UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER AND LIGHT COMPANY

PENNSYLVANIA ELECTRIC COMPANY

DOCKET NO. 50-289

THREE MILE ISLAND NUCLEAR STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 30
License No. DPR-50

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by Metropolitan Edison Company, Jersey Central Power & Light Company, and Pennsylvania Electric Company (the licensees) dated August 23, 1975, as supplemented September 15 and October 19, 1976, and March 9, 1977, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act) and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. DPR-50 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 30, are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Robert W. Reid, Chief
Operating Reactors Branch #4
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: May 11, 1977

ATTACHMENT TO LICENSE AMENDMENT NO. 30

FACILITY OPERATING LICENSE NO. DPR-50

DOCKET NO. 50-289

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ii & iii	ii & iii
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The changed areas on the revised pages are shown by marginal lines.

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(RESERVED)

3.16 Shock Suppressors (Snubbers)

Applicability

Applies to the operability of the snubbers listed in Table 3.16.1.

Objective

To identify those conditions for which the operability of snubbers is required and to identify the time limits in which either the snubber must be made operable or reactor shutdown must occur.

Specification

3.16.1 During all modes of operation except Cold Shutdown and Refueling, all safety-related snubbers listed in Table 3.16.1 shall be operable except as noted in 3.16.2 through 3.16.4 below.

3.16.2 From and after the time that a snubber is determined to be inoperable, continued reactor operation in modes other than those identified in 3.16.1, above, is permissible only during the succeeding 72 hours unless the snubber is sooner made operable or replaced.

3.16.3 If the requirements of 3.16.1 and 3.16.2 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in hot shutdown condition within an additional 12 hours.

3.16.4 If a snubber is determined to be inoperable while the reactor is in the shutdown or refuel mode, the snubber shall be made operable or replaced prior to reactor start-up.

3.16.5 Snubbers may be added to safety-related systems without prior License Amendment to Table 3.16.1 provided that a revision to Table 3.16.1 is included with the next License Amendment Request.

Bases

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 snubbers required to protect the primary coolant system or any other safety system or component be operable during reactor operation or other periods when severe transients might cause damaging dynamic loads.

Because the snubber protection is required only during low probability events, a period of 72 hours is allowed for repairs or replacements. In case a shutdown is required, the allowance of 12 hours to reach a hot shutdown condition will permit an orderly shutdown consistent with standard operating procedures. Since plant startup should not commence with safety equipment having known defects, specification 3.16.4 prohibits startup with inoperable snubbers.

Table 3.16.1 lists all snubbers installed on nuclear safety related systems throughout the plant. Snubbers were classified for the table in accordance with the following guidelines:

a. High Radiation Area During Shutdown: Those snubbers located in a general field of greater than 100 mr/hr, during shutdown.

b. Especially difficult to remove: Those snubbers that are elevated more than 10 feet off the floor and that, due to interferences, may not be safely reached from a suitable work platform.

c. Inaccessible during normal operation: Those snubbers that are located within an area where the general field is 100 mr/hr. or greater during normal operation.

d. Accessible during normal operation: Those snubbers that do not meet the criteria of paragraphs b and c above.

TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber in High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
RC-4	R.B. Inside Sec. Shield N.E. Quad.	355	No	Yes	Yes	No
RC-5	Rx. Bldg. Inside Sec. Shield N.E. Quad. Top of PZR Near RC-V3	355	No	No	Yes	No
RC-15	Rx. Bldg. Inside Sec. Shield N.E. Quad. Top of PZR Near RC-V3	355	No	No	Yes	No
RC-16	Rx. Bldg. Inside Sec. Shield N.E. Quad. Top of PZR Near RC-V3	355	No	No	Yes	No
RC-17	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-V1	355	No	No	Yes	No
RC-18	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-V1	355	No	No	Yes	No
RC-19	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-V1	355	No	No	Yes	No
RC-23	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-V1	355	No	No	Yes	No
RC-20	Rx. Bldg. Inside Sec. Shield N.E. Quad.	353	No	No	Yes	No
RC-21	Rx. Bldg. Inside Sec. Shield N.E. Quad.	353	No	No	Yes	No
RC-22	Rx. Bldg. Inside Sec. Shield N.E. Quad.	353	No	No	Yes	No
RC-9	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-V31	346	No	No	Yes	No
RC-7	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-V31	353	No	No	Yes	No
RC-8	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-V31	353	No	No	Yes	No
RC-6	Rx. Bldg. Inside Sec. Shield N.E. Quad.	353	No	No	Yes	No
RC-10	Rx. Bldg. Inside Sec. Shield N.E. Quad.	346	No	No	Yes	No
RC-11	Rx. Bldg. Inside Sec. Shield N.E. Quad.	328	No	No	Yes	No
RC-12	Rx. Bldg. Inside Sec. Shield N.E. Quad.	328	No	No	Yes	No

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
RC-13	Rx. Bldg. Inside Sec. Shield N.E. Quad.	321	No	No	Yes	No
RC-14	Rx. Bldg. Inside Sec. Shield N.E. Quad	321	No	No	Yes	No
MUE-38	Rx. Bldg. Inside Sec. Shield N.E. Quad.	318	No	No	Yes	No
MUE-39	Rx. Bldg. Inside Sec. Shield N.E. Quad.	318	No	No	Yes	No
PR-23	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1A Disch. Line	340	No	No	Yes	No
PR-24	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1A Disch. Line	340	No	No	Yes	No
PR-25	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1B Disch. Line	340	No	No	Yes	No
PR-26	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1B Disch. Line	340	No	No	Yes	No
PR-34	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1A Disch. Line	345	No	No	Yes	No
PR-36	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1A Disch. Line	345	No	No	Yes	No
PR-35	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1B Disch. Line	345	No	No	Yes	No
PR-37	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-1B Disch. Line	345	No	No	Yes	No
PR-47	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-2 Disch. Line	355	No	No	Yes	No
PR-48	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-2 Disch. Line	355	No	No	Yes	No
NSE-77	Rx. Bldg. Inside Sec. Shield N.E. Quad.	333	No	No	Yes	No
NSE-78	Rx. Bldg. Inside Sec. Shield N.E. Quad.	334	No	No	Yes	No
NSE-79	Rx. Bldg. Inside Sec. Shield N.E. Quad.	331	No	No	Yes	No
NSE-75	Rx. Bldg. Inside Sec. Shield N.E. Quad.	332	No	No	Yes	No

TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
NSE-76	Rx. Bldg. Inside Sec. Shield N.E. Quad.	332	No	No	Yes	No
NSE-103	Rx. Bldg. Inside Sec. Shield N.E. Quad.	334	No	No	Yes	No
NSE-104	Rx. Bldg. Inside Sec. Shield N.E. Quad.	334	No	No	Yes	No
NSE-105	Rx. Bldg. Inside Sec. Shield N.E. Quad.	334	No	No	Yes	No
NSE-108	Rx. Bldg. Inside Sec. Shield N.E. Quad.	334	No	No	Yes	No
NSE-110	Rx. Bldg. Inside Sec. Shield N.E. Quad.	331	No	No	Yes	No
NSE-112	Rx. Bldg. Inside Sec. Shield N.E. Quad.	332	No	No	Yes	No
NSE-113	Rx. Bldg. Inside Sec. Shield N.E. Quad.	338	No	No	Yes	No
MS-201	Rx. Bldg. Inside Sec. Shield N.E. Quad.	338	No	Yes	Yes	No
NSE-80	Rx. Bldg. Inside Sec. Shield S.E. Quad.	332	No	No	Yes	No
NSE-81	Rx. Bldg. Inside Sec. Shield S.E. Quad.	331	No	No	Yes	No
NSE-82	Rx. Bldg. Inside Sec. Shield S.E. Quad.	331	No	No	Yes	No
NSE-96	Rx. Bldg. Inside Sec. Shield S.E. Quad.	338	No	No	Yes	No
NSE-96A	Rx. Bldg. Inside Sec. Shield S.E. Quad.	338	No	No	Yes	No
NSE-151	Rx. Bldg. Inside Sec. Shield S.E. Quad.	334	No	No	Yes	No
NSE-153	Rx. Bldg. Inside Sec. Shield S.E. Quad.	331	No	No	Yes	No
EF-116	Rx. Bldg. Inside Sec. Shield S.E. Quad.	330	No	No	Yes	No
FW-109	Rx. Bldg. Inside Sec. Shield S.E. Quad.	325	No	Yes	Yes	No

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
FW-110	Rx. Bldg. Inside Sec. Shield S.E. Quad.	325	No	Yes	Yes	No
MUE-20	Rx. Bldg. Inside Sec. Shield S.E. Quad.	315	No	No	Yes	No
MUE-69	Rx. Bldg. Inside Sec. Shield S.E. Quad.	310	No	Yes	Yes	No
NSE-85	Rx. Bldg. Inside Sec. Shield N.W. Quad.	332	No	Yes	Yes	No
NSE-86	Rx. Bldg. Inside Sec. Shield N.W. Quad.	331	No	Yes	Yes	No
NSE-87	Rx. Bldg. Inside Sec. Shield N.W. Quad.	331	No	Yes	Yes	No
NSE-88	Rx. Bldg. Inside Sec. Shield N.W. Quad.	334	No	Yes	Yes	No
NSE-131	Rx. Bldg. Inside Sec. Shield N.W. Quad.	334	No	No	Yes	No
NSE-132	Rx. Bldg. Inside Sec. Shield N.W. Quad.	334	No	No	Yes	No
NSE-133	Rx. Bldg. Inside Sec. Shield N.W. Quad.	334	No	No	Yes	No
NSE-138	Rx. Bldg. Inside Sec. Shield N.W. Quad.	331	No	Yes	Yes	No
NSE-141	Rx. Bldg. Inside Sec. Shield N.W. Quad.	331	No	No	Yes	No
NSE-142	Rx. Bldg. Inside Sec. Shield N.W. Quad.	331	No	No	Yes	No
MUE-43	Rx. Bldg. Inside Sec. Shield N.W. Quad.	310	No	No	Yes	No
MUE-44	Rx. Bldg. Inside Sec. Shield N.W. Quad.	310	No	No	Yes	No
MUE-42	Rx. Bldg. Inside Sec. Shield N.W. Quad.	310	No	No	Yes	No
CF-16	Rx. Bldg. Inside Sec. Shield N.W. Quad.	310	No	No	Yes	No
CF-16A	Rx. Bldg. Inside Sec. Shield N.W. Quad.	316	No	No	Yes	No

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TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
NSE-89	Rx. Bldg. Inside Sec. Shield S.W. Quad.	334	No	No	Yes	No
NSE-90	Rx. Bldg. Inside Sec. Shield S.W. Quad.	334	No	No	Yes	No
NSE-91	Rx. Bldg. Inside Sec. Shield S.W. Quad.	334	No	No	Yes	No
NSE-92	Rx. Bldg. Inside Sec. Shield S.W. Quad.	334	No	No	Yes	No
NSE-122	Rx. Bldg. Inside Sec. Shield S.W. Quad.	342	No	No	Yes	No
NSE-129	Rx. Bldg. Inside Sec. Shield S.W. Quad.	334	No	No	Yes	No
NSE-130	Rx. Bldg. Inside Sec. Shield S.W. Quad.	334	No	No	Yes	No
FW-114	Rx. Bldg. Inside Sec. Shield S.W. Quad.	325	No	No	Yes	No
FW-115	Rx. Bldg. Inside Sec. Shield S.W. Quad.	325	No	No	Yes	No
EF-113	Rx. Bldg. Inside Sec. Shield S.W. Quad.	320	No	Yes	Yes	No
DH-4	Rx. Bldg. Inside Sec. Shield S.W. Quad.	302	No	Yes	Yes	No
DH-5	Rx. Bldg. Inside Sec. Shield S.W. Quad.	302	No	Yes	Yes	No
CF-6	Rx. Bldg. Inside Sec. Shield S.W. Quad.	316	No	No	Yes	No
DH-32	Rx. Bldg. Outside Sec. Shield N.E. Quad.	340	No	No	No	Yes
MS-202	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	No
MS-203	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	No
MS-206	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	No
MS-207	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	No

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
MS-292	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	No
MS-286	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	No
PR-38	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
PR-39	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
PR-40	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
PR-41	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
PR-42	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
PR-43	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
PR-44	Rx. Bldg. Outside Sec. Shield N.E. Quad.	309	No	No	No	Yes
PR-45	Rx. Bldg. Outside Sec. Shield N.E. Quad.	309	No	No	No	Yes
PR-46	Rx. Bldg. Outside Sec. Shield N.E. Quad.	309	No	No	No	Yes
PR-49	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
PR-50	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
CF-14	Rx. Bldg. Outside Sec. Shield N.E. Quad.	309	No	No	No	Yes
CF-15	Rx. Bldg. Outside Sec. Shield N.E. Quad.	309	No	No	No	Yes
MS-200	Rx. Bldg. Outside Sec. Shield S.E. Quad.	338	No	Yes **	No	No
MS-204	Rx. Bldg. Outside Sec. Shield S.E. Quad.	338	No	Yes **	No	No
MS-205	Rx. Bldg. Outside Sec. Shield S.E. Quad.	338	No	Yes **	No	No

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
MS-291	Rx. Bldg. Outside Sec. Shield S.E. Quad.	338	No	Yes **	No	No
BS-27	Rx. Bldg. Outside Sec. Shield S.W. Quad.	341	No	Yes **	No	No
BS-27A	Rx. Bldg. Outside Sec. Shield S.W. Quad.	341	No	Yes **	No	No
MUE-40	Rx. Bldg. Outside Sec. Shield S.W. Quad	318	No	No	No	Yes
MUE-41	Rx. Bldg. Outside Sec. Shield S.W. Quad.	318	No	No	No	Yes
BS-5	Rx. Bldg. Outside Sec. Shield S.W. Quad.	335	No	Yes **	No	No
BS-6	Rx. Bldg. Outside Sec. Shield S.W. Quad.	335	No	Yes **	No	No
BS-26	Rx. Bldg. Outside Sec. Shield S.W. Quad.	337	No	Yes **	No	No
DH-11	Rx. Bldg. Outside Sec. Shield S.W. Quad.	297	No	No	No	Yes
DH-12	Rx. Bldg. Outside Sec. Shield S.W. Quad.	297	No	No	No	Yes
CF-7	Rx. Bldg. Outside Sec. Shield S.W. Quad.	297	No	No	No	Yes
CF-8	Rx. Bldg. Outside Sec. Shield S.W. Quad.	297	No	No	No	Yes
CF-9	Rx. Bldg. Outside Sec. Shield S.W. Quad.	308	No	Yes **	No	No
BS-7	Rx. Bldg. Outside Sec. Shield S.W. Quad.	307	No	Yes **	No	No
BS-22	Rx. Bldg. Outside Sec. Shield S.W. Quad.	291	No	No	No	Yes
BS-23	Rx. Bldg. Outside Sec. Shield S.W. Quad.	291	No	No	No	Yes
BS-24	Rx. Bldg. Outside Sec. Shield S.W. Quad.	291	No	No	No	Yes
BS-25	Rx. Bldg. Outside Sec. Shield S.W. Quad.	293	No	No	No	Yes

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TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
DH-23	Rx. Bldg. Outside Sec. Shield S.W. Quad.	295	No	No	No	Yes
DH-24	Rx. Bldg. Outside Sec. Shield S.W. Quad.	295	No	No	No	Yes
MS-208	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-209	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-210	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-211	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-212	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-213	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-214	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-215	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-287	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
MS-288	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
FW-112	Rx. Bldg. Outside Sec. Shield N.W. Quad.	320	No	No	No	Yes
FW 113	Rx. Bldg. Outside Sec. Shield N.W. Quad.	320	No	No	No	Yes
FW-108	Rx. Bldg. Outside Sec. Shield N.W. Quad.	320	No	No	No	Yes
FW-111	Rx. Bldg. Outside Sec. Shield N.W. Quad.	320	No	No	No	Yes
DH-20	Rx. Bldg. Outside Sec. Shield N.W. Quad.	298	No	No	No	Yes
DH-21	Rx. Bldg. Outside Sec. Shield N.W. Quad.	298	No	No	No	Yes

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
DH-22	Rx Bldg. Outside Sec. Shield N.W. Quad.	295	No	No	No	Yes
MS-216	Int. Bldg. on MS-V-1D	355	No	Yes ***	No	No
MS-217	Int. Bldg. on MS-V-1C	341	No	Yes ***	No	No
MS-218	Int. Bldg. on MS-V-1C	341	No	Yes ***	No	No
MS-219	Int. Bldg. on MS-V-1C	355	No	No	No	Yes
MS-220	Int. Bldg. on MS-V-1D	355	No	No	No	Yes
MS-221	Int. Bldg. on MS-V-1D	341	No	Yes ***	No	No
MS-222	Int. Bldg. on MS-V-1B	341	No	Yes ***	No	No
MS-223	Int. Bldg. on MS-V-1A	341	No	Yes ***	No	No
MS-224	Int. Bldg. on MS-V-1A	341	No	No	No	Yes
MS-225	Int. Bldg. on MS-V-1B	355	No	No	No	Yes
MS-226	Int. Bldg. on MS-V-1C	355	No	No	No	Yes
MS-227	Int. Bldg. on MS-V-1A	355	No	No	No	Yes
MS-289	Int. Bldg. on MS-V-1A	355	No	No	No	Yes
MS-290	Int. Bldg. on MS-V-1B	341	No	No	No	Yes
MS-228A	Int. Bldg. on A RV Hdr.	337	No	Yes ***	No	No
MS-228B	Int. Bldg. on A RV Hdr.	337	No	Yes ***	No	No
MS-229	Int. Bldg. on B RV Hdr.	337	No	Yes ***	No	No

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
MS-230	Int. Bldg. on C RV Hdr.	337	No	Yes ***	No	No
MS-231	Int. Bldg. on D RV Hdr.	337	No	Yes ***	No	No
MS-65	Int. Bldg.	314	No	No	No	Yes
MS-233	Int. Bldg.	314	No	Yes ***	No	No
MS-234	Int. Bldg.	314	No	Yes ***	No	No
MS-235	Int. Bldg.	314	No	Yes ***	No	No
MS-236	Int. Bldg.	314	No	Yes ***	No	No
MS-237	Int. Bldg.	314	No	Yes ***	No	No
MS-238	Int. Bldg.	314	No	Yes ***	No	No
MS-239	Int. Bldg.	314	No	Yes ***	No	No
MS-240	Int. Bldg.	314	No	Yes ***	No	No
MS-243	Int. Bldg.	314	No	Yes ***	No	No
MS-277	Int. Bldg.	320	No	Yes ***	No	No
MS-277A	Int. Bldg.	320	No	Yes ***	No	No
MS-247	Int. Bldg. Near EF-P-1	300	No	No	No	Yes
MS-245	Int. Bldg. Near EF-P-1	300	No	No	No	Yes
MS-246	Int. Bldg. Near EF-P-1	300	No	No	No	Yes
MS-270	Int. Bldg. Near EF-P-1	300	No	No	No	Yes

TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
MS-271	Int. Bldg. Near EF-P-1	300	No	No	No	Yes
FW-121	Int. Bldg. B FW Catch Hdr.	325	No	No	No	Yes
FW-122	Int. Bldg. B FW Catch Hdr.	325	No	No	No	Yes
EF-74	Int. Bldg. Near EF-P-2A	302	No	No	No	Yes
EF-75	Int. Bldg. Near EF-P-2B	302	No	Yes ***	No	No
EF-76	Int. Bldg. Near EF-P-2B	302	No	Yes ***	No	No
EF-85	Int. Bldg.	302	No	No	No	Yes
EF-87	Int. Bldg. Near EF-P-1	302	No	No	No	Yes
EF-88	Int. Bldg. Near EF-p-1	302	No	No	No	Yes
EF-89	Int. Bldg.	305	No	Yes ***	No	No
FW-116	Turb. Bldg. A FW Catch Hdr.	323	No	No	No	Yes
FW-118	Turb. Bldg. A FW Catch Hdr.	323	No	No	No	Yes
DCH-58	Aux. Bldg. HX Vault	286	No	Yes ***	No	No
DCH-59	Aux. Bldg. HX Vault	286	No	Yes ***	No	No
DCH-68	Aux. Bldg. HX Vault	286	No	Yes ***	No	No
NSE-12	Aux. Bldg. HX Vault	286	No	Yes ***	No	No
NSE-13	Aux. Bldg. HX Vault	286	No	Yes ***	No	No
NSE-14	Aux. Bldg. HX Vault	286	No	Yes ***	No	No

TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
NSE-15	Aux. Bldg. HX Vault	284	No	Yes ***	No	No
NSE-16	Aux. Bldg. HX Vault	284	No	Yes ***	No	No
NSE-17	Aux. Bldg. HX Vault	284	No	Yes ***	No	No
MUE-6	Aux. Bldg. Valve Alley	283	Yes	Yes	Yes	No
MUE-7	Aux. Bldg. Valve Alley	283	Yes	Yes	Yes	No
MUH-318	Aux. Bldg. Valve Alley	288	Yes	Yes	Yes	No
MUH-319	Aux. Bldg. Valve Alley	288	Yes	Yes	Yes	No
MUH-321	Aux. Bldg. Valve Alley	288	Yes	Yes	Yes	No
MUH-322	Aux. Bldg. Valve Alley	288	Yes	Yes	Yes	No
DHH-196	Aux. Bldg.	297	No	Yes ***	No	No
NSE-7	Aux. Bldg.	295	No	Yes ***	No	No
NSE-8	Aux. Bldg.	295	No	No	No	Yes
NSE-9	Aux. Bldg.	293	No	No	No	Yes
NSE-10	Aux. Bldg.	291	No	Yes ***	No	No
NSE-11	Aux. Bldg.	291	No	No	No	Yes
NSE-18	Aux. Bldg.	291	No	No	No	Yes
NSE-33	Aux. Bldg.	297	No	Yes ***	No	No
NSE-37	Aux. Bldg.	293	No	No	No	Yes

TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
MUH-311	Aux. Bldg. N. End Valve Alley	295	No	Yes ***	No	No
MUH-312	Aux. Bldg. N. End Valve Alley	295	No	Yes ***	No	No
DHH-187	Aux. Bldg. DH-P-1A Room	275	No	Yes ***	No	No
DHH-188	Aux. Bldg. DH-P-1A Room	275	No	Yes ***	No	No
SPSE-2	Aux. Bldg. DH-P-1A Room	275	No	Yes ***	No	No
SPSE-3	Aux. Bldg. DH-P-1A Room	275	No	Yes ***	No	No
SPSE-12	Aux. Bldg. DH-P-1A Room	275	No	Yes ***	No	No
DHH-197	Aux. Bldg. DH-P-1B Room	275	No	Yes ***	No	No
DHH-198	Aux. Bldg. DH-P-1B Room	275	No	Yes ***	No	No
SPSE-7	Aux. Bldg. DH-P-1B Room	275	No	Yes ***	No	No
SPSE-10	Aux. Bldg. DH-P-1B Room	275	No	Yes ***	No	No
SPSE-11	Aux. Bldg. DH-P-1B Room	275	No	Yes ***	No	No
BS-19	Aux. Bldg. BS-P-1A Room	275	No	Yes ***	No	No
SPSE-5	Aux. Bldg. BS-P-1A Room	275	No	Yes ***	No	No
SPSE-9	Aux. Bldg. BS-P-1B Room	275	No	Yes ***	No	No
BS-21	Aux. Bldg. BS-P-1B Room	275	No	Yes ***	No	No
NSE-2	Aux. Bldg.	310	No	Yes ***	No	No
NSE-3	Aux. Bldg.	310	No	Yes ***	No	No

TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
NSE-23	Aux. Bldg. NSP Discharge	322	No	Yes ***	No	No
NSE-24	Aux. Bldg. NSP Suction	324	No	Yes ***	No	No
NSE-27	Aux. Bldg.	320	No	Yes ***	No	No
NSE-29	Aux. Bldg. NS to SF Cooler	320	No	Yes ***	No	No
RW-72	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RW-73	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RW-75	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RWE-8	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RWE-9	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RWE-10	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RWE-11	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RWE-12	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RWE-13	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
RWE-14	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
IPE-1	Intake Pump House	290	No	No	No	Yes
IPE-2	Intake Pump House	290	No	No	No	Yes
IPE-3	Intake Pump House	290	No	No	No	Yes
IPE-4	Intake Pump House	290	No	No	No	Yes

TABLE 3.16.1

SAFETY RELATED SHOCK SUPPRESSORS (SNUBBERS)

Snubber MK No.	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
IPE-5	Intake Pump House	290	No	No	No	Yes
IPE-6	Intake Pump House	290	No	No	No	Yes
IPE-7	Intake Pump House	290	No	No	No	Yes
IPE-8	Intake Pump House	290	No	No	No	Yes
IPE-9	Intake Pump House	290	No	No	No	Yes
RCP-1A	Reactor Bldg. on RCP-1A	340	Cylinder-No Reservoir-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
RCP-1B	Reactor Bldg. on RCP-1B	340	Cylinder-No Reservoir-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
RCP-1C	Reactor Bldg. on RCP-1C	340	Cylinder-No Reservoir-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
RCP-1D	Reactor Bldg. on RCP-1D	340	Cylinder-No Reservoir-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
				* Modifications to this table due to changes in high radiation areas should be submitted to the NRC as part of the next license amendment.		
				** To be inspected with the "inaccessible snubbers" group		
				*** To be inspected with the "accessible snubbers" group		
				+ Hydraulic snubber cylinders to be inspected with the "inaccessible snubber" group. Reservoirs to be inspected with the "accessible snubbers" group.		

TABLE 4.1-2

MINIMUM EQUIPMENT TEST FREQUENCY

	Item	Test	Frequency
1.	Control Rods	Rod drop times of all full length rods	Each refueling shutdown
2.	Control Rod Movement	Movement of each rod	Every two weeks, when reactor is critical
3.	Pressurizer Safety Valves	Setpoint *	50% each refueling period
4.	Main Steam Safety Valves	Setpoint	25% each refueling period
5.	Refueling System Interlocks	Functional	Start of each refueling period
6.	Main Steam Isolation Valves	(See Section 4.8)	
7.	Reactor Coolant System Leakage	Evaluate	Daily, when reactor coolant system temperature is greater than 525°F
8.	Charcoal and high efficiency filters for Control Room, and RB Purge Filters	DOP test on HEPA filters, freon test on charcoal filter units	Each refueling period and at any time work on filters could alter their integrity
9.	Spent Fuel Cooling System	Functional	Each refueling period prior to fuel handling
10.	Intake Pump House Floor (Elevation 262 Ft 6 in.)	(a) Silt Accumulation-Visual inspection of Intake Pump House Floor	Each refueling period
		(b) Silt Accumulation Measurement of Pump House Flow	Quarterly

* The setpoint of the pressurizer code safety valves shall be in accordance with ASME Boiler and Pressurizer Vessel Code, Section III, Article 9, Winter, 1968.

4.17 Shock Suppressors (Snubbers)

Applicability

Applies to the inspection of hydraulic snubbers listed in Table 3.16.1 to determine their operability.

Objective

To provide assurance of the operability of the hydraulic snubbers.

Specification

4.17.1 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. 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 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.

4.17.2 All hydraulic snubbers whose seal materials are other than ethylene propylene or other material that has been demonstrated to be compatible with the operating environment shall be visually inspected for operability at least every 31 days.

4.17.3 For the purpose of entering the schedule in Specification 4.17-1, the initial inspection interval shall be 12 months ± 25%.

4.17.4 Once each refueling cycle, a representative sample of 10 hydraulic snubbers or approximately 10% of the hydraulic snubbers, whichever is less, shall be functionally tested for operability including verification of proper piston movement, lockup and bleed. For each unit and subsequent unit found inoperable, an additional 10% or ten hydraulic snubbers, whichever is less, shall be so tested, until no more failures are found or all units have been tested. Snubbers of rated capacity greater than 50,000 lbs. need not be functionally tested.

Bases

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. However, based upon the results of snubber inspection at TMI-1 and engineering analyses, Metropolitan Edison may propose for NRC review and approval an alternative program for snubber inspection which will provide assurance of an equivalent level of snubber performance.

The initial inspection interval for visual inspection is based upon the results of the inspection performed during the March-April 1977 refueling outage.

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 installation.

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 designated in Table 3.16.1 as being 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 lbs. are exempt from the functional testing requirements because of the impracticality 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