

3.6 LIMITING CONDITIONS FOR OPERATION

I. Shock Suppressors (Snubbers)

1. Except as noted in 3.6.I.2 and 3.6.I.3 below, all required safety-related snubbers listed in Table 4.6.2 shall be operable whenever its supported system is required to be operable.
2. With one or more required snubbers inoperable, within 72 hours, replace or restore the snubber to operable status and perform an engineering evaluation per Specification 4.6.I.1b and c, on the supported component. In all cases, the required snubbers shall be made operable or replaced prior to reactor startup.
3. If the requirements of 3.6.I.1 and 3.6.I.2 cannot be met, the supported system shall be declared inoperable and the appropriate action statement for that system shall be followed.
4. Snubbers may be added or deleted from safety-related systems without prior License Amendment to Table 4.6.2 provided: the additions or deletions are based on approved engineering analysis; the limiting conditions and surveillance requirements of this specification are applied to the snubber additions, and a revision to Table 4.6.2 is included with a subsequent License Amendment request.

4.6 SURVEILLANCE REQUIREMENTS

I. Shock Suppressors (Snubbers)

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

a. Visual Inspections

Visual inspections shall be performed in accordance with the following schedule:

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

The snubbers may be categorized into two groups: the accessible and those inaccessible during reactor operation. Each group may be inspected independently in accordance with the above schedule. The inspection interval shall not be lengthened more than one step at a time.

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b. Visual Inspection Acceptance Criteria

Visual inspections shall verify (1) that there are no visible indications of damage or impaired OPERABILITY, and (2) that the snubber installation exhibits no visual indications of detachment from foundations or supporting structures. Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, providing that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible; and/or (2) the affected snubber is functionally tested in the as-found condition and determined OPERABLE per Specification 4.6.I.c, as applicable. When the fluid port of a hydraulic snubber is found to be uncovered, the snubber shall be determined inoperable unless it can be determined OPERABLE via functional testing for the purpose of establishing the next visual inspection interval.

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For the snubber(s) found inoperable, an engineering evaluation shall be performed on the component(s) which are supported by the snubber(s). The scope of this engineering evaluation shall be consistent with the licensee's engineering judgment and may be limited to a documented visual inspection of the supported component(s). The purpose of this engineering evaluation shall be to determine if the component(s) supported by the snubber(s) were adversely affected by the inoperability of the snubber(s) in order to ensure that the supported component remains capable of meeting the designed service.

c. Functional Tests

At least once per 18 months during shutdown, a representative sample of 10% of the snubbers in use in the plant shall be functionally tested either in place or in a bench test. For each snubber that does not meet the functional test acceptance criteria of Specification 4.6.1.1.d, an additional 5% of the snubbers shall be functionally tested until no more failures are found or until all snubbers have been functionally tested.

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Snubbers of rated capacity greater than 50,000 lbs. need not be functionally tested.

Snubbers identified in Table 4.6.2 as especially difficult to remove or in high radiation areas shall also be included in the representative sample.

In addition to the regular sample, snubbers which failed the previous functional test shall be retested during the next test period unless the root cause for the problem has been determined and corrective actions implemented. If a spare snubber has been installed in place of a failed snubber, then both the failed snubber (if it is repaired and installed in another position) and the spare snubber shall be retested during the next test period. Failure of these snubbers shall not entail functional testing of additional snubbers.

If any snubber selected for functional testing either fails to lock up within the capability of the testing machine or fails to move, i.e., frozen in place, the cause will be evaluated and if caused by manufacturer or design

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deficiency, all generically susceptible snubbers of the same design subject to the same defect shall be functionally tested. This testing requirement shall be independent of the requirements stated above for snubbers not meeting the functional test acceptance criteria.

For the snubber(s) found inoperable, an engineering evaluation shall be performed on the component(s) which are supported by the snubber(s). The scope of this engineering evaluation shall be consistent with the licensee's engineering judgement and may be limited to a documented visual inspection of the supported component(s). The purpose of this engineering evaluation shall be to determine if the component(s) supported by the snubber(s) were adversely affected by the inoperability of the snubber(s) in order to ensure that the supported component remains capable of meeting the designed service.

d. Hydraulic Snubbers Functional Test Acceptance Criteria

The hydraulic snubber functional test shall verify that:

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1. Activation (restraining action) is achieved within the specified range of velocity or acceleration in both tension and compression.
2. Snubber bleed, or release rate, where required, is within the specified range in compression or tension. For snubbers specifically required to not displace under continuous load, the ability of the snubber to withstand load without displacement shall be verified.

J. Thermal Hydraulic Stability

1. When the reactor mode switch is in RUN, the reactor shall not intentionally be operated in a natural circulation mode, except as permitted in 3.6.J.2 below, nor shall an idle recirculation pump be started with the reactor in a natural circulation mode, except as permitted in 3.6.J.2.
2. For the purpose of performing special tests, operation in the natural circulation mode is permitted. For the purpose of recovering forced circulation operation during and after special tests at natural circulation, startup of an idle recirculation pump is permitted if:
 - a. The ΔT between the idle loop and vessel saturation temperature is $\leq 50^{\circ}\text{F}$.
 - b. The ΔT between the idle loop and an operating loop is $\leq 50^{\circ}\text{F}$.
 - c. The ΔT between the vessel top head and the vessel bottom head is $\leq 145^{\circ}\text{F}$.

J. Thermal Hydraulic Stability

Operation in the natural circulation mode shall be timed and recorded for special tests. Also, during special tests loop temperatures, vessel saturation temperature (pressure), vessel top head temperature, and vessel bottom head temperature shall be monitored and recorded.

3.6.I and 4.6.I SHOCK SUPPRESSORS (SNUBBERS)

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 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 (1) of a specific make or model, (2) of the same design, and (3) similarly located or exposed to the same environmental conditions such as temperature, radiation, and vibration. These characteristics of the snubber installation shall be evaluated to determine if further functional testing of similar snubber installations is warranted.

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.

To provide assurance of snubber functional reliability, a representative sample of the installed snubbers will be functionally tested once each refueling cycle. Observed failures of these sample snubbers shall require functional testing of additional units.

3.6.J THERMAL HYDRAULIC STABILITY

Not allowing operation in a natural circulation mode will provide additional stability margin, and it will provide protection against a reactivity insertion transient due to starting of an idle recirculation pump from the natural circulation mode.