



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

May 11, 1993

Docket Nos. 50-272/311

Mr. Steven E. Miltenberger  
Vice President and Chief Nuclear  
Officer  
Public Service Electric & Gas  
Company  
Post Office Box 236  
Hancocks Bridge, New Jersey 08038

Dear Mr. Miltenberger:

SUBJECT: PACKING ADJUSTMENTS OF FEEDWATER ISOLATION VALVES, SALEM NUCLEAR  
GENERATING STATION, UNITS 1 AND 2 (TAC NOS. M85720 AND M85721)

The Commission has issued the enclosed Amendment Nos. 140 and 119 to Facility  
Operating License Nos. DPR-70 and DPR-75 for the Salem Nuclear Generating  
Station, Unit Nos. 1 and 2. These amendments consist of changes to the  
Technical Specifications (TSs) in response to your application dated  
February 2, 1993, as supplemented by a submittal dated March 16, 1993.

These amendments change Technical Specification (TS) Table 3.6-1, "Containment  
Isolation Valves," to add a note modifying the post-maintenance cycling test  
and verification of isolation time requirements in TS Section 3/4.6.3. The  
note applies to the main feedwater isolation valves and allows a partial  
stroke test to satisfy the surveillance requirements of TS 3/4.6.3 after  
packing gland adjustments are made up to the manufacturer recommended torque  
value (a type of maintenance) at power. A full-stroke cycling test and  
verification of isolation time requirements is required the first time the  
unit enters operational MODE 3 following the packing gland adjustment.

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Mr. Steven E. Miltenberger

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May 11, 1993

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. You are requested to inform the NRC, in writing, when the amendments have been implemented at Salem, Units 1 and 2.

Sincerely,  
/s/

James C. Stone, Senior Project  
Manager Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 140 to License No. DPR-70
2. Amendment No. 119 to License No. DPR-75
3. Safety Evaluation

cc w/enclosures:  
See next page

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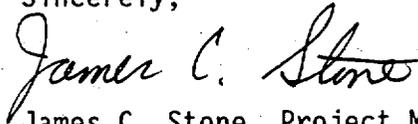
Mr. Steven E. Miltenberger

- 2 -

May 11, 1993

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's biweekly Federal Register notice. You are requested to inform the NRC, in writing, when the amendments have been implemented at Salem, Units 1 and 2.

Sincerely,



James C. Stone, Project Manager  
Project Directorate I-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

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1. Amendment No. 140 to  
License No. DPR-70
2. Amendment No. 119 to  
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cc w/enclosures:  
See next page

Mr. Steven E. Miltenberger  
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Units 1 and 2

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

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-272

SALEM NUCLEAR GENERATING STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 140  
License No. DPR-70

1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated February 2, 1993, as supplemented by submittal dated March 16, 1993, 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 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 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. DPR-70 is hereby amended to read as follows:

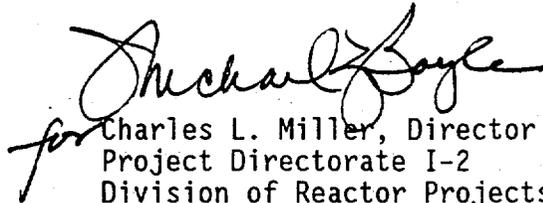
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(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 140, are hereby incorporated in the license. The licensee 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 of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
for Charles L. Miller, 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: May 11, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 140

FACILITY OPERATING LICENSE NO. DPR-70

DOCKET NO. 50-272

Revise Appendix A as follows:

Remove Pages

3/4 6-15

3/4 6-17a

Insert Pages

3/4 6-15

3/4 6-17a

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

VALVE NUMBER	FUNCTION	ISOLATION TIME (Seconds)
<b>D. FEEDWATER ISOLATION (Note 1)</b>		
1. 11 BF 19#	Main Feedwater Isolation	≤9 Sec.
2. 12 BF 19#	Main Feedwater Isolation	≤9 Sec.
3. 13 BF 19#	Main Feedwater Isolation	≤9 Sec.
4. 14 BF 19#	Main Feedwater Isolation	≤9 Sec.
5. 11 BF 40#	Main Feedwater Isolation	≤9 Sec.
6. 12 BF 40#	Main Feedwater Isolation	≤9 Sec.
7. 13 BF 40#	Main Feedwater Isolation	≤9 Sec.
8. 14 BF 40#	Main Feedwater Isolation	≤9 Sec.
<b>E. STEAM GENERATOR BLOWDOWN ISOLATION</b>		
1. 11 GB 4#	Steam Generator Blowdown	≤10 Sec.
2. 12 GB 4#	Steam Generator Blowdown	≤10 Sec.
3. 13 GB 4#	Steam Generator Blowdown	≤10 Sec.
4. 14 GB 4#	Steam Generator Blowdown	≤10 Sec.
5. 11 SS 94#	SG Blowdown Sampling	≤10 Sec.
6. 12 SS 94#	SG Blowdown Sampling	≤10 Sec.
7. 13 SS 94#	SG Blowdown Sampling	≤10 Sec.
8. 14 SS 94#	SG Blowdown Sampling	≤10 Sec.
<b>F. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF</b>		
1. 1 VC 1	Purge Supply	≤2 Sec.
2. 1 VC 2	Purge Supply	≤2 Sec.
3. 1 VC 3	Purge Exhaust	≤2 Sec.
4. 1 VC 4	Purge Exhaust	≤2 Sec.
5. 1 VC 5*	Pressure - Vacuum Relief	≤2 Sec.
6. 1 VC 6*	Pressure - Vacuum Relief	≤2 Sec.

TABLE 3.6-1 (Continued)

CONTAINMENT ISOLATION VALVES

<u>VALVE NUMBER</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (Seconds)</u>
H. CHECK (Contd.)		
13. 1 WR 81	Pressurizer Relief Tk.-Primary Water Conn.	Not Applicable
14. 11 CA 360	Instrument Air Supply	Not Applicable
15. 12 CA 360	Instrument Air	Not Applicable

Note 1: For the 11 through 14 BF19s and 11 through 14 BF40s a partial stroke test to ensure that the valve is free of any stem binding is acceptable to satisfy the requirement of surveillance 4.6.3.1.1 following a packing gland adjustment up to the manufacturer recommended value range. A timed full stroke test shall be conducted the first time the Unit enters operational Mode 3 following the packing gland adjustment.

- \*May be opened on an intermittent basis under administrative control.
- #Not subject to Type C leakage tests.
- ##Either valve 1 CV 68 or 1 CV 69 must be OPERABLE.
- + Normally closed motor-operated containment isolation valve. Valve opens on Phase B isolation.



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

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

DOCKET NO. 50-311

SALEM NUCLEAR GENERATING STATION, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 119  
License No. DPR-75

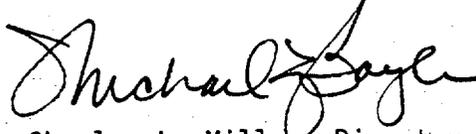
1. The Nuclear Regulatory Commission (the Commission or the NRC) has found that:
  - A. The application for amendment filed by the Public Service Electric & Gas Company, Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) dated February 2, 1993, as supplemented by submittal dated March 16, 1993 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 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 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. DPR-75 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 119, are hereby incorporated in the license. The licensee 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 of the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



for Charles L. Miller, 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: May 11, 1993

ATTACHMENT TO LICENSE AMENDMENT NO. 119

FACILITY OPERATING LICENSE NO. DPR-75

DOCKET NO. 50-311

Revise Appendix A as follows:

Remove Pages

3/4 6-17

3/4 6-20

Insert Pages

3/4 6-17

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TABLE 3.6-1 (Contd.)

## CONTAINMENT ISOLATION VALVES

VALVE NUMBER	FUNCTION	ISOLATION TIME (Seconds)
<b>D. FEEDWATER ISOLATION (Note 1)</b>		
1. 21 BF 19#	Main Feedwater Isolation	≤9 Sec.
2. 22 BF 19#	Main Feedwater Isolation	≤9 Sec.
3. 23 BF 19#	Main Feedwater Isolation	≤9 Sec.
4. 24 BF 19#	Main Feedwater Isolation	≤9 Sec.
5. 21 BF 40#	Main Feedwater Isolation	≤9 Sec.
6. 22 BF 40#	Main Feedwater Isolation	≤9 Sec.
7. 23 BF 40#	Main Feedwater Isolation	≤9 Sec.
8. 24 BF 40#	Main Feedwater Isolation	≤9 Sec.
<b>E. STEAM GENERATOR BLOWDOWN ISOLATION</b>		
1. 21 GB 4#	Steam Generator Blowdown	≤10 Sec.
2. 22 GB 4#	Steam Generator Blowdown	≤10 Sec.
3. 23 GB 4#	Steam Generator Blowdown	≤10 Sec.
4. 24 GB 4#	Steam Generator Blowdown	≤10 Sec.
5. 21 SS 94#	SG Blowdown Sampling	≤10 Sec.
6. 22 SS 94#	SG Blowdown Sampling	≤10 Sec.
7. 23 SS 94#	SG Blowdown Sampling	≤10 Sec.
8. 24 SS 94#	SG Blowdown Sampling	≤10 Sec.
<b>F. CONTAINMENT PURGE AND PRESSURE - VACUUM RELIEF</b>		
1. 2 VC 1	Purge Supply	≤2 Sec.
2. 2 VC 2	Purge Supply	≤2 Sec.
3. 2 VC 3	Purge Exhaust	≤2 Sec.
4. 2 VC 4	Purge Exhaust	≤2 Sec.
5. 2 VC 5*	Pressure - Vacuum Relief	≤2 Sec.
6. 2 VC 6*	Pressure - Vacuum Relief	≤2 Sec.

TABLE 3.6-1 (Contd.)

CONTAINMENT ISOLATION VALVES

<u>VALVE NUMBER</u>	<u>FUNCTION</u>	<u>ISOLATION TIME (Seconds)</u>
H. CHECK (Contd.)		
13. 2 WR 81	Pressurizer Relief Tk.-Primary Water Conn.	Not Applicable
14. 21 CA 360	Instrument Air Supply	Not Applicable
15. 22 CA 360	Instrument Air	Not Applicable

Note 1: For the 21 through 24 BF19s and 21 through 24 BF40s a partial stroke test to ensure that the valve is free of any stem binding is acceptable to satisfy the requirement of surveillance 4.6.3.1 following a packing gland adjustment up to the manufacturer recommended value range. A timed full stroke test shall be conducted the first time the Unit enters operational Mode 3 following the packing gland adjustment.

- \* May be opened on an intermittent basis under administrative control.
- # Not subject to Type C leakage tests.
- ## Either valve 1 CV 68 or 1 CV 69 must be OPERABLE.
- + Normally closed motor operated containment isolation valve. Valve opens on Phase B isolation.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NOS. 140 AND 119 TO FACILITY OPERATING

LICENSE NOS. DPR-70 AND DPR-75

PUBLIC SERVICE ELECTRIC & GAS COMPANY

PHILADELPHIA ELECTRIC COMPANY

DELMARVA POWER AND LIGHT COMPANY

ATLANTIC CITY ELECTRIC COMPANY

SALEM NUCLEAR GENERATING STATION, UNIT NOS. 1 AND 2

DOCKET NOS. 50-272 AND 50-311

1.0 INTRODUCTION

By letter dated February 2, 1993, as supplemented on March 16, 1993, the Public Service Electric & Gas Company (PSE&G), Philadelphia Electric Company, Delmarva Power and Light Company and Atlantic City Electric Company (the licensees) submitted a request for changes to the Salem Nuclear Generating Station, Unit Nos. 1 and 2, Technical Specifications (TS). The requested changes would add a note to Table 3.6-1, "Containment Isolation Valves", Section D, "Feedwater Isolation", stating that for the feedwater isolation BF-19 and BF-40 valves a partial-stroke test to ensure that the valve is free of any stem binding is acceptable to satisfy the post-maintenance test requirements of TS Sections 4.6.3.1.1 (Unit 1) and 4.6.3.1 (Unit 2) following a packing adjustment up to the manufacturer recommended value. A full-stroke test shall be conducted the first time the Unit enters operational MODE 3 following the packing adjustment. The words "range" and "timed" were added in the text of the added note for enhanced clarity and correctness per discussion with PSE&G. The March 16, 1993, letter and the added words provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

TS Sections 4.6.3.1.1 and 4.6.3.1 contain surveillance requirements for containment isolation valves, specifically:

"The isolation valves specified in Table 3.6-1 shall be demonstrated OPERABLE prior to returning the valve to service after maintenance, repair or replacement work is performed on the valve or its associated actuator, control or power circuit by performance of a cycling test and verification of isolation time.

The term "maintenance" is not a defined TS term. According to the ASME Boiler and Pressure Vessel Code (the Code), Section XI, Subsection IWV-3200, testing is required after "...maintenance that could affect [the valve's] performance...." This is further clarified; "Adjustment of stem packing, removal of the bonnet, ... are examples of maintenance that could affect valve performance parameters." The BF-19 and BF-40 valves are included in Salem Station's inservice testing program in accordance with Section XI of the Code, therefore, it is appropriate to adopt the Code definition in this case. The TS and Code required full-stroke testing of these valves after a packing adjustment at power, however, is not necessary due to the lack of effect on stroke-time, and is impractical due to having to perform a plant shutdown.

The 14" BF-19 valves are manufactured by Copes-Vulcan, the 4" BF-40 valves are installed in parallel with the BF-19s and are manufactured by Masoneilan. These valves are used for maintaining steam generator level (power levels  $\approx$ 5% to  $\approx$ 20% with the BF-40s which are fully closed at  $>$ 20% power, power levels  $\approx$ 20% and above with the BF-19s) and feedwater isolation, as well as containment isolation. The isolation functions of these valves require a valve closure time of less than 9 seconds, which is tested periodically. A verification of this closure time is required by Salem TS and the Code after any activities performed on these valves which could affect stroke time. The code mentions, as discussed above, packing adjustments as one of these activities.

All of these valves, however, utilize graphite packing with live loading, which has been shown to minimize the effect a packing adjustment would have on stroke-time. PSE&G has data from previous testing on BF-19 valves which demonstrate that adjusting the torque value at power to 17, 19, and 21 Ft-lbs (installation torque value is 13 Ft-lbs on clean, lubricated studs with no system pressure acting on the packing) resulted in stroke-times of  $\leq$ 5.5 seconds, obtained when plant conditions allowed. PSE&G discussions with Copes-Vulcan, the BF-19 valve manufacturer, concluded that the present required TS stroke time (9 seconds) would not be exceeded if the torque value does not exceed 20 Ft-lbs. The part-stroke test that will be performed immediately after the packing adjustment provides further assurance that the valve stem is free to move, indicating that the adjustment did not cause valve stem binding which would affect stroke-time. A full-stroke test would be conducted the first time the Unit enters operational MODE 3 following the packing adjustment.

The BF-40 valves remain fully closed throughout full power operation (power  $>$ 20%). This is the valves' fail-safe position, therefore negating the necessity for fast closure. The BF-40 valves are in service to control steam generator level for a short period of time during shutdown. Stroke-time after increased torque values is not available for these valves as PSE&G has not historically had any problems requiring packing adjustment on these valves. A part-stroke test will be performed on the BF-40s to ensure the absence of stem binding immediately after a packing adjustment at power, and a full-stroke test would be conducted the first time the unit enters operational MODE 3 following the packing adjustment..

The packing adjustment is performed at power only to correct occasional packing leaks. The valves' stem movement during operation allows the live load settings on the packing to loosen, requiring occasional adjustment of the packing to maintain zero leakage. The adjustment is performed in small increments, approximately 2 to 4 Ft-lbs, in order to make the minimum adjustment necessary to stop the leakage. PSE&G states in their submittal that the appropriate maintenance procedure has been modified to reflect Copes-Vulcan's recommended maximum torque value. This value for the BF-19 valves is 20 Ft-lbs. Because PSE&G has not experienced packing leaks on the BF-40 valves at power, the staff requested confirmation that the valve manufacturer (Masoneilan) would be consulted before adjusting the packing. This confirmation was in the supplement dated March 16, 1993. In a followup telephone call with the licensee's representative, E. Villar, it was also confirmed that the maintenance procedure would contain a requirement to contact the valve manufacturer before making the packing adjustment with the applicable unit at power. Also, as data became available for the BF-40 valves, the relationship between the packing torque values and valve stroke times would be analyzed.

The note proposed to be added to Table 3.6-1 includes a requirement that "A full-stroke test shall be conducted the first time the Unit enters operational MODE 3 following the packing adjustment." This test cannot be performed at power without incurring a reactor trip due to the feedwater regulating function of the BF-19 valves. A fast closure of the BF-40 valves at power would cause the BF-19 valves to respond to the feedwater flow transient, incurring a reactor trip. A slow, manually controlled part-stroke can be performed at power on either valve without incurring a reactor trip, allowing assurance that the valve stem is free to move which indicates that the adjustment did not cause valve stem binding which would affect stroke-time.

The feedwater isolation function of the BF-19 and BF-40 valves is backed up by motor-operated valve BF-13 (remotely operated from the control room with a 30-second closure time). The containment isolation function of the valves is backed up by motor-operated stop check valve BF-22. Valve BF-22 closes upon loss of feedwater flow and is made leak tight upon manual energization of the motor operator from the control room. The backup feedwater injection function is performed by the auxiliary feedwater system, a safety-related system which automatically injects to the steam generators on low water level. Should the BF-19 or BF-40 valves fail open, excessive feedwater flow is an analyzed accident in the Salem Updated Final Safety Analysis Report (UFSAR). This analysis bounds the failure of a BF-19 valve to close (a more severe single failure than failure of the BF-40 valve to close).

Based on the above information, the staff finds this change to the Salem Units-1 and 2 TS to be acceptable. The staff has also determined that relief from the Code requirements is not necessary, as the design characteristics of this type of packing allow increased torque values (to a manufacturer recommended maximum) without an averse effect on the valve performance parameter (stroke-time).

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the New Jersey 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. 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 (58 FR 16231). 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.

Principal Contributor: A. Pelletier

Date: May 11, 1993