FOR THE ATOMIC ENERGY COMMISSION

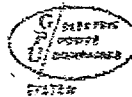


George Lear, Chief  
Operating Reactors Branch #3  
Directorate of Licensing

# Jersey Central Power & Light Company



MADISON AVENUE AT PUNCH BOWL ROAD • MORRISTOWN, N. J. 07960 • 201-539-8111

General  Public Utilities Corporation

July 3, 1974

Mr. K. R. Goller  
Assistant Director for Operating Reactors  
Directorate of Licensing  
United States Atomic Energy Commission  
Washington, D. C. 20545

Dear Mr. Goller:

Subject: Oyster Creek Station  
Docket No. 50-219  
Temporary Technical Specification Change

Oyster Creek Technical Specifications, paragraph 3.5.A.6 requires that the "primary containment atmosphere shall be reduced to less than 5.0% oxygen with nitrogen gas within 24 hours after the reactor mode selector switch is placed in the run mode." As a result of our inability to obtain delivery of additional liquid nitrogen to the plant site, we <sup>were</sup> not able to meet the Technical Specification requirements by 10:15 p.m. July 2, 1974. Therefore, the following temporary change to the Technical Specifications is requested:

On page 3.5-1 of the Technical Specifications, add the following to the first sentence of paragraph 3.5.A.6:

"except that between 10:15 p.m. July 2, 1974 and 10:15 p.m. July 3, 1974, the reactor may be operated at power levels up to 50% of rated with oxygen in the primary containment greater than 5%."

The situation which necessitates requesting this temporary change is the following:

Reactor startup at the conclusion of the 1974 refueling outage commenced on Sunday, July 1, 1974, approximately twelve hours after the original schedule of startup. The reactor was shut down while in the heatup process (500 psig) due to a steam leak in the secondary plant. Startup was again initiated late Sunday and again interrupted Monday morning due to a recurrence of the steam leak in the secondary plant. Upon repair of this leak, the reactor startup commenced with the reactor mode switch being placed in the RUN mode at 10:15 p.m. on Monday, July 2, 1974.

July 3, 1974

In anticipation of the impending reactor startup and consistent with the schedule in effect, nitrogen for the inerting process was ordered and arrived at the site late Friday night, June 28, 1974, at which time the nitrogen tank was filled to capacity (190 inches). Due to natural evaporation, the level in the tank decreased over the period of approximately three days to 172 inches. This level was felt to be sufficient to complete the inerting process. Nitrogen was ordered for normal supply on Tuesday morning, July 2, 1974. Due to difficulties in securing drivers and equipment, the earliest the order could be filled was 4:00 p.m., July 3, 1974.

Inerting of the drywell and torus commenced Tuesday morning, July 2, 1974, with the nitrogen tank level at 172 inches. The drywell was inerted to 4.7% oxygen concentration, and the torus to 5.2% oxygen concentration, whereupon the nitrogen purge supply flow was lost. Upon investigation, the nitrogen tank indicated 20 inches of nitrogen. The operator tapped the gauge and the level indication dropped to 10 inches of nitrogen which is an insufficient supply for suction to the purge lines. Based on past experience, 150 to 160 inches of nitrogen from our storage tank is required to inert the primary containment. It is believed that the indicator error, along with inerting the drywell before the torus, which is not the usual sequence, resulted in the nitrogen deficiency. (Note: By purging the drywell to 4.7% with its larger free volume, more nitrogen may have been used than normal.) Emergency communication placed to the nitrogen supplier resulted in the securing of a nitrogen shipment which arrived at Oyster Creek at 12:30 a.m., July 3, 1974. Inerting continued and the primary containment was inerted to <5% drywell and torus by 1:45 a.m., July 3, 1974 (27.5 hours after the reactor was placed in the RUN mode.) During this entire time period, the reactor power level remained below 830 MWt.

In the bases for this Technical Specification, it states that "it has been shown that an acceptable margin with respect to flammability exists without containment inerting. Inerting the primary containment provides additional margin to that already considered acceptable." Therefore, it is clear that there is reasonable assurance that the health and safety of the public will not be endangered by the operation permitted by this change. We further propose to provide additional margin by operating at no greater than 50% of rated power until the containment is inerted so that in the unlikely event of a loss of coolant accident, combustible gas generation would be reduced.

It does not appear reasonable to upset the static operations of the reactor system and to cycle it through the transients of a shutdown and startup to provide additional margin to safety in a case where the margin is such that the health and safety of the public is already well protected.

Mr. Goller

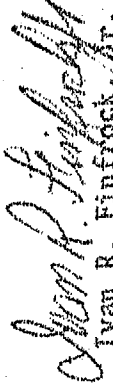
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July 5, 1971

This requested change has been previously reviewed by the Plant Operation Review Committee and the General Office Review Board and had the approval of both bodies.

Your prompt consideration of this request is appreciated.

Very truly yours,

  
Ivan R. Finflock, Jr.  
Vice President

CS