May 24, 1982

Distribution:
Docket File OPA
NRC PDR RDiggs
Local PDR NSIC
ORB #2 Rdg ASLAB
DEisenhut Gray
~~RRaxxxsh~~ Extra
SNorris
RClark
OELD
SECY
OI&E (2)
TBarnhart (12)
LSchneider
DBrinkman
ACRS (10)

Docket Nos. 50-259
50-260
50-269

Mr. Hugh G. Parris
Manager of Power
Tennessee Valley Authority
500A Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Dear Mr. Parris:

The Commission has issued the enclosed Amendment Nos. 84 , 81 and 55 to Facility License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3. These amendments are in response to your letter of April 28, 1981 (TVA BFNP TS 158), as supplemented by your letter of March 9, 1982.

These Amendments change the Technical Specifications to add additional requirements for inspection of snubbers and seismic restraints in response to our generic request of November 20, 1981 to All Power Reactor Licensees.

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

Sincerely,

ORIGINAL SIGNED BY
Richard J. Clark, Project Manager
Operating Reactors Branch #2
Division of Licensing

Enclosures:
1. Amendment No. 84 to DPR-33
2. Amendment No. 81 to DPR-52
3. Amendment No. 55 to DPR-68
4. Safety Evaluation
5. Notice

cc w/encls:
See next page

OFFICE	DL:ORB#2	DL:ORB#2	DL:ORB#2	DL:OR	OELD		
SURNAME	SNorris	RJClark:ms	DBVassallo	TMNovak	TLawson	HShaw	
DATE	5/6/82	5/07/82	5/12/82	5/13/82	5/20/82	5/11/82	

Mr. Hugh G. Parris

cc:

H. S. Sanger, Jr., Esquire
General Counsel
Tennessee Valley Authority
400 Commerce Avenue
E 11B 33C
Knoxville, Tennessee 37902

Mr. Ron Rogers
Tennessee Valley Authority
400 Chestnut Street, Tower II
Chattanooga, Tennessee 37401

Mr. Charles R. Christopher
Chairman, Limestone County Commission
P. O. Box 188
Athens, Alabama 35611

Ira L. Myers, M.D.
State Health Officer
State Department of Public Health
State Office Building
Montgomery, Alabama 36104

Mr. H. N. Culver
249A HBD
400 Commerce Avenue
Tennessee Valley Authority
Knoxville, Tennessee 37902

Athens Public Library
South and Forrest
Athens, Alabama 35611

James P. O'Reilly
Regional Administrator, Region II
U.S. Nuclear Regulatory Commission
101 Marietta Street, Suite 3100
Atlanta, Georgia 30303

U. S. Environmental Protection Agency
Region IV Office
Regional Radiation Representative
345 Courtland Street
Atlanta, Georgia 30308

Resident Inspector
U. S. Nuclear Regulatory Commission
Route 2, Box 311
Athens, Alabama 35611

Mr. John F. Cox
Tennessee Valley Authority
W9-D 207C
400 Commerce Avenue
Knoxville, Tennessee 37902

George Jones
Tennessee Valley Authority
P. O. Box 2000
Decatur, Alabama 35602

Mr. Oliver Havens
U.S. Nuclear Regulatory Commission
Reactor Training Center
Osborne Office Center, Suite 200
Chattanooga, Tennessee 37411

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-259

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 84
License No. DPR-33

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

   A. The application for amendments by Tennessee Valley Authority (the licensee) dated April 28, 1981, as supplemented by letter dated March 9, 1982, 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 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. 84, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 24, 1982

ATTACHMENT TO LICENSE AMENDMENT NO.84

FACILITY OPERATING LICENSE NO. DPR-33

DOCKET NO. 50-259

Revise Appendix A as follows:

1. Replace the following page with the identically numbered page:

vii
viii
185
186
187
188
189
190
191
192
193
194
195
196-208
224
225
226

2. Marginal lines on these pages indicate the area being revised. The overleaf page is not being revised and should be retained.

LIST OF TABLES (Cont'd)

LIST OF ILLUSTRATIONS

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
3.6 PRIMARY SYSTEM BOUNDARY	4.6 PRIMARY SYSTEM BOUNDARY
H. Seismic Restraints, Supports, and Snubbers	H. Seismic Restraints, Supports, and Snubbers
1. During all modes of operation except Cold Shutdown and Refuel, and seismic restraints, supports, and snubbers shall be operable except as noted in 3.6.H.2 and 3.6.H.3 below. All safety-related snubbers are listed in Surveillance Instruction BF SI 4.6.H.	The surveillance requirements of paragraph 4.6.G are the only requirements that apply to any seismic restraint or support other than snubbers. Each safety-related snubber shall be demonstrated OPERABLE BY performance of the following augumented inservice inspection program and the requirements of Specification 3.6.H/4.6.H. These snubbers are listed in Surveillance Instruction BF SI 4.6.H.
2. With one or more seismic restraint , support, or snubber inoperable; within 72 hours replace or restore the inoperable seismic restraint(s), support(s), or 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.	1. Inspection Groups The snubbers may be categorized into two major groups based on whether the snubbers are accessible or inaccessible during reactor 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.
3. If a seismic restraint, support, or snubber (SRSS) is determined to be inoperable while the reactor is in the shutdown or refuel mode, that SRSS shall be made operable or replaced prior to reactor startup. If the inoperable SRSS is attached to a system that is required OPERABLE during the shutdown or refuel mode, the appropriate LIMITING CONDITIONS statement for that system shall be followed.	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 not been performed and documented previously, shall be performed within six months for accessible snubbers and before resuming power after the first refueling outage

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued)

2. Visual Inspection, Schedule, and Lot Size (continued)

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.

No. Inoperable Snubbers per Inspection Period	*Subsequent Visual Inspection Period
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.

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

H. Seismic Restraints, Supports, and Snubbers (Continued)

H. Seismic Restraints, Supports, and Snubbers (continued)

3. Visual Inspection Performance and Evaluation (cont'd)

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.

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

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (Continued)	H. Seismic Restraints, Supports, and Snubbers (continued) 4. Functional Test Schedule, Lot Size, and Composition (continued) 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. 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

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

5. Function Test Acceptance Criteria (continued)

a. (continued)

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.

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.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued)
	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% 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. 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

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

6. Functional Test Failure Analysis and Additional Test Lots (continued)

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 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

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

8. Functional Testing of Repaired and Spare Snubbers (continued)

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

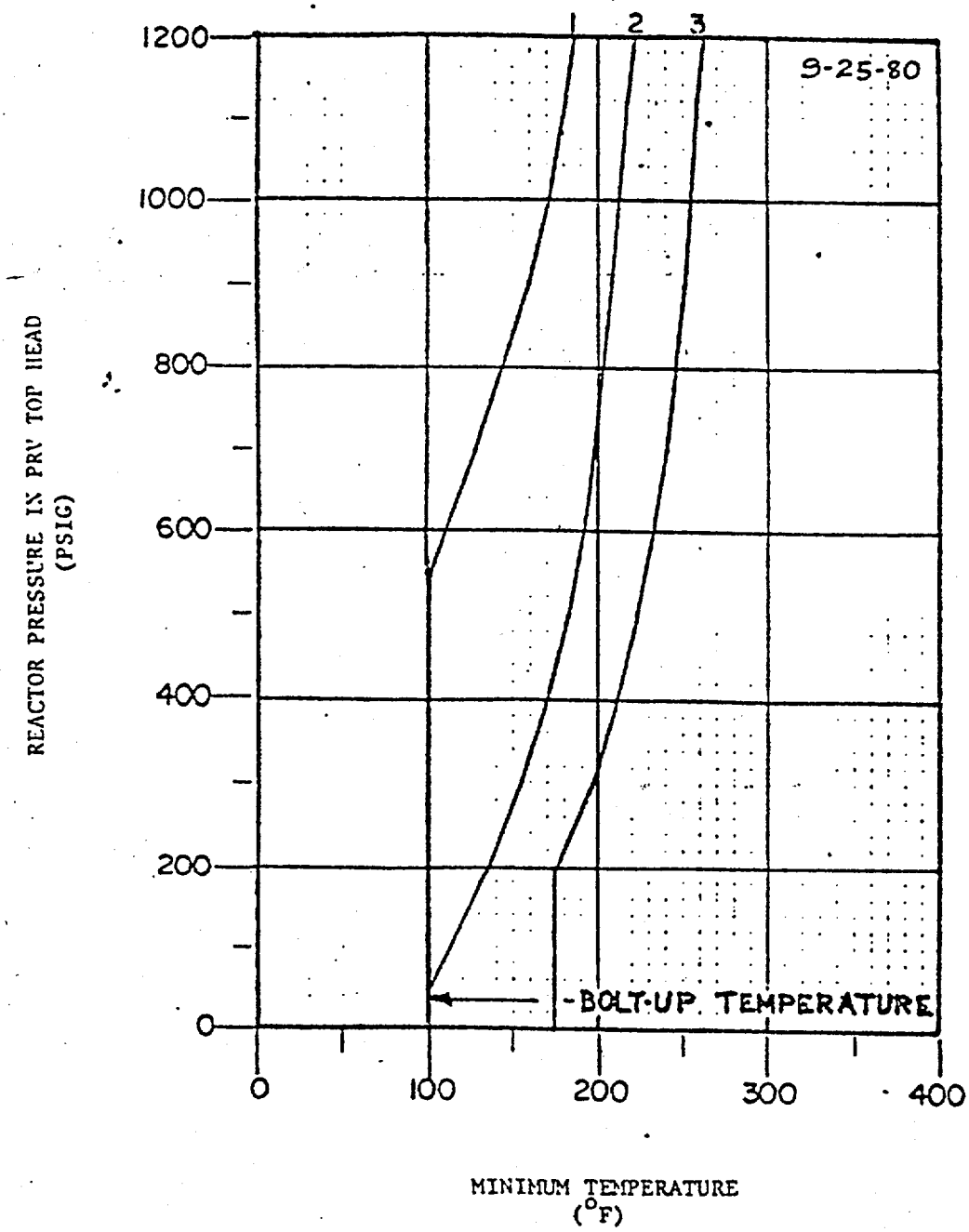
Permanent or other exemptions from visual inspections and/or functional testing for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and if applicable snubber life destructive testing was performed to qualify snubber operability for the applicable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

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued)
	10. Snubber Service Life Program (continued) functional tests, maintenance history, and environmental conditions to which the snubbers have been exposed.

Figure 3.6-1



Curve #1
Minimum temperature for pressure tests such as required by Section XI.

Curve #2
Minimum temperature for mechanical heat up or cooldown following nuclear shutdown.

Curve #3
Minimum temperature for core operation (criticality) Includes additional margin required by 10CFR50 Appendix G, Par. IV A.2.C.

Notes
These curves are shifted 30°F to the right of the original set of curves to include a ΔRT_{NDT} of 30°F. This shift will allow these curves to be used thru 4.0 EFPY.

Amendment No. ~~66~~ 84

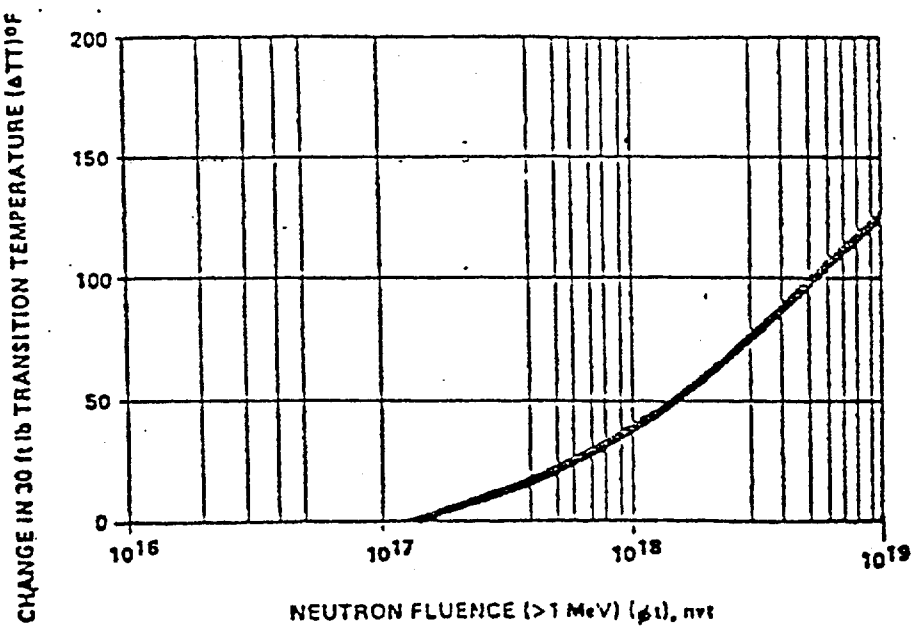


FIGURE 3.6-2
CHANGE IN CHARPY V TRANSITION TEMPERATURE
VERSUS
NEUTRON EXPOSURE

PAGES 196-208 DELETED

3.6.H/4.6.H Seismic Restraints, Supports, and Snubbers

Seismic restraints, supports, and snubbers (SRSS) 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 SRSS 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 SRSS required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the SRSS protection is required only during relatively low probability events, a period of 72 hours is allowed to replace or restore the inoperable SRSS(s) 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 SRSS has adversely affected any safety-related component or system.

3.6/4.6 BASES

To verify snubber operability functional tests shall be performed during the refueling outages, at approximately 18 months 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 inpsection 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.

Page 226 Deleted

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-260

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 81
License No. DPR-52

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

   A. The application for amendments by Tennessee Valley Authority (the licensee) dated April 28, 1981, as supplemented by letter dated March 9, 1982 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 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. 81, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 24, 1982

ATTACHMENT TO LICENSE AMENDMENT NO. 81

FACILITY OPERATING LICENSE NO. DPR-52

DOCKET NO. 50-260

Revise Appendix A as follows:

1. Replace the following page with the identically numbered page:

vii
viii
185
186
187
188
189
190
191
192
193
194
195
196-208
224
225
226

2. Marginal lines on these pages indicate the area being revised. The overleaf page is not being revised and should be retained.

LIST OF TABLES (Cont'd)

Amendment No. ~~35~~, ~~46~~, 81

LIST OF ILLUSTRATIONS

LIMITING CONDITIONS FOR OPERATION

3.6 PRIMARY SYSTEM BOUNDARY

H. Seismic Restraints, Supports, and Snubbers

1. During all modes of operation except Cold Shutdown and Refuel, and seismic restraints, support , and snubbers shall be operable except as noted in 3.6.H.2 and 3.6.H.3 below. All safety-related snubbers are listed in Surveillance Instruction BF SI 4.6.H.

2. With one or more seismic restraint , support, or snubber inoperable; within 72 hours replace or restore the inoperable seismic restraint(s), support(s), or 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.

3. If a seismic restraint, support, or snubber (SRSS) is determined to be inoperable while the reactor is in the shutdown or refuel mode, that SRSS shall be made operable or replaced prior to reactor startup. If the inoperable SRSS is attached to a system that is required OPERABLE during the shutdown or refuel mode, the appropriate LIMITING CONDITIONS statement for that system shall be followed.

SURVEILLANCE REQUIREMENTS

4.6 PRIMARY SYSTEM BOUNDARY

H. Seismic Restraints, Supports, and Snubbers

The surveillance requirements of paragraph 4.6.G are the only requirements that apply to any seismic restraint or support other than snubbers.

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

1. Inspection Groups

The snubbers may be categorized into two major groups based on whether the snubbers are accessible or inaccessible during reactor 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 not been performed and documented previously, shall be performed within six months for accessible snubbers and before resuming power after the first refueling outage

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

2. Visual Inspection, Schedule, and Lot Size (continued)

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.

No. Inoperable Snubbers per Inspection Period	*Subsequent Visual Inspection Period
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.

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

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (Continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

3. Visual Inspection Performance and Evaluation (cont'd)

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.

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

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (Continued)	H. Seismic Restraints, Supports, and Snubbers (continued) 4. Functional Test Schedule, Lot Size, and Composition (continued) 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. 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

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

5. Function Test Acceptance Criteria (continued)

a. (continued)

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.

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.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued) 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% 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. 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

H. Seismic Restraints, Supports, and Snubbers (continued)

H. Seismic Restraints, Supports, and Snubbers (continued)

6. Functional Test Failure Analysis and Additional Test Lots (continued)

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 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

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

8. Functional Testing of Repaired and Spare Snubbers (continued)

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

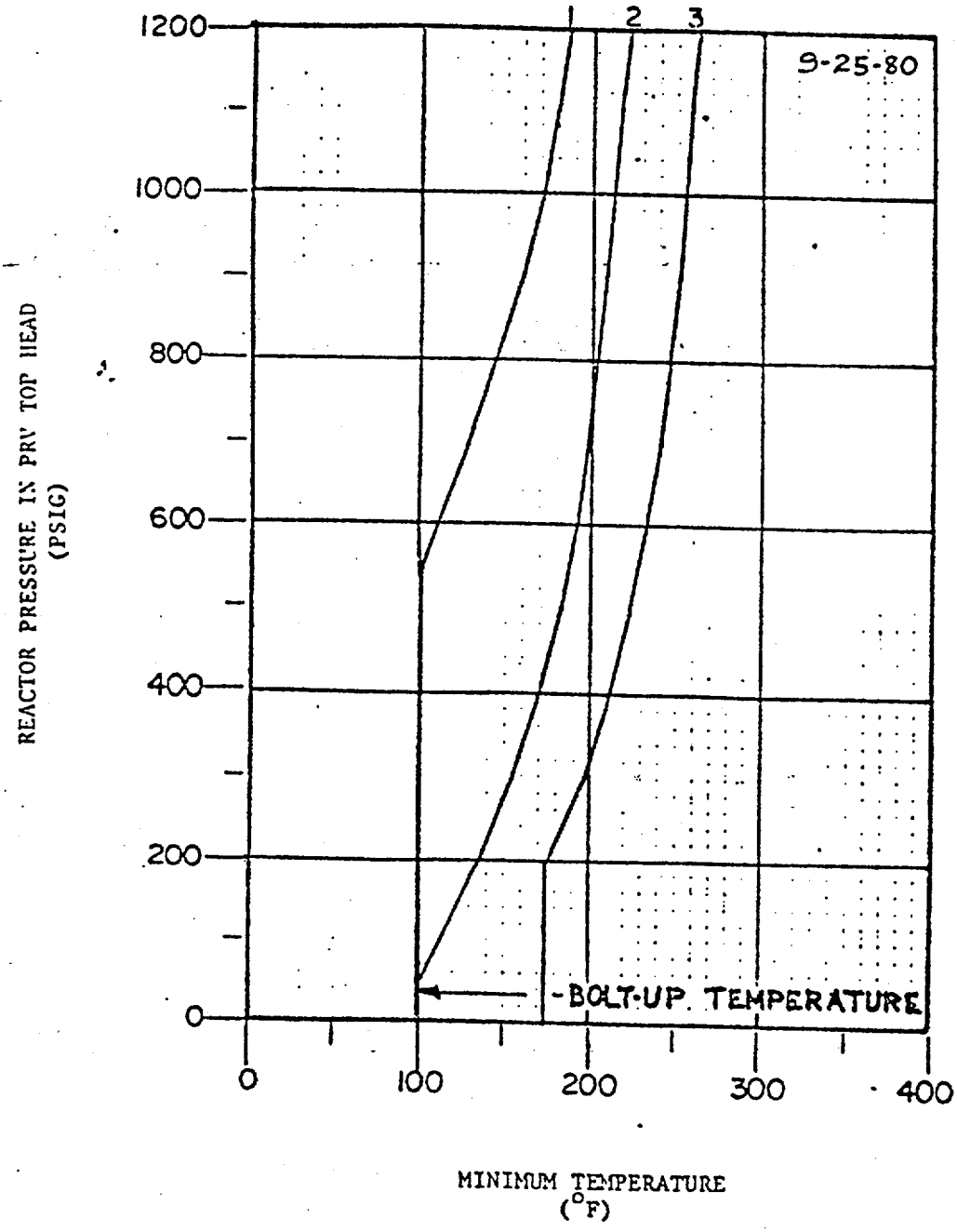
Permanent or other exemptions from visual inspections and/or functional testing for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and if applicable snubber life destructive testing was performed to qualify snubber operability for the applicable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

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued)
	10. Snubber Service Life Program (continued)
	functional tests, maintenance history, and environmental conditions to which the snubbers have been exposed.

Figure 3.6-1



Curve #1
Minimum temperature for pressure tests such as required by Section XI.

Curve #2
Minimum temperature for mechanical heat up or cooldown following nuclear shutdown.

Curve #3
Minimum temperature for core operation (criticality) Includes additional margin required by 10CFR50 Appendix G, Par. IV A.2.C.

Notes
These curves are shifted 30°F to the right of the original set of curves to include a ΔRT_{NDT} of 30°F. This shift will allow these curves to be used thru 4.0 EFPY.

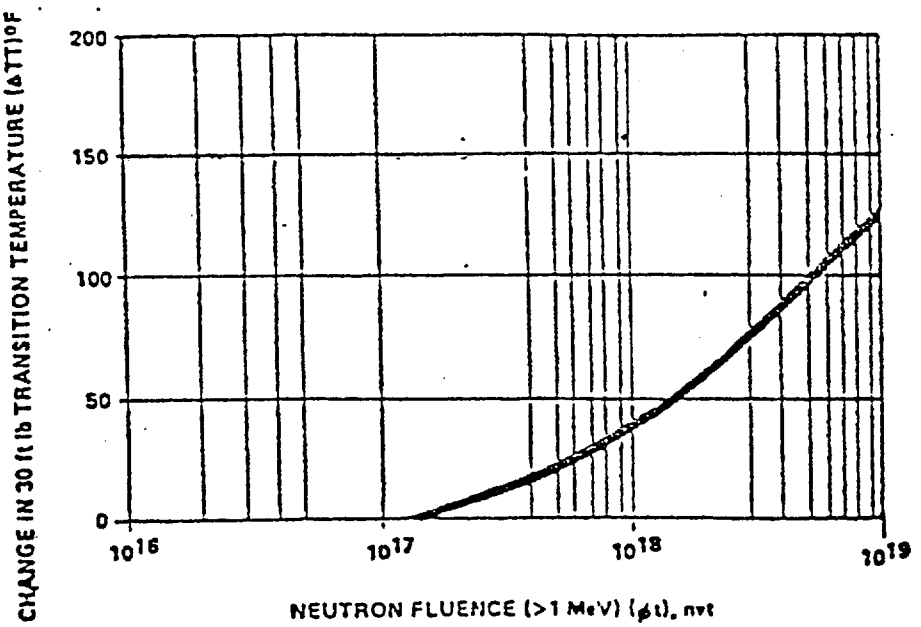


FIGURE 3.6-2
CHANGE IN CHARPY V TRANSITION TEMPERATURE
VERSUS
NEUTRON EXPOSURE

PAGES 196-208 DELETED

3.6.H/4.6.H Seismic Restraints, Supports, and Snubbers

Seismic restraints, supports, and snubbers (SRSS) 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 SRSS 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 SRSS required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the SRSS protection is required only during relatively low probability events, a period of 72 hours is allowed to replace or restore the inoperable SRSS(s) 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 SRSS has adversely affected any safety-related component or system.

3.6/4.6 BASES

To verify snubber operability functional tests shall be performed during the refueling outages, at approximately 18 months 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 inpsection 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.

Page 226 Deleted

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

TENNESSEE VALLEY AUTHORITY

DOCKET NO. 50-296

BROWNS FERRY NUCLEAR PLANT, UNIT NO. 3

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 55
License No. DPR-68

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

   A. The application for amendments by Tennessee Valley Authority (the licensee) dated April 28, 1981, as supplemented by letter dated March 9, 1982 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 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. 55, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

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

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 24, 1982

ATTACHMENT TO LICENSE AMENDMENT NO. 55

FACILITY OPERATING LICENSE NO. DPR-68

DOCKET NO. 50-296

Revise Appendix A as follows:

1. Remove the following pages and replace with the identically numbered pages:

vii
viii
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215-219
228
229
230

2. Marginal lines on the above pages indicate the area being revised.

NOTE: The table on pages 209-214 is the same information previously on pages 203-208. The table was moved, verbatim, to provide pages for the requirements on snubbers being added by this amendment.

LIST OF ILLUSTRATIONS

LIMITING CONDITIONS FOR OPERATION

3.6 PRIMARY SYSTEM BOUNDARY

H. Seismic Restraints, Supports, and Snubbers

1. During all modes of operation except Cold Shutdown and Refuel, and seismic restraints, supports, and snubbers shall be operable except as noted in 3.6.H.2 and 3.6.H.3 below. All safety-related snubbers are listed in Surveillance Instruction BF SI 4.6.H.

2. With one or more seismic restraint , support, or snubber inoperable; within 72 hours replace or restore the inoperable seismic restraint(s), support(s), or 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.

3. If a seismic restraint, support, or snubber (SRSS) is determined to be inoperable while the reactor is in the shutdown or refuel mode, that SRSS shall be made operable or replaced prior to reactor startup. If the inoperable SRSS is attached to a system that is required OPERABLE during the shutdown or refuel mode, the appropriate LIMITING CONDITIONS statement for that system shall be followed.

SURVEILLANCE REQUIREMENTS

4.6 PRIMARY SYSTEM BOUNDARY

H. Seismic Restraints, Supports, and Snubbers

The surveillance requirements of paragraph 4.6.G are the only requirements that apply to any seismic restraint or support other than snubbers.

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

1. Inspection Groups

The snubbers may be categorized into two major groups based on whether the snubbers are accessible or inaccessible during reactor 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 not been performed and documented previously, shall be performed within six months for accessible snubbers and before resuming power after the first refueling outage

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued)

2. Visual Inspection, Schedule, and Lot Size (continued)

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.

No. Inoperable Snubbers per Inspection Period	*Subsequent Visual Inspection Period
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.

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

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (Continued)	H. Seismic Restraints, Supports, and Snubbers (continued) 3. Visual Inspection Performance and Evaluation (cont'd) 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. 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

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (Continued)	H. Seismic Restraints, Supports, and Snubbers (continued)
	4. Functional Test Schedule, Lot Size, and Composition (continued) 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.
	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

H. Seismic Restraints, Supports, and Snubbers (continued)

H. Seismic Restraints, Supports, and Snubbers (continued)

5. Function Test Acceptance Criteria (continued)

a. (continued)

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.

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.

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued)
	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% 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. 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

H. Seismic Restraints, Supports, and Snubbers (continued)

H. Seismic Restraints, Supports, and Snubbers (continued)

6. Functional Test Failure Analysis and Additional Test Lots (continued)

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 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

LIMITING CONDITIONS FOR OPERATION

H. Seismic Restraints, Supports, and Snubbers (continued)

SURVEILLANCE REQUIREMENTS

H. Seismic Restraints, Supports, and Snubbers (continued)

8. Functional Testing of Repaired and Spare Snubbers (continued)

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

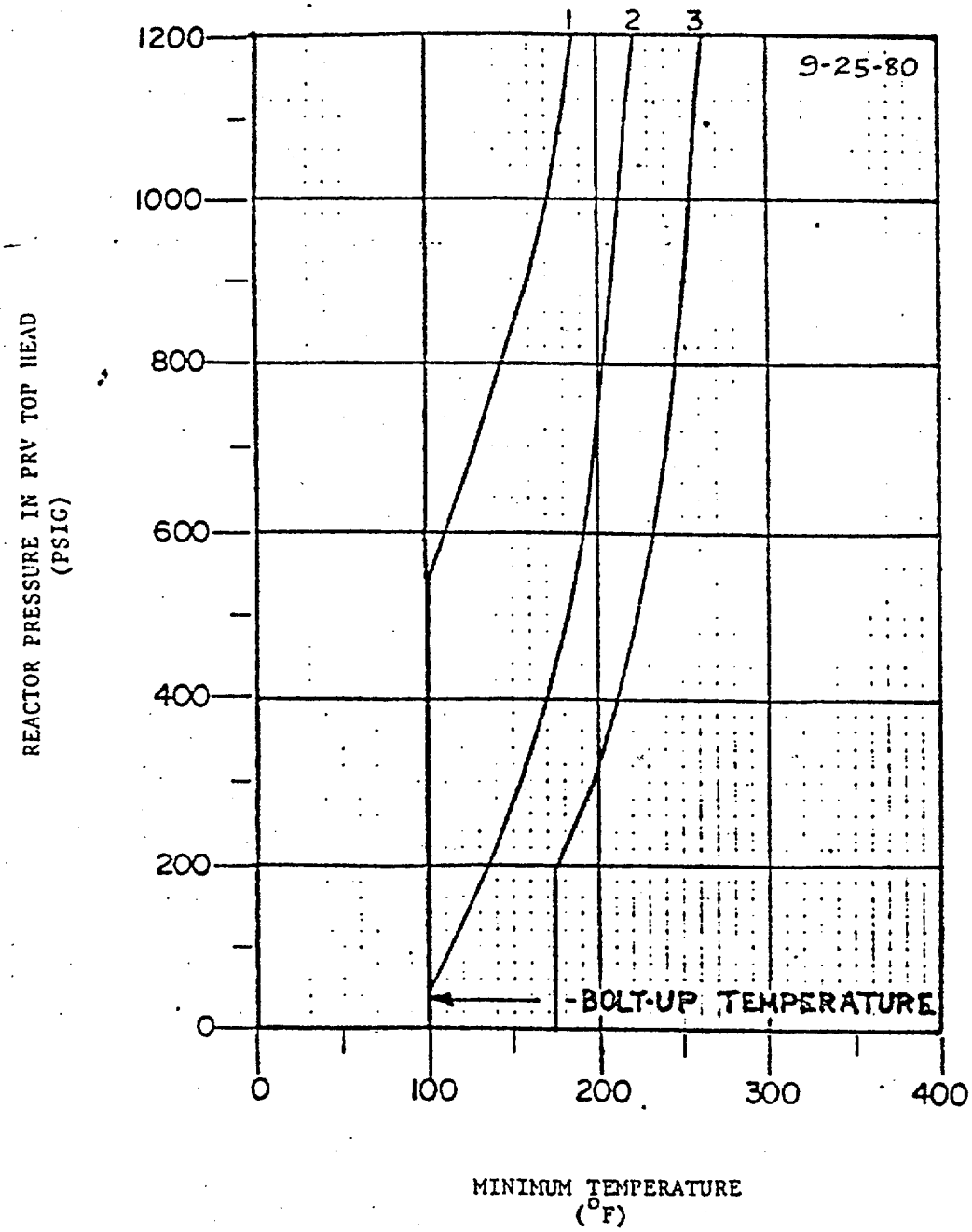
Permanent or other exemptions from visual inspections and/or functional testing for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and if applicable snubber life destructive testing was performed to qualify snubber operability for the applicable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

LIMITING CONDITIONS FOR OPERATION	SURVEILLANCE REQUIREMENTS
H. Seismic Restraints, Supports, and Snubbers (continued)	H. Seismic Restraints, Supports, and Snubbers (continued)
	10. Snubber Service Life Program (continued)
	functional tests, maintenance history, and environmental conditions to which the snubbers have been exposed.

Figure 3.6-1



Curve #1
Minimum temperature for pressure tests such as required by Section XI.

Curve #2
Minimum temperature for mechanical heat up or cooldown following nuclear shutdown.

Curve #3
Minimum temperature for core operation (criticality) Includes additional margin required by 10CFR50 Appendix G, Par. IV A.2.C.

Notes
These curves are shifted 30°F to the right of the original set of curves to include a ΔRT_{NDT} of 30°F. This shift will allow these curves to be used thru 4.0 EFPY.

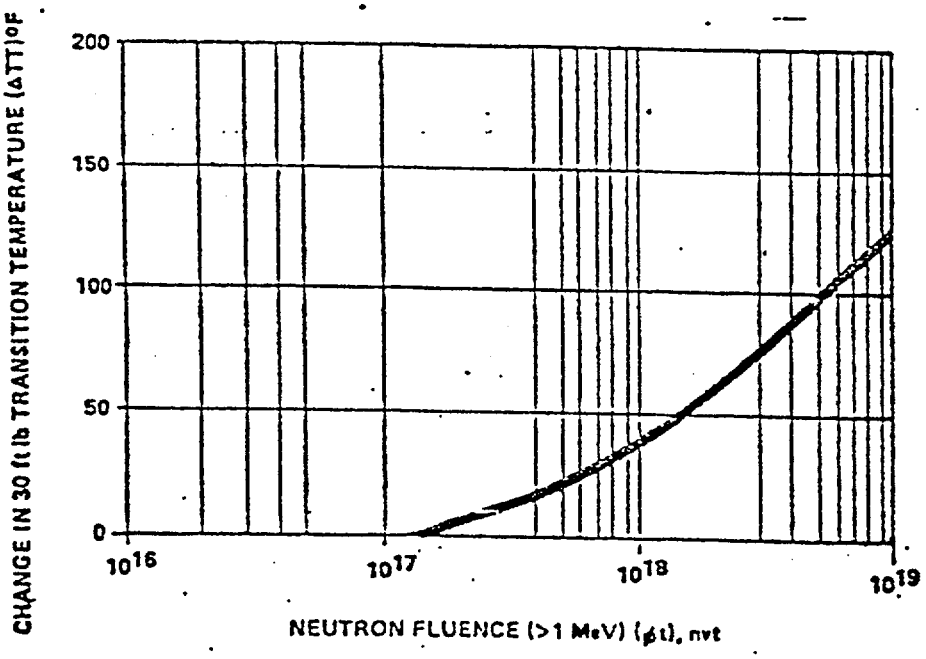


FIGURE 3.6-2
CHANGE IN CHARPY V TRANSITION TEMPERATURE
VERSUS
NEUTRON EXPOSURE

Table 4.6.A
REACTOR COOLANT SYSTEM INSERVICE INSPECTION SCHEDULE

	AREAS OF INTEREST	ACCESS	% INSP. IN INSP. INTERVAL	FREQUENCY	METHOD
A.	Reactor Vessel				
	1. Longitudinal and circumferential welds outside core region and in vessel head	Those welds above sacrificial shield and all in closure head are accessible from vessel o.d.	10% of accessible longitudinal 5% of accessible circumferential	Code (1)	Volumetric
	2. Vessel-to-flange circumferential weld	From flange surface	100%	Code (2)	Volumetric
	Head-to-flange circumferential weld	From o.d. of head	100%	Code (2)	Volumetric
	3. Primary nozzle-to-vessel welds and nozzle-to-vessel inside radii	All nozzles 4 inches and greater will be accessible from vessel o.d.	100% welds	Code (2)	
			Inside radii at the 6 and 12 o'clock positions	Code (2)	Volumetric
	3a. CRD housing-to-stub tube and stub tube-to-vessel welds and incore penetration	During refueling from CRD area for signs of leakage	100%	At time of system hydrostat	Visual
	4. Primary nozzles to safe-end Dissimilar Metal welds	All nozzles 4 inches and larger will be accessible	100%	Code (2)	Visual, surface, and volumetric
	5. Closure studs and nuts	Studs in place, nuts on removal	100%	Code (2)	Visual, surface, and volumetric

Table 4.6.A
REACTOR COOLANT SYSTEM INSERVICE INSPECTION SCHEDULE

	AREAS OF INTEREST	ACCESS	% INSP. IN INSP. INTERVAL	FREQUENCY	METHOD
	6. Closure washers,	On removal	100%	Code (2)	Visual
	Bushings	In place, when studs are removed	When made accessible		Visual
	7. Integrally welded vessel supports	Two sections 2 feet long each, 18° apart, accessible in support skirt to vessel weld	One foot minimum length 180° apart - two spots	Code (2)	Volumetric
	8. Vessel cladding	During refueling - vessel i.d.	6 predetermined patches (36 in.^{2} each)	Code (2)	Visual
	9. Vessel internals and integrally welded internal supports	Accessible areas during normal refueling	Accessible areas	First refueling and every third refueling thereafter	Visual
	10. Vessel flange-ligaments between threaded stud holes	During refueling	100%	Code (2)	Volumetric
B.	Piping Pressure Boundary				
	1. Vessel, pump, and valve safe ends-to-primary pipe dissimilar metal welds and safe ends in branch piping welds 4 inches and larger	From pipe o.d.	100%	Code (2)	Visual and surface and volumetric

Table 4.6.A
REACTOR COOLANT SYSTEM INSERVICE INSPECTION SCHEDULE

AREAS OF INTEREST	ACCESS	% INSP. IN INSP. INTERVAL	FREQUENCY	METHOD
2. Circumferential and longitudinal pipe welds 4 inches and over	Removable insulation	25% of circumferential welds plus 1 foot of adjacent longitudinal welds	Code (2)	Visual and volumetric
Circumferential-type welds - pipe whip protection	Removable Insulation	All those listed in Section 4.6.G.4 of Technical Specifications	Code (1)	Visual and volumetric
3. Pressure-retaining bolting	2 inches and larger	100%	Code (1)	Visual and volumetric
	Bolting under 2 inches on piping 4 inches and over	100%	Signs of leakage during normal maintenance	Visual
4. Piping supports and hangers				
a. Integrally welded	Scaffolding - as required	100% visual, 25% Vol. (if suitable geometry)	Code (2)	Visual and volumetric
b. Nonintegrally welded supports	Scaffolding - as required	100%	Code (2)	Visual
C. Pump Pressure Boundary				
1. Pump casing				

Table 4.6.A
REACTOR COOLANT SYSTEM INSERVICE INSPECTION SCHEDULE

AREAS OF INTEREST	ACCESS	% INSP. IN INSP. INTERVAL	FREQUENCY	METHOD
Pump pressure boundary interior	From pump i.d. only when maintenance requires removal of internals	One pump with or without welds if disassembled	Code (1) if disassembled	Visual
2. Pressure-retaining bolting	2 inches and larger	100%	Code (1)	Visual and volumetric
	Bolting under 2 inches	100%	Signs of leakage during normal maintenance outage	Visual
3. Supports				
a. Integrally welded	Scaffolding as required	25%	Code (2)	Visual and volumetric
b. Nonintegrally welded	Scaffolding as required	100%	Code (2)	Visual
4. Nozzle-to-safe end dissimilar metal welds	Removable insulation	100%	Code (2) volumetric	Visual and
D. Valve Pressure Boundary				
1. Valve body seam welds	From valve o.d.	100%	Code (1)	Visual and volumetric

Table 4.6.A
REACTOR COOLANT SYSTEM INSERVICE INSPECTION SCHEDULE

	AREAS OF INTEREST	ACCESS	% INSP. IN INSP. INTERVAL	FREQUENCY	METHOD
	Valve pressure boundary interior	From valve i.d. only when maintenance requires removal of internals	One valve with or without welds if disassembled	Code (1) if disassembled	Visual
2.	Valve-to-safe end dissimilar metal welds	Removal insulation	100%	Code (2)	Visual and volumetric
3.	Pressure-retaining bolting	2 inches and larger	100%	Code (1)	Visual and volumetric
		Bolting under 2 inches	100%	Signs of leakage during normal maintenance outage	Visual
4.	Supports and hangers -				
	a. Integrally welded	Scaffolding - as required	25% Vol. (if suitable geometry) 100% visual	Code (2)	Visual and volumetric
	b. Nonintegrally welded	Scaffolding - as required	100%	Code (2)	Visual

Table 4.6.A
REACTOR COOLANT SYSTEM INSERVICE INSPECTION SCHEDULE

AREAS OF INTEREST	ACCESS	% INSP. IN INSP. INTERVAL	FREQUENCY	METHOD

Inspection Frequency:

Code (1) - Program such that all areas of interest will be inspected during the inspection interval.

Code (2) - Program such that at least 25% of the required examinations shall have been completed after one-third of the inspection interval has expired (with credit for no more than 33-1/3% if additional examinations are completed) and at least 50% after two-thirds of the inspection interval has expired (with credit for no more than 66-2/3%). The remainder shall be completed by the end of the inspection interval.

Pages 215-219 Deleted

3.6/4.6 BASES

It is intended that the required examinations and inspection be completed during each 10-year interval. The periodic examinations are to be done during refueling outages or other extended plant shutdown periods.

Only proven nondestructive testing techniques will be used.

More frequent inspections shall be performed on certain circumferential pipe welds as listed in Section 4.6.G.4 to provide additional protection against pipe whip. These welds were selected in respect to their distance from hangers or supports wherein a failure of the weld would permit the unsupported segments of pipe to strike the drywell wall or nearby auxiliary systems or control systems. Selection was based on judgment from actual plant observation of hanger and support locations and review of drawings. Inspection of all these welds during each 10-year inspection interval will result in three additional examinations above the requirements of Section XI of ASME Code.

REFERENCES

1. Inservice Inspection and Testing (BFNP FSAR Subsection 4.12)

2. Inservice Inspection of Nuclear Reactor Coolant Systems, Section XI, ASME Boiler and Pressure Vessel Code

3. ASME Boiler and Pressure Vessel Code, Section III (1968 edition)

4. American Society for Nondestructive Testing No. SNT-TC-1A (1968 edition)

3.6.H/4.6.H Seismic Restraints, Supports and Snubbers

Seismic restraints, supports and snubbers (SRSS) 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 SRSS 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 SRSS required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the SRSS protection is required only during relatively low probability events, a period of 72 hours is allowed to replace or restore the inoperable SRSS(s) 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 SRSS 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 months 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.

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 inpsection 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.

Page 230 Deleted

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NO. 84 TO FACILITY OPERATING LICENSE NO. DPR-33

AMENDMENT NO. 81 TO FACILITY OPERATING LICENSE NO. DPR-52

AMENDMENT NO. 55 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

Author: Richard J. Clark

1.0 Introduction

By letter dated April 28, 1981 (TVA BFNP TS 158) and supplemented by letter dated March 9, 1982, the Tennessee Valley Authority (the licensee or TVA) requested amendments to Facility Operating License Nos. DPR-33, DPR-52 and DPR-68 for the Browns Ferry Nuclear Plant, Units 1, 2 and 3. The proposed amendments would revise the Technical Specifications appended to the above Facility Operating Licenses to add additional requirements for inspection of snubbers and seismic restraints in response to our generic request of November 20, 1981 to All Power Reactor Licensees.

2.0 Background

To reflect accumulated experience obtained from operating plants in the past several years, NRC issued Revision 1 of the Standard Technical Specifications on the surveillance requirements for safety-related snubbers. On November 20, 1980, this document was transmitted to operating plants excluding those under the Systematic Evaluation Program (SEP) along with a request for submittal of appropriate license amendments to incorporate the requirements of this revision within 120 days. The same request was extended to SEP plants on March 23, 1981.

3.0 Description and Discussion

Numerous discoveries of inoperative snubbers in the period of 1973 to 1975 resulted in their surveillance requirements in the Technical Specifications for operating reactor plants. However, several deficiencies were identified after the original requirements were in force for several years. These deficiencies are:

1. Mechanical snubbers were not included in these requirements.

2. The rated capacity of snubbers was used as a limit to the inservice test requirement.

3. NRC approval was necessary for the acceptance of seal materials.

4. Inservice test requirements were not clearly defined.

5. In-place inservice testing was not permitted.

Since mechanical snubbers were not subject to any surveillance requirements, some licensees and permit holders believed that mechanical snubbers were preferred by NRC. Many plants used mechanical snubbers as original equipment and many others requested to replace their hydraulic snubbers with mechanical ones to simplify or avoid an inservice surveillance program. This is directly contradictory to NRC's intention, where for an unsurveyed mechanical snubber, the most likely failure is permanent lock-up. This failure mode can be harmful to the system during normal plant operations.

During the period of 1973-1975, when the first hydraulic snubber surveillance requirements in the Technical Specifications were drafted, a compromise was made to limit the testing of snubbers to those with rated capacity of not more than 50,000 lbs. This was because of the available capacity of the test equipment and the requirement to test some parameters at the snubber rated load. Since then, greater equipment capacity and better understanding of parametric correlation both developed. To maintain this arbitrary 50,000 lb. limit could mean an unnecessary compromise on plant safety.

The original hydraulic snubber problem started from leaking seals. Most seal materials of the 1973 vintage could not withstand the temperature and irradiation environments. Ethylene propylene was the first material that could offer a reasonable service life for those seals. In order to discourage the use of unproven material for those seals, the words "NRC approved material" were used in the Technical Specifications. Staff members were asked to approve different seal materials on many occasions. Consequently, since the basis for the approval was not defined, the development of better seal materials by the industry was actually discouraged.

The not-well-defined acceptance criteria in the earlier version of the testing requirements resulted in non-uniform interpretations and implementation. Acceptance Criteria were set individually at widely different ranges. Since the rationale of adopting a specific acceptance criteria was not clear, I&E inspectors found it impossible to make any necessary corrections. In some cases, snubbers were tested without reference to acceptance criteria.

Testing of snubbers was usually accomplished by removing snubbers from their installed positions, mounting them on a testing rig, conducting the test, removing them from rig, and reinstalling them to the working position. Many snubbers were damaged in the removing and reinstallation process. This defeated the purpose for conducting tests. Since methods and equipment have been developed to conduct in-place tests on snubbers, taking advantage of these developments could result in minimizing the damage to snubbers caused by removal and reinstallation plus time and cost savings to the plants.

From these short-comings it was concluded that the snubber surveillance requirements for the Technical Specifications should be revised.

4.0 Evaluation

In response to our generic request, TVA initially proposed changes to the snubber surveillance requirements for Browns Ferry Units 1, 2 and 3 by letter dated April 28, 1981. Based on our review, we determined that with a few minor exceptions, TVA had adopted the requirements in the proposed standard Technical Specifications transmitted by our request of November 20, 1980. One of the deviations proposed by TVA was that, if there was no visible indication of inoperability in a lot of snubbers for two successive 18 month periods, that the visual inspection lot be reduced from 100% to 50%. A similar proposal was made by several other licensees.

In our letter of November 18, 1981 to TVA, we agreed that the development of improved snubber designs, the use of seal materials in hydraulic snubbers that are more resistant to temperature and irradiation environments, more stringent quality assurance and testing and other factors had significantly reduced the problems discussed in Section 3.0 above. However, we advised TVA and the other licensees that there was not, as yet, a sufficient operating history and data base to confirm the indicated increase in expected service life. Accordingly, we requested TVA to revise the proposed Technical Specifications to provide for 100% visual inspection of all snubbers each fuel cycle.

TVA's submittal of March 9, 1982 revised the Technical Specifications, as requested in our letter of November 18, 1981, while submitting additional justification for TVA's initial proposition for reduced visual inspection based on at least three years performance without indication of deficiencies. Although the staff is evaluating the snubber performance data, a staff position on reduced frequency of surveillance has not been developed.

We have reviewed the revised Technical Specifications submitted by TVA's letter of March 9, 1982 and have determined that they incorporate the requirements stated in our letter of November 20, 1980. The new surveillance requirements will correct the deficiencies discussed in Section 3.0 above in the following manner:

1. Mechanical snubbers are now included in the surveillance program.

2. No arbitrary snubber capacity is used as a limit to the inservice test requirements.

3. Seal material no longer requires NRC approval. A monitoring program will be implemented to assure that snubbers are functioning within their service life.

4. Clearly defined inservice test requirements for snubbers will be implemented.

5. In-place inservice testing shall be permitted.

We conclude that the technical specifications submitted by TVA include the necessary requirements for surveillance of safety-related snubbers, as defined in our letter of November 20, 1980 and are therefore acceptable.

5.0 Environmental Considerations

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

6.0 Conclusion

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant decrease in a safety margin, the amendments do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations, and the issuance of these amendments will not be inimical to the common defense and security or to the health and safety of the public.

Dated: May 24, 1982

UNITED STATES NUCLEAR REGULATORY COMMISSION

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

TENNESSEE VALLEY AUTHORITY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment No.84 to Facility Operating License No. DPR-33, Amendment No. 81 to Facility Operating License No. DPR-52, and Amendment No. 55 to Facility Operating License No. DPR-68 issued to Tennessee Valley Authority (the licensee), which revised the Technical Specifications for operation of the Browns Ferry Nuclear Plant, Units 1, 2, and 3, located in Limestone County, Alabama. The amendments are effective as of the date of issuance.

These amendments change the Technical Specifications to add additional requirements for inspection of snubbers and seismic restraints in response to our generic request of November 20, 1980 to All Power Reactor Licensees.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

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

and environmental impact appraisal need not be prepared in connection with issuance of these amendments.

For further details with respect to this action, see (1) the application for amendments dated April 28, 1981, as supplemented by letter dated March 9, 1982, (2) Amendment No. 84 to License No. DPR-33, Amendment No. 81 to License No. DPR-52, and Amendment No. 55 to License No. DPR-68, and (3) the Commission's related Safety Evaluation. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, D. C. and at the Athens Public Library, South and Forrest, Athens, Alabama 35611. A copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C. 20555, Attention: Director, Division of Licensing.

Dated at Bethesda, Maryland, this 24th day of May 1982

FOR THE NUCLEAR REGULATORY COMMISSION

Domenic B. Vassallo, Chief
Operating Reactors Branch #2
Division of Licensing