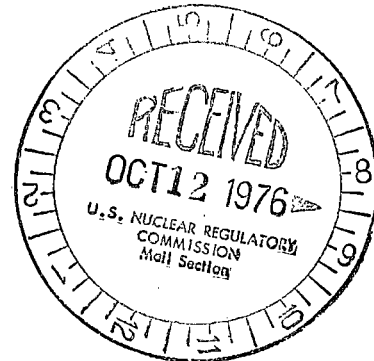




**Consumers  
Power  
Company**

General Offices: 212 West Michigan Avenue, Jackson, Michigan 49201 • Area Code 517 788-0550

October 8, 1976



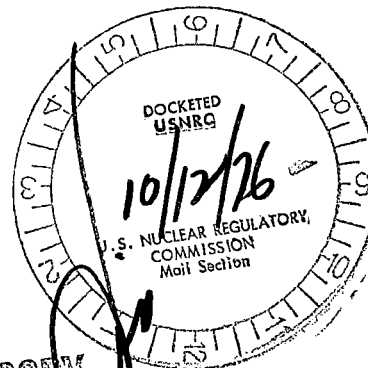
Director of Nuclear Reactor Regulation  
Att: Mr Albert Schwencer, Chief  
Operating Reactor Branch No 1  
US Nuclear Regulatory Commission  
Washington, DC 20555

DOCKET 50-255 - LICENSE DPR-20 -  
PALISADES PLANT - TECHNICAL SPECIFICATIONS  
CHANGE - HYDRAULIC SHOCK SUPPRESSORS

Attached is a revised proposed change to the Palisades Technical Specifications concerning operability and surveillance requirements for hydraulic shock suppressors. This change revises the previously proposed changes submitted by letter dated October 7, 1975 and is based on discussion with members of your staff and a revised "Model Technical Specifications" received in May 1976.

David A. Bixel  
Assistant Nuclear Licensing Administrator

CC: JGKeppler, USNRC



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CONSUMERS POWER COMPANY

Docket No 50-255

Request for Change to the Technical Specifications

License No DPR-20

For the reason herein set forth, it is requested that the Technical Specifications contained in Provisional Operating License DPR-20, Docket 50-255, issued to Consumers Power Company on October 16, 1972, be changed as described below:

I. Changes

A. Add new Section 3.20 as follows:

"3.20 Hydraulic Snubbers

Applicability

Applies to the operating status of the safety-related piping hydraulic snubbers.

Objective

To minimize the possibility of unrestrained pipe motion as might occur during an earthquake or severe transient.

Specifications

3.20.1 During all modes of operation, except cold shutdown and refueling, all hydraulic snubbers listed in Table 3.18.1 shall be operable except as noted in 'a' through 'd' below.

- a. 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 made operable prior to the end of the 72-hour period.
- b. If the inoperable hydraulic snubber cannot be made operable within the required 72 hours, an orderly shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 36 hours.
- c. If a hydraulic snubber is determined to be inoperable while the reactor is in either the cold shutdown or refueling mode, the snubber shall be made operable prior to the reactor being made critical.

TABLE 3.20.1  
Safety-Related Hydraulic Snubbers

Palisades ID Number	System	Location	Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
1	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
2	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
3	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
4	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
5	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
6	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
8	MSS	On Main Steam Lines - EBl Upstream of MSIVs				x
9	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
10	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
11	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
12	MSS	On Main Steam Lines - EBl Upstream of MSIVs				X
15	MSS	EB-1-8" Upstream of CV-0781				X
16	MSS	EB-1-8" Upstream of CV-0781				X
17	MSS	EB-1-8" Upstream of CV-0780				X
18	MSS	EB-1-8" Upstream of CV-0780				X
19	MSS	EBD-6, E-50A, 36" Steam to Aux FW Turbine				X
20	MSS	EBD-6, E-50A, 36" Steam to Aux FW Turbine				X
21	CCS	Component Cooling Outside Cont				X
22	CCS	From Component Cooling Water System to Evaporators				X
23	CCS	Evaporators to Component Cooling Water Sys				X
24	CCS	Evaporators to Component Cooling Water Sys				X
25	CCS	Component Cooling Water Outside Cont - Pump Discharge				X
26	CCS	Component Cooling Water Outside Cont - Pump Discharge				X
27	CCS	Component Cooling Water Outside Cont - Pump Discharge				X
28	CCS	Component Cooling Water Outside Cont - Pump Discharge				X

Palisades ID Number	System	Location	Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
29	CVC	Primary Coolant Pump Leakoff to Volume Control Tank - 602' Pipeway	X			X
30	CVC	Letdown to Volume Control Tank - 602' Pipeway	X			X
31	ESS	GC-8 Shutdown Cooling Lower Pressure Safety Injection Pump Suction				X
32	ESS	HC-3 Engineering Safeguards Pump Suction				X
33	ESS	GC-8 Shutdown Cooling LPSI Pump Suction				X
34	ESS	HC-3 Engineering Safeguards Pump Suction				X
35	ESS	GC-1 LPSI Pump Discharge				X
36	ESS	GC-1 LPSI Pump Discharge				X
37	ESS	GC-1 LPSI Pump Discharge				X
38	ESS	GC-1 LPSI Pump Discharge				X
39	ESS	GC-8 Shutdown Cooling LPSI Pump Suction				X
40	ESS	GC-8 Shutdown Cooling LPSI Pump Suction				X
41	ESS	GC-8 Shutdown Cooling LPSI Pump Suction				X
42	ESS	GC-1 LPSI Pump Discharge				X
43	ESS	HC-3 Engineering Safeguards Pump Suction				X
44	ESS	GC-1 LPSI Pump Discharge (After CV-3025 SDHX to LPSI Valves)				X X
45	ESS	HC-3 Engineering Safeguards Pump Suction				
46	MSS	Steam Generator A, Restraint 1-SS-1	X	X	X	
47	MSS	Steam Generator A, Restraint 1-SS-2	X	X	X	
48	MSS	Steam Generator A, Restraint 1-SS-3	X	X	X	
49	MSS	Steam Generator A, Restraint 1-SS-4	X	X	X	
50	MSS	Steam Generator A, Restraint 1-SS-5	X	X	X	
51	MSS	Steam Generator A, Restraint 1-SS-6	X	X	X	
52	MSS	Steam Generator A, Restraint 1-SS-7	X	X	X	
53	MSS	Steam Generator A, Restraint 1-SS-8	X	X	X	
54	MSS	Steam Generator B, Restraint 2-SS-1	X	X	X	
55	MSS	Steam Generator B, Restraint 2-SS-2	X	X	X	
56	MSS	Steam Generator B, Restraint 2-SS-3	X	X	X	
57	MSS	Steam Generator B, Restraint 2-SS-4	X	X	X	
58	MSS	Steam Generator B, Restraint 2-SS-5	X	X	X	

Palisades ID Number	System	Location	Snubber in High Radiation Area During Shutdown	Snubbers Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
59	MSS	Steam Generator B, Restraint 2-SS-6	X	X	X	
60	MSS	Steam Generator B, Restraint 2-SS-7	X	X	X	
61	MSS	Steam Generator B, Restraint 2-SS-8	X	X	X	
62	SIS	On Low-Pressure Safety Injection Line Inside Cont Before Motor-Operated Valves			X	
63	SIS	Low-Pressure Safety Injection to T-82C			X	
64	SIS	Low-Pressure Safety Injection to T-82C			X	
65	MSS	On EBD-7 Steam to Aux Feed Pump				X

"d. Snubbers may be added to safety-related systems without prior license amendment to Table 3.20.1 provided that safety evaluations, documentation and reporting are provided in accordance with 10 CFR 50.59 and then a revision to Table 3.20.1 is included with a subsequent License Amendment Request."

B. Add new Section 4.16 as follows:

"4.16 Inservice Inspection Program for Hydraulic Snubbers  
Applicability

Applies to periodic surveillance of safety-related hydraulic snubbers as listed in Table 3.20.1.

Objective

To specify the frequency and type of surveillance to be applied to the hydraulic snubbers.

Specifications

4.16.1 All hydraulic snubbers listed in Table 3.20.1 shall be visually inspected. This inspection shall include inspection of the hydraulic fluid reservoir, fluid connections, and linkage connections to the piping and anchor to verify snubber 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 $\pm$ 25%
1	12 Months $\pm$ 25%
2	6 Months $\pm$ 25%
3, 4	124 Days $\pm$ 25%
5, 6, 7	62 Days $\pm$ 25%
$\geq 8$	31 Days $\pm$ 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.

"4.16.2 The initial inspection, if not already completed, shall be performed within 6 months from the date of issuance of these specifications. For the purpose of entering the schedule in Specification 4.16.1, it shall be assumed that the facility had been on a 6-month inspection interval.

4.16.3 Once each refueling cycle a representative sample of at least 10% of the snubbers listed in Table 3.20.1 shall be functionally tested for operability including verification of proper piston movement, lockup and bleed. For each snubber found inoperable, an additional sample of 10% shall be tested until no more failures are found or all units have been tested. Snubbers of rated capacity greater than 50,000 pounds need not be directionally tested.

#### Basis

Snubbers are designed to prevent unrestrained pipe motion under dynamic loads (as might occur during an earthquake or severe transient) but still allow normal thermal motion during start-up 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 start-up should not commence with knowingly defective safety-related equipment, Specification 3.20.1.c prohibits start-up with inoperable snubbers.

All safety-related hydraulic snubbers are visually inspected for overall integrity and operability. The inspection will

"include the fluid reservoir, fluid connections, and any linkage connections to associated piping and anchors.

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.

Examination of defective snubbers at reactor facilities and material tests performed at several laboratories (Reference 1) have 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 define precisely 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 increase further the assurance of snubber reliability, functional tests should be performed once each refueling cycle. Where practical, these tests will include stroking of the snubbers to verify proper piston movement, lockup and bleed. Ten percent 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.

Snubbers of rated capacity greater than 50,000 pounds are exempt from the functional testing requirements because of the impracticability of testing such large units.

The snubbers associated with the steam generators are made by a different manufacturer and they have not experienced significant problems. Since these snubbers are connected into a complex system, certain tests are not considered practical. Because of the size of the steam generator snubbers and their complex system, these snubbers have been classified as especially difficult to remove. Verification of piston motion is considered adequate to demonstrate operability on a refueling cycle frequency.<sup>(1)</sup>

All applicable snubbers located inside the containment are classified as inaccessible during normal operation.

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

C. Add to Table of Contents (Page ii):

"3.20     Hydraulic Snubbers 3-88" (page).

D. Add to Table of Contents (Page iii):

"4.16     Inservice Inspection Program for Hydraulic Snubbers 4-71" (page).

## II. Discussion

This proposed change basically conforms with the "model" Technical Specifications and bases prepared by the NRC staff. Areas where significant differences occur are discussed in the following paragraphs.

We have reviewed the seal materials in use in the hydraulic snubbers and have concluded that either operating experience, lab testing or analysis has demonstrated that the material is compatible with the operating environment. We have, therefore, deleted the 31-day visual inspection requirement associated with seal material not so demonstrated.

The snubbers on the steam generators are made by Grinnell. We have not experienced any problems with these snubbers (design problems with the operating fluid supply and reservoir system have been identified and corrected). One snubber was completely disassembled and inspected in January 1974 with all snubber components found to be in good condition.

The snubbers on each steam generator (eight) are interconnected such that the load for any snubbing action is shared. This arrangement plus the size of the snubber and available testing equipment makes testing of these snubbers for lockup impractical.

All safety-related snubbers located in containment are considered inaccessible during power operation. This is due to radiation, health and general safety conditions associated with their location.

III. Conclusion

Based on the foregoing, the Palisades Plant Review Committee has concluded that this change does not involve an unreviewed safety question.

CONSUMERS POWER COMPANY

By

C R Bilby  
C R Bilby, Vice President  
Production & Transmission

Sworn and subscribed to before me this 7th day of October 1976.

Linda R. Thayer  
Linda R Thayer, Notary Public  
Jackson County, Michigan  
My commission expires July 9, 1979.