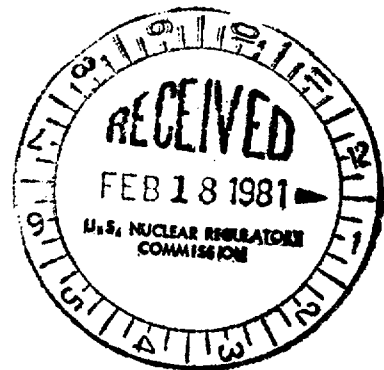


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K. Parrish  
E. Reeves



CP2

OFFICE	SURNAME	DATE					

Docket No. 50-364

Mr. F. L. Clayton, Jr.  
Senior Vice President  
Alabama Power Company  
Post Office Box 2641  
Birmingham, Alabama 35291

Dear Mr. Clayton:

SUBJECT: AMENDMENT NO. 2 TO FACILITY LICENSE NO. NPF-8 - FARLEY, UNIT 2

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 2 to License No. NPF-8 in accordance with your letter dated January 5, 1981, requesting exceptions to the Farley Unit 2 Technical Specifications which will permit you to perform augmented low power tests identified in Condition 2C(13) of License NPF-8. Your letter of September 2, 1980, "Augmented Low-Power Startup Test Program" and subsequent revisions in letters dated September 11, 1980, October 13, 1980, November 18, 1980 and January 16, 1981 provided your safety analysis and operating procedures for this program. Your letters of January 14 and February 5, 1981 provided your response to NUREG-0737 requirements for fuel loading and low power testing.

We have reviewed the above information and have concluded that an exception to the Technical Specifications for conducting augmented low power testing is acceptable and that Alabama Power Company's procedures for these tests are acceptable and can be performed without posing an undue risk to the public. Enclosure 1 provides Amendment No. 2 to License NPF-8 that permits conduct of the augmented low power test program within the constraints of your license, as amended. Enclosure 2 provides our safety evaluation regarding this matter.

Enclosure 3 is a copy of the Federal Register Notice which has been forwarded to the Office of the Federal Register for publication.

Sincerely,

Original signed by  
Darrell G. Eisenhut

Darrell G. Eisenhut, Director  
Division of Licensing

8102280334  
p

Enclosures:

1. Amendment 2 to License NPF-8
2. Safety Evaluation Report
3. Federal Register Notice

cc w/enclosures:

OFFICE	See next page	LB-2	DL:LB-2	DL:LB-2	OELD	DL:AD:L	DL:DR
SURNAME	MService/lm	LKintner	ASchwencer	DSwanson	RTedesco	DEisenhut	
DATE	2/6/81	2/9/81	2/9/81	2/9/81	2/9/81	2/10/81	

Legal reviewed & amended  
FR notice only  
as notified  
2/10/81

ccs w/enclosures:

Mr. Alan R. Barton  
Executive Vice President  
Alabama Power Company  
P. O. Box 2641  
Birmingham, Alabama 35291

Mr. Ruble A. Thomas  
Vice President  
Southern Company Service, Inc.  
P. O. Box 2625  
Birmingham, Alabama 35202

Mr. George F. Trowbridge  
Shaw, Pittman, Potts and Trowbridge  
1800 M Street, N. W.  
Washington, D. C. 20036

Ira L. Myers, M. D.  
State Health Officer  
State Department of Public Health  
State Office Building  
Montgomery, Alabama 36104

Honorable A. A. Middleton  
Chairman  
Houston County Commission  
Dothan, Alabama 36301

U. S. Environmental Protection Agency  
Attn: EIS Coordinator  
Region IV Office  
345 Courtland Street, N. E.  
Atlanta, Georgia 30308

Mr. W. Bradford  
NRC Resident Inspector  
P. O. Box 1814  
Dothan, Alabama 36302

ALABAMA POWER COMPANY

DOCKET NO. 50-364

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY LICENSE

Amendment No. 2  
License No. NPF-8

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Alabama Power Company (the licensee) dated January 5, 1981, 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 to 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:

A. Paragraph 2.C.(2) of Facility License No. NPF-8 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment 2 and the Environmental Protection Plan contained in Appendix B attached hereto are hereby incorporated in this license. The Alabama Power Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

B. Paragraph 2.C.(12).b of Facility License No. NPF-8 is hereby amended to read as follows:

b. Shift Manning (I.A.1.3)

The shift manning shall be as shown in Table 6.2-1 of the Technical Specifications. This table shall be in effect until the licensee has additional licensed operators to fully meet the new requirements described in the NRC letter of July 31, 1980, but no later than May 1, 1981 without prior approval by the NRC.

Prior to fuel loading, Alabama Power Company shall implement administrative procedures to assure that qualified individuals to man the operational shifts are readily available in the event of an abnormal or emergency situation. These administrative procedures shall include provisions which limit the amount of overtime worked by operations personnel in accordance with Alabama Power Company's letter dated February 5, 1981.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Original signed by  
Darrell G. Eisenhut

Darrell G. Eisenhut, Director  
Division of Licensing

Attachments:  
Changes to the Technical  
Specifications

Date of Issuance:

*Legal review  
Amendment 2  
and FR notices  
only as  
notified*

OFFICE	DL:LB-2	DL:LB-2	OELD	DL:LB-2	DL:AD:L	DL:DER
SURNAME	MServide/m	LKintner	Swanson	ASchwencer	RTedesco	DEisenhut
DATE	2/6/81	2/9/81	2/9/81	2/9/81	2/9/81	2/10/81



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

ALABAMA POWER COMPANY

DOCKET NO. 50-364

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY LICENSE

Amendment No. 2  
License No. NPF-8

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Alabama Power Company (the licensee) dated January 5, 1981, 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 to 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:

- A. Paragraph 2.C.(2) of Facility License No. NPF-8 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment 2 and the Environmental Protection Plan contained in Appendix B attached hereto are hereby incorporated in this license. The Alabama Power Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

- B. Paragraph 2.C.(12).b of Facility License No. NPF-8 is hereby amended to read as follows:

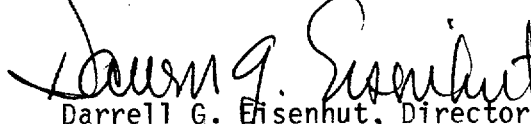
b. Shift Manning (I.A.1.3)

The shift manning shall be as shown in Table 6.2-1 of the Technical Specifications. This table shall be in effect until the licensee has additional licensed operators to fully meet the new requirements described in the NRC letter of July 31, 1980, but no later than May 1, 1981 without prior approval by the NRC.

Prior to fuel loading, Alabama Power Company shall implement administrative procedures to assure that qualified individuals to man the operational shifts are readily available in the event of an abnormal or emergency situation. These administrative procedures shall include provisions which limit the amount of overtime worked by operations personnel in accordance with Alabama Power Company's letter dated February 5, 1981.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Darrell G. Eisenhut, Director  
Division of Licensing

Attachments:  
Changes to the Technical  
Specifications

Date of Issuance:  
February 10, 1981

ATTACHMENT TO LICENSE AMENDMENT NO. 2

FACILITY LICENSE NO. NPF-8

DOCKET NO. 50-364

Revise Appendix A as follows:

Remove Old Page

6-5

Add New Page

6-5

7-1



TABLE 6.2-2 (Continued)

- SS - Shift Supervisor with a Senior Reactor Operators License on Unit 2
- SRO - Individual with a Senior Reactor Operators License on Unit 2<sup>d</sup>
- RO - Individual with a Reactor Operators License on Unit 2
- AO - Auxiliary Operator
- STA - Shift Technical Advisor

The Shift Crew Composition may be one less than the minimum requirements of Table 6.2-1 for a period of time not to exceed 2 hours in order to accommodate unexpected absence of on-duty shift crew members provided immediate action is taken to restore the Shift Crew Composition to within the minimum requirements of Table 6.2-1. This provisions does not permit any shift crew position to be unmanned upon shift change due to an oncoming shift crewman being late or absent.

During any absence of the Shift Supervisor from the Control Room while the unit is in MODE 1, 2, 3, 4, 5 or 6, an individual (other than the Shift Technical Advisor) with a valid SRO license shall be designated to assume the Control Room command function and shall remain in the Control Room until the Shift Supervisor returns and reassumes the command function.

d/ Refer to note d/ on page 6-4.

#### AUGMENTED LOW POWER TEST PROGRAM

- 7.1 For the conducting of the augmented low power test program only (licensee letter of November 18, 1980), the licensee has been granted an exemption from the requirements of those Technical Specifications identified in Table A of the NRC Safety Evaluation Report enclosed with Amendment 2 to the Facility License NPF-8.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-364

ALABAMA POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY LICENSE NPF-8

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 2 to Facility License No. NPF-8 issued to Alabama Power Company (the licensee), which added Technical Specification 7.1 to Facility License NPF-8 for operation of the Joseph M. Farley Nuclear Plant, Unit No. 2 (the facility) located in Houston County, Alabama. The amendment is effective as of the date of issuance.

The amendment grants relief from certain requirements in the Technical Specifications to permit the conduct of augmented low power tests.

The application for the amendment complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendment. The activity authorized by the amendment is encompassed by the overall action involving the proposed issuance of an operating license for which prior public notice was issued in the Federal Register on October 30, 1973 (38 FR 29907).

The Commission has determined that the issuance of this amendment will not result in any environmental impacts other than those evaluated in the Final

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Environmental Statement since the activity authorized by the amendment is encompassed by the overall action evaluated in the Final Environmental Statement.

For further details with respect to this action, see (1) the application for amendment dated January 5, 1981, (2) Amendment No. 2 to License No. NPF-8, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C. and at the George S. Houston Memorial Library, 212 W. Burdeshaw Street, Dothan, Alabama 36303. A copy of item (2) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland this 10 day of February 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer, Chief  
Licensing Branch No. 2  
Division of Licensing

*Legal review of  
amendment  
and FR notice,  
as modified  
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SURNAME	MService:ph	LKintner	Stube	ASchwencer	D. G. G. G.	R. Tedesco	
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ENCLOSURE 2

FEB 10 1981

SAFETY EVALUATION BY THE

OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 2 TO

FACILITY LICENSE NO. NPF-8

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

DOCKET NO. 50-364

Background

License condition 2.C.(13)b requires staff approval of licensee's program for I.G.1, "Training During Low Power Testing". This program is one of the requirements for fuel loading and low power testing identified in NUREG-0694, "TMI Related Requirements for New Operating Licenses," June 1980. NUREG-0737, "Clarification of TMI Action Plan Requirements", November 1980, superseded and provided changes to the requirements in NUREG-0694.

The staff has evaluated licensee's safety analysis and test procedures for Item I.G.1. In addition staff has reviewed licensee's response to those items in NUREG-0737 which change fuel loading and low power testing requirements identified in NUREG-0694. Our evaluation and conclusion regarding these items is provided herein.

I.G.1 Training During Low Power Testing

Requirement

Section 22.2, Item I.G.1 of Supplement 4 to the Safety Evaluation Report related to the Operation of Joseph M. Farley Nuclear Plant, Unit 2, September 1980, required that augmented low power tests be performed during initial plant startup prior to exceeding 5 percent power to provide data and operator training for anticipated abnormal conditions. The specific tests required by Supplement 4 were:

- Test 1      Cooldown capability of the charging and letdown system (6)\*
- Test 2a     Natural circulation test (1)
- Test 2b     Natural circulation with loss of pressurizer heaters (3)

\*Numbers in parentheses are those used to designate the tests in Supplement 4; (8) was not required and (9B) will be run after the Westinghouse full power acceptance run.

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*Legal review and FR only as modified*

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DATE	2/9/81	2/9/81	2/9/81	2/9/81	2/10/81		

Test 2c Natural circulation at reduced pressure (5)  
Test 3 Natural circulation with simulated loss of offsite power (2)  
Test 4 Effect of steam generator secondary side isolation on natural circulation (4)  
Test 5 Forced circulation cooldown (9A)  
Test 6 Simulated loss of all onsite and offsite AC power (7)

### Evaluation

By letter dated September 2, 1980, licensee transmitted its safety analysis and procedures for Tests 1, 2, 3, 4 and 6. The safety analysis for Test 5 (9A)\* was not included because it was a prerequisite test for the tests of boron mixing and cooldown (9B)\* if they were to be run using nuclear heat; however, the licensee proposed, and Staff agreed, that the boron mixing and cooldown tests could be run following the plant power escalation and full power acceptance run using decay heat. Subsequently, Test 5 (9A) was incorporated in Test 4 (4). By letter dated September 11, 1980, licensee transmitted revised procedures for Tests 3 and 6, using nuclear heat for Test 3 and reactor coolant pump heat for Test 6. By letters dated November 18, 1980 and January 16, 1981, licensee transmitted its revised safety analysis, which is the basis for our approval of the tests. The draft test procedures which were reviewed and accepted by the staff are:

	<u>FNPP Test No.</u>	<u>Date of Draft</u>
Test 1	501-7-001	September 17, 1980
Test 2	501-7-002	September 17, 1980
Test 3	501-7-003	September 13, 1980
Test 4	501-7-004	September 18, 1980
Test 6	501-7-006	September 17, 1980

The purpose of this safety evaluation is to present the results of the NRC staff review of Tests 1, 2, 3, 4 and 6 which constitute the licensee's augmented low power test program. Staff approval of this test program satisfies NPF-8 License Condition 2.C.(13)b.

As identified above, Alabama Power Company (licensee) submitted the results of an analysis of the safety effects of the special conditions of the augmented low power test program, including the exceptions to the Technical Specifications, which lead to operating conditions that are outside the bounds of conditions assumed in the Final Safety Analysis Report (FSAR). The effects of these special conditions on the Condition II, III, and IV events treated in Chapter 15 of the FSAR were evaluated.

\*Numbers in parentheses are those used to designate the tests in Supplement 4; (8) was not required and (9B) will be run after the Westinghouse full power acceptance run.

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As the result of licensee's safety analysis of the augmented low power test program, a set of operational safety criteria have been specified for test conditions and for conditions requiring prompt operator initiation of reactor trip or safety injection or termination of test. The operational safety criteria which are provided in Section 3.2 of licensee's safety analysis, November 18, 1980, include:

- a. Limits on maximum core exit temperature, maximum loop  $\Delta T$  for any loop, maximum coolant cold leg and average temperature, and minimum subcooling. These limits and operator actions are provided to ensure adequate margin to the saturation temperature and adequate core cooling.
- b. Limits on the minimum steam generator water level to provide a sufficient secondary side heat sink.
- c. Limits on the minimum pressurizer water level for heater coverage and pressure control.
- d. Limits on maximum insertion of control bank D to minimize consequences of inadvertent rod withdrawal and maintain a small moderator temperature coefficient while providing sufficient margin for shutdown.
- e. Limits on the Power Range Neutron Flux low setpoint and Intermediate Range Neutron Flux reactor trip setpoint to limit maximum power to low values following possible uncontrolled power increases.
- f. Limits on containment pressure and unplanned or unexplained changes in pressurizer water level and pressure.

Exceptions to a number of Farley Unit 2 Technical Specification requirements are needed to conduct the augmented low power test program. Some exceptions are needed because of operation with a critical reactor under conditions outside of the range allowed in the Technical Specifications (e.g., natural circulation conditions and low coolant temperatures and pressure). Other exceptions are required because some systems normally required to be operable will be rendered temporarily inoperable as part of the test program (e.g., simulated loss of offsite power and simulated loss of all AC power). The exceptions required are provided in Table 3-1 of Licensee's safety analysis, January 16, 1981, and listed in Table A of this Safety Evaluation for each of the tests in the augmented low power test program.

The Licensee presented results of offsite dose analyses for a hypothetical accident during the augmented low power test program, using conservative assumptions. The analysis was made for an accident with a coincident loss of main condenser vacuum which did not involve a break in the reactor coolant

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pressure boundary. This accident bounds the consequences of Condition II type transients analyzed in the FSAR. The results of the analysis show that the two hour site boundary doses would be 5 rem thyroid, 0.9 rem whole body, and 0.4 rem to the skin.

The test procedures for the augmented low power test program as identified in the Background of this Safety Evaluation have been reviewed by the staff. The procedures have also been reviewed by the reactor system vendor, Westinghouse. The reactor system vendor's safety analysis stated that the program can be safely performed. Independent staff review also concludes that the tests can be safely performed. In order to perform the tests certain Technical Specifications must be excepted for the period of the tests as described above. The low power levels, low core fission product inventory, and operational safety criteria described above permit the exceptions to be made and still retain adequate safety margins.

On the basis of our review of the licensee's safety analysis and procedures for the tests which include the operational safety criteria, effects of the exceptions to the Technical Specifications, offsite dose analyses, and test procedures, the staff concludes that the augmented low power test program at Farley Unit 2 is acceptable.

#### I.A.1.1 Shift Technical Advisor

##### Requirement

Each licensee shall provide an on-shift technical advisor to the shift supervisor. The shift technical advisor (STA) may serve more than one unit at a multiunit site if qualified to perform the advisor function for the various units.

The STA shall have a bachelor's degree or equivalent in a scientific or engineering discipline and have received specific training in the response and analysis of the plant for transients and accidents. The STA shall also receive training in plant design and layout, including the capabilities of instrumentation and controls in the control room. The licensee shall assign normal duties to the STAs that pertain to the engineering aspects of assuring safe operations of the plant, including the review and evaluation of operating experience.

Training shall be completed by January 1, 1981 or by the time the fuel loading license is issued. See NUREG-0578, Section 2.2.1.b, and letters of September 27 and November 9, 1979 and October 31, 1980 (NUREG-0737).

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### Clarification

The letter of October 30, 1979 clarified the short-term STA requirements. That letter indicated that the STAs must have completed all training by January 1, 1981. This paper confirms these requirements and requests additional information.

The need for the STA position may be eliminated when the qualifications of the shift supervisors and senior operators have been upgraded and the man-machine interface in the control room has been acceptably upgraded. However, until those long-term improvements are attained, the need for an STA program will continue.

The staff has not yet established the detailed elements of the academic and training requirements of the STA beyond the guidance given in its October 30, 1979 letter. Nor has the staff made a decision on the level of upgrading required for licensed operating personnel and the man-machine interface in the control room that would be acceptable for eliminating the need of an STA. Until these requirements for eliminating the STA position have been established, the staff continues to require that, in addition to the staffing requirements specified in its July 31, 1980 letter (as revised by item I.A.1.3 of this enclosure), an STA be available for duty on each operating shift when a plant is being operated in Modes 1-4 for a PWR and Modes 1-3 for a BWR. At other times, an STA is not required to be on duty.

Since the October 30, 1979 letter was issued, several efforts have been made to establish, for the longer term, the minimum level of experience, education, and training for STAs. These efforts include work on the revision to ANS-3.1, work by the Institute of Nuclear Power Operations (INPO), and internal staff efforts.

INPO recently made available a document entitled "Nuclear Power Plant Shift Technical Advisor--Recommendations for Position Description, Qualifications, Education and Training." A copy of Revision 0 of this document, dated April 30, 1980, is attached as Appendix C. Sections 5 and 6 of the INPO document describe the education, training, and experience requirements for STAs. The NRC staff finds that the descriptions as set forth in Sections 5 and 6 of Revision 0 to the INPO document are an acceptable approach for the selection and training of personnel to staff the STA positions. (Note: This should not be interpreted to mean that this is an NRC requirement at this time. The intent is to refer to the INPO document as acceptable for interim guidance for a utility in planning its STA program over the long term (i.e., beyond the January 1, 1981 requirement to have STAs in place in accordance with the qualification requirements specified in the staff's October 30, 1979 letter).)

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No later than January 1, 1981, all licensees of operating reactors shall provide this office with a description of their STA training program and their plans for regualification training. This description shall indicate the level of training attained by STAs by January 1, 1981 and demonstrate conformance with the qualification and training requirements in the October 30, 1979 letter. Applicants for operating licenses shall provide the same information in their application, or amendments thereto, on a schedule consistent with the NRC licensing review schedule.

No later than January 1, 1981, all licensees of operating reactors shall provide this office with a description of their long-term STA program, including qualification, selection criteria, training plans, and plans, if any, for the eventual phaseout of the STA program. (Note: The description shall include a comparison of the licensee/applicant program with the above-mentioned INPO document. This request solicits industry views to assist NRC in establishing long-term improvements in the STA program. Applicants for operating licenses shall provide the same information in their application, or amendments thereto, on a schedule consistent with the NRC licensing review schedule.)

#### Evaluation

The NRC letter of October 30, 1979 refers to Sections A.1, A.2 and A.3 of Enclosure 2 to a September 13, 1979 NRC letter to licensees for detailed guidance concerning the technical education and training qualifications of STAs that are to be met by January 1, 1981 for operating plants and prior to fuel loading for operating license applicants. This guidance is as follows.

#### A. Accident Assessment Function

##### 1. General Technical Education

The technical education of at least one person in the control room under off normal conditions should include basic subjects in engineering and science. The purpose of this education is to aid the operator in assessing unusual situations not explicitly covered in the current operator training. The following is a tentative list of areas of knowledge that are considered to be desirable:

Mathematics, including elementary calculus

Reactor physics, chemistry and materials

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Reactor thermodynamics, fluid mechanics, and heat transfer

Electrical Engineering, including reactor control theory

These areas of knowledge should be taught at the college level and would be equivalent to about 60 semester hours. Although a college graduate engineer would have many of these subjects and more that would not be essential, some engineers might be deficient in a few of these specific areas, e.g., reactor physics. Although the time to teach these subjects to a licensed senior reactor operator could be as short as two years, depending on the scope and content of the subjects, the selection of a graduate engineer would likely be a more rapid means of fulfilling this characteristic.

2. All persons assigned to duties in the control room should be trained in the details of the design, function, arrangement and operation of the plant systems. This training is necessary to assure that the meaning and significance of instrument readings and the effect of control actions are known. A licensed operator or supervisor of an operator would not be required to have further training in order to fulfill this characteristic. A graduate engineer not previously licensed or trained as an operator or senior operator would require additional training in order to fulfill this characteristic.

3. Transient and Accident Response Training

In addition to the training in normal operations, anticipated transients, and accidents presently required of operators and senior operators, one person in the control room under off normal conditions should be trained to recognize and react to a wide range of unusual situations including multiple equipment failures and operator errors. This training should not be limited to written procedures or specific accident scenarios, but should include the recognition of symptoms of accident conditions such as complex transient responses or inadequate core cooling and possible corrective actions. The purpose of this training is to broaden the ability for prompt recognition of and response to unusual events, not to modify the instinctive, rapid procedural response to transients and accidents provided by reactor operators. The training is required in recognition of the fact that real accidents inherently are initiated and accompanied by unusual and unexpected events. The training is also to emphasize need to focus on the essential parameters that indicate the status of the core and the primary coolant boundary. This additional training

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would take up to a year to accomplish for a person not already experienced in nuclear plant transient and accident analysis or evaluation. Both inexperienced graduate engineers and currently licensed operators would require additional training to fulfill this characteristic."

By letter dated February 5, 1981, APCo has informed us that its STAs meet the technical education and training requirements as specified in the NRC September 13, 1979 letter to licensees. APCo also submitted information listing the education and training qualifications of each of its five STAs. It has assumed and attributed equivalent college semester hour credits for some of the training received by these STAs in the Farley STA and SRO training programs and in U.S. Navy training programs. APCo relies on these equivalent credit hours to reach the 60 semester credit hours in technical subjects specified by the September 13, 1979 letter for two of the Farley STAs. The other three Farley STAs have Bachelor of Science Degrees in either Nuclear or Mechanical Engineering and appear to have well over the specified 60 semester credit hours without relying on an equivalence between the APCo-provided STA and SRO training program and college semester hour credits for technical education.

We have reviewed licensee's submittal regarding the technical education and training of its five shift technical advisors. Based on our review, we conclude that the technical education and training of the Farley Nuclear Plant shift technical advisors meet the requirements specified in Item I.A.1.1, and are acceptable.

#### I.A.1.3 Shift Manning

##### Requirement

Shift staffing and overtime restrictions for normal operation shall be in accordance with Mr. D. G. Eisenhut's letter of July 31, 1980, as revised by NUREG-0737.

This requirement shall be met before fuel loading. See letters of July 31, 1980 and October 31, 1980 (NUREG-0737).

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### Clarification

NUREG-0737 supersedes page 3 of the July 31, 1980 letter in its entirety with the following:

Licensees of operating plants and applicants for operating licenses shall include in their administrative procedures (required by license conditions) provisions governing required shift staffing and movement of key individuals about the plant. These provisions are required to assure that qualified plant personnel to man the operational shifts are readily available in the event of an abnormal or emergency situation.

These administrative procedures shall also set forth a policy, the objective of which is to operate the plant with the required staff and develop working schedules such that use of overtime is avoided, to the extent practicable, for the plant staff who perform safety-related functions (e.g., senior reactor operators, reactor operators, health physicists, auxiliary operators, I&C technicians and key maintenance personnel).

IE Circular No. 80-02, "Nuclear Power Plant Staff Work Hours," dated February 1, 1980 discusses the concern of overtime work for members of the plant staff who perform safety-related functions.

The staff recognizes that there are diverse opinions on the amount of overtime that would be considered permissible and that there is a lack of hard data on the effects of overtime beyond the generally recognized normal 8-hour working day, the effects of shift rotation, and other factors. NRC has initiated studies in this area. Until a firmer basis is developed on working hours, the administrative procedures shall include as an interim measure the following guidance, which generally follows that of IE Circular No. 80-02.

In the event that overtime must be used (excluding extended period of shutdown for refueling, major maintenance or major plant modifications), the following overtime restrictions should be followed:

- (1) An individual should not be permitted to work more than 12 hours straight (not including shift turnover time).
- (2) There should be a break of at least 12 hours (which can include shift turnover time) between all work periods.
- (3) An individual should not work more than 72 hours in any 7-day period.
- (4) An individual should not be required to work more than 14 consecutive days without having 2 consecutive days off.

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However, recognizing that circumstances may arise requiring deviation from the above restrictions, such deviation shall be authorized by the plant manager or his deputy, or higher levels of management in accordance with published procedures and with appropriate documentation of the cause.

If a reactor operator or senior reactor operator has been working more than 12 hours during periods of extended shutdown (e.g., at duties away from the control board), such individuals shall not be assigned shift duty in the control room without at least a 12-hour break preceding such an assignment.

NRC encourages the development of a staffing policy that would permit the licensed reactor operators and senior reactor operators to be periodically assigned to other duties away from the control board during their normal tours of duty.

If a reactor operator is required to work in excess of 8 continuous hours, he shall be periodically relieved of primary duties at the control board, such that periods of duty at the board do not exceed about 4 hours at a time.

The guidelines on overtime do not apply to the shift technical advisor provided he or she is provided sleeping accommodations and a 10-minute availability is assured.

Operating license applicants shall complete these administrative procedures before fuel loading. Development and implementation of the administrative procedures at operating plants will be reviewed by the Office of Inspection and Enforcement beginning 90 days after July 31, 1980.

### Evaluation

In Section 22.2 of Supplement 4 to the Safety Evaluation Report, we evaluated the Farley 2 plans for shift manning and overtime against the requirements in Mr. D. G. Eisenhower's letter of July 31, 1980 and concluded that they were acceptable.

NUREG-0737 did not revise the shift manning requirements in our July 31, 1980 letter; however, it did change the limitations on overtime.

APCO has agreed to modify its administrative procedures to implement the overtime policy, restrictions, and administrative requirements as described in NUREG-0737. APCO confirmed this in a letter dated February 5, 1981, which reads as follows:

"The Company will incorporate into plant administrative procedures this policy concerning the utilization of overtime. This procedure, which will establish work schedules and guidelines that control the use of overtime for the plant staff who perform safety related functions, will be approved by corporate management. The work schedule guidelines will comply with NUREG-0737 clarification.

For personnel required by Farley Nuclear Plant Technical Specifications, Sections 6.2.2(a) and (c), the plant manager or in his absence, the plant emergency director will approve any deviations from the overtime guidelines described in the plant administrative procedures.

For all other personnel performing safety related functions, the group supervisor or superintendent will approve any posted work schedule deviating from the overtime guidelines described in plant administrative procedures. In those unexpected situations where the necessity exists, due to unforeseen shift-to-shift contingencies or emergencies to work personnel more than 12 hours straight, or to not provide such personnel with a break between work periods of at least 12 hours in order to perform safety related work, the respective group foreman may authorize such deviation. Action on the foreman's part in these situations will be reviewed by the respective group supervisor or superintendent as a part of the normal biweekly approval process for payroll time records. It is the opinion of Alabama Power Company that this commitment meets the spirit of the management control process of limiting overtime in that it provides a two-tier approval and review for the unexpected situation described above.

This commitment will be implemented prior to fuel loading."

For the personnel listed in Section 6.2.2(a) and (c) of the Farley Unit 2 Technical Specifications, this complies with the requirements of NUREG-0737. For all other personnel performing safety-related functions, which will number in the hundreds, APCO's procedure will provide for on-shift approval and management review of overtime. We conclude that this meets the objectives of the NUREG-0737 requirements when applied to a large group of people.

#### I.A.2.1 Immediate Upgrading of Operator and Senior Operator Training and Qualification

##### Requirements

- (1) Applicants for SRO license shall have 4 years of responsible power plant experience, of which at least 2 years shall be nuclear power plant experience (including 6 months at the specific plant) and no more than 2 years shall be academic or related technical training.

Certifications that operator license applicants have learned to operate the controls shall be signed by the highest level of corporate management for plant operation.

These requirements shall be met on or after May 1, 1980. See letter of March 28, 1980 (Ref. 27).

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- (2) Revise training programs to include training in heat transfer, fluid flow, thermodynamics, and plant transients.

This requirement shall be met by August 1, 1980. See letter of March 28, 1980.

- (3) An applicant for a senior reactor operator (SRO) license will be required to have experience equivalent to one year's experience as a licensed operator.

This requirement shall be met by December 1, 1980. See letter of October 31, 1980 (NUREG-0737).

#### Evaluation

In Section 22.5 of Supplement 4 to the Safety Evaluation Report, the staff concluded that Alabama Power Company (licensee) has satisfied the first two requirements of this item.

By letter dated January 14, 1981, the licensee stated it will meet the third requirement for all applications for licenses for SRO after December 1980.

We conclude that licensee has satisfactorily met the requirements of Item I.A.2.1.

#### I.A.2.3 Administration of Training Programs for Licensed Operators

##### Requirements

- (1) Training instructors who teach systems, integrated responses, transient and simulator courses shall successfully complete a SRO examination.

Applications shall be submitted by August 1, 1980. See letter of March 28, 1980.

- (2) Instructors shall attend appropriate retraining programs that address, as a minimum, current operating history, problems and changes to procedures and administrative limitations. In the event an instructor is a licensed SRO, his retraining shall be the SRO requalification program.

Programs shall be initiated by May 1, 1980. See letter of March 28, 1980.

- (3) Pending accreditation of training institutions, training center and facility instructors who teach systems, integrated responses, transient, and simulator courses shall demonstrate senior reactor operator (SRO) qualifications and be enrolled in appropriate requalification programs.



Documentation should be submitted 2 months prior to the issuance of an operating license. See letter of October 31, 1980 (NUREG-0737).

#### Evaluation

In Supplement 4 to the SER, we concluded that licensee complied with requirements (1) and (2) of this item.

By letter of January 14, 1981, licensee has stated that all current and future plant instructors will be SRO-licensed or certified and will attend the SRO requalification program.

We conclude that licensee has satisfactorily met the requirements of Item I.A.2.3.

#### I.C.6 Guidance on Procedures for Verifying Correct Performance of Operating Activities

##### Requirement

Procedures shall be reviewed and revised, as necessary, to assure that an effective system of verifying the correct performance of operating activities is provided as a means of reducing human errors and improving the quality of normal operations. This will reduce the frequency of occurrence of situations that could result in or contribute to accidents. Such a verification system may include automatic system status monitoring, human verification of operations and maintenance activities independent of the people performing the activity, or both. Implementation of automatic status monitoring if required will reduce the extent of human verification of operations and maintenance activities but will not eliminate the need for such verification in all instances. The procedures adopted by the licensees may consist of two phases--one before and one after installation of automatic status monitoring equipment, if required, in accordance with Item I.D.3 of NUREG-0660.

This requirement shall be met by January 1, 1981 or prior to fuel load. See NUREG-0578, Recommendation 5 and letter of October 31, 1980 (NUREG-0737).

##### Evaluation

Modified procedures, policies, and directives will be used at the Farley Nuclear Plant to assure operating activities have been adequately verified. A description of these procedures has been reviewed by the staff and comments given to the licensee. The description has been revised to incorporate these comments and other comments generated within the applicant's organization. Representatives of the Office of Inspection and Enforcement will verify implementation of these procedures in accordance with NUREG-0737.

We conclude that the program described by the licensee for verification of correct performance of operating activities is adequate to support operation up to 100 percent of rated power.

Environmental Considerations

We have determined that the amendment does not authorize a change in effluent types, total amounts or an increase in design power level of 2774 MWt. The test program will not result in any environmental impacts other than those evaluated in the Staff's Final Environmental Statement since the test program is encompassed by the overall activity evaluated in the Final Environmental Statement.

Conclusions

The augmented low power test program for Farley Unit 2 involves tests at low power levels conducted over a short period of time and with a very low fission product inventory. Similar tests have been conducted at Sequoyah Unit 1 and North Anna Unit 2.

On the basis of the above considerations, the proposed operational safety criteria and the safety evaluations which include the effects of the exceptions to the Technical Specifications and operation under natural circulation conditions, the staff concludes that the augmented low power test program will not result in undue risk to public health and safety and is acceptable.

Therefore, we have concluded based on the considerations discussed above, that: (1) the low power test program does not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public. Also, we reaffirm our conclusions as otherwise stated in our Safety Evaluation Report and its Supplements related to the operation of Farley Unit 2.

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TABLE A

EXCEPTIONS TO TECHNICAL SPECIFICATIONS FOR AUGMENTED LOW POWER TESTS

<u>Technical Specification</u>		<u>Test No.</u>						
		1	2a	2b	2c	3	4	6
2.1.1	Core Safety Limits	—	X	X	X	X	X	
2.2.1	Various Reactor Trips							
	Overtemperature $\Delta T$		X	X	X	X	X	
	Overpower $\Delta T$		X	X	X	X	X	
	Steam Generator Level		X	X	X	X	X	
3.1.1.4	Moderator Temperature Coefficient						X	
3.1.1.5	Minimum Temperature for Criticality						X	
3.3.1	Various Reactor Trips							
	Overtemperature $\Delta T$		X	X	X	X	X	
	Overpower $\Delta T$		X	X	X	X	X	
	Steam Generator Level		X	X	X	X	X	
3.3.2	Safety Injection - All automatic functions		X	X	X	X	X	X
	Auxiliary Feedwater Initiation							
3.4.4	Pressurizer			X	X			X
3.7.1.2	Auxiliary Feedwater					X		X
3.8.1.1	AC Power Sources					X		X
3.8.2.1	AC Onsite Power Distribution System					X		X
3.8.2.3	DC Distribution System					X		X
3.10.3	Special Test Exceptions - Physics Tests						X	