

PLANT SYSTEMS

3/4.7.7 SNUBBERS

LIMITING CONDITION FOR OPERATION

3.7.7 All snubbers identified in Tables 3.7-3a and 3.7-3b shall be OPERABLE.¹

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

ACTION:

- a. With one or more snubbers inoperable: 1. within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status, or 2. verify system operability with the snubber(s) inoperable by engineering evaluation within 72 hours; or 3. declare the supported system inoperable and follow the appropriate ACTION statement for that system.

AND,

- b. Perform an engineering evaluation within 90 days to determine if any safety-related system or component has been adversely affected by the inoperability of the snubber and if the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.² The provisions of Technical Specification 3.0.4 are not applicable for the component or system.

SURVEILLANCE REQUIREMENTS

4.7.7 Each snubber shall be demonstrated OPERABLE by the requirements of the following surveillance programs and pursuant to requirements of Specification 4.0.5.

4.7.7.1 Visual Inspection Program

a. General Requirements

At least once per inspection interval, a representative sample of each type of snubber in use in the Plant shall be visually inspected in accordance with Specification 4.7.7.1.b and 4.7.7.1.c. Visual inspections may be performed with binoculars, or other video support devices, for those snubbers that are difficult to access and where required to keep exposure ALARA. Response to failures shall be in accordance with Specification 4.7.7.1.d.

¹See plant system-bases for definitions and background information.

²Engineering evaluation is not required when a snubber is removed for surveillance testing provided it is returned to OPERABLE status within the requirements of action statement a.

SURVEILLANCE REQUIREMENTS (Continued)b. Inspection Interval and Sample Criteria

The inspection interval and sample criteria may be applied on the basis of snubber groups. The snubber groups may be established based on physical characteristics and accessibility. (See Tables 3.7-3a and 3.7-3b for grouping of snubbers.) Visual inspections for a group shall be performed in accordance with the following schedule:

<u>No. of Inoperable Snubbers Within a Group Per Inspection Interval</u>	<u>Subsequent Group Visual Inspection Interval ^{3, 4, 5}</u>
0	18 months
1	12 months
2	6 months
3, 4	124 days
5, 6, 7	62 days
8 or more	31 days

The first and second inspections shall include 100 percent of all snubbers in Tables 3.7-3a and 3.7-3b. If no snubbers are found unacceptable within a group during two successive inspection intervals, the next sample size may be limited to 50 percent of the snubbers within the eligible group. For subsequent inspections following inspections in which all snubbers examined are acceptable, the sample size may be further reduced in steps to 25, 15, and 10 percent of each eligible group, provided that the total of all snubbers subject to inspection at all times is at least 10 percent of the total number of snubbers in Tables 3.7-3a and 3.7-3b.

When an inoperable snubber is revealed during a group inspection, the sample size for that group shall be increased to 100 percent for the next two inspections, except as noted in Specification 4.7.7.1.d(3).

³The inspection interval shall not be lengthened more than one step at a time, and

⁴The provisions of Specification 4.0.2 are not applicable.

⁵All the time intervals are $\pm 25\%$, except that the inspection of inaccessible snubbers, as noted in Tables 3.7-3a and 3.7-3b, may be deferred to the next shutdown when plant conditions allow 5 days for inspection.

SURVEILLANCE REQUIREMENTS (Continued)

c. Acceptance Criteria

A snubber shall be considered OPERABLE as a result of a visual inspection if: (1) there are no visible indications of damage or INOPERABILITY, and (2) attachments to the foundation or supporting structure are secure.

d. Response to Failures

For each snubber unit which does not meet the visual inspection acceptance criteria of Specification 4.7.7.1.c:

Determine the snubber OPERABLE by functionally testing the snubber per Specification 4.7.7.2, unless the (hydraulic) snubber was determined INOPERABLE because the fluid port was found uncovered;

OR

1. Perform the ACTION specified in 3.7.7a; AND
2. Perform an engineering evaluation as specified in 3.7.7.b.;

AND

3. Increase the frequency of group inspection and the size of the group sample, as described in Specification 4.7.7.1.b, unless the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible.

4.7.7.2 Functional Test Program

a. General Requirements

At least once per inspection interval a representative sample of each type of snubber in use in the Plant shall be functionally tested in accordance with Specifications 4.7.7.2.b and 4.7.7.2.c. Response to the failures shall be in accordance with Specification 4.7.7.2.d.

For hydraulic snubbers, functional testing shall consist of either bench testing or inplace testing. Snubbers greater than 50,000 lbs. capacity may be excluded from functional testing requirements.

For mechanical snubbers, functional testing shall consist of either inplace testing or bench testing.

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SURVEILLANCE REQUIREMENTS (Continued)

b. Inspection Interval and Sample Criteria

The snubbers may be categorized into groups based on physical characteristics. Each group may be tested independently from the standpoint of performing additional tests if failures are discovered.

The inspection interval for functional testing shall be 18 months.

Snubbers which are scheduled for removal for seal maintenance may be included in the test sample prior to any maintenance on the snubber.

The representative sample shall consist of at least 10 percent (rounded off to next highest integer) of each group of snubbers in use in the Plant. The selection process shall ensure that all snubbers, regardless⁶ of their accessibility classification (per Tables 3.7-3a and 3.7-3b), are functionally tested at least once every ten test intervals.

c. Acceptance Criteria

For hydraulic snubbers (either inplace testing or bench testing), the test shall verify that:

1. Gradual movement of snubber piston will allow the hydraulic fluid to "bypass" from one side of the piston to the other.
2. When the snubber is subjected to a sudden movement which creates a load condition that exceeds the allowable normal operating condition, the hydraulic fluid is trapped in one end of the snubber causing suppression of that movement.

For mechanical snubber inplace testing, the test shall verify that:

1. The snubber is not locked solid (i.e., frozen);

⁶Permanent or other exemptions from functional testing for individual snubbers in these categories may be granted by the Commission only if a justifiable basis for exemption is presented.

SURVEILLANCE REQUIREMENTS (Continued)

For mechanical snubber bench testing, the test shall verify that:

1. The force that initiates free movement of the snubber rod in either tension or compression is less than the specified maximum drag force.
2. Activation (restraining action) is achieved in both tension and compression.
3. Snubber release, where required, occurs in compression and tension.

d. Response to Failures

For each inoperable snubber per Specification 4.7.7.2.c:

1. Perform the ACTIONS specified in 3.7.7a and 3.7.7b; AND
2. Within the specified test interval, functionally test an additional sample of at least 10 percent of the snubber units from the group that the INOPERABLE snubber unit is in.

The functional testing of an additional sample of at least 10 percent from the INOPERABLE snubber's group is required for each snubber unit determined to be INOPERABLE in subsequent functional tests, or until all snubbers in that group have been tested; AND

3. The cause of snubber failure will be evaluated and, if caused by a manufacturing or design deficiency, all snubbers of the same or similar design subject to the same defect shall be functionally tested within 90 days from determining snubber inoperability. This testing requirement shall be independent of the requirements in 4.7.7.2.d(2) above.

TABLE 3.7-3a

SAFETY RELATED HYDRAULIC SNUBBER SYSTEMS^{1,2,3,4}

AUXILIARY FEEDWATER	MAIN STEAM
COMPONENT COOLING	MAKEUP & PURIFICATION
CONTAINMENT SPRAY	PRESSURIZER
CORE FLOOD	REACTOR COOLANT SYSTEM
DECAY HEAT REMOVAL	SERVICE WATER
DEISEL GENERATOR EXHAUST	SPENT FUEL POOL
HIGH PRESSURE INJECTION	STEAM GENERATOR
MAIN FEEDWATER	MISCELLANEOUS LIQUID
	RADWASTE (ECCS DRAIN)

TABLE 3.7-3b

SAFETY RELATED MECHANICAL SNUBBER SYSTEMS^{1,2,3,4}

AUXILIARY FEEDWATER	MAKEUP & PURIFICATION
CONTAINMENT VENTILATION (HYDROGEN RECOMBINER)	REACTOR COOLANT SYSTEM
DECAY HEAT REMOVAL	REACTOR COOLANT SYSTEM
HIGH PRESSURE INJECTION	SAMPLING
MAIN STEAM	SERVICE WATER
	STEAM GENERATOR DRAIN

¹Snubbers may be added to, or removed from, safety-related systems and their assigned groups without prior Licensing Amendment to Table 3.7-3a/b provided that a revision to Table 3.7-3a/b is included with the next License Amendment request.

²Inaccessible snubbers are defined as those located: (a) inside containment, (b) in high radiation exposure zones, or (c) in areas where accessibility is limited by physical constraints such as the need for scaffolding.

³Snubbers are divided into four (4) groups: "Accessible" - Group I and "Inaccessible" - Group II (see note 2) for either hydraulic or mechanical.

⁴Safety related snubbers are those covered by the criteria in 10CFR50 Appendix A and listed in the latest revision of applicable surveillance test procedure(s).

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BASES

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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. Snubbers excluded from this inspection program are those installed on nonsafety-related systems and then only if their failure or failure of the system on which they are installed, would have no adverse effect on any safety-related system.

Inoperable is defined as:

1. For visual test
 - a. The fluid no longer is supplied to the valve block, or
 - b. Mounting pins are disengaged from the snubber.
2. For functional test
 - a. The snubber does not meet specified test criteria.

The visual inspection frequency is based upon maintaining a constant level of snubber protection to systems. 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. 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.

When the cause of the rejection of a snubber is clearly established and remedied for that snubber and for any other snubbers that may be generically susceptible, and verified by functional testing, that snubber may be exempted from being counted as inoperable. Generically susceptible snubbers are those which are of a specific make or model and have the same design features directly related to rejection of the snubber by visual inspection, or are similarly located or exposed to the same environmental conditions such as temperature, radiation, and vibration.

When a snubber is found inoperable, an engineering evaluation is performed, in addition to the determination of the snubber mode of failure, in order to determine if any safety-related component or system has been adversely affected by the inoperability of the snubber. The engineering evaluation shall determine whether or not the snubber mode of failure has imparted a significant effect or degradation on the supported component or system.

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To provide assurance of snubber functional reliability, a representative sample of the installed snubbers will be functionally tested at 18 month intervals. Selection of a representative sample of 10% provides a confidence level of approximately 95% that 90% to 100% of the snubbers in the plant will be OPERABLE within acceptance limits. Observed failures of these sample snubbers shall require functional testing of additional units. When a snubber is found to be inoperable due to failure to lock up or failure to move (i.e., frozen in place), the cause will be evaluated for further action or testing.

In cases where the cause of failure has been identified, additional snubbers that have a high probability for the same type of failure or are being used in the same application that caused the failure shall be tested. This requirement increases the probability of locating inoperable snubbers without testing 100% of the snubbers.

Hydraulic snubbers and mechanical snubbers may each be treated as a different entity for the above surveillance programs.

To minimize personnel exposures, snubbers, installed in high radiation zones or in especially difficult to remove locations, may be exempted (e.g., greater than 50,000 lbs. capacity) from these functional testing requirements provided the OPERABILITY of these snubbers was demonstrated during functional testing at either the completion of their fabrication or at a subsequent date.