

December 8, 1998

Mr. D. N. Morey
Vice President - Farley Project
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: ISSUANCE OF AMENDMENTS - JOSEPH M. FARLEY NUCLEAR PLANT,
UNITS 1 AND 2 (TAC NOS. MA0381 AND MA0382)

Dear Mr. Morey:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 140 to Facility Operating License No. NPF-2 and Amendment No. 132 to Facility Operating License No. NPF-8 for the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2, Technical Specifications (TSs) in response to your submittal dated December 31, 1997, as supplemented by letter dated September 11, 1998.

The amendments change the TSs to revise the intermediate range neutron flux reactor trip setpoint and allowable value, and delete the reference to the reactor trip setpoints in TS 3.10.3, "Special Test Exceptions - Physics Tests" and TS 3.10.4, "Special Test Exceptions - Reactor Coolant Loops."

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:
Jacob I. Zimmerman, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosures:

1. Amendment No. 140 to NPF-2
2. Amendment No. 132 to NPF-8
3. Safety Evaluation

cc w/encls: See next page

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NAME	J.ZIMMERMAN:cn	L.BERRY	S.MARTZ	H.BERKOW
DATE	11/19/98	11/15/98	11/27/98	12/7/98
COPY	YES NO	YES NO	YES NO	YES NO

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Joseph M. Farley Nuclear Plant

cc:

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Columbia, Alabama 36319



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

WASHINGTON, D.C. 20555-0001

December 8, 1998

Mr. D. N. Morey
Vice President - Farley Project
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1295

SUBJECT: ISSUANCE OF AMENDMENTS - JOSEPH M. FARLEY NUCLEAR PLANT,
UNITS 1 AND 2 (TAC NOS. MA0381 AND MA0382)

Dear Mr. Morey:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 140 to Facility Operating License No. NPF-2 and Amendment No. 132 to Facility Operating License No. NPF-8 for the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2, Technical Specifications (TSs) in response to your submittal dated December 31, 1997, as supplemented by letter dated September 11, 1998.

The amendments change the TSs to revise the intermediate range neutron flux reactor trip setpoint and allowable value, and delete the reference to the reactor trip setpoints in TS 3.10.3, "Special Test Exceptions - Physics Tests" and TS 3.10.4, "Special Test Exceptions - Reactor Coolant Loops."

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, reading "Jacob I. Zimmerman", is positioned above the typed name.

Jacob I. Zimmerman, Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosures:

1. Amendment No. 140 to NPF-2
2. Amendment No. 132 to NPF-8
3. Safety Evaluation

cc w/encls: See next page



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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 140
License No. NPF-2

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by Southern Nuclear Operating Company, Inc. (Southern Nuclear), dated December 31, 1997, as supplemented by letter dated September 11, 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 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 license 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-2 is hereby amended to read as follows:

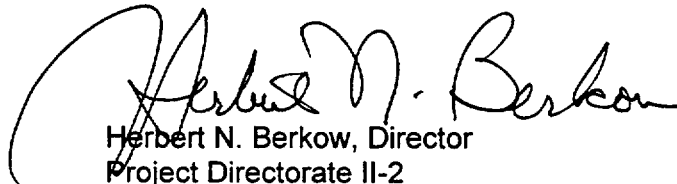
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P PDR

(2) Technical Specifications

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

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "Herbert N. Berkow", is written over the typed name and title.

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 8, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 140

TO FACILITY OPERATING LICENSE NO. NPF-2

DOCKET NO. 50-348

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

Remove

2-5
B 2-4
3/4 10-3
3/4 10-4

Insert

2-5
B 2-4
3/4 10-3
3/4 10-4

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

<u>FUNCTIONAL UNIT</u>	<u>TRIP SETPOINT</u>	<u>ALLOWABLE VALUES</u>
1. Manual Reactor Trip	Not Applicable	Not Applicable
2. Power Range, Neutron Flux	Low Setpoint - $\leq 25\%$ of RATED THERMAL POWER	Low Setpoint - $\leq 25.4\%$ of RATED THERMAL POWER
	High Setpoint - $\leq 109\%$ of RATED THERMAL POWER	High Setpoint - $\leq 109.4\%$ of RATED THERMAL POWER
3. Power Range, Neutron Flux, High Positive Rate	$\leq 5\%$ of RATED THERMAL POWER with a time constant ≥ 2 seconds	$\leq 5.4\%$ of RATED THERMAL POWER with a time constant ≥ 2 seconds
4. Power Range, Neutron Flux, High Negative Rate	$\leq 5\%$ of RATED THERMAL POWER with a time constant ≥ 2 seconds	$\leq 5.4\%$ of RATED THERMAL POWER with a time constant ≥ 2 seconds
5. Intermediate Range, Neutron Flux	$\leq 35\%$ of RATED THERMAL POWER	$\leq 40\%$ of RATED THERMAL POWER
6. Source Range, Neutron Flux	$\leq 10^5$ counts per second	$\leq 1.3 \times 10^5$ counts per second
7. Overtemperature ΔT	See Note 1	See Note 3
8. Overpower ΔT	See Note 2	See Note 6
9. Pressurizer Pressure--Low	≥ 1865 psig	≥ 1862 psig
10. Pressurizer Pressure--High	≤ 2385 psig	≤ 2388 psig
11. Pressurizer Water Level--High	$\leq 92\%$ of instrument span	$\leq 92.4\%$ of instrument span
12. Loss of Flow	$\geq 90\%$ of minimum measured flow per loop*	$\geq 89.7\%$ of minimum measured flow per loop*

*Minimum measured flow is 88,100 gpm per loop.

LIMITING SAFETY SYSTEM SETTINGS

BASES

Intermediate and Source Range, Nuclear Flux

The Intermediate and Source Range, Nuclear Flux trips provide reactor core protection during reactor startup. These trips provide redundant protection to the low setpoint trip of the Power Range, Neutron Flux channels. The Source Range Channels will initiate a reactor trip at about 10^5 counts per second unless manually blocked when P-6 becomes active. The Intermediate Range Channels will initiate a reactor trip at a current level proportional to approximately 35 percent of RATED THERMAL POWER unless manually blocked when P-10 becomes active. No credit was taken for operation of the trips associated with either the Intermediate or Source Range Channels in the accident analyses; however, their functional capability at the specified trip settings is required by this specification to enhance the overall reliability of the Reactor Protection System.

Overtemperature ΔT

The Overtemperature delta T trip provides core protection to prevent DNB for all combinations of pressure, power, coolant temperature, and axial power distribution, provided that the transient is slow with respect to piping transit, thermowell, and RTD response time delays from the core to the temperature detectors (about 4 seconds), and pressure is within the range between the High and Low Pressure reactor trips. This setpoint includes corrections for changes in density and heat capacity of water with temperature and dynamic compensation for transport, thermowell, and RTD response time delays from the core to RTD output indication. With normal axial power distribution, this reactor trip limit is always below the core safety limit as shown in Figure 2.1-1. If axial peaks are greater than design, as indicated by the difference between top and bottom power range nuclear detectors, the reactor trip is automatically reduced according to the notations in Table 2.2-1.

Operation with a reactor coolant loop out of service below the 3 loop P-8 setpoint does not require reactor protection system setpoint modification because the P-8 setpoint and associated trip will prevent DNB during 2 loop operation exclusive of the Overtemperature delta T setpoint. Two loop operation above the 3 loop P-8 setpoint is permissible after resetting the K1, K2, and K3 inputs to the Overtemperature delta T channels and raising the P-8 setpoint to its 2 loop value. In this mode of operation, the P-8 interlock and trip functions as a High Neutron Flux trip at the reduced power level.

SPECIAL TEST EXCEPTIONS

3/4.10.3 PHYSICS TESTS

LIMITING CONDITION FOR OPERATION

3.10.3 The limitations of Specifications 3.1.1.3, 3.1.1.4, 3.1.3.1, 3.1.3.5 and 3.1.3.6 may be suspended during the performance of PHYSICS TESTS provided:

- a. The THERMAL POWER does not exceed 5% of RATED THERMAL POWER, and
- b. The Reactor Coolant System lowest operating loop temperature (T_{avg}) is greater than or equal to 531°F.

APPLICABILITY: MODE 2.

ACTION:

- a. With the THERMAL POWER greater than 5% of RATED THERMAL POWER, immediately open the reactor trip breakers.
- b. With a Reactor Coolant System operating loop temperature (T_{avg}) less than 531°F, restore T_{avg} to within its limit within 15 minutes or be in at least HOT STANDBY within the next 15 minutes.

SURVEILLANCE REQUIREMENTS

4.10.3.1 The THERMAL POWER shall be determined to be less than or equal to 5% of RATED THERMAL POWER at least once per hour during PHYSICS TESTS.

4.10.3.2 Each Intermediate and Power Range Channel shall be subjected to a CHANNEL FUNCTIONAL TEST within 12 hours prior to initiating PHYSICS TESTS.

4.10.3.3 The Reactor Coolant System temperature (T_{avg}) shall be determined to be greater than or equal to 531°F at least once per 30 minutes during PHYSICS TESTS.

SPECIAL TEST EXCEPTIONS

3/4.10.4 REACTOR COOLANT LOOPS

LIMITING CONDITION FOR OPERATION

3.10.4 The limitations of Specification 3.4.1.1 may be suspended during the performance of start up and PHYSICS TESTS provided the THERMAL POWER does not exceed the P-7 Interlock Setpoint.

APPLICABILITY: During operation below the P-7 Interlock Setpoint.

ACTION:

With the THERMAL POWER greater than the P-7 Interlock Setpoint, immediately open the reactor trip breakers.

SURVEILLANCE REQUIREMENTS

4.10.4.1 The THERMAL POWER shall be determined to be less than P-7 Interlock Setpoint at least once per hour during start up and PHYSICS TESTS.

4.10.4.2 Each Intermediate, Power Range Channel and P-7 Interlock shall be subjected to a CHANNEL FUNCTIONAL TEST within 12 hours prior to initiating start up and PHYSICS TESTS.



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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

ALABAMA POWER COMPANY

DOCKET NO. 50-364

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 132
License No. NPF-8

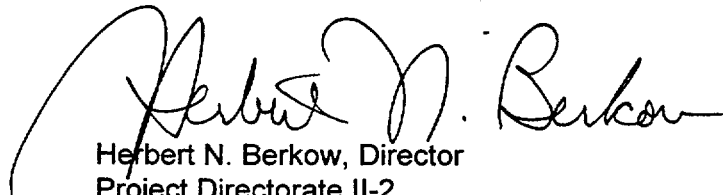
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 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license 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-8 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 132 , are hereby incorporated in the license. Southern Nuclear 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 issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "Herbert N. Berkow", is written over the typed name and title.

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 8, 1998

ATTACHMENT TO LICENSE AMENDMENT NO. 132

TO FACILITY OPERATING LICENSE NO. NPF-8

DOCKET NO. 50-364

Replace the following pages of the Appendix A Technical Specifications with the enclosed pages. The revised areas are indicated by marginal lines.

Remove

2-5
B 2-4
3/4 10-3
3/4 10-4

Insert

2-5
B 2-4
3/4 10-3
3/4 10-4

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Overtemperature ΔT

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SPECIAL TEST EXCEPTIONS

3/4.10.3 PHYSICS TESTS

LIMITING CONDITION FOR OPERATION

3.10.3 The limitations of Specifications 3.1.1.3, 3.1.1.4, 3.1.3.1, 3.1.3.5 and 3.1.3.6 may be suspended during the performance of PHYSICS TESTS provided:

- a. The THERMAL POWER does not exceed 5% of RATED THERMAL POWER, and
- b. The Reactor Coolant System lowest operating loop temperature (T_{avg}) is greater than or equal to 531°F.

APPLICABILITY: MODE 2.

ACTION:

- a. With the THERMAL POWER greater than 5% of RATED THERMAL POWER, immediately open the reactor trip breakers.
- b. With a Reactor Coolant System operating loop temperature (T_{avg}) less than 531°F, restore T_{avg} to within its limit within 15 minutes or be in at least HOT STANDBY within the next 15 minutes.

SURVEILLANCE REQUIREMENTS

4.10.3.1 The THERMAL POWER shall be determined to be less than or equal to 5% of RATED THERMAL POWER at least once per hour during PHYSICS TESTS.

4.10.3.2 Each Intermediate and Power Range Channel shall be subjected to a CHANNEL FUNCTIONAL TEST within 12 hours prior to initiating PHYSICS TESTS.

4.10.3.3 The Reactor Coolant System temperature (T_{avg}) shall be determined to be greater than or equal to 531°F at least once per 30 minutes during PHYSICS TESTS.

SPECIAL TEST EXCEPTIONS

3/4.10.4 REACTOR COOLANT LOOPS

LIMITING CONDITION FOR OPERATION

3.10.4 The limitations of Specification 3.4.1.1 may be suspended during the performance of start up and PHYSICS TESTS provided the THERMAL POWER does not exceed the P-7 Interlock Setpoint.

APPLICABILITY: During operation below the P-7 Interlock Setpoint.

ACTION:

With the THERMAL POWER greater than the P-7 Interlock Setpoint, immediately open the reactor trip breakers.

SURVEILLANCE REQUIREMENTS

4.10.4.1 The THERMAL POWER shall be determined to be less than P-7 Interlock Setpoint at least once per hour during startup and PHYSICS TESTS.

4.10.4.2 Each Intermediate, Power Range Channel and P-7 Interlock shall be subjected to a CHANNEL FUNCTIONAL TEST within 12 hours prior to initiating start up and PHYSICS TESTS.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 140 TO FACILITY OPERATING LICENSE NO. NPF-2
AND AMENDMENT NO. 132 TO FACILITY OPERATING LICENSE NO. NPF-8
SOUTHERN NUCLEAR OPERATING COMPANY, INC., ET AL.
JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2
DOCKET NOS. 50-348 AND 50-364

1.0 INTRODUCTION

By letter dated December 31, 1997, as supplemented by letter dated September 11, 1998, the Southern Nuclear Operating Company, Inc. (SNC, the licensee), submitted a request for changes to the Joseph M. Farley Nuclear Plant (FNP), Units 1 and 2, Technical Specifications (TSs). The requested changes revise the intermediate range (IR) neutron flux reactor trip setpoint and allowable value, and delete the reference to the reactor trip setpoints in TS 3.10.3, "Special Test Exceptions - Physics Tests," and TS 3.10.4, "Special Test Exceptions - Reactor Coolant Loops." The September 11, 1998, letter provided clarifying information that did not change December 31, 1997, application or the initial proposed no significant hazards consideration determination.

2.0 EVALUATION

2.1 Increase the Intermediate Range Trip Setpoint (TS Table 2.2-1, Item 5)

The IR channels provide a reactor trip (RT) signal on increasing power if the power level rises above the trip setpoint (typically 25 percent rated thermal power (RTP)). This trip signal provides backup protection to the power range high neutron flux trip (low setpoint) during reactor startup. The IR trip function provides diversity in the RT system due to the differences in the ion chamber design and the circuit design between the intermediate range and the power range channels. The safety analyses, however, do not explicitly assume a trip from the IR channels.

During controlled plant startup, the IRRT is allowed to be manually blocked above the P-10 permissive (typically 10 percent RTP) and will be reinstated automatically when the power level decreases below the P-10 setting. The P-10 permissive setting is determined by the power range channels. The IR channels are typically calibrated one time, at the beginning of the fuel cycle, while the power range channels are normalized to a secondary side power calorimetric on a daily basis. During routine plant operation, problems may arise with the IR trip due to large instrument uncertainty in the IR channels. The reactor power level measurement discrepancy between the P-10 permissive (generated by the power range detectors) and the

IRRT setpoint could cause an inadvertent RT because when the reactor power decreases below 10 percent power level (P-10), the IRRT will be automatically reinstated. The percent is based on one-out-of-two trip logic and when either channel NI-35 or NI-36 reaches a trip setpoint the reactor will trip even if the actual reactor power has not reached the trip level. To alleviate this problem, SNC proposed to increase the percent setpoint from 25 percent to 35 percent, and the allowable value from 30 percent to 40 percent. SNC performed a test on Unit 1 to measure the effect of changes on IR detector currents during control rod movement.

From that test, the rod shadowing effect was properly recorded and analyzed to determine the new value of the process measurement uncertainty. SNC evaluated the total channel errors for the percent by including a statistical combination of the process measurement accuracy uncertainties based on FNP's test data and the test results support this TS change.

The staff has reviewed the IR channel uncertainty data and finds that FNP's results are similar to those seen at other plants. As discussed earlier, the IRRT is not explicitly credited in any safety analysis. With the nominal trip setpoint at 35 percent RTP, and the new channel statistical allowance provided in the submittal, the trip is assured of actuating before reaching 60 percent RTP. This RTP level is still below the power range high setting trip at 110 percent RTP, which is always active. The staff finds that the proposed TS change to the IRRT setpoint and allowable value does not involve a significant reduction in safety margin and will reduce the potential for inadvertent trip and is, therefore, acceptable.

2.2 Delete the reference to the RT setpoints in TS 3.10.3, "Special Test Exceptions - Physics Tests" and TS 3.10.4, "Special Test Exceptions - Reactor Coolant Loops"

SNC stated that the proposed change to delete the above RT setpoints is a redundant reference that merely restates the analyzed setpoints contained in TS 2.2.1. In addition, deletion of these references is consistent with the Westinghouse Standard TS (STS) NUREG-1431, Revision 1, format. The staff has reviewed these deletions and finds the changes acceptable.

3.0 STAFF CONCLUSION

The staff has reviewed SNC's evaluation and justification for trip setpoint and allowable value changes in TS Table 2.2-1, Item 5, Intermediate Range, Neutron Flux, and changes in TS 3.10.3, "Special Test Exception - Physics Test," and TS 3.10.4, "Special Test Exception - Reactor Coolant Loops." Based on this review, the staff concludes that the proposed TS changes do not result in a significant reduction in safety margin, and are consistent with staff guidance in the Westinghouse STS, NUREG-1431. The staff concludes, therefore, that the proposed TS changes are acceptable.

4.0 STATE CONSULTATION

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

5.0 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 (63 FR 6998 dated February 11, 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.

6.0 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: H. Li

Date: December 8, 1998