PLANT SYSTEMS

3/4.7.4 SNUBBERS

LIMITING CONDITION FOR OPERATION

3.7.4 All snubbers summarized in Table 3.7.4-1 shall be OPERABLE.

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

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 4.7.4.c on the supported component or declare the supported system inoperable and follow the appropriate ACTION statement for that system.

SURVEILLANCE REQUIREMENTS

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

a. Visual Examinations

The first inservice visual examination of snubbers shall be performed during the first refueling outage and shall include all snubbers listed in Table 3.7.4-1. Subsequent visual examinations shall be performed in accordance with the following schedule:

Number of Unexplained Inoperable Snubbers per Examination Period	Subsequent Visual Examination Period*#
0	18 months ± 25%
1	12 months ± 25%
2	6 months ± 25%
3,4	124 days ± 25%
5,6,7	62 days ± 25%
8 or more	31 days ± 25%

The snubbers may be categorized into two major groups: those accessible and those inaccessible during reactor operation. Subgroups may be established based on snubber physical characteristics, service application, or environmental conditions. Each group or subgroup may be examined independently. Snubbers accessible during reactor operation shall be examined in accordance with the above schedule. Examination of snubbers inaccessible during reactor operation shall occur during each reactor shutdown greater than 48 hours unless examinations were previously performed in accordance with the above schedule.

*The inspection interval shall not be lengthened more than one step at a time.
#The provisions of Specification 4.0.2 are not applicable.

b. Visual Examination Acceptance Criteria

Visual examinations shall verify (1) that there are no visible indications of damage or impaired OPERABILITY, (2) that attachments to the foundation or supporting structure are secure, and (3) in those locations where snubber movement can be manually induced without disconnecting the snubber, that the snubber has freedom of movement and is not frozen up. Snubbers which appear inoperable as a result of these visual examinations may be determined OPERABLE for the purpose of establishing the next visual examination interval, providing that (1) the cause of the rejection is clearly established and remedied for that particular snubber and for other snubbers that may be generically susceptible, and (2) the affected snubber is functionally tested in the as found condition and determined OPERABLE per Surveillance Requirement 4.6.4.d.

c. Functional Tests

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.

The NRC Regional Administrator shall be notified in writing of the option 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 option implemented in the most recent refueling outage shall be implemented.

SAMPLE PLAN (OPTIONS)

OPTION #1

During the first refueling outage and at least once per 18 months thereafter during shutdown, a representative sample of at least that number of snubbers which follows the expression $35\ (1 + \frac{c}{2})$, where c = 3, the allowable number of snubbers not meeting the acceptance criteria, shall be functionally tested either in-place or in a bench test. For each number of snubbers above c which does not meet the functional test acceptance criteria of Specification 4.7.4.d, an additional sample selected according to the expression: $35\ (1 + \frac{c}{2})\ (\frac{2}{c + 1})^2\ (a - c)$ shall be functionally tested, where a is the total number of snubbers found inoperable during the functional testing of the representative sample.

Functional testing shall continue according to the expression $b\ [35\ (1 + \frac{c}{2})\ (\frac{2}{c + 1})^2]$ where b is the number of snubbers found inoperable in the previous re-sample, until no additional inoperable snubbers are found within a sample or until all snubbers in Table 3.7.4-1 have been functionally tested.

OPTION #2

During each refueling outage, a representative sample of at least 37 snubbers listed in Table 3.7.4-1 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" shall be plotted on 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 shall 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.

OPTION #3

During each refueling outage, a representative sample of 55 snubbers listed in Table 3.7.4-1 shall be functionally tested. For each snubber failing the functional test acceptance criteria another sample 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 + 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 re-sampling.

If any snubber selected for functional testing either fails to lockup or fails to move, i.e., frozen in place, the cause will be evaluated and if caused by manufacturer or design deficiency all snubbers of the same 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 any snubber(s) found inoperable, an engineering evaluation shall be performed on the components which are supported by the snubber(s). The purpose of this engineering evaluation shall be to determine if the components supported by the snubber(s) were adversely affected by the inoperability of snubber(s) in order to ensure that the supported component remains capable of meeting the designed service.

d. Mechanical Snubbers Functional Test Acceptance Criteria

The mechanical snubber functional test shall verify that:

1. When tested at ≥ 10% of rated snubber load, the force that initiates free movement of the snubber rod in either tension or compression is less than the specified maximum drag force. Additionally, mechanical snubber drag force greater than 150% of the previously measured value shall be noted in the test record as an indication of impending failure. Impending failure shall not be counted as failed snubbers. Corrective action shall be documented per paragraph 4.7.4.e.

2. Activation (restraining action) is achieved within the specified range of velocity or acceleration in both tension and compression.

3. Snubber release rate, where required, is within the specified range in compression or tension. For snubbers specifically required not to displace under continuous load, the ability of the snubber to withstand load without displacement shall be verified.

4. Testing methods which measure parameters indirectly or measure parameters other than those specified may be used provided, (1) the results can be correlated to the specified parameters through established methods and, (2) that activation testing is performed at ≥ 10% of the rated snubber capacity.

e. Snubber Service Records

A record of the service life of each snubber, the date at which the designated service life commences and the installation and maintenance records on which the designated service life is based shall be maintained as required by Specification 6.10.2.

f. Exemption From Visual Examination or Functional Tests

Permanent or other exemptions from surveillance requirements for individual snubbers may be granted by the Commission if a justifiable basis for exemption is presented. Exempt snubbers shall be indicated in Table 3.7.4-1.

3/4.7.4 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. 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.

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 inservice functional testing, that snubber may be exempted from being counted as inoperable. Generically susceptible snubbers are those snubbers 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 adversly 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 further assurance of snubber reliability, a representative sample of the installed snubbers will be functionally tested during plant shutdowns at 18 month intervals. Failures of these sample snubbers may require functional testing of additional units.

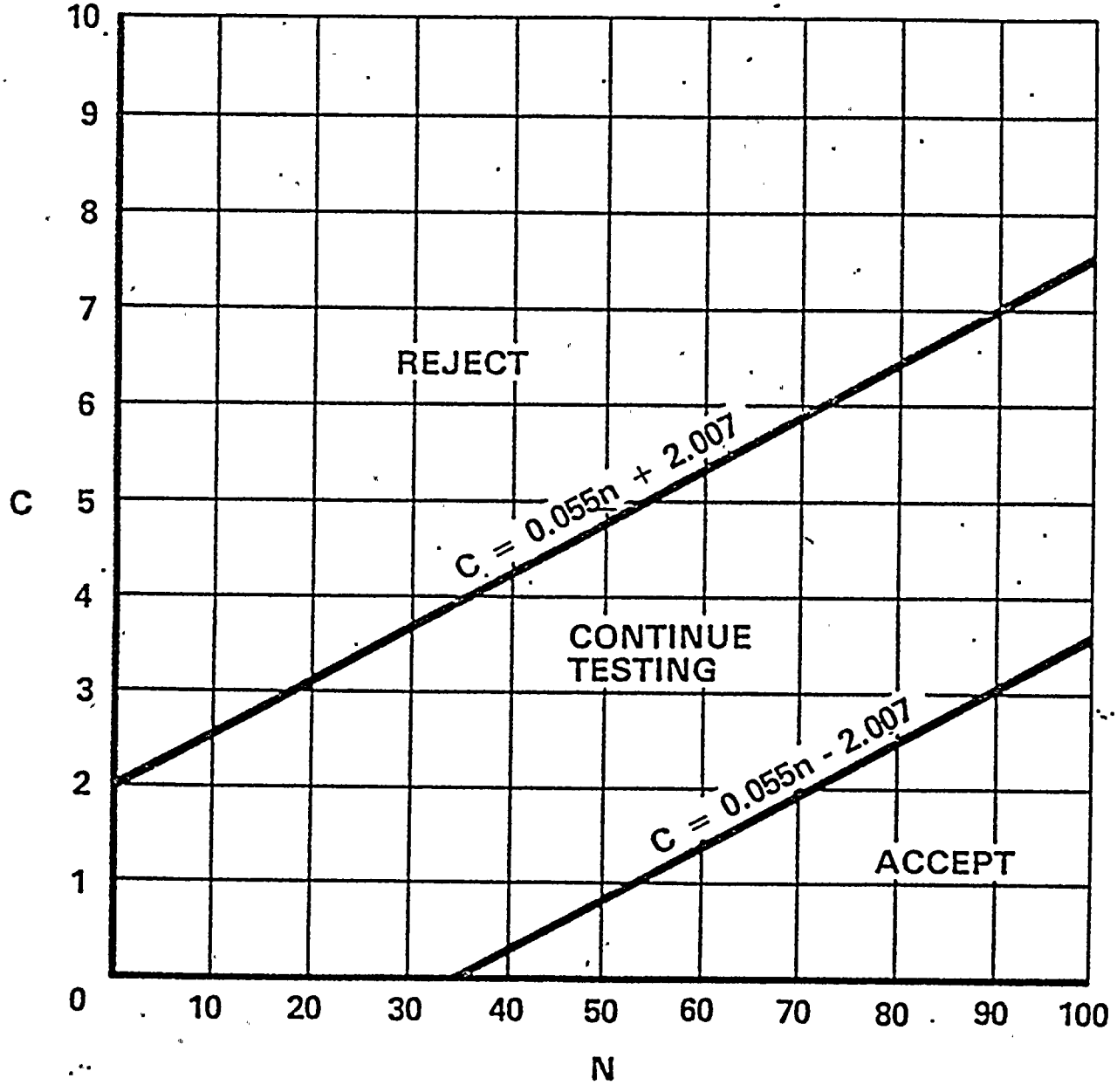

FIGURE 4.7-1
SAMPLE PLAN 2) FOR SNUBBER FUNCTIONAL TEST

TABLE 3.7.4-1

All WNP-2 safety related mechanical snubbers are manufactured by Pacific Scientific (PSA).

Safety Related Mechanical Snubbers* +

System Snubbers Installed On	Snubber Size	Number of Snubbers
AS	½	1
	1	1
COND	1	2
DE	¼	3
	½	1
	1	10
	3	7
FPC	½	2
	1	3
	3	1
HPCS	3	8
	10	6
HY	¼	4
LPCS	3	4
	10	3
MS	¼	24
	½	15
	1	7
	3	7
	35	30
	100	8
MSLC	¼	1
	½	3
	1	1
MSRV	3	2
	10	129
	35	2
RCC	¼	23
	½	13
	1	12
	3	4
RCIC	¼	2
	½	5
	1	19
	3	28
	10	5
RFW	1	2
	10	26
	35	3
	100	2
RHR	¼	14
	½	16
	1	44
	3	108
	10	51
	35	18
	100	1
RRC	¼	12
	½	5
	1	11
	35	35
	100	8
RWCU	¼	18
	½	20
	1	11
	3	14
	10	1
	100	2
SGT	3	2
	10	2
SLC	¼	5
	½	5
	1	3
SW	3	1
	10	8
	35	2
VR	½	5
	1	2
TOTAL		853

*Snubbers may be added to safety related systems without prior License amendment to Table 3.7.4-1 provided that a revision to Table 3.7.4-1 is included with the next License Amendment Request.

+This Table presents a summary of plant safety related snubbers. These snubbers are specifically identified in the WNP-2 Inservice Inspection Program component support listing which contains snubber

COMPONENT SUPPORT INSPECTION AND TEST PROGRAM PLAN

FOR THE

SUPPLY SYSTEM NUCLEAR PROJECT NO. 2