

Mr. George A. Hunger, Jr.  
Director-Licensing, MC 62A-1  
PECO Energy Company  
Nuclear Group Headquarters  
Correspondence Control Desk  
P.O. Box No. 195  
Wayne, PA 19087-0195

SUBJECT: LIMERICK GENERATING STATION, UNITS 1 AND 2 (TAC NOS. M98423 AND M98424)

Dear Mr. Hunger:

The Commission has issued the enclosed Amendment No. 123 to Facility Operating License No. NPF-39 and Amendment No. 88 to Facility Operating License No. NPF-85 for the Limerick Generating Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated April 9, 1997.

These amendments revise the TSs to clarify existing battery-specific gravity requirements, delete the requirement to correct specific gravity values based on electrolyte level, and allow the use of charging current measurements to verify the battery's state of charge.

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

Sincerely,

/s/  
Frank Rinaldi, Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-352/353

- Enclosures: 1. Amendment No. 123 to License No. NPF-39
- 2. Amendment No. 88 to License No. NPF-85
- 3. Safety Evaluation

cc w/encls: See next page

*DFOI 1/1*

**DISTRIBUTION:**

<del>Public File</del>	MO'Brien	WBeckner
PUBLIC	FRinaldi	ACRS
PDI-2 Reading	OGC	MPratt
BBoger	GHill(4)	SSaba
JStolz	CAAnderson, RGN-I	

OFFICE	PDI-2/PM <i>gr</i>	PDI-2/LM <i>gr</i>	EELB	OGC <i>act</i>	RDI-2/D
NAME	FRinaldi:rb	MO'Brien	SE dtd		JStolz
DATE	9/16/97	9/16/97	07/16/97	9/17/97	10/17/97

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

October 8, 1997

Mr. George A. Hunger, Jr.  
Director-Licensing, MC 62A-1  
PECO Energy Company  
Nuclear Group Headquarters  
Correspondence Control Desk  
P.O. Box No. 195  
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A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

A handwritten signature in black ink, appearing to read "Frank Rinaldi".

Frank Rinaldi, Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-352/353

Enclosures: 1. Amendment No. 123 to  
License No. NPF-39  
2. Amendment No. 88 to  
License No. NPF-85  
3. Safety Evaluation

cc w/encls: See next page

Mr. George A. Hunger, Jr.  
PECO Energy Company

Limerick Generating Station,  
Units 1 & 2

cc:

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of Limerick Township  
646 West Ridge Pike  
Linfield, PA 19468



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

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. 50-352

LIMERICK GENERATING STATION, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 123  
License No. NPF-39

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Philadelphia Electric Company (the licensee) dated April 9, 1997, 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.

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2. Accordingly, the license is amended by 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-39 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 123 , are hereby incorporated into this license. Philadelphia Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment: Changes to the  
Technical Specifications

Date of Issuance: October 8, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 123

FACILITY OPERATING LICENSE NO. NPF-39

DOCKET NO. 50-352

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

Remove

3/4 8-13  
B 3/4 8-2  
-

Insert

3/4 8-13  
B 3/4 8-2  
B 3/4 8-2a

TABLE 4.8.2.1-1

BATTERY SURVEILLANCE REQUIREMENTS

Parameter	CATEGORY A <sup>(1)</sup>	CATEGORY B <sup>(2)</sup>	
	Limits for each designated pilot cell	Limits for each connected cell	Allowable <sup>(3)</sup> value for each connected cell
Electrolyte Level	>Minimum level indication mark, and ≤ ¼" above maximum level indication mark	>Minimum level indication mark, and ≤ ¼" above maximum level indication mark	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 volts	≥ 2.13 volts <sup>(4)</sup>	> 2.07 volts
Specific Gravity <sup>(5)</sup>	≥ 1.195 <sup>(6)</sup>	≥ 1.190 AND Average of all connected cells > 1.200	≥ 1.170 <sup>(6)</sup> AND Average of all connected cells ≥ 1.190 <sup>(6)</sup>

<sup>(1)</sup>For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.

<sup>(2)</sup>For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.

<sup>(3)</sup>Any Category B parameter not within its allowable value indicates an inoperable battery.

<sup>(4)</sup>May be corrected for average electrolyte temperature.

<sup>(5)</sup>Corrected for electrolyte temperature of 77°F.

<sup>(6)</sup>Or battery charging current is less than 1 amperes when on float charge.

## ELECTRICAL POWER SYSTEMS

### BASES

#### A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

"Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977 except for paragraphs C.2.a(3), C.2.c(1), C.2.c(2), C.2.d(3) and C.2.d(4), and the periodic testing will be performed at least once per 24 months. The exceptions to Regulatory Guide 1.108 allow for gradual loading of diesel generators during testing and decreased surveillance test frequencies (in response to Generic Letter 84-15). The single largest post-accident load on each diesel generator is the RHR pump.

The Surveillance Requirement for removal of accumulated water from the fuel oil storage tanks is for preventive maintenance. The presence of water does not necessarily represent failure of the Surveillance Requirement, provided the accumulated water is removed during performance of the Surveillance. Accumulated water in the fuel oil storage tanks constitutes a collection of water at a level that can be consistently and reliably measured. The minimum level at which accumulated water can be consistently and reliably measured in the fuel oil storage tank sump is 0.25 inches. Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of accumulated water from the fuel storage tanks once every (31) days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are established by Regulatory Guide 1.137.

The surveillance requirements for demonstrating the OPERABILITY of the units batteries are in accordance with the recommendations of Regulatory Guide 1.129 "Maintenance Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," February 1978 and IEEE Std 450-1980, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations," and IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications" except that certain tests will be performed at least once every 24 months.

Verifying average electrolyte temperature above the minimum for which the battery was sized, total battery terminal voltage on float charge, connection resistance values and the performance of battery service and discharge tests ensures the effectiveness of the charging system, the ability to handle high discharge rates and compares the battery capacity at that time with the rated capacity.



## ELECTRICAL POWER SYSTEMS

### BASES

#### A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

The parameters in Table 4.8.2.1-1 are based on the manufacturer's recommendation. These parameters assure the OPERABILITY and capability of the battery to perform its design function.

The Category A and B limits are specified for each designated pilot cell and each connected cell for electrolyte level, float voltage and specific gravity. Parameters within the Category A and B limits are characteristic of a fully charged cell. The limits for the float voltage and specific gravity for each connected cell and the average specific gravity of all of the connected cells ensures the OPERABILITY and capability of the battery.

The Category B allowable value for electrolyte level provides assurance that the plates are covered and adequate electron transfer will occur between the plates. The allowable value for cell voltage provides assurance that the cell is not discharged and the battery is capable of performing its design function. The allowable value for specific gravity for an individual cell provides assurance that the overall capability of the battery will be maintained within acceptable limits. The allowable value for the average specific gravity of all the cells ensures that the decrease in rating will be less than the safety margin provided in the battery sizing.

With parameters of one or more cells, in one or more batteries, not within limits (i.e., Category A limits not met or Category B limits not met, or Category A and B limits not met) but within the Category B allowable value specified in Table 4.8.2.1-1, operation is permitted for seven (7) days. Verification that the Category B allowable values are met, provides assurance that during the time needed to restore the parameters to the Category A and B limits, the battery is still capable of performing its' intended function. For indication outside Category A, a period of 24 hours is allowed to complete the requirement because specific gravity measurements must be taken for each connected cell. The specific gravity Category A limit and the Category B allowable value for each connected cell and the average of all connected cells is modified by Note 6. This note allows the use of charging current to verify the battery's state of charge. Charging current stability at a low rate is an indication that the battery is fully charged. This method provides a reliable measure of the battery's state of charge.

Continued operation is only permitted for seven (7) days before the battery cell parameters must be restored to within Category A and B limits. Taking into consideration that, while battery capacity may be degraded, sufficient capacity exists, based on meeting the Category B allowable values, to perform the intended function and to allow time to restore the battery cell to its normal limits. When any battery parameter for each connected cell is outside the Category B allowable value, sufficient capacity to supply the maximum load requirement is not assured and the corresponding dc electrical power subsystem (i.e., battery) must be declared inoperable.



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

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. 50-353

LIMERICK GENERATING STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 88  
License No. NPF-85

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Philadelphia Electric Company (the licensee) dated April 9, 1997, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;
  - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

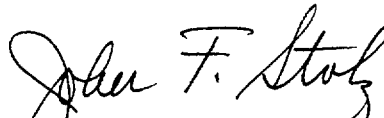
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-85 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 88, are hereby incorporated in the license. Philadelphia Electric Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION



John F. Stolz, Director  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment: Changes to the  
Technical Specifications

Date of Issuance: October 8, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 88

FACILITY OPERATING LICENSE NO. NPF-85

DOCKET NO. 50-353

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

Remove

3/4 8-13  
B 3/4 8-2

Insert

3/4 8-13  
B 3/4 8-2  
B 3/4 8-2a

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Parameter	CATEGORY A <sup>(1)</sup>		CATEGORY B <sup>(2)</sup>	
	Limits for each designated pilot cell	Limits for each connected cell	Allowable <sup>(3)</sup> value for each connected cell	
Electrolyte Level	>Minimum level indicated mark, and ≤ ¼" above maximum level indication mark	>Minimum level indication mark, and ≤ ¼" above maximum level indication mark	Above top of plates, and not overflowing	
Float Voltage	≥ 2.13 volts	≥ 2.13 volts <sup>(4)</sup>	> 2.07 volts	
Specific Gravity <sup>(5)</sup>	≥ 1.195 <sup>(6)</sup>	≥ 1.190	≥ 1.170 <sup>(6)</sup>	
		AND	AND	
		Average of all connected cells > 1.200	Average of all connected cells ≥ 1.190 <sup>(6)</sup>	

<sup>(1)</sup>For any Category A parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that within 24 hours all the Category B measurements are taken and found to be within their allowable values, and provided all Category A and B parameter(s) are restored to within limits within the next 6 days.

<sup>(2)</sup>For any Category B parameter(s) outside the limit(s) shown, the battery may be considered OPERABLE provided that the Category B parameters are within their allowable values and provided the Category B parameter(s) are restored to within limits within 7 days.

<sup>(3)</sup>Any Category B parameter not within its allowable value indicates an inoperable battery.

<sup>(4)</sup>May be corrected for average electrolyte temperature.

<sup>(5)</sup>Corrected for electrolyte temperature of 77°F.

<sup>(6)</sup>Or battery charging current is less than 1 amperes when on float charge.

## ELECTRICAL POWER SYSTEMS

### BASES

#### A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

Supplies, March 10, 1971, Regulatory Guide 1.137 "Fuel-Oil Systems for Standby Diesel Generators," Revision 1, October 1979 and Regulatory Guide 1.108, "Periodic Testing of Diesel Generator Units Used as Onsite Electric Power Systems at Nuclear Power Plants," Revision 1, August 1977 except for paragraphs C.2.a(3), C.2.c(1), C.2.c(2), C.2.d(3) and C.2.d(4), and the periodic testing will be performed at least once per 24 months. The exceptions to Regulatory Guide 1.108 allow for gradual loading of diesel generators during testing and decreased surveillance test frequencies (in response to Generic Letter 84-15). The single largest post-accident load on each diesel generator is the RHR pump.

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### BASES

#### A.C. SOURCES, D.C. SOURCES, and ONSITE POWER DISTRIBUTION SYSTEMS (Continued)

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Continued operation is only permitted for seven (7) days before the battery cell parameters must be restored to within Category A and B limits. Taking into consideration that, while battery capacity may be degraded, sufficient capacity exists, based on meeting the Category B allowable values, to perform the intended function and to allow time to restore the battery cell to its normal limits. When any battery parameter for each connected cell is outside the Category B allowable value, sufficient capacity to supply the maximum load requirement is not assured and the corresponding dc electrical power subsystem (i.e., battery) must be declared inoperable.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 123 AND 88 TO FACILITY OPERATING  
LICENSE NOS. NPF-39 AND NPF-85  
PHILADELPHIA ELECTRIC COMPANY  
LIMERICK GENERATING STATION, UNITS 1 AND 2  
DOCKET NOS. 50-352 AND 50-353

1.0 INTRODUCTION

By letter dated April 9, 1997, the Philadelphia Electric Company (PECO, the licensee) submitted a request for changes to the Limerick Generating Station, Units 1 and 2, Technical Specifications (TSs). The requested changes would revise the TSs to clarify existing battery-specific gravity requirements, delete the requirement to correct specific gravity values based on electrolyte level, and allow the use of charging current measurements to verify the battery's state of charge.

2.0 EVALUATION

PECO requested TS changes that will revise TS Table 4.8.2.1-1, "Battery Surveillance Requirements," and the TS Bases Section 3/4 8.2, "D.C. Sources," related to TS Table 4.8.2.1-1. The following is a detailed listing of the proposed changes:

Table 4.8.2.1-1:

1. The word "AND" is added between the specific gravity, Category B limits and allowable value parameters.

The licensee has stated that Limerick TS Table 4.8.2.1-1 specific gravity, Category B limits and the allowable values are implied to be "AND" statements. Therefore, adding the "AND" between the specific gravity, Category B limits and allowable value parameters will only clarify the meaning of the Limerick TS. Additionally, this change is consistent with NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4," which currently has an "AND" between the specific gravity, Category B limits and the allowable value parameters.

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2. The specific gravity, Category B allowable value for each connected cell is revised to replace the existing statement describing the value with an equivalent discrete value of 1.170.

TS Table 4.8.2.1-1 currently states the Category B, specific gravity allowable values as "Not more than 0.020 below the average of all connected cells."

This requirement ensures that the effect of a highly charged or new cell does not mask overall degradation of the battery. The licensee is proposing to replace the current wording in the TS with a discrete value of  $\geq 1.170$ . The discrete value of 1.170 is 0.020 below the average allowable specific gravity of 1.190 currently listed in the Limerick TS. Therefore, the licensee states that the change only clarifies the TS and does not change the intent of the surveillance requirement.

3. Note number 6, "Or battery charging current is less than one amperes when on float charge" will also be applied to the specific gravity, Category B allowable value for each connected cell.

The licensee is proposing to use the charging current as an alternative to specific gravity measurements to verify the battery's state of charge. The proposed change will not eliminate specific gravity measurements but will provide more time to allow all cell parameters to rise above Category B limits. The licensee states that specific gravity measurements may not be accurate after water is added to the battery, at times when the battery is being charged, and periods immediately following battery charging. The practice of using the charging current to determine the state of charge of the battery is an acceptable alternative and is discussed in the Institute of Electrical and Electronics Engineers' (IEEE) Standard (Std.) 450.

IEEE Std. 450 states that the pattern of charging delivered by a conventional voltage-regulated charger after a discharge is the most accurate method for determining the state of charge. As the cells approach full charge, the battery voltage rises to approach the output voltage of the charger, and the charging current decreases. When the charging current has stabilized at the charging voltage, the battery is charged, even though specific gravities have not stabilized.

Additionally, NUREG-1433 states that a stabilized charger current is an acceptable alternative to specific gravity measurement for determining the state of charge of the designated pilot cell. The justification for this statement is that specific gravity gradients that are produced during the recharging process delay the stabilization of the specific gravity for up to several days.

4. Note number 5, which states, "Corrected for average electrolyte temperature of 77°F and full level," will be modified to delete the requirement for full level.

The licensee is proposing to remove the requirement for level correction when monitoring battery-specific gravity. The licensee states that current manufacturer's recommendations for monitoring specific gravity no longer require level correction. An increase in the specific gravity is normal with a decrease in water level because the electrolyte becomes more concentrated. The manufacturer states that the battery performance is not affected by changes in electrolyte level as long as the change in level is reasonable (i.e., between the high and low level marks on the battery). Additionally, IEEE Std. 450 states that if the electrolyte level is between the high and low level marks and the temperature-corrected specific gravity of the electrolyte is within the manufacturer's nominal specific gravity range, it is not necessary to correct the specific gravity of the battery for electrolyte level. The current TSs at Limerick do require that the battery electrolyte level be maintained between the high and low level marks.

#### TS Bases Section B 3/4 8-2:

1. TS Bases Section B 3/4 8-2 is revised to reflect the above proposed changes regarding TS Table 4.8.2.1-1.

The staff has reviewed the proposed changes and concludes that they are either editorial and/or consistent with IEEE Std. 450 and NUREG-1433. Therefore, the staff finds the proposed changes by the licensee acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to 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, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (62 FR 30643). 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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