H. Hydraulic Snubbers

1. During all modes of operation, except Cold Shutdown and Refueling Shutdown, all hydraulic snubbers listed in Table 3.6.1 shall be operable except as noted in 3.6.H.2 through 3.6.H.4 below.

2. From and after the time that a hydraulic snubber is determined to be inoperable, continued reactor operation is permissible only during the succeeding 72 hours unless the snubber is sooner made operable.

3. If the requirements of 3.6.H.1 and 3.6.H.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 36 hours.

4. If a hydraulic snubber listed in Table 3.6.1 is determined to be inoperable while the reactor is in the shutdown or refueling mode, the snubber shall be made operable prior to reactor startup.

3. The diffuser to lower plenum differential pressure reading on an individual jet pump is 10% or more, less than the mean of all jet pump differential pressures.

H. Hydraulic Snubbers

The following surveillance requirements apply to all hydraulic snubbers listed in Table 3.6.1:

1. All hydraulic snubbers whose seal material has been demonstrated by operating experience, lab testing or analysis to be compatible with the operating environment shall be visually inspected to verify their operability in accordance with the following schedule:

Number of Snubbers Found Inoperable During Inspection or During Inspection Interval	Next Required Inspection Interval
0	18 months ± 25%
1	12 months ± 25%
2	6 months ± 25%
3,4	124 days ± 25%
5,6,7	62 days ± 25%
≥ 8	31 days ± 25%

The required inspection interval shall not be lengthened more than one step at a time.

3.0 LIMITING CONDITIONS FOR OPERATION	4.0 SURVEILLANCE REQUIREMENTS
5. Snubbers may be added to, or removed from, safety related systems without prior License Amendment to Table 3.6.1 provided that safety evaluations, documentation and reporting are provided in accordance with 10CFR 50.59 and that a revision to Table 3.6.1 is included with a subsequent License Amendment request.	Snubbers may be categorized in two groups, "accessible" or "inaccessible" based on their accessibility for inspection during reactor operation. These two groups may be inspected independently according to the above schedule. 2. All hydraulic snubbers whose seal materials have not been demonstrated to be compatible with the operating environment shall be visually inspected for operability every 31 days. 3. The initial inspection shall be performed within 6 months from the date of issuance of these specifications. For the purpose of entering the schedule in Specification 4.6.H.1 it shall be assumed that the facility had been on a 12-month inspection interval. 4. Once each refueling cycle, a representative sample of 10 snubbers or approximately 10% of the snubbers, whichever is less, shall be functionally tested for operability including verification of proper piston movement, lock up and bleed. For each unit and subsequent unit found inoperable, an additional 10% or ten snubbers shall be so tested until no more failures are found or all units have been tested. 5. Once each refueling cycle at least two representative snubbers from a relatively severe environment shall be completely disassembled and examined for damage and abnormal seal degradation.

TABLE 3.6.1 (Page 1 of 4)

Safety Related Hydraulic Snubbers

Snubber No.	Location - System - Elevation			Accessible or Inaccessible (A or I)
SS-1	Drywell - Main Steam	953'	Az 279°	I
SS-2	Drywell - Main Steam	953'	Az 81°	I
SS-3	Drywell - Main Steam	950'	Az 212°	I
SS-4	Drywell - Main Steam	950'	Az 148°	I
SS-7	Drywell - Main Steam	953'	Az 240°	I
SS-8	Drywell - Main Steam	953'	Az 120°	I
SS-11	Drywell - Feedwater	952'	Az 302°	I
SS-12	Drywell - Feedwater	952'	Az 58°	I
SS-13	Drywell - Feedwater	952'	Az 258°	I
SS-14	Drywell - Feedwater	952'	Az 96°	I
SS-17A	Drywell - RHR	964'	Az 72°	I
SS-17B	Drywell - RHR	964'	Az 72°	I
SS-18A	Drywell - RHR	964'	Az 288°	I
SS-18B	Drywell - RHR	964'	Az 288°	I
SS-19	Drywell - RHR	964'	Az 341°	I
SS-20	Drywell - RHR	964'	Az 19°	I
SS-1AR	Drywell - Recirculation	922'	Az 315°	I
SS-1BR	Drywell - Recirculation	922'	Az 135°	I
SS-2AR	Drywell - Recirculation	927'	Az 302°	I
SS-2BR	Drywell - Recirculation	927'	Az 122°	I
SS-3AR	Drywell - Recirculation	927'	Az 328°	I
SS-3BR	Drywell - Recirculation	927'	Az 148°	I
SS-4AR(a)	Drywell - Recirculation	934'	Az 302°	I
SS-4AR(b)	Drywell - Recirculation	934'	Az 323°	I
SS-4BR(a)	Drywell - Recirculation	934'	Az 120°	I
SS-4BR(b)	Drywell - Recirculation	934'	Az 149°	I
SS-5AR	Drywell - Recirculation	941'	Az 315°	I
SS-5BR	Drywell - Recirculation	941'	Az 135°	I
SS-6AR	Drywell - Recirculation	953'	Az 261°	I
SS-6BR	Drywell - Recirculation	953'	Az 99°	I

TABLE 3.6.1 (Page 2 of 4)

Safety Related Hydraulic Snubbers

Snubber No.	Location - System - Elevation			Accessible or Inaccessible (A or I)
SS-7AR	Drywell - Recirculation	953'	Az 323°	I
SS-7BR	Drywell - Recirculation	953'	Az 32°	I
SS-8AR	Drywell - Recirculation	927'	Az 270°	I
SS-8BR	Drywell - Recirculation	927'	Az 90°	I
PS1-H2	Drywell - Main Steam	953'	Az 71°	I
PS1-H3	Drywell - Main Steam	950'	Az 148°	I
PS2-H2	Drywell - Main Steam	950'	Az 120°	I
PS3-H2	Drywell - Main Steam	950'	Az 240°	I
PS4-H2	Drywell - Main Steam	950'	Az 212°	I
RV24-H3	Drywell - Safety Relief	950'	Az 110°	I
RV24-H4	Drywell - Safety Relief	935'	Az 100°	I
RV24-H4A	Drywell - Safety Relief	935'	Az 100°	I
RV24-H5	Drywell - Safety Relief	935'	Az 110°	I
RV24A-H4A	Drywell - Safety Relief	947'	Az 48°	I
RV24A-H7	Drywell - Safety Relief	953'	Az 115°	I
RV24A-H8	Drywell - Safety Relief	939'	Az 32°	I
RV25-H1	Drywell - Safety Relief	953'	Az 180°	I
RV25-H1A	Drywell - Safety Relief	953'	Az 180°	I
RV25-H2	Drywell - Safety Relief	948'	Az 190°	I
RV25-H2A	Drywell - Safety Relief	948'	Az 190°	I
RV25-H3	Drywell - Safety Relief	934'	Az 180°	I
RV25A-H2	Drywell - Safety Relief	945'	Az 120°	I
RV25A-H2A	Drywell - Safety Relief	945'	Az 120°	I
RV25A-H7	Drywell - Safety Relief	953'	Az 135°	I
RV26-H1	Drywell - Safety Relief	953'	Az 200°	I
RV26-H1A	Drywell - Safety Relief	953'	Az 200°	I
RV26-H2	Drywell - Safety Relief	947'	Az 200°	I
RV26-H2A	Drywell - Safety Relief	947'	Az 200°	I
RV26A-H2	Drywell - Safety Relief	940'	Az 250°	I
RV26A-H2A	Drywell - Safety Relief	935'	Az 250°	I

TABLE 3.6.1 (Page 3 of 4)

Safety Related Hydraulic Snubbers

Snubber No.	Location - System - Elevation		Accessible or Inaccessible (A or I)
RV27-H1	Drywell - Safety Relief	950' Az 320°	I
RV27-H1A	Drywell - Safety Relief	950' Az 230°	I
RV27-H5	Drywell - Safety Relief	945' Az 270°	I
RV27-H6	Drywell - Safety Relief	945' Az 270°	I
RV27A-H2A	Drywell - Safety Relief	953' Az 290°	I
RV27A-H3	Drywell - Safety Relief	953' Az 290°	I
RV27A-H9	Drywell - Safety Relief	938' Az 290°	I
SS-21	Torus Floor Level - RHR	South Wall	A
SS-22	Torus Floor Level - RHR	South Wall	A
SS-23	"B" RHR Room - RHR	Floor Level	A
SS-24	"A" RHR Room - RHR	Floor Level	A
SS-25	RHR Discharge - RHR	Southeast wall just below torus catwalk	A
SS-26	"B" RHR Room - Core Spray	Floor Level	A
SS-27	"B" RHR Room - Core Spray	Floor Level	A
SS-28A	"A" RHR Room - Core Spray	Floor Level	A
SS-28B	"A" RHR Room - Core Spray	Floor Level	A
SS-29	Overhead, by N_2 Analyzer - RHR	954'	A
SS-30	Overhead, by N_2 Analyzer - RHR	954'	A
SS-31	Torus catwalk - RHR Discharge	---	A
SS-32A	"A" RHR Room; Behind Heat Exchanger - RHR	916'	A
SS-32B	"A" RHR Room; Behind Heat Exchanger - RHR	916'	A
SS-33	Above Torus on side sloping towards Drywell - RHR Discharge	---	A
SS-34	Above Torus on side sloping towards Drywell - RHR Discharge	---	A
SS-35	HPCI Room - HPCI Pump Discharge	On North Wall, 912'	A
SS-36A	HPCI Room - HPCI Turbine Exhaust	Floor Level	A
SS-36B	HPCI Room - HPCI Turbine Exhaust	Floor Level	A

TABLE 3.6.1 (Page 4 of 4)

Safety Related Hydraulic Snubbers

Snubber No.	Location - System - Elevation		Accessible or Inaccessible (A or I)
SS-37	HPCI Room - HPCI Turbine Exhaust	West Wall, 905'	A
SS-38A	RCIC Room - RCIC Turbine Exhaust	West Wall, 906'	A
SS-38B	RCIC Room - RCIC Turbine Exhaust	West Wall, 906'	A
SS-40	Main Steam Chase - HPCI Steam supply	---	I
SS-41	Above Torus Catwalk - Core Spray Discharge	927'	A
SS-42	Above Torus Ring Header - HPCI Steam Exhaust	North West Wall, 906'	A

Bases Continued 3.6 and 4.6:

A nozzle-riser system failure could also generate the coincident failure of a jet pump body; however, the converse is not true. The lack of any substantial stress in the jet pump body makes failure impossible without an initial nozzle-riser system failure.

H. Hydraulic Snubbers

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads as might occur during an earthquake or severe transient, while allowing normal thermal motion during startup and shutdown. The consequence of an inoperable snubber is an increase in the probability of structural damage to piping as a result of a seismic or other event initiating dynamic loads. It is therefore required that all hydraulic snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation.

Because the snubber protection is required only during relatively low probability events, a period of 72 hours is allowed for repairs or replacements. In case a shutdown is required, the allowance of 36 hours to reach a cold shutdown condition will permit an orderly shutdown consistent with standard operating procedures. Since plant startup should not commence with knowingly defective safety related equipment, Specification 3.6.H.4 prohibits startup with inoperable snubbers.

All safety related hydraulic snubbers are visually inspected for overall integrity and operability. The inspection will include verification of proper orientation, adequate hydraulic fluid level and proper attachment of snubber to piping and structures.

The inspection frequency is based upon maintaining a constant level of snubber protection. Thus the required inspection interval varies inversely with the observed snubber failures. The number of inoperable snubbers found during a required inspection determines the time interval for the next required 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.

Experience at operating facilities has shown that the required surveillance program should assure an acceptable level of snubber performance provided that the seal materials are compatible with the operating environment.

Snubbers containing seal material which has not been demonstrated by operating experience, lab tests or analysis to be compatible with the operating environment should be inspected more frequently (every month) until material compatibility is confirmed or an appropriate changeout is completed.

H. Hydraulic Snubbers (contd.)

Examination of defective snubbers at reactor facilities and material tests performed at several laboratories has shown that millable gum polyurethane deteriorates rapidly under the temperature and moisture conditions present in many snubber locations. Although molded polyurethane exhibits greater resistance to these conditions, it also may be unsuitable for application in the higher temperature environments. Data are not currently available to precisely define an upper temperature limit for the molded polyurethane. Lab tests and in-plant experience indicate that seal materials are available, primarily ethylene propylene compounds, which should give satisfactory performance under the most severe conditions expected in reactor installations.

To further increase the assurance of snubber reliability, functional tests should be performed once each refueling cycle. These tests will include stroking of the snubbers to verify proper pistion movement, lock-up and bleed. Ten percent or ten snubbers, whichever is less, represents an adequate sample for such tests. Observed failures on these samples should require testing of additional units. Snubbers in high radiation areas or those especially difficult to remove need not be selected for functional tests provided operability was previously verified. To complement the visual external inspections, disassembly and internal examination for component damage and abnormal seal degradation should be performed. The examination of two units, each refueling cycle, selected from relatively severe environments should adequately serve this purpose. Any observed wear, breakdown or deterioration will provide a basis for additional inspections.

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