

August 25, 1998

Mr. G. R. Peterson
Site Vice President
Catawba Nuclear Station
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745-9635

SUBJECT: ISSUANCE OF AMENDMENTS - CATAWBA NUCLEAR STATION, UNITS 1 AND 2 (TAC NOS. MA1301 AND MA1302)

Dear Mr. Peterson:

The Nuclear Regulatory Commission has issued the enclosed Amendment No.168 to Facility Operating License NPF-35 and Amendment No. 160 to Facility Operating License NPF-52 for the Catawba Nuclear Station, Units 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated April 8, 1998.

The amendments revise TS Section 3/4.6.5.1, regarding the ice condenser, to reduce the total ice weight from 2,475,252 to 2,330,856 pounds, and to reduce individual ice basket ice weight from 1273 to 1199 pounds. The associated Bases section is also revised to reflect the changed requirements.

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

Sincerely,

ORIGINAL SIGNED BY:

Peter S. Tam, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosures:

- 1. Amendment No. 168 to NPF-35
- 2. Amendment No. 160 to NPF-52
- 3. Safety Evaluation

DISTRIBUTION

Docket File	OGC	LBerry
PUBLIC	ACRS	WBeckner, TSB
PDII-2 RF	GHill (4)	KCampe O-8 H7
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PTam	THarris (e-mail SE only)	

cc w/encls: See next page

DOCUMENT NAME: G:\CATAWBA\MA1301.AMD

OFFICE	PDII-2/PM	PDII-2/LA	SCSB	SCSB/BC	OGC	PDII-2/BC
NAME	P.Tam:cr	L.Berry	K.Campe	C.Berlingerl	Q Marco	H.Berkow
DATE	7/28/98	7/10/98	7/29/98	7/30/98	8/13/98	8/24/98
COPY	YES NO	YES	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY

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PDR ADOCK 05000413
PDR

with changes noted

DR

CP-1

Catawba Nuclear Station

cc:

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August 25, 1998

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Site Vice President
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The amendments revise TS Section 3/4.6.5.1, regarding the ice condenser, to reduce the total ice weight from 2,475,252 to 2,330,856 pounds, and to reduce individual ice basket ice weight from 1273 to 1199 pounds. The associated Bases section is also revised to reflect the changed requirements.

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Sincerely,

ORIGINAL SIGNED BY:

Peter S. Tam, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

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cc w/encs: See next page

DOCUMENT NAME: G:\CATAWBA\MA1301.AMD

OFFICE	PDII-2/PM	PDII-2/LA	SCSB	SCSB/BC	OGC	PDII-2/RF
NAME	P.Tam:cr	L.Berry	K.Campe	C.Berlingerl	C.Marc	H.Berkow
DATE	7/28/98	7/10/98	7/29/98	7/30/98	8/13/98	8/12/98
COPY	YES NO	YES	YES NO	YES NO	YES NO	YES NO

with changes noted

OFFICIAL RECORD COPY



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

August 25, 1998

Mr. G. R. Peterson
Site Vice President
Catawba Nuclear Station
Duke Energy Corporation
4800 Concord Road
York, South Carolina 29745-9635

SUBJECT: ISSUANCE OF AMENDMENTS - CATAWBA NUCLEAR STATION, UNITS 1
AND 2 (TAC NOS. MA1301 AND MA1302)

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

Sincerely,

A handwritten signature in cursive script that reads "Peter S. Tam".

Peter S. Tam, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-413 and 50-414

Enclosures:

1. Amendment No. 168 to NPF-35
2. Amendment No. 160 to NPF-52
3. Safety Evaluation

cc w/encls: See next page

Catawba Nuclear Station

cc:

Mr. T. Richard Puryear
Owners Group (NCEMC)
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York, South Carolina 29745

Richard M. Fry, Director
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Raleigh, North Carolina 27609-7721



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DUKE ENERGY CORPORATION

NORTH CAROLINA ELECTRIC MEMBERSHIP CORPORATION

SALUDA RIVER ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-413

CATAWBA NUCLEAR STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 168
License No. NPF-35

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 1 (the facility) Facility Operating License No. NPF-35 filed by the Duke Energy Corporation, acting for itself, North Carolina Electric Membership Corporation and Saluda River Electric Cooperative, Inc. (licensees), dated April 8, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
 - 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.

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2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-35 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 168 , which are attached hereto, are hereby incorporated into this license. Duke Energy Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: August 25, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 168

FACILITY OPERATING LICENSE NO. NPF-35

DOCKET NO. 50-413

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Remove

3/4 6-33

3/4 6-34

B 3/4 6-9

Insert

3/4 6-33

3/4 6-34

B 3/4 6-9

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1 The ice bed shall be OPERABLE with:

- a. The stored ice having a boron concentration of at least 1800 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,
- b. Flow channels through the ice condenser,
- c. A maximum ice bed temperature of less than or equal to 27°F,
- d. A total ice weight of at least 2,330,856 pounds at a 95% level of confidence, and
- e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUT-DOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

- a. At least once per 12 hours by using the Ice Bed Temperature Monitoring System to verify that the maximum ice bed temperature is less than or equal to 27°F,
- b. At least once per 9 months by:
 - 1) Chemical analyses which verify that at least nine representative samples of stored ice have a boron concentration of at least 1800 ppm as sodium tetraborate and a pH of 9.0 to 9.5 at 25°C; and
 - 2) Verifying, by a visual inspection of at least two flow passages per ice condenser bay, that the accumulation of frost or ice on flow passages between ice baskets, past lattice frames, through the top deck floor grating, or past the lower inlet plenum support

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

structures and turning vanes is restricted to a thickness of less than or equal to 0.38 inch. If one flow passage per bay is found to have an accumulation of frost or ice with a thickness of greater than or equal to 0.38 inch, a representative sample of 20 additional flow passages from the same bay shall be visually inspected. If these additional flow passages are found acceptable, the surveillance program may proceed considering the single deficiency as unique and acceptable. More than one restricted flow passage per bay is evidence of abnormal degradation of the ice condenser.

c. At least once per 18 months by:

Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1199 lbs of ice. The representative sample shall include six baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8, and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1199 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1199 pounds/basket at a 95% level of confidence.

The ice condenser shall also be subdivided into 3 groups of baskets, as follows: Group 1 - Bays 1 through 8, Group 2 - Bays 9 through 16, and Group 3 - Bays 17 through 24. The minimum average ice weight of the sample baskets from Radial Rows 1, 2, 4, 6, 8, and 9 in each group shall not be less than 1199 pounds/basket at a 95% level of confidence.

The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,330,856 pounds.

d. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each one-third of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 12 feet for this inspection.

CONTAINMENT SYSTEMS

BASES

3/4.6.5 ICE CONDENSER

The requirements associated with each of the components of the ice condenser ensure that the overall system will be available to provide sufficient pressure suppression capability to limit the containment peak pressure transient to less than 14.7 psig during LOCA conditions.

3/4.6.5.1 ICE BED

The OPERABILITY of the ice bed ensures that the required ice inventory will: (1) be distributed evenly through the containment bays, (2) contain sufficient boron to preclude dilution of the containment sump following the LOCA, and (3) contain sufficient heat removal capability to condense the Reactor Coolant System volume released during a LOCA. These conditions are consistent with the assumptions used in the safety analyses.

The minimum weight figure of 1199 pounds of ice per basket contains a 90 pound conservative allowance for ice loss through sublimation during the fuel cycle. The minimum total weight of 2,330,856 pounds of ice also contains an additional 1.1% conservative allowance to account for systematic error in the weighing instruments.

3/4.6.5.2 ICE BED TEMPERATURE MONITORING SYSTEM

The OPERABILITY of the Ice Bed Temperature Monitoring System ensures that the capability is available for monitoring the ice temperature. In the event the system is inoperable, the ACTION requirements provide assurance that the ice bed heat removal capacity will be retained within the specified time limits.

3/4.6.5.3 ICE CONDENSER DOORS

The OPERABILITY of the ice condenser doors and the requirement that they be maintained closed ensures that the Reactor Coolant System fluid released during a LOCA will be diverted through the ice condenser bays for heat removal and that excessive sublimation of the ice bed will not occur because of warm air intrusion.

If an Ice Condenser Door is not capable of opening automatically, then system function is seriously degraded and immediate action must be taken to restore the opening capability of the door. Not capable of opening automatically is defined as those conditions in which a door is physically blocked from opening by installation of a blocking device or by obstruction from temporarily or permanently installed equipment. Impairment by ice, frost or debris is considered to render the doors inoperable but capable of opening automatically since these types of conditions will result in a slightly greater torque necessary to open the doors or a slight delay in door opening.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

DUKE ENERGY CORPORATION

NORTH CAROLINA MUNICIPAL POWER AGENCY NO. 1

PIEDMONT MUNICIPAL POWER AGENCY

DOCKET NO. 50-414

CATAWBA NUCLEAR STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 160
License No. NPF-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment to the Catawba Nuclear Station, Unit 2 (the facility) Facility Operating License No. NPF-52 filed by the Duke Energy Corporation, acting for itself, North Carolina Municipal Power Agency No. 1 and Piedmont Municipal Power Agency (licensees), dated April 8, 1998, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as 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 set forth in 10 CFR Chapter I;
 - 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 hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and Paragraph 2.C.(2) of Facility Operating License No. NPF-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 160 , which are attached hereto, are hereby incorporated into this license. Duke Energy Corporation shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: August 25, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 160

FACILITY OPERATING LICENSE NO. NPF-52

DOCKET NO. 50-414

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the areas of change.

Remove

3/4 6-33

3/4 6-34

B 3/4 6-9

Insert

3/4 6-33

3/4 6-34

B 3/4 6-9

CONTAINMENT SYSTEMS

3/4.6.5 ICE CONDENSER

ICE BED

LIMITING CONDITION FOR OPERATION

3.6.5.1 The ice bed shall be OPERABLE with:

- a. The stored ice having a boron concentration of at least 1800 ppm boron as sodium tetraborate and a pH of 9.0 to 9.5,
- b. Flow channels through the ice condenser,
- c. A maximum ice bed temperature of less than or equal to 27°F,
- d. A total ice weight of at least 2,330,856 pounds at a 95% level of confidence, and
- e. 1944 ice baskets.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With the ice bed inoperable, restore the ice bed to OPERABLE status within 48 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUT-DOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.5.1 The ice condenser shall be determined OPERABLE:

- a. At least once per 12 hours by using the Ice Bed Temperature Monitoring System to verify that the maximum ice bed temperature is less than or equal to 27°F,
- b. At least once per 9 months by:
 - 1) Chemical analyses which verify that at least nine representative samples of stored ice have a boron concentration of at least 1800 ppm as sodium tetraborate and a pH of 9.0 to 9.5 at 25°C; and
 - 2) Verifying, by a visual inspection of at least two flow passages per ice condenser bay, that the accumulation of frost or ice on flow passages between ice baskets, past lattice frames, through the top deck floor grating, or past the lower inlet plenum support

CONTAINMENT SYSTEMS

SURVEILLANCE REQUIREMENTS (Continued)

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- c. At least once per 18 months by:

Weighing a representative sample of at least 144 ice baskets and verifying that each basket contains at least 1199 lbs of ice. The representative sample shall include six baskets from each of the 24 ice condenser bays and shall be constituted of one basket each from Radial Rows 1, 2, 4, 6, 8, and 9 (or from the same row of an adjacent bay if a basket from a designated row cannot be obtained for weighing) within each bay. If any basket is found to contain less than 1199 pounds of ice, a representative sample of 20 additional baskets from the same bay shall be weighed. The minimum average weight of ice from the 20 additional baskets and the discrepant basket shall not be less than 1199 pounds/basket at a 95% level of confidence.

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The minimum total ice condenser ice weight at a 95% level of confidence shall be calculated using all ice basket weights determined during this weighing program and shall not be less than 2,330,856 pounds.

- d. At least once per 40 months by lifting and visually inspecting the accessible portions of at least two ice baskets from each one-third of the ice condenser and verifying that the ice baskets are free of detrimental structural wear, cracks, corrosion or other damage. The ice baskets shall be raised at least 12 feet for this inspection.

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 168 TO FACILITY OPERATING LICENSE NPF-35
AND AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NPF-52

DUKE ENERGY CORPORATION, ET AL.

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

1.0 INTRODUCTION

By letter dated April 8, 1998, Duke Energy Corporation, et al. (the licensee), submitted a request for changes to the Catawba Nuclear Station, Units 1 and 2, Technical Specifications (TS). The requested changes revise TS Section 3/4.6.5.1 regarding the ice bed of the ice condenser and the associated Bases Section 3/4 6.5.1.

2.0 DISCUSSION AND EVALUATION

The ice condenser design and performance analysis are described in Section 6.7 of the Catawba Updated Final Safety Analysis Report. The primary function of the ice condenser is the absorption of thermal energy released abruptly in the event of a loss-of-coolant accident or steamline break accident, thereby limiting the initial peak pressure in the containment. TS 3/4.6.5.1, the subject of the licensee's amendment request, specifies the conditions of the ice bed of the ice condenser.

By Amendment Nos. 83 (for Unit 1) and 77 (for Unit 2), dated February 20, 1991, the staff imposed minimum required ice weight: 2,475,252 pounds total for each ice condenser, 1273 pounds for each ice basket in a condenser. The staff's associated safety evaluation states that these limits were derived from the assumed 2,132,000 pounds (i.e., 1097 pounds for each of the 1944 baskets) of ice at the onset of a postulated accident, adding a 15 percent conservative allowance for ice loss through sublimation in an 18-month surveillance interval, and adding a 1.1 percent conservative allowance to account for weighing instrument errors.

Over the past years of operation of both units, the licensee has collected approximately 40,000 ice basket weight records and stored the data in the Ice Condenser Data Management System (ICEMAN). Using the individual ice basket sublimation rate, the licensee calculated an overall average observed sublimation rate for each ice condenser. In calculating the average sublimation rate, the licensee ignored negative sublimation rates (e.g., for baskets near the annulus wall that actually gained weight) by simply setting them to zero. As a result, the average of all positive sublimation rates for the Units 1 and 2 ice condenser is 0.0810 and 0.0728 pounds/day/basket. ICEMAN has been validated by the licensee over time to correctly

predict ice basket weight. The licensee further applied a safety factor of 2, thus conservatively doubling the sublimation rate; therefore, the sublimation allowance for each ice condenser is:

$$\text{Allowance for each basket} = (\text{Sublimation Rate per basket}) \times (\text{Days in Fuel Cycle}) \times 2$$

For an 18-month fuel cycle, the allowance for the Units 1 and 2 condenser is calculated to be 89.10 and 80.08 pounds per basket. Based on this, the licensee proposed to use 90 pounds sublimation allowance per basket, instead of the 15 percent (i.e., 164 pounds) sublimation allowance assumed in the current requirement. The weighing error of 1.1 percent remains unchanged. Therefore, the new minimum ice weight per basket at the beginning of an 18-month surveillance interval is:

$$\text{Minimum ice weight} = 1,097 \times 1.011 + 90 = 1,199 \text{ pounds}$$

The licensee proposed to revise Section 4.6.5.1.c to reflect this calculation. The licensee also proposed to revise Section 3.6.5.1.d to reflect the total ice weight in 1944 baskets to be 2,330,856 pounds. Bases Section 3/4.6.5.1 would similarly be changed to reflect the new calculations.

The NRC staff has reviewed the licensee's submittal in detail and found that the licensee had applied appropriate conservatism in the calculation of sublimation allowance. Therefore, the staff determines that the new requirements are acceptable.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the South Carolina State official, Mr. Virgil Autrey, was notified of the proposed issuance of the amendments. The State official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, 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 (62 FR 25107 dated May 6, 1998). 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

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.

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