LIMITING CONDITION FOR OPERATION	SURVEILLANCE REQUIREMENT

3.6.I Hydraulic Snubbers

1. During all modes of operation except Cold Shutdown and Refuel, all hydraulic snubbers shall be operable except as noted in 3.6.I.2 through 3.6.I.5 below.

2. The hydraulic snubbers listed in Table 3.6.I are not required to protect the primary coolant system or any other safety related system or component and are therefore exempt from these specifications.

3. 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. 11

4. If the requirements of 3.6.I.1 and 3.6.I.3 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 3[illegible] hours.

5. If a hydraulic snubber is determined to be inoperable while the reactor is in the shutdown or refuel mode, the snubber shall be made operable prior to reactor startup.

4.6.I Hydraulic Snubbers

The following surveillance requirement apply to all hydraulic snubbers except those listed in 3.6.I.2.

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.

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.

4.6.I Hydraulic Snubbers (cont'd)

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.I.1, it shall be assumed that the facility had been on a 6 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. 1

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.I

Snubber No.	Location	Elevation
S-1-30-1	Main Steam Line A	24'9"
S-1-30-2	Main Steam Line A	24'9"
S-1-30-3	Main Steam Line B	24'9"
S-1-30-4	Main Steam Line B	24'9"
S-1-30-5	Main Steam Line C	24'9"
S-1-30-6	Main Steam Line C	24'9"
S-1-30-7	Main Steam Line D	24'9"
S-1-30-8	Main Steam Line D	24'9"
S-1-10-9	From Stop Valves	28'6"
S-1-10-10	From Stop Valves	28'6"
S-1-10-11	To Stop Valves	39'
S-1-20-12	To Stop Valve	39'
S-1-10-13	To Stop Valve	39'3"
S-1-3-14	To Stop Valves	24'9"
S-1-3-15	To Stop Valves	39'3"
S-1-10-16	To Stop Valves	24'9"
S-1-3-17	Steam By-Pass	40'3"
S-1-3-18	Steam By-Pass	40'3"
S-1-3-19	Steam By-Pass	38'7"
S-1-10-20	B Train Over 2nd Point	21'
S-1-10-21	B Train Over 2nd Point	21'
S-1-10-22	B Train Over 2nd Point	21'
S-1-10-23	B Train Over 2nd Point	21'
S-1-10-24	B Train Over 2nd Point	21'
S-1-10-25	A Train Over 2nd Point	21'
S-1-10-26	A Train Over 2nd Point	21'
S-1-10-27	A Train Over 2nd Point	21'
S-1-10-28	A Train Over 2nd Point	21'
S-1-10-29	A Train over 1st Point	21'
S-1-3-38	Air Ejectors	34'
S-1-3-39	Air Ejectors	25'
S-1-3-40	Air Ejectors	34'
S-1-3-41	Air Ejectors	34'
S-1-3-42	Air Ejectors	35'

ARKANSAS NUCLEAR ONE

DOCKET NO. 50-313

SUPPLEMENT NO. 18 - REACTOR BUILDING RING GIRDER DESIGN

REQUESTS FOR ADDITIONAL INFORMATION

1. Loadings under the following conditions, appropriately combined with the Operating Basis Earthquake (OBE), Design Basis Earthquake (DBE) and tornado loadings, are generally considered in the design of reactor buildings:

   (a) Conditions immediately after tendon prestressing (steady-state)

   (b) Startup conditions (transient state)

   (c) Normal operating conditions during a standard winter and during a standard summer day (steady-state)

   (d) Shutdown conditions (transient state)

   (e) LOCA conditions (transient state)

   (f) Post-LOCA conditions (transient state)

   Creep and shrinkage are included as appropriate to the loading conditions. Have all these loading conditions been considered in the design of the ring girder? Provide justification for any of the conditions omitted by demonstrating that the expected maximum stresses or strains in the concrete, the reinforcing steel and the prestressing tendons, under each of the omitted conditions would not influence the design. For thermal, shrinkage, and creep transients, the influence of variations in the thickness of the structure should be considered.

2. It is stated on page 5-F-14 of Supplement No. 18 that the stress analysis for mechanical loads was made with the use of a finite element computer program for uncracked concrete and that concrete and reinforcement stresses were calculated by "conventional" methods from the moment caused by the loading.

   The meaning of "conventional" is not clear. For complete understanding the following information should be provided:

BASES:

3.6.I and 4.6.I

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.I.5 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. 1

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 compatability is confirmed or an appropriate changeout is completed.

Examination of defective snubbers at reactor facilities and material tests performed at several laboratories (Reference 1) 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

BASES:

3.6.I and 4.6.I

Hydraulic Snubbers (cont'd)

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 piston 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. 11

(1) Report H. R. Erickson, Bergen Paterson to K. R. Goller, NRC, October 7, 1974
Subject: Hydraulic Shock Sway Arrestors