

# 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

- 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

Remove Pages	<u>Insert Pages</u>
	ii & iii
ii & iii	· V
. <b>V</b>	V
	3-61 & 3-62
<u>-</u>	3-63 - 3-79
<del>т</del>	4-8
4-8	4-60 - 4-62

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

## TABLE OF CONTENTS

Section		PRFE
		3-6
3.1.3	MINIMUM CONVITIONS FOR CRITICALITY	3-8
3.1.4	REACTOR COOLANT SYSTEM ACTIVITY	3-10
3.1.5	CHERISTRY	3-12
3.1.6	LEAKAGE	3-16
3.1.7	MODIEVICE TELEFRATURE COEFFICIENT OF REACTIVITY	3-17
3.1.8	STWATE LOOP RESERICTIONS	3-18
3.1.9	LOW POWER PHYSICS TESTING RUSTRICTIONS	3-18a
3.1.10	TO THE REAL PROPERTY AND THE PARTY AND THE P	-
3.2	MARKED AND PURIFICACION AND CHAMBOAL ADDITION SYSTEMS	3-19
3.2 3.3	CONTROL ROD CREATED.  MAKEUR AND FURIFICACION AND CHEMICAL ADDITION SYSTEMS  EMERGENCY CORE CONLING, REACTOR EVILDING EMERGENCY  COOLING, AND REACTOR EVILDING SPRAY SYSTEMS	
3.3	COSTING AND REACTOR ENTEDENS SPRAY SYSTEMS	3-21
3.4	TUPBINE CHOLE  INSTRUMENTATION SYSTEMS  CPERATIONAL DAFFTY INSTRUMENTATION  CPERATIONAL DAFFTY INSTRUMENTATION	3-25
	Treepontant arton Systems	3-27
3.5	OPERATOR OF THE LEGISLE OF	3-27
3.5.1	ACTUACH SOM ARCITE INTO POWER BLOCKEDULARS MAKES	<b>3-</b> 33
3.5.2	ENGINEEPED SAFEGUARDS PROTECTION SYSTEM ACTUATION	
<b>3.5.</b> 3		3-37
,	SETPOLITS	<b>3-</b> 38
3.5.4	INCOPE INSTRUCENTATION	3-41
3.6	REACTOR PULLDING	3-42
3.7	UNIT ELECTRICAL POWER SISSEA	3-1.4
3.8	FUEL MOADING AND REFLEEZING	3-46
<b>3.</b> 9	UNIT ELECTRICAL POWER SYSTEM FUEL LOADING AND REPUBLING RADICACTIVE MATERIANS	<b>3</b> , , ,
3.10	MISCELLANGOUS RAPLOACTIVE	
	MATERIALS SCURCES	3-46
•	•	<b>3-</b> 55
3.11	HANDLING OF IRRADIACED FUEL	3-57
3.12	REACTOR BUTLDING FOLAS CRAIR RECONDARY SYSTEM ACTIVITY	3-58
3.13	RECONDUCT STOTEM ACTIVITY	
3.14	三 たっつ	· <b>3-5</b> 9
3.14.1	THE PROPERTY OF THE DIVES AROUND 124	<b>3-</b> 59
3.14.2	FLOOD CONDITION FOR PLACING THE UNIT IN HOT STANDAY	3-60
3,15	(RESERVED)	3-61
3.16	SHOCK SUPPRESSORS (SNUBBERS)	3-63
3.10		
4	SURVEILLANCE STANDARDS	4-1
4.1	OPERATIONAL SAFETY REVIEW REACTOR COOLANT SYSTEM INSERVICE INSPECTION TESTING FOLLOWING OPENING OF SYSTEM REACTOR BUILDING CONTAINMENT LEAKAGE TESTS	4-1
4.2	BELOTOR CONTAIN SYSTEM INSERVICE INSPECTION	4-11
4.3	TRETTION FOR CHILLIS OF SYSTEM	4-28
4.J	PRIOTOR WITT DING	4-29
	CONTINUE TRAVECT TESUS	4-29
4.4.1	STRUCTURAL INTEGRITY	4-35
4.1.2	STREET BURGE CYCTEY	4-37
4.4.3	HIDROGE, FORGE GIGIENTER AND POWER TRANSFER, EMERGENCY	
4.5	EVERTERAL DURANTA CERCENCIA PRESCRIP RETURNO COULTES	
	EMERGENCY LOADING SEQUENCE AND FOMER TRANSFER. EMERGENCY CORE COOLING SYSTEM AND REACTOR BUILDING COULING EXSTEM PERIODIC TESTING	4-39
		4-39
4.5.1	EMERGETOY LOADING SEQUENCE	4-41
4.5.2	EMERGENCY CORE COOLING SYSTEM	4-43
4.5.3	REACTOR BUILDING COOLING AND ISOLATION SYSTEM	4-45
4.5.4	DECAY HEAT REMOVAL SYSTEM LEAKAGE	7-7
-		

## TABLE OF CONTENTS

Section	•	Fake
	TODIC MECHC	4-46
4.6	DMERGENCY POWER SYSTEM PERIODIC TESTS	4-48
4.7	REACTOR CONTROL ROD SYSTEM TESTS	4-48
4.7.1	CONTROL ROD DRIVE SYSTEM FUNCTIONAL TESTS	4-50
4.7.2	CONTROL ROD PROGRAM VERIFICATION	4-51
4.8	MAIN STEAM ISOLATION VALVES	4-52
4.9	EMERGENCY FEEDWATER FUMPS PERIODIC TESTING	4-52
4.9.1	TEST	4-52
4.9.2	ACCEPTANCE CRITERIA	
4.10	REACTIVITY ANOMALIES	4-53
4.11	SITE ENVIRONMENTAL FADICACTIVITY SURVEY	4-54
	CONTROL ROOM FILTERING SYSTEM	4-55
4.12	OPERATING TESTS	4-55
4.12.1	FILTER TESTS	4-55
4.12.2	RADIOACTIVE MATERIALS SCURCES SURVEILLANCE	4-56
4.13	REACTOR BUILDING PURGE EXHAUST SYSTEM	4-57
4.14	MAIN STEAM SYSTEM INSERVICE INSPECTION	4-58
4.15	REACTOR INTERNALS VENT VALVES SURVEILLANCE	4-59
4.16	REACTOR INTERNALS VENT VALVES BONVESTED BONVES	4-60
4.17	SHOCK SUPPRESSORS (SNUBBERS)	4-00
5	DESIGN FEATURES	5-1
		5-1
5.1	SITE	5-2
5.2	CONTAINMENT	5-2
5.2.1	REACTOR BUILDING	8-3
5.2.2	REACTOR BUILDING ISOLATION SYSTEM	5-3 5-4
5.3	REACTOR	5 h
-	REACTOR CORE	5-4
5.3.1	REACTOR COOLANT SYSTEM	5-4
5.3.2	NEW AND SPENT FUEL STORAGE FACILITIES	5-6
5.4	NEW FUEL STORAGE	5-6
5.4.1	SPENT FUEL STORAGE	5-6
5.4.2	AIR INTAKE TUNNEL FIRE PROTECTION SYSTEMS	5-8
5.5	AIR INTARE TOMBED TIME THE	•
	ADMINISTRATIVE CONTROLS	6-1
6	ADMITTOTION TO THE PARTY OF THE	6-1
6.1	RESPONSIBILITY	6 <b>-</b> 2
6.2	ORGANIZATION	6-2
6.2.1	OFFSITE	6-2
6.2.2	FACILITY STAFF	6-3
	STATION STAFF QUALIFICATIONS	
6.3	TRAINING	6-3
6.4	PENTENT & AUDIT	6-3
6.5	PLANT OPERATIONS REVIEW COMMITTEE (PORC)	6-3
6.5.1	MET-ED CORPORATE TECHNICAL SUPPORT STAFF	6-5
6.5.2.A	GENERAL OFFICE REVIEW BOARD (GORB)	6-7
6.5.2.B	REPORTABLE OCCURRENCE ACTION	6-10
6.6	OCCURRENCES INVOLVING A SAFETY LIMIT VIOLATION	6-108
6.7		6-11
<b>68</b>	PROCEDURES	

# LIST OF TABLES

Table	Title	Page
2.3-1	Reactor Protection System Trip Setting Limits	2-9
3.5-1	Instruments Operating Conditions	<b>3-</b> 29
3.16.1	Safety Related Shock Suppressors (Snubbers)	3-65
4.1-1	Instrument Surveillance Requirements	4-3
4.1-2	Minimum Equipment Test Frequency	<b>4-8</b>
4.1-3	Minimum Sampling Frequency	4-9
4.2-1	Instrument Surveillance Program	4-14
4.2-2	Surveillance Capsule Insertion & Withdrawal Schedule at TMI-2	4-27a
h.4-1	Selected Tendons and Corresponding Inspection Periods	4-35e
4.4-2	Tendons Selected for Tendon Physical Condition Test	4-36
4.4-3	Ring Girder Surveillance	<b>4-3</b> 68
4.15-1	Radioactive Liquid Waste Sampling and Analysis	4-59
4.15-2	Radioactive Gaseous Waste Sampling and Analysis	4-63
6.12-1	Protection Factors for Respirators	6-23

(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.

SAFETY	RELATED	SHOCK	SUPPRESSORC	(	SNUBBERS)	Ì
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Amendment No. 6	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
٠,	RC-4	R.B. Inside Sec. Shield N.E. Quad.	355	110	Yes	Yes	No
•	RC-5	Rx. Fldg. Inside Sec. Shield N.E. Quad. Top of PZR Near RC-V3	355	No	No	Yes	No
•	RC-15	Rx. Eldg. Inside Sec. Shield N.E. Quad. Top of PZR Near RC-V3	355	No	Ио	Yes	No
•	RC-16	Ex. 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-Vl	355	No	No	Yes	No
	RC-18	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-Vl	355	No	No	Yes	No
3-65	RC-19	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-Vl	355	No	No	Yes	No
55	RC-23	Rx. Bldg. Inside Sec. Shield N.E. Quad. Near RC-Vl	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)

Amendmen	<b>†</b>	
Amendment No. § *		Si M
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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. Qued,	321	No	No	Yes	No
RC-14 ·	Rx. Bldg. Inside Sec. Chield N.E. Quad	321	No	No	Yes	No
MUE-38	Rx. Eldg. Inside Sec. Shield N.E. Quel.	318	No	No	Yes	No
MUE-39	Rx. Fldg. Inside Sec. Shield N.E. Quad.	318	No	Ио	Yes	No (
PR-23	Rx. Eldg. Inside Sec. Shield N.E. Quad. RC-RV-1A Disch. Line	3/10	No	No	Yes	No
PR=2h	Rx. Eldg. Inside Sec. Shield N.E. Quad. RC-RV-1A Disch. Line	340	No	No	Yes	No
FR-25	Rx. Blog. Inside Sec. Shield N.E. Quad. RC-RV-1B Disch. Line	340	No	No	Yes	No
PR-26	Rx. Pldg. Inside Sec. Shield N.E. Quad. RC-RV-1B Disch. Line	340	No	No	Yes	No
FR-314	Rx. Eldg. 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. Qued. 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. Blag. Inside Sec. Shield N.E. Quad. RC-RV-1B Disch. Line	345	No	No	Yes	No
FR-47	Rx. Bldg. Inside Sec. Shield N.E. Quad. RC-RV-2 Disch. Line	355	No	No	Yes	No
FR-48	Rx. Eldg. Inside Sec. Shield N.E. Quad. RC-RV-2 Disch. Line	355	No	No	Yes	No
NSE-77	Rx. Fldg. 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. Blag. Inside Sec. Shield N.E. Quad.	331	No	No	Yes	No
NSE-75	Rx. Bldg. Inside Sec. Shield N.E. Quai.	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.	33 <sup>l</sup> +	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)

len			•				
endment No.	Snubber	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	325	No	Yes	Yes	No
	MUE-20	S.E. Quad.  Rx. Bldg. Inside Sec. Shield	315	No	llo	Yes	No
	MUE-69	S.E. Quad. Rx. Bldg. Inside Sec. Shield S.E. Quad.	310	No	Yes	Yes	No
	nse-85	Fx. Bldg. Inside Sec. Shield	332	No	Yes	Yes	No (
_	NSE-86	N.W. Quad. Rx. Bldg. Inside Sec. Shield	331	No.	Yes	Yes	No
	nse-87	N.W. Quad. 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
3-68	NSE-131	Rx. Bldg. Inside Sec. Shield N.W. Quad.	334	No	No	Yes	No
68	NSE-132	Rx. Bldg. Inside Sec. Shield	334	No	No	Yes	No
	NSE-133	N.W. Quad.  Rx. Bldg. Inside Sec. Shield	334	No	No	Yes	No
	NSE-138	N.W. Quad.  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	310	No	No	Yes	No
	MUE-42	N.W. Quad.  Rx. Bldg. Inside Sec. Shield	310	No	No	Yes	No
	CF-16	N.W. Quad.  Rx. Bldg. Inside Sec. Shield	310	No	No	Yes	No
	CF-16A	N.W. Quad.  Rx. Bldg. Inside Sec. Shield  N.W. Quad.	316	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-89	Rx. Bldg. Inside Sec. Shield	334	No	No	Yes	No
	S.W. Quad. Rx. Bldg. Inside Sec. Shield			No	Yes	No
NSE-90 ·	S.W. Quad.	334	No	No		No
NSE-91	Rx. Bldg. Inside Sec. Chield	3.44	No	No	Yes	NO
	S.W. Quad. Rx. Bldg. Inside Sec. Chield	334	No	No	Yes	No
NSE-92	S.W. Quad. Rx. Bldg. Inside Sec. Shield			No	Yes	No
NSE-122	S.W. Quad.	342	No			No
NSE-129	Rx. Bldg. Inside Sec. Shield S.W. Quad.	33 <sup>1</sup> 4	No	No	Yes	No
NSE-130	Rx. Bldg. Inside Sec. Shield	334	No	110	Yes	No
	S.W. Quad. Rx. Eldg. Inside Sec. Shield	225	N	No	Yes	No
FW-114	S.W. Quad.	325	No		V.	No
FW-115	Rx. Bldg. Inside Sec. Chield S.W. Quad.	325	Ио	No	Yes	NO
EF-113	Rx. Bldg. Inside Sec. Shield	320	No	Yes	Yes	No
·	S.W. Quad. Rx. Bldg. Inside Sec. Shield	302	No	Yes	Yes	No
DII-4	S.W. Quad.	302	NO		V	No
DH-5	Rx. Bldg. Inside Sec. Chield S.W. Quad.	302	No	Yes	Yes	
cf-6	Rx. Bldg. Inside Sec. Shield	316	No	No	Yes	No
	S.W. Quad. Rx. Bldg. Outside Sec. Shield	340	No	No	No	Yes
DH-32	N.E. Quad.		NO			No
MS-202	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	NO
MS-203	Rx. Bldg. Outside Sec. Shield	337	No	Yes **	No	No
CO2-CU1	N.E. Quad. Rx. Bldg. Outside Sec. Shield	337	No	Yes **	No	No
MS-206	N.E. Quad.	331	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)

mendment No.	Snubber	Location	Elevation	Snubber In High Radiation Area During Shutdown#	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
ω :2	MK No.	Rx. Bldg. Outside Sec. Shield	337	No	Yes **	No	No
	MS-292	N.E. Quad.	331	-			No
Ī	MS-286 ·	Rx. Bldg. Outside Sec. Shield N.E. Quad.	337	No	Yes **	No	NO
	PR-38	Rx. Rldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
+	PR-39	Rx. Bldg. Outside Sec. Shield	326	No	Yes **	No	No (
1	FR-40	N.E. Quad. Rx. Bldg. Outside Sec. Shield	326	No	Yes **	No	No
ļ		N.E. Quad. Rx. Bldg. Outside Sec. Shield	326	No	Yes **	No	No
	PR-111	N.E. Quad.		NO		N	No
φ	PR-42	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	NO
3-70	PR-43	Rx. Bldg. Outside Sec. Shield	326	No	Yes **	No	No
•	PR-44	N.E. Quad.  Rx. Bldg. Outside Sec. Shield	309	No	No	No	Yes
		N.E. Quad. Rx. Bldg. Outside Sec. Shield	309	No	No	No	Yes
	PR-45	N.E. Quad. Rx. Bldg. Outside Sec. Shield	309	No	No	No	Yes
	PR-46	N.E. Quad.	309	NO			No
	PR-49	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	
	PR-50	Rx. Bldg. Outside Sec. Shield N.E. Quad.	326	No	Yes **	No	No
	CF-14	Rx. Bldg. Outside Sec. Shield	309	No	No	No ·	Yes
	CF-15	N.E. Quad.  Rx. Bldg. Outside Sec. Shield	309	No	No	No	Yes
	MS-200	N.E. Quad. Rx. Bldg. Outside Sec. Shield	338	No	Yes **	No	No
	MS-201	Rx. Bldg. Outside Sec. Shield	338	No	Yes **	No	No
	MS-205	S.E. Quad.  Rx. Bldg. Outside Sec. Shield S.E. Quad.	338	No	Yes **	No	No

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS ( SNUBBERS)

Snubber		Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
MK No.	Location			Voc	No	No
MS-291	Rx. Bldg. Outside Sec. Shield S.E. Quad.	338	No	Yes **		N
pc 07	Rx. Bldg. Outside Sec. Shield	341	No	Yes **	No	No
BS-27	S.W. Quad. Rx. Bldg. Outside Sec. Shield	311	No	Yes **	No	No
BS-27A	1 C H Oued				No	Yes (
MUE-110	Rx. Bldg. Outside Sec. Shield S.W. Quad	31.8	No	Ио	110	
	Rx. Pldg. Outside Sec. Shield	31.8	No	No	No	Yes
MUE-41	S.W. Quad.	-		V	No	No
BS-5	Rx. Bldg. Outside Sec. Shield S.W. Quad.	335	No	Yes **		N -
BS-6	Rx. Bldg. Outside Sec. Shield	335	No	Yes **	No	No
	S.W. Quad. Rx. Bldg. Outside Sec. Shield	337	No	Yes **	No	No
BS-26	S.W. Quad.	3,31			No	Yes
DH-11	Rx. Bldg. Outside Sec. Shield S.W. Quad.	297	No	No	NO	
-	Rx. Bldg. Outside Sec. Shield	297	No	No	No	Yes
DH-12	S.W. Quad.			No	No	Yes
CF-7	Rx. Bldg. Outside Sec. Shield S.W. Quad.	297	No	NO		
CF-8	Rx. Bldg. Outside Sec. Shield	297	No	No	No	Yes
CF-0	S.W. Quad. Rx. Bldg. Outside Sec. Shield	308	No	Yes **	No	· No
CF-9	S W. Quad.	300	_		No	No
BS-7	Rx. Bldg. Outside Sec. Shield	307	No	Yes **	No	
	S.W. Quad. Rx. Bldg. Outside Sec. Shield	291	No	No	No	Yes
BS-22	S.W. Quad.		N.	No	No	Yes
BS-23	Rx. Bldg. Outside Sec. Shield S.W. Quad.	291	No	10		V
PS-24	Rx. Bldg. Outside Sec. Shield	291	No	No	No	Yes
DO-24	S.W. Quad. Rx. Bldg. Outside Sec. Shield	202	No	No	No	Yes
BS-25	S.W. Quad.	293	110			!

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS ( SNUBBERS)

nd							
endment No.	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
3-72	MS-212	Rx. Bldg. Outside Sec. Shield N.W. Quad.	338	No	Yes **	No	No
2	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	Ио	No	No	Yes
	DH-21	Rx. Bldg. Outside Sec. Shield N.W. Quad.	298	No	No	No	les

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS ( SNUBBERS)

endment No.	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
Ī	MS-216 ·	Int. Bldg. on MS-V-1D	355	No	Yes ***	No	No
1	MS-217	Int. Bldg. on MS-V-1C	341	No	Yes ***	No	No
1	MS-218	Int. Bldg. on MS-V-1C	31+1	No	Yes ***	No	No (
	FS-219	Int. Bldg. on MS-V-1C	355	No	No	No	Yes
1	MS-220	Int. Bldg. on MS-V-11)	355	No	No	No	Yes
	MS-221	Int. Bldg. on MS-V-lD	3/11	No	Yes ***	No	No
3-73	MS-222	Int. Bldg. on MS-V-1B	341	110	Yes ***	No	No
~	MS-223	Int. Bldg. on MS-V-1A	341	No	Yes ***	No	No
1	MS-224	Int. Pldg. 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
4	MS-227	Int. Bldg. on MS-V-lA	355	No	No	No	Yes
-	MS-289	Int. Bldg. on MS-V-1A	355	No	No	No	Yes
J	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. Eldg. 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)

nendment No. 60	Snubber	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	По	No	Yes
+	MS-233	Int. Bldg.	3114	No	Yes ***	No	No (
+	MS-234	Int. Bldg.	314	No	Yes ***	No	No
	MS-235	Int. Bldg.	314	110	Yes ***	No	No
		Int. Bldg.	314	No	Yes ***	No	No
3-74	MS-236		314	No	Yes ***	No	No
4	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.			Yes ***	No	No
	MS-277	Int. Bldg.	320	No			No
	MS-277A	Int. Bldg.	320	No	Yes ***	No ·	
	MS-247	Int. Bldg. Near EF-P-1	300	Ио	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)

ocation	Elevation	Snubber In High Radiation Area During Shutdown#	Snubber Especially Difficult To Remove	Snubbers Inaccessible During Normal Operation	Snubbers Accessible During Normal Operation
nt. Bldg. Near EF-P-1	300	No	No	No	Yes
nt. Bldg. B FW Catch Hdr.	325	No	No	No	Yes
nt. Bldg. B FW Catch Hdr.	325	No	No	No	Yes
nt. Bldg. Near EF-P-2A	302	No	No	No	Yes
nt. Bldg. Near EF-P-2B	302	No	Yes ***	No	No
int. Bldg. Near EF-P-2B	302	No	Yes ***	No	No
Int. Bldg.	302	Ио	No	No	Yes
Int. Bldg. Near EF-P-1	302	No	No	No	Yes
Int. Bldg. Near EF-p-1	302	No	No	No	Yes
Int. Bldg.	305	No	Yes ***	No	No
Furb. Bldg. A FW Catch Hdr.	323	No	No	No	Yes
Turb. Bldg. A FW Catch Hdr.	323	No	No	No	Yes
Aux. Bldg. HX Vault	286	No	Yes ***	No	No
Aux. Bldg. HX Vault	286	No	Yes ***	No .	No
Aux. Bldg. HX Vault	286	No	Yes ***	No	No
Aux. Bldg. HX Vault	286	No	Yes ***	No	No
Aux. Bldg. HX Vault	286	No	Yes ***	No	No
Aux. Bldg. HX Vault	286	No	Yes ***	No	No
	nt. Bldg. Near EF-P-1  nt. Bldg. B FW Catch Hdr.  nt. Bldg. B FW Catch Hdr.  nt. Bldg. Near EF-P-2A  nt. Bldg. Near EF-P-2B  nt. Bldg. Near EF-P-1  nt. Bldg. Near EF-P-1  nt. Bldg. Near EF-P-1  nt. Bldg. Near EF-p-1  nt. Bldg. A FW Catch Hdr.  Purb. Bldg. A FW Catch Hdr.  nux. Bldg. HX Vault  nux. Bldg. HX Vault	at. Bldg. Near EF-P-1       300         at. Bldg. B FW Catch Hdr.       325         at. Bldg. B FW Catch Hdr.       325         at. Bldg. Near EF-P-2A       302         at. Bldg. Near EF-P-2B       302         at. Bldg. Near EF-P-2B       302         at. Bldg. Near EF-P-1       302         at. Bldg. Near EF-P-1       302         at. Bldg. Near EF-p-1       302         at. Bldg. A FW Catch Hdr.       323         at. Bldg. A FW Catch Hdr.       323         atw. Bldg. HX Vault       286         atw. Bldg. HX Vault       286	High Radiation Area During Shutdown*  at. Bldg. Near EF-F-1 300 No  at. Bldg. B FW Catch Hdr. 325 No  at. Bldg. B FW Catch Hdr. 325 No  at. Bldg. Near EF-P-2A 302 No  at. Bldg. Near EF-P-2B 302 No  at. Bldg. Near EF-P-2B 302 No  at. Bldg. Near EF-P-1 302 No  at. Bldg. A FW Catch Hdr. 323 No  atr. Bldg. A FW Catch Hdr. 323 No  atr. Bldg. A FW Catch Hdr. 323 No  atr. Bldg. HX Vault 286 No	High Radiation Area During Shutdown*   Especially Difficult To Remove	High Radiation Area During Shutdown*   Especially Difficult To Remove   No   No   No   No   No   No   No   N

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS ( SNUBBERS)

Snubber	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
	Aux. Bldg. HX Vault	284	No	Yes ***	No	No
NGE-16	Aux. Bldg. HX Vault	284	110	Yes ***	No	No
NSE-17 MUE-6	Aux. Bldg. Valve Alley	283	Yes	Yes	Yes	No (
	Aux. Bldg. Valve Alley	283	Yes	Yes	Yes	No
MUE-7	Aux. Bldg. Valve Alley	288	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.	297	No	Yes ***	No	No
DHH-196		295	No	Yes ***	No	No
NSE-7	Aux. Bldg.	295	No	No	No	Yes
NSE-8	Aux. Bldg.	293	No	No	No	Yes
NSE-9	Aux. Bldg.	291	No	Yes ***	No .	No
NSE-10	Aux. Bldg.	291	No	No	No	Yes
NSE-11	Aux. Bldg.		No	No	No	Yes
NSF-18	Aux. Bldg.	291	No	Yes ***	No	No
NSE-33	Aux. Bldg.	297			No	Yes
NSE-37	Aux. Bldg.	293	No	No	110	

Amendment No. 3 f

3-76

TABLE 3.16.1
SAFETY RELATED SHOCK SUPPRESSORS ( SNUBBERS)

endment No.	Snubber	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-lA 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-1Λ Room	275	No	Yes ***	No	No
+	SPSE-3	Aux. Bldg. DH-P-1A Room	275	По	Yes ***	No	No
+	SPSE-12	Aux. Bldg. DH-P-1A Room	275	No	Yes ***	No	No
3-77	DHH-197	Aux. Bldg. DH-P-1B Room	275	No	∛es ***	No	No
7	рнн-198	Aux. Bldg. DH-P-1B Room	275	No	Yes ***	No	No
į	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)

Amendment No.

Snubber	Location	Elevation	Snubber In High Radiation Area During Shutdown*	Snubber Especially Difficult To Remove	Snubbers Ineccessible During Normal Operation	Snubbers Accessible During Normal Operation
MK No.	Aux. Bldg. NSP Discharge	322	llo .	Yes	No	No
NSE-24	Aux. Bldg. NSP Suction	324	No	Yes ***	Уэ	No
XSE-27	Aux. Bldg.	320	No	Yes ***	No	No
NSE-29	Aux. Bldg. NS to SF Cooler	320	llo	Yes ***	No	No (
RW-72	Aux. Bldg. HX Vault	290	lio	Yes ***	No	No
PW-73	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
PW-75	Aux. Bldg. HX Vault	290	No	Yes ***	Хо	No
PWE-8	Aux. Bldg. HX Vault	290	No	Yes ***	No	No
EME=0	Aux. Bldg. HX Vault	290	No	Yes ***	Но	No
PWE-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	Ио	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)

Intake Pump House	290	No			
Intake Pump House	200		Ilo	No	Yes
	270	No	No	No	Yes
Intake Fump House	290	По	tio	No	Yes
Intake Pump House	290	Ио	No	No	Yes (
Intake Pump House	290	Ио	No	No	Yes
	3110	Cylinder_No Reservoir-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
	31+0	Cylinder-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
Reactor Bldg. on RCP-1C	3110	Cylinder-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
Reactor Bldg. on RCP-1D	31:0	Cylinder-No Reservoir-No	Yes +	Cylinder-Yes Reservoir-No	Reservoir-Yes Cylinder-No
			in high rad to the NRC amendment.  ** To be inspective.  ** To be inspective.  ** Hydraulic so with the "inspective.  Reservoirs	ationareas should as part of the nest of t	d be submitted xt license cessible cessible to be inspected
	Intake Pump House  Reactor Bldg. on RCP-1A  Reactor Bldg. on RCP-1B  Reactor Bldg. on RCP-1C	Intake Pump House 290  Reactor Bldg. on RCP-1A 3h0  Reactor Bldg. on RCP-1B 3h0  Reactor Bldg. on RCP-1C 3h0	Intake Pump House  290  Reactor Bldg. on RCP-1A  Reactor Bldg. on RCP-1B  Reactor Bldg. on RCP-1B  Reactor Bldg. on RCP-1C  Reservoir-No  Cylinder-No Reservoir-No	Intake Pump House   290	Intake Pump House  290  No  No  No  No  Reactor Bldg. on RCP-1A  3h0  Reservoir-No  Reservoir-No  Reactor Bldg. on RCP-1B  3h0  Reservoir-No  Reservoir-No

## 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
<b>.</b>	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	(a) Silt Accumulation- Visual inspection of Intake Pump House Floor	Each refueling period
•	(Elevation 262 Ft 6 in.)	(b) Silt Accumulation Measurement of Pump House Flow	Quarterly

<sup>\*</sup> 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 1 2 3, 4 5, 6, 7 <u>&gt;</u> 8	18 months ± 25% 12 months ± 25% 6 months ± 25% 124 days ± 25% 62 days ± 25% 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 polyurethamedeteriorates repidly 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