

Docket Nos. 50-259/260/296

January 19, 1989

Mr. Oliver D. Kingsley, Jr.  
Senior Vice President, Nuclear Power  
Tennessee Valley Authority  
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POSTED  
50-259  
BROWNS FERRY 1  
AMENDMENT NO. 163  
TO DPR-33

Dear Mr. Kingsley:

SUBJECT: DELETION OF SEISMIC RESTRAINTS AND SUPPORTS FROM SECTIONS 3.6.H AND 4.6.H OF THE BROWNS FERRY TECHNICAL SPECIFICATIONS (TAC 00471/00472 AND 00473) (TS 255T) - BROWNS FERRY NUCLEAR PLANTS, UNITS 1, 2, AND 3

The Commission has issued the enclosed Amendment Nos. 163, 160, and 134 to Facility Operating Licenses Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3, respectively. These amendments are in response to your application dated September 29, 1988. These amendments remove the references to seismic restraints and supports from Sections 3.6.H and 4.6.H of the Browns Ferry Technical Specifications (TS).

A copy of the Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

Original signed by

Suzanne Black, Assistant Director  
for Projects  
TVA Projects Division  
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 163 to License No. DPR-33
2. Amendment No. 160 to License No. DPR-52
3. Amendment No. 134 to License No. DPR-68
4. Safety Evaluation

cc w/enclosures:  
See next page

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Mr. Oliver D. Kingsley, Jr.

-2-

Browns Ferry Nuclear Plant

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 163  
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 September 29, 1988, 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.

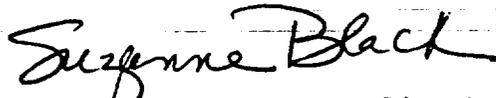
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-33 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 163, 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne Black, Assistant Director  
for Projects  
TVA Projects Division  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: January 19, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 163

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.

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3.6/4.6 PRIMARY SYSTEM BOUNDARY

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

3.6.H. Snubbers

During all modes of operation, all snubbers shall be OPERABLE except as noted in 3.6.H.1. All safety-related snubbers are listed in Surveillance Instructions BF SI 4.6.H-1 and BF SI 4.6.H-2.

1. With one or more snubber(s) inoperable on a system that is required to be OPERABLE in the current plant condition, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status and perform an engineering evaluation on the attached component or declare the attached system inoperable and follow the appropriate Limiting Condition statement for that system.

4.6.H. Snubbers

Each safety-related snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirements of Specification 3.6.H/4.6.H. These snubbers are listed in Surveillance Instructions BF SI 4.6.H-1 and BF SI 4.6.H-2.

1. Inspection Groups

The snubbers may be categorized into two major groups based on whether the snubbers are accessible or inaccessible during REACTOR POWER OPERATION. These major groups may be further subdivided into groups based on design, environment, or other features which may be expected to affect the operability of the snubbers within the group. Each group may be inspected independently in accordance with 4.6.H.2 through 4.6.H.9.

2. Visual Inspection, Schedule, and Lot Size

The first inservice visual inspection of snubbers not previously included in these technical specifications and whose visual inspection has

4.6.H. Snubbers

4.6.H.2. (Cont'd)

not been performed and documented previously, shall be performed within six months for accessible snubbers and before resuming power after the first refueling outage for inaccessible snubbers subsequent to being included in these specifications. The results of these inspections shall be used in the schedule table below to determine the subsequent visual inspection period. Snubbers previously included in these technical specifications shall continue on their previously earned inspection schedule without affect from adding snubbers not within their group.

<u>No. Inoperable Snubbers per Inspection Period</u>	<u>*Subsequent Visual Inspection Period</u>
0	18 months ± 25%
1	12 months ± 25%
2	6 months ± 25%
3,4	124 days ± 25%
5,6,7	62 days ± 25%
8 or more	31 days ± 25%

\*The inspection interval shall not be lengthened more than one step at a time.

4.6.H. Snubbers

3. Visual Inspection  
Performance and Evaluation

Visual inspections shall verify (1) that there are no visible indications of damage or impaired OPERABILITY, (2) bolts attaching the snubber to the foundation or supporting structure are secure, and (3) snubbers attached to sections of safety-related systems that have experienced unexpected potentially damaging transients since the last inspection period shall be evaluated for the possibility of concealed damage and functionally tested, if applicable, to confirm OPERABILITY.

Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, providing that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible; and (2) the affected snubber is functionally tested, if applicable, in the as-found condition and determined OPERABLE per Specification 4.6.H.5.

4.6.H Snubbers

4.6.H.3 (Cont'd)

Also, snubbers which have been made inoperable as the result of unexpected transients, isolated damage, or other such random events, when the provisions of 4.6.H.7 and 4.6.H.8 have been met and any other appropriate corrective action implemented, shall not be counted in determining the next visual inspection interval.

4. FUNCTIONAL TEST Schedule, Lot Size, and Composition

During each refueling outage, a representative sample of 10% of the total of each group of safety-related snubbers in use in the plant shall be functionally tested either in place or in a bench test.

The representative sample selected for functional testing shall include the various configurations, operating environments, and the range of size and capacity of snubbers within the groups. The representative sample should be weighed to include more snubbers from severe service areas such as near heavy equipment.

The stroke setting and the security of fasteners for attachment of the snubbers to the component and to the snubber anchorage shall be verified on snubbers selected for FUNCTIONAL TESTS.

4.6.H. Snubbers

5. FUNCTIONAL TEST Acceptance Criteria

The snubber FUNCTIONAL TEST shall verify that:

- a. Activation (restraining action) is achieved in both tension and compression within the specified range, except that inertia dependent, acceleration limiting mechanical snubbers may be tested to verify only that activation takes place in both directions of travel.
- b. Snubber bleed, or release where required, is present in both compression and tension within the specified range.
- c. For mechanical snubbers, the force required to initiate or maintain motion of the snubber is not great enough to overstress the attached piping or component during thermal movement, or to indicate impending failure of the snubber.
- d. For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement shall be verified.

### 3.6/4.6 PRIMARY SYSTEM BOUNDARY

#### LIMITING CONDITIONS FOR OPERATION

#### SURVEILLANCE REQUIREMENTS

##### 4.6.H. Snubbers

##### 4.6.H.5 (Cont'd)

- e. Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

##### 6. FUNCTIONAL TEST Failure Analysis and Additional Test Lots

An engineering evaluation shall be made of each failure to meet the **FUNCTIONAL TEST** acceptance criteria to determine the cause of the failure. The result of this analysis shall be used, if applicable, in selecting snubbers to be tested in the subsequent lot in an effort to determine the **OPERABILITY** of other snubbers which may be subject to the same failure mode. Selection of snubbers for future testing may also be based on the failure analysis. For each snubber that does not meet the **FUNCTIONAL TEST** acceptance criteria, an additional lot equal to 10 percent of the remainder of that group of snubbers shall be functionally tested. Testing shall continue until no additional inoperable snubbers are found within subsequent lots or all snubbers of the original inspection group have been tested or all suspect snubbers identified by the failure analysis have been tested, as applicable.

**3.6/4.6 PRIMARY SYSTEM BOUNDARY**

**LIMITING CONDITIONS FOR OPERATION**

**SURVEILLANCE REQUIREMENTS**

**4.6.H. Snubbers**

**4.6.H.6 (Cont'd)**

If any snubber selected for functional testing either fails to lockup or fails to move, i.e., frozen in place, the cause will be evaluated and if caused by manufacturer or design deficiency, all snubbers of the same design subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements stated above for snubbers not meeting the **FUNCTIONAL TEST** acceptance criteria.

The discovery of loose or missing attachment fasteners will be evaluated to determine whether the cause may be localized or generic. The result of the evaluation will be used to select other suspect snubbers for verifying the attachment fasteners, as applicable.

**7. FUNCTIONAL TEST Failure - Attached Component Analysis**

For the snubber(s) found inoperable, an engineering evaluation shall be performed on the components which are restrained by the snubber(s). The purpose of this engineering evaluation shall be to determine if the components restrained by the

4.6.H. Snubbers

4.6.H.7. (Cont'd)

snubber(s) were adversely affected by the inoperability of the snubber(s), and in order to ensure that the restrained component remains capable of meeting the designed service.

8. Functional Testing Of Repaired and Spare Snubbers

Snubbers which fail the visual inspection or the FUNCTIONAL TEST acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the FUNCTIONAL TEST results shall meet the FUNCTIONAL TEST criteria before installation in the unit. These snubbers shall have met the acceptance criteria subsequent to their most recent service, and the FUNCTIONAL TEST must have been performed within 12 months before being installed in the unit.

9. Exemption from Visual Inspection or FUNCTIONAL TESTS

Permanent or other exemptions from visual inspections and/or functional testing for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and if applicable snubber life destructive testing was performed to qualify snubber OPERABILITY for the applicable design conditions at either the

3.6/4.6 PRIMARY SYSTEM BOUNDARY

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

4.6.H. Snubbers

4.6.H.9 (Cont'd)

completion of their fabrication or at a subsequent date. Snubbers so exempted shall continue to be listed in the plant instructions with footnotes indicating the extent of the exemptions.

10. Snubber Service Life Program

The service life of snubbers may be extended based on an evaluation of the records of FUNCTIONAL TESTS, maintenance history, and environmental conditions to which the snubbers have been exposed.

### 3.6/4.6 BASES

#### 3.6.H/4.6.H Snubbers

Snubbers are designed to prevent unrestrained pipe or component motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping or components as a result of a seismic or other event initiating dynamic loads. It is therefore required that all snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the protection is required only during relatively low probability events, a period of 72 hours is allowed to replace or restore the inoperable snubber to operable status and perform an engineering evaluation on the supported component or declare the supported system inoperable and follow the appropriate limiting condition for operation statement for that system. The engineering evaluation is performed to determine whether the mode of failure of the snubber has adversely affected any safety-related component or system.

To verify snubber operability FUNCTIONAL TESTS shall be performed during the refueling outages, at approximately 18-month intervals.

These tests will include stroking of the snubbers to verify proper movement, activation, and bleed or release. Ten percent represents an adequate sample for such tests. Observed failures on these samples will require an engineering analysis and testing of additional units. If the engineering analysis results in the determination that the failure of a snubber to activate or to stroke (i.e., seized components) is the result of manufacture or design deficiency, all snubbers subject to the same defect shall be functionally tested. A thorough inspection of the snubber threaded attachments to the pipe or components and the anchorage will be made in conjunction with all required FUNCTIONAL TESTS. The stroke setting of the snubbers selected for functional testing also will be verified.

All safety-related snubbers are also visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate fluid level if applicable, and proper attachment of the snubber to piping and structures. The removal of insulation or the verification of torque values for threaded fasteners is not required for visual inspections.

### 3.6/4.6 BASES (Continued)

The visual inspection frequency is based upon maintaining a constant level of snubber protection. Thus, the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25 percent) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

When the cause of the rejection of a snubber in a visual inspection is clearly established and remedied for that snubber and for any other snubbers that may be generically susceptible and operability verified by inservice functional testing, if applicable, that snubber may be exempted from being counted as inoperable. Generically susceptible snubbers are those which are of a specific make or model and have the same design features directly related to rejection of the snubber, or are similarly located or exposed to the same environmental conditions such as temperature, radiation, and vibration. Inspection groups may be established based on design features, and installed conditions which may be expected to be generic. Each of these inspection groups is inspected and tested separately unless an engineering analysis indicates the inspection group is improperly constituted. All suspect snubbers are subject to inspection and testing regardless of inspection groupings.



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 160  
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 September 29, 1988, 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.

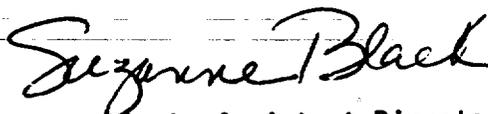
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-52 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 160, 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne Black, Assistant Director  
for Projects  
TVA Projects Division  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: January 19, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 160

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

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### 3.6/4.6 PRIMARY SYSTEM BOUNDARY

#### LIMITING CONDITIONS FOR OPERATION

##### 3.6.H. Snubbers

During all modes of operation, all snubbers shall be OPERABLE except as noted in 3.6.H.1. All safety-related snubbers are listed in Surveillance Instructions BF SI 4.6.H-1 and BF SI 4.6.H-2.

1. With one or more snubber(s) inoperable on a system that is required to be OPERABLE in the current plant condition, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status and perform an engineering evaluation on the attached component or declare the attached system inoperable and follow the appropriate Limiting Condition statement for that system.

#### SURVEILLANCE REQUIREMENTS

##### 4.6.H. Snubbers

Each safety-related snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirements of Specification 3.6.H/4.6.H. These snubbers are listed in Surveillance Instructions BF SI 4.6.H-1 and BF SI 4.6.H-2.

##### 1. Inspection Groups

The snubbers may be categorized into two major groups based on whether the snubbers are accessible or inaccessible during REACTOR POWER OPERATION. These major groups may be further subdivided into groups based on design, environment, or other features which may be expected to affect the operability of the snubbers within the group. Each group may be inspected independently in accordance with 4.6.H.2 through 4.6.H.9.

##### 2. Visual Inspection Schedule, and Lot Size

The first inservice visual inspection of snubbers not previously included in these technical specifications and whose visual inspection has

3.6/4.6 PRIMARY SYSTEM BOUNDARY

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

4.6.H. Snubbers

4.6.H.2. (Cont'd)

not been performed and documented previously, shall be performed within six months for accessible snubbers and before resuming power after the first refueling outage for inaccessible snubbers subsequent to being included in these specifications. The results of these inspections shall be used in the schedule table below to determine the subsequent visual inspection period. Snubbers previously included in these technical specifications shall continue on their previously earned inspection schedule without affect from adding snubbers not within their group.

<u>No. Inoperable Snubbers per Inspection Period</u>	<u>*Subsequent Visual Inspection Period</u>
0	18 months $\pm$ 25%
1	12 months $\pm$ 25%
2	6 months $\pm$ 25%
3,4	124 days $\pm$ 25%
5,6,7	62 days $\pm$ 25%
8 or more	31 days $\pm$ 25%

\*The inspection interval shall not be lengthened more than one step at a time.

4.6.H. Snubbers

3. Visual Inspection  
Performance and Evaluation

Visual inspections shall verify (1) that there are no visible indications of damage or impaired OPERABILITY, (2) bolts attaching the snubber to the foundation or supporting structure are secure, and (3) snubbers attached to sections of safety-related systems that have experienced unexpected potentially damaging transients since the last inspection period shall be evaluated for the possibility of concealed damage and functionally tested, if applicable, to confirm OPERABILITY.

Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, providing that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible; and (2) the affected snubber is functionally tested, if applicable, in the as-found condition and determined OPERABLE per Specification 4.6.H.5.

4.6.H Snubbers

4.6.H.3 (Cont'd)

Also, snubbers which have been made inoperable as the result of unexpected transients, isolated damage, or other such random events, when the provisions of 4.6.H.7 and 4.6.H.8 have been met and any other appropriate corrective action implemented, shall not be counted in determining the next visual inspection interval.

4. FUNCTIONAL TEST Schedule, Lot Size, and Composition

During each refueling outage, a representative sample of 10% of the total of each group of safety-related snubbers in use in the plant shall be functionally tested either in place or in a bench test.

The representative sample selected for functional testing shall include the various configurations, operating environments, and the range of size and capacity of snubbers within the groups. The representative sample should be weighed to include more snubbers from severe service areas such as near heavy equipment.

The stroke setting and the security of fasteners for attachment of the snubbers to the component and to the snubber anchorage shall be verified on snubbers selected for FUNCTIONAL TESTS.

4.6.H. Snubbers

5. FUNCTIONAL TEST Acceptance Criteria

The snubber FUNCTIONAL TEST shall verify that:

- a. Activation (restraining action) is achieved in both tension and compression within the specified range, except that inertia dependent, acceleration limiting mechanical snubbers may be tested to verify only that activation takes place in both directions of travel.
- b. Snubber bleed, or release where required, is present in both compression and tension within the specified range.
- c. For mechanical snubbers, the force required to initiate or maintain motion of the snubber is not great enough to overstress the attached piping or component during thermal movement, or to indicate impending failure of the snubber.
- d. For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement shall be verified.

3.6/4.6 PRIMARY SYSTEM BOUNDARY

LIMITING CONDITIONS FOR OPERATION

SURVEILLANCE REQUIREMENTS

4.6.H. Snubbers

4.6.H.5 (Cont'd)

- e. Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

6. FUNCTIONAL TEST Failure Analysis and Additional Test Lots

An engineering evaluation shall be made of each failure to meet the FUNCTIONAL TEST acceptance criteria to determine the cause of the failure. The result of this analysis shall be used, if applicable, in selecting snubbers to be tested in the subsequent lot in an effort to determine the OPERABILITY of other snubbers which may be subject to the same failure mode. Selection of snubbers for future testing may also be based on the failure analysis. For each snubber that does not meet the FUNCTIONAL TEST acceptance criteria, an additional lot equal to 10 percent of the remainder of that group of snubbers shall be functionally tested. Testing shall continue until no additional inoperable snubbers are found within subsequent lots or all snubbers of the original inspection group have been tested or all suspect snubbers identified by the failure analysis have been tested, as applicable.

4.6.H. Snubbers

4.6.H.6 (Cont'd)

If any snubber selected for functional testing either fails to lockup or fails to move, i.e., frozen in place, the cause will be evaluated and if caused by manufacturer or design deficiency, all snubbers of the same design subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements stated above for snubbers not meeting the **FUNCTIONAL TEST** acceptance criteria.

The discovery of loose or missing attachment fasteners will be evaluated to determine whether the cause may be localized or generic. The result of the evaluation will be used to select other suspect snubbers for verifying the attachment fasteners, as applicable.

7. FUNCTIONAL TEST Failure - Attached Component Analysis

For the snubber(s) found inoperable, an engineering evaluation shall be performed on the components which are restrained by the snubber(s). The purpose of this engineering evaluation shall be to determine if the components restrained by the

4.6.H. Snubbers

4.6.H.7. (Cont'd)

snubber(s) were adversely affected by the inoperability of the snubber(s), and in order to ensure that the restrained component remains capable of meeting the designed service.

8. Functional Testing Of Repaired and Spare Snubbers

Snubbers which fail the visual inspection or the FUNCTIONAL TEST acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the FUNCTIONAL TEST results shall meet the FUNCTIONAL TEST criteria before installation in the unit. These snubbers shall have met the acceptance criteria subsequent to their most recent service, and the FUNCTIONAL TEST must have been performed within 12 months before being installed in the unit.

9. Exemption from Visual Inspection or FUNCTIONAL TESTS

Permanent or other exemptions from visual inspections and/or functional testing for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and if applicable snubber life destructive testing was performed to qualify snubber OPERABILITY for the applicable design conditions at either the

**3.6/4.6 PRIMARY SYSTEM BOUNDARY**

**LIMITING CONDITIONS FOR OPERATION**

**SURVEILLANCE REQUIREMENTS**

**4.6.H. Snubbers**

**4.6.H.9 (Cont'd)**

completion of their fabrication or at a subsequent date. Snubbers so exempted shall continue to be listed in the plant instructions with footnotes indicating the extent of the exemptions.

**10. Snubber Service Life Program**

The service life of snubbers may be extended based on an evaluation of the records of **FUNCTIONAL TESTS**, maintenance history, and environmental conditions to which the snubbers have been exposed.

### 3.6/4.6 BASES

#### 3.6.H/4.6.H Snubbers

Snubbers are designed to prevent unrestrained pipe or component motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping or components as a result of a seismic or other event initiating dynamic loads. It is therefore required that all snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the protection is required only during relatively low probability events, a period of 72 hours is allowed to replace or restore the inoperable snubber to operable status and perform an engineering evaluation on the supported component or declare the supported system inoperable and follow the appropriate limiting condition for operation statement for that system. The engineering evaluation is performed to determine whether the mode of failure of the snubber has adversely affected any safety-related component or system.

To verify snubber operability functional tests shall be performed during the refueling outages, at approximately 18-month intervals.

These tests will include stroking of the snubbers to verify proper movement, activation, and bleed or release. Ten percent represents an adequate sample for such tests. Observed failures on these samples will require an engineering analysis and testing of additional units. If the engineering analysis results in the determination that the failure of a snubber to activate or to stroke (i.e., seized components) is the result of manufacture or design deficiency, all snubbers subject to the same defect shall be functionally tested. A thorough inspection of the snubber threaded attachments to the pipe or components and the anchorage will be made in conjunction with all required functional tests. The stroke setting of the snubbers selected for functional testing also will be verified.

All safety-related snubbers are also visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate fluid level if applicable, and proper attachment of the snubber to piping and structures. The removal of insulation or the verification of torque values for threaded fasteners is not required for visual inspections.

### 3.6/4.6 BASES (Continued)

The visual inspection frequency is based upon maintaining a constant level of snubber protection. Thus, the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25 percent) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

When the cause of the rejection of a snubber in a visual inspection is clearly established and remedied for that snubber and for any other snubbers that may be generically susceptible and operability verified by inservice functional testing, if applicable, that snubber may be exempted from being counted as inoperable. Generically susceptible snubbers are those which are of a specific make or model and have the same design features directly related to rejection of the snubber, or are similarly located or exposed to the same environmental conditions such as temperature, radiation, and vibration. Inspection groups may be established based on design features, and installed conditions which may be expected to be generic. Each of these inspection groups is inspected and tested separately unless an engineering analysis indicates the inspection group is improperly constituted. All suspect snubbers are subject to inspection and testing regardless of inspection groupings.



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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 134  
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 September 29, 1988, 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.

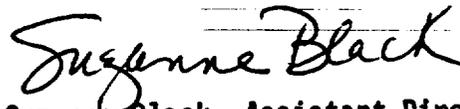
2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. DPR-68 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 134, 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 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Suzanne Black, Assistant Director  
for Projects  
TVA Projects Division  
Office of Special Projects

Attachment:  
Changes to the Technical  
Specifications

Date of Issuance: January 19, 1989

ATTACHMENT TO LICENSE AMENDMENT NO. 134

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

- iii
- iv
- 3.6/4.6-15
- 3.6/4.6-16
- 3.6/4.6-17
- 3.6/4.6-18
- 3.6/4.6-19
- 3.6/4.6-20
- 3.6/4.6-21
- 3.6/4.6-22
- 3.6/4.6-23
- 3.6/4.6-34
- 3.6/4.6-35

INSERT

- iii
- iv\*
- 3.6/4.6-15
- 3.6/4.6-16
- 3.6/4.6-17
- 3.6/4.6-18
- 3.6/4.6-19
- 3.6/4.6-20
- 3.6/4.6-21
- 3.6/4.6-22
- 3.6/4.6-23
- 3.6/4.6-34
- 3.6/4.6-35\*

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A. High Pressure Fire Protection System . . . . .	3.11/4.11-1
B. CO <sub>2</sub> Fire Protection System . . . . .	3.11/4.11-4
C. Fire Detectors . . . . .	3.11/4.11-6
D. Deleted. . . . .	3.11/4.11-7
E. Fire Protection Systems Inspection . . . . .	3.11/4.11-8
F. Deleted. . . . .	3.11/4.11-8
G. Air Masks and Cylinders. . . . .	3.11/4.11-8
H. Continuous Fire Watch. . . . .	3.11/4.11-9
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5.3 Reactor Vessel . . . . .	5.0-1
5.4 Containment. . . . .	5.0-1
5.5 Fuel Storage . . . . .	5.0-1
5.6 Seismic Design . . . . .	5.0-2

**3:6/4.6 PRIMARY SYSTEM BOUNDARY**

**LIMITING CONDITIONS FOR OPERATION**

**SURVEILLANCE REQUIREMENTS**

**3.6.H. Snubbers**

During all modes of operation, all snubbers shall be OPERABLE except as noted in 3.6.H.1. All safety-related snubbers are listed in Surveillance Instructions BF SI 4.6.H-1 and BF SI 4.6.H-2.

1. With one or more snubber(s) inoperable on a system that is required to be OPERABLE in the current plant condition, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status and perform an engineering evaluation on the attached component or declare the attached system inoperable and follow the appropriate Limiting Condition statement for that system.

**4.6.H. Snubbers**

Each safety-related snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirements of Specification 3.6.H/4.6.H. These snubbers are listed in Surveillance Instructions BF SI 4.6.H-1 and BF SI 4.6.H-2.

**1. Inspection Groups**

The snubbers may be categorized into two major groups based on whether the snubbers are accessible or inaccessible during REACTOR POWER OPERATION. These major groups may be further subdivided into groups based on design, environment, or other features which may be expected to affect the operability of the snubbers within the group. Each group may be inspected independently in accordance with 4.6.H.2 through 4.6.H.9.

**2. Visual Inspection, Schedule, and Lot Size**

The first inservice visual inspection of snubbers not previously included in these technical specifications and whose visual inspection has

**3.6/4.6 PRIMARY SYSTEM BOUNDARY**

**LIMITING CONDITIONS FOR OPERATION**

**SURVEILLANCE REQUIREMENTS**

**4.6.H. Snubbers**

**4.6.H.2. (Cont'd)**

not been performed and documented previously, shall be performed within six months for accessible snubbers and before resuming power after the first refueling outage for inaccessible snubbers subsequent to being included in these specifications. The results of these inspections shall be used in the schedule table below to determine the subsequent visual inspection period. Snubbers previously included in these technical specifications shall continue on their previously earned inspection schedule without affect from adding snubbers not within their group.

<u>No. Inoperable Snubbers per Inspection Period</u>	<u>*Subsequent Visual Inspection Period</u>
0	18 months $\pm$ 25%
1	12 months $\pm$ 25%
2	6 months $\pm$ 25%
3,4	124 days $\pm$ 25%
5,6,7	62 days $\pm$ 25%
8 or more	31 days $\pm$ 25%

\*The inspection interval shall not be lengthened more than one step at a time.

4.6.H. Snubbers

3. Visual Inspection  
Performance and Evaluation

Visual inspections shall verify (1) that there are no visible indications of damage or impaired OPERABILITY, (2) bolts attaching the snubber to the foundation or supporting structure are secure, and (3) snubbers attached to sections of safety-related systems that have experienced unexpected potentially damaging transients since the last inspection period shall be evaluated for the possibility of concealed damage and functionally tested, if applicable, to confirm OPERABILITY.

Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, providing that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible; and (2) the affected snubber is functionally tested, if applicable, in the as-found condition and determined OPERABLE per Specification 4.6.H.5.

4.6.H Snubbers

4.6.H.3 (Cont'd)

Also, snubbers which have been made inoperable as the result of unexpected transients, isolated damage, or other such random events, when the provisions of 4.6.H.7 and 4.6.H.8 have been met and any other appropriate corrective action implemented, shall not be counted in determining the next visual inspection interval.

4. FUNCTIONAL TEST Schedule, Lot Size, and Composition

During each refueling outage, a representative sample of 10% of the total of each group of safety-related snubbers in use in the plant shall be functionally tested either in place or in a bench test.

The representative sample selected for functional testing shall include the various configurations, operating environments, and the range of size and capacity of snubbers within the groups. The representative sample should be weighed to include more snubbers from severe service areas such as near heavy equipment.

The stroke setting and the security of fasteners for attachment of the snubbers to the component and to the snubber anchorage shall be verified on snubbers selected for FUNCTIONAL TESTS.

4.6.H. Snubbers

5. FUNCTIONAL TEST Acceptance Criteria

The snubber FUNCTIONAL TEST shall verify that:

- a. Activation (restraining action) is achieved in both tension and compression within the specified range, except that inertia dependent, acceleration limiting mechanical snubbers may be tested to verify only that activation takes place in both directions of travel.
- b. Snubber bleed, or release where required, is present in both compression and tension within the specified range.
- c. For mechanical snubbers, the force required to initiate or maintain motion of the snubber is not great enough to overstress the attached piping or component during thermal movement, or to indicate impending failure of the snubber.
- d. For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement shall be verified.

4.6.H. Snubbers

4.6.H.5 (Cont'd)

- e. Testing methods may be used to measure parameters indirectly or parameters other than those specified if those results can be correlated to the specified parameters through established methods.

6. FUNCTIONAL TEST Failure Analysis and Additional Test Lots

An engineering evaluation shall be made of each failure to meet the **FUNCTIONAL TEST** acceptance criteria to determine the cause of the failure. The result of this analysis shall be used, if applicable, in selecting snubbers to be tested in the subsequent lot in an effort to determine the **OPERABILITY** of other snubbers which may be subject to the same failure mode. Selection of snubbers for future testing may also be based on the failure analysis. For each snubber that does not meet the **FUNCTIONAL TEST** acceptance criteria, an additional lot equal to 10 percent of the remainder of that group of snubbers shall be functionally tested. Testing shall continue until no additional inoperable snubbers are found within subsequent lots or all snubbers of the original inspection group have been tested or all suspect snubbers identified by the failure analysis have been tested, as applicable.

**3.6/4.6 PRIMARY SYSTEM BOUNDARY**

**LIMITING CONDITIONS FOR OPERATION**

**SURVEILLANCE REQUIREMENTS**

**4.6.H. Snubbers**

**4.6.H.6 (Cont'd)**

If any snubber selected for functional testing either fails to lockup or fails to move, i.e., frozen in place, the cause will be evaluated and if caused by manufacturer or design deficiency, all snubbers of the same design subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements stated above for snubbers not meeting the **FUNCTIONAL TEST** acceptance criteria.

The discovery of loose or missing attachment fasteners will be evaluated to determine whether the cause may be localized or generic. The result of the evaluation will be used to select other suspect snubbers for verifying the attachment fasteners, as applicable.

**7. FUNCTIONAL TEST Failure - Attached Component Analysis**

For the snubber(s) found inoperable, an engineering evaluation shall be performed on the components which are restrained by the snubber(s). The purpose of this engineering evaluation shall be to determine if the components restrained by the

4.6.H. Snubbers

4.6.H.7. (Cont'd)

snubber(s) were adversely affected by the inoperability of the snubber(s), and in order to ensure that the restrained component remains capable of meeting the designed service.

8. Functional Testing Of Repaired and Spare Snubbers

Snubbers which fail the visual inspection or the FUNCTIONAL TEST acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the FUNCTIONAL TEST results shall meet the FUNCTIONAL TEST criteria before installation in the unit. These snubbers shall have met the acceptance criteria subsequent to their most recent service, and the FUNCTIONAL TEST must have been performed within 12 months before being installed in the unit.

9. Exemption from Visual Inspection or FUNCTIONAL TESTS

Permanent or other exemptions from visual inspections and/or functional testing for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and if applicable snubber life destructive testing was performed to qualify snubber OPERABILITY for the applicable design conditions at either the

4.6.H. Snubbers

4.6.H.9 (Cont'd)

completion of their fabrication or at a subsequent date. Snubbers so exempted shall continue to be listed in the plant instructions with footnotes indicating the extent of the exemptions.

10. Snubber Service Life Program

The service life of snubbers may be extended based on an evaluation of the records of FUNCTIONAL TESTS, maintenance history, and environmental conditions to which the snubbers have been exposed.

### 3.6/4.6 BASES

#### 3.6.H/4.6.H Snubbers

Snubbers are designed to prevent unrestrained pipe or component motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping or components as a result of a seismic or other event initiating dynamic loads. It is therefore required that all snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the protection is required only during relatively low probability events, a period of 72 hours is allowed to replace or restore the inoperable snubber to operable status and perform an engineering evaluation on the supported component or declare the supported system inoperable and follow the appropriate limiting condition for operation statement for that system. The engineering evaluation is performed to determine whether the mode of failure of the snubber has adversely affected any safety-related component or system.

To verify snubber operability functional tests shall be performed during the refueling outages, at approximately 18-month intervals.

These tests will include stroking of the snubbers to verify proper movement, activation, and bleed or release. Ten percent represents an adequate sample for such tests. Observed failures on these samples will require an engineering analysis and testing of additional units. If the engineering analysis results in the determination that the failure of a snubber to activate or to stroke (i.e., seized components) is the result of manufacture or design deficiency, all snubbers subject to the same defect shall be functionally tested. A thorough inspection of the snubber threaded attachments to the pipe or components and the anchorage will be made in conjunction with all required functional tests. The stroke setting of the snubbers selected for functional testing also will be verified.

All safety-related snubbers are also visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate fluid level if applicable, and proper attachment of the snubber to piping and structures. The removal of insulation or the verification of torque values for threaded fasteners is not required for visual inspections.

### 3.6/4.6 BASES (Continued)

The visual inspection frequency is based upon maintaining a constant level of snubber protection. Thus, the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required inspection. Inspections performed before that interval has elapsed may be used as a new reference point to determine the next inspection. However, the results of such early inspections performed before the original required time interval has elapsed (nominal time less 25 percent) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule.

When the cause of the rejection of a snubber in a visual inspection is clearly established and remedied for that snubber and for any other snubbers that may be generically susceptible and operability verified by inservice functional testing, if applicable, that snubber may be exempted from being counted as inoperable. Generically susceptible snubbers are those which are of a specific make or model and have the same design features directly related to rejection of the snubber, or are similarly located or exposed to the same environmental conditions such as temperature, radiation, and vibration. Inspection groups may be established based on design features, and installed conditions which may be expected to be generic. Each of these inspection groups is inspected and tested separately unless an engineering analysis indicates the inspection group is improperly constituted. All suspect snubbers are subject to inspection and testing regardless of inspection groupings.



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

ENCLOSURE 4

SAFETY EVALUATION BY THE OFFICE OF SPECIAL PROJECTS

SUPPORTING AMENDMENT NO. 163 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 160 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 134 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 September 29, 1988, the Tennessee Valley Authority (TVA or the licensee) requested amendments to Appendix A of the Technical Specifications (TS) for Facility Operating License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant (BFN), Units 1, 2 and 3. The proposed change would delete the references to seismic restraints and supports (but retain references to snubbers) from TS Sections 3.6.H and 4.6.H and revise the appropriate bases for these two sections.

2.0 EVALUATION

Technical Specifications (TSs) for operating plants have surveillance requirements for snubbers in order to confirm operability of these components. The snubber action statements, therefore, specify actions which are appropriate when snubbers are inoperable. However, the staff's guidance in its Standard Technical Specifications (STS) for Boiling Water Reactors (BWRs) (NUREG-0123) do not define either specific operability or surveillance requirements for structural components such as restraints and supports. The rationale for including TS surveillance and operability requirements for snubbers is that failures of snubbers are considered probable events based upon field experience at numerous plants. Damage to structural components should generally occur only due to unusual events.

The deletion of references to seismic restraints and supports from Sections 3.6.H and 4.6.H is, therefore, consistent with the STS. The licensee has stated that if a restraint or support is found to be damaged or in need of modification as a result of the ongoing seismic design program, then an engineering evaluation would be performed. The evaluation would assess the impact of the support in question on the operability of the system which it supports. This evaluation shall be completed within seven days or within the allowable outage

time for the associated system in accordance with the TS Limiting Condition for Operation (LCO), whichever is less.<sup>1</sup> The allowable outage time for the associated system would be applicable from the point that it is recognized that the support is damaged or needs modification. If the support/restraint is determined to affect system operability then the applicable system LCO must be entered and the support/restraint repaired or replaced within the remaining system outage time.

Further NRC generic guidance is expected in the area of operability of restraints and supports. Therefore, the above position for determining operability is acceptable on an interim basis until further guidance is developed.

### 3.0 ENVIRONMENTAL CONSIDERATION

The amendments involve a change to a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The staff has determined that the amendments involve no significant increase in the amounts of 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 these amendments involve no significant hazards consideration and there has been no public comment on such finding. 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 nor environmental assessment need be prepared in connection with the issuance of these amendments.

### 4.0 CONCLUSION

The Commission made a proposed determination that the amendment involves no significant hazards consideration which was published in the Federal Register (53 FR 41001) on October 19, 1988, and consulted with the State of Alabama. No public comments were received and the State of Alabama did not have any comments.

The staff 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and the issuance of the amendments will not be inimical to the common defense and security nor to the health and safety of the public.

Principal Contributor: G. Gears and M. Branch

Dated: January 19, 1989

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1 For safety-related piping systems, the time frame for evaluating non-conformances should be consistent with IE Bulletin 79-14, "Seismic Analysis for As-Built Safety-Related Piping Systems," Supplement 2 dated September 7, 1979.