SEPTEMBER 18 1979

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Docket No. 50-348

Mr. Alan R. Barton
Senior Vice President
Alabama Power Company
Post Office Box 2641
Birmingham, Alabama 35291

Dear Mr. Barton:

The Commission has issued the enclosed Amendment No. 14 to Facility Operating License No. NPF-2 for the Joseph M. Farley Nuclear Plant, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated June 20, 1979. The proposals relating to containment purging will be the subject of a separate action.

The amendment modifies the Technical Specification negative flux-rate setpoint and the rate-lag circuit time constant to ensure that a reactor trip will occur for any dropped control rod.

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

Sincerely,

Original Signed By

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:
1. Amendment No. 14 to NPF-1
2. Safety Evaluation
3. Notice of Issuance

cc: w/enclosures
See next page

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DATE	9/14/79	9/14/79	9/18/79	9/17/79	9/17/79	9/12/79

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

September 18, 1979

Docket No. 50-348

Mr. Alan R. Barton
Senior Vice President
Alabama Power Company
Post Office Box 2641
Birmingham, Alabama 35291

Dear Mr. Barton:

The Commission has issued the enclosed Amendment No. 14 to Facility Operating License No. NPF-2 for the Joseph M. Farley Nuclear Plant, Unit No. 1. The amendment consists of changes to the Technical Specifications in response to your application transmitted by letter dated June 20, 1979. The proposals relating to containment purging will be the subject of a separate action.

The amendment modifies the Technical Specification negative flux-rate setpoint and the rate-lag circuit time constant to ensure that a reactor trip will occur for any dropped control rod.

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

Sincerely,

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Enclosures:
1. Amendment No. 14 to NPF-1
2. Safety Evaluation
3. Notice of Issuance

cc: w/enclosures
See next page

cc: Ruble A. Thomas, Vice President
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River Ridge, Louisiana 70123

George S. Houston Memorial Library
212 W. Burdeshaw Street
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State Department of Public Health
ATTN: State Health Officer
State Office Building
Montgomery, Alabama 36104

Director, Technical Assessment Division
Office of Radiation Programs (AW-459)
U. S. Environmental Protection Agency
Crystal Mall #2
Arlington, Virginia 20460

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

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

ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 14
License No. NPF-2

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Alabama Power Company (the licensee) dated June 20, 1979, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-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. 14, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 18, 1979

ATTACHMENT TO LICENSE AMENDMENT NO. 14

FACILITY OPERATING LICENSE NO. NPF-2

DOCKET NO. 50-348

Replace the following pages of the Appendix "A" Technical Specifications with the enclosed pages. Revised pages are identified by Amendment number and contain vertical lines indicating the area of change. Corresponding overleaf pages are also provided to maintain document completeness.

Pages
2-5
B2-4

2.2 LIMITING SAFETY SYSTEM SETTINGS

BASES

2.2.1 REACTOR TRIP SYSTEM INSTRUMENTATION SETPOINTS

The Reactor Trip Setpoint Limits specified in Table 2.2-1 are the values at which the Reactor Trips are set for each parameter. The Trip Setpoints have been selected to ensure that the reactor core and reactor coolant system are prevented from exceeding their safety limits. Operation with a trip set less conservative than its Trip Setpoint but within its specified Allowable Value is acceptable on the basis that each Allowable Value is equal to or less than the drift allowance assumed for each trip in the safety analyses.

Manual Reactor Trip

The Manual Reactor Trip is a redundant channel to the automatic protective instrumentation channels and provides manual reactor trip capability.

Power Range, Neutron Flux

The Power Range, Neutron Flux channel high setpoint provides reactor core protection against reactivity excursions which are too rapid to be protected by temperature and pressure protective circuitry. The low set point provides redundant protection in the power range for a power excursion beginning from low power. The trip associated with the low setpoint may be manually bypassed when P-10 is active (two of the four power range channels indicate a power level of above approximately 10 percent of RATED THERMAL POWER).

Power Range, Neutron Flux, High Rates

The Power Range Positive Rate trip provides protection against rapid flux increases which are characteristic of rod ejection events from any power level. Specifically, this trip complements the Power Range Neutron Flux High and Low trips to ensure that the criteria are met for rod ejection from partial power.

The Power Range Negative Rate trip provides protection to ensure that the minimum DNBR is maintained above 1.30 for control rod drop accidents. At high power a single or multiple rod drop accident could cause local flux peaking which, when in conjunction with nuclear power being maintained equivalent to turbine power by action of the automatic rod control system, could cause an unconservative local DNBR to exist. The Power Ragne Negative Rate trip will prevent this from occurring by tripping the reactor for all single or multiple dropped rods.

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 25 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 ΔT 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 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 piping delays from the core to the loop temperature detectors. 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.

TABLE 2.2-1

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
1. Manual Reactor Trip	Not Applicable	Not Applicable
2. Power Range, Neutron Flux	Low Setpoint - $\leq$ 25% of RATED THERMAL POWER	Low Setpoint - $\leq$ 26% of RATED THERMAL POWER
	High Setpoint - $\leq$ 109% of RATED THERMAL POWER	High Setpoint - $\leq$ 110% of RATED THERMAL POWER
3. Power Range, Neutron Flux, High Positive Rate	$\leq$ 5% of RATED THERMAL POWER with a time constant $\geq$ 1 second	$\leq$ 5.5% of RATED THERMAL POWER with a time constant $\geq$ 1 second
4. Power Range, Neutron Flux, High Negative Rate	$\leq$ 3% of RATED THERMAL POWER with a time constant $\geq$ 1 second	$\leq$ 3.5% of RATED THERMAL POWER with a time constant $\geq$ 1 second
5. Intermediate Range, Neutron Flux	$\leq$ 25% of RATED THERMAL POWER	$\leq$ 30% 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 4
9. Pressurizer Pressure--Low	$\geq$ 1865 psig	$\geq$ 1855 psig
10. Pressurizer Pressure--High	$\leq$ 2385 psig	$\leq$ 2395 psig
11. Pressurizer Water Level--High	$\leq$ 92% of instrument span	$\leq$ 93% of instrument span
12. Loss of Flow	$\geq$ 90% of design flow per loop*	$\geq$ 89% of design flow per loop*

*Design flow is 88,500 gpm per loop.

TABLE 2.2-1 (Continued)

REACTOR TRIP SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
13. Steam Generator Water Level--Low-Low	≥ 15% of narrow range instrument span-each steam generator	≥ 14% of narrow range instrument span-each steam generator
14. Steam/Feedwater Flow Mismatch and Low Steam Generator Water Level	≤ 40% of full steam flow at RATED THERMAL POWER coincident with steam generator water level ≥ 25% of narrow range instrument span--each steam generator	≤ 42.5% of full steam flow at RATED THERMAL POWER coincident with steam generator water level ≥ 24% of narrow range instrument span--each steam generator
15. Undervoltage-Reactor Coolant Pumps	≥ 2680 volts-each bus	≥ 2640 volts-each bus
16. Underfrequency-Reactor Coolant Pumps	≥ 57.0 Hz - each bus	≥ 56.9 Hz - each bus
17. Turbine Trip		
A. Low Auto Stop Oil Pressure	≥ 45 psig	≥ 43 psig
B. Turbine Throttle Valve Closure	≥ 1% open	≥ 0.75% open
18. Safety Injection Input from ESF	Not Applicable	Not Applicable
19. Reactor Coolant Pump Breaker Position Trip	Not Applicable	Not Applicable

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 14 TO FACILITY OPERATING LICENSE NO. NPF-2

ALABAMA POWER COMPANY

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT NO. 1

DOCKET NO. 50-348

Introduction

The single rod drop in a Pressurized Water Reactor (PWR) is a Departure from Nucleate Boiling (DNB) limited transient. Westinghouse has informed the NRC and licensees that there is a deficiency in the analysis of the single rod drop transient. In three-loop Westinghouse plants, the reactor control system obtains its reactor power signal from a dedicated excore detector. Recent spatial analyses by Westinghouse indicated that when the reactor is in the automatic mode a dropped rod in the core quadrant adjacent to the dedicated detector would result in a power overshoot greater than the value calculated by the methods used in the Final Safety Analysis Report (FSAR). Without a reactor trip this could lead to exceeding the DNB limit. No credit is taken in the analysis for the negative flux rate trip. Westinghouse recommended adjustment of the negative flux rate trip constants to all owners of Westinghouse reactors having plants without a turbine runback feature. The adjustment would result in a reactor trip on any single dropped rod, which would preclude a DNB problem. By letter dated June 20, 1979 Alabama Power Company (APC) proposed system modifications and Technical Specification changes to implement the Westinghouse design changes for Farley Nuclear Plant Unit No. 1 (FNP-1). In the interim, pending NRC approval, APC committed to operate with the reactor in the manual control mode.

Discussion and Evaluation

At FNP-1 the high positive and negative flux rate trip circuits use an autioneered (high) excore detector signal. The auctioneered detector signal feeds a rate-lag processing circuit whose output is fed to the high positive and negative flux rate trip bistables. To ensure that the drop of any rod will cause a reactor trip regardless of rod worth or location, two changes were proposed: (1) lowering the Technical Specification rate-lag circuit time constant from two seconds to one second, and (2) lowering the negative flux rate trip value from -5% to -3%. The limiting safety

system (LSS) setpoint is $\geq$1 second for the time constant, and is $\leq$3.5% for the negative flux rate trip value. The new LSS setpoints result in reactor trips for negative flux rates 1% to 2% per second slower than would have occurred with the original setpoints. The new setpoints are designed to ensure that a reactor trip will occur for any dropped rod. Therefore, the potential for the automatic control system causing power overshoots as a result of a dropped rod would be eliminated.

The neutron flux rate-lag circuit output is a direct function of the time constant and is used in the high positive flux rate trip circuit (whose trip setpoint is not being changed). The net result in lowering the time constant from two seconds to one second is that fewer positive flux ramp reactor trips will occur now. However, the flux ramps (permitted by the new setpoints) are relatively low rates and are generally in the range of those produced by the automatic control system (i.e., not rod ejections). The FSAR states that protection for rod ejection accidents is provided by the high flux (high and low setpoints) signal, and the high positive rate trip function is a "complementary" trip. Changing the rate-lag circuit time constant will not alter the role of the high positive flux rate trip in affording reactor protection during rod accidents.

Since we expect the new setpoints to ensure that all rod drops will result in reactor trips, which will eliminate the possibility of automatic rod control system induced power overshoots, and since the positive flux rate trip is still available as a complementary trip for rod ejection accidents, the proposed setpoints are acceptable. We will continue to maintain cognizance of reactor operating data to ensure that all actual cases of dropped control rods indeed result in reactor trips in the power plants with negative flux rate trips. Should any cases occur where this is not the case, we would require further readjustment of the trip setpoints, or other corrective action.

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.

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) 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.

Date: September 18, 1979

7590-01

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NO. 50-348

ALABAMA POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENT TO FACILITY OPERATING LICENSE

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No. 14 to Facility Operating License No. NPF-2 issued to Alabama Power Company (the licensee), which revised Technical Specifications for operation of the Joseph M. Farley Nuclear Plant, Unit No. 1 (the facility) located in Houston County, Alabama. The amendment is effective as of the date of issuance.

The amendment modifies the Technical Specification negative flux-rate setpoint and the rate-lag circuit time constant to ensure that a reactor trip will occur for any dropped control rod.

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. Prior public notice of this amendment was not required since this amendment does not involve a significant hazards consideration.

The Commission has determined that the issuance of this amendment 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 this amendment.

For further details with respect to this action, see (1) the application for amendment dated June 20, 1979, (2) Amendment No. 14 to License No. NPF-2, 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 items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D.C. 20555, Attention: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 18th day of September, 1979.

FOR THE NUCLEAR REGULATORY COMMISSION

A. Schwencer, Chief
Operating Reactors Branch #1
Division of Operating Reactors