

## PLANT SYSTEMS

### 3/4.7.8 SNUBBERS

#### LIMITING CONDITION FOR OPERATION

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3.7.8 All snubbers listed in Tables 3.7-4a and 3.7-4b shall be OPERABLE.

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

#### ACTION:

With one or more snubbers inoperable, within 72 hours replace or restore the inoperable snubber(s) to OPERABLE status and perform an engineering evaluation per Specification 4.7.8g on the attached component or declare the attached system inoperable and follow the appropriate ACTION statement for that system.

#### SURVEILLANCE REQUIREMENTS

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4.7.8 Each snubber shall be demonstrated OPERABLE by performance of the following augmented inservice inspection program and the requirements of Specification 4.0.5.

a. Inspection Types

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

b. Visual Inspections

Snubbers are categorized as inaccessible or accessible during reactor operation and may be treated independently. The accessibility of each snubber shall be determined and approved by the (Station) Health Physicist or qualified designee prior to performing each visual inspection. The determination shall be based upon the then existing radiation levels in each snubber location and the expected time to perform the visual inspection and shall be in accordance with the recommendations of Regulatory Guides 8.8 and 8.10.

The first inservice visual inspection of each type of snubber shall be performed after 4 months but within 10 months (of commencing) POWER OPERATION and shall include all snubbers listed in Tables 3.7-4a and 3.7-4b. If less than two snubbers of each type are found inoperable during the first inservice visual inspection, the second inservice visual inspection shall be performed 12 months  $\pm$  25% from the date of the first inspection. Otherwise, subsequent visual inspections shall be performed in accordance with the following schedule:

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\* The inspection interval for each type of snubber shall not be lengthened more than one step at a time unless a generic problem has been identified and corrected; in that event the inspection interval may be lengthened one step the first time and two steps thereafter if no inoperable snubbers of that type are found.

# The provisions of Specification 4.0.2 are not applicable.

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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

#### c. Refueling Outage Inspections

At least once per 18 months an inspection shall be performed of all the snubbers listed in Tables 3.7-4a and 3.7-4b attached to sections of Safety Systems piping that have experienced unexpected, potentially damaging transients as determined from a review of operational data and a visual inspection of the systems. In addition to satisfying the visual inspection acceptance criteria, freedom-of-motion of mechanical snubbers shall be verified using at least one of the following: (1) manually induced snubber movement; (2) evaluation of in-place snubber piston setting; or (3) stroking the mechanical snubber through its full range of travel.

#### d. Visual Inspection Acceptance Criteria

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. Snubbers which appear inoperable as a result of visual inspections may be determined OPERABLE for the purpose of establishing the next visual inspection interval, provided that: (1) 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 (2) the affected snubber is functionally tested in the as found condition and determined OPERABLE per Specifications 4.7.8f. When a fluid port of a hydraulic snubber is found to be uncovered the snubber shall be declared inoperable and shall not be determined OPERABLE via functional testing unless the test is started with the piston in the as found setting, extending the piston rod in the tension mode direction. All snubbers connected to an inoperable common hydraulic fluid reservoir shall be counted as inoperable snubbers.

#### e. Functional Testing

For the purpose of functional testing of safety-related snubbers, the sample plan and resample plan should provide a confidence level of 95% that 90% to 100% of the snubbers are operable. Several sample plans are known to meet this criteria. These sample plans are listed, as options, to allow latitude for continued investigation leading to the implementation of the most effective sample plan.

e. Functional Tests (Continued)

During the first refueling shutdown and at least once per refueling thereafter, a representative sample of snubbers shall be tested using one of the following sample plans.

The NRC Regional Administrator shall be notified in writing of the sample plan selected for implementation prior to the initiation of the functional testing program. If notice is not given prior to the initiation of the functional testing program, that sample plan implemented in the most recent refueling outage shall be implemented.

- 1) A representative sample of 10% of all snubbers listed in tables 3.7-4a and 3.7-4b shall be functionally tested either in-place or in a bench test.

For the first sample tested, a sample which is representative of the snubber designs and installations shall be selected. For each snubber failing the functional test acceptance criteria, an additional sample lot of 1/2 the size of the initial lot, within the group represented by the failed snubber, shall be tested. Testing shall continue within the representative group until no failures are found in subsequent sample lots or all units in the representative groups have been tested.

At subsequent testing intervals, each representative sample shall consist of previously untested snubbers.

- 2) A representative sample of at least 37 snubbers listed in Tables 3.7-4a and 3.7-4b shall be functionally tested. Additional testing shall be in accordance with Figure 4.7-1 which includes acceptance and rejection criteria. "C" is the cumulative total number of snubbers found not meeting the functional test acceptance criteria. The cumulative number of snubbers tested is denoted by "N". At the end of each testing day, the new values of "N" and "C" (previous day's total plus current day's increments) shall be plotted on the Figure 4.7-1. If at any time the point plotted falls in the "Reject" region, all snubbers of that group shall be functionally tested. If at any time the point plotted falls in the "Accept" region, testing of that group of snubbers may be terminated. When the point plotted falls in the "Continue Testing" region, additional snubbers shall be tested until the point falls in the "Accept" region or the "Reject" region, or all the snubbers of that group have been tested.
- 3) A representative sample of 55 snubbers listed in Tables 3.7-4a and 3.7-4b shall be functionally tested. For each snubber failing the functional test acceptance criteria another sample

e. Functional Tests (Continued)

of at least 1/2 the initial lot shall be tested until the total number tested is equal to the initial sample size multiplied by the factor, " $1 \pm C/2$ " where "C" is the number of snubbers found failing the functional test acceptance criteria. Another sample of at least 1/2 of the initial test lot shall be tested for each subsequent snubber determined to fail the functional test acceptance criteria.

In addition to the regular sample, snubbers which failed the previous functional test shall be retested during the next test period. 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. Test results of these snubbers may not be included for the resampling.

For the purpose of functional testing, the hydraulic and mechanical snubbers will be considered as independent groups with sampling and testing criteria applied accordingly.

If it is determined by an engineering analysis that a series of unit failures is unique to a certain group or model, then the sample quantities need not exceed the total number of snubbers in that group.

Snubbers identified in Tables 3.7-4a and 3.7-4b as "Especially Difficult To Remove" or in "High Radiation Zones During Shutdown" shall be included in the representative sample.

Inservice operability testing may be accomplished with the snubber installed in its permanent location by utilizing owner-approved test methods and equipment.

If it is extremely difficult to utilize the conventional test methods, due to the physical size of the snubber or inaccessibility of location, the snubber subcompartments shall be examined and tested in accordance with approved procedures. Reassembly of individual components must be in accordance with approved procedures.

The snubbers of parallel and multiple installation locations shall be identified and counted individually.

Snubbers shall not receive prior maintenance specifically for the purpose of meeting an operability test requirement.



f. 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,
- 2) Snubber bleed rate for hydraulic snubbers 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 not great enough to overstress the attached piping or component during thermal movement, or to indicate impending failure of the snubber, and
- 4) 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.

g. Service Life Monitoring Program

The service life of a snubber is evaluated via manufacturer input and information through consideration of the snubber service conditions and associated installation and maintenance records (newly installed snubber, seal replaced, spring replaced, in high radiation area, in high temperature area, etc...). The requirement to monitor the snubber service life is included in Station Procedures 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.

The seal service life of hydraulic snubbers shall be monitored to ensure that the seals do not fail between surveillance examinations. The maximum expected service life for the various seals, seal materials, and applications shall be estimated based on engineering information, and the seals shall be replaced so that the maximum expected service life does not expire during a period when the snubber is required to be OPERABLE. The seal replacements shall be documented and the documentation shall be retained in accordance with Specification 6.10.2.

Mechanical snubber drag force increases greater than 50% of previously measured values shall be evaluated as an indication of impending failure of the snubber. These evaluations, and any associated corrective action such as repair or replacement of the snubbers, shall be documented, and the documentation shall be retained in accordance with Station Procedures.

## PLANT SYSTEMS

### SURVEILLANCE REQUIREMENTS (Continued)

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#### h. Functional Testing of Repaired and Replaced Snubbers

Snubbers which fail the visual inspection or the functional test acceptance criteria shall be repaired or replaced. Replacement snubbers and snubbers which have repairs which might affect the functional test result 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 must have been performed within 12 months before being installed in the unit.

TABLE 3.7-4~~b~~<sup>a</sup>

SAFETY-RELATED HYDRAULIC SNUBBERS\*

(MANUFACTURER)

SYSTEM

Small  
( ) ( )

SIZE (KIPS)  
Medium  
( ) ( )

Large  
( ) ( )

Subtotal-1

Subtotal-2

TOTAL

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\* Snubbers may be added to safety-related systems without prior License Amendment to Table 3.7-4b provided that a revision to Table 3.7-4b is included with the next License Amendment request.

4  
Table 3.7-~~3~~b

SAFETY-RELATED MECHANICAL SNUBBERS\*

| <u>SYSTEM</u> | (MANUFACTURER) |     |                              |     |       |     |
|---------------|----------------|-----|------------------------------|-----|-------|-----|
|               | Small          |     | <u>SIZE (KIPS)</u><br>Medium |     | Large |     |
|               | ( )            | ( ) | ( )                          | ( ) | ( )   | ( ) |

Subtotal-1

Subtotal-2

TOTAL

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\* Snubbers may be added to safety-related systems without prior License Amendment to Table 3.7-4b provided that a revision to Table 3.7-4b is included with the next License Amendment request.



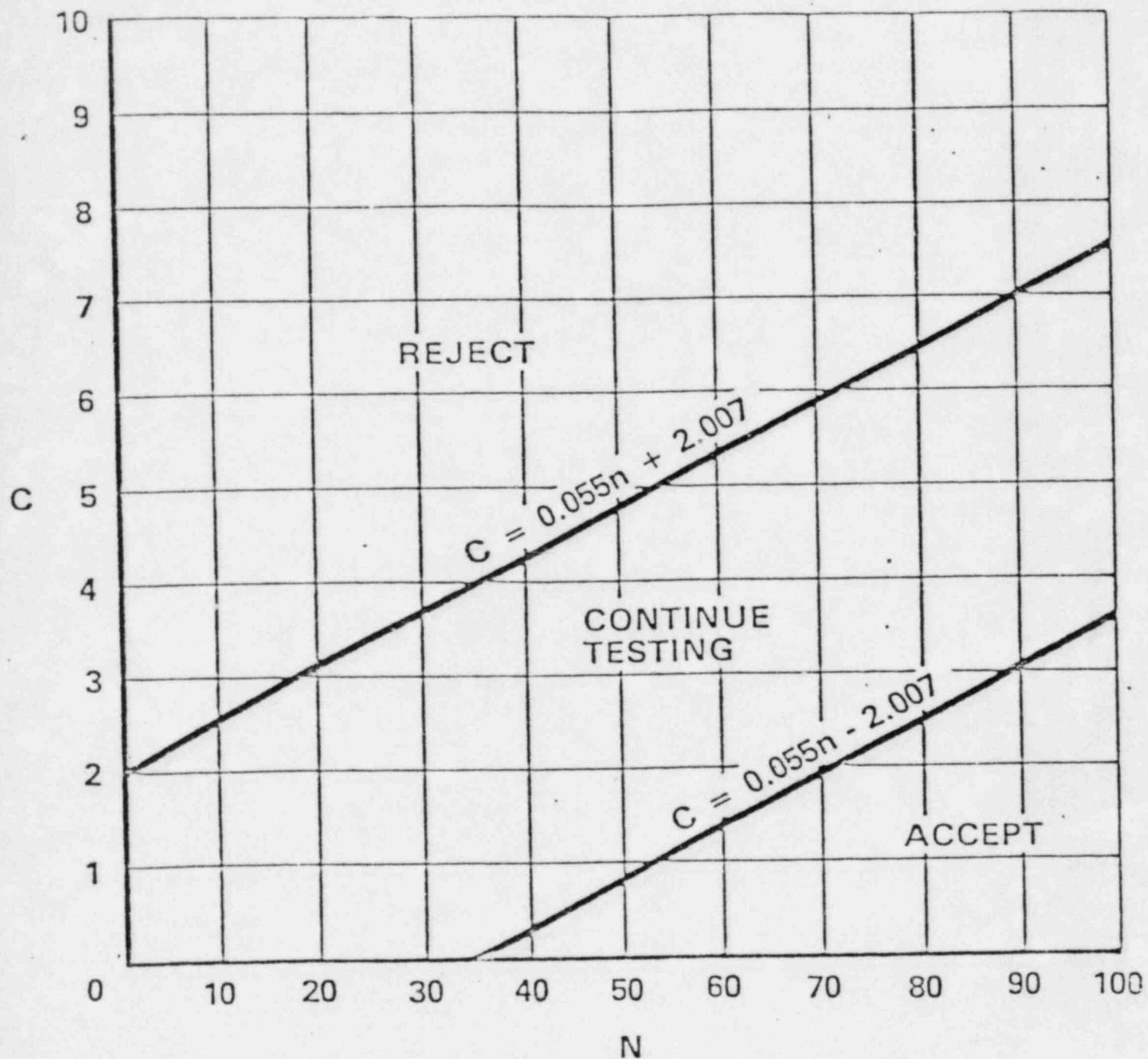


FIGURE 4.7-1  
SAMPLE PLAN 2) FOR SNUBBER FUNCTIONAL TEST