

Docket Nos.: 50-348  
and 50-364

JUL 8 1981

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

Dear Mr. Clayton:

Subject: Issuance of Amendments to NPF-2 and NPF-8 - Joseph M. Farley  
Nuclear Plant, Units 1 and 2

The Commission has issued the enclosed Amendment No. 20 to Facility Operating License No. NPF-2 for the Joseph M. Farley Nuclear Plant, Unit No. 1 and Amendment No. 2 to Facility Operating License No. NPF-8 for the Joseph M. Farley Nuclear Plant, Unit No. 2. The amendment consists of changes to the Technical Specifications in response to your telecopy request, dated May 10, 1981, as confirmed by letter dated May 10, 1981. You requested temporary relief from diesel generator operability and surveillance frequency requirements to allow continued plant operation during repairs to diesel generator 1C.

The amendment approves the relief request and associated Technical Specification changes. Telephone authorization for this amendment was given May 11, 1981 and confirmed by letter dated May 11, 1981.

Copies of the Safety Evaluation and the Notice of Issuance are also enclosed.

Sincerely,

15/  
Steven A. Varga, Chief  
Operating Reactors Branch No. 1  
Division of Licensing

8107230367 810708  
PDR ADOCK 05000348  
PDR

Enclosures:

1. Amendment No. 20 to NPF-2
2. Amendment No. 2 to NPF-8
3. Safety Evaluation
4. Federal Register Notice

cc w/enclosures: See next page

REGULATORY DOCKET FILE COPY

JUL 30 1981

OFFICE	DL:LB#1	DL:LB#1	ORB#1	OELD	ORB#1	AD:OR	
SURNAME	MRushbrook/ys	JThomas	EReeves	DSIMANSON	Syerga	TNovak	
DATE	6/1/81	6/24/81	6/16/81	6/12/81	6/9/81	6/24/81	

JUL 8 1981

Mr. F. L. Clayton  
Alabama Power Company

cc: Mr. W. O. Whitt  
Executive Vice President  
Alabama Power Company  
Post Office Box 2641  
Birmingham, Alabama 35291

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

Ruble A. Thomas, Vice President  
Southern Company Services, Inc.  
Post Office Box 2625  
Birmingham, Alabama 35202

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

Chairman  
Houston County Commission  
Dothan, Alabama 36301

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Post Office Box 306  
Birmingham, Alabama 35201

George S. Houston Memorial Library  
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Dothan, Alabama 36303

Resident Inspector  
U.S. Nuclear Regulatory Commission  
Post Office Box 24-Route 2  
Columbia, Alabama 36319

State Department of Public Health  
ATTN: State Health Officer  
State Office Building  
Montgomery, Alabama 36104

Director, Criteria and Standards Division  
Office of Radiation Programs (ANR-460)  
U. S. Environmental Protection Agency  
Washington, D. C. 20460

JUL 8 1981

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

cc: Mr. W. O. Whitt  
Executive Vice President  
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Southern Company Services, Inc.  
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Mr. George F. Trowbridge  
Shaw, Pittman, Potts and Trowbridge  
1800 M Street, N. W.  
Washington, D. C. 20036

Mr. W. Bradford  
NRC Resident Inspector  
P. O. Box 24, Route 2  
Columbia, Alabama 36319

JUL 8 1981

AMENDMENT NO. 20 TO  
FACILITY OPERATING LICENSE NPF-2 - JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

AMENDMENT NO. 2 TO  
FACILITY OPERATING LICENSE NPF-8 - JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

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Docket File 50-343 & 50-364  
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ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 20  
License No. NPF-2

1. The Nuclear Regulatory Commission (the Commission) has found that:
- A. The request for amendment by Alabama Power Company (the licensee) dated May 10, 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 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.

8107230373 810708  
PDR ADOCK 05000348  
P PDR

OFFICE ▶							
SURNAME ▶							
DATE ▶							

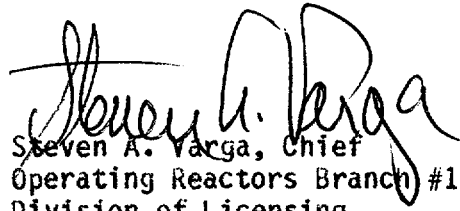
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-2 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 20, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment was effective May 11, 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: JUL 8 1981

OFFICE	DL:LB#1	ORB#1	OELD <sup>2</sup>	ORB#1			
SURNAME	J Thomas	E Reeves	Conner	S Varga			
DATE	6/23/81	6/23/81	6/ /81	6/28/81			

ATTACHMENT TO LICENSE AMENDMENT  
AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NO. NPF-2  
DOCKET NO. 50-348

Revise Appendix A as follows:

Remove Pages

3/4 8-1  
3/4 8-2

Insert Pages

3/4 8-1  
3/4 8-2

3.4.8.1 A.C. SOURCESOPERATINGLIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits from the offsite transmission network to the switchyard and two physically independent circuits from the switchyard to the onsite Class 1E distribution system, and
- b. Two separate and independent diesel generator sets (one 4075 Kw and one 2850 Kw) each with:
  1. Separate day tanks containing a minimum volume of 900 gallons of fuel for the 4075 kw diesel generators and 700 gallons of fuel for the 2850 kw diesel generators.
  2. A separate fuel transfer pump for each diesel.
- c. A fuel storage system consisting of four independent storage tanks each containing a minimum of 25,000 gallons of fuel.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

- a. With either an offsite circuit or a diesel generator set of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits and both diesel generator sets to OPERABLE status within 72\* hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and both diesel generator sets to OPERABLE status within 72\* hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

\*One time only exception for repair of Diesel 1C - the 72 hour action statement for operability of Diesel 1C may be extended to a period of 13 days provided Unit 2 is in modes 2, 3, 4, 5 or 6; and Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

\*\*One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.



ACTION (Continued)

- c. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of both diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore at least two offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- d. With both of the above required diesel generator sets inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours\*\*thereafter; restore at least one of the inoperable diesel generator sets to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both diesel generator sets to OPERABLE status within 72\* hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shut-down by transferring unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator set shall be demonstrated OPERABLE:

- a. At least once per 31 days, on a STAGGERED TEST BASIS, by:
  - 1. Verifying the fuel level in the day tank,
  - 2. Verifying the fuel level in the fuel storage tanks,

\*One time only exception for repair of Diesel 1C - the 72 hour action statement for operability of Diesel 1C may be extended to a period of 13 days provided Unit 2 is in modes 2, 3, 4, 5 or 6; and Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

\*\*One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

JUL 8 1981

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NO. NPF-2  
AND TO AMENDMENT NO. 2 TO FACILITY OPERATING LICENSE NO. NPF-8

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS NO. 1 AND 2

DUCKET NO. 50-348 AND 50-364

Introduction

On May 8, 1981, at 5:17 p.m., while performing surveillance tests on diesel generator 1C it was determined that the jacket cooling water had been introduced into the number 10 cylinder. At this time, diesel generator 1C was declared inoperable and the 72 hour ACTION statement was invoked. After exceeding the 72 hour ACTION statement, both Units 1 and 2 must be placed in HOT STANDBY. Preliminary investigations revealed that an excess of 72 hours would be required to return diesel generator 1C to OPERABLE status. By letter dated May 10, 1981, the licensee requested a one time exception to permit plant operation up to 13 days to allow repair of diesel generator 1C without shutting down the Unit 1 facility.

The Technical Specifications also state that during the 72 hour period when a diesel generator is declared inoperable, the remaining diesels must be started every eight hours to verify their operability. Since this would amount to over 150 combined starts for the remaining diesels, the licensee has requested that the period be increased to 72 hours during this one time repair because accelerated wear and degradation might occur due to the large number of startups.

Discussion and Evaluation

Availability of Safety Trains

Three of the five Farley Plant diesel generators are designed as swing diesels capable of serving either unit. Diesel generator 1C is one of the swing diesels. The licensee has shown that for all combinations of loss of offsite power with and without a coincident LOCA at one of the units, there will be at least one train of safety related equipment available at each unit.

In addition, the staff has investigated the possibility of each unit experiencing a single failure of a remaining diesel generator coincident with loss of offsite power to both units and a LOCA occurring at one unit. But even under these postulated conditions, the flexibility of the diesels result in one safety train being available on each unit to supply power to the required loads.

JUL 8 1981

### Station Blackout

Station blackout is characterized by the loss of both offsite and emergency ac power for an extended period of time. Core melt can occur if the turbine-driven auxiliary feedwater system fails or if the reactor coolant pump seals fail subsequently because of lack of cooling.

The sequence probabilities noted in Table 1 represent estimates for the next 13 days of operation with only 4 diesels available. As indicated in Table 1, the total probability of a core melt associated with a Station Blackout during the next 13 days is approximately  $3 \times 10^{-5}$ . This one time risk is considered acceptable. An explanation of the core melt probabilities follows:

There has been one loss-of-offsite power event in 4 years of operation or a point estimate of 0.25/Reactor Year (RY) which is consistent with generic results. Since we are concerned about 13 days with only 4 diesels, the probability of loss of AC is  $0.25 \times 13/360 = 0.009$  during the 13 days.

Based on Westinghouse analysis of loss of all feedwater, the core would begin to uncover in about 4000 seconds and would be completely uncovered in 5000 seconds. Thus, if offsite power is not restored in about 1-1/2 to 2 hours (assuming no emergency power), core melt could occur. An estimate of the probability of not recovering offsite power in 1-1/2 hours is 0.22/demand (D). Core melt would probably be well underway with the postulated conditions in about three hours. The probability of not restoring offsite power in three hours is estimated to be 0.15/D. Sufficient information is not available to estimate the time for RCP seal failure in the absence of any cooling.

While diesel generator 1C is out of commission, the emergency ac power supply consists of four diesel generators which power emergency buses for Units 1 and 2. Alabama Power Company's commitments concerning procedures for loading the diesels is discussed in another section of this report. A minimum of one emergency bus is required for each unit. A faulted condition resulting in the loss of 3 out of 4 of the diesel generators would result in one unit not having an emergency bus available.

Based on data obtained since March 1981 and during 1977 and 1978, the point estimate of diesels failing to start given a loss of offsite power is  $16/148 = 0.11/D$ . This unavailability is above generic experience. The common cause failure of a second diesel to start given the failure of one diesel is .05 to 0.16. We will assume 0.16/D. Similarly, we arbitrarily assumed the probability of a third diesel to start given the failure of two diesels is 0.3/D. Thus, the unavailability of 3 out of 4 diesels is  $4 \times 0.11 \times 0.16 \times .3 = 0.20/D$  which is about 5 times higher than the probability of random failures of 3 out of 4 diesels.

JUL 8 1981

The unavailability of the turbine-driven AFW pump is 0.06/D based on operating experience since 1977 (two failures out of 35 trials).

#### Diesel Testing

The reduced testing frequency requested is acceptable provided staggered testing of the four diesels is scheduled within the 72 hour time frame. During a telecon on May 11, 1981 between Mr. T. Novak (NRR) and Mr. O. Kingsley (APCO), we were advised of the following actions being taken:

1. APCO will modify plant procedures to assure operators are aware of the staggered diesel test frequency and proper bus loading procedures with diesel 1C out of commission.
2. APCO will assure that each Senior Reactor Operator briefs each oncoming shift and the Shift Technical Advisor.
3. APCO currently has a Task Force reviewing diesel failures.

#### Summary

The licensee has shown that for all combinations of loss of offsite power with and without a coincident LOCA at one of the units, there will always be power available to run at least one of the redundant safety trains at each unit. Staff analyses also showed that the inclusion of single failures of a remaining diesel generator at either or both units would not change this result.

The probability of core melt during the one-time 13 day Technical Specification change is acceptably low. Therefore, the proposed Technical Specification change is acceptable on a one-time only basis.

#### Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

JUL 8 1991

### Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment 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) 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.

The following staff members provided inputs to this safety evaluation report:

John Thoma, Farley 2 Project Manager  
Edward Reeves, Farley 1 Project Manager  
Douglas Pickett, Principal Reviewer - Operating Reactors Assessment Branch

CORE MELT PROBABILITIES FOR STATION BLACKOUT FOR NEXT 13 DAYS

	<u>Loss of AFW Sequence</u>	<u>Loss of RCP Seal Sequence</u>
Probability of loss-of-offsite power - 13 days	0.009	0.009
Probability of failure to recover offsite power in 1-1/2 hours in 3 hours	0.22/D NA	NA 0.15
Probability of failure of emergency ac power 3 out of 4 DG given no offsite power	$2 \times 10^{-2}/D$	$2 \times 10^{-2}/D$
Probability of failure of turbine AFW train - given no ac power	0.06/D	NA
Probability of significant failure of RCP seal	NA $\frac{1}{2 \times 10^{-6}}$	$\frac{1}{3 \times 10^{-5}}$

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 request for amendment by Alabama Power Company (the licensee), dated May 10, 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 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.

OFFICE ▶							
SURNAME ▶							
DATE ▶							

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 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 No. 2, and the Environmental Protection Plan, Appendix B, are hereby incorporated into the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment was effective May 11, 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

151

B. J. Youngblood, Chief  
Licensing Branch No. 1  
Division of Licensing

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: JUL 8 1981

OFFICE	DL:LB#1	DL:LB#1	OELD Dd	DL:LB#1			
SURNAME	MRusbrook/Lg	JOT	D. Swanson	B. Youngblood			
DATE	6/23/81	6/ /81	7/2/81	7/8/81			



ATTACHMENT TO LICENSE AMENDMENT NO. 2

FACILITY LICENSE NO. NPF-8

DOCKET NO. 50-364

Revise Appendix A as follows:

Remove Old Pages

3/4 8-1  
3/4 8-2  
3/4 8-3

Insert Revised Pages

3/4 8-1  
3/4 8-2  
3/4 8-3

### 3/4.8 ELECTRICAL POWER SYSTEMS

#### 3/4.8.1 A.C. SOURCES

##### OPERATING

#### LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

- a. Two physically independent circuits between the offsite transmission network to the switchyard and two physically independent circuits from the switchyard to the onsite Class 1E distribution system, and
- b. Two separate and independent diesel generator sets (Set A: DG 1-2A and DG-1C, Set B: DG-2B and DG-2C) each with:
  1. Separate day tanks containing a minimum volume of 900 gallons of fuel for the 4075 kw diesel generators and 700 gallons of fuel for the 2850 kw diesel generator.
  2. A separate fuel transfer pump for each diesel.
- c. A fuel storage system consisting of four, independent storage tanks each containing a minimum of 25,000 gallons of fuel.\*

APPLICABILITY: MODES 1, 2, 3 and 4.

##### ACTION:

- a. With an offsite circuit inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least two offsite circuits to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- b. With one diesel generator set inoperable, demonstrate the operability of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours<sup>\*\*\*</sup> thereafter. Restore both diesel generator sets to OPERABLE status within 72<sup>\*</sup> hours or comply with the following:
  - 1) Be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

\*One inoperable fuel storage tank is equivalent to one inoperable diesel generator set.

\*\*One time only exception for repair of Diesel 1C - the 72 hour action statement<sup>~</sup> for operability of Diesel 1C may be extended to a period of 13 days provided Unit 2 is in modes 2, 3, 4, 5 or 6; and Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

\*\*\*One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

ACTION (Continued)

- 2) One diesel generator set may be made inoperable for up to 14 days to perform scheduled maintenance and testing on diesel generators 1C (or 2C) provided all the following are satisfied:
  - a) Unit 1 is in MODE 5 or 6 and appropriate technical specifications covering the diesel generator sets are satisfied.
  - b) The remaining Unit 2 diesel generators 1-2A, 2B, 1C (or 2C) are OPERABLE.
  - c) The service water system is recirculated to the pond and surveillance requirement 4.7.6.2.1 is verified prior to removing 1C (or 2C) from service and once per 8 hours thereafter.
  - d) Diesel Generator 1C (or 2C) is returned to OPERABLE status as soon as maintenance is completed.

Otherwise, be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

- c. With one offsite circuit and one diesel generator set of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirements 4.8.1.1.1.a and 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two offsite circuits and both diesel generator sets to OPERABLE status within 72\*hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.
- d. With two of the above required offsite A.C. circuits inoperable, demonstrate the OPERABILITY of both diesel generator sets by performing Surveillance Requirement 4.8.1.1.2.a.4 within one hour and at least once per 8 hours thereafter, unless the diesel generators are already operating; restore at least one of the inoperable offsite sources to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. With only one offsite source restored, restore both offsite circuits to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

\*One time only exception for repair of Diesel 1C - the 72 hour action statement for operability of Diesel 1C may be extended to a period of 13 days provided Unit 2 is in modes 2, 3, 4, 5 or 6; and Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

\*\*One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

ACTION: (Continued)

- e. With both of the above required diesel generator sets inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours\*thereafter; restore at least one of the inoperable diesel generator sets to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore both diesel generator sets to OPERABLE status within 72\* hours from time of initial loss or be in least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

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4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

- a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availability, and
- b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

- a. In accordance with the frequency specified in Table 4.8-1 on a STAGGERED TEST BASIS by:
  - 1. Verifying the fuel level in the day tank,
  - 2. Verifying the fuel level in the fuel storage tanks,
  - 3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the day tank,
  - 4. Verifying the diesel starts from ambient condition and accelerates to at least 900 rpm, for the 2850 kw generator and 514 rpm for the 4075 kw generators, in less than or equal to 10 seconds. The generator voltage and frequency shall be  $\geq 3952$  volts and  $\geq 57$  Hz within 10 seconds after the start signal.
  - 5. Verifying the generator is synchronized, loaded to greater than or equal to its continuous rating, and operates for greater than or equal 60 minutes,

\*One time only exception for repair of Diesel 1C - 72 hour action statement for operability of Diesel 1C may be extended to a period of 13 days provided Unit 2 is in modes 2, 3, 4, 5 or 6; and Diesel 1C is returned to OPERABLE status as soon as maintenance is completed. The provisions of specification 3.0.4 are not applicable for this one time change.

\*\*One time only exception during repair of Diesel 1C - the 8 hour interval test is extended to 72 hours.

JUL 8 1981

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 20 TO FACILITY OPERATING LICENSE NO. NPF-2  
AND TO AMENDMENT NO. 2 TO FACILITY OPERATING LICENSE NO. NPF-8

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS NO. 1 AND 2

DOCKET NO. 50-348 AND 50-364

Introduction

On May 8, 1981, at 5:17 p.m., while performing surveillance tests on diesel generator 1C it was determined that the jacket cooling water had been introduced into the number 10 cylinder. At this time, diesel generator 1C was declared inoperable and the 72 hour ACTION statement was invoked. After exceeding the 72 hour ACTION statement, both Units 1 and 2 must be placed in HOT STANDBY. Preliminary investigations revealed that an excess of 72 hours would be required to return diesel generator 1C to OPERABLE status. By letter dated May 10, 1981, the licensee requested a one time exception to permit plant operation up to 13 days to allow repair of diesel generator 1C without shutting down the Unit 1 facility.

The Technical Specifications also state that during the 72 hour period when a diesel generator is declared inoperable, the remaining diesels must be started every eight hours to verify their operability. Since this would amount to over 150 combined starts for the remaining diesels, the licensee has requested that the period be increased to 72 hours during this one time repair because accelerated wear and degradation might occur due to the large number of startups.

Discussion and Evaluation

Availability of Safety Trains

Three of the five Farley Plant diesel generators are designed as swing diesels capable of serving either unit. Diesel generator 1C is one of the swing diesels. The licensee has shown that for all combinations of loss of offsite power with and without a coincident LOCA at one of the units, there will be at least one train of safety related equipment available at each unit.

In addition, the staff has investigated the possibility of each unit experiencing a single failure of a remaining diesel generator coincident with loss of offsite power to both units and a LOCA occurring at one unit. But even under these postulated conditions, the flexibility of the diesels result in one safety train being available on each unit to supply power to the required loads.

JUL 8 1981

### Station Blackout

Station blackout is characterized by the loss of both offsite and emergency ac power for an extended period of time. Core melt can occur if the turbine-driven auxiliary feedwater system fails or if the reactor coolant pump seals fail subsequently because of lack of cooling.

The sequence probabilities noted in Table 1 represent estimates for the next 13 days of operation with only 4 diesels available. As indicated in Table 1, the total probability of a core melt associated with a Station Blackout during the next 13 days is approximately  $3 \times 10^{-5}$ . This one time risk is considered acceptable. An explanation of the core melt probabilities follows:

There has been one loss-of-offsite power event in 4 years of operation or a point estimate of 0.25/Reactor Year (RY) which is consistent with generic results. Since we are concerned about 13 days with only 4 diesels, the probability of loss of AC is  $0.25 \times 13/360 = 0.009$  during the 13 days.

Based on Westinghouse analysis of loss of all feedwater, the core would begin to uncover in about 4000 seconds and would be completely uncovered in 5000 seconds. Thus, if offsite power is not restored in about 1-1/2 to 2 hours (assuming no emergency power), core melt could occur. An estimate of the probability of not recovering offsite power in 1-1/2 hours is 0.22/demand (D). Core melt would probably be well underway with the postulated conditions in about three hours. The probability of not restoring offsite power in three hours is estimated to be 0.15/D. Sufficient information is not available to estimate the time for RCP seal failure in the absence of any cooling.

While diesel generator 1C is out of commission, the emergency ac power supply consists of four diesel generators which power emergency buses for Units 1 and 2. Alabama Power Company's commitments concerning procedures for loading the diesels is discussed in another section of this report. A minimum of one emergency bus is required for each unit. A faulted condition resulting in the loss of 3 out of 4 of the diesel generators would result in one unit not having an emergency bus available.

Based on data obtained since March 1981 and during 1977 and 1978, the point estimate of diesels failing to start given a loss of offsite power is  $16/148 = 0.11/D$ . This unavailability is above generic experience. The common cause failure of a second diesel to start given the failure of one diesel is .05 to 0.16. We will assume 0.16/D. Similarly, we arbitrarily assumed the probability of a third diesel to start given the failure of two diesels is 0.3/D. Thus, the unavailability of 3 out of 4 diesels is  $4 \times 0.11 \times 0.16 \times .3 = 0.20/D$  which is about 5 times higher than the probability of random failures of 3 out of 4 diesels.

JUL 8 1981

The unavailability of the turbine-driven AFW pump is 0.06/D based on operating experience since 1977 (two failures out of 35 trials).

#### Diesel Testing

The reduced testing frequency requested is acceptable provided staggered testing of the four diesels is scheduled within the 72 hour time frame. During a telecon on May 11, 1981 between Mr. T. Novak (NRR) and Mr. O. Kingsley (APCO), we were advised of the following actions being taken:

1. APCO will modify plant procedures to assure operators are aware of the staggered diesel test frequency and proper bus loading procedures with diesel 1C out of commission.
2. APCO will assure that each Senior Reactor Operator briefs each oncoming shift and the Shift Technical Advisor.
3. APCO currently has a Task Force reviewing diesel failures.

#### Summary

The licensee has shown that for all combinations of loss of offsite power with and without a coincident LOCA at one of the units, there will always be power available to run at least one of the redundant safety trains at each unit. Staff analyses also showed that the inclusion of single failures of a remaining diesel generator at either or both units would not change this result.

The probability of core melt during the one-time 13 day Technical Specification change is acceptably low. Therefore, the proposed Technical Specification change is acceptable on a one-time only basis.

#### Environmental Consideration

We have determined that the amendment does not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendment involves an action which is insignificant from the standpoint of environmental impact and, pursuant to 10 CFR §51.5(d)(4), that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of this amendment.

JUL 8 1991

### Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendment does not involve a significant increase in the probability or consequences of accidents previously considered and does not involve a significant decrease in a safety margin, the amendment 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) 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.

The following staff members provided inputs to this safety evaluation report:

John Thoma, Farley 2 Project Manager  
Edward Reeves, Farley 1 Project Manager  
Douglas Pickett, Principal Reviewer - Operating Reactors Assessment Branch



## TABLE 1

## CORE MELT PROBABILITIES FOR STATION BLACKOUT FOR NEXT 13 DAYS

	<u>Loss of AFW Sequence</u>	<u>Loss of RCP Seal Sequence</u>
Probability of loss-of-offsite power - 13 days	0.009	0.009
Probability of failure to recover offsite power in 1-1/2 hours in 3 hours	0.22/D NA	NA 0.15
Probability of failure of emergency ac power 3 out of 4 DG given no offsite power	$2 \times 10^{-2}/D$	$2 \times 10^{-2}/D$
Probability of failure of turbine AFW train - given no ac power	0.06/D	NA
Probability of significant failure of RCP seal	NA $\frac{1}{2 \times 10^{-6}}$	$\frac{1}{3 \times 10^{-5}}$

UNITED STATES NUCLEAR REGULATORY COMMISSIONDOCKET NO. 50-348 AND 50-364ALABAMA POWER COMPANYNOTICE OF ISSUANCE OF AMENDMENT TO FACILITYOPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 20 to Facility Operating License No. NPF-2 and Amendment No. 2 to Facility Operating License No. NPF-8 issued to Alabama Power Company (the licensee), which revised Technical Specifications for operation of the Joseph M. Farley Nuclear Plant, Units No. 1 and 2 (the facilities) located in Houston County, Alabama. The amendment was effective May 11, 1981.

The amendments were authorized by telephone on May 11, 1981 and confirmed by letter on the same date. The amendments grant temporary relief on a one-time only basis from diesel generator operability and surveillance frequency requirements to allow continued plant operation during repairs to diesel generator 1C.

The application for the amendments comply 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 Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since these amendments do not involve a significant hazards consideration.

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- 2 -

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the request for amendments, dated May 10, 1981, (2) Amendment No. 20 to License No. NPF-2, (3) Amendment No. 2 to License No. NPF-8, and (4) 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 items (2), (3) and (4) 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 8<sup>th</sup> day of July, 1981.

FOR THE NUCLEAR REGULATORY COMMISSION

15/

Steven A. Varga, Chief  
Operating Reactors Branch #1  
Division of Licensing

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