September 28, 1995

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

DISTRIBUTION
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PUBLIC C. Grimes
PD22 Reading ACRS (4)
S. Varga E. Merschoff, RII
OGC R. Crlenjak, RII

SUBJECT: ISSUANCE OF AMENDMENTS - JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. M90266 and M90267

Dear Mr. Morey:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 116 to Facility Operating License No. NPF-2 and Amendment No. 108 to Facility Operating License No. NPF-8 for the Joseph M. Farley Nuclear Plant, Units 1 and 2. The amendments change the Technical Specifications (TS) in response to your submittal dated August 17, 1994, as supplemented by letters dated June 15 and August 11, 1995.

The amendments eliminate periodic pressure sensor response time testing surveillance requirements for specific Reactor Trip System and Engineered Safety Feature Actuation System instrumentation specified in TS Sections 4.3.1.3 and 4.3.2.3.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,

Byron L. Siegel

Byron L. Siegel, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-348
and 50-364

Enclosures:
1. Amendment No. 116 to NPF-2
2. Amendment No. 108 to NPF-8
3. Safety Evaluation

cc w/encl: See next page
DOCUMENT NAME: G:\FARLEY\90266.AMD

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

September 28, 1995

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

SUBJECT: ISSUANCE OF AMENDMENTS - JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. M90266 and M90267)

Dear Mr. Morey:

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The amendments eliminate periodic pressure sensor response time testing surveillance requirements for specific Reactor Trip System and Engineered Safety Feature Actuation System instrumentation specified in TS Sections 4.3.1.3 and 4.3.2.3.

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3. Safety Evaluation

cc w/encl: See next page

Mr. D. N. Morey
Southern Nuclear Operating
Company, Inc.

Joseph M. Farley Nuclear Plant

cc:

Mr. R. D. Hill, Jr.
General Manager -
Southern Nuclear Operating Company
Post Office Box 470
Ashford, Alabama 36312

Mr. D. P. Hayes, Acting
Licensing Manager
Southern Nuclear Operating Company
Post Office Box 1295
Birmingham, Alabama 35201-1295

Mr. M. Stanford Blanton
Balch and Bingham Law Firm
Post Office Box 306
1710 Sixth Avenue North
Birmingham, Alabama 35201

Mr. J. D. Woodard
Executive Vice President
Southern Nuclear Operating Company
Post Office Box 1295
Birmingham, Alabama 35201

State Health Officer
Alabama Department of Public Health
434 Monroe Street
Montgomery, Alabama 36130-1701

Chairman
Houston County Commission
Post Office Box 6406
Dothan, Alabama 36302

Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, NW., Suite 2900
Atlanta, Georgia 30323

Resident Inspector
U.S. Nuclear Regulatory Commission
7388 N. State Highway 95
Columbia, Alabama 36319

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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

ALABAMA POWER COMPANY

DOCKET NO. 50-348

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 116
License No. NPF-2

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

   A. The application for amendment by Southern Nuclear Operating Company, Inc. (Southern Nuclear), dated August 17, 1994, as supplemented June 15 and August 11, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

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

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

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

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

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

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 116 , are hereby incorporated in the license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 28, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 116

TO FACILITY OPERATING LICENSE NO. NPF-2

DOCKET NO. 50-348

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

| Remove Pages | Insert Pages |
|---|---|
| 3/4 3-1 | 3/4 3-1 |
| 3/4 3-15 | 3/4 3-15 |
| B 3/4 3-2 | B 3/4 3-2 |
| ----- | B 3/4 3-2a |

REACTOR TRIP SYSTEM AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION (Continued)

The verification of response time at the specified frequencies provides assurance that the reactor trip and ESF actuation associated with each channel is completed within the time limit assumed in the accident analyses. Response time limits for the Reactor Trip System and Engineered Safety Features Actuation System are maintained in Tables 7.2-5 and 7.3-16 of the Farley FSAR, respectively. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be verified by actual tests in any series of sequential, overlapping or total channel measurements, or by summation of allocated sensor response times with actual tests on the remainder of the channel in any series of sequential or overlapping measurements. Allocations for specific pressure and differential pressure sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g. vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. The allocations for these sensor response times must be verified prior to placing the sensor in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. One example where time response could be affected is replacing the sensing assembly of a transmitter. Response time verification for other sensor types must be demonstrated by test.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

Alarm/trip setpoints for the containment purge have been established for a purge rate of 5,000 scfm in all MODES and for purge rates of 25,000 scfm and 50,000 scfm in MODES 4, 5, and 6. The containment purge setpoints are based on a release in which Xe-133 and Kr-85 are the predominant isotopes, on concentration values equal to or less than the effluent concentration limits stated in 10 CFR 20, Appendix B (to paragraphs 20.1001 - 20.2401), Table 2, Column 1 for these isotopes, and on a X/Q of $5.6 \times 10^{-6}$ sec/m$^3$ at the site boundary.

RADIATION MONITORING INSTRUMENTATION (Continued)

The alarm/trip setpoint for the fuel storage pool area has been established based on a flow rate of 13,000 scfm; a release in which Xe-133 and Kr-85 are the predominant isotopes, on concentration values equal to or less than the effluent concentration limits stated in 10 CFR 20, Appendix B (to paragraphs 20.1001 - 20.2401), Table 2, Column 1 for these isotopes, and on a X/Q of 5.6 x $10^{-6}$ sec/$m^3$ at the site boundary.

3/4.3.3.2 MOVABLE INCORE DETECTORS

The OPERABILITY of the movable incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core. The OPERABILITY of this system is demonstrated by irradiating each detector used and determining the acceptability of its voltage curve.

For the purpose of measuring $F_Q(Z)$, $F^N_{\Delta H}$, and $F_{xy}$ a full incore flux map is used. Quarter-core flux maps, as defined in WCAP-8648, June 1976, may be used in recalibration of the excore neutron flux detection system. Full incore flux maps or symmetric incore thimbles may be used for monitoring the QUADRANT POWER TILT RATIO when one Power Range Channel is inoperable.

## 3/4.3 INSTRUMENTATION

### 3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

#### SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.2 The logic for the interlocks shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. The total interlock function shall be demonstrated OPERABLE at least once per 18 months.

4.3.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be verified to be within its limit at least once per 18 months.* Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

* Neutron detectors are exempt from response time testing.

INSTRUMENTATION

3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS instrumentation channel or interlock trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.

SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.2 The logic for the interlocks shall be demonstrated OPERABLE during the automatic actuation logic test. The total interlock function shall be demonstrated OPERABLE at least once per 18 months.

4.3.2.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit at least once per 18 months. Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

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

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

ALABAMA POWER COMPANY

DOCKET NO. 50-364

JOSEPH M. FARLEY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 108
License No. NPF-8

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

   A. The application for amendment by Southern Nuclear Operating Company, Inc. (Southern Nuclear), dated August 17, 1994, as supplemented June 15 and August 11, 1995, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

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

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

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

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

2. Accordingly, the license is amended by changes to the Technical Specifications, as indicated in the attachment to this license amendment; and paragraph 2.C.(2) of Facility Operating License No. NPF-8 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 108, are hereby incorporated in the license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Herbert N. Berkow

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

Attachment:
Changes to the Technical
Specifications

Date of Issuance: September 28, 1995

ATTACHMENT TO LICENSE AMENDMENT NO. 108

TO FACILITY OPERATING LICENSE NO. NPF-8

DOCKET NO. 50-364

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

| Remove Pages | Insert Pages |
| --- | --- |
| 3/4 3-1 | 3/4 3-1 |
| 3/4 3-15 | 3/4 3-15 |
| B 3/4 3-2 | B 3/4 3-2 |
| ----- | B 3/4 3-2a |

## 3/4.3 INSTRUMENTATION

### 3/4.3.1 REACTOR TRIP SYSTEM INSTRUMENTATION

#### LIMITING CONDITION FOR OPERATION

3.3.1 As a minimum, the reactor trip system instrumentation channels and interlocks of Table 3.3-1 shall be OPERABLE.

APPLICABILITY: As shown in Table 3.3-1.

ACTION:

As shown in Table 3.3-1.

#### SURVEILLANCE REQUIREMENTS

4.3.1.1 Each reactor trip system instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-1.

4.3.1.2 The logic for the interlocks shall be demonstrated OPERABLE prior to each reactor startup unless performed during the preceding 92 days. The total interlock function shall be demonstrated OPERABLE at least once per 18 months.

4.3.1.3 The REACTOR TRIP SYSTEM RESPONSE TIME of each reactor trip function shall be verified to be within its limit at least once per 18 months.* Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once every N times 18 months where N is the total number of redundant channels in a specific reactor trip function as shown in the "Total No. of Channels" column of Table 3.3-1.

* Neutron detectors are exempt from response time testing.

## 3/4.3.2 ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

### LIMITING CONDITION FOR OPERATION

3.3.2 The Engineered Safety Feature Actuation System (ESFAS) instrumentation channels and interlocks shown in Table 3.3-3 shall be OPERABLE with their trip setpoints set consistent with the values shown in the Trip Setpoint column of Table 3.3-4.

APPLICABILITY: As shown in Table 3.3-3.

ACTION:

a. With an ESFAS instrumentation channel or interlock trip setpoint less conservative than the value shown in the Allowable Values column of Table 3.3-4, declare the channel inoperable and apply the applicable ACTION requirement of Table 3.3-3 until the channel is restored to OPERABLE status with the trip setpoint adjusted consistent with the Trip Setpoint value.

b. With an ESFAS instrumentation channel or interlock inoperable, take the ACTION shown in Table 3.3-3.

### SURVEILLANCE REQUIREMENTS

4.3.2.1 Each ESFAS instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations for the MODES and at the frequencies shown in Table 4.3-2.

4.3.2.2 The logic for the interlocks shall be demonstrated OPERABLE during the automatic actuation logic test. The total interlock function shall be demonstrated OPERABLE at least once per 18 months.

4.3.2.3 The ENGINEERED SAFETY FEATURES RESPONSE TIME of each ESFAS function shall be verified to be within the limit at least once per 18 months. Each verification shall include at least one logic train such that both logic trains are verified at least once per 36 months and one channel per function such that all channels are verified at least once per N times 18 months where N is the total number of redundant channels in a specific ESFAS function as shown in the "Total No. of Channels" Column of Table 3.3-3.

REACTOR TRIP SYSTEM AND ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION (Continued)

The verification of response time at the specified frequencies provides assurance that the reactor trip and ESF actuation associated with each channel is completed within the time limit assumed in the accident analyses. Response time limits for the Reactor Trip System and Engineered Safety Features Actuation System are maintained in Tables 7.2-5 and 7.3-16 of the Farley FSAR, respectively. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be verified by actual tests in any series of sequential, overlapping or total channel measurements, or by summation of allocated sensor response times with actual tests on the remainder of the channel in any series of sequential or overlapping measurements. Allocations for specific pressure and differential pressure sensor response times may be obtained from: (1) historical records based on acceptable response time tests (hydraulic, noise, or power interrupt tests), (2) in place, onsite, or offsite (e.g. vendor) test measurements, or (3) utilizing vendor engineering specifications. WCAP-13632, Revision 2, "Elimination of Pressure Sensor Response Time Testing Requirements," provides the basis and methodology for using allocated sensor response times in the overall verification of the channel response time for specific sensors identified in the WCAP. The allocations for these sensor response times must be verified prior to placing the sensor in operational service and re-verified following maintenance that may adversely affect response time. In general, electrical repair work does not impact response time provided the parts used for repair are of the same type and value. One example where time response could be affected is replacing the sensing assembly of a transmitter. Response time verification for other sensor types must be demonstrated by test.

## 3/4.3.3 MONITORING INSTRUMENTATION

### 3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

Alarm/trip setpoints for the containment purge have been established for a purge rate of 5,000 scfm in all MODES and for purge rates of 25,000 scfm and 50,000 scfm in MODES 4, 5, and 6. The containment purge setpoints are based on a release in which Xe-133 and Kr-85 are the predominant isotopes, on concentration values equal to or less than the effluent concentration limits stated in 10 CFR 20, Appendix B (to paragraphs 20.1001 - 20.2401), Table 2, Column 1 for these isotopes, and on a X/Q of $5.6 \times 10^{-6}$ sec/$m^3$ at the site boundary.

RADIATION MONITORING INSTRUMENTATION Continued)

The alarm/trip setpoint for the fuel storage pool area has been established based on a flow rate of 13,000 scfm; a release in which Xe-133 and Kr-85 are the predominant isotopes, on concentration values equal to or less than the effluent concentration limits stated in 10 CFR 20, Appendix B (to paragraphs 20.1001 - 20.2401), Table 2, Column 1 for these isotopes, and on a X/Q of 5.6 x $10^{-6}$ sec/$m^3$ at the site boundary.

3/4.3.3.2 MOVABLE INCORE DETECTORS

The OPERABILITY of the movable incore detectors with the specified minimum complement of equipment ensures that the measurements obtained from use of this system accurately represent the spatial neutron flux distribution of the reactor core. The OPERABILITY of this system is demonstrated by irradiating each detector used and determining the acceptability of its voltage curve.

For the purpose of measuring $F_Q(Z)$, $F^N_{\Delta H}$, and $F_{xy}$ a full incore flux map is used. Quarter-core flux maps, as defined in WCAP-8648, June 1976, may be used in recalibration of the excore neutron flux detection system. Full incore flux maps or symmetric incore thimbles may be used for monitoring the QUADRANT POWER TILT RATIO when one Power Range Channel is inoperable.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 116 TO FACILITY OPERATING LICENSE NO. NPF-2

AND AMENDMENT NO. 108 TO FACILITY OPERATING LICENSE NO. NPF-8

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-348 AND 50-364

## 1.0 INTRODUCTION

By letter dated August 17, 1994, as supplemented by letters dated June 15 and August 11, 1995, the Southern Nuclear Operating Company, Inc. (the licensee), submitted a request for changes to the Joseph M. Farley Nuclear Plant, Units 1 and 2, Technical Specifications (TS). The requested changes would eliminate periodic response time testing (RTT) from the TS requirements for pressure and differential pressure sensors in Reactor Trip System (RTS) and Engineered Safety Feature Actuation System (ESFAS) instrumentation channels. The June 15 and August 11, 1995, letters provided clarifying information that did not change the August 17, 1994, application and the initial proposed no significant hazards consideration determination.

## 2.0 BACKGROUND

The proposed TS changes would eliminate periodic response time testing (RTT) surveillance requirements for the following pressure and differential pressure sensors in RTS and ESFAS channels:

- Steam generator water level (Units 1 and 2) - Barton 764 Differential Pressure Transmitter
- Pressurizer pressure (Unit 1) - Foxboro N-E11GM Gauge Pressure Transmitter
- Pressurizer pressure (Unit 2) - Barton 763A Gauge Pressure Transmitter
- Steamline pressure (Units 1 and 2) - Foxboro E11GM Gauge Pressure Transmitter
- Containment pressure (Units 1 and 2) - Barton 764 Differential Pressure Transmitter/Barton 351 Sealed Sensor
- Reactor coolant flow (Units 1 and 2) - Foxboro E13DH Differential Pressure Transmitter

Specifically, the proposed TS amendments would revise RTS Instrumentation Surveillance Requirement 4.3.1.3 and ESFAS Instrumentation Surveillance Requirement 4.3.2.3 to indicate that the response time of each RTS and ESFAS instrumentation channel shall be periodically "verified" versus "tested." The associated Bases section would be revised to state that the total channel response time may be verified by either actual response time tests of the entire channel in any series of sequential, overlapping or total channel measurements, or by summation of allocated sensor response times with actual tests on the remainder of the channel in any series of sequential or overlapping measurements. The use of allocated sensor response times would only apply to the specific sensors identified above.

Allocations for specific pressure and differential pressure sensor response times would be obtained from: 1) historical records based on acceptable RTT (hydraulic, noise, or power interrupt tests), 2) inplace, onsite, or offsite (e.g., vendor) test measurements, or 3) utilizing vendor engineering specifications. The revised Bases would also indicate that the allocations for the sensor response times must be verified prior to placing the sensor in operational service and re-verified following maintenance that may adversely affect response time, such as replacing the sensing assembly of a transmitter.

In support of these proposed TS changes, the licensee originally submitted Westinghouse Electric Corporation topical report WCAP-13632, Revision 1, "Elimination of Pressure Sensor Response Time Testing Requirements," dated December 1993. In response to the staff's request for additional information, Westinghouse Electric Corporation revised WCAP-13632, Revision 1. The licensee transmitted WCAP-13632, Revision 2, dated August 1995, with its August 11, 1995 letter. The licensee's June 15, 1995 letter provided clarifying information in response to the staff's April 17, 1995 request for additional information.

Revision 2 of WCAP-13632 describes Westinghouse Owners Group (WOG) Program MUHP-3040, Revision 1, which was completed as an industry effort to demonstrate that TS requirements to perform periodic RTT of selected pressure and differential pressure sensors typically installed in RTS and ESFAS instrumentation loops at Westinghouse plants could be eliminated. The staff approved WCAP-13632, Revision 2, for reference in license amendment applications for all Westinghouse pressurized water reactors as documented in the staff's Safety Evaluation (SE) dated September 5, 1995. Joseph M. Farley is the lead plant proposing sensor RTT elimination under WOG Program MUHP-3040, Revision 1.

## 3.0 EVALUATION

The licensee noted that Institute of Electrical and Electronic Engineers (IEEE) Standard 338-1977, "Criteria for the Periodic Surveillance Testing of Nuclear Power Generating Station Safety Systems," as endorsed by Regulatory Guide 1.118, Revision 2, "Periodic Testing of Electric Power and Protection Systems," dated June 1978, defines a basis for eliminating RTT. Section 6.3.4 of IEEE Standard 338 states in part:

> Response time testing of all safety-related equipment, per se, is not required if, in lieu of response time testing, the response time of the safety system equipment is verified by functional testing, calibration check, or other tests, or both. This is acceptable if it can be demonstrated that changes in response time beyond acceptable limits are accompanied by changes in performance characteristics which are detectable during routine periodic tests.

The licensee stated that WCAP-13632, Revision 2, provides the technical basis for the deletion of periodic RTT of the subject pressure and differential pressure sensors. WCAP-13632, Revision 2, utilized the Electric Power Research Institute (EPRI) failure modes and effects analyses (FMEA) as documented in EPRI Report NP-7243, Revision 1, "Investigation of Response Time Testing Requirements," and WOG similarity analyses to justify the elimination of RTT surveillance requirements for numerous pressure and differential pressure sensors, including the specific sensors identified in Section 1.0 of this evaluation.

As indicated in WCAP-13632, Revision 2, the basic premise for the elimination of periodic RTT of pressure and differential pressure sensors installed in RTS and ESFAS channels is that pressure sensor component failures that can cause response time degradation will also affect sensor output and, therefore, can be detected during other TS surveillance tests, such as channel checks and calibrations. In addition, these other surveillance tests are performed more frequently than current response time tests. Based on this information, WCAP-13632, Revision 2, concludes that RTT is redundant to other TS surveillance requirements.

By SE dated September 5, 1995, the staff approved WCAP-13632, Revision 2, as a basis for the elimination of TS RTT requirements for each of the pressure sensors identified in WCAP-13632, Revision 2. As described in the staff's SE, the results of the EPRI FMEAs and the WOG sensor analyses indicated that, in general, potential sensor component failure modes associated with sensors identified in WCAP 13632, Revision 2, would not affect sensor response time independently of sensor output. Therefore, sensor failure modes that have the potential to affect sensor response time would be detected during the performance of other TS surveillance tests.

However, the EPRI results did identify several potential failure modes in certain pressure sensors that could affect sensor response time without concurrently affecting sensor output. To address these failures modes and other generic concerns, the staff stipulated four actions that licensees must commit to take, if applicable, when eliminating sensor RTT. First, the staff's SE stated that licensees must perform a hydraulic RTT prior to installation of a new transmitter/switch or following refurbishment of the transmitter/switch to determine an initial sensor-specific response time value. In response, the licensee has committed to revise applicable plant surveillance test procedures to stipulate that allocations for pressure sensor response times must be verified by performance of an appropriate RTT prior to placing a sensor in operational service and re-verified following maintenance that may adversely affect sensor response time, such as replacing the sensing assembly of a transmitter. When sensor RTT is required, the resultant pressure sensor response times will be documented in the plant procedure data packages. The staff finds this commitment acceptable.

Secondly, the EPRI FMEAs identified crimped capillaries as a manufacturing/handling defect that has the potential to affect response times of sensors containing capillaries. As a result, the staff's SE stated that for transmitters and switches with capillary tubes, a RTT must be performed after initial installation and after any maintenance or modification activity that could damage the capillary tubes. In response, the licensee has committed to revise plant procedures and other appropriate administrative controls to stipulate that pressure sensors utilizing capillary tubes, e.g., containment pressure, must be subjected to RTT after initial installation and following any maintenance or modification activity which could damage the capillary tubes. The staff finds this commitment acceptable.

The third and fourth stipulated actions in the staff's SE were included as a result of identified failure modes associated with transmitters that have variable damping potentiometers and with Rosemount pressure and differential pressure transmitters, respectively. However, these two actions are not applicable to the Farley plant because the licensee does not have any variable damping transmitters or Rosemount transmitters installed in any RTS or ESFAS application for which RTT is required.

For systems with a history of sensing line degradation (e.g., blockage), the licensee stated that the sensing lines will be flushed during each refueling outage as recommended by NUREG/CR-5851, "Long Term Performance and Aging Characteristics of Nuclear Plant Pressure Transmitters," to mitigate sensing line response time degradation due to blockage that noise analysis RTT techniques would have previously detected. In addition, the licensee noted that extensive pressure sensor sensing line degradation can be detected by channel checks. The staff finds the above to be acceptable.

The licensee has proposed using allocated sensor response times in accordance with the methodology contained in Section 9.0 of WCAP-13632, Revision 2, to verify total RTS or ESFAS channel response time. Allocations for sensor response times would be obtained from: 1) historical records based on acceptable RTT (hydraulic, noise, or power interrupt tests); 2) inplace, onsite, or offsite (e.g., vendor) test measurements; or 3) vendor engineering specifications. There is no specific recommendation regarding which of these methods to use, although the value will be increasingly more conservative progressing through these methods. Available manufacturer supplied and Westinghouse engineering specification response time values for the subject pressure sensors are shown in Table 9-1 of WCAP-13632, Revision 2. The total channel response time is obtained by summing the allocated sensor response time with the measured response time of the remainder of the channel. This methodology, as described in WCAP-13632, Revision 2, was previously approved in the staff's SE dated September 5, 1995.

## 4.0 SUMMARY

To meet the guidance of Regulatory Guide 1.118, Revision 2, and IEEE 338-1977, Section 6.3.4, RTT is needed unless it has been shown that changes in the response time of a sensor will be accompanied by changes in performance characteristics which are detectable during routine periodic surveillance tests. The sensor analyses results as referenced by WCAP-13632, Revision 2, concluded that RTT is redundant to other periodic surveillance tests, such as channel checks and calibrations, because these other surveillance tests will detect sensor component failures that cause response time degradation. Furthermore, these other surveillance tests are performed more frequently than current response time tests.

Based on its review of the plant specific commitments and information presented by the licensee as well as the previous approval of WCAP-13632, Revision 2, in the September 5, 1995 SE, the staff agrees that, in general, sensor component failures that can significantly degrade sensor response time can be detected during the performance of other required surveillance tests. Thus, the staff concludes that other existing TS surveillance requirements for the subject pressure and differential pressure sensors provide confidence that the safety function of the plant instrumentation will be satisfied without the need for specific RTT. The staff, therefore, concludes that the licensee's proposal to eliminate the TS RTT requirements for the following pressure and differential pressure sensors is acceptable:

- Steam generator water level (Units 1 and 2) - Barton 764 Differential Pressure Transmitter
- Pressurizer pressure (Unit 1) - Foxboro N-E11GM Gauge Pressure Transmitter
- Pressurizer pressure (Unit 2) - Barton 763A Gauge Pressure Transmitter
- Steamline pressure (Units 1 and 2) - Foxboro E11GM Gauge Pressure Transmitter

- Containment pressure (Units 1 and 2) - Barton 764 Differential Pressure Transmitter/Barton 351 Sealed Sensor

- Reactor coolant flow (Units 1 and 2) - Foxboro E13DH Differential Pressure Transmitter

## 5.0 STATE CONSULTATION

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

## 6.0 ENVIRONMENTAL CONSIDERATION

The amendments change the surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (59 FR 49434 dated September 28, 1994). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

## 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: John Ganiere

Date: September 28, 1995