

December 21, 1994

Mr. Oliver D. Kingsley, Jr.  
President, TVA Nuclear and  
Chief Nuclear Officer  
Tennessee Valley Authority  
6A Lookout Place  
1101 Market Street  
Chattanooga, Tennessee 37402-2801

Dear Mr. Kingsley:

SUBJECT: ISSUANCE OF TECHNICAL SPECIFICATION AMENDMENTS FOR THE BROWNS FERRY  
NUCLEAR PLANT UNITS 1, 2, AND 3 (TAC NOS. M87903, M87904, AND  
M87905) (TS 313)

The Commission has issued the enclosed Amendment Nos. 214, 230, and 187 to Facility Operating Licenses Nos. DPR-33, DPR-52, and DPR-68 for the Browns Ferry Nuclear Plant (BFN), Units 1, 2, and 3, respectively. These amendments are in response to your application dated October 7, 1993, regarding the addition of the high range primary containment radiation monitors and recorders to tables 3.2.F, 4.2.F and TS Section 6.9.2 in response to NUREG 0737, Item II.F.1.3. The wide range gaseous effluent radiation monitor and recorder, which were added to the plant during the Unit 2 restart effort in response to NUREG 0737, Item II.F.1.1, monitor potential releases from any of the three units. The proposed amendment for Units 1 and 3 also adds this existing wide range gaseous effluent radiation monitor and recorder to Tables 3.2.F, 4.2.F and TS Section 6.9.2. The proposed amendment for Unit 2 is an administrative change which clarifies that the high range primary containment radiation recorders and monitors are both part of the instrument loop.

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

Sincerely,

ORIGINAL SIGNED BY:

Joseph F. Williams, Project Manager  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket Nos. 50-259, 50-260 and 50-296

- Enclosures: 1. Amendment No. 214 to License No. DPR-33
- 2. Amendment No. 230 to License No. DPR-52
- 3. Amendment No. 187 to License No. DPR-68
- 4. Safety Evaluation

cc w/enclosures: See next page

DOCUMENT NAME: G:\BFN\TS313.AMD

To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure  
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DATE	11/9/94		11/15/94		11/15/94		11/22/94	11/17/94		12/8/94	

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AMENDMENT NO. 214 FOR BROWNS FERRY UNIT 1 - DOCKET NO. 50-259  
AMENDMENT NO. 230 FOR BROWNS FERRY UNIT 2 - DOCKET NO. 50-260  
AMENDMENT NO. 187 FOR BROWNS FERRY UNIT 3 - DOCKET NO. 50-296  
DATED: December 21, 1994

Distribution w/enclosures

Docket File

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T-5-C-3

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ACRS (4)

OPA

OC/LFDCB

T-9-E10

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RII

M. Lesser

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 214  
License No. DPR-33

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated October 7, 1993, 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.

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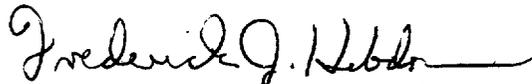
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 214, 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 its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: December 21, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 214

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf\* pages are provided to maintain document completeness.

REMOVE

3.2/4.2-31  
3.2/4.2-32  
3.2/4.2-33  
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3.2/4.2-54  
3.2/4.2-55  
3.2/4.2-61  
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6.0-29  
6.0-30

INSERT

3.2/4.2-31\*  
3.2/4.2-32  
3.2/4.2-33  
3.2/4.2-33a\*  
3.2/4.2-54\*  
3.2/4.2-55  
3.2/4.2-61  
3.2/4.2-61a\*  
6.0-29  
6.0-30\*

TABLE 3.2.F  
Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	LI-3-46 A LI-3-46 B	Reactor Water Level	Indicator - 155" to +60"	(1) (2) (3)
2	PI-3-54 PI-3-61	Reactor Pressure	Indicator 0-1500 psig	(1) (2) (3)
2	TI-64-52 TR-64-52	Drywell Temperature	Recorder, Indicator 0-400°F	(1) (2) (3)
1	TR-64-52	Suppression Chamber Air Temperature	Recorder 0-400°F	(1) (2) (3)
1	N/A	Control Rod Position	6V Indicating Lights )	
1	N/A	Neutron Monitoring	SRM, IRM, LPRM ) 0 to 100% power )	(1) (2) (3) (4)
1	PS-64-67	Drywell Pressure	Alarm at 35 psig )	
1	TR-64-52 and PS-64-58 B and IS-64-67	Drywell Temperature and Pressure and Timer	Alarm if temp. > 281°F and pressure >2.5 psig after 30 minute delay )	(1) (2) (3) (4)
1	LI-84-2A	CAD Tank "A" Level	Indicator 0 to 100%	(1)
1	LI-84-13A	CAD Tank "B" Level	Indicator 0 to 100%	(1)

TABLE 3.2.F (Cont'd)  
Surveillance Instrumentation

BFN Unit 1	Minimum # of Operable Instrument Channels	Instrument #	Instrument	Type Indication and Range	Notes
	2	H <sub>2</sub> M - 76 - 94 H <sub>2</sub> M - 76 - 104	Drywell and Torus Hydrogen Concentration	0.1 - 20%	(1)
	2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential Pressure	Indicator 0 to 2 psid	(1) (2) (3)
	1/Valve		Relief Valve Tailpipe Thermocouple Temperature or Acoustic Monitor on Relief Valve Tailpipe		(5)
	2	LI-64-159A XR-64-159	Suppression Chamber Water Level-Wide Range	Indicator, Recorder 0-240"	(1) (2) (3)
	2	PI-64-39A XR-64-159 PI-64-160A XR-64-159	Drywell Pressure Low Range Drywell Pressure Wide Range	Indicator, Recorder) -5 to +5 psig ) Indicator, Recorder) 0-300 psig )	(1) (2) (3)
	2	TI-64-161 TR-64-161 TI-64-162 TR-64-162	Suppression Pool Bulk Temperature	Indicator, Recorder) ) 30° - 230° F ) )	(1) (2) (3) (4) (6)
	1	RR-90-272 RR-90-273 RM-90-272A RM-90-273A	High Range Primary Containment Radiation Monitors and Recorders	Monitor, Recorder  1 - 10 <sup>7</sup> R/Hr	(7) (8)
	1	RM-90-306 RR-90-360	Wide Range Gaseous Effluent Radiation Monitor and Recorder	Monitor, Recorder (Noble Gas 10 <sup>-7</sup> - 10 <sup>+5</sup> μCi/cc)	(7) (8) (9)

3.2/4.2-32

APPENDIX NO. 214

NOTES FOR TABLE 3.2.F

- (1) From and after the date that one of these parameters is reduced to one indication, continued operation is permissible during the succeeding 30 days unless such instrumentation is sooner made operable.
- (2) From and after the date that one of these parameters is not indicated in the control room, continued operation is permissible during the succeeding seven days unless such instrumentation is sooner made operable.
- (3) If the requirements of notes (1) and (2) cannot be met, and if one of the indications cannot be restored in (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a COLD SHUTDOWN CONDITION within 24 hours.
- (4) These surveillance instruments are considered to be redundant to each other.
- (5) From and after the date that both the acoustic monitor and the temperature indication on any one valve fails to indicate in the control room, continued operation is permissible during the succeeding 30 days, unless one of the two monitoring channels is sooner made available. If both the primary and secondary indication on any SRV tailpipe is inoperable, the torus temperature will be monitored at least once per shift to observe any unexplained temperature increase which might be indicative of an open SRV.
- (6) A channel consists of eight sensors, one from each alternating torus bay. Seven sensors must be operable for the channel to be operable.
- (7) When one of these instruments is inoperable for more than seven days, in lieu of any other report required by Specification 6.9.1.4, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next seven days outlining the action taken, the cause of inoperability, and the plans and schedule for restoring the system to OPERABLE status.
- (8) With the plant in REACTOR POWER OPERATION, STARTUP CONDITION, HOT STANDBY CONDITION OR HOT SHUTDOWN CONDITION and with the number of OPERABLE channels less than the required OPERABLE channels, either restore the inoperable channel(s) to OPERABLE Status within 72 hours, or initiate the preplanned alternate method of monitoring the appropriate parameter.
- (9) Noble Gas only.

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TABLE 4.2.F  
 MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
1) Reactor Water Level	Once/6 months	Each Shift
2) Reactor Pressure	Once/6 months	Each Shift
3) Drywell Pressure	Once/6 months	Each Shift
4) Drywell Temperature	Once/6 months	Each Shift
5) Suppression Chamber Air Temperature	Once/6 months	Each Shift
8) Control Rod Position	N/A	Each Shift
9) Neutron Monitoring	(2)	Each Shift
10) Drywell Pressure (PS-64-67)	Once/6 months	N/A
11) Drywell Pressure (PS-64-58B)	Once/6 months	N/A
12) Drywell Temperature (TR-64-52)	Once/6 months	N/A
13) Timer (IS-64-67)	Once/6 months	N/A
14) CAD Tank Level	Once/6 months	Once/day
15) Containment Atmosphere Monitors	Once/6 months	Once/day

BFN  
 Unit 1

3.2/4.2-54

TABLE 4.2.F (Continued)  
 MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
16) Drywell to Suppression Chamber Differential Pressure	Once/6 months	Each Shift
17) Relief Valve Tailpipe Thermocouple Temperature	N/A	Once/month (24)
18) Acoustic Monitor on Relief Valve Tailpipe	Once/cycle (25)	Once/month (26)
19) Suppression Chamber Water Level-Wide Range (LI-64-159A) (XR-64-159)	Once/cycle	Once/month
20) Drywell Pressure - Low Range (PI-64-39A) (XR-64-159)	Once/cycle	Once/shift
21) Drywell Pressure - Wide Range (PI-64-160A) (XR-64-159)	Once/cycle	Once/shift
22) Suppression Pool Bulk Temperature (TI-64-161) (TR-64-161) (TI-64-162) (TR-64-162)	Once/cycle	Once shift
23) High Range Primary Containment Radiation Monitors and Recorders (RR-90-272, RR-90-273, RM-90-272A and RM-90-273A)	Once/18 months (32)	Once/month
24) Wide Range Gaseous Effluent Radiation Monitor and Recorder (RM-90-306 and RR-90-360)	Once/18 months	Once/shift

BFN  
 Unit 1

3.2/4.2-55

AMENDMENT NO. 214

NOTES FOR TABLES 4.2.A THROUGH 4.2.L except 4.2.D AND 4.2.K (Cont'd)

26. This instrument check consists of comparing the background signal levels for all valves for consistency and for nominal expected values (not required during refueling outages).
27. Functional test consists of the injection of a simulated signal into the electronic trip circuitry in place of the sensor signal to verify OPERABILITY of the trip and alarm functions.
28. Calibration consists of the adjustment of the primary sensor and associated components so that they correspond within acceptable range and accuracy to known values of the parameter which the channel monitors, including adjustment of the electronic trip circuitry, so that its output relay changes state at or more conservatively than the analog equivalent of the trip level setting.
29. The functional test frequency decreased to once/3 months to reduce challenges to relief valves per NUREG-0737, Item II.K.3.16.
30. Functional testing for the Reactor Building Ventilation Radiation Monitoring System (RBVRMS) shall consist of verifying the High Voltage Power Supply (HVPS) voltage at the Sensor and Convertors (detectors) is within its design limits. A channel functional test as defined in Section 1.0, "Definitions" shall be performed once per 18 months as part of the RBVRM channel calibration.
31. Functional tests shall be performed once/3 months.
32. Calibration shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr and a one-point source check of the detector below 10 R/hr with an installed or portable gamma source.

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8.	Secondary Containment Leak Rate Testing*	4.7.C.	Within 90 days of completion of each test.
9.	High Range Primary Containment Radiation Monitors and Recorders	3.2.F	Within 7 days after 7 days of inoperability.
10.	Wide Range Gaseous Effluent Radiation Monitor and Recorder	3.2.F	Within 7 days after 7 days of inoperability.

\*Each integrated leak rate test of the secondary containment shall be the subject of a summary technical report. This report should include data on the wind speed, wind direction, outside and inside temperatures during the test, concurrent reactor building pressure, and emergency ventilation flow rate. The report shall also include analyses and interpretations of those data which demonstrate compliance with the specified leak rate limits.

6.10 STATION OPERATING RECORDS AND RETENTION

6.10.1 Records and/or logs shall be kept in a manner convenient for review as indicated below:

- a. All normal plant operation including such items as power level, fuel exposure, and shutdowns
- b. Principal maintenance activities
- c. Reportable Events
- d. Checks, inspections, tests, and calibrations of components and systems, including such diverse items as source leakage
- e. Reviews of changes made to the procedures or equipment or reviews of tests and experiments to comply with 10 CFR 50.59
- f. Radioactive shipments
- g. Test results in units of microcuries for leak tests performed pursuant to Specification 3.8.D

- h. Record of annual physical inventory verifying accountability of sources on record
- i. Records of gaseous and liquid radioactive waste released to the environs, and the resulting calculated dose to individual MEMBERS OF THE PUBLIC
- j. Offsite environmental monitoring surveys
- k. Fuel inventories and transfers
- l. Plant radiation and contamination surveys
- m. Radiation exposures for all plant personnel for whom monitoring was required
- n. Updated, corrected, and as-built drawings of the plant
- o. Reactor coolant system inservice inspection
- p. Minutes of meetings of the NSRB
- q. Design fatigue usage evaluation

Monitoring and recording requirements below will be met for various portions of the reactor coolant pressure boundary (RCPB) for which detailed fatigue usage evaluation per the ASME Boiler and Pressure Vessel Code Section III was performed for the conditions defined in the design specification. In this plant, the applicable codes require fatigue usage evaluation for the reactor pressure vessel only. The locations to be monitored shall be:

1. The feedwater nozzles
2. The shell at or near the waterline
3. The flange studs



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 230  
License No. DPR-52

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated October 7, 1993, 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.

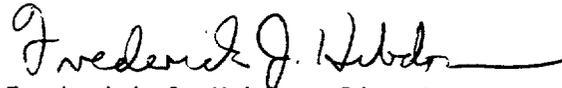
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 230, 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 its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: December 21, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 230

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf\* pages are provided to maintain document completeness.

REMOVE

3.2/4.2-31  
3.2/4.2-32  
3.2/4.2-54  
3.2/4.2-55  
6.0-29  
6.0-30

INSERT

3.2/4.2-31\*  
3.2/4.2-32  
3.2/4.2-54\*  
3.2/4.2-55  
6.0-29  
6.0-30\*

TABLE 3.2.F  
Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	LI-3-58A LI-3-58B	Reactor Water Level	Indicator -155" to +60"	(1) (2) (3)
2	PI-3-74A PI-3-74B	Reactor Pressure	Indicator 0-1200 psig	(1) (2) (3)
2	XR-64-50 PI-64-67B	Drywell Pressure	Recorder -15 to +65 psig Indicator -15 to +65 psig	(1) (2) (3)
2	XR-64-50 TI-64-52AB	Drywell Temperature	Recorder, Indicator 0-400°F	(1) (2) (3)
1	XR-64-52	Suppression Chamber Air Temperature	Recorder 0-400°F	(1) (2) (3)
1	N/A	Control Rod Position	6V Indicating ) Lights )	
1	N/A	Neutron Monitoring	SRM, IRM, LPRM ) 0 to 100% power )	(1) (2) (3) (4)
1	PS-64-67B	Drywell Pressure	Alarm at 35 psig )	
1	TS-64-52A & PIS-64-58A & IS-64-67A	Drywell Temperature and Pressure and Timer	Alarm if temp. ) > 281°F and ) pressure >2.5 psig ) after 30 minute ) delay )	(1) (2) (3) (4)
1	LI-84-2A	CAD Tank "A" Level	Indicator 0 to 100%	(1)
1	LI-84-13A	CAD Tank "B" Level	Indicator 0 to 100%	(1)

BFN  
Unit 2

3.2/4.2-31

AMENDMENT NO. 2 1 1

TABLE 3.2.F (cont'd)  
Surveillance Instrumentation

Minimum # of Operable Instrument Channels	Instrument #	Instrument	Type Indication and Range	Notes
2	H <sub>2</sub> M - 76 - 94 H <sub>2</sub> M - 76 - 104	Drywell and Torus Hydrogen Concentration	0.1 - 20%	(1)
2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential Pressure	Indicator 0 to 2 psid	(1) (2) (3)
1/Valve		Relief Valve Tailpipe Thermocouple Temperature or Acoustic Monitor on Relief Valve Tailpipe		(5)
1	RR-90-272 RR-90-273 RM-90-272C RM-90-273C	High Range Primary Containment Radiation Monitors and Recorders	Monitor, Recorder 1-10 <sup>7</sup> R/Hr	(7)(8)
2	LI-64-159A XR-64-159	Suppression Chamber Water Level-Wide Range	Indicator, Recorder 0-240"	(1) (2) (3)
2	PI-64-160A XR-64-159	Drywell Pressure Wide Range	Indicator, Recorder) 0-300 psig )	(1) (2) (3)
2	TI-64-161 TR-64-161 TI-64-162 TR-64-162	Suppression Pool Bulk Temperature	Indicator, Recorder) 30° - 230° F )	(1) (2) (3) (4) (6)
1	RM-90-306 RR-90-360	Wide Range Gaseous Effluent Radiation Monitor and Recorder	Monitor and Recorder (Noble Gas 10 <sup>-7</sup> - 10 <sup>+5</sup> μCi/cc)	(7)(8)(9)

BFN  
Unit 2

3.2/4.2-32

APPENDIX NO. 230

TABLE 4.2.F

MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
1) Reactor Water Level (LI-3-58A&B)	Once/6 months	Each Shift
2) Reactor Pressure (PI-3-74A&B)	Once/6 months	Each Shift
3) Drywell Pressure (PI-64-67B) and XR-64-50	Once/6 months	Each Shift
4) Drywell Temperature (TI-64-52AB) and XR-64-50	Once/6 months	Each Shift
5) Suppression Chamber Air Temperature (XR-64-52)	Once/6 months	Each Shift
8) Control Rod Position	N/A	Each Shift
9) Neutron Monitoring	(2)	Each Shift
10) Drywell Pressure (PS-64-67B)	Once/6 months	N/A
11) Drywell Pressure (PIS-64-58A)	Once/6 months	N/A
12) Drywell Temperature (TS-64-52A)	Once/6 months	N/A
13) Timer (IS-64-67A)	Once/6 months	N/A
14) CAD Tank Level	Once/6 months	Once/day
15) Containment Atmosphere Monitors	Once/6 months	Once/day

TABLE 4.2.F (Continued)  
 MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
16) Drywell to Suppression Chamber Differential Pressure	Once/6 months	Each Shift
17) Relief Valve Tailpipe Thermocouple Temperature	N/A	Once/month (24)
18) Acoustic Monitor on Relief Valve Tailpipe	Once/cycle (25)	Once/month (26)
19) High Range Primary Containment Radiation Monitors and Recorders (RR-90-272, RR-90-273, RM-90-272C, and RM-90-273C)	Once/18 Months (30)	Once/month
20) Suppression Chamber Water Level-Wide Range (LI-64-159A) (XR-64-159)	Once/18 Months	Once/shift
21) Drywell Pressure - Wide Range (PI-64-160A) (XR-64-159)	Once/18 Months	Once/shift
22) Suppression Pool Bulk Temperature (TI-64-161) (TR-64-161) (TI-64-162) (TR-64-162)	Once/18 Months	Once/shift
23) Wide Range Gaseous Effluent Radiation Monitor and Recorder (RM-90-306 and RR-90-360)	Once/18 Months	Once/shift

BFN  
 Unit 2

3.2/4.2-55

APPENDIX NO. 230

8. Secondary Containment Leak Rate Testing*	4.7.C.	Within 90 days of completion of each test.
9. High-Range Primary Containment Radiation Monitors and Recorders	3.2.F	Within 7 days after 7 days of inoperability.
10. Wide-Range Gaseous Effluent Radiation Monitor and recorder	3.2.F	Within 7 days after 7 days of inoperability.

\*Each integrated leak rate test of the secondary containment shall be the subject of a summary technical report. This report should include data on the wind speed, wind direction, outside and inside temperatures during the test, concurrent reactor building pressure, and emergency ventilation flow rate. The report shall also include analyses and interpretations of those data which demonstrate compliance with the specified leak rate limits.

6.10 STATION OPERATING RECORDS AND RETENTION

6.10.1 Records and/or logs shall be kept in a manner convenient for review as indicated below:

- a. All normal plant operation including such items as power level, fuel exposure, and shutdowns
- b. Principal maintenance activities
- c. Reportable Events
- d. Checks, inspections, tests, and calibrations of components and systems, including such diverse items as source leakage
- e. Reviews of changes made to the procedures or equipment or reviews of tests and experiments to comply with 10 CFR 50.59
- f. Radioactive shipments
- g. Test results in units of microcuries for leak tests performed pursuant to Specification 3.8.D

- h. Record of annual physical inventory verifying accountability of sources on record
- i. Records of gaseous and liquid radioactive waste released to the environs, and the resulting calculated dose to individual MEMBERS OF THE PUBLIC
- j. Offsite environmental monitoring surveys
- k. Fuel inventories and transfers
- l. Plant radiation and contamination surveys
- m. Radiation exposures for all plant personnel for whom monitoring was required
- n. Updated, corrected, and as-built drawings of the plant
- o. Reactor coolant system inservice inspection
- p. Minutes of meetings of the NSRB
- q. Design fatigue usage evaluation

Monitoring and recording requirements below will be met for various portions of the reactor coolant pressure boundary (RCPB) for which detailed fatigue usage evaluation per the ASME Boiler and Pressure Vessel Code Section III was performed for the conditions defined in the design specification. In this plant, the applicable codes require fatigue usage evaluation for the reactor pressure vessel only. The locations to be monitored shall be:

1. The feedwater nozzles
2. The shell at or near the waterline
3. The flange studs



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 187  
License No. DPR-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Tennessee Valley Authority (the licensee) dated October 7, 1993, 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.

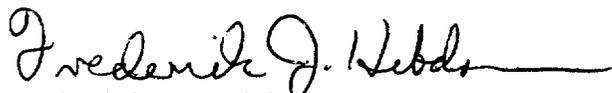
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 187, 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 its date of issuance and shall be implemented within 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Frederick J. Hebdon, Director  
Project Directorate II-4  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: December 21, 1994

ATTACHMENT TO LICENSE AMENDMENT NO. 187

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise the Appendix A Technical Specifications by removing the pages identified below and inserting the enclosed pages. The revised pages are identified by the captioned amendment number and contain marginal lines indicating the area of change. Overleaf\* pages are provided to maintain document completeness.

REMOVE

3.2/4.2-30  
3.2/4.2-31  
3.2/4.2-32  
---  
3.2/4.2-53  
3.2/4.2-54  
3.2/4.2-60  
---  
6.0-29  
6.0-30

INSERT

3.2/4.2-30\*  
3.2/4.2-31  
3.2/4.2-32  
3.2/4.2-32a\*  
3.2/4/2-53\*  
3.2/4.2-54  
3.2/4.2-60  
3.2/4.2-60a\*  
6.0-29  
6.0-30\*

TABLE 3.2.F  
Surveillance Instrumentation

<u>Minimum # of Operable Instrument Channels</u>	<u>Instrument #</u>	<u>Instrument</u>	<u>Type Indication and Range</u>	<u>Notes</u>
2	LI-3-46 A LI-3-46 B	Reactor Water Level	Indicator - 155" to +60"	(1) (2) (3)
2	PI-3-54 PI-3-61	Reactor Pressure	Indicator 0-1500 psig	(1) (2) (3)
2	XR-64-50 PI-64-67	Drywell Pressure	Recorder -15 to +65 psig Indicator -15 to +65 psig	(1) (2) (3)
2	TI-64-52 XR-64-50	Drywell Temperature	Recorder, Indicator 0-400°F	(1) (2) (3)
1	XR-64-52	Suppression Chamber Air Temperature	Recorder 0-400°F	(1) (2) (3)
1	N/A	Control Rod Position	6V Indicating Lights )	
1	N/A	Neutron Monitoring	SRM, IRM, LPRM ) 0 to 100% power )	(1) (2) (3) (4)
1	PS-64-67	Drywell Pressure	Alarm at 35 psig )	
1	XR-64-50 and PS-64-58 B and IS-64-67	Drywell Temperature and Pressure and Timer	Alarm if temp. > 281°F and pressure >2.5 psig after 30 minute delay )	(1) (2) (3) (4)
1	LI-84-2A	CAD Tank "A" Level	Indicator 0 to 100%	(1)
1	LI-84-13A	CAD Tank "B" Level	Indicator 0 to 100%	(1)

BFN  
Unit 3

3.2/4.2-30

AMENDMENT NO. 1 6 8

TABLE 3.2.F (cont'd)  
Surveillance Instrumentation

BFN Unit 3	Minimum # of Operable Instrument Channels	Instrument #	Instrument	Type Indication and Range	Notes
	2	H <sub>2</sub> M - 76 - 94 H <sub>2</sub> M - 76 - 104	Drywell and Torus Hydrogen Concentration	0.1 - 20%	(1)
	2	PdI-64-137 PdI-64-138	Drywell to Suppression Chamber Differential Pressure	Indicator 0 to 2 psid	(1) (2) (3)
	1/Valve		Relief Valve Tailpipe Thermocouple Temperature or Acoustic Monitor on Relief Valve Tailpipe		(5)
	2	LI-64-159A XR-64-159	Suppression Chamber Water Level-Wide Range	Indicator, Recorder 0-240"	(1) (2) (3)
	2	PI-64-160A XR-64-159	Drywell Pressure Wide Range	Indicator, Recorder) 0-300 psig )	(1) (2) (3)
	2	TI-64-161 TR-64-161 TI-64-162 TR-64-162	Suppression Pool Bulk Temperature	Indicator, Recorder) 30° - 230° F )	(1) (2) (3) (4) (6)
	1	RR-90-272 RR-90-273 RM-90-272A RM-90-273A	High Range Primary Containment Radiation Monitors and Recorders	Monitor, Recorder 1 - 10 <sup>7</sup> R/Hr	(7) (8)
	1	RM-90-306 RR-90-360	Wide Range Gaseous Effluent Radiation Monitor and Recorder	Monitor, Recorder (Noble Gas 10 <sup>-7</sup> - 10 <sup>+5</sup> μCi/cc)	(7)(8)(9)

3.2/4.2-31

AMENDMENT NO. 157

NOTES FOR TABLE 3.2.F

- (1) From and after the date that one of these parameters is reduced to one indication, continued operation is permissible during the succeeding 30 days unless such instrumentation is sooner made operable.
- (2) From and after the date that one of these parameters is not indicated in the control room, continued operation is permissible during the succeeding seven days unless such instrumentation is sooner made operable.
- (3) If the requirements of notes (1) and (2) cannot be met, and if one of the indications cannot be restored in (6) hours, an orderly shutdown shall be initiated and the reactor shall be in a COLD SHUTDOWN CONDITION within 24 hours.
- (4) These surveillance instruments are considered to be redundant to each other.
- (5) From and after the date that both the acoustic monitor and the temperature indication on any one valve fails to indicate in the control room, continued operation is permissible during the succeeding 30 days, unless one of the two monitoring channels is sooner made available. If both the primary and secondary indication on any SRV tailpipe is inoperable, the torus temperature will be monitored at least once per shift to observe any unexplained temperature increase which might be indicative of an open SRV.
- (6) A channel consists of eight sensors, one from each alternating torus bay. Seven sensors must be operable for the channel to be operable.
- (7) When one of these instruments is inoperable for more than seven days, in lieu of any other report required by Specification 6.9.1.4, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next seven days outlining the action taken, the cause of inoperability, and the plans and schedule for restoring the system to OPERABLE status.
- (8) With the plant in REACTOR POWER OPERATION, STARTUP CONDITION, HOT STANDBY CONDITION OR HOT SHUTDOWN CONDITION and with the number of OPERABLE channels less than the required OPERABLE channels, either restore the inoperable channel(s) to OPERABLE status within 72 hours, or initiate the preplanned alternate method of monitoring the appropriate parameter.
- (9) Noble Gas only.

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TABLE 4.2.F  
 MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
1) Reactor Water Level	Once/6 months	Each Shift
2) Reactor Pressure	Once/6 months	Each Shift
3) Drywell Pressure	Once/6 months	Each Shift
4) Drywell Temperature	Once/6 months	Each Shift
5) Suppression Chamber Air Temperature	Once/6 months	Each Shift
8) Control Rod Position	N/A	Each Shift
9) Neutron Monitoring	(2)	Each Shift
10) Drywell Pressure (PS-64-67)	Once/6 months	N/A
11) Drywell Pressure (PS-64-588)	Once/6 months	N/A
12) Drywell Temperature (TR-64-52)	Once/6 months	N/A
13) Timer (IS-64-67)	Once/6 months	N/A
14) CAD Tank Level	Once/6 months	Once/day
15) Containment Atmosphere Monitors	Once/6 months	Once/day

BFN  
 Unit 3

3.2/4.2-53

TABLE 4.2.F (Cont'd)  
 MINIMUM TEST AND CALIBRATION FREQUENCY FOR SURVEILLANCE INSTRUMENTATION

<u>Instrument Channel</u>	<u>Calibration Frequency</u>	<u>Instrument Check</u>
16) Drywell to Suppression Chamber Differential Pressure	Once/6 months	Each Shift
17) Relief Valve Tailpipe Thermocouple Temperature	N/A	Once/month (24)
18) Acoustic Monitor on Relief Valve Tailpipe	Once/cycle (25)	Once/month (26)
19) Suppression Chamber Water Level-Wide Range (LI-64-159A) (XR-64-159)	Once/cycle	Once/month
20) Drywell Pressure - Wide Range (PI-64-160A) (XR-64-159)	Once/cycle	Once/shift
21) Suppression Pool Bulk Temperature (TI-64-161) (TR-64-161) (TI-64-162) (TR-64-162)	Once/cycle	Once shift
22) High Range Primary Containment Radiation Monitors and Recorders (RR-90-272, RR-90-273, RM-90-272A, RM-90-273A)	Once/18 months (32)	Once/month
23) Wide Range Gaseous Effluent Radiation Monitor and Recorder (RM-90-306 and RR-90-360)	Once/18 months	Once/shift

BFN  
 Unit 3

3.2/4.2-54

APPENDIX NO. 137

NOTES FOR TABLES 4.2.A THROUGH 4.2.L except 4.2.D AND 4.2.K (Cont'd)

26. This instrument check consists of comparing the background signal levels for all valves for consistency and for nominal expected values (not required during refueling outages).
27. Functional test frequency decreased to once/3 months to reduce the challenges to relief valves per NUREG-0737, Item II.K.3.16.
28. Functional test consists of the injection of a simulated signal into the electronic trip circuitry in place of the sensor signal to verify OPERABILITY of the trip and alarm functions.
29. Calibration consists of the adjustment of the primary sensor and associated components so that they correspond within acceptable range and accuracy to known values of the parameter which the channel monitors, including adjustment of the electronic trip circuitry, so its output relay changes state at or more conservatively than the analog equivalent of the trip level setting.
30. Functional testing for the Reactor Building Ventilation Radiation Monitoring System (RBVRMS) shall consist of verifying the High Voltage Power Supply (HVPS) voltage at the Sensor and Convertors (detectors) is within its design limits. A channel functional test as defined in Section 1.0, "Definitions" shall be performed once per 18 months as part of the RBVRM channel calibration.
31. Functional tests shall be performed once/3 months.
32. Calibration shall consist of an electronic calibration of the channel, not including the detector, for range decades above 10 R/hr and a one-point source check of the detector below 10 R/hr with an installed or portable gamma source.

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8.	Secondary Containment Leak Rate Testing*	4.7.C.	Within 90 days of completion of each test.
9.	High Range Primary Containment Radiation Monitors and Recorders	3.2.F	Within 7 days after 7 days of inoperability.
10.	Wide Range Gaseous Effluent Radiation Monitor and Recorder	3.2.F	Within 7 days after 7 days of inoperability.

\*Each integrated leak rate test of the secondary containment shall be the subject of a summary technical report. This report should include data on the wind speed, wind direction, outside and inside temperatures during the test, concurrent reactor building pressure, and emergency ventilation flow rate. The report shall also include analyses and interpretations of those data which demonstrate compliance with the specified leak rate limits.

6.10     STATION OPERATING RECORDS AND RETENTION

6.10.1 Records and/or logs shall be kept in a manner convenient for review as indicated below:

- a. All normal plant operation including such items as power level, fuel exposure, and shutdowns
- b. Principal maintenance activities
- c. Reportable Events
- d. Checks, inspections, tests, and calibrations of components and systems, including such diverse items as source leakage
- e. Reviews of changes made to the procedures or equipment or reviews of tests and experiments to comply with 10 CFR 50.59
- f. Radioactive shipments
- g. Test results in units of microcuries for leak tests performed pursuant to Specification 3.8.D

- h. Record of annual physical inventory verifying accountability of sources on record
- i. Records of gaseous and liquid radioactive waste released to the environs, and the resulting calculated dose to individual MEMBERS OF THE PUBLIC
- j. Offsite environmental monitoring surveys
- k. Fuel inventories and transfers
- l. Plant radiation and contamination surveys
- m. Radiation exposures for all plant personnel for whom monitoring was required.
- n. Updated, corrected, and as-built drawings of the plant
- o. Reactor coolant system inservice inspection
- p. Minutes of meetings of the NSRB
- q. Design fatigue usage evaluation

Monitoring and recording requirements below will be met for various portions of the reactor coolant pressure boundary (RCPB) for which detailed fatigue usage evaluation per the ASME Boiler and Pressure Vessel Code Section III was performed for the conditions defined in the design specification. In this plant, the applicable codes require fatigue usage evaluation for the reactor pressure vessel only. The locations to be monitored shall be:

1. The feedwater nozzles
2. The shell at or near the waterline
3. The flange studs



UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 214 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 230 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 187 TO FACILITY OPERATING LICENSE NO. DPR-68

TENNESSEE VALLEY AUTHORITY

BROWNS FERRY NUCLEAR PLANT, UNITS 1, 2, AND 3

DOCKET NOS. 50-259, 50-260, AND 50-296

1.0 INTRODUCTION

By letter dated October 7, 1993, the Tennessee Valley Authority (the licensee) requested amendments of the technical specifications (TS) for the Browns Ferry Nuclear Plant (BFN) Units 1, 2, and 3. The proposed changes include the addition of the high range primary containment radiation monitors and recorders to the TS for Units 1 and 3. Also, the changes add the wide range gaseous effluent radiation monitor and recorder to the TS of Units 1 and 3. The wide range gaseous effluent radiation monitor and recorder was added to Unit 2 during the restart effort and will monitor potential releases from any of the three units. The proposed amendment is in accordance with NUREG 0737, Item II.F.1 and Item II.F.3.

2.0 EVALUATION

TVA proposed an amendment for Browns Ferry Nuclear Plant Units 1 and 3 to revise TS tables 3.2.F, 4.2.F and TS section 6.9.2 by adding the high range primary containment radiation monitors and recorders in accordance with NUREG 0737, Item II.F.3. The proposed amendment also includes an administrative change to the Unit 2 TS clarifying the instrument loop that the high range primary containment radiation monitor and recorder is part of. The amendment for Units 1 and 3 is similar to the TS changes approved as Amendments 125 (BFN-TS-199), dated August 19, 1986 and 171 (BFN-TS-266), dated August 22, 1989.

2.1 BFN Units 1 and 3 - Revision to TS Table 3.2.F and 4.2.F

The change includes the addition of the high range primary containment monitor and recorder as well as the wide range gaseous effluent radiation monitor and recorder to the BFN TS. These additions are consistent with the guidance of TMI Action Plan Item II.F.1.3. Generic letter 83-36 provided guidance for limiting conditions for operation and surveillance requirements for these monitors. The licensee proposed TSs that are consistent with the guidance provided in Generic Letter 83-36. Therefore, the staff concludes that the proposed TSs for Item II.1.3 are acceptable.

ENCLOSURE 4

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## 2.2 BFN Units 1 and 3 - Addition of Notes to Table 3.2.F

The proposed changes include guidance on issuance of special reports when one of the two instruments is inoperable for more than seven days pursuant to TS 6.9.2. The notes also include requirements on operability when the plant is in reactor power operation, startup condition, hot standby condition or hot shutdown condition. These notes provide for consistency between TS Table 3.2.F and the notes to Table 3.2.F. These corrections are administrative and acceptable.

## 2.3 BFN Units 1 and 3 - Addition of Note to Table 4.2.F

These notes provide for consistency between TS Table 4.2.F and the notes to Table 4.2.F. The note references calibration procedures that are consistent with NUREG 0737, therefore the addition is acceptable.

## 2.4 BFN Unit 2 Revision to TS Table 3.2.F and 4.2.F

The change clarifies that the high range primary containment radiation monitors and recorders are part of the instrument loop. This is an administrative change to include the correct instrument numbers and instrument types, is therefore acceptable.

## 2.5 BFN Units 1 and 3 - Revision to TS 6.9.2, "Special Reports"

Revision will include the high range primary containment monitor and recorder, and the wide range gaseous effluent radiation monitor and recorder as instrumentation required to be reported if found inoperable within or after a specified length of time. The change is administrative in nature and is consistent with NUREG 0737. Therefore, the staff finds the change acceptable.

## 2.6 BFN Unit 2 - Revision to TS 6.9.2.9

The new specification includes the high range primary containment recorders to the existing text. The change is administrative and therefore the staff finds it acceptable.

## 3.0 STATE CONSULTATION

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

## 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes 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

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 (58 FR 67863). 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 upon 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and (3) issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: Laura A. Dudes

Dated: December 21, 1994

Mr. Oliver D. Kingsley, Jr.  
Tennessee Valley Authority

**BROWNS FERRY NUCLEAR PLANT**

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