

SPECIFICATION MP&L-M-189.1

APPENDIX A

REVISION 0

MAXIMUM STROKE TIMES

FOR

POWER ACTUATED VALVES

8507110093 850628
PDR ADOCK 05000416
P PDR

SPECIFICATION MP&L-M-189.1
APPENDIX A
REVISION: 0
PAGE ii of 43

PAGE REVISION INDEX

<u>Page No.</u>	<u>Revision No.</u>
i	0
ii	0
1 - 43	0

INTRODUCTION

Appendix A provides maximum stroke times for all power actuated valves in the Pump and Valve Program as required by ASME Section XI, Paragraph IWV-3413.

The valves are listed by system in numerical order. The stroke time given applies to the valve stroke as the valve moves to its safety position. Valves having two safety positions will have one maximum stroke time applicable to both directions of travel unless otherwise noted.

SYSTEM B21

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F016	C	20.0	Note 1
F019	C	20.0	Note 1
F022A	C	5.0	Note 1
F022B	C	5.0	Note 1
F022C	C	5.0	Note 1
F022D	C	5.0	Note 1
F028A	C	5.0	Note 1
F028B	C	5.0	Note 1
F028C	C	5.0	Note 1
F028D	C	5.0	Note 1
F065A	C	131.5	None
F065B	C	131.5	None
F067A	C	9.0	Note 1
F067B	C	9.0	Note 1
F067C	C	9.0	Note 1
F067D	C	9.0	Note 1
F098A	C	184.0	None
F098B	C	184.0	None
F098C	C	184.0	None
F098D	C	184.0	None
F113	C	30.0 (8.5)	Note 1 & 2
F114	C	30.0 (10.0)	Note 1 & 2
F147A	O	31.0	None
F147B	O	31.0	None

SYSTEM B33

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F019	O/C	36.0 (33.6)	Note 1 & 2
F020	O/C	36.0 (33.6)	Note 1 & 2
F125	C	34.6	None
F126	C	34.6	None
F127	O/C	6.1	None
F128	O/C	6.1	None

SYSTEM C11

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F010	C	20.0	None
F011	C	16.2	None
F083	C	15.8	None
I26	O	N/A	Relief Request C11-1
I27	O	N/A	Relief Request C11-1
F322	C	34.8	None

SYSTEM C41

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001A	0	27.4	None
F001B	0	27.4	None

SYSTEM D23

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F591	O/C	32.3	None
F592	O/C	32.9	None
F593	O/C	32.6	None
F594	O/C	32.3	None

SYSTEM E12

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F003A	O/C	108.4	None
F003B	O/C	108.4	None
F004A	O/C	162.9	None
F004B	O/C	162.9	None
F004C	O/C	162.9	None
F006A	O	131.6	None
F006B	O	131.6	None
F008	O/C	40.0 (35.8)	Note 1 & 2
F009	O/C	40.0 (35.8)	Note 1 & 2
F011A	C	36.0 (33.7)	Note 1 & 2
F011B	C	36.0 (33.7)	Note 1 & 2
F021	C	144.0 (121.9)	Note 1 & 2
F023	C	94.0 (84.1)	Note 1 & 2
F024A	O/C	90.0	Note 1
F024B	O/C	90.0	Note 1
F026A	C	30.1	None
F026B	C	30.1	None
F027A	O/C	88.4	None
F027B	O/C	88.4	None
F028A	O/C	90.0 (88.4)	Note 1 & 2
F028B	O/C	90.0 (88.4)	Note 1 & 2
F037A	C	74.0 (65.2)	Note 1 & 2
F037B	C	74.0 (65.2)	Note 1 & 2
F040	C	26.0	None

SYSTEM E12

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F042A	O/C	22.0	None
F042B	O/C	22.0	None
F042C	O/C	27.0	None
F047A	O/C	104.8	None
F047B	O/C	104.8	None
F048A	O/C	108.4	None
F048B	O/C	108.4	None
F049	C	32.1	None
F051A	C	26.0	None
F051B	C	26.0	None
F052A	C	104.0	None
F052B	C	104.0	None
F053A	O/C	30.6	None
F053B	O/C	30.6	None
F064A	O/C	11.7	None
F064B	O/C	11.7	None
F064C	O/C	11.7	None
F065A	C	7.1	None
F065B	C	7.1	None
F073A	C	15.8	None
F073B	C	15.8	None
F074A	C	15.8	None
F074B	C	15.8	None
F082A	O/C	9.3	None

SYSTEM E12

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F082B	O/C	9.3	None
F087A	C	104.0	None
F087B	C	104.0	None
F094	C	116.8	None
F096	C	116.8	None
F203	C	30.0 (5.7)	Note 1 & 2
F290A	O/C	9.3	None
F290B	O/C	9.3	None
F346	C	5.4	None

SYSTEM E21

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001	O/C	120.8	None
F005	O	25.7	None
F011	O/C	31.8	None
F012	O/C	144.0 (134.7)	Note 1 & 2

1
3
8

SYSTEM E22

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001	C	104.0	None
F004	O/C	15.0	None
F010	C	63.2	None
F011	C	62.9	None
F012	O/C	8.0	None
F015	O/C	31.1	None
F023	C	75.0	Note 1

1
3
9

SYSTEM E30

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001A	0	79.2	None
F001B	0	79.2	None
F002A	0	79.2	None
F002B	0	79.2	None
F591A	C	18.3	None
F591B	C	31.6	None
F592A	C	33.8	None
F592B	C	24.9	None
F593A	C	34.0	None
F593B	C	34.1	None
F594A	C	27.2	None
F594B	C	33.1	None

SYSTEM E32

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001A	O/C	9.3	None
F001E	O/C	9.3	None
F001J	O/C	9.3	None
F001N	O/C	9.3	None
F002A	0	9.3	None
F002E	0	9.3	None
F002J	0	9.3	None
F002N	0	9.3	None
F003A	O/C	9.3	None
F003E	O/C	9.3	None
F003J	O/C	9.3	None
F003N	O/C	9.3	None
F006	0	6.3	None
F007	0	6.3	None
F008	0	6.3	None
F009	0	6.3	None

SYSTEM E38

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001A	O/C	9.3	None
F001B	O/C	9.3	None

SYSTEM E51

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F004	C	2.0	Note 3
F005	C	2.0	Note 3
F010	C	39.0	None
F013	O/C	15.2	None
F019	O/C	6.4	None
F022	C	33.3	None
F025	C	4.8	None
F026	C	5.7	None
F031	O/C	56.0 (49.1)	Note 1 & 2
F045	O/C	19.8	None
F046	O	6.4	None
F059	C	32.3	None
F063	O/C	20.0	Note 1
F064	O/C	20.0	Note 1
F068	C	110.7	None
F076	C	20.0 (15.2)	Note 1 & 2
F077	O/C	26.0	Note 1
F078	O/C	10.0 (9.3)	Note 1 & 2
Trip &			
Throttle	C	2.0	Note 3 & 4
F095	O/C	5.0	None

SYSTEM E61

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F003A	O/C	84.0 (75.1)	Note 1 & 2
F003B	O/C	84.0 (75.1)	Note 1 & 2
F005A	O/C	84.0 (75.1)	Note 1 & 2
F005B	O/C	84.0 (75.1)	Note 1 & 2
F007	O/C	9.0 (7.2)	Note 1 & 2
F009	C	4.0	Note 1
F010	C	4.0	Note 1
F020	C	18.0 (13.8)	Note 1 & 2
F056	C	4.0	Note 1
F057	C	4.0	Note 1
F595A	C	24.4	None
F595B	C	25.8	None
F595C	C	23.0	None
F595D	C	25.4	None
F596A	C	24.4	None
F596B	C	23.9	None
F596C	C	24.8	None
F596D	C	26.3	None
F597A	C	24.9	None
F597B	C	20.8	None
F597C	C	21.4	None
F597D	C	25.2	None
F598A	C	25.0	None

SYSTEM E61

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F598B	C	21.5	None
F598C	C	22.5	None
F598D	C	22.9	None

SYSTEM G33

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001	C	35.0	Note 1
F004	C	35.0	Note 1
F028	C	35.0 (27.5)	Note 1 & 2
F034	C	35.0 (27.5)	Note 1 & 2
F039	C	35.0	Note 1
F040	C	35.0	Note 1
F053	C	35.0 (27.5)	Note 1 & 2
F054	C	35.0 (27.5)	Note 1 & 2
F234	C	30.0 (15.5)	Note 1 & 2
F235	C	30.0 (8.5)	Note 1 & 2
F250	C	35.0	Note 1
F251	C	35.0	Note 1
F252	C	35.0	Note 1
F253	C	35.0	Note 1

SYSTEM G36

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F101	C	11.0 (9.6)	Note 1 & 2
F106	C	11.0 (7.2)	Note 1 & 2
F108	C	30.0 (8.5)	Note 1 & 2
F109	C	30.0 (7.1)	Note 1 & 2

SYSTEM G41

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F028	C	51.0	Note 1
F029	C	51.0 (45.5)	Note 1 & 2
F044	C	40.0	Note 1

SYSTEM G46

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F253	C	30.0 (4.8)	Note 1 & 2

SYSTEM M41

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F007	C	4.0	Note 1
F008	C	4.0	Note 1
F011	C	4.0	Note 1
F012	C	4.0	Note 1
F013	C	4.0	Note 1
F015	C	4.0	Note 1
F016	C	4.0	Note 1
F017	C	4.0	Note 1
F034	C	4.0	Note 1
F035	C	4.0	Note 1
F036	C	4.0	Note 1
F037	C	4.0	Note 1

SYSTEM M71

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F591A	C	27.3	None
F591B	C	26.6	None
F592A	C	27.1	None
F592B	C	27.7	None
F593	C	27.5	None
F594	C	28.6	None
F595	C	6.1	None

SYSTEM P11

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F047	C	4.0 (4.6)	Note 1 & 2
F061	C	4.0 (5.8)	Note 1 & 2
F062	C	9.0 (11.5)	Note 1 & 2
F063	C	4.0 (4.0)	Note 1 & 2
F064	C	4.0 (5.4)	Note 1 & 2
F065	C	4.0 (5.1)	Note 1 & 2
F066	C	4.0 (5.0)	Note 1 & 2
F067	C	4.0 (5.9)	Note 1 & 2
F075	C	10.0 (9.8)	Note 1 & 2
F130	C	8.0 (6.7)	Note 1 & 2
F131	C	8.0 (8.2)	Note 1 & 2

SYSTEM P21

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F017	C	19.0 (14.6)	Note 1 & 2
F018	C	19.0 (14.6)	Note 1 & 2
F024	C	30.0 (27.9)	Note 1 & 2

SYSTEM P41

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001A	O	80.0	None
F001B	O	80.0	None
F005A	O	80.0	None
F005B	O	80.0	None
F006A	C	74.9	None
F006B	C	74.9	None
F007A	O/C	31.1	None
F007B	O/C	31.1	None
F011	O	76.8	None
F014A	O	79.0	None
F014B	O	79.0	None
F015A	C	31.1	None
F015B	C	31.1	None
F016A	C	31.1	None
F016B	C	31.1	None
F018A	O	76.8	None
F018B	O	76.8	None
F064A	O	22.7	None
F064B	O	22.7	None
F066A	C	22.7	None
F066B	C	22.7	None
F068A	O	28.7	None
F068B	O	28.7	None

SYSTEM P41

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F074A	C	22.7	None
F074B	C	22.7	None
F081A	O	22.7	None
F081B	O	22.7	None
F113	O/C	15.8	None
F125	C	35.2	None
F154	C	22.7	None
F155A	C	22.7	None
F155B	C	22.7	None
F159A	O/C	9.4	None
F159B	O/C	9.4	None
F160A	O/C	9.4	None
F160B	O/C	9.4	None
F168A	O/C	9.4	None
F168B	O/C	9.4	None
F189	C	35.2	None
F237	O	22.7	None
F238	O	22.7	None
F239	C	8.9	None
F240	C	8.4	None
F241	C	22.7	None

SYSTEM P42

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F066	C	72.2	None
F067	C	72.2	None
F068	C	72.2	None
F114	C	52.2	None
F116	C	52.2	None
F117	C	52.2	None
F200A	LC	N/A	Relief Request P42-1
F200B	LC	N/A	Relief Request P42-1
F201A	LC	N/A	Relief Request P42-1
F201B	LC	N/A	Relief Request P42-1

SYSTEM P44

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F042	C	74.9	None
F053	C	33.0 (27.8)	Note 1 & 2
F054	C	74.9	None
F067	C	74.9	None
F069	C	33.0 (27.8)	Note 1 & 2
F070	C	33.0 (27.8)	Note 1 & 2
F074	C	32.0 (27.8)	Note 1 & 2
F076	C	32.0 (27.8)	Note 1 & 2
F077	C	32.0 (27.8)	Note 1 & 2
F116	C	100.0 (31.5)	Note 1 & 2
F117	C	100.0 (61.4)	Note 1 & 2
F118	C	100.0 (38.3)	Note 1 & 2
F119	C	100.0 (35.2)	Note 1 & 2
F120	C	100.0	Note 1
F121	C	100.0	Note 1
F122	C	100.0 (37.8)	Note 1 & 2
F123	C	100.0 (38.2)	Note 1 & 2

SYSTEM P45

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F003	C	6.0 (5.7)	Note 1 & 2
F004	C	6.0 (5.7)	Note 1 & 2
F009	C	6.0	Note 1
F010	C	6.0	Note 1
F061	C	7.0 (6.1)	Note 1 & 2
F062	C	7.0 (5.4)	Note 1 & 2
F067	C	7.0 (6.7)	Note 1 & 2
F068	C	7.0 (6.9)	Note 1 & 2
F096	C	9.0	Note 1
F097	C	9.0	Note 1
F098	C	8.0 (6.7)	Note 1 & 2
F099	C	8.0 (6.7)	Note 1 & 2
F158	C	9.0 (9.2)	Note 1 & 2
F159	C	9.0 (11.2)	Note 1 & 2
F160	C	9.0 (11.5)	Note 1 & 2
F161	C	9.0 (12.2)	Note 1 & 2
F163	C	9.0 (7.4)	Note 1 & 2
F273	O/C	32.0 (27.8)	Note 1 & 2
F274	O/C	32.0 (27.8)	Note 1 & 2

SYSTEM P52

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F105	C	6.0	Note 1
F160A	C	4.0 (5.3)	Note 1 & 2
F160B	C	4.0 (5.9)	Note 1 & 2
F195	C	16.0 (15.8)	Note 1 & 2
F221A	C	4.0 (5.3)	Note 1 & 2
F221B	C	4.0 (3.2)	Note 1, 2 & 3

SYSTEM P53

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001	C	6.0 (4.8)	Note 1 & 2
F003	C	4.0	Note 1
F007	O/C	7.0 (6.5)	Note 1 & 2
F026A	C	4.0 (5.4)	Note 1 & 2
F026B	C	4.0 (7.2)	Note 1 & 2

SYSTEM P60

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001	C	8.0	None
F003	C	30.0 (7.6)	Note 1 & 2
F004	C	30.0 (7.6)	Note 1 & 2
F007	C	30.0 (10.7)	Note 1 & 2
F008	C	30.0 (8.7)	Note 1 & 2
F009	C	8.0	Note 1
F010	C	8.0 (7.6)	Note 1 & 2
F021	C	7.4	None

SYSTEM P64

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F282A	C	4.0 (4.8)	Note 1 & 2
F282B	C	4.0 (4.5)	Note 1 & 2
F283A	C	4.0 (5.0)	Note 1 & 2
F283B	C	4.0 (5.0)	Note 1 & 2
F332A	O/C	4.0	Note 1
F332B	O/C	4.0	Note 1

SYSTEM P66

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F029A	C	4.0 (4.6)	Note 1 & 2

SYSTEM P71

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F148	C	12.0 (5.6)	Note 1 & 2
F149	C	12.0 (5.2)	Note 1 & 2
F150	C	12.0 (5.7)	Note 1 & 2
F300	C	4.0 (5.3)	Note 1 & 2
F301	C	4.0 (6.1)	Note 1 & 2
F302	C	4.0 (5.6)	Note 1 & 2
F303	C	4.0 (5.4)	Note 1 & 2
F304	C	30.0 (5.6)	Note 1 & 2
F305	C	30.0 (15.5)	Note 1 & 2
F306	C	30.0 (13.3)	Note 1 & 2
F307	C	30.0 (16.6)	Note 1 & 2

SYSTEM P75

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F507A	O	N/A	Relief Request P75-1
F507B	O	N/A	Relief Request P75-1
F507C	O	N/A	Relief Request P75-1
F507D	O	N/A	Relief Request P75-1
F508A	O	N/A	Relief Request P75-1
F508B	O	N/A	Relief Request P75-1
F508C	O	N/A	Relief Request P75-1
F508D	O	N/A	Relief Request P75-1

SYSTEM P81

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F503A	0	N/A	Relief Request P81-1
F503B	0	N/A	Relief Request P81-1
F504A	0	N/A	Relief Request P81-1
F504B	0	N/A	Relief Request P81-1

SYSTEM T41

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F006	C	4.0	Note 1 & 3
F007	C	4.0	Note 1

SYSTEM T42

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F003	C	4.0	Note 1
F004	C	4.0	Note 1
F011	C	4.0	Note 1 & 3
F012	C	4.0	Note 1 & 3
F019	C	4.0	Note 1
F020	C	4.0	Note 1

SYSTEM T48

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F005	0	81.0	None
F006	0	81.0	None
F023	0	81.0	None
F024	0	81.0	None
F025	0	81.0	None
F026	0	81.0	None

SYSTEM Z51

VALVE	SAFETY POSITION	MAXIMUM STROKE TIME	COMMENTS
F001	C	4.0	None
F002	C	4.0	None
F003	C	4.0	None
F004	C	4.0	None
F007	O/C	74.9	None
F008	O/C	74.9	None
F010	C	4.0	None
F011	C	4.0	None
F014	O/C	74.9	None
F016	O/C	74.9	None
F073A	O	9.4	None
F073B	O	9.4	None

NOTES

1. The maximum stroke time is the maximum isolation time given in Technical Specification Table 3.6.4-1 or 3.6.6.2-1.
2. The number in parenthesis was derived from the greater of 3 standard deviations from the mean plus 10% or 10% above the code allowable alert value ($1.35 \bar{x}$ for stroke times exceeding 10 seconds and $1.6 \bar{x}$ for stroke times less than or equal to 10 seconds). This number is under consideration for future revisions to this specification and the Technical Specification.
3. Fast acting valve. Refer to Generic Relief Request 2.
4. The safety function of the RCIC trip and throttle valve is to close in the "trip" mode. This mode of closure is accomplished by spring action and not by use of the motor operator.

RELIEF REQUEST E12-1:
RESIDUAL HEAT REMOVAL SYSTEM

VALVES: F046A, (M-1085B, D-5)
F046B, F046C (M-1085A, C-6, D-6)

CATEGORY: C

CLASS: 2

TYPE: Check

FUNCTION: Open to pass RHR pump minimum flow.

TEST REQUIREMENTS: Check valves shall be exercised at least once every 3 months (IWV-3520).

BASIS FOR RELIEF: There are no installed flow measuring devices that monitor the minimum flow line flow and in-line orifices prevent verifying check valve full open travel during flow testing.

ALTERNATIVE TESTING: F046A and F046B will be disassembled each refueling outage.

For F046C, the indicated system flow change that occurs when the minimum flow line motor operated valve is manually opened during system high flow operation will be monitored for degradation. Any reduction in the system flow change observed would be an indication of increased resistance to flow in the minimum flow line. Corrective actions will be taken, as appropriate.

RELIEF REQUEST E51-3:
REACTOR CORE ISOLATION COOLING SYSTEM

VALVES: F021 (M-1083A, E-4)

CATEGORY: C

CLASS: 2

TYPE: Stop Check

FUNCTION: Open to pass RCIC pump minimum flow.

TEST REQUIREMENTS: Check valves shall be exercised at least once every 3 months (IWW-3520).

BASIS FOR RELIEF: There are no installed flow measuring devices that monitor minimum flow line flow and an in-line orifice prevents verifying check valve full open travel during flow testing.

ALTERNATIVE TESTING: The indicated system flow change that occurs when the minimum flow line motor operated valve is manually opened during system high flow operation will be monitored for degradation. Any reduction in the system flow change observed would be an indication of increased resistance to flow in the minimum flow line. Corrective action will be taken, as appropriate.

Pump Generic Relief Request 1

PUMPS:	As applicable
CLASS:	As applicable
FUNCTION:	As applicable
TEST REQUIREMENT:	ASME Section XI, Subsection IWP
BASIS FOR RELIEF:	Pump testing is performed with 2% accurate instrumentation, but the high value Alert Range is only 102 to 103% and the Required Action Range is greater than 103%. As pump failures that include increasing flow or discharge pressure as part of their indications are very rare, the very narrow ranges allowed are unrealistic.
ALTERNATIVE TESTING:	Change the High Value Alert Range for pump flow and differential pressure to 1.05 to 1.07 times the reference value and the High Value Required Action Range for pump flow and differential pressure to greater than 1.07 times the reference value.