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3.12 SHOCK SUPPRESSORS (SNUBBERS)

Applicability

Applies to the operability of snubbers required for protection of safety-related components.

Objective

To define the time during which reactor operation is permitted after detection of inoperable snubbers.

Specification

1. During all modes of operation except cold shutdown and refueling, all snubbers listed in Table 3.12-1 shall be operable except as noted in 3.12.2 through 3.12.4. Operability is defined as the ability of the snubber to perform the restraint function when required.
2. From and after the time that any snubbers are determined to be inoperable, continued reactor operation is permissible only during the succeeding 72 hours unless the snubber is made operable sooner or replaced.
3. If the requirements of 3.12.2 cannot be met, an orderly reactor shutdown shall be initiated and the reactor shall be in a cold shutdown condition within 36 hours.
4. If a snubber is determined to be inoperable while the reactor is in the cold shutdown or refueling mode, the snubber shall be made operable or replaced prior to bringing the reactor above cold shutdown.
5. Snubbers may be added to safety related systems without prior License Amendment to Table 3.12-1 provided that a revision to Table 3.12-1 is included with a subsequent License Amendment request.

Basis

Snubbers are required 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 in the event of dynamic loads. It is therefore required that all 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. Specification 3,12,4 prohibits startup if snubbers are known to be inoperable.

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

<u>Line No.</u>	<u>Snubber No.</u>	<u>Location</u>	<u>Category</u>
1	SR - M4	AFB	3
1	SR - M5A	AFB	4
1	SR - M5B	AFB	4
1	MSR - 2V	VC 97'	3
2	SR - M1	AFB	4
2	SR - M2	AFB	3
2	SR - M3A	AFB	4
2	SR - M3B	AFB	4
2	SR - M27	AFB	4
2	SR - M50	AFB	4
2	SR - M51	AFB	3
2	SR - M52	AFB	4
3	SR - M7	AFB	3
3	SR - M8A	AFB	4
3	SR - M8B	AFB	4
3	SR - M53	AFB	4
3	MSR - 1V	VC 96'	3
4	SR - M9	AFB	3
4	SR - M10A	AFB	4
4	SR - M10B	AFB	3
4	SR - M55	AFB	3
4	SR - M56	AFB	3
5	SR - B3	AFB	4
5	SR - B4	AFB	4

Amendment No.

TABLE 3.12 - 1 (SHEET 2 OF 2)
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
5	SR - B9	AFB	4
6	SR - B1	AFB	4
6	SR - B2	AFB	4
7	SR - B7	AFB	4
7	SR - B8	AFB	4
8	SR - B5	AFB	4
8	SR - B6	AFB	4
8	SR - B10	AFB	4
9	SR - 55	PAB 15'	4
9	SR - 57	PAB 15'	4
9	SR - 59	PAB	4
9	SR - 801	VC 55'	3
9	SR - 802	VC 55'	3
9	SR - 803	VC 55'	3
9	SR - 803A	VC 55'	3
9	SR - 804	VC 55'	3
9	SR - 805	VC 55'	3
9	SR - 1	VC 55'	3
10	SR - 60	PAB	4
10	SR - 61	PAB	4
10	SR - 62	PAB	4
10	SR - 63	PAB	4

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

<u>Line No.</u>	<u>Snubber No.</u>	<u>Location</u>	<u>Category</u>
10	SR - 65	PAB	4
10	SR - 807	VC 59'	3
10	SR - 807A	VC 59'	3
10	SR - 807B	VC 59'	3
10	SR - 807C	VC 59'	3
10	SR - 808	VC - 59'	3
10	SR - 809	VC - 59'	3
10	SR - 809A	VC - 59'	3
10	SR - 810	VC - 59'	3
10	SR - 811	VC - 55	3
13	SR - 935	VC - 69' (RCP 21) 3	
13	SR - 935	VC - 75 (RCP 21) 3	
13	SR - 936	VC - 77' (RCP 21) 3	
13	SR - 937	VC - 84' (RCP 21) 3	
13	SR - 937A	VC - 84' (RCP 21) 3	
13	SR - 938	VC - 85' (RCP 21) 3	
13	SR - 939	VC - 76 (RCP 21) 3	
13	SR - 1027	VC - 78 (RCP 23) 3	
13	SR - 1028	VC - 77' (RCP 23) 3	
13	SR - 1028A	VC - 77' (RCP 23) 3	
13	SR - 1029	VC - 70' (RCP 23) 3	
13	SR - 1030	VC - 68' (RCP 23) 3	
13	SR - 1030A	VC - 68' (RCP 23) 3	
13	SR - 1032	VC - 77' (RCP 23) 3	

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SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
13	SR - 1037	VC - 84' (RCP 23)	3
13	SR - 1037A	VC - 84' (RCP 23)	3
13	SR - 1051	VC - 84' (RCP 24)	3
13	SR - 1052	VC - 77 (RCP 24)	3
13	SR - 1053	VC - 69' (RCP 24)	3
13	SR - 1058	VC - 78' (RCP 24)	3
13	SR - 1059	VC - 84' (RCP 24)	3
13	SR - 1060	VC - 76' (RCP 24)	3
13	SR - 1079	VC - 65' (RCP 24)	3
13	SR - 1080	VC - 75' (RCP 24)	3
13	SR - 1081	VC - 69' (RCP 24)	3
13	SR - 1099	VC - 84' (RCP 22)	3
13	SR - 1100	VC - 76' (RCP 22)	3
13	SR - 1101	VC - 68' (RCP 22)	3
13	SR - 1101A	VC - 70' (RCP 22)	3
13	SR - 1102	VC - 84' (RCP 22)	3
13	SR - 1103	VC - 76' (RCP 22)	3
13	SR - 1104	VC - 70' (RCP 22)	3
13	SR - 1105	VC - 66' (RCP 22)	3
13	SR - 1106	VC - 65' (RCP 22)	3
13	SR - 1124	VC - 76' (RCP 22)	3

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

<u>Line No.</u>	<u>Snubber No.</u>	<u>Location</u>	<u>Category</u>
14	SR - 761	VC - 46' (RHR)	3
14	SR - 925	VC - 85' (RCP 21)	3
14	SR - 927	VC - 82' (RCP 21)	3
14	SR - 927A	VC - 82' (RCP 21)	3
14	SR - 928	VC - 76' (RCP 21)	3
14	SR - 928A	VC - 77' (RCP 21)	3
14	SR - 929	VC - 77' (RCP 21)	3
14	SR - 931	VC - 75' (RCP 21)	3
14	SR - 969	VC - 76' (RCP 21)	3
14	SR - 970	VC - 76' (RCP 21)	3
14	SR - 971	VC - 75' (RCP 21)	3
14	SR - 1035	VC - 75' (RCP 23)	3
14	SR - 1036A	VC - 76' (RCP 23)	3
14	SR - 1040	VC - 78' (RCP 23)	3
14	SR - 1040A	VC - 78' (RCP 23)	3
14	SR - 1041	VC - 70' (RCP 23)	3

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
14	SR - 1042	VC 70' (RCP 23)	3
14	SR - 1045A	VC 77' (RCP 23)	3
14	SR - 1047	VC 77' (RCP 23)	3
14	SR - 1049	VC 76' (RCP 24)	3
14	SR - 1056	VC 76' (RCP 24)	3
14	SR - 1057	VC 84' (RCP 24)	3
14	SR - 1057A	VC 78' (RCP 24)	3
14	SR - 1075	VC 70' (RCP 24)	3
14	SR - 1076	VC 65' (RCP 24)	3
14	SR - 1083	VC 73' (RCP 24)	3
14	SR - 1084	VC 73' (RCP 24)	3
14	SR - 1093	VC 77' (RCP 22)	3
14	SR - 1094	VC 68' (RCP 22)	3
14	SR - 1095	VC 77' (RCP 22)	3
14	SR - 1096	VC 68' (RCP 22)	3
14	SR - 1097	VC 74' (RCP 22)	3
14	SR - 1098	VC 73' (RCP 22)	3
14	14 - SR - 1	VC 84' (RCP 22)	3
14A	SR - 954	VC 67' (RCP 21)	3
14A	SR - 955	VC 71' (RCP 21)	3
14A	SR - 955A	VC 71' (RCP 21)	3
14A	SR - 956	VC 76' (RCP 21)	3
14A	SR - 1001	VC 70' (RCP 23)	3
14A	SR - 1002	VC 69' (RCP 23)	3
14A	SR - 1002A	VC 69' (RCP 23)	3
14A	SR - 1003	VC 77' (RCP 23)	3
14A	SR - 1003A	VC 77' (RCP 23)	3
14A	SR - 1077	VC 70' (RCP 24)	3

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SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
14A	SR - 1078	VC 70' (RCP 24)	3
14A	SR - 1120	VC 69' (RCP 22)	3
14A	SR - 1122	VC 69' (RCP 22)	3
14A	SR - 1123	VC 69' (RCP 22)	3
15	SR - 7	PAB - 68'	4
15	SR - 8	PAB - 68'	4
15	SR - 8A	PAB - 68'	4
15	SR - 8C	PAB - 68'	4
15	SR - 8D	PAB - 68'	4
15	SR - 11A	VC - 72'	3
15	SR - 11A	PAB - 68'	4
15	SR - 13B	PAB - 68'	4
15	SR - 24C	PAB	4
15	SR - 31C	PAB	4
15	SR - 73A	PAB - 71'	4
16	SR - 83B	PAB - 59'	4
16	SR - 83C	PAB - 59'	4
17	SR - 941	VC - 76 (RCP 21)	3
17	SR - 941 A	VC - 76' RCP 21)	3
17	SR - 1010	VC - 77' (RCP 23)	3
17	SR - 1015	VC - 79' (RCP 23)	3
17	SR - 1063	VC - 77' (RCP 24)	3
17	SR - 1065	VC - 77' (RCP 24)	3
17	SR - 1069	VC - 70' (RCP 21)	3
17	SR - 1112	VC - 62' (RCP 22)	3
17	SR - 1113	VC - 69' (RCP 22)	3

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SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

<u>Line No.</u>	<u>Snubber No.</u>	<u>Location</u>	<u>Category</u>
17	SR - 1116	VC 69' (RCP 22)	3
17	SR - 1117	VC 66' (RCP 22)	3
17	SR - 1118	VC 69' (RCP 22)	3
17	17 - SR-1	VC 61' (RHR)	3
17	17 - SR-2	VC 58'	3
17	17 - SR-3	VC 58'	3
17	17 - SR-4	VC 58'	3
19	SR - 307	PAB 83' CP 22	4
19	SR - 308	PAB 83' CP 22	4
19	SR - 327	PAB 83' CP 21	4
41	SR - 301	PAB 83' CP 22	4
41	SR - 302	PAB 83' CP 23	4
41	SR - 348	PAB 83' CP 21	4
41	SR - 949	VC 77' (RCP 21)	3
41	SR - 952	VC 76' (RCP 21)	3
41	SR - 952A	VC 76' (RCP 21)	3
41	SR - 953	VC 68' (RCP 21)	3
41	SR - 953A	VC 68' (RCP 21)	3
42	SR - 1107	VC 70' (RCP 22)	3
42	SR - 1108	VC 67' (RCP 22)	3
42	SR - 1109	VC 71' (RCP 22)	3
42	SR - 1111	VC 70' (RCP 22)	3
43	SR - 1020	VC 81' (RCP 23)	3
43	SR - 1020A	VC 81' (RCP 23)	3
43	SR - 1021	VC 76' (RCP 23)	3
43	SR - 1022	VC 75' (RCP 23)	3

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

<u>Line No.</u>	<u>Snubber No.</u>	<u>Location</u>	<u>Category</u>
43	SR - 1023	VC 65' (RCP 23)	3
43	SR - 1024A	VC 74' (RCP 23)	3
43	SR - 1025A	VC 65' (RCP 23)	3
44	SR - 1072	VC 68' (RCP 24)	3
44	SR - 1073	VC 69' (RCP 24)	3
45	45 - SR-83D	PAB 64'	4
46	46 - SR - 2	VC 69' (RCP 21)	3
48	48-SR - 5	VC 69' (RCP 24)	3
46	46-SR - 3	VC 69' (RCP 21)	3
48	48 - SR-4	VC 69' (RCP 24)	3
46	46 - SR-83B	PAB 64'	4
47	47 - SR-83C	PAB 64'	4
47	47 - SR-4	VC 69' SG 23	3
48	48 - SR-83A	PAB 64'	4
51	SR - 21	PAB 68'	4
51	SR - 21A	PAB 68'	4
51	SR - 21B	PAB 68'	4

Amendment No.

TABLE 3.12 - 1 (SHEET 10 OF 19)

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
51	SR - 24A	PAB	4
51	SR - 26B	PAB	4
53	53 - SR - 1	VC 53' (RHR)	3
53	52 - SR - 2	VC 53' (RHR)	3
56	56 - SR - 1	VC 62'	3
56	56 - SR - 6	VC 55'	3
56	56 - SR - 12	VC 56'	3
56	56 - SR - 16	VC 63'	3
56	56 - SR - 17	VC 64'	3
57	SR - 64	PAB 32'	4
60	SR - 76A	PAB 59'	4
60	SR - 83A	PAB 59'	4
60	SR - 83D	PAB 59'	4
60	SR - 746A	VC 46' (RHR)	3
60	SR - 746B	VC 46' (RHR)	3
60	SR - 746C	VC 46' (RHR)	3
61	SR - 881	VC 63'	3
61	SR - 887	VC 68' (RCP 24)	3
61	SR - 888	VC 68' (RCP 24)	3
61	SR - 890	VC 78' (RCP 24)	3
62	SR - 922A	VC 68' (RCP 24)	3
62	SR - 922B	VC 68' (RCP 24)	3
62	SR - 924	VC 70' (RCP 24)	3
62	SR - 924A	VC 70' (RCP 24)	3
63	RCH - 77	VC 46'	3
64	64 - SR - 1	VC 64'	3

Amendment No.

TABLE 3.12 - 1 (SHEET 11 OF 19)

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
64	64 - SR - 2	VC 77'	3
64	64 - SR - 3	VC 77'	3
64	64 - SR - 4	VC 77'	3
64	64 - SR - 5	VC 69'	3
64	64 - SR - 17	VC 58'	3
64	64 - SR - 18	VC 57'	3
64	64 - SR - 19	VC 57'	3
64	64 - SR - 20	VC 48'	3
70	RCS - 5	VC 102'	3
70	RCS - 5A	VC 102'	3
70	RCS - 6	VC 103'	3
70	70 - SR - 1	VC 65' (RCP 22)	3
70	70 - SR - 3	VC 85'	3
70	70 - SR - 4	VC 65'	3
70	70 - SR - 5	VC 68'	3
70	70 - SR - 10	VC 125'	3
70	70 - SR - 11	VC 125'	3
70	70 - SR - 12	VC 123'	3
70	70 - SR - 13	VC 123'	3
70	70 - SR - 14	VC 125'	3
71	SR - 963	VC 76' (RCP 21)	3
71	SR - 964	VC 68' (RCP 21)	3
71	SR - 964A	VC 68' (RCP 21)	3
71	SR - 967A	VC 63' (RCP 21)	3
71	71 - SR - 1	VC 80' (RCP 21)	3
72	SR - 1126	VC 70' (RCP 22)	3

Amendment No.

TABLE 3.12 - 1 (SHEET 12 OF 19)

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
72	SR - 1127	VC 70' (RCP 22)	3
72	SR - 1128	VC 72' (RCP 22)	3
72	SR - 1129	VC 63' (RCP 22)	3
72	SR - 1131	VC 63' (RCP 22)	3
72	72 - SR - 1	VC 80' (RCP 22)	3
73	SR - 1016	VC 76' (RCP 23)	3
73	SR - 1016A	VC 76' (RCP 23)	3
73	SR - 1017	VC 69' (RCP 23)	3
73	SR - 1017A	VC 69' (RCP 23)	3
73	SR - 1017B	VC 68' (RCP 23)	3
73	SR - 1018A	VC 65' (RCP 23)	3
73	73 - SR - 1	VC 80' (RCP 23)	3
74	SR - 1085	VC 65' (RCP 24)	3
74	SR - 1085A	VC 65' (RCP 24)	3
74	SR - 1086	VC 67' (RCP 24)	3
74	SR - 1087	VC 68' (RCP 24)	3
74	SR - 1087A	VC 70' (RCP 24)	3
74	SR - 1088	VC 80' (RCP 24)	3
74	SR - 1089	VC 68' (RCP 24)	3
74	SR - 1092	VC 70' (RCP 24)	3
79	SR - 901	VC 52' (RCP 21)	3
79	SR - 902	VC 51' (RCP 21)	3
79	SR - 903	VC 56'	3
79	SR - 904	VC 56'	3
79	SR - 905	VC 56'	3
79	SR - 906	VC 56'	3

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
79	SR - 907	VC 56'	3
79	SR - 908	VC 56'	3
79	SR - 909	VC 56'	3
79	SR - 910	VC 56'	3
79	SR - 911	VC 56'	3
79	SR - 968A	VC 56'	3
80	SR - 915B	VC 58'	3
80	SR - 916	VC 58'	3
80	SR - 917	VC	3
80	SR - 919	VC 46'	3
80	SR - 920	VC 46'	3
80	SR - 920A	VC 58'	3
80	SR - 920B	VC 58'	3
93	SR - 750	VC 72'	3
93	SR - 750A	VC 86 (RHR)	3
93	SR - 751	VC 74' RHR	3
93	SR - 752	VC 74' (RHR)	3
93	SR - 752A	VC (RHR)	3
93	SR - 753	VC 69' (RHR)	3
93	SR - 754	VC 85'	3
94	SR - 756	VC 85' (RHR)	3
94	SR - 757	VC 87' (RHR)	3
94	SR - 758	VC 69' (RHR)	3
94	SR - 758A	VC 73' (RHR)	3
94	SR - 759	VC 74' RHR	3
94	SR - 760	VC RHR	3

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
96	SR - 912	VC 58'	3
96	SR - 913	VC 62'	3
96	SR - 914	VC 58	3
96	SR - 915	VC 58	3
96	SR - 915A	VC 58'	3
155	SR - 50A	PAB 15'	4
163	SR - 250	PAB 68'	4
163	SR - 250A	PAB 68'	4
209	SR - 304	PAB 83' CP 23	4
211	SR - 305	PAB 83' CP 23	4
214	SR - 313	PAB 83' CP 22	4
215	SR - 310	PAB 83' CP 21	4
215	SR - 312	PAB 83' CP 22	4
217	SR - 311	PAB 83' CP 21	4
293	SR - 762	VC 53' (RHR)	3
293	SR - 763	VC 65' (RHR)	3
293	SR - 764	VC 46' (RHR)	3
317	SR - 766	VC 46' (RHR)	3
317	SR - 766A	VC 54' (RHR)	3
317	317 - SR 1	VC 57' (RHR)	3
318	318 - SR 1	VC 53' (RHR)	3
318	318 - SR 2	VC 46' (RHR)	3
318	318 - SR 3	VC 54' (RHR)	3
318	318 - SR 5	VC 90' (RHR)	3
342	342 - SR 6	VC 96'	3
343	343 - SR 5	VC 95'	3

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SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
344	344 - SR - 4	VC 95'	3
350	PWR - 156	VC 64'	3
351	SR - 742	VC 64'	3
351	351 - SR - 1	VC 56'	3
351	PWR - 127	VC 57'	3
351	PWR - 128	VC 64'	3
351	PWR - 129	VC 46' (RHR)	3
352	SR - 713	VC 51	3
352	352 - SR - 2	VC 51'	3
352	PWR - 152	VC 63'	3
353	SR - 736	VC 47	3
353	SR - 737	VC 47'	3
353	SR - 737A	VC 49'	3
353	PWR - 147A	VC 59'	3
353	PWR - 148	VC 60'	3
355	SR - 748	VC 55' (RHR)	3
356	SR - 708	VC 55' (RHR)	3
356	SR - 714	VC 62 (RHR)	3
356	SR - 715	VC 62' (RHR)	3
356	SR - 716	VC 61' (RHR)	3
356	SR - 717	VC 62' (RHR)	3
356	SR - 718	VC 62' (RHR)	3
356	SR - 718A	VC 62' (RHR)	3
356	SR - 719	VC 55' (RHR)	3
356	SR - 720	VC 64' (RHR)	3
356	SR - 747	VC 57' (RHR)	3

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
356	356 - SR 1	VC 56' (RHR)	3
358	SR - 738A	VC 55'	3
358	SR - 738B	VC 55' (RHR)	3
361	SR - 749	VC 54' (RHR)	3
361	SR - 749A	VC 55' (RHR)	3
361	SR - 749B	VC 57' (RHR)	3
361	SR - 749C	VC 55' (RHR)	3
361	SR - 755	VC 57' (RHR)	3
361	SR - 756	VC 72' (RHR)	3
361	361 - SR - 10	VC 64' (RHR)	3
413	SR - 376A	DGB/PAB	4
413	SR - 395A	DGB/PAB	4
414	SR - 377A	DGB/PAB	4
414	SR - 396A	DGB/PAB	4
518	SR - 71A	PAB 59'	4
577	577 - SR - 15	VC 46	3
577	577 - SR - 17	VC 46' (RHR)	3
3CD	3CD - SR - 13	AFB 15'	4
3CD	3CD - SR - A13	AFB 15'	4
12CD	SR V20A	AFB 53'	3
12CD	SR V20B	AFB 40	3
12CD	SR V21A	AFB TOP	4
12CD	SR V21B	AFB TOP	4
BFD	SR 471A	AFB 15'	4
BFD	SR 472A	AFB 15'	4
BFD	SR 473A	AFB 15'	4

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
BFD	SR - 474A	AFB 15'	4
BFD	SR - 475A	AFB 15'	4
BFD	SR - 484A	AFB 15'	4
BFD	SR - 486A	AFB 15'	4
BFD	SR - 490A	AFB 15'	4
BFD	SR - 492A	AFB 15'	4
BFD	SR - 494A	AFB 15'	4
BFD	SR - 496A	AFB 15'	4
BFD	SR - A11	AFB 54	3
BFD	SR - A24	AFB 48'	3
BFD 2	SR - A8	AFB 52'	3
BFD 2	SR - A9	AFB 52'	3
BFD 2	SR - 464A	AFB 52'	3
BFD 2	SR - 465A	AFB 52'	3
BFD 2	SR - 466A	AFB 52'	3
MS 3	SR - 499	AFB 65'	3
MS 3	SR - 500	AFB 65'	3
MS 3	SR - 501	AFB 65'	3
MS 3	SR - 501A	AFB 65'	4
MS 3	SR - 501B	AFB 65'	3
MS 3	SR - 502	AFB 65'	3
MS 3	SR - 503	AFB 65'	4
MS 3	SR - 503A	AFB 65'	4
MS 3	SR - 503B	AFB 65'	4
MS 3	SR - 505	AFB 54'	3
MS 3	SR - 506	AFB 53'	3
MS 3	SR - 507	AFB 35'	4
MS 3	SR - 507A	AFB 55'	3

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
MS 3	SR - 507B	AFB 48'	3
MS 3	SR - M 20	AFB 35'	4
MS 3	SR - M 20A	AFB 15'	4
MS 3	SR - M 20B	AFB 15'	4
MS 3	SR - M 21A	AFB 15'	4
MS 3	SR - M 21B	AFB	4
MS 3	SR - M 22A	AFB 15	4
MS 3	SR - M 22B	AFB 15'	4
MS 3	SR - M 23B	AFB 15'	4
MS 3	SR - M 24	AFB 15'	4
PCA 3	SR - 432	PAB 59'	4
V3	SR - M25	AFB	4
V3	SR - M26	AFB	4
V3	SR - M28	AFB	4
V3	SR - M29	AFB 65'	4
V3	SR - M30	AFB 65'	4
V3	SR - M31	AFB 65'	4
V3	SR - M33	AFB	3
V3	SR - M32	AFB	3
V5	SR - M35	AFB	4
V5	SR - M36	AFB	4
V5	SR - M38	AFB	4
V5 S	SR - M34	AFB	4
V5 S	SR - M37	AFB 75'	4
V6	SR - M39	AFB 65'	3
V6	SR - M40	AFB 65'	3
V6	SR - M41	AFB 65'	3

Amendment No.

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Line No.	Snubber No.	Location	Category
V6	SR-M 42	AFB	4
V6	SR-M 43	AFB	4
	SR-M54	AFB	4
	SR83E	PAB 59'	4
	SR-524	AFB 54'	3
	SR-713	PAB 15'	4
	SR-765		4
	SR-896		4
Steam Gen.			
#21	1 thru 6	VC - E1.94	2,3
#22	1 thru 6	VC - E1.94	2,3
#23	1 thru 6	VC - E1.94'	2,3
#24	1 thru 6	VC - E1.94'	2,3

NOTES:

DGB - Diesel Generator Building

(1) Location: AFB - Aux. Boiler Feed Pump Bldg. and Pipe Bridge Area

PAB - Primary Auxiliary Building

VC - Containment Building

RHR - Residual Heat Removal Exchanger Area

RCP - Reactor Coolant Pump

CP - Charging Pump

SG - Steam Generator

(2) Categories:

1. Snubber in high radiation area during shutdown.
2. Snubber especially difficult to remove. (Because of size and location).
3. Snubber inaccessible during normal operation. (Because of high radiation and/or temperature environment).
4. Snubber accessible during normal operation.

4.12 SHOCK SUPPRESSORS (SNUBBERS)

Applicability

Applies to the inspection and testing of all hydraulic snubbers listed in Table 3.12-1.

Objective

To verify that snubbers will perform their design functions in the event of a seismic or other transient dynamic event.

Specification

1. All hydraulic snubbers whose seal material has been demonstrated by operating experience, laboratory testing, or analysis to be compatible with the operating environment shall be visually inspected. This inspection shall include, but not necessarily be limited to, 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 + 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 are categorized in Table 3.12-1 as accessible or inaccessible 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 4.12.1, 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 hydraulic 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 hydraulic snubbers shall be so tested until no more failures are found or all units have been tested. Snubbers of rated capacity greater than 50,000 lb need not be functionally tested.

Basis

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.

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 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 will 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. Those snubbers designated in Table 3.12-1 as being in high radiation areas or especially difficult to remove need not be selected for functional tests. Snubbers of rated capacity greater than 50,000 lb are exempt from the functional testing requirements because of the impracticability of testing such large units.

Reference

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

ATTACHMENT B

APPLICATION FOR AMENDMENT TO
OPERATING LICENSE

Consolidated Edison Company of New York, Inc.

Indian Point Unit No. 2

Docket No. 50-247

Facility Operating License No. DPR-26

September, 1976

SAFETY EVALUATION

The purpose of the proposed changes to the Technical Specifications is to provide assurance that snubbers used on safety-related components are operable during reactor operation. These changes conform to the model Technical Specifications suggested in the Commission's letter dated December 23, 1975, requesting the changes.

The proposed changes have been reviewed by the Station Nuclear Safety Committee and the Consolidated Edison Nuclear Facilities Safety Committee, and both committees concur that these changes do not represent a significant hazards consideration and will not cause any change in the types or increase in the amounts of effluents or any change in the authorized power level.