

ATTACHMENT 3-5A
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1a

COMPONENTS	MAKEUP AND PURIFICATION																												REMARKS							
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C		C	C					
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B					
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F					
	1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5		
	a	b	c							a					0	1	1	a		a	b	c	d	e	f	g	a	b	c	d	a	b	a	b		
MU-P-1A				X			X	S	S			S					S		X	X	P		X		S		X		X	X		X			Train A	
MU-P-1B					X		X		M	S		M							X	X	X	X	S	S	S	S	X	X	R S D	R S D		R S D			Normally Train B. See Notes 2 and 3.	
MU-P-1C						X	P		X	S	S	S					S				X	X		S		S		X	R S D	R S D		R S D			Train B	
MU-P-2A				X			X	X		X									X	X			S		S		X			X		X			Train A	
MU-P-3A				X			X												X	X			X		S		S			X		X			Train A	
MU-P-2B				X	X		X	X		X									X	X			S		S		X		S	X		X			Train A	
MU-P-3B					X				X	S	X										X	X	X	S	X	S		S	R S D	R S D		R S D			Train B	
MU-P-2C						X			X	S	X										S		X	S	X	S		S		X		X			Train B	
MU-P-3C						X	X												X		X			X	P	X		S	R S D	R S D		R S D			Train B	
MU-V-14A				X				X	P/M										X	X	P		X		S		S			X	X		X			Train A. The suction path from BWST is available via cross connect line. Pre-emptive action to open valve prior to fire damage is credited in CB-FA-3d and CB-FA-4b.
MU-V-14B								X	X	S	X										X	X		X	P	X		S	R S D	R S D		R S D			Train B. Pre-emptive action to open valve prior to fire damage is credited in CB-FA-3d and CB-FA-4b.	

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

- Note 1: Spurious opening of MU-V-16A and 16B during fire in CB-FA-1, -2a, -2d, -2f, FH-FZ-1 and MU-V-16C and 16D during a fire in CB-FA-2b, -2c, -2e, -2g, -3b, FH-FZ-5 due to spurious ESAS initiation can be mitigated by tripping the operating makeup pump(s) (if not required for seal injection) or by manually closing the respective valves after opening MU-V-36 and MU-V-37.
- Note 2: MU-P-1B is a swing pump normally aligned to 1E 4160V switchgear, but can be transferred to 1D 4160V switchgear. MU-P-1B will be shutdown if 1E 4160V bus is de-energized (e.g. LOOP) and cannot be started without action outside of the control room.
- Note 3: MU-P-1B manual action refers to action to select pump for ES at 1E 4160V switchgear within one hour if a loss of offsite power occurs.
- Note 4: Spurious closure of MU-V-36 due to a fire in AB-FZ-6, CB-FA-1, -2a, -2d, -2f, and MU-V-37 due to a fire in AB-FZ-6, CB-FA-2c, -2e, -2g, -3b due to an inadvertent ESAS actuation may require that these valves be manually opened to support minimum MU pump recirculation in HPI valves are closed.
- Note 5: Air is not required to place the valve in the FSSD position (closed).

ATTACHMENT 3-5A
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 2a

COMPONENTS	MAKEUP AND PURIFICATION																												REMARKS						
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C		C	C	C			
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B			
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F			
	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	A	A	A	A	A	A	A	A	A	A		A	A	Z	Z		
	1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5	
				a	b	c				a					0	1	1	a		a	b	c	d	e	f	g	a	b	c	d	a	b	a	b	
MU-V-16A (Note 1)									P/X		M								M	M			M		M		X		M	M		M			Train A. MU-V-16A/B are only protected to prevent spurious opening due to a hot short.
MU-V-16B (Note 1)									P/X		M								M	M	P		M		M		X		M	M		M			Train A
MU-V-16C (Note 1)										X	X	X									M	M		M	P	M		M	RSD	RSD		RSD			Train B
MU-V-16D (Note 1)										X	X	X									M	M		M	P	M		M	RSD	RSD		RSD			Train B
MU-V-17	S	S					X	S	S	S		S		S	S			S				S		S				X	X		X			Train X. Fails Mid position on loss of power. Closes on loss of air.	
MU-V-18	S	S					S	X	S	S		S		S	S			X		X	X	S	S	S		X	X	RSD	RSD		RSD			Train C. Fails open on loss of power. Closes on loss of air.	
MU-V-217								D	D	X												X	X	X					X		X			Train X	
MU-V-20	A	A					S	A	A	S		A		A	A			X		O		S		S		X	P	RSD	RSD		RSD			Train X. O = Open 1M DC Panel Switch #5. Valve will close as soon as 40 minutes after loss of IA.	
MU-V-25								X										X	X	X		X				X		X	X		X			Train A	
MU-V-26	A	A					A	A	A	X		A		A	A			A				A	X	A	S		X	X	X		X			Train B. NOTE 5	
MU-V-32							X											S				S		S					X		X			Train X	
MU-V-36 (Note 4)							D	P		M									P/M	M	M		M		M				M	M		M			Train A. Power is not protected. RSD controls may not function. Local operation may be required.

LEGEND

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F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

Note 1: Spurious opening of MU-V-16A and 16B during fire in CB-FA-1, -2a, -2d, -2f, FH-FZ-1 and MU-V-16C and 16D during a fire in CB-FA-2b, -2c, -2e, -2g, -3b, FH-FZ-5 due to spurious ESAS initiation can be mitigated by tripping the operating makeup pump(s) (if not required for seal injection) or by manually closing the respective valves after opening MU-V-36 and MU-V-37.

Note 2: MU-P-1B is a swing pump normally aligned to 1E 4160V switchgear, but can be transferred to 1D 4160V switchgear. MU-P-1B will be shutdown if 1E 4160V bus is de-energized (e.g. LOOP) and cannot be started without action outside of the control room.

Note 3: MU-P-1B manual action refers to action to select pump for ES at 1E 4160V switchgear within one hour if a loss of offsite power occurs.

Note 4: Spurious closure of MU-V-36 due to a fire in AB-FZ-6, CB-FA-1, -2a, -2d, -2f, and MU-V-37 due to a fire in AB-FZ-6, CB-FA-2c, -2e, -2g, -3b due to an inadvertent ESAS actuation may require that these valves be manually opened to support minimum MU pump recirculation in HPI valves are closed.

Note 5: Air is not required to place the valve in the FSSD position (closed).

ATTACHMENT 3-5A
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 3a

MAKEUP AND PURIFICATION																																							
COMPONENTS	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C		
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	I	I	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	T	T			F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F			
	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	F	F	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	Z	Z			
	1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	Z	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5		REMARKS		
				a	b	c				a					0	1	1	a		a	b	c	d	e	f	g	a	b	c	d	a	b							
MU-V-37 (Note 4)							M	P	D	P	S/M	M									M	M			M	P	M		M	R	R	R	S	S	D	D	D		Train B

LEGEND

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S – Support Not Available
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M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair

T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

- Note 1: Spurious opening of MU-V-16A and 16B during fire in CB-FA-1, -2a, -2d, -2f, FH-FZ-1 and MU-V-16C and 16D during a fire in CB-FA-2b, -2c, -2e, -2g, -3b, FH-FZ-5 due to spurious ESAS initiation can be mitigated by tripping the operating makeup pump(s) (if not required for seal injection) or by manually closing the respective valves after opening MU-V-36 and MU-V-37.
- Note 2: MU-P-1B is a swing pump normally aligned to 1E 4160V switchgear, but can be transferred to 1D 4160V switchgear. MU-P-1B will be shutdown if 1E 4160V bus is de-energized (e.g. LOOP) and cannot be started without action outside of the control room.
- Note 3: MU-P-1B manual action refers to action to select pump for ES at 1E 4160V switchgear within one hour if a loss of offsite power occurs.
- Note 4: Spurious closure of MU-V-36 due to a fire in AB-FZ-6, CB-FA-1, -2a, -2d, -2f, and MU-V-37 due to a fire in AB-FZ-6, CB-FA-2c, -2e, -2g, -3b due to an inadvertent ESAS actuation may require that these valves be manually opened to support minimum MU pump recirculation in HPI valves are closed.
- Note 5: Air is not required to place the valve in the FSSD position (closed).

SHEET 1b

[illegible]

LEGEND

X – Component Not Available
S – Support Not Available
P – Available—Cable Protected
M – Available—Manual Operation
A – Manual Op. Due to Loss of Inst. Air
E – One or the other is available

- D – Design Modification
- RSD – Remote Shut Down
- O – Open Switch or Breaker
- R – Repair

- T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

Note 1: Spurious opening of MU-V-16A and 16B during fire in CB-FA-1, -2a, -2d, -2f, FH-FZ-1 and MU-V-16C and 16D during a fire in CB-FA-2b, -2c, -2e, -2g, -3b, FH-FZ-5 due to spurious ESAS initiation can be mitigated by tripping the operating makeup pump(s) (if not required for seal injection) or by manually closing the respective valves after opening MU-V-36 and MU-V-37.

Note 2: MU-P-1B is a swing pump normally aligned to 1E 4160V switchgear, but can be transferred to 1D 4160V switchgear. MU-P-1B will be shutdown if 1E 4160V bus is de-energized (e.g. LOOP) and cannot be started without action outside of the control room.

Note 3: MU-P-1B manual action refers to action to select pump for ES at 1E 4160V switchgear within one hour if a loss of offsite power occurs.

Note 4: Spurious closure of MU-V-36 due to a fire in AB-FZ-6, CB-FA-1, -2a, -2d, -2f, and MU-V-37 due to a fire in AB-FZ-6, CB-FA-2c, -2e, -2g, -3b due to an inadvertent ESAS actuation may require that these valves be manually opened to support minimum MU pump recirculation in HPI valves are closed.

Note 5: Closure of MU-V-26 due to a loss of Inst. Air does not require corrective manual operation to ensure Fire Safe Shutdown.

ATTACHMENT 3-5A
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 2b

COMPONENTS	MAKEUP AND PURIFICATION																										REMARKS
	D	D	F	F	F	F	F	F	I	I	I	I	I	I	I	I	I	I	R	R	R	R	R	R	R	T	
	G	G	H	H	H	H	H	H	B	B	B	B	B	B	B	B	S	S	S	S	B	B	B	B	B	B	
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	H	H	H	H	F	F	F	F	F	F	
	A	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	A	Z	Z	Z	1	1	1	1	1	2	3
	1	2	1	2	3	4	5	6	1	2	3	4	5	6	7	8	F	F	F	F	a	b	c	d	e		
																	2	1	2	3							
MU-V-16A (Note 1)	S		M					X																			Train A. MU-V-16A/B are only protected to prevent spurious opening.
MU-V-16B (Note 1)	S		M					X																			Train A
MU-V-16C (Note 1)		S	P	X				M																			Train B
MU-V-16D (Note 1)		S	P	X				M																			Train B
MU-V-17		S	X	X	S	S	X		S	S	S	S	S	S		S		S	S	S						S	Train X. Fails Mid-position on loss of power. Closes on loss of air.
MU-V-18		S	X	S	S	S	X	X	S	S	S	S	S	S		S		S	S	S						S	Train C. Fails open on loss of power. Closes on loss of air.
MU-V-217				X			X																				Train X
MU-V-20		A	X	X	A	A		X	A	A	A	A	A	A		A		A	A	A						A	Train X. O = Open 1M DC Panel Switch #5. Valve will close as soon as 40 minutes after loss of air.
MU-V-25	S		X					X														X			X		Train A
MU-V-26		A	X	X	A	A	X		A	A	A	A	A	A		A		A	A	A						A	Train B, NOTE 5
MU-V-32			X	X			X																				Train X
MU-V-36			P/M					P																			Train A
MU-V-37			P	P			P																				Train B

LEGEND

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F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

- Note 1: Spurious opening of MU-V-16A and 16B during fire in CB-FA-1, -2a, -2d, -2f, FH-FZ-1 and MU-V-16C and 16D during a fire in CB-FA-2b, -2c, -2e, -2g, -3b, FH-FZ-5 due to spurious ESAS initiation can be mitigated by tripping the operating makeup pump(s) (if not required for seal injection) or by manually closing the respective valves after opening MU-V-36 and MU-V-37.
- Note 2: MU-P-1B is a swing pump normally aligned to 1E 4160V switchgear, but can be transferred to 1D 4160V switchgear. MU-P-1B will be shutdown if 1E 4160V bus is de-energized (e.g. LOOP) and cannot be started without action outside of the control room.
- Note 3: MU-P-1B manual action refers to action to select pump for ES at 1E 4160V switchgear within one hour if a loss of offsite power occurs.
- Note 4: Spurious closure of MU-V-36 due to a fire in AB-FZ-6, CB-FA-1, -2a, -2d, -2f, and MU-V-37 due to a fire in AB-FZ-6, CB-FA-2c, -2e, -2g, -3b due to an inadvertent ESAS actuation may require that these valves be manually opened to support minimum MU pump recirculation in HPI valves are closed.
- Note 5: Closure of MU-V-26 due to a loss of Inst. Air does not require corrective manual operation to ensure Fire Safe Shutdown.

ATTACHMENT 3-5B
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1a

COMPONENTS	LETDOWN																												REMARKS							
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I	A	C	C	C	C	C	C	C	C		C	C	C	C			
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	T	I	B	B	B	B	B	B	B	B	B		B	B	B	B			
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	Z	F	F	F	F	F	F	F	F	F		F	F	F	F			
	1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5	
	a			a	b	c					a				0	1	1	a		a	b	b	c	d	e	f	g	a	b	c	d	a	b	a	b	
MU-V-1A								M*	M*	M*		S							M					M	M	M					M		M			Train X
MU-V-1B								M*	M*	M		S		M*					M					M	M	M					M		M			Train X
MU-V-2A								M*	M*	S	M*								M			M	M	M	M	M	M		M	RSD	RSD		RSD			Train B
MU-V-2B								M*	M*	S	M*								M			M	M	M	M	M	M		M	RSD	RSD		RSD			Train B
MU-V-3	A	A					M	M	M	A		S		A	A				M	O	O		M		M		O		O	RSD		RSD			Train A. Open 1E DC Panel Switch #15. Closes on Loss of Air.	
MU-V-4	A	A					M	A	A	A		S		A	A				M	M			A		A		M			M		M			Train X. Closes on Loss of Air	
MU-V-5	S	S					X	X	X	S		S		S	S				M				X		X				X	X		X			Train X. Closes on Loss of Air	
MU-V-6A	A	A					A	A	A	M		S		A	A				A				M	M	M					M		M			Train X. Closes on Loss of Air	
MU-V-6B	A	A					A	A	A	M		S		A	A				M				M	M	M					M		M			Train X. Closes on Loss of Air	
MU-V-8				M*					M*	M*				M										M	M	M				RSD	M		M			Train X
MU-V-11A	A	A					A	A	M	A		S		A	A				M				M	M	M					X		X			Train X. Closes on Loss of Air	
MU-V-11B	A	A					A	A	M	A		S		A	A				A				M	M	M					X		X			Train X. Closes on Loss of Air	

LEGEND

- | | |
|---|--|
| X – Component Not Available | D – Design Modification |
| S – Support Not Available | RSD – Remote Shut Down |
| P – Available–Cable Protected | O – Open Switch or Breaker |
| M – Available–Manual Operation | R – Repair |
| A – Manual Op. Due to Loss of Inst. Air | M* – Manual operation may be challenged by a specific hot short |
| F – One or the other is available | T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump) |

ATTACHMENT 3-5B
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1b

COMPONENTS	LETDOWN																								REMARKS				
	D	D	F	F	F	F	F	F	I	I	I	I	I	I	I	I	I	S	S	S	S	R	R	R		R	R	R	T
	G	G	H	H	H	H	H	H	B	B	B	B	B	B	B	B	B	S	S	S	S	B	B	B		B	B	B	B
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	H	H	H	H	F	F	F		F	F	F	F
	A	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	A	Z	Z	Z	Z	Z	Z		Z	Z	Z	A
	1	2	1	2	3	4	5	6	1	2	3	4	5	6	7	8	A	F	F	F	F	1	1	1	1	1	2	3	1
																	2	1	2	3	a	b	c	d	e				
MU-V-1A			M*	M			M	M													M		M*			M	M		Train X
MU-V-1B			M	M			M	M													M		M*			M	M		Train X
MU-V-2A		M	M	M			M																M*						Train B
MU-V-2B		M	M	M			M																M*						Train B
MU-V-3		A	M	M	A	A	M	O	A	A	A	A	A	A		A		A	A	A							A	Train A. Open 1E DC Panel Switch #15. Closes on Loss of Air.	
MU-V-4		A	M	A	A	A		M	A	A	A	A	A	A		A		A	A	A							S	Train X. Closes on Loss of Air	
MU-V-5		S	X	X	S	S	M		S	S	S	S	S	S		S		S	S	S							A	Train X. Closes on Loss of Air	
MU-V-6A		A	M	M	A	A	M		A	A	A	A	A	A		A		A	A	A							A	Train X. Closes on Loss of Air	
MU-V-6B		A	M	M	A	A	M		A	A	A	A	A	A		A		A	A	A							A	Train X. Closes on Loss of Air	
MU-V-8			M*	M*			M																					Train X	
MU-V-11A		A	M	M	A	A	M		A	A	A	A	A	A		A		A	A	A							A	Train X. Closes on Loss of Air	
MU-V-11B		A	M	M	A	A	M		A	A	A	A	A	A		A		A	A	A							A	Train X. Closes on Loss of Air	

LEGEND

X – Component Not Available	D – Design Modification
S – Support Not Available	RSD – Remote Shut Down
P – Available–Cable Protected	O – Open Switch or Breaker
M – Available–Manual Operation	R – Repair
A – Manual Op. Due to Loss of Inst. Air	M* – Manual operation may be challenged by a specific hot short
F – One or the other is available	T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5C
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1a

COMPONENTS	REACTOR COOLANT																												REMARKS							
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I	A	C	C	C	C	C	C	C	C		C	C	C	C			
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	I	I	B	B	B	B	B	B	B	B	B		B	B	B	B			
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F	F			
	1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5	
	a			a	b	c				a					0	1	1	a		a	b	c	d	e	f	g	a	b	c	d	a	b	a	b		
RC-GRP-8																				R	X	R	R	S		S		S		X	S		S		Train A	
RC-GRP-9																				R		X	X		S		S		X	R S D	R S D		R S D		Train B	
RC-V-2								X												P		X	X		X					R S D	R S D		R S D		Train X. Pre-emptive action to close valve prior to fire damage is credited in CB-FA-3d and CB-FA-4b.	
RC-RV-2								P												X	X	P		X		S		S		X	X		X		Train X	
RC-V-1								T												T	X			T		T		S		S	X		X		Train X	
RC-V-3								X	X	X										X		X		X	X	X	X		S	R S D	R S D		R S D		Train X	
RC-V-28								X	X	X										X		X		X	X	X					X		X		Train X	
RC-V-44 (Note 1)								D	D																	S		S		D	D	D		D		Train B
RC-V-40A								X												X	X	X								X	X		X		Train A	
RC-V-41A (Note 1)								D												D	D	D								D	D		D		Train A	
RC-V-40B								X	X																S		S		X	X	X		X		Train B	
RC-V-41B (Note 1)								D	D																S		S		D	D	D		D		Train B	
RC-V-42								X	X																S		S		X	X	X		X		Train B	
RC-V-43 (Note 1)								D	D																S		S		D	D	D		D		Train B	
RC-P-1A Trip																				M					X		S								The manual action for the RCP trip and alternate trip refer to local trip at the 6900 V switchgear. Pre-emptive action to trip pumps prior to fire damage is credited in CB-FA-3d and CB-FA-4b.	
RC-P-1B Trip																				M					X		S									
RC-P-1C Trip																				M					X		S									
RC-P-1D Trip																				M					X		S									
RC-P-1A, 1C Alt. Trip																				M				X		S										
RC-P-1B, 1D Alt. Trip																				M				X		S										

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair

T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

Note 1: Design modification is made of one of the two RC vent valves in series (i.e. RC-V-28 and -44; RC-V-40A and -41A; RC-V-40B and -41B; RC-V-42 and -43) to prevent spurious opening due to any one hot short. However, opening of both valves in any one path does not prevent the plant from safely shutting down and therefore is acceptable.

ATTACHMENT 3-5C
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1b

COMPONENTS		REACTOR COOLANT																												REMARKS			
		D	D	F	F	F	F	F	F	I	I	I	I	I	I	I	I	I	I	R	R	R	R	R	R	R	T						
		G	G	H	H	H	H	H	H	B	B	B	B	B	B	B	B	B	S	S	S	S	B	B	B	B	B						
		F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	H	H	H	H	F	F	F	F	F	F						
		A	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	A	Z	Z	Z	Z	Z	Z	Z	Z	A						
		1	2	1	2	3	4	5	6	1	2	3	4	5	6	7	8	F	F	F	F	1	1	1	1	1	2	3	1				
																		2	1	2	3												
RC-GRP-8	S						R																		X		X		X	Train A			
RC-GRP-9		S					X																		X		X		X	Train B			
RC-V-2			X	X			P													P		P	P		P				Train X				
RC-RV-2			P				X													P		P	P		P	S			Train X				
RC-V-1	S		T				X													T		T	T		T	X			Train X				
RC-V-3		S	X	X			X													X		X	X		X				Train X				
RC-V-28			X	X			X													X		X	X		X	X			Train X				
RC-V-44 (Note 1)			D	D			D															D			D	D			Train B				
RC-V-40A			X				X															X	X	X					Train A				
RC-V-41A (Note 1)			D				D															D	D	D					Train A				
RC-V-40B			X	X			X															X		X	X	X			Train B				
RC-V-41B (Note 1)			D	D			D															D		D	D	D			Train B				
RC-V-42			X	X			X															X			X	X			Train B				
RC-V-43 (Note 1)			D	D			D															D			D	D			Train B				
RC-P-1A Trip																												X					
RC-P-1B Trip																												X					
RC-P-1C Trip																												X					
RC-P-1D Trip																												X					
RC-P-1A, 1C Alt. Trip																												X					
RC-P-1B, 1D Alt. Trip																												X					

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5D
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1a

COMPONENTS	CORE FLOODING																												REMARKS					
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C		C	C	C		
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	I	I	B	B	B	B	B	B	B	B	B		B	B	B		
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F		
	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	F	F	A	A	A	A	A	A	A	A	A		A	A	A	Z	Z
1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5
			a	b	c					a				0	1	1	a		a	b	c	d	e	f	g	a	b	c	d	a	b	a	b	
CF-V-1A																												M		M			Only required in III.G.3 areas.	
CF-V-1B																												M		M			Only required in III.G.3 areas.	

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5D
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1b

COMPONENTS	CORE FLOODING																								REMARKS					
	D	D	F	F	F	F	F	F	I	I	I	I	I	I	I	I	I	S	S	S	S	R	R	R		R	R	R	T	
	G	G	H	H	H	H	H	H	B	B	B	B	B	B	B	B	B	P	P	P	P	B	B	B		B	B	B	B	
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	H	H	H	H	F	F	F		F	F	F	F	
	A	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z					Z	Z	Z		Z	Z	Z	A	
	1	2	1	2	3	4	5	6	1	2	3	4	5	6	7	8		F	F	F	F	1	1	1	1	1	2	3	1	
																	A	Z	Z	Z	a	b	c	d	e					
																	2	1	2	3										
CF-V-1A				X				X																			X		X	Only required in III.G.3 areas.
CF-V-1B				X				X																			X		X	Only required in III.G.3 areas.

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5E
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1a

COMPONENTS	EMERGENCY FEEDWATER																												REMARKS					
	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B	A B		A B	A B			
	F A	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z	F Z		F Z	F Z			
	1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	2	2	2	2	2	2	2	3	3		3	3	4	4	5
EF-P-1																																	Pre-emptive action to open MS-V-13A/B is credited in CB-FA-3d and CB-FA-4b	
EF-P-2A																			X	X			S		S		X		S	X		X		Train A
EF-P-2B																			P		X			S		S		X	R S D	R S D		R S D		Train B
EF-V-2A																			X	X			X							M		M		Train A
EF-V-2B																			X		X		X		X					M		M		Train B
EF-V-30A	A	A					A	A	A	A		A		A	A				S	X			X		X	M	X	X	X	R S D		R S D		Train A. Closes on Loss of Air
EF-V-30B	A	A					A	X	X	A		A		A	A				A		X	X	A	X	A	M			R S D	R S D		R S D		Train B. Closes on Loss of Air
EF-V-30C	A	A					A	A	A	A		A		A	A				S	X			X		X	M	X	X	X	R S D		R S D		Train A. Closes on Loss of Air
EF-V-30D	A	A					A	X	X	A		A		A	A				A		X	X	A	X	A	M			R S D	R S D		R S D		Train B. Closes on Loss of Air
CO-V-7	S	S					S	S	S	S		S		S	S				X	X			S		S		X			M		M		Train X. Opens on Loss of Air. Spurious concern only.
CO-V-8	S	S					S	S	S	S		S		S	S				X	X			S		S		X			M		M		Train X. Opens on Loss of Air. Spurious concern only.
CO-V-13																														X		X		Train X
CO-V-111A																			X	X	X		S		S		S		X	M		M		Train A
CO-V-111B								X	X										X		X	X		S		S		S		M		M		Train B
VA-P-1A, 1B, 1C																														M		M		Train X
VA-V-8																			X	X	X	X		X			X			X		X		Train X

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5E
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1b

COMPONENTS	EMERGENCY FEEDWATER																								REMARKS		
	D	D	F	F	F	F	F	F	I	I	I	I	I	I	I	I	I	I	R	R	R	R	R	R		T	
	G	G	H	H	H	H	H	H	B	B	B	B	B	B	B	B	B	S	S	S	S	B	B	B		B	
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	H	H	H	H	F	F	F	F		F	
	A	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	A	Z	Z	Z	a	b	c	d		e	
	1	2	1	2	3	4	5	6	1	2	3	4	5	6	7	8	2	1	2	3	1	1	1	1	2	3	1
EF-P-1										X	M																
EF-P-2A	S										X															Train A	
EF-P-2B		S									X															Train B	
EF-V-2A											X															Train A	
EF-V-2B											X															Train B	
EF-V-30A		A	X	A	A	A	M	X	A	A	M	A	A	A		M		A	A	A						A	Train A. Closes on Loss of Air.
EF-V-30B		A	P/A	A	A	A	M		A	A	M	X	A	A		M		A	A	A						A	Train B. Closes on Loss of Air.
EF-V-30C		A	X	A	A	A	M	X	A	A	M	A	A	A		M		A	A	A						A	Train A. Closes on Loss of Air.
EF-V-30D		A	P/A	A	A	A	M		A	A	M	X	A	A		M		A	A	A						A	Train B. Closes on Loss of Air.
CO-V-7		S	S	S	S	S			S	S	S	S	S	S		S		S	S	S						X	Train X. Opens on Loss of Air. Spurious concern only
CO-V-8		S	S	S	S	S			S	S	S	S	S	S		S		S	S	S						X	Train X. Opens on Loss of Air. Spurious concern only
CO-V-13																										X	Train X
CO-V-111A	S		X								X	X				X											Train A
CO-V-111B		S	X	X			X					X				X											Train B
VA-P-1A, 1B, 1C																										F	Train X. Adequate cable separation- one or other is available in TB-FA-1
VA-V-8			X	X			X																			F	Train X. Adequate cable separation- one or other is available in TB-FA-1

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

This table has been deleted, as HSPS is not required for safe shutdown. See Attachment 3-3. Circuits in Attachment 3-6F are retained for historical information.

LEGEND	
X – Component Not Available	D – Design Modification
S – Support Not Available	RSD – Remote Shut Down
P – Available–Cable Protected	O – Open Switch or Breaker
M – Available–Manual Operation	R – Repair
A – Manual Op. Due to Loss of Inst. Air	J – Cut & Jumper
F – One or the other is available	T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5G
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1a

COMPONENTS	FEEDWATER (FOR PREVENTION OF OVERFEEDING STEAM GENERATORS)																												REMARKS					
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	I	A	C	C	C	C	C	C	C	C		C	C	C	C	
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	T	I	B	B	B	B	B	B	B	B	B		B	B	B	B	
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	Z	F	F	F	F	F	F	F	F	F		F	F	F	F	
	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	F	A	A	A	A	A	A	A	A		A	A	A	A	Z
1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5
			a	b	c					a				0	1	1	a			a	b	c	d	e	f	g	a	b	c	d	a	b	a	b
FW-P-1A																							S	S	S		X	X		X				Train X
FW-P-1B																							S	S	S		X	X		X				Train X
FW-V-1A																										X	X		X		X			Train X
FW-V-1B																										X	X		X		X			Train X
FW-V-5A								X		X										X	X	X		X		X		S		X	X		X	Train A
FW-V-5B								X	X	S	X											S		S		S		S		X		X		Train B
FW-V-92A								X		X										X	X	X		X		X		S		X	X		X	Train A
FW-V-92B								X	X	S	X											S		S		S		S		X		X		Train B
FW-V-17A	S	S					S	S	S	S		S		S	S					S				S		S				X				Train B
FW-V-17B	S	S					S	S	S	S		S		S	S					X	X			X		S				X				Train A
FW-V-16A	S	S					S	S	S	S		S		S	S					S				S		S				X				Train B
FW-V-16B	S	S					S	S	S	S		S		S	S					X	X			X		S				X				Train A

LEGEND

X – Component Not Available
S – Support Not Available
P – Available–Cable Protected
M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5G
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1b

COMPONENTS	FEEDWATER																												REMARKS
	D	D	F	F	F	F	F	F	I	I	I	I	I	I	I	I	I	I	R	R	R	R	R	R	R	T			
	G	G	H	H	H	H	H	H	B	B	B	B	B	B	B	B	B	S	S	S	S	B	B	B	B	B			
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	H	H	H	H	F	F	F	F	F	F			
	A	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	A	Z	Z	Z	Z	Z	Z	Z	Z	A			
	1	2	1	2	3	4	5	6	1	2	3	4	5	6	7	8	F	F	F	F	1	1	1	1	1	2	3	1	
																	2	1	2	3	a	b	c	d	e				
FW-P-1A																											X	Train X	
FW-P-1B																											X	Train X	
FW-V-1A																											X	Train X	
FW-V-1B																											X	Train X	
FW-V-5A	S		X				X	X								X											X	Train A	
FW-V-5B		S	X	X			X		X	X		X		X		X												Train B	
FW-V-92A	S		X				X	X								X											X	Train A	
FW-V-92B		S	X	X			X		X	X	X	X		X		X												Train B	
FW-V-17A			S	S	S	S	X		S	S	S	S	S	S		S		S	S	S							X	Train B	
FW-V-17B			X	S	S	S	X	X	S	S	X	S	S	X		X		S	S	S							S	Train A	
FW-V-16A			S	S	S	S	X		S	S	S	S	S	S		S		S	S	S							X	Train B	
FW-V-16B			X	S	S	S	X	X	S	S	X	S	S	X		X		S	S	S							S	Train A	

LEGEND

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S – Support Not Available
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M – Available–Manual Operation
A – Manual Op. Due to Loss of Inst. Air
F – One or the other is available

D – Design Modification
RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5H
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1a

COMPONENTS	MAIN STEAM																												REMARKS					
	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	C	C	C	C	C	C	C	C	C	C		C	C	C		
	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B		B	B	B		
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F		F	F	F		
	1	2	1	2	2	2	3	4	5	6	6	7	8	9	1	1	1	1	1	2	2	2	2	2	2	2	3	3	3	3	4	4	5	5
	a			a	b	c					a				0	1	1	a		a	b	c	d	e	f	g	a	b	c	d	a	b	a	b
MS-V-3A, 3B, 3C, 3D, 3E, & 3F																										X	X	X	X		X			Valves Close on Loss of Air
MS-V-8A																					X	X		X				R	R		R		Pre-emptive action to close valve prior to fire damage is credited in CB-FA-3d and CB-FA-4b.	
MS-V-8B																			X	X	X	S		S				R	R		R		Pre-emptive action to close valve prior to fire damage is credited in CB-FA-3d and CB-FA-4b.	
MS-V-4A		A	A				A	A	A	A		A		A	A			A			M	M		A		M	M	M	R		R		Closes on Loss of Air	
MS-V-4B		A	A				A	A	A	A		A		A	A			A		M	M	M		A		M	M	R	R		R		Closes on Loss of Air	
MS-V-2A																			X	X							X			X	X			Manual action for CSD only
MS-V-2B																			X	X	X						X	X	X	X	X			Manual action for CSD only
MS-V-10A																			X	X			X		S		X			X	X			Manual action for CSD only
MS-V-10B																			X		X		X	X	X	S				X	X			Manual action for CSD only
MS-V-13A																				X		X								X	X			Fails Open
MS-V-13B																			X		X		X	X						X	X			Fails Open
MS-V-6		S	S				S	S	S	S		S		S	S				S				S	S										Fails full open on Loss of Air.

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RSD – Remote Shut Down
O – Open Switch or Breaker
R – Repair
T – Trip 3 RC Pumps (Both 'A' loop pumps & either 'B' loop pump)

ATTACHMENT 3-5H
APPENDIX R EVALUATION REPORT – THREE MILE ISLAND UNIT 1
COMPONENT AVAILABILITY FOR A FIRE IN FIRE AREA/ZONE

SHEET 1b

COMPONENTS	MAIN STEAM																								REMARKS		
	D	D	F	F	F	F	F	F	I	I	I	I	I	I	I	I	I	R	R	R	R	R	R	R		T	
	G	G	H	H	H	H	H	H	B	B	B	B	B	B	B	B	S	S	S	S	B	B	B	B		B	
	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	H	H	H	H	F	F	F	F		F	
	A	A	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	Z	A	Z	Z	Z	Z	Z	Z	Z		A	
	1	2	1	2	3	4	5	6	1	2	3	4	5	6	7	8	F	F	F	F	1	1	1	1	2	3	1
																	2	1	2	3	a	b	c	d	e		
MS-V-3A, 3B, 3C, 3D, 3E, & 3F																										X	Valves close on loss of air
MS-V-8A			X	X			X			X	X					X											
MS-V-8B			X	X				X		X	X					X											
MS-V-4A		A	A	A	A	A			A	M	A	A	A	M		A		A	A	A						M	Valve closes on loss of air
MS-V-4B		A	A	A	A	A	M		A	M	M	A	A	M		A		A	A	A						M	Valve closes on loss of air
MS-V-2A			X					X		X	X																Manual action for CSD only
MS-V-2B			X				X	X		X				X	X											X	Manual action for CSD only
MS-V-10A										X	M			X	X												Manual action for CSD only
MS-V-10B										X	M																Manual action for CSD only
MS-V-13A							X			X	X			X	X											X	Fail Open. Unavailable in FH-FZ-5 and IB-FZ-3 for hot short only. MS-V-13A or -13B is available.
MS-V-13B							X			X	X																Fail Open. Unavailable in FH-FZ-5 and IB-FZ-3 for hot short only. MS-V-13A or -13B is available.
MS-V-6		S	S	S	S	S			S	X	S	S	S	S		S		S	S	S						S	Fails full open on Loss of Air.

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R – Repair
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