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Writer's Direct Dial Number

July 30, 1984

Mr. Dennis M. Crutchfield, Chief  
Operating Reactors Branch  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Crutchfield:

Subject: Oyster Creek Nuclear Generating Station (OCNGS)  
Docket No. 50-219  
SEP Topic No. III-10A, Thermal-Overload Protection  
for Motors of Motor-Operated Valves

During the integrated assessment of the subject SEP topic, GPU Nuclear made a commitment to evaluate thermal-overload relays for the motor operator for each engineered safety feature (ESF) valve.

GPU Nuclear has recently developed a methodology as described in the attached report with which to determine the optimum setpoints (heater size) for the thermal-overload-relays. The methodology was developed to satisfy Regulatory Guide 1.106 position C2, which requires that the setpoints be established with all uncertainties resolved in favor of completing the safety related function. Safety factors are employed in establishing these setpoints to help ensure completion of the valve operation while still providing motor protection.

A sample calculation for sizing the thermal overload setpoints on Core Spray Isolation Valve motor operator is included in the report.

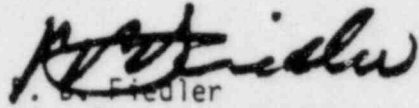
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*Note: 2nd Distribution  
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GPU Nuclear plans to utilize the methodology provided in the report for the remaining ESF valves in determining the setpoints. The evaluation and modification, if necessary, are expected to be completed by March, 1985.

Very truly yours,



J. B. Fiedler  
Vice President and Director

1r/0331e

cc: Administrator  
Region I  
U.S. Nuclear Regulatory Commission  
631 Park Avenue  
King of Prussia, Pa. 19406

NRC Resident Inspector  
Oyster Creek Nuclear Generating Station  
Forked River, N.J. 08731

**Obsolete Devices**

Note: If full load amperes falls between increments, use next higher rating.

**Table 46, NEMA Sizes 00, 0, & 1**

Use Column A For:

CR106, CR109①, Open, Types 4, 7, 9  
 CR110, CR111①, All Enclosures  
 CR124A1①②, Open or Type 1  
 CR133C①

Use Column B For:

CR106, CR109①, Types 1, 12  
 CR107, CR108①, All Enclosures  
 CR160C1①

Max. Motor Full-load Amperes		Heater Cat. No. CR123
Column A	Column B	
0.33	0.31	C036A
0.37	0.34	C039A
0.41	0.36	C043A
0.46	0.43	C046A
0.52	0.47	C054A
0.57	0.52	C060A
0.61	0.56	C066A
0.67	0.62	C071A
0.75	0.69	C076A
0.84	0.77	C087A
0.94	0.87	C097A
1.03	0.94	C109A
1.14	1.04	C118A
1.30	1.18	C131A
1.42	1.30	C148A
1.61	1.47	C163A
1.72	1.56	C164A
1.93	1.75	C196A
2.10	1.90	C220A
2.34	2.13	C239A
2.64	2.40	C266A
2.86	2.60	C301A
3.13	2.84	C326A
3.32	3.02	C356A
3.66	3.34	C379A
4.06	3.72	C419A
4.61	4.20	C466A
5.21	4.73	C526A
5.67	5.02	C592A
6.12	5.55	C630A
6.63	6.21	C695A
7.70	6.92	C776A
8.48	7.64	C867A
9.19	8.31	C955A
9.92	9.04	C104B
11.1	9.99	C113B
12.2	10.9	C125B
13.5	12.0	C137B
14.6	13.0	C151B
16.1	14.3	C163B
17.0	15.6	C1600
19.3	17.0	C191B
20.6	18.1	C214B
22.6	19.9	C228B
24.6	21.6	C250B
27.0	24.2	C273B
	26.3	C303B
	27.0	C330B

**Table 47, CR106K, Size 1P①**

Type Enclosure		Device
Open 4, 7, 9	1, 12	CR106
Max. Motor Full-load Amperes		Heater Cat. No. CR123
15.1	.....	C151B
16.7	15.0	C163B
18.5	16.6	C180B
20.0	17.9	C196B
21.4	19.0	C214B
23.5	20.9	C228B
25.6	22.9	C250B
28.7	25.4	C273B
31.2	27.6	C303B
36.0	30.7	C330B
.....	33.5	C366B
.....	36.0	C400B

**Table 48 NEMA Size 2**

Use Column A For:

CR106, CR109①, Open, Types 4, 7, 9  
 CR110, CR111①, All Enclosures  
 CR124B1①②, All  
 CR131D, CR133D, CR134D①, All

Use Column B For:

CR106, CR109①, Types 1, 12  
 CR107, CR108①, All Enclosures  
 CR160C2①

Max. Motor Full-load Amperes		Heater Cat. No. CR123
Col. A	Col. B	
6.63	.....	C665A
7.59	6.60	C775A
8.36	7.76	C867A
9.20	8.63	C955A
9.93	9.53	C104B
11.2	10.7	C112B
12.5	11.7	C125B
14.1	12.8	C137B
15.5	14.3	C151B
17.4	16.1	C163B
19.8	17.9	C180B
21.2	19.3	C196B
22.7	21.4	C214B
24.9	22.6	C228B
27.3	24.6	C250B
29.7	26.7	C273B
34.2	30.0	C303B
40.2	34.8	C330B
46.0	40.1	C366B
.....	43.3	C400B
.....	46.0	C440B

**Table 49, NEMA Size 3**

Use Column A For:

CR106, CR109①, Open, Types 4, 7, 9  
 CR110, CR111①, All Enclosures  
 CR131E①, All  
 CR123E①, All Enclosures

Use Column B For:

CR106, CR109①, Types 1, 12  
 CR107, CR108①, All Enclosures

Max. Motor Full-load Amperes		Heater Cat. No. CR123
Col. A	Col. B	
23.1	20.9	F243B
26.3	23.5	F270B
28.5	25.5	F300B
30.9	27.7	F327B
33.6	30.3	F357B
36.5	32.8	F395B
41.1	37.1	F430B
47.6	42.9	F487B
52.5	47.0	F567B
56.6	50.1	F614B
61.9	54.5	F658B
67.9	58.5	F719B
75.5	64.1	F772B
79.6	68.6	F848B
87.9	77.5	F914B
90.0	82.2	F104C
.....	93.0	F114C

- ① Heaters for current devices are now selected by type of enclosure. See table NEMA Type Enclosures, page 10.  
 ② Three heaters required. Single-phase—One heater. Two-speed controllers require six heaters.  
 ③ Do not use table for CR124 relays mounted directly on magnetic starters. Refer to table for starter involved.  
 ④ One heater required.  
 ⑤ Three heaters required.

**Table 50, NEMA Size 4**

Use Column A For:

CR106, CR109①, Open, Types 4, 7, 9  
 CR110, CR111①, All Enclosures  
 CR131F①, All  
 CR133F①, All Enclosures

Use Column B For:

CR106, CR109①, Types 1, 12  
 CR107, CR108①, All Enclosures

Max. Motor Full-load Amperes		Heater Cat. No. CR123
Col. A	Col. B	
37.8	34.3	F365B
42.6	38.9	F430B
46.8	45.3	F487B
54.2	48.0	F567B
58.0	52.6	F614B
66.5	57.4	F658B
70.6	61.6	F719B
79.1	67.8	F772B
83.6	73.0	F848B
92.9	83.1	F914B
100	94.7	F104C
110	.....	F114C
124	106	F118C
133	116	F133C
.....	130	F146C

**Table 51, NEMA Size 5**

Use Column A For:

CR106, CR109①, Open, Types 4, 7, 9  
 CR110, CR111①, All Enclosures  
 CR131G, CR133G①, All

Use Column B For:

CR106, CR109①, Types 1, 12  
 CR107, CR108①, All Enclosures

Max. Motor Full-load Amperes		Heater Cat. No. CR123
Col. A	Col. B	
76.2	.....	C376A
84.2	79.9	C418A
94.6	90.1	C466A
106	100	C526A
111	107	C592A
122	114	C630A
137	127	C695A
151	137	C776A
170	147	C867A
185	159	C955A
201	170	C104B
223	185	C113B
244	202	C125B
266	218	C137B
270	231	C151B
.....	250	C163B
.....	270	C180B