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February 26, 2007

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Duke Power Company LLC d/b/a Duke Energy Carolinas, LLC (Duke)
Catawba Nuclear Station, Unit 2
Docket Number 50-414
Request for Relief Number 07-CN-003
Request for Relief to Allow Use of Alternate Requirements for Snubber Inspection and Testing

Pursuant to 10 CFR 50.55a(a)(3)(i), Duke is submitting the attached relief request for NRC review and approval. In lieu of the requirements of Section XI of the ASME Boiler and Pressure Vessel Code, this relief request seeks continued use of Catawba Selected Licensee Commitment (SLC) 16.9-13, "Snubbers," as the governing set of requirements for snubber inspection and testing.

The attachments to this letter contain all technical information necessary to support NRC review of this relief request. Duke is requesting NRC approval of this relief request by August 31, 2007. Approval of this relief request will allow Catawba to continue to utilize the existing SLC requirements governing snubber inspection and testing during refueling outages for the third inspection and testing interval. The initial outage in the third interval will begin in the Fall of 2007 for Catawba Unit 2. This relief request is exactly like Request for Relief Number 05-CN-002, which Duke submitted for the Unit 1 third inspection and testing interval. The NRC approved this relief request on September 7, 2006.

There are no regulatory commitments contained in this letter or its attachments.

If you have any questions concerning this material, please call L.J. Rudy at (803) 831-3084.

A047

Very truly yours,

James R. Morris

LJR/s

Attachments

xc (with attachments):

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Duke Power Company LLC d/b/a Duke Energy Carolinas, LLC (Duke)
Catawba Nuclear Station, Unit 2
Third 10-Year Interval Request for Relief Number 07-CN-003

Pursuant to 10 CFR 50.55a(a)(3)(i), Duke requests to use an alternative to the Section XI requirements of the ASME Boiler and Pressure Vessel Code. Accordingly, information is being submitted in support of our determination that the alternative provides an acceptable level of quality and safety.

Reference Code: ASME Boiler and Pressure Vessel Code, Section XI, 1998 Edition through 2000 Addenda

Notes:
1) Catawba Unit 2 was previously granted relief to use this alternative during the second interval per Relief Request Number 96-01, dated February 12, 1996, approved May 16, 1996, TAC Number M95237.

2) Catawba Unit 2's initial outage of the third interval will begin in the Fall of 2007.

I. System/Component for which Relief is Requested:

All Unit 2 safety-related ASME Section XI Code Class 1, 2, and 3 snubbers.

II. Code Requirement from which Relief is Requested:

Relief is requested from the requirements of Article IWF-5000, Subarticle IWF-5300. An alternative will be provided from the following requirements.

(a) Inservice examinations shall be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in IWA-2213.

(b) Inservice tests shall be performed in accordance with ASME/ANSI OM, Part 4.

(c) Integral and non-integral attachments for snubbers, including lugs, bolting, pins, and clamps, shall be examined in accordance with the requirements of this Subsection.

III. Basis for Relief:

The ISI and IST of ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and applicable addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(g), except where specific written relief has been granted by the Commission, pursuant to 10 CFR 50.55a(f)(6)(i) IST and 10 CFR 50.55a(g)(6)(i) ISI. Section 50.55a(a)(3) states that alternatives to the requirements of the paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii)compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in ASME Code, Section XI, to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b), twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Catawba Unit 2 third 10-year ISI interval is the 1998 edition up to and including the 2000 addenda.

ASME Section XI, 1998 Edition through 2000 Addenda, Subarticle IWF-5300 (a) and (b) specifies that snubber examinations and tests be performed in accordance with the first addenda to ASME/ANSI OM, Part 4 (published in 1998). Subarticle IWF-5300 (c) requires examinations per the IWF Subarticle.

Snubber examinations and tests are currently performed under the Updated Final Safety Analysis Report, Chapter 16, Selected Licensee Commitments (SLC) 16.9-13, "Snubbers" (see Attachment A).

The current inspection program as defined by this SLC provides for an acceptable level of quality and safety equal to or greater than that of the proposed OM-4 Standard.

The SLC lists visual examination requirements for snubbers that are compatible with ASME Section XI VT-3 requirements. The SLC also incorporates the reduced visual examination frequency table as provided in NRC Generic Letter (GL) 90-09. The SLC use results in a significant reduction in unnecessary radiological exposure to plant personnel, a savings in company resources, and compliance with visual examination requirements while maintaining the same confidence level in snubber operability as that provided by following the ASME Section XI requirements.

Failure Mode Grouping

The OM Standard provides for Failure Mode Grouping of snubbers which fail visual examination, meaning only those snubbers identified as being in that group would require shortened inspection intervals. Under the SLC program, all snubbers in the population would be placed in a shortened inspection interval. On this basis, the SLC program is more conservative in corrective action than the OM Standard requirements.

The functional test plan required by the OM Standard also includes Failure Mode Groups. The use of Failure Mode Grouping is required even for a single failure, and in some cases allows for the failed snubber to be reclassified as acceptable with no further testing. This is non-conservative for the large snubber population which exists at Catawba (over 600 snubbers for Unit 2) as compared to the existing SLC program. The SLC program at Catawba requires supplemental testing for all failures until the desired confidence level is assured, with no allowances to reclassify failed snubbers.

Visual Examinations

IWF-5000 requires that examinations be performed using the VT-3 visual examination method described in IWA-2213. IWA-2213 reads as follows:

"VT-3 examinations are conducted to determine the general mechanical and structural condition of components and their supports by verifying parameters such as clearances, settings, and physical displacements; and to detect discontinuities and imperfections, such as loss of

integrity at bolted or welded connections, loose or missing parts, debris, corrosion, wear, or erosion. VT-3 includes examinations for conditions that could affect operability or functional adequacy of snubbers and constant load and spring supports."

The Catawba SLC states that:

"Visual inspections shall verify: (1) that there are no visible indications of damage or impaired OPERABILITY, and (2) attachments to the foundation or supporting structure are secure."

Catawba Procedure MP/0/A/7650/085, "Visual Inspection of Snubbers," is used to implement the SLC inspections and includes requirements that the following items be checked: loose or missing locking devices, missing spacers, paint or corrosion issues, connecting devices, visible damage, welds, loose jam nuts on extensions, leakage, orientation, fluid level.

SLC examinations are performed using task qualified personnel who are specifically trained for the SLC examinations and who are familiar with snubber and component support operation and maintenance.

The SLC makes no distinction between integral and non-integral attachments. All are included in the examination to verify overall structural integrity. The request is not intended to exclude attachments from examination requirements, but only to use the SLC as the governing document for all examinations. With the SLC and Code requirements being comparable, it is preferable to utilize the SLC in order to maintain consistent programmatic and procedural control between Unit 1 and Unit 2. An identical Relief Request for Unit 1 was approved in a letter dated September 7, 2006. The same procedures and personnel are currently utilized for examinations for both Catawba units. Using different governing documents for the two units would require administrative changes resulting in new procedures and additional training. Even though the actual physical scope and examination results would not be affected, there would be an added burden to implement the change and administer two programs. In addition, the programmatic difference between the two units would result in a number of potential human error traps when work is alternated between the two units.

This request does not include Preservice Examination or Repair/Replacement Activities. Relief is not requested from Subarticle IWF-5200, "Preservice Examination and Tests" or from IWF-5400, "Repair/Replacement Activities". Existing station procedures and processes will continue to be used to satisfy these Code requirements.

Optional Use of ISTD

10 CFR 50.55a(b)(3)(v) states, in part, that licensees may use Subsection ISTD, in place of the requirements for snubbers in ASME Code Section XI, IWF-5200 (a) and (b) and IWF-5300 (a) and (b). This option is not considered to be the best course of action for Catawba's third interval, based upon the fact that there are some aspects of the ISTD requirements that are non-conservative when compared to the SLC program. There are also some ambiguities in ISTD that could potentially lead to non-conservative decision making, especially with regard to infrequently encountered situations. It is maintained that the SLC requirements provide for a more comprehensive and conservative program than would result from incorporating the current edition of ISTD. Some of the differences between the SLC and ISTD requirements are as listed below:

- The SLC requires a 10% additional sample for each failure under the 10% Plan. ISTD-5300 requires only a 5% additional sample. The larger supplemental sample size increases the statistical reliability of the population.
- ISTD allows for isolated snubber failures to be accepted with no additional tests required, for both the 10% and the 37 Plans. The definition and use of the term "isolated failure" is ambiguous and subject to interpretation. Incorrect application of this allowance could invalidate the statistical basis of the testing and render the sample testing useless as a tool for determining the reliability of the snubber population. This is a human error trap for all but the most knowledgeable program owner, potentially resulting in a false level of confidence in the population reliability.
- ISTD states that all unacceptable snubbers should be assigned to a Failure Mode Group (except for isolated or unexplained), no matter the quantity of failures involved. This can lead to "force fitting" a failure into a category prematurely, resulting in supplemental testing being restricted to a non-conservative subgroup of the overall snubber population. The SLC does not

have specific allowances for Failure Mode Grouping. This results in a more conservative additional sample from the overall population, while the SLC remedial actions address common cause evaluation and generic applicability issues.

- There are inconsistencies in the ISTD wording for the 10% and 37 Plans with regard to Failure Mode Grouping that could be a human error trap for the implementing parties, and are potential areas for interpretation issues with regard to literal compliance decisions.

In general, Failure Mode Grouping is non-conservative for plants with large snubber populations, such as Catawba. The sample plans assume a homogenous population. Failure Mode Grouping makes it more critical for the remaining population to be homogenous in order for the statistical assumptions to remain valid. By encouraging Failure Mode Grouping, ISTD can lead to decision making that is non-conservative in the long term.

IV. Alternate Examination or Testing:

In lieu of implementing the requirements of Subarticle IWF-5300 (a), (b), and (c), it is proposed that the inservice examination and testing be performed under SLC 16.9-13.

V. Justification for the Granting of Relief:

The SLC lists visual examination requirements for snubbers that are compatible with Section XI VT-3 requirements. The SLC also incorporates the reduced visual examination frequency table as provided in NRC Generic Letter 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions." The SLC results in a significant reduction in unnecessary radiological exposure to plant personnel, a savings in company resources, and compliance with visual examination requirements, while maintaining the same confidence level in snubber operability as that provided by following Section XI requirements.

When this relief request is approved, the SLC 16.9-13 Bases will be revised to reference the NRC approval and to identify that any revision to the snubber visual inspection and functional test requirements of the SLC shall consider the basis for the granted alternative from

the ASME Code requirements and any resulting requirement for NRC review and approval.

Attachment B is a comparison of the Catawba SLC Requirements and the associated ASME/ANSI OM-4 Requirements; including a section by section explanation of how the SLC satisfies the pertinent Code requirements.

Attachment C is a copy of the approved Relief Request and the Safety Evaluation for Unit 1 (Request for Relief No. 05-CN-002, Docket No. 50-413). The Unit 2 request is identical to the approved Unit 1 request and all responses to the Unit 1 RAI as incorporated in the safety evaluation are applicable to Unit 2 as well.

VI. Implementation Schedule:

Snubber visual examination and testing will be scheduled and performed in accordance with SLC 16.9-13 during the third inspection interval.

Attachment A

SLC 16.9-13, "Snubbers"

16.9 AUXILIARY SYSTEMS

16.9-13 Snubbers

COMMITMENT

----------NOTE----------
Snubbers installed on non-safety related systems may be excluded from these requirements provided their failure or the failure of the system on which they are installed would not have an adverse effect on any safety related system.

All snubbers shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.
MODES 5 and 6 for snubbers located on systems required OPERABLE in those MODES.

REMEDIAL ACTIONS

CONDITION		REQUIRED ACTION		COMPLETION TIME
A.	One or more snubber(s) discovered inoperable by walkdown or observation.	A.1	Enter the applicable Conditions and Required Actions for any affected system(s) and component(s).	Immediately
		AND		
		A.2	Perform engineering evaluation per the Functional Test Failure Analysis.	Immediately
B.	One or more snubber(s) inoperable for testing or maintenance. AND Prior system OPERABILITY evaluation not performed.	B.1	Enter the applicable Conditions and Required Actions for any affected system(s) and component(s).	Immediately
		AND		

(continued)

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. (continued)	B.2 ----------NOTE---------- Only applicable if one or more snubber(s) fail to meet test acceptance criteria. ---------- Perform engineering evaluation per the Functional Test Failure Analysis.	72 hours AND Prior to restoring affected system(s) and component(s) to OPERABLE status
C. One or more snubber(s) inoperable for testing or maintenance. AND Prior system OPERABILITY evaluation performed.	C.1 ----------NOTE---------- Only applicable if one or more snubber(s) fail to meet test acceptance criteria. ---------- Perform engineering evaluation per the Functional Test Failure Analysis to determine impact on prior system OPERABILITY evaluation. AND C.2 ----------NOTE---------- Only applicable if prior system OPERABILITY evaluation is invalidated. ---------- Enter the applicable Conditions and Required Actions for any affected system(s) and component(s).	Immediately Immediately

TESTING REQUIREMENTS

----------NOTES----------

1. Each snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program.

2. 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 be tested to meet the functional test criteria before installation in the unit. Mechanical snubbers shall have met the acceptance criteria subsequent to their most recent service, and the freedom of motion test shall have been performed within 12 months before being installed in the unit.

3. As used in this SLC, "type of snubber" shall mean snubbers of the same design and manufacturer, irrespective of capacity.

	TEST	FREQUENCY
TR 16.9-13-1	----------NOTE---------- Snubbers are categorized as inaccessible or accessible during reactor operation and may be inspected independently according to the schedule determined by Table 16.9-13-1. The first inspection interval using Table 16.9-13-1 shall be based upon the previous inspection interval as established by the requirements in effect before Technical Specification Amendment 88 (Unit 1) and 82 (Unit 2). ---------- Perform a visual inspection for each category of snubber.	In accordance with Table 16.9-13-1
TR 16.9-13-2	----------NOTE---------- In case of a severe dynamic event, mechanical snubbers in the system which experienced the event shall be inspected during the refueling outage to assure that they have freedom of movement and are not frozen up. ---------- Perform an inspection, during shutdown, to determine if there has been a severe dynamic event for systems which have the potential for a severe dynamic event.	18 months

(continued)

TESTING REQUIREMENTS (continued)

	TEST	FREQUENCY
TR 16.9-13-3	----------NOTE---------- The large-bore steam generator hydraulic snubbers shall be treated as a separate population for functional test purposes and shall be functionally tested under Sample Plan 1. ----------	
	Perform, during shutdown, snubber functional testing on a representative sample of each type of snubber in accordance with one of the following three Sample Plans: 1. Functionally test 10% of a type of snubber with an additional 10% tested for each functional testing failure, or 2. Functionally test a sample size and determine sample acceptance or continue testing using Figure 16.9-13-1, or 3. Functionally test a representative sample size and determine sample acceptance or rejection using the stated equation.	18 months
TR 16.9-13-4	----------NOTE---------- Service life records shall be documented and the documentation retained for the duration of the unit operating license. ----------	
	Verify that the service life of all snubbers has not been exceeded or will not be exceeded prior to the next scheduled surveillance inspection.	18 months

Table 16.9-13-1

Snubber Visual Inspection Interval (page 1 of 2)

POPULATION OR CATEGORY (NOTES 1 AND 2)	NUMBER OF UNACCEPTABLE SNUBBERS		
	COLUMN A EXTEND INTERVAL (NOTES 3 AND 6)	COLUMN B REPEAT INTERVAL (NOTES 4 AND 6)	COLUMN C REDUCE INTERVAL (NOTES 5 AND 6)
1	0	0	1
80	0	0	2
100	0	1	4
150	0	3	8
200	2	5	13
300	5	12	25
400	8	18	36
500	12	24	48
750	20	40	78
$\geq$ 1000	29	56	109

Note 1: The next visual inspection interval for a snubber population or category size shall be determined based upon the previous inspection interval and the number of unacceptable snubbers found during that interval. Snubbers may be categorized, based upon their accessibility during power operation, as accessible or inaccessible. These categories may be examined separately or jointly. However, the licensee must make and document that decision before any inspection and shall use that decision as the basis upon which to determine the next inspection interval for that category.

Note 2: Interpolation between population or category sizes and the number of unacceptable snubbers is permissible. Use next lower integer for the value of the limit for Columns A, B, or C if that integer includes a fractional value of unacceptable snubbers as determined by interpolation.

Note 3: If the number of unacceptable snubbers is equal to or less than the number in Column A, the next inspection interval may be twice the previous interval but not greater than 48 months.

Note 4: If the number of unacceptable snubbers is equal to or less than the number in Column B but greater than the number in Column A, the next inspection interval shall be the same as the previous interval.

Note 5: If the number of unacceptable snubbers is equal to or greater than the number in Column C, the next inspection interval shall be two-thirds of the previous interval. However, if the number of unacceptable snubbers is less than the number in Column C but greater than the number in Column B, the

Table 16.9-13-1

Snubber Visual Inspection Interval (page 2 of 2)

next interval shall be reduced proportionally by interpolation, that is, the previous interval shall be reduced by a factor that is one-third of the ratio of the difference between the number of unacceptable snubbers found during the previous interval and the number in Column B to the difference in the numbers in Columns B and C.

Note 6: The provisions of SLC 16.2.6 are applicable for all inspection intervals up to and including 48 months.

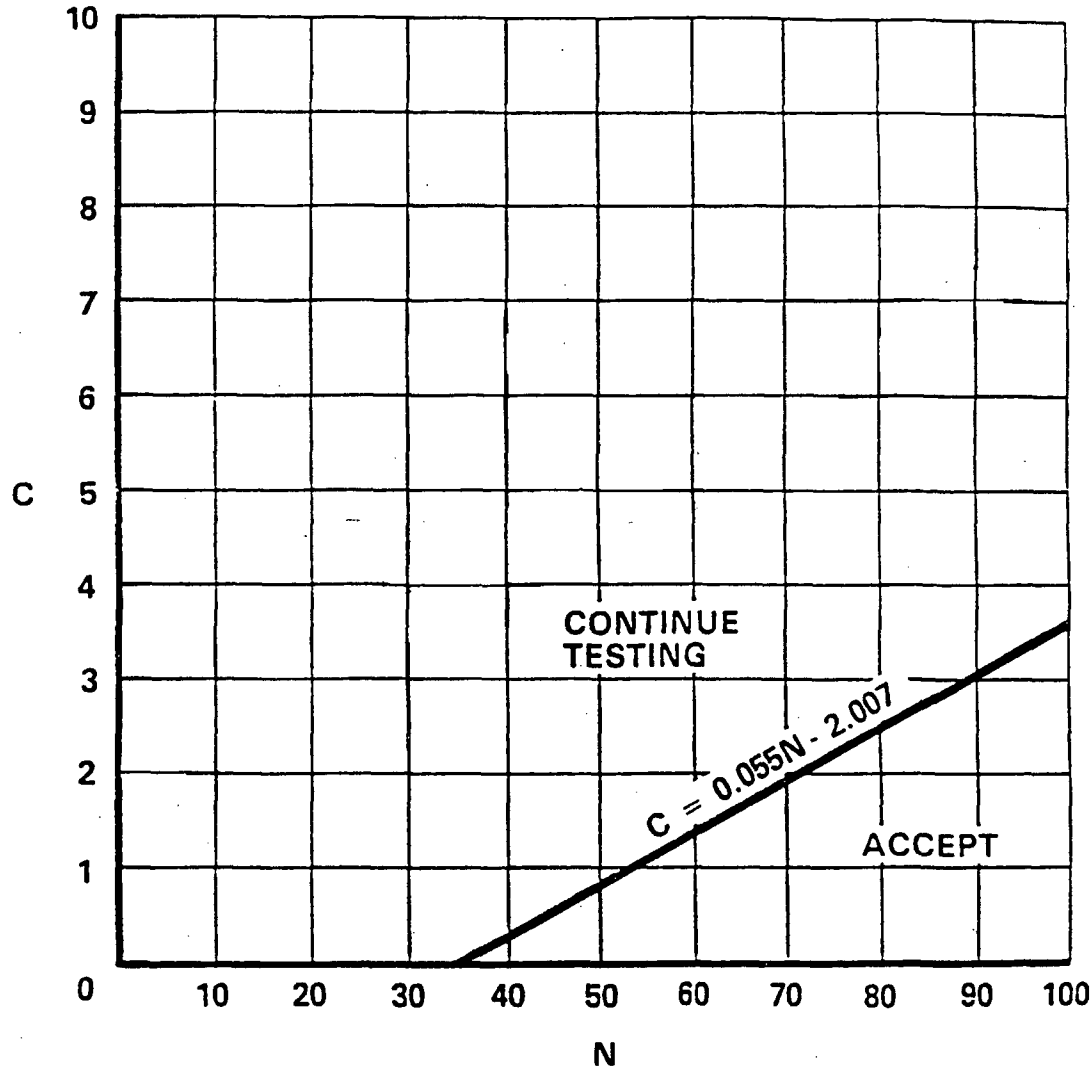

Figure 16.9-13-1

Sample Plan 2 for Snubber Functional Test

BASES

All snubbers are required OPERABLE to ensure that the structural integrity of the reactor coolant system and all other safety related systems is maintained during and following a seismic or other event initiating dynamic loads.

The snubber requirements of SLC 16.9-13 were originally located in the Technical Specifications. The Nuclear Regulatory Commission (NRC) authorized the use of these requirements, while located in Technical Specifications, as an acceptable alternative to the requirements of the ASME Code, 1989 Edition, Section XI, Article IWF-5000 (References 3, 4). Any revision to these snubber visual inspection and functional test requirements shall consider the basis for the granted relief from the ASME Code requirements and any resulting requirement for NRC review and approval.

Snubbers are classified and grouped by design and manufacturer but not by size. For example, mechanical snubbers utilizing the same design features of the 2-kip, 10-kip, and 100-kip capacity manufactured by Company "A" are of the same type. The same design mechanical snubbers manufactured by Company "B" for the purposes of this SLC would be of a different type, as would hydraulic snubbers from either manufacturer.

A list of individual snubbers with detailed information of snubber location and size and of system affected shall be available at the plant in accordance with Section 50.71(c) of 10 CFR Part 50. The addition or deletion of any hydraulic or mechanical snubber shall be made in accordance with Section 50.59 of 10 CFR Part 50.

REMEDIAL ACTIONS

When one or more installed snubbers are discovered to be inoperable by means of routine walk down or observation, the applicable REMEDIAL ACTIONS for any affected system(s) and component(s) must be entered immediately and an engineering evaluation per the Functional Test Failure Analysis must be performed. The purpose of the evaluation is to determine the cause of failure and to address transportability issues.

For snubbers that are removed for testing or maintenance activities, it is possible that a prior evaluation of the system may verify the continued operability of the system with the snubber(s) removed. In these cases, it is not necessary to enter into the system REMEDIAL ACTIONS as long as the conditions of the prior evaluation are met.

Should one or more snubbers fail to meet testing acceptance criteria or be discovered in a condition where failure is apparent, an engineering evaluation is to be performed within the prescribed time frame, as described in the Functional Test Failure Analysis.

BASES (continued)

Visual Inspections

The visual inspection frequency is based upon maintaining a constant level of snubber protection during an earthquake or severe transient. Therefore, the required inspection interval varies inversely with the observed snubber failures and is determined by the number of inoperable snubbers found during an inspection. In order to establish the inspection frequency for each type of snubber, it was assumed that the frequency of snubber failures and initiating events are constant with time and that the failure of any snubber on that system could cause the system to be unprotected and to result in failure during an assumed initiating event. 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%) may not be used to lengthen the required inspection interval. Any inspection whose results require a shorter inspection interval will override the previous schedule. The acceptance criteria are to be used in the visual inspection to determine OPERABILITY of the snubbers.

Visual inspections shall verify that: (1) the snubber has no visible indications of damage or impaired OPERABILITY, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional. Snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that: (i) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible; and (ii) the affected snubber is functionally tested in the as-found condition and determined OPERABLE. All snubbers found connected to an inoperable common hydraulic fluid reservoir shall be counted as unacceptable and may be reclassified as acceptable for determining the next inspection interval provided that criterion (i) and (ii) above are met. A review and evaluation shall be performed and documented to justify continued operation with an unacceptable snubber. If continued operation cannot be justified, the snubber shall be declared inoperable and the REMEDIAL ACTION requirements shall be met.

Refueling Outage Inspections

At each refueling, the systems which have the potential for a severe dynamic event, specifically, the main steam system (upstream of the main steam isolation valves), the main steam safety and power operated relief valves and piping, auxiliary feedwater system, main steam supply to the auxiliary feedwater pump turbine, and the letdown and charging portion of the chemical and volume control system shall be inspected to determine if there has been a severe dynamic event. In the case of a severe dynamic event,

BASES (continued)

mechanical snubbers in that system which experienced the event shall be inspected during the refueling outage to assure that the mechanical snubbers have freedom of movement and are not frozen up. The inspection shall consist of verifying freedom of motion using one of the following: (1) manually induced snubber movement, or (2) evaluation of in-place snubber piston setting, or (3) stroking the mechanical snubber through its full range of travel. If one or more mechanical snubbers are found to be frozen up during this inspection, those snubbers shall be replaced or repaired before returning to power. The requirements of TESTING REQUIREMENT 16.9-13-1 are independent of the requirements of this item.

Functional Testing

At least once per 18 months during shutdown, a representative sample of snubbers of each type shall be tested using one of the following Sample Plans. The large-bore steam generator hydraulic snubbers shall be treated as a separate type (population) for functional test purposes. A 10% random sample shall be tested at least once per 18 months during refueling with continued testing based on a failure evaluation. The Sample Plan shall be selected prior to the test period and cannot be changed during the test period. The NRC shall be notified in writing of the Sample Plan selected for each snubber type prior to the test period or the Sample Plan used in the prior test period shall be implemented:

1) At least 10% of all snubbers shall be functionally tested either in-place or in a bench test. For each snubber of a type that does not meet the functional test acceptance criteria, an additional 10% of all snubbers shall be functionally tested until no more failures are found or until all snubbers have been functionally tested; or

2) A representative sample of all snubbers shall be functionally tested in accordance with Figure 16.9-13-1. "C" is the total number of snubbers of a type found not meeting the acceptance requirements. The cumulative number of snubbers tested is denoted by "N". At the end of each day's testing, the new values of "N" and "C" (previous day's total plus current day's increments) shall be plotted on Figure 16.9-13-1. If at any time the point plotted falls in the "Accept" region, testing of snubbers of that type may be terminated. When the point plotted lies in the "Continue Testing" region, additional snubbers of that type shall be tested until the point falls in the "Accept" region or all the snubbers of that type have been tested; or

3) An initial representative sample of 55 snubbers shall be functionally tested. For each snubber type which does not meet the functional test acceptance criteria, another sample of at least one-half the size of the initial sample shall be tested until the total number tested is equal to the initial sample size multiplied by the factor, 1 + C/2, where

BASES (continued)

"C" is the number of snubbers found which do not meet the functional test acceptance criteria. The results from this Sample Plan shall be plotted using an "Accept" line which follows the equation N = 55(1 + C/2). Each snubber point should be plotted as soon as the snubber is tested. If the point plotted falls on or below the "Accept" line, testing may be terminated. If the point plotted falls above the "Accept" line, testing must continue until the point falls in the "Accept" region or all the snubbers of that type have been tested.

Testing equipment failure during functional testing may invalidate that day's testing and allow that day's testing to resume anew at a later time provided all snubbers tested with the failed equipment during the day of equipment failure are retested. The representative sample selected for the functional test Sample Plans shall be randomly selected from all snubbers and reviewed before beginning the testing. The review shall ensure, as far as practicable, that they are representative of the various configurations, operating environments, range of size, and capacity of snubbers. Snubbers placed in the same location as snubbers which failed the previous functional test shall be retested at the time of the next functional test but shall not be included in the Sample Plan. If during the functional testing, additional sampling is required due to failure of only one type of snubber, the functional test results shall be reviewed at that time to determine if additional samples should be limited to the type of snubber which has failed the functional testing.

Figure 16.9-13-1 was developed using "Wald's Sequential Probability Ratio Plan" as described in "Quality Control and Industrial Statistics" by Acheson J. Duncan.

Permanent or other exemptions from the inspection program for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented and, if applicable, snubber life testing was performed to qualify the snubber for the applicable design conditions. Snubbers so exempted shall be listed in the list of individual snubbers indicating the extent of the exemptions.

The snubber testing program may remove snubbers from service and restore OPERABILITY of the snubber application by replacement with another like snubber. In this situation, if the removed snubber later fails to meet test acceptance criteria, the system Required Action is not applicable since the failed snubber component has no current required function; however, the engineering evaluation per the Functional Test Failure Analysis is still required to determine the failure cause and address transportability issues. During the allowed 72 hours to perform an engineering evaluation or at any other time, when conditions of the affected system(s) and component(s) are determined to no longer support a reasonable assurance of OPERABILITY, applicable Required Actions are to be entered immediately.

BASES (continued)

Functional Test Acceptance Criteria

The snubber functional test shall verify that:

1) Activation (restraining action) is achieved within the specified range in both tension and compression, except that inertia dependent, acceleration limiting mechanical snubbers may be tested to verify only that activation takes place in both directions of travel;

2) Snubber bleed, or release rate where required, is present in both tension and compression, within the specified range;

3) For mechanical snubbers, the force required to initiate or maintain motion of the snubber is within the specified range in both directions of travel; and

4) For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement.

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.

Functional Test Failure Analysis

An engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. The results of this evaluation shall be used, if applicable, in selecting snubbers to be tested in an effort to determine the OPERABILITY of other snubbers irrespective of type which may be subject to the same failure mode.

For the snubbers found inoperable, an engineering evaluation shall be performed on the components to which the inoperable snubbers are attached. The purpose of this engineering evaluation shall be to determine if the components to which the inoperable snubbers are attached were adversely affected by the inoperability of the snubbers in order to ensure that the component remains capable of meeting the designed service.

If any snubber selected for functional testing either fails to lock up 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 type subject to the same defect shall be functionally tested. This TESTING REQUIREMENT shall be independent of the requirements stated in TESTING REQUIREMENT 16.9-13-3 for snubbers not meeting the functional test acceptance criteria.

BASES (continued)

All snubbers that fail to meet the functional test criteria must be evaluated to determine the cause, and the potential for applicability of the failure mode to other snubbers. Likewise, an evaluation is required to determine if the attached components have been adversely affected by the functional failure of the snubber. It is noted that the evaluation is only required for snubbers that are inoperable due to a failure of the snubber itself to meet the functional requirements. A snubber that is inoperable due solely to being disconnected from the supported component does not necessitate a component or system evaluation, provided that the snubber itself meets the requirements of the functional test criteria. In this case, the only action required is that the snubber be completely restored and the cause of the disconnection determined and evaluated for generic implications.

Service Life

The service life of a snubber is established via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubbers, seal replaced, spring replaced, in high radiation area, in high temperature area, etc.). The requirement to monitor the snubber service life is included to ensure that the snubbers periodically undergo a performance evaluation in view of their age and operating conditions. These records will provide statistical bases for future consideration of snubber service life.

If a service lifetime limit is associated (established) with any snubber (or critical part) based on manufacturer's information, qualification tests, or historical service results, then the service life shall be monitored to ensure that the service life is not exceeded between surveillance inspections. Established snubber service life shall be extended or shortened based on monitored test results and failure history. The replacements (snubbers or critical parts) shall be documented and the documentation shall be retained. Records of the service lives of all hydraulic and mechanical snubbers, including the date at which the service life commences, and associated installation and maintenance records shall be retained for the duration of the unit operating license.

REFERENCES

1. Letter from W.R. McCollum, Jr. to NRC, Request for Relief 95-05, Snubber Inspection Interval for Unit 1, August 23, 1995.

2. Letter from W.R. McCollum, Jr. to NRC, Request for Relief 96-01, Snubber Inspection Interval for Unit 2, February 12, 1996.

3. Letter from NRC to W.R. McCollum, Request for Relief 95-05, January 11, 1996.

REFERENCES (continued)

4. Letter from NRC to W.R. McCollum, Request for Relief 96-01, May 16, 1996.

5. Letter from NRC to Gary R. Peterson, Duke, Issuance of Improved Technical Specifications Amendments for Catawba, September 30, 1998.

6. Letter from M.S. Tuckman to NRC, Licensing Position Regarding Snubbers, May 20, 1999.

7. Letter from NRC to G.R. Peterson, Licensing Position Regarding Snubbers, July 7, 1999.

Attachment B

Comparison of OM-4 and SLC 16.9-13 Requirements

	Criteria	ASME/ANSI OM Part 4 -1987 through OMa-1988 addenda	Catawba, Unit 2, SLC 16.9-13 Requirements
Inservice Examination			
1.	Visual Examination	Paragraph 2.3.1.1, Visual Examination, states that snubber visual examinations shall identify impaired functional ability due to physical damage, leakage, corrosion, or degradation.	SLC 16.9-13, Bases requires that visual inspections shall verify that (1) the snubber has no visible indications of damage or impaired operability; (2) attachments to the foundation or supporting structure are functional; and (3) fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional.
2.	Visual Examination Interval Frequency	Paragraph 2.3.2.2 provides Examination Interval frequency and additional examination requirements.	Table 16.9-13-1 provides snubber visual inspection interval frequency.
3.	Method of Visual Examination	IWF-5300(a) requires use of the VT-3 visual examination method described in IWA-2213.	Catawba Maintenance Procedure MP/0/A/7650/085, "Visual Inspection of Snubbers," is used to implement the SLC inspection requirements.
4.	Subsequent Examination Intervals	Paragraph 2.3.2 provides guidance for inservice examination intervals based on the number of unacceptable snubbers discovered.	Table 16.9-13-1 provides a snubber visual inspection interval based on the number of unacceptable snubbers discovered. These requirements are similar to NRC GL 90-09.
5.	Inservice Examination Failure Evaluation	Paragraph 2.3.4.1 states that snubbers not meeting examination and acceptance criteria shall be evaluated to determine the cause of unacceptability. Paragraph 2.3.4.2 states that snubbers found unacceptable may be tested in accordance with the requirements of paragraph 3.2.	SLC 16.9-13, Bases, states that snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that (i) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible, and (ii) the affected snubber is functionally tested in the as-found condition and determined operable per acceptance criteria of the SLC.

	Criteria	ASME/ANSI OM Part 4 -1987 through OMa-1988 addenda	Catawba, Unit 2, SLC 16.9-13 Requirements
Inservice Operability Test			
1.	Inservice Operability Test Requirements	Paragraph 3.2.1.1, Operability Test, states that snubber operational readiness tests shall verify activation, release rate, and breakaway force or drag force by either an in-place or bench test.	SLC 16.9-13, Bases, states that snubbers shall be functionally tested either in-place or in a bench test. Functional test acceptance criteria requires a functional test to verify activation in tension and compression, force required to initiate or maintain motion within the specified range in both directions of travel for mechanical snubbers, and snubber bleed or release rate where required.
2.	Snubber Sample Size	Paragraph 3.2.3 states that each defined test plan group shall use either a 10% sampling plan; a "37 testing sample plan"; or a "55 testing sample plan" during each refueling outage.	SLC 16.9-13, Bases, Functional Testing, specifies sample testing plans. In a response to RAI, the licensee states that Catawba utilizes four groupings for snubber testing. Separate 10% sample plans for (1) small bore Lisega hydraulic snubbers; (2) Anchor/Darling mechanical snubbers; and (3) large bore steam generator snubbers, and a 37 sample plan for PSA mechanical snubbers. The 10% testing sample and 37 testing sample plans are similar to the plans as specified in the OM-4.
3.	Additional Sampling	(a) 10% Testing Sample Plan: Paragraph 3.2.3.1(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional sample of at least one-half the size of the initial sample lot shall be tested. (b) 37 Testing Sample Plan: Paragraph 3.2.3.2(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional random sample of at least one-half the size of the initial sample lot shall be tested.	(a) 10% Testing Sample Plan: SLC 16.9-13, Bases, under functional testing requires an additional 10% of all snubbers shall be tested until no more failures are found or until all snubbers have been functionally tested. (b) 37 Testing Sample Plan: SLC 16.9-13 requirements are same as of the OM-4 Code. (Detailed evaluation is provided below, in Item 3 Additional Sampling.)

	Criteria	ASME/ANSI OM Part 4 -1987 through OMa-1988 addenda	Catawba, Unit 2, SLC 16.9-13 Requirements
Inservice Operability Test			
4.	Inservice Operability Failure Evaluation	Paragraph 3.2.4.1 states that snubbers not meeting the operability testing acceptance criteria in paragraph 3.2.1 shall be evaluated to determine the cause of the failure.	SLC 16.9-13, Bases, under "Functional Test Failure Analysis" states that an engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen in place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested.
5.	Test Failure Mode Groups	Paragraph 3.2.4.2 states that unacceptable snubber(s) shall be categorized into failure mode group(s). A test failure mode group(s) shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode.	SLC 16.9-13, Bases, under "Functional Test Failure Analysis" states that all snubbers that fail to meet the functional criteria must be evaluated to determine the cause, and potential for applicability of the failure mode to other snubbers. All snubbers susceptible to the same failure conditions would be identified and evaluated, or replaced without categorizing a mode group(s).
6.	Corrective Actions for 10% Testing Sample Plan or 37 Testing Sample Plan	Paragraphs 3.2.5.1 and 3.2.5.2 state that unacceptable snubbers shall be repaired, modified, or replaced.	SLC 16.9-13 states that snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers which have repairs which might affect functional test results shall be tested to meet the functional test criteria before installation. The SLC makes no allowance for isolated failures. The unacceptable snubbers would be repaired or replaced.

Inservice Examination Requirements

(1) Visual Examination

SLC 16.9-13, Bases, requires that visual inspections shall verify that (1) the snubber has no visible indications of damage or impaired operability, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional. The visual examination per SLC 16.9-13 verifies visible indication of damage or impaired operability of snubbers as well as its attachments and supports. OM-4, paragraph 2.3.1.1, requires snubber visual examinations to identify impaired functional ability due to physical damage, leakage, corrosion, or degradation. Therefore, SLC 16.9-13 snubber visual examination requirements are considered to be equivalent to snubber visual examination requirements of OM-4 paragraphs 2.3.1.1.

(2) Visual Examination Interval Frequency

SLC Table 16.9-13-1 provides snubber visual inspection interval frequency requirements which are different than the OM-4 visual inspection interval requirements. Table 16.9-13-1 incorporates the visual inspection interval frequency as specified in Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions." GL 90-09 acknowledges that the visual inspection interval frequency (as contained in OM-4) is excessively restrictive and that licensees with large snubber populations have spent a significant amount of resources and have subjected plant personnel to unnecessary radiological exposure to comply with the visual examination requirements. GL 90-09 states that its alternative schedule (interval frequency) for visual inspection provides the same confidence level as that provided by OM-4. Therefore, this alternative provides an acceptable level of quality and safety.

(3) Method of Visual Examination

IWF-5300(a) requires that inservice examination be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in IWA-2213. IWA-2213 states that VT-3 examinations are conducted to determine the general mechanical and structural condition of components and their supports by verifying parameters such as clearance, settings, and physical displacements; and to detect discontinuities and imperfections, such as loss of integrity at bolts and welded connections, loose or missing parts, debris, corrosion, wear, or erosion. VT-3 includes examinations for conditions that could affect operability or functional adequacy of snubbers and constant load and spring type supports.

Catawba SLC 16.9-13 states that: "Visual inspections shall verify that (1) the snubber has no visible indications of damage or impaired operability, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional." Catawba Procedure MP/0/A/7650/085, "Visual Inspection of Snubbers," is used to implement the SLC inspections and includes requirements that the following items be checked: loose or missing

locking devices, missing spacers, paint or corrosion issues, connecting devices, visible damage, welds, loose jam nuts on extensions, leakage, orientation, fluid level.

The intent and scope of IWA-2213 and the SLC are essentially equal, although the Code wording is more detailed than the SLC in listing specific items to be included. However, these items are intuitive to meeting the SLC requirements and are more specifically addressed in the implementing procedure, which closely parallels the Code list. SLC examinations are performed using task qualified personnel who are specifically trained for the SLC examinations and who are familiar with snubber and component support operation and maintenance. Also, the SLC makes no distinction between integral and nonintegral attachments. All are included in the examination to verify overall structural integrity.

Therefore, the intent and scope of OM-4, VT-3 examination requirements are equivalent to the Catawba SLC visual inspection requirements.

(4) Subsequent Examination Intervals

SLC Table 16.9-13-1 establishes subsequent snubber visual inspection intervals based on the number of unacceptable snubbers discovered, in lieu of OM-4, paragraph 2.3.2 requirements. These requirements are equivalent to the guidance provided in GL 90-09, which has been approved for use by the NRC. Therefore, the subsequent examination intervals contained in SLC Table 16.9-13-1 provide an acceptable level of quality and safety and are acceptable.

(5) Inservice Examination Failure Evaluation

OM-4, paragraph 2.3.4.1 requires that snubbers not meeting examination criteria be evaluated to determine the cause of unacceptability. Paragraph 2.3.4.2 states that snubbers found unacceptable, may be tested in accordance with the requirements of paragraph 3.2. SLC 16.9-13 states that snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that (i) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible and (ii) the affected snubber is functionally tested in the as-found condition and determined operable per acceptance criteria of the SLC. The SLC program is considered to be equivalent to the requirements of OM-4. Therefore, the SLC's inservice examination failure evaluation requirements provide an acceptable level of quality and safety.

4.1.4.2 Inservice Operability Testing

(1) Inservice Operability Test Requirements

SLC 16.9-13, Bases, states that snubbers shall be functionally tested either in-place or in a bench test. SLC functional test acceptance criteria requires a functional test to verify (1) activation in tension and compression, (2) snubber bleed or release rate where required for mechanical snubbers, (3) the force required to initiate or maintain motion is within the

specified range in both directions of travel, and (4) the ability to withstand load without displacement. OM-4, paragraph 3.2.1.1, Operability Test, states that snubber operational readiness tests verify activation, release rate, and breakaway force or drag force by either an in-place or bench test. The SLC requirements are equivalent to the snubber operability test requirements of OM-4 paragraph 3.2.1. Therefore, the SLC functional test requirements provide an acceptable level of quality and safety.

(2) Snubber Sample Size

SLC 16.9-13, Bases, Functional Testing, states that at least 10% of all snubbers shall be functionally tested either in-place or in a bench test. These tests are normally performed during refueling outages. OM-4, Section 3.2.3 requires either a 10% testing sampling plan, a "37 testing sample plan," or a "55 testing sample plan." Currently Catawba is using four groupings for snubber testing. Separate 10% sample plans are used for small bore Lisega hydraulic snubbers, Anchor/Darling mechanical snubbers, and large bore steam generator snubbers, and a 37 sample plan is used for PSA mechanical snubbers. The 10% testing sample and 37 testing sample plans are similar to the plans as specified in the OM-4. As a result, the number of snubbers tested during outages is considered to be equivalent to the OM-4 requirements. Therefore, the SLC requirements of snubber sample size provide an acceptable level of quality and safety.

(3) Additional Sampling

(a) For 10% snubbers sample plan

SLC 16.9-13 states that for each snubber of a type that does not meet the functional test acceptance criteria, an additional 10% of all snubbers shall be functionally tested until no more failures are found or until all snubbers have been functionally tested. OM-4, paragraph 3.2.3.1(b) requires that an additional sample size must be at least one-half the size of the initial sample size of the "defined test plan group" of snubbers. That is, for a 10% sample program, an additional 5% of the same type of snubber in the overall population would need to be tested. Therefore, SLC 16.9-13 requirements for additional sampling for a 10% sample plan are considered to be acceptable.

(b) For 37 snubbers sample plan

OM-4, paragraph 3.2.3.2(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional random sample of at least one-half the size of the initial sample lot shall be tested until the total number tested (N) is equal to the initial sample size multiplied by the factor 1 + C/2, where C is the total number of snubbers found to be unacceptable. For a 37 sample plan, this is represented as an equation $N = 37(1 + C/2)$ in Appendix C of the OM-4 Code. The SLC requirement is the same as it requires a representative random sample of each test group to satisfy the equation:
$C = 0.055N - 2.007$,
where
N = the number tested, and
C = the number of unacceptable snubbers.

For the initial sample (C = 0), this equation gives N = 36.5 snubbers, rounding up to 37. Likewise, for each failure the additional snubber tests required will round up to 18, which matches the number required in the Code equation. Therefore, SLC 16.9-13 requirements for additional sampling for the 37 sample plan are acceptable.

(4) Inservice Operability Failure Evaluation

OM-4 paragraph 3.2.4.1 requires that snubbers not meeting operability testing acceptance criteria in paragraph 3.2.1 are to be evaluated to determine the cause of the failure. The cause of failure evaluation requires the review of the information related to other unacceptable snubbers and the determination of whether other snubbers of similar design would require further examination. SLC 16.9-13, Bases, under "Functional Test Failure Analysis" states that an engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen in place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested. Therefore, the SLC requirements related to inservice operability failure evaluation are equivalent to the OM-4 requirements.

(5) Test Failure Mode Groups

OM-4 paragraph 3.2.4.2 requires that unacceptable snubber(s) be categorized into failure mode group(s). A test failure mode group shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode. SLC 16.9-13, Bases, under "Functional Test Failure Analysis" states that all snubbers that fail to meet the functional criteria must be evaluated to determine the cause, and potential for applicability of the failure mode to other snubbers. Further, the licensee states that all snubbers susceptible to the same failure conditions would be identified and evaluated, or replaced without categorizing a mode group(s). Therefore, the SLC requirements are equivalent to the OM-4 requirements.

(6) Inservice Operability Testing Corrective Actions for 10% Sample or 37 Sample Plan

OM-4, paragraphs 3.2.5.1 and 3.2.5.2 require that unacceptable snubbers be adjusted, repaired, modified, or replaced. SLC 16.9-13 states that snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers that have repairs which might affect functional test results shall be tested to meet the functional test criteria before installation. The SLC makes no allowance for isolated failures. The unacceptable snubbers would be repaired or replaced. Therefore, the SLC corrective actions associated with unacceptable snubbers are equivalent to the OM-4 requirements.

Based on the above discussions, the snubber inservice visual examinations and functional testing, conducted in accordance with SLC 16.9-13, provide reasonable assurance of snubber operability and provide a level of quality and safety equivalent to that of ASME

Code, Section XI, Subarticles IWF-5300(a), (b), and (c). Therefore, the proposed alternative provides an acceptable level of quality and safety with respect to snubber inservice visual inspection and functional testing.

Attachment C

NRC Approval of Request for Relief 05-CN-002

ATTACHMENT C

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

MHS
EWV

September 7, 2006

Mr. Dhiaa Jamil
Vice President
Catawba Nuclear Station
Duke Power Company LLC
4800 Concord Road
York, SC 29745

SUBJECT: CATAWBA NUCLEAR STATION, UNIT 1, REQUEST FOR RELIEF FOR SNUBBER VISUAL EXAMINATION AND FUNCTIONAL TESTING RELATED TO THE THIRD 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM (TAC NOS. MC6942 AND MD2811)

Dear Mr. Jamil:

By letter dated April 29, 2005, as supplemented by letter dated May 22, 2006, Duke Power Company LLC (the licensee), submitted Relief Request No. 05–CN-002, for its third 10-year interval inservice inspection (ISI) and inservice testing (IST) programs for snubbers at Catawba Nuclear Station, Unit 1 (Catawba Unit 1). The third 10-year ISI period started June 30, 2005, and will end June 30, 2015. The licensee proposed alternatives to the American Society of Mechanical Engineers (ASME), *Boiler and Pressure Vessel Code* (Code), 1998 edition through the 2000 addenda, for the inspection and testing of snubbers.

The enclosed Safety Evaluation contains the Nuclear Regulatory Commission (NRC) staff's evaluation and conclusions. Based on the information provided in the relief request, the NRC staff has concluded that the licensee's proposed alternative provides an acceptable level of quality and safety. Therefore, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(a)(3)(i), the NRC staff authorizes the proposed alternative for the third 10-year ISI and IST interval for Catawba Unit 1.

Sincerely,

E C Marinos

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-413

Enclosure:
Safety Evaluation

cc w/encl: See next page

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF NO. 05-CN-002

CATAWBA NUCLEAR STATION, UNIT 1

DUKE POWER COMPANY LLC

DOCKET NO. 50-413

1.0 INTRODUCTION

By letter dated April 29, 2005, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML051300359) Duke Power Company LLC (the licensee), submitted Relief Request 05-CN-002 for its third 10-year interval inservice inspection (ISI) and inservice testing (IST) programs for snubbers at Catawba Nuclear Station, Unit 1 (Catawba Unit 1). In response to the Nuclear Regulatory Commission (NRC) staff's request for additional information (RAI), the licensee submitted a letter dated May 22, 2006, (ADAMS Accession No. ML061520445).

The licensee requested relief from certain inservice inspection and examination requirements of the American Society of Mechanical Engineers, *Boiler and Pressure Vessel Code* (ASME Code), Section XI, 1998 edition through 2000 addenda, Article IWF-5000. IWF-5000 references ASME/ANSI (American National Standards Institute) OM, Part 4 (OM-4), 1987 edition with OMa-1988. The licensee proposed to perform the above snubber surveillance activities using the Updated Final Safety Analysis Report (UFSAR), Chapter 16, Selected Licensee Commitment (SLC) 16.9-13, "Snubbers." This relief request is for the third 10-year ISI and IST programs for Catawba Unit 1.

2.0 REGULATORY EVALUATION

The ISI and IST of ASME Code Class 1, 2, and 3 components shall be performed in accordance with Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the ASME Code and applicable addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Section 50.55a(g), except where specific written relief has been granted by the Commission, pursuant to 10 CFR 50.55a(f)(6)(i) IST and 10 CFR 50.55a(g)(6)(i) ISI. Section 50.55a(a)(3) states that alternatives to the requirements of the paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii)compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in ASME Code, Section XI, to the extent

practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b), twelve months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Catawba Unit 1 third 10-year ISI interval is the 1998 edition up to and including the 2000 addenda.

3.0 TECHNICAL EVALUATION

3.1 Relief Request 05-CN-002

3.1.1 Licensee Relief Request

The licensee requested relief from the ASME Code, Section XI, Article IWF-5000, Subarticle IWF-5300(a), (b), and (c) requirements. ASME Section XI, IWF-5300(a) requires that snubber visual examinations be performed in accordance with OM-4, using the VT-3 visual examination method described in IWA-2213. ASME Section XI, IWF-5300(b) requires that snubber inservice tests be performed in accordance with OM-4. ASME Section XI, IWF-5300(c) requires that integral and non-integral attachments for snubbers, including lugs, bolting, pins, and clamps, be examined in accordance with Subsection IWF. Relief was requested for all Catawba Unit 1 safety-related ASME Section XI Code Class 1, 2, and 3 snubbers.

3.1.2 Licensee's Basis for Requesting Relief

ASME Section XI, 1998 edition through 2000 addenda, IWF-5300(a) and (b) specifies that snubber inservice examinations and tests be performed in accordance with the OM-4. IWF-5300(c) requires examinations of integral and non-integral attachments to snubbers, including lugs, bolting, pins, and clamps.

Snubber examinations and tests are currently performed under the UFSAR, Chapter 16, Selected Licensee Commitment (SLC) 16.9-13, "Snubbers." The licensee indicated that the proposed inspection program as defined by this SLC provides for an acceptable level of quality and safety equal to or greater than that of the proposed OM-4.

The SLC lists visual examination requirements for snubbers that are compatible with ASME Section XI VT-3 requirements. The SLC also incorporates the reduced visual examination frequency table as provided in NRC Generic Letter (GL) 90-09. SLC uses results in a significant reduction in unnecessary radiological exposure to plant personnel, a savings in company resources, and compliance with visual examination requirements while maintaining the same confidence level in snubber operability as that provided by following the ASME Section XI requirements.

Failure Mode Grouping

OM-4 provides for Failure Mode Grouping of snubbers which fail visual examination, meaning only those snubbers identified as being in that group would require shortened inspection intervals. Under the SLC program all snubbers in the population would be placed in a shortened inspection interval. On this basis the existing program is more conservative in corrective action than the OM-4 requirements.

The functional test plan required by OM-4 also includes Failure Mode Groups. The use of Failure Mode Grouping is required even for a single failure, and in some cases allows for the failed snubber to be reclassified as acceptable with no further testing. The SLC program at Catawba requires supplemental testing for all failures until the desired confidence level is assured, with no allowance to reclassify failed snubbers.

Visual Examinations

IWF-5000 requires that examinations be performed using the VT-3 visual examination method described in IWA-2213. IWA-2213 reads as follows:

"VT-3 examinations are conducted to determine the general mechanical and structural condition of components and their supports by verifying parameters such as clearance, settings, and physical displacements; and to detect discontinuities and imperfections, such as loss of integrity at bolted or welded connections, loose or missing parts, debris, corrosion, wear, or erosion. VT-3 includes examinations for conditions that could affect operability or functional adequacy of snubbers and constant load and spring supports."

The Catawba SLC states that:

"Visual inspections shall verify that: (1) the snubber has no visible indications of damage or impaired operability, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional."

Catawba Procedure MP/0/A/7650/085, "Visual Inspection of Snubbers," is used to implement the SLC inspections and includes requirements that the following items be checked: loose or missing locking devices, missing spacers, paint or corrosion issues, connecting devices, visible damage, welds, loose jam nuts on extensions, leakage, orientation, fluid level.

The SLC makes no distinction between integral and non-integral attachments. All are included in the examination to verify overall structural integrity. The request is not intended to exclude attachments from examination requirements, but only to use the SLC as the governing document for all examinations. With the SLC and Code requirements being comparable, it is preferable to utilize the SLC in order to maintain consistent programmatic and procedural control between Unit 1 and Unit 2.

3.1.3 Licensee's Proposed Alternative

Inservice examination and testing of snubbers will be performed in accordance with

SLC 16.9.13 in lieu of IWF-5300(a), (b), and (c).

3.1.4 NRC Staff's Evaluation of Relief Request 05-CN-002

The licensee requested relief from the requirements of ASME Code, Section XI, paragraphs IWF-5300(a), (b), and (c). The licensee proposed that the inservice visual examinations and functional testing of ASME Code Class 1, 2 and 3 snubbers be performed in accordance with the requirements of Catawba Unit 1 SLC 16.9-13 in lieu of meeting the requirements in ASME Code, Section XI, paragraphs IWF-5300(a), (b) and (c).

ASME Section XI, paragraph IWF-5300(a) requires that inservice visual inspections be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in paragraph IWA-2213.

Paragraph, IWF-5300(b) requires that inservice tests be performed in accordance with ASME/ANSI OM, Part 4, OM-4.

Paragraph, IWF-5300(c) requires that integral and non-integral attachments for snubbers, including lugs, bolting, pins, and clamps, be examined in accordance with Subsection IWF.

ASME Code, Section XI, Table IWA-1600-1 states that ASME/OM, Part 4 (OM-4) shall be of edition 1987 with OMa-1988 addenda. OM-4 specifies the requirements for visual examination (paragraph 2.3), and functional testing (paragraph 3.2). The licensee proposes to use the SLC 16.9-13 and its bases for inservice visual examination and functional testing of all safety-related snubbers including lugs, bolting, pins, and clamps. A visual inspection is the observation of the condition of installed snubbers to identify those that are damaged, degraded, or inoperable as caused by physical means, leakage, corrosion, or environmental exposure. To verify that a snubber can operate within specific performance limits, the licensee performs functional testing that typically involves removing the snubber and testing it on a specially designed stand or bench. The performance of visual examinations is a separate process that complements the functional testing program and provides additional confidence in snubber operability.

SLC 16.9-13 incorporates Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions." GL 90-09 acknowledges that the visual inspection schedule (as contained in OM-4) is excessively restrictive and that licensees with large snubber populations have spent a significant amount of resources and have subjected plant personnel to unnecessary radiological exposure to comply with the visual examination requirements. GL90-09 states that its alternative schedule for visual inspection provides the same confidence level as that provided by OM-4.

The licensee states that the SLC makes no distinction between integral and non-integral attachments. All are included in the examination to verify overall structural integrity. The request is not intended to exclude attachments from examination requirements, but only to use the SLC as the governing document for all examinations.

In a response to the NRC staff's RAI, the licensee states in its letter dated May 22, 2006, that Catawba Unit 1 is not requesting relief from Subarticle IWF-5200, "Preservice Examination and

Tests" or IWF-5400, "Repair/Replacement Activities" of the Article IWF-5000, and will continue to use appropriate station procedures and processes to meet these Code requirements.

Catawba SLC 16.9-13 defines inservice examination requirements, method of examination, subsequent examination intervals, failure evaluation, inservice operability test requirements, initial snubber sample size, additional sampling, failure evaluation, test failure mode groups, and corrective actions for the 10% sample and 37 sample plans that are similar to those provided by OM-4. OM-4 requirements and SLC 16.9-13 criteria are compared and summarized in the following table:

	Criteria	ASME/ANSI OM Part 4 -1987 through OMa-1988 addenda	Catawba, Unit 1, SLC 16.9-13 Requirements
Inservice Examination			
1.	Visual Examination	Paragraph 2.3.1.1, Visual Examination, states that snubber visual examinations shall identify impaired functional ability due to physical damage, leakage, corrosion, or degradation.	SLC 16.9-13, Bases requires that visual inspections shall verify that (1) the snubber has no visible indications of damage or impaired operability; (2) attachments to the foundation or supporting structure are functional; and (3) Fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional.
2.	Visual Examination Interval Frequency	Paragraph 2.3.2.2 provides Examination Interval frequency and additional examination requirements.	Table 16.9-13-1 provides snubber visual inspection interval frequency.
3.	Method of Visual Examination	IWF-5300(a) requires use of the VT-3 visual examination method described in IWA-2213.	Catawba states that Catawba Procedure MP/0/A/7650/085, "Visual Inspection of Snubbers," is used to implement the SLC inspection requirements.
4.	Subsequent Examination Intervals	Paragraph 2.3.2 provides guidance for inservice examination intervals based on the number of unacceptable snubbers discovered.	Table 16.9-13-1 provides a snubber visual inspection interval based on the number of unacceptable snubbers discovered. These requirements are similar to NRC GL 90-09.

	Criteria	ASME/ANSI OM Part 4 -1987 through OMa-1988 addenda	Catawba, Unit 1, SLC 16.9-13 Requirements
5.	Inservice Examination Failure Evaluation	Paragraph 2.3.4.1 states that snubbers not meeting examination and acceptance criteria shall be evaluated to determine the cause of unacceptability. Paragraph 2.3.4.2 states that snubbers found unacceptable, may be tested in accordance with the requirements of paragraph 3.2	SLC 16.9-13, Bases, states that snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that (I) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible, and (ii) the affected snubber is functionally tested in the as-found condition and determined operable per acceptance criteria of the SLC.
Inservice Operability Test			
1.	Inservice Operability Test Requirements	Paragraph 3.2.1.1, Operability Test, states that snubber operational readiness tests shall verify activation, release rate, and breakaway force or drag force by either an in-place or bench test.	SLC 16.9-13, Bases states that snubbers shall be functionally tested either in-place or in a bench test. Functional test acceptance criteria requires a functional test to verify activation in tension and compression, force required to initiate or maintain motion within the specified range in both directions of travel for mechanical snubbers, and snubber bleed or release rate where required.

	Criteria	ASME/ANSI OM Part 4 -1987 through OMa-1988 addenda	Catawba, Unit 1, SLC 16.9-13 Requirements
2.	Snubber Sample size	Paragraph 3.2.3 states that each defined test plan group shall use either a 10% sampling plan; a "37 testing sample plan;" or a "55 testing sample plan" during each refueling outage.	SLC 16.9-13, Bases, Functional Testing specifies sample testing plans. In a response to RAI, the licensee states that Catawba utilizes four groupings for snubbers testing. Separate 10% sample plans for (1) small bore Lisega hydraulic snubbers; (2) Anchor/Darling mechanical snubbers, and (3) large bore steam generator snubbers, and a 37 sample plan for PSA mechanical snubbers. The 10% testing sample and 37 testing sample plans are similar to the plans as specified in the OM-4.
3.	Additional Sampling	(a) 10% Testing Sample Plan: Paragraph 3.2.3.1(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional sample of at least one-half the size of the initial sample lot shall be tested. (b) 37 Testing Sample Plan: Paragraph 3.2.3.2(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional random sample of at least one-half the size of the initial sample lot shall be tested.	(a) 10% Testing Sample Plan: SLC 16.9-13, Bases under functional testing requires an additional 10% of all snubbers shall be tested until no more failures are found or until all snubbers have been functionally tested. (b) 37 Testing Sample Plan: In a response to RAI, the licensee states that SLC 16.9-13 requirements are same as of the OM-4 Code. (Detailed evaluation is provided below, in Item 3 Additional Sampling)

	Criteria	ASME/ANSI OM Part 4 -1987 through OMa-1988 addenda	Catawba, Unit 1, SLC 16.9-13 Requirements
4.	Inservice Operability Failure Evaluation	Paragraph 3.2.4.1 states that snubbers not meeting the operability testing acceptance criteria in paragraph 3.2.1 shall be evaluated to determine the cause of the failure.	SLC 16.9-13, Bases under "Functional Test Failure Analysis" states that an engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen in place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested.
5.	Test Failure Mode Groups	Paragraph 3.2.4.2 states that unacceptable snubber(s) shall be categorized into failure mode group(s). A test failure mode group(s) shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode.	SLC 16.9-13, Bases under "Functional Test Failure Analysis" states that all snubbers that fail to meet the functional criteria must be evaluated to determine the cause, and potential for applicability of the failure mode to other snubbers. Further the licensee states that all snubbers susceptible to the same failure conditions would be identified and evaluated, or replaced without categorizing a mode group(s).
6.	Corrective Actions for 10% Testing Sample Plan or 37 Testing Sample Plan	Paragraphs 3.2.5.1 and 3.2.5.2 states that unacceptable snubbers shall be repaired, modified, or replaced.	SLC 16.9-13 states that snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers which have repairs which might affect functional test results shall be tested to meet the functional test criteria before installation. In a response to RAI, the licensee states that the SLC makes no allowance for isolated failures. The unacceptable snubbers would be repaired or replaced.

3.1.4.1 Inservice Examination Requirements

(1) Visual Examination

SLC 16.9-13, Bases requires that visual inspections shall verify that (1) the snubber has no visible indications of damage or impaired operability, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional. The visual examination per SLC 16.9-13 verifies visible indication of damage or impaired operability of snubbers as well as its attachments and supports. OM-4, paragraph 2.3.1.1, requires snubber visual examinations to identify impaired functional ability due to physical damage, leakage, corrosion, or degradation. Therefore, SLC 16.9-13 snubber visual examination requirements are considered to be equivalent to snubber visual examination requirements of OM-4 paragraphs 2.3.1.1.

(2) Visual Examination Interval Frequency

SLC Table 16.9-13-1 provides snubber visual inspection interval frequency requirements which are different than the OM-4 visual inspection interval requirements. Table 16.9-13-1 incorporates the visual inspection interval frequency as specified in Generic Letter (GL) 90-09, "Alternative Requirements for Snubber Visual Inspection Intervals and Corrective Actions." GL 90-09 acknowledges that the visual inspection interval frequency (as contained in OM-4) is excessively restrictive and that licensees with large snubber populations have spent a significant amount of resources and have subjected plant personnel to unnecessary radiological exposure to comply with the visual examination requirements. GL 90-09 states that its alternative schedule (interval frequency) for visual inspection provides the same confidence level as that provided by OM-4. Therefore, this alternative provides an acceptable level of quality and safety.

(3) Method of Visual Examination

IWF-5300(a) requires that inservice examination be performed in accordance with ASME/ANSI OM, Part 4, using the VT-3 visual examination method described in IWA-2213. IWA-2213 states that VT-3 examinations are conducted to determine the general mechanical and structural condition of components and their supports by verifying parameters such as clearance, settings, and physical displacements; and to detect discontinuities and imperfections, such as loss of integrity at bolts and welded connections, loose or missing parts, debris, corrosion, wear, or erosion. VT-3 includes examinations for conditions that could affect operability or functional adequacy of snubbers and constant load and spring type supports.

Catawba SLC states that: "Visual inspections shall verify that (1) the snubber has no visible indications of damage or impaired operability, (2) attachments to the foundation or supporting structure are functional, and (3) fasteners for the attachment of the snubber to the component and to the snubber anchorage are functional."

The licensee states that "Catawba Procedure MP/0/A/7650/085, 'Visual Inspection of Snubbers,' is used to implement the SLC inspections and includes requirements that the following items be checked: loose or missing locking devices, missing spacers, paint or

corrosion issues, connecting devices, visible damage, welds, loose jam nuts on extensions, leakage, orientation, fluid level."

The licensee makes the argument that the intent and scope of IWA-2213 and SLC are essentially equals, although the Code wording is more detailed than the SLC in listing specific items to be included. However, these items are intuitive to meeting the SLC requirements and are more specifically addressed in the implementing procedure, which closely parallels the Code list. SLC examinations are performed using task qualified personnel who are specifically trained for the SLC examinations and who are familiar with snubber and component support operation and maintenance. Also the SLC makes no distinction between integral and non-integral attachments. All are included in the examination to verify overall structural integrity.

Therefore, the intent and scope of OM-4, VT-3 examination requirements are equivalent to the Catawba SLC Visual inspection requirements. Therefore, the NRC staff finds the licensee's method of snubber visual inspection provides an acceptable level of quality and safety and is acceptable.

(4) Subsequent Examination Intervals

SLC Table 16.9-13-1 establishes subsequent snubber visual inspection intervals based on the number of unacceptable snubbers discovered, in lieu of OM-4, paragraph 2.3.2 requirements. These requirements are equivalent to the guidance provided in GL 90-09, which has been approved for use by the NRC. Therefore, the NRC staff finds that the subsequent examination intervals contained in SLC Table 16.9-13-1 provide an acceptable level of quality and safety and is acceptable.

(5) Inservice Examination Failure evaluation

OM-4, paragraph 2.3.4.1 requires that snubbers not meeting examination criteria be evaluated to determine the cause of unacceptability. Paragraph 2.3.4.2 states that snubbers found unacceptable, may be tested in accordance with the requirements of paragraph 3.2. SLC 16.9-13, states that snubbers which appear inoperable as a result of visual inspections shall be classified as unacceptable and may be reclassified acceptable for the purpose of establishing the next visual inspection interval, provided that (I) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers irrespective of type that may be generically susceptible and (ii) the affected snubber is functionally tested in the as-found condition and determined operable per acceptance criteria of the SLC. The licensee's program is considered to be equivalent to the requirements of OM-4. Therefore, the NRC staff finds that the SLC's inservice examination failure evaluation requirements provide an acceptable level of quality and safety.

4.1.4.2 Inservice Operability Testing

(1) Inservice Operability Test Requirements

SLC 16.9-13, Bases, states that snubbers shall be functionally tested either in-place or in a bench test. SLC functional test acceptance criteria requires a functional test to verify (1) activation in tension and compression, (2) snubber bleed or release rate where required for

mechanical snubbers, (3) the force required to initiate or maintain motion is within the specified range in both direction of travel, and (4) the ability to withstand load without displacement. OM-4, paragraph 3.2.1.1, Operability Test, states that snubber operational readiness tests verify activation, release rate, and breakaway force or drag force by either an in-place or bench test. The staff finds that the SLC requirements are considered to be equivalent to the snubber operability test requirements of OM-4 paragraph 3.2.1. Therefore, the SLC functional test requirements provide an acceptable level of quality and safety.

(2) Snubber Sample Size

SLC 16.9-13, Bases, Functional Testing states that at least 10% of all snubbers shall be functionally tested either in-place or in a bench test. These tests are normally performed during refueling outages. OM-4, Section 3.2.3 requires either a 10% testing sampling plan, a "37 testing sample plan," or a "55 testing sample plan." In a response to an RAI, the licensee states that currently Catawba is using four grouping for snubbers testing. Separate 10% sample plans are used for small bore Lisega hydraulic snubbers, Anchor/Darling mechanical snubbers, and large bore steam generator snubbers, and a 37 sample plan is used for PSA mechanical snubbers. The 10% testing sample and 37 testing sample plans are similar to the plans as specified in the OM-4. As a result, the number of snubbers tested during outages are considered to be equivalent to the OM-4 requirements. Therefore, the SLC requirements of snubber sample size provide an acceptable level of quality and safety.

(3) Additional Sampling

(a) For 10% snubbers sample plan

SLC 16.9-13 states that for each snubber of a type that does not meet the functional test acceptance criteria, an additional 10% of all snubbers shall be functionally tested until no more failures are found or until all snubbers have been functionally tested. OM-4, paragraph 3.2.3.1(b) requires that an additional sample size must be at least one-half the size of the initial sample size of the "defined test plan group" of snubbers. That is, for a 10% sample program, an additional 5% of the same type of snubber in the overall population would need to be tested. Therefore, SLC 16.9-13 requirements for additional sampling for a 10% sample plan are considered to be acceptable.

(b) For 37 snubbers sample plan

OM-4, paragraph 3.2.3.2(b) states that for any snubber(s) determined to be unacceptable as a result of testing, an additional random sample of at least one-half the size of the initial sample lot shall be tested until the total number tested (N) is equal to the initial sample size multiplied by the factor 1+ C/2, where C is the total number of snubbers found to be unacceptable. For a 37 sample plan, this is represented as an equation $N = 37(1 + C/2)$ in Appendix C of the OM-4 Code. The SLC requirement is the same as it requires a representative random sample of each test group to satisfy the equation $C = 0.055N - 2.007$, where N = the number tested, and C = the number of unacceptable snubbers. For the initial sample (C =0), this equation gives N = 36.5 snubbers, rounding up to 37. Likewise, for each failure the additional snubbers test required will round up to 18, which matches the number required in the Code equation.

Therefore, SLC 16.9-13 requirements for additional sampling for the 37 sample plan are considered to be acceptable.

(4) Inservice Operability Failure evaluation

OM-4 paragraph 3.2.4.1 requires that snubbers not meeting operability testing acceptance criteria in paragraph 3.2.1 are to be evaluated to determine the cause of the failure. The cause of failure evaluation requires to review the information related to other unacceptable snubbers and determine whether other snubbers of similar design would require further examination. SLC 16.9-13, Bases under "Functional Test Failure Analysis" states that an engineering evaluation shall be made of each failure to meet the functional test acceptance criteria to determine the cause of the failure. If any snubber selected for functional testing either fails to lock up or fails to move, i.e., frozen in place, the cause of failure will be evaluated. If the failure is caused by the manufacturer or design deficiency, all snubbers of the same type subject to the same defect shall be functionally tested. Therefore, the NRC staff finds that the SLC requirements related to inservice operability failure evaluation are considered to be equivalent to the OM-4 requirements.

(5) Test Failure Mode Groups

OM-4 paragraph 3.2.4.2 requires that unacceptable snubber(s) be categorized into failure mode group(s). A test failure mode group shall include all unacceptable snubbers that have a given failure mode, and all other snubbers subject to the same failure mode. SLC 16.9-13, Bases under "Functional Test Failure Analysis" states that all snubbers that fail to meet the functional criteria must be evaluated to determine the cause, and potential for applicability of the failure mode to other snubbers. Further the licensee states that all snubbers susceptible to the same failure conditions would be identified and evaluated, or replaced with out categorizing a mode group(s). Therefore, the SLC requirements are considered to be equivalent to the OM-4 requirements, and are acceptable.

(6) Inservice Operability Testing Corrective Actions for 10% sample or 37 sample plan

OM-4, paragraphs 3.2.5.1 and 3.2.5.2 require that unacceptable snubbers be adjusted, repaired, modified, or replaced. SLC 16.9-13 states that snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers which have repairs which might affect functional test results shall be tested to meet the functional test criteria before installation. In a response to RAI, the licensee states that the SLC makes no allowance for isolated failures. The unacceptable snubbers would be repaired or replaced. Therefore, the NRC staff finds that the SLC corrective actions associated with unacceptable snubbers at Catawba are considered to be equivalent to the OM-4 requirements.

Based on the above discussions, the NRC staff finds that snubber inservice visual examinations and functional testing, conducted in accordance with SLC 16.9-13, provides reasonable assurance of snubber operability and provides a level of quality and safety equivalent to that of ASME Code, Section XI, Subarticles IWF-5300(a), (b) and (c). Therefore, the NRC staff finds the licensee's proposed alternative provides an acceptable level of quality and safety with respect to snubber inservice visual inspection and functional testing. It should be noted that in

authorizing Relief Request 05-CN-002, SLC 16.9-13 becomes a regulatory requirement that may be used in lieu of ASME Code, Section XI requirements for performing inservice inspection and testing of snubbers. Changes to these requirements must be reviewed and approved by the NRC staff for authorization pursuant to 10 CFR 50.55a(a)(3) or as an exemption pursuant to 10 CFR 50.12.

4.0 CONCLUSION

Based on the information provided, the NRC staff concludes that the proposed alternative to use SLC 16.9.13 for snubber inservice visual inspection and functional testing activities provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative is authorized for the Catawba Unit 1 third 10-year ISI and IST intervals.

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