System Function	(1) Condition which requires action (Equipment Failure)	(2) Applicable Fire Area / Zones	(3) Manual Action or Repair		(3) Action or Repair Required (Note 1)	(4) Location where Action or Repair is Performed	(5) Time Requirement	(6) Time Requirement Basis	Comments
			Action	Repair					
Decay Heat Removal	DR-P-1A is not remotely operable	ISPH-FZ-2	X	X	1) Repair control cable LR24 by lifting and taping all conductors. 2) Start DR-P-1A at 1R 480V switchgear.	ISPH-FZ-1	Prior to initiating DHR		
Decay Heat Removal	DR-P-1B is not remotely operable	ISPH-FZ-1	X	X	1) Repair control cables LT21 and LT24 by lifting and taping all conductors. 2) Start DR-P-1B at 1T 480V switchgear.	ISPH-FZ-2	Prior to initiating DHR		
Decay Heat Removal	DC-P-1A and DC-P-1B not remotely operable	AB-FZ-7		X	Repair power cable LP2 for DC-P-1A or LS2 for DC-P-1B by splicing in a new power cable.	AB-FZ-7	Prior to initiating DHR		Repair restores control room or local switchgear operation.
Decay Heat Removal	DH-P-1A is not remotely operable	CB-FA-2b		X	Repair control cable MD63 by lifting and taping all conductors.	CB-FA-3a	Prior to initiating DHR		Repair restores control room or local switchgear operation.
Decay Heat Removal	DH-P-1B is not remotely operable	AB-FZ-5 FH-FZ-1		X	Repair power cable ME6 for DH-P-1B by splicing in a new power cable.	FH-FZ-2 FH-FZ-1 AB-FZ-4 AB-FZ-5	Prior to initiating DHR		Repair restores control room or local switchgear operation.
Decay Heat Removal	DH-V-1 and DH-V-2 are not remotely operable	CB-FA-2c, CB-FA-2e, CB-FA-3c, CB-FA-3d, CB-FA-4b, FH-FZ-1, FH-FZ-2 FH-FZ-5, RB-FZ-1a RB-FZ-1b, RB-FZ-1c RB-FZ-1e, RB-FZ-2 TB-FA-1	X		Locally open DH-V-1 and DH-V-2	RB-FZ-1e RB-FZ-1c	Prior to initiating DHR		
Decay Heat Removal	DH-V-3 remote operation is unavailable.	AB-FZ-4, CB-FA-2c CB-FA-2e, CB-FA-3c CB-FA-3d, CB-FA-4b FH-FZ-1, FH-FZ-5	X		Locally open DH-V-3	AB-FZ-4	66 Hours (Note 3)	ECR 09-00527	
Decay Heat Removal	DH-V-4A is not remotely operable	AB-FZ-6 CB-FA-2b	X		Manually open DH-V-4A	AB-FZ-4	Prior to initiating DHR		
Decay Heat Removal	DH-V-4B is not remotely operable	AB-FZ-4, AB-FZ-5 AB-FZ-6a, CB-FA-2d CB-FA-2f, CB-FA-3c CB-FA-3d, CB-FA-4b FH-FZ-1	X		Manually open DH-V-4B	AB-FZ-4	66 Hours (Note 3)		
Decay Heat Removal	BS-V-3A fails open	AB-FZ-6 CB-FA-2b	X		Locally close BS-V-3A	AB-FA-1	Prior to initiating DHR		
Decay Heat Removal	BS-V-3B fails open.	AB-FZ-5, AB-FZ-6a CB-FA-2d, CB-FA-2f CB-FA-3c, CB-FA-3d CB-FA-4b, FH-FZ-1	X		Locally close BS-V-3B	AB-FZ-2	66 Hours (Note 3)		
Decay Heat Removal	DH-V-7A fails open	AB-FZ-6	X		Locally close DH-V-7A	AB-FZ-4	Prior to initiating DHR		

System Function	(1) Condition which requires action (Equipment Failure)	(2) Applicable Fire Area / Zones	(3) Manual Action or Repair		(3) Action or Repair Required (Note 1)	(4) Location where Action or Repair is Performed	(5) Time Requirement	(6) Time Requirement Basis	Comments
			Action	Repair					
Decay Heat Removal	DH-V-7B fails open.	AB-FZ-4, AB-FZ-5 AB-FZ-6a, CB-FA-2d CB-FA-2f, CB-FA-3d CB-FA-4b, FH-FZ-1	X		Locally close DH-V-7B	AB-FZ-2	66 Hours (Note 3)		
Decay Heat Removal	Initiate Decay Heat Removal System operation	CB-FA-3d CB-FA-4b CB-FA-3c	X		1) Start DH-P-1B at 1E 4160V switchgear 2) Locally throttle DH-V-19B to 2500 to 3500 GPM using DH-FI-299B DH Flow indicator.	CB-FA-3b AB-FZ-4	66 Hours (Note 3)	ECR 09-00527 ECR 08-01051	
Decay Heat Removal	Initiate Decay Heat Removal System operation	AB-FZ-2, AB-FZ-2c AB-FZ-3, AB-FZ-6 AIT-FZ-1a, CB-FA-2b CB-FA-2c, CB-FA-2e CB-FA-2g, CB-FA-3b DG-FA-2, FH-FZ-2 FH-FZ-5, ISPH-FZ-2	X		1) Locally open DH-V-12A 2) Locally throttle DH-V-19A to 2500 to 3500 GPM using DH-FI-299A DH Flow indicator.	AB-FZ-4	Prior to initiating DHR		Required in all fire areas/zones where ‘A’ DHR train is credited. In fire areas/zones where both ‘A’ and ‘B’ trains of DHR are available, either DH-V-19A or DH-V-19B can be manually operated.
Decay Heat Removal	Initiate Decay Heat Removal System operation	AB-FA-1, AB-FZ-4 AB-FZ-5, AIT-FZ-1 CB-FA-1, CB-FA-2a CB-FA-2d, CB-FA-2f CB-FA-3a, DG-FA-1 FH-FZ-1, FH-FZ-6 ISPH-FZ-1	X		Locally throttle DH-V-19B to 2500 to 3500 GPM using DH-FI-299B DH Flow indicator.	AB-FZ-4	Prior to initiating DHR.		Required in all fire areas/zones where ‘B’ DHR train is credited. In fire areas/zones where both ‘A’ and ‘B’ trains of DHR are available, either DH-V-19A or DH-V-19B can be manually operated.
Decay Heat Removal	DH cooler outlet temperature indication unavailable	FH-FZ-1 FH-FZ-5	X		Use temporary local temperature measurements of DH Cooler Outlet Temperature	CB-FA-3d	Prior to initiating DHR		
Decay Heat Removal	Control cooldown using Decay Heat Removal System	AB-FZ-2, AB-FZ-3 AB-FZ-6, AB-FZ-7 AB-FZ-9, AB-FZ-10 DG-FA-2, FH-FZ-2 FH-FZ-3, FH-FZ-4 IB-FZ-1, IB-FZ-2 IB-FZ-3, IB-FZ-4 IB-FZ-5, IB-FZ-6 IB-FZ-8, ISPH-FZ-2 ISPH-FZ-3, TB-FA-1	X		Locally throttle DC-V-2A and DC-V-65A to control DC system flow (DC-FS-26), and control RCS heat removal.	AB-FA-1 AB-FZ-4	Prior to initiating DHR and required to cool to CSD using DHR		DC-FS-26 is local (AB-FZ-4) mechanical flow indicator. Required for all fire areas/zones where ‘A’ DHR is credited. Action required for either DC-V-2A/65A OR DC-V-2B/65B where both ‘A’ and ‘B’ are available.

System Function	(1) Condition which requires action (Equipment Failure)	(2) Applicable Fire Area / Zones	(3) Manual Action or Repair		(3) Action or Repair Required (Note 1)	(4) Location where Action or Repair is Performed	(5) Time Requirement	(6) Time Requirement Basis	Comments
			Action	Repair					
Decay Heat Removal	Control cooldown using Decay Heat Removal System DC-V-2B and DC-V-65B spuriously close or fail open on loss of IA or power.	AB-FA-1, AB-FZ-3 AB-FZ-4, AB-FZ-5 AB-FZ-7, AB-FZ-9 AB-FZ-10, CB-FA-1, CB-FA-2d, CB-FA-2f, CB-FA-3d CB-FA-4b, FH-FZ-1 FH-FZ-3, FH-FZ-4 IB-FZ-1, IB-FZ-2 IB-FZ-3, IB-FZ-4 IB-FZ-5, IB-FZ-6 IB-FZ-8, ISPH-FZ-1 ISPH-FZ-3, TB-FA-1	X		For a fire in fire areas/zones AB-FZ-4, AB-FZ-5, CB-FA-3d, CB-FA-4b, and FH-FZ-1, disconnect power or air at DC-V-2B and DC-V-65B solenoid. Locally throttle DC-V-2B and DC-V-65B to control DC system flow (DC-FS-27), and control RCS heat removal.	AB-FZ-2	Prior to initiating DHR and required to cool to CSD using DHR or 66 hours (Note 3)	ECR 09-00527	DC-FS-27 is local (AB-FZ-4) mechanical flow indicator. Required for all fire areas/zones where 'B' DHR is credited. Action required for either DC-V-2A/65A OR DC-V-2B/65B where both 'A' and 'B' are available.
EFW	EF-P-1 speed cannot be maintained using MS-V-13A and MS-V-13B.	IB-FZ-3	X		Locally throttle open MS-V-10A and MS-V-10B to continue use of EF-P-1	IB-FZ-2		MS-V-13A or MS-V-13B capacity is adequate at HSD	MS-V-13A or MS-V-13B is available from the control room to provide initial steam flow to EF-P-1
EFW	EF-V-1A or EF-V-1B spuriously closed due to a hot short	CB-FA-3c CB-FA-3d CB-FA-4b	X		Locally ensure EF-V-1A and EF-V-1B are open. (Both OTSGs are used for cooldown)	IB-FZ-3	4 hours (Prior to initiating cooldown)	ECR 09-00527	
EFW	EF-V-2A or EF-V-2B spuriously closed due to a hot short	CB-FA-3d CB-FA-4b	X		Locally ensure EF-V-2A and EF-V-2B are open. (Both OTSGs are used for cooldown)	IB-FZ-3	4 hours (Prior to initiating cooldown)	ECR 09-00527	
Electrical Power	Loss of Control Building Ventilation	CB-FA-3c CB-FA-3d CB-FA-4b	X		Open Doors C212 & C213	CB-FA-2d, CB-FA-2f	24 Hours	ECR 09-00527, TDR 900	
Electrical Power / Component Cooling	Loss of both trains of Control Building cooling (fans or chillers)	CB-FA-1, CB-FA-2a, CB-FA-2b, CB-FA-2d, CB-FA-2e, CB-FA-2f, CB-FA-3a, CB-FA-4a	X		Open Doors C212 & C213	CB-FA-2d, CB-FA-2f	24 Hr	DR5375339A-2 TDR 900	EL-L-80A EL-L-80B EL-L-15 EL-L-16
RCS Heat Removal	MS-V-2A spuriously closed due to a hot short	CB-FA-1, CB-FA-2a CB-FA-3a, CB-FA-3d CB-FA-4b, FH-FZ-1 FH-FZ-6, IB-FZ-2 IB-FZ-3	X		Locally ensure MS-V-2A is open. (Both OTSGs are used for cooldown)	IB-FZ-2	4 hours (Prior to initiating cooldown)	ECR 09-00527	EL-L-84A provides lighting.

System Function	(1) Condition which requires action (Equipment Failure)	(2) Applicable Fire Area / Zones	(3) Manual Action or Repair		(3) Action or Repair Required (Note 1)	(4) Location where Action or Repair is Performed	(5) Time Requirement	(6) Time Requirement Basis	Comments
			Action	Repair					
RCS Heat Removal	MS-V-2B spuriously closed due to a hot short	CB-FA-1, CB-FA-2a CB-FA-2b, CB-FA-3a CB-FA-3b, CB-FA-3c CB-FA-3d, CB-FA-4b FH-FZ-1, FH-FZ-5 FH-FZ-6, IB-FZ-2 IB-FZ-6, IB-FZ-7, TB-FA-1	X		Locally ensure MS-V-2B is open. (Both OTSGs are used for cooldown)	IB-FZ-2	4 hours (Prior to initiating cooldown)	ECR 09-00527	EL-L-84A provides lighting. EL-L-84B provides lighting
RCS Heat Removal	MS-V-4A failed closed due to loss of control or loss of IA.	All fire areas/zones where a loss of normal Instrument Air is possible (See Attachment 3-0) PLUS CB-FA-2d, CB-FA-3a, CB-FA-3b, IB-FZ-2, IB-FZ-6, TB-FA-1	X		Locally operate MS-V-4A (Both OTSGs are used for cooldown)	IB-FZ-2	4 Hours (To establish cooldown rate)	Historical standard for “prior to cooldown”	
RCS Heat Removal	MS-V-4B failed closed due to loss of control or loss of IA.	All fire areas/zones where a loss of normal Instrument Air is possible (See Attachment 3-0) PLUS CB-FA-2b, CB-FA-2c, CB-FA-2d, CB-FA-3a, CB-FA-3b, FH-FZ-5, IB-FZ-2, IB-FZ-3, IB-FZ-6, TB-FA-1	X		Locally operate MS-V-4B (Both OTSGs are used for cooldown)	IB-FZ-2	4 Hours (To establish cooldown rate)	Historical standard for “prior to cooldown”	
Decay Heat Removal	Feedwater isolated to OTSG B to mitiage XHT caused by spurious opening of MS-V-8B with failed MS-V-3A,B,C	CB-FA-3c	X		Locally close MS-V-8B	IB-FZ-2	4 hours (prior to initiating cooldown)	Historical standard for “prior to cooldown”	
RCS Heat Removal	Wide Range RCS Incore or T_{HOT} Temperature Indication Unavailable	FH-FZ-1		X	Provide alternate indication of RC4A-TE-1 (T_{HOT} RCS Wide Range Temperature) to support cooldown	CB-FA-3d	Prior to initiating cooldown.	ECR 08-01051	

System Function	(1) Condition which requires action (Equipment Failure)	(2) Applicable Fire Area / Zones	(3) Manual Action or Repair		(3) Action or Repair Required (Note 1)	(4) Location where Action or Repair is Performed	(5) Time Requirement	(6) Time Requirement Basis	Comments
			Action	Repair					
RCS Heat Removal	Prevent feeding OTSG with MFW during cooldown. (FW valve failed open)	CB-FA-3d CB-FA-4b	X		ENSURE CO-P-1A, 1B and 1C are shutdown.	TB-FA-1	Prior to reducing OTSG pressure below 200 psig	ECR 09-00527	
RCS Inventory	BWST level indication is not available	CB-FA-3b, YARD		X	Provide alternate method to determine BWST level	AUX BLDG	Prior to initiating DHR		
RCS Pressure Control	Neither pressurizer vent path (i.e. RC-V-28 and RC-V-44 OR RC-V-2 and RC-RV-2) is available to reduce RCS pressure AND ambient pressurizer heat loss is insufficient.	CB-FA-3c CB-FA-3d CB-FA-4b	X	X	**1)** Throttle open RC-V-49 and RC-V-50	RB-FZ-3		ECR 14-00097	
RCS Pressure Control	Pressurizer Heater Groups 8 and 9 are unavailable and one train of DH is unavailable	CB-FA-1	X	X	1) Provide alternate power to RC-GRP-8 or RC-GRP-9 from FX-Y-1A or FX-Y-1B to 1B Pressurizer Heater Group MCC. 2) Open non-emergency pressurizer heater group breakers.	TB-FA-1	Prior to reducing RCS temperature below 313°F		Repair restores control room or local MCC operation of RC-GRP-8 or RC-GRP-9.
RCS Pressure Control	Pressurizer Heater Groups 8 and 9 are unavailable and one train of DH unavailable	CB-FA-2b CB-FA-2c FH-FZ-5	X	X	1) Repair RC-GRP-8 control cable LP58 by lifting and taping all conductors. 2) Repair RC-GRP-8 power cable LP52 by splicing in new cable. 3) Transfer RC-GRP-8 to emergency power supply (1P 480V ES switchgear)	TB-FA-1 CB-FA-2a CB-FA-2b	Prior to reducing RCS temperature below 313°F		Repair restores control room or local MCC operation of RC-GRP-8 or RC-GRP-9.
RCS Pressure Control	RCS temperature less than 313ºF	CB-FA-3d CB-FA-4b CB-FA-3c	X		1) Rack out MU-P-1A breaker 2) Locally close MU-V-16A and MU-V-16B	CB-FA-3a AB-FZ-6	Prior to reducing RCS temperature below 313ºF.	ECR 09-00527 ECR 08-01051	Tech Spec requirement to prevent LTOP event.
RCS Pressure Control	Remote control of either CF-V-1A or CF-V-1B is not available.	CB-FA-3d CB-FA-4b	X		Locally close CF-V-1A and CF-V-1B	RB-FZ-2	Prior to reducing RCS pressure below 600 psig	ECR 14-00097	
RCS Pressure Control	Remote control of either CF-V-1A or CF-V-1B is not available.	CB-FA-3c	X		Remotely close CF-V-1A and CF-V-1B from 1C ESV MCC	FH-FZ-1	Prior to reducing RCS pressure below 600 psig	ECR 14-00097	

Column Heading Notes:

(1) **Condition (Equipment Failure):**
This is the event or effect of the fire that requires action to achieve safe shutdown. As applicable, the associated failure that necessitates action is described in parenthesis.

(2) **Applicable Fire Areas/Zones:**
List all of the fire zones where the action may be required for a successful safe shutdown strategy.

(3) **Action or Repair Required:**
This is a single action or group of actions that are performed together to mitigate the "failure" or satisfy required function.

(4) **Fire Area/Zone of Action Location:**
List the Fire Areas (or Zones) where the actions are performed.

(5) **Time Requirement:**
Describes the maximum acceptable time for completion of the manual action.
In III.G.2 fire areas, the actions needed for cold shutdown must be identified and prepared, and repairs must be completed within 72 hours but there is no requirement to reach cold shutdown within 72 hours.
In III.g.3 areas, the starting time for applicable action durations is:

- Fire affects SSD equipment in ESAS room (CB-FA-3c)
- SRO determines control room evacuation is required (CB-FA-3d and CB-FA-4b)

(6) **Time Requirement Basis:**
Basis for the time requirement is described or a reference is provided.

Notes:

1. Functions and Actions that are required for Hot Shutdown and for initial cooldown are contained on Attachment 3-7A, and are not repeated on this Attachment unless the function or action is unique or different from the requirements for Hot Shutdown.
2. For all MOVs, it is assumed that the breaker for the locally operated valve will be opened prior to valve operation. This is part of the required manual action.
3. This action must be completed to support initiating DHR operation within 66 hours. This limit is only applicable in Appendix R III.G.3 fire areas (CB-FA-3c, CB-FA-3d, CB-FA-4b) to meet the cold shutdown requirement of 72 hours.
4. The table only includes action taken outside of the control room. No exemptions are required for these actions.