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Docket Nos. 50-277
50-278
50-352
50-353

License Nos. DPR-44
DPR-56
NPF-39
NPF-85

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Peach Bottom Atomic Power Station, Units 2 and 3
Limerick Generating Station, Units 1 and 2
Supplemental Response to Generic Letter 89-10
"Safety-Related Motor-Operated Valve Testing and Surveillance - 10 CFR 50.54 (f)"

REFERENCE: Letter from D. R. Helwig (PECo) to NRC, dated December 28, 1989

Dear Sir:

The referenced letter submitted Philadelphia Electric Company's (PECo) response to Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," wherein PECo requested approximately two years to complete its response to Item (c) of the Generic Letter. Due to the many uncertainties surrounding GL 89-10 issues at the time, PECo required the additional two year period to evaluate alternatives to the in-plant motor operated valve (MOV) testing requested by GL 89-10, item (c), and to develop a MOV differential pressure and/or flow testing program.

We have completed our evaluation of alternatives to in-plant MOV testing and as a result have developed the attached "Program for Testing of Motor Operated Valves" (Attachment 1), which will be implemented at both Peach Bottom Atomic Power Station (PBAPS), Units 2 and 3 and Limerick Generating Station (LGS), Units 1 and 2. The Program delineates the criteria for selecting valves to be tested and describes the selection of test conditions.

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Attachment 2 to this letter provides a list of the MOVs at PBAPS determined to be testable at design basis differential pressure. Attachment 2 also provides a list of the MOVs determined to be testable at highest system attainable differential pressure. Attachment 3 provides similar information for LGS. These lists, which are current as of this date are submitted for your information and may be subject to changes as we proceed with the implementation of the testing program.

PECo has made a significant commitment of resources to support the MOV Users Group and the Electric Power Research Institute (EPRI) MOV Performance Prediction Program. The intent of the EPRI research program is to develop methods to predict performance of MOVs and alternatives to design-basis testing. The current schedule for completion of this program is 1994. Upon completion of the EPRI program, it is PECo's intent to use the information derived from it, as well as information from other organizations and programs, to ensure that diagnostic techniques are appropriately used to assure operability of safety related MOVs.

This submittal completes PECo's response to GL 89-10 Item (c). If you have any questions concerning it, or require additional information, please contact us.

Sincerely,

Attachments

cc: T. T. Martin, Administrator, Region I, USNRC
J. J. Lyash, USNRC Senior Resident Inspector, PBAPS
T. J. Kenny, USNRC Senior Resident Inspector, LGS

PHILADELPHIA ELECTRIC COMPANY
SUPPLEMENTAL RESPONSE TO GENERIC LETTER 89-10
PROGRAM FOR TESTING OF MOTOR-OPERATED VALVES

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PURPOSE

The purpose of this document is to provide Philadelphia Electric Company's plan for testing of motor-operated valves (MOVs) in safety related systems to ensure that MOVs will operate under design basis conditions. This is accomplished through differential pressure testing and/or static testing of motor-operated valves as recommended by Generic Letter 89-10, including Supplements 1 through 3. Valves which are within the scope of Supplement 4 to Generic Letter 89-10 have been removed from the MOV Program.

TOTAL POPULATION

There are currently 178 Peach Bottom Units 2 & 3 and 439 Limerick Units 1 & 2 valves in the Generic Letter 89-10 Program.

PREVIOUS ACTIONS

Philadelphia Electric has previously taken significant steps to assure the operability of motor-operated valves. These steps include:

- Valves within the original scope of Generic Letter 89-10 have been set up, within a thrust band determined by vendor supplied data and engineering calculations, to meet required design thrust. Diagnostic equipment was used on valves to assure that the needed thrust was achieved.

- Valves in the HPCI and RCIC systems (14 at Peach Bottom Unit 2 and 17 at Limerick Unit 1) have been tested at highest system attainable differential pressures. No operability concerns were identified.

VALVE TESTABILITY CRITERIA

Valves within the Generic Letter 89-10 Program for both Peach Bottom and Limerick were evaluated for differential pressure testability using the criteria listed below. Valves were excluded if:

1) Testing would adversely affect reactor/system chemistry.

2) Testing would affect reactor core reactivity.

3) Testing would violate plant Technical Specifications.

4) Testing could damage plant equipment or systems.

5) Testing could cause a significant release of airborne radioactivity or spread of contamination.

6) A major plant evolution would be required solely for the purpose of MOV testing.

7) Design basis or highest system attainable differential pressure and flow conditions could not be adequately maintained during the valve test.

8) A design modification would be required to facilitate testing.

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9) The valve need not change position to perform its safety function.

All valves that are considered testable have been placed into the following categories:

A) Testable at design basis differential pressure in at least one direction of stroke.

B) Testable at highest system attainable, but less than design basis, differential pressure and flow.

TESTING PLAN

Valves that can be tested at design basis differential pressure will be tested at those conditions. The remaining testable valves have been grouped into families of essentially identical applications i.e., same vendor, type, model, size, motor operator, design operating conditions, service conditions, etc. A minimum of 25% of the valves in a given family will be tested at the highest system attainable differential pressure (see Attachments 2 & 3). Additionally, static test results of all valves in a given family will be reviewed for acceptable correlation as a basis for determining if additional valves in the family need to be differential pressure tested. Based on our current assessment, the results are as indicated in the following table.

	PEACH BOTTOM	LIMERICK
TOTAL GENERIC LETTER 89-10 SCOPE	178	439
TESTABLE		
Full Differential Pressure	8	16
Partial Differential Pressure	88	252
TO BE TESTED		
Full Differential Pressure	8	16
Partial Differential Pressure	37	98

TESTING SCHEDULE

Testing of valves for Peach Bottom Units 2 & 3 and Limerick Units 1 & 2 will be completed within five years or three refueling outages of the issue date of GL 89-10, whichever is later. The Peach Bottom valve identified as being marginally acceptable in the Nuclear Regulatory Commission letter dated February 25, 1992, will be differential pressure tested at the earliest available opportunity.

Following the completion of this initial testing, PECo will continue to static test these valves at an interval not to exceed 5 years or three refueling outages, whichever is longer. Specific valve test intervals will be based on the safety significance and maintenance and performance history of the MOV.

New valves and valves that are modified, repaired, or overhauled will be statically tested. A specific evaluation will be performed for each modified, repaired or overhauled valve to determine the necessity for performing differential pressure testing.

PEACH BOTTOM UNITS 2 & 3 CATEGORY "A" VALVES
(VALVES TESTABLE AT DESIGN BASIS DIFFERENTIAL PRESSURE)

FAMILY NUMBER	VALVES TO BE TESTED	VALVES IN FAMILY		
		UNIT 2	UNIT 3	COMMON
1	4	MO-2-10-034A MO-2-10-034B	MO-3-10-034A MO-3-10-034B	
2	4	MO-2-10-025A MO-2-10-025B	MO-3-10-025A MO-3-10-025B	

PEACH BOTTOM UNITS 2 & 3 CATEGORY "B" VALVES
(VALVES TESTABLE AT HIGHEST SYSTEM ATTAINABLE DIFFERENTIAL PRESSURE)

FAMILY NUMBER	VALVES TO BE TESTED	VALVES IN FAMILY		
		UNIT 2	UNIT 3	COMMON
3	1	MO-2-01-074	MO-3-01-074	
4	1	MO-2-01-077	MO-3-01-077	
5	2	MO-2-10-016A MO-2-10-016B MO-2-10-016C MO-2-10-016D	MO-3-10-016A MO-3-10-016B MO-3-10-016C MO-3-10-016D	
6	1	MO-2-10-039A MO-2-10-039B	MO-3-10-039A MO-3-10-039B	
7	2	MO-2-10-089A MO-2-10-089B MO-2-10-089C MO-2-10-089D	MO-3-10-089A MO-3-10-089B MO-3-10-089C MO-3-10-089D	
8	1	MO-2-10-154A MO-2-10-154B	MO-3-10-154A MO-3-10-154B	
9A	1	MO-2-12-015		
9B	1		MO-3-12-015	
10A	1	MO-2-12-018		
10B	1		MO-3-12-018	
11	1	MO-2-13-015	MO-3-13-015	
12	1	MO-2-13-016	MO-3-13-016	
13	1	MO-2-13-018	MO-3-13-018	
14	1	MO-2-13-027	MO-3-13-027	
15	1	MO-2-13-039	MO-3-13-039	
16	1	MO-2-13-041	MO-3-13-041	
17	1	MO-2-13-131	MO-3-13-131	
18	1	MO-2-13-132	MO-3-13-132	
19	2	MO-2-14-005A MO-2-14-005B MO-2-14-005C MO-2-14-005D	MO-3-14-005A MO-3-14-005B MO-3-14-005C MO-3-14-005D	
20	1	MO-2-23-014	MO-3-23-014	
21	1*	MO-2-23-015	MO-3-23-015	
22	1	MO-2-23-016	MO-3-23-016	
23	1	MO-2-23-017	MO-3-23-017	
24	1	MO-2-23-025	MO-3-23-025	
25	1	MO-2-23-057	MO-3-23-057	
26	1	MO-2-23-058	MO-3-23-058	
27	1	MO-2486	MO-3486	
28	1	MO-2803	MO-3803	
29	1	MO-2373	MO-3373	
30	1	MO-2374	MO-3374	
31	1	MO-2200A MO-2200B	MO-3200A MO-3200B	
32	1	MO-2201A MO-2201B	MO-3201A MO-3201B	
33	1			MO-0498
34	1			MO-0841

* MO-3-23-015 MUST BE TESTED - TEST AT EARLIEST AVAILABLE OPPORTUNITY

LIMERICK UNITS 1 & 2 CATEGORY "A" VALVES
(VALVES TESTABLE AT DESIGN BASIS DIFFERENTIAL PRESSURE)

FAMILY NUMBER	VALVES TO BE TESTED	VALVES IN FAMILY		
		UNIT 1	UNIT 2	COMMON
1	2	HV-12-112	HV-12-212	
2	2	HV-12-114	HV-12-214	
3	1	HVC-51-1F048A HVC-51-1F048B	HVC-51-2F048A HVC-51-2F048B	
5	4	FV-57-D0-102A FV-57-D0-102B	FV-57-D0-202A FV-57-D0-202B	
6	4	HV-57-160A HV-57-160B	HV-57-260A HV-57-260B	

LIMERICK UNITS 1 & 2 CATEGORY "B" VALVES
(VALVES TESTABLE AT HIGHEST SYSTEM ATTAINABLE DIFFERENTIAL PRESSURE)

FAMILY NUMBER	VALVES TO BE TESTED	VALVES IN FAMILY		
		UNIT 1	UNIT 2	COMMON
7	1			HV-11-011A HV-11-011B
8	1			HV-11-015A HV-11-015B
9	1			TVC-11-053A TVC-11-053B
10	1	HV-11-105	HV-11-205	
11	1	HV-11-107	HV-11-207	
12	2	HV-11-131A HV-11-131B HV-11-131C HV-11-131D	HV-11-231A HV-11-231B HV-11-231C HV-11-231D	
13	2	HV-11-132A HV-11-132B HV-11-132C HV-11-132D	HV-11-232A HV-11-232B HV-11-232C HV-11-232D	
14	2	HV-11-133A HV-11-133B HV-11-133C HV-11-133D	HV-11-233A HV-11-233B HV-11-233C HV-11-233D	
15	2	HV-11-134A HV-11-134B HV-11-134C HV-11-134D	HV-11-234A HV-11-234B HV-11-234C HV-11-234D	
16	1			HV-12-017A HV-12-017B
17	1			HV-12-031A HV-12-031B HV-12-031C HV-12-031D
18	1			HV-12-032A HV-12-032B HV-12-032C HV-12-032D
19	1			HV-12-034A HV-12-034B
20	1	HV-12-110	HV-12-210	
21	1	HV-12-111	HV-12-211	
22	1	HV-12-113	HV-12-213	
23	1	HV-13-106	HV-13-206	
24	1	HV-13-107	HV-13-207	
25	1	HV-13-108	HV-13-208	
26	1	HV-13-111	HV-13-211	
27	1	HV-41-1F016	HV-41-2F016	

LIMERICK UNITS 1 & 2 CATEGORY "B" VALVES
(VALVES TESTABLE AT HIGHEST SYSTEM ATTAINABLE DIFFERENTIAL PRESSURE)
CONTINUED

FAMILY NUMBER	VALVES TO BE TESTED	VALVES IN FAMILY		
		UNIT 1	UNIT 2	COMMON
28	1	HV-41-130A HV-41-130B	HV-41-230A HV-41-230B	
29	1	HV-41-133A HV-41-133B	HV-41-233A HV-41-233B	
31	1	HV-44-1F001	HV-44-2F001	
32	1	HV-44-1F004	HV-44-2F004	
33	1	HV-49-1F008	HV-49-2F008	
34	1	HV-49-1F010	HV-49-2F010	
35	1	HV-49-1F019	HV-49-2F019	
36	1	HV-49-1F029	HV-49-2F029	
37	1	HV-49-1F031	HV-49-2F031	
38	1	HV-49-1F076	HV-49-2F076	
39	1	HV-50-1F045	HV-50-2F045	
40	1	HV-50-1F046	HV-50-2F046	
41	2	HV-51-1F007A HV-51-1F007B HV-51-1F007C HV-51-1F007D	HV-51-2F007A HV-51-2F007B HV-51-2F007C HV-51-2F007D	
42	1	HV-51-1F010A HV-51-1F010B	HV-51-2F010A HV-51-2F010B	
43	1	HV-51-1F014A HV-51-1F014B	HV-51-2F014A HV-51-2F014B	
44	1	HV-51-1F015A HV-51-1F015B	HV-51-2F015A HV-51-2F015B	
45	1	HV-51-1F024A HV-51-1F024B	HV-51-2F024A HV-51-2F024B	
46	1	HV-51-1F027A HV-51-1F027B	HV-51-2F027A HV-51-2F027B	
47	1	HV-51-1F040	HV-51-2F040	
48	1	HV-51-1F049	HV-51-2F049	
49	1	HV-51-1F068A HV-51-1F068B	HV-51-2F068A HV-51-2F068B	
50	1	HV-52-1F031A HV-52-1F031B	HV-52-2F031A HV-52-2F031B	
51	1	HV-55-1F001	HV-55-2F001	
52	1	HV-55-1F003	HV-55-2F003	
53	1	HV-55-1F004	HV-55-2F004	
54	1	HV-55-1F012	HV-55-2F012	
55	1	HV-55-1F041	HV-55-2F041	
56	1	HV-55-1F100	HV-55-2F100	
57	1	HV-56-1F059	HV-56-2F059	
58	1	HV-57-109	HV-57-209	
59	1	HV-57-110A HV-57-110B	HV-57-210A HV-57-210B	
60	1	HV-57-116	HV-57-216	

LIMERICK UNITS 1 & 2 CATEGORY "B" VALVES
(VALVES TESTABLE AT HIGHEST SYSTEM ATTAINABLE DIFFERENTIAL PRESSURE)

CONTINUED

FAMILY NUMBER	VALVES TO BE TESTED	VALVES IN FAMILY		
		UNIT 1	UNIT 2	COMMON
61	1	HV-57-161	HV-57-261	
62	1	HV-57-162	HV-57-262	
63	1	HV-57-163	HV-57-263	
64	1	HV-57-164	HV-57-264	
65	1	HV-57-165	HV-57-265	
66	1	HV-57-166	HV-57-266	
67	1	HV-57-167	HV-57-267	
68	1	HV-57-168A HV-57-168B	HV-57-268A HV-57-268B	
69	1	HV-57-169	HV-57-269	
70	1	HV-59-140	HV-59-240	
71	1	HV-59-141	HV-59-241	
72	1	HV-59-142	HV-59-242	
73	1	HV-59-143	HV-59-243	
74	1	HV-87-120A HV-87-120B	HV-87-220A HV-87-220B	
75	1	HV-87-121A HV-87-121B	HV-87-221A HV-87-221B	
76	1	HV-87-122	HV-87-222	
77	1	HV-87-123	HV-87-223	
78	1	HV-87-124A HV-87-124B	HV-87-224A HV-87-224B	
79	1	HV-87-125A HV-87-125B	HV-87-225A HV-87-225B	
80	1	HV-87-128	HV-87-228	
81	1	HV-87-129	HV-87-229	
82	1			TVC-90-042A TVC-90-042B
83	1			TVC-90-043A TVC-90-043B
84	1			TVC-90-044A TVC-90-044B

LIMERICK UNITS 1 & 2 CATEGORY "B" VALVES
(VALVES OPERATING AT 0 DIFFERENTIAL PRESSURE-TEST AT STATIC CONDITIONS)

FAMILY NUMBER	VALVES TO BE TESTED	VALVES IN FAMILY		
		UNIT 1	UNIT 2	COMMON
4	1	FV-57-DO-101A FV-57-DO-101B	FV-57-DO-201A FV-57-DO-201B	
85	1	HV-01-108	HV-01-208	
86	1	HV-01-109	HV-01-209	
87	1	HV-01-111	HV-01-211	
88	1	HV-01-150	HV-01-250	
89	1	HV-41-140	HV-41-240	
90	1	HV-41-141	HV-41-241	
91	1	HV-41-142	HV-41-242	
92	1	HV-41-143	HV-41-243	
93	1	HVC-41-1F020	HVC-41-2F020	
94	1	HV-46-125	HV-46-225	
95	1	HV-46-126	HV-46-226	
96	1	HV-46-127	HV-46-227	
97	1	HV-46-128	HV-46-228	
98	2	HV-48-1F006A HV-48-1F006B	HV-48-2F006A HV-48-2F006B	