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# GENERAL ELECTRIC

NUCLEAR ENERGY  
PROJECTS DIVISION

GENERAL ELECTRIC COMPANY, 175 CURTNER AVE., SAN JOSE, CALIFORNIA 95125

MFN-413-78

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November 13, 1978

U. S. Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Washington, D. C. 20555

Attention: Mr. C. I. Grimes, Task Manager  
Mark I Containment Program  
Division of Operating Reactors

Gentlemen:

SUBJECT: MARK I CONTAINMENT PROGRAM  
MULTIPLE CONSECUTIVE SAFETY/RELIEF VALVE ACTUATION

- References:
- 1) Letter, L. J. Sobon to V. Stello, dated July 21, 1978, "Mark I Containment Program - Multiple Consecutive Safety/Relief Valve Actuation"
  - 2) Letter, L. J. Sobon to V. Stello, dated August 14, 1978, "Mark I Containment Program - Multiple Consecutive Safety/Relief Valve Actuation"

During discussions regarding multiple consecutive safety/relief valve (SRV) actuations, the NRC Staff requested certain information in addition to that provided in References 1 and 2. Attached are two tables which contain the requested information. Table I compares the hydrodynamic multipliers for the "worst SRV line expected to experience a subsequent actuation" to the "average SRV line". Table I also provides the values used for the key parameters which affect SRV loadings and the change in the limiting strength ratio for five Mark I plants requested by the NRC Staff. The information in Table I is based on calculations performed using analytical models and the specified input parameters rather than parametric curves as in previous submittals. Table II provides a summary of the key parameters used in developing the hydrodynamic factors contained in Attachment 2 to Reference 1.

Very truly yours,

*L. J. Sobon*  
for L. J. Sobon, Manager  
BWR Containment Licensing  
Containment Improvement Programs

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cc: L. S. Gifford (GE-Bethesda)  
File 2.10/

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TABLE 1

PLANT	"AVERAGE LINE"				"WORST LINE PREDICTED TO 2nd POP"				"WORST" SPUM & CPUM "AVERAGE" SPUM & CPUM	LIMITING STRENGTH RATIO CHANGE - "AVG." TO "WORST"
	Line	Set Pt. psig	W. Leg ft.	Air Vol. ft. <sup>3</sup>	Line	Set Pt. psig	W. Leg ft.	Air Vol. ft. <sup>3</sup>		
Millstone	C	1095	13.0	41.3	A	1095	13.0	36.8	1.11	No change*
Vermont Yankee	C	1090	4.9	38.5	B	1072	4.9	37.5	1.01	Negligible**
Dresden III	E	1130	13.9	28.8	A	1115	13.9	27.4	1.07	+0.01
Quad Cities I	D	1130	14.8	26.6	A	1115	14.8	25.1	1.06	+0.02
Duane Arnold	4405	1100	9.8	41.2	4401	1090	9.8	36.2	0.99	Negligible

## Notes:

SPUM - Shell Plant Unique Multiplier

CPUM - Column Plant Unique Multiplier

\* The Millstone Plant utilized their S/RV test results from Line A in developing their strength ratios. Therefore, a change in SPUM and CPUM values does not affect their strength ratios.

\*\* The Vermont Yankee limiting strength ratio for an individual analysis of line C is 0.46 (SPUM = 0.71, CPUM = 0.76). In going from line C to line B, the change in strength ratio is negligible.

Table II

Plant	Avg. S/RV Line	Water Leg (ft)		Air Vol (ft <sup>3</sup> )		Set Point (PSIG)		S/RV Flow (lbm/sec)		RH Height From Floor (ft)	
		Avg.	Range	Avg.	Range	Avg.	Range	Avg.	Range	Avg.	Range
Monticello	71A	11.3	All Lines The Same	51	45-53	1080	All Lines The Same	248	248 257	4.7	All Lines The Same
Millettone	3C	13.0	"	41	34-42	1095	"	260	260 259	4.4	"
Duane Arnold	4405	9.8	"	41	36-47	1100	1090 1110	261	263 248	4.0	"
Cooper	71B	6.1	"	69	41-80	1090	1080 1100	250	252 257	4.2	"
Fitzpatrick	71E	8.0	"	67	51-106	1080	1080 1100	257	262 181	4.6	"
NMP	0107	3.4	"	100	100-106	1095	1090 1100	182	183	5.5	"
Pilgrim	3C	14.6	"	63	59-63	1095	All Same 1072	248	248 245	3.3	"
Vermont Yankee	71C	4.9	"	39	38-43	1090	1090 1080	250	250 244	5.3	"
Hatch I	13J	8.8	5.8-8.8	59	51-75	1080	1100 1090	257	261 269	4.5	"
Hatch II	K	12.1	5.7-12.1	49	43-58	1100	1110 1115	271	273 187	4.8	"
Quad Cities I	3D	14.8	All Lines The Same	27	25-28	1130	1135 1115	193	270 187	4.9	"
Dresden III	3E	13.9	"	29	28-31	1130	1135 1080	193	270 248	4.9	"
Peach Bottom II, III	71F	9.9	"	77	77-84	1090	1100 1080	250	252 248	5.0	"
Browns Ferry I, II, III	71A	8.5	"	59	52-59	1090	1100	250	252	5.0	"

TEST CONDITIONS (Line Tested)

Monticello	71A	13.1		49		985		200		4.7	
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