Step 2: Review of the Internal Events PRA Against the Fire Safe Shutdown Analysis

TABLE 1: SYSTEMS IN PRA MODEL				
System	**Description**	**Additional Details**	**Address in Fire PRA Model? (Y or N)**	**Comments**
RCS	Reactor Coolant System	PORV for pressure relief and feed & bleed. Stuck-open PORV causes small LOCA.		
CVCS	Chemical and Volume Control System	Normal charging and letdown functions are not modeled. However, components required to isolate the volume control tank and letdown are modeled for HPI mode.		
HPI	High Pressure Injection System	The charging pumps in the CVCS also function as safety injection pumps.		
RHR	Residual Heat Removal System	Shutdown cooling is not modeled. However, the RHR pump and heat exchanger are required for recirculation.		
AFW	Auxiliary Feedwater System	All three trains are modeled.		

TABLE 1: SYSTEMS IN PRA MODEL				
System	**Description**	**Additional Details**	**Address in Fire PRA Model? (Y or N)**	**Comments**
MFW	Main Feed Water	Would take considerable effort to get cables involved and their locations		
MS	Main Steam System	Stuck-open secondary atmospheric dump valve could cause equivalent of main steam line break.		
CS	Containment Spray	Required for recirculation during LOCA		
CF	Containment Fan Coolers	Required for recirculation during LOCA		
CI	Containment Isolation	Modeled in LERF		
ESFAS	Emergency Safeguards Actuation System			
CCW	Component Cooling Water System			

TABLE 1: SYSTEMS IN PRA MODEL				
System	**Description**	**Additional Details**	**Address in Fire PRA Model? (Y or N)**	**Comments**
SW	Service Water System			
AC	AC Power (all voltage levels)	To extent power is needed to support equipment in the PRA.		
DG	Emergency Diesel Generators			
DC	DC Power	To extent power is needed to support equipment in the PRA.		
IA	Instrument Air	Required for PORV and other valves.		
HVAC-HPI	HVAC in HPI Pump Room	HVAC is required during 24-hr PRA mission		
HVAC-RHR	HVAC in RHR Pump Room	HVAC is required during 24-hr PRA mission		

TABLE 2: SYSTEMS IN APPENDIX R				
System	**Description**	**Additional Details**	**System function addressed in the Internal Events PRA Model?** **(Y or N)**	**Comments**
RCS	Reactor Coolant System	PORV to prevent spurious opening and PORV block valve fails to close results in consequential small LOCA.		
CVCS	Chemical Volume and Control System	Normal charging and letdown functions are credited.		
RHR	Residual heat Removal System	Shutdown cooling is credited		
AFW	Auxiliary Feedwater System	Motor-driven and steam -driven AFW pumps are credited.		
MS	Main Steam System	Steam relief for secondary heat removal. Secondary relief valves and MSIVs are also		

TABLE 2: SYSTEMS IN APPENDIX R				
System	**Description**	**Additional Details**	**System function addressed in the Internal Events PRA Model? (Y or N)**	**Comments**
		included to prevent spurious opening causing uncontrolled secondary depressurization.		
CCW	Component Cooling Water System			
SW	Service Water System			
AC	AC Power (all voltage levels)	But certain buses not credited (especially non-safety) if loads not otherwise required for safe shutdown		
DG	Emergency Diesel Generators			
DC	DC Power	But certain buses not credited (especially non-safety) if loads		

TABLE 2: SYSTEMS IN APPENDIX R				
System	**Description**	**Additional Details**	**System function addressed in the Internal Events PRA Model? (Y or N)**	**Comments**
		not otherwise required for safe shutdown		
IA	Instrument Air	Required for normal charging and letdown valves.	Y	
RCS Instruments	RCS pressure, temperature, nuclear instrumentation, etc	Required for safe shutdown monitoring.		
Secondary Instruments	Steam Generator level, Streamline pressure, etc.	Required for safe shutdown monitoring.		
HVAC-HPI	HVAC in HPI Pump Room	HVAC is required during 72-hr Appendix R mission		
HVAC-RHR	HVAC in RHR Pump Room	HVAC is required during 72-hr Appendix R mission		

TABLE 2: SYSTEMS IN APPENDIX R				
System	**Description**	**Additional Details**	**System function addressed in the Internal Events PRA Model?** **(Y or N)**	**Comments**
HVAC-AFW	HVAC in AFW Pump Room	HVAC is required during 72-hr Appendix R mission		

TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
%I1	Interfacing Systems LOCA at RCS/LPI Interface (2 MOVs and 1 check valve in series)
%I2	Interfacing Systems LOCA at RCS/RHR Interface (2 MOVs in series)
%I3	Interfacing Systems LOCA at RCS/CCW interface (Reactor Coolant Pump Cooler rupture)
%T1	REACTOR TRIP
%T15	LOSS OF COMPONENT COOLING WATER (CCW)
%T23	PARTIAL LOAD REJECTION
%T25	REACTOR TRIP WITH PORV OPENING
%T4	LOSS OF MAIN FEEDWATER
%T5C	GRID-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T5D	WEATHER-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T5P	PLANT-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T6	STEAMLINE/FEED LINE BREAK UPSTREAM OF MAIN STEAM ISOLATION VALVE
AFWA-FTR	Motor-driven AFW Pump A fails to run
AFWA-FTS	Motor-driven AFW Pump A fails to start
AFWB-FTR	Steam-drivens AFW-B fails to run
AFWB-FTS	Steam-drivens AFW-B fails to start
AFWC-FTR	Diesel-drivern AFW Pump C fails to run
AFWC-FTS	Diesel-drivern AFW Pump C fails to start
AOV-1_FTC	PORV AOV-1 fails to CLOSE
AOV-1_FTO	PORV AOV-1 fails to open
AOV-3_FTC	AOV-3 FAILS TO CLOSE
CCW_FAILS	FAILURE OF COMPONENT COOLING WATER AFTER TRIP
COMP-1_FTR	AIR COMPRESSOR 1 FAILS TO RUN

TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
EPS-120VBUSAF	120V BUS A FAULT
EPS-120VBUSAINVF	FAILURE OF 120V BUS A INVERTER
EPS-120VBUSBF	120V BUS B FAULT
EPS-120VBUSBINVF	FAILURE OF 120V BUS B INVERTER
EPS-125VDCBUSAF	FAULT ON 125V DC BUS A
EPS-125VDCBUSBF	FAULT ON 125V DC BUS B
EPS-125VDCPNLAF	FAULT ON 125V DC PANEL A
EPS-125VDCPNLBF	FAULT ON 125V DC PANEL B
EPS-480VLC1F	480V LOAD CENTER 1 FAULT
EPS-480VLC1XTF	480V LOAD CENTER 1 TRANSFORMER FAILS
EPS-480VLCAF	480V LOAD CENTER A FAULT
EPS-480VLCAXTF	480V LOAD CENTER A TRANSFORMER FAILS
EPS-480VLCBF	480V LOAD CENTER B FAULT
EPS-480VLCBXTF	480V LOAD CENTER B TRANSFORMER FAILS
EPS-480VMCCA1F	480V MCC A1 FAULT
EPS-480VMCCB1F	480V MCC B1 FAULT
EPS-4VBUS1F	4KV BUS 1 FAULT
EPS-4VBUSAF	4KV BUS A FAULT
EPS-4VBUSBF	4KV BUS B FAULT
EPS-BATA	FAILURE OF BATTERY A
EPS-BATB	FAILURE OF BATTERY B
EPS-BCAF	FAILURE OF BATTERY CHARGER A
EPS-BCBF	FAILURE OF BATTERY CHARGER B
EPS-DGAF	FAILURE OF DIESEL GENERATOR A

TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
EPS-DGBF	FAILURE OF DIESEL GENERATOR B
HPIA_FTR	HPIA fails to run
HPIA_FTS	HPIA fails to start
HPIA_HVAC	LOSS OF HVAC COOLING TO HPI PUMP A ROOM
HPIB_FTR	HPIB fails to run
HPIB_FTS	HPIB fails to start
HPIB_HVAC	LOSS OF HVAC COOLING TO HPI PUMP B ROOM
MFWFAIL	MAIN FEEDWATER SYSTEM FAILURE AFTER REACTOR TRIP
MOV-10_FTO	MOV-10 fails to open
MOV-11_FTO	MOV-11 fails to open
MOV-14_FTO	MOV-14 FAILS TO OPEN
MOV-15_FTO	MOV-15 FAILS TO OPEN
MOV-18_FTO	MOV-18 fails to open
MOV-1_FTO	MOV-1 FAILS TO OPEN
MOV-2_FTC	MOV-2 fails to close
MOV-3_FTO	MOV-3 fails to open
MOV-4_FTO	MOV-4 fails to open
MOV-5_FTC	MOV-5 fails to close
MOV-5_FTO	MOV-5 fails to open
MOV-6_FTC	MOV-6 fails to close
MOV-6_FTO	MOV-6 fails to open
MOV-9_FTO	MOV-9 FAILS TO OPEN
OPER-1	Operator fails to switch over to recirculation
OPER-4	Operator fails to establish feed an bleed cooling

TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
OPER-7	OPERATOR FAILS TO TRIP REACTOR COOLANT PUMP
PT-1_FL	PRESSURE TRANSMITTER PT-1 FAILS LOW
RCPSEAL	RCP SEAL LOCA GIVEN LOSS OF CCW AND SUCCESSFUL RCP TRIP
RHRB-FTR	RHR PUMP B FAILS TO RUN
RHRB-FTS	RHR PUMP B FAILS TO START
RHRB-HVAC	LOSS OF RHR PUMP B ROOM HVAC COOLING
SUTF	FAILURE OF START-UP TRANSFORMER (SUT)
UATF	FAILURE OF UNIT AUXILIARY TRANSFORMER (UAT)
TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
%I1	Interfacing Systems LOCA at RCS/LPI Interface (2 MOVs and 1 check valve in series)
%I2	Interfacing Systems LOCA at RCS/RHR Interface (2 MOVs in series)
%I3	Interfacing Systems LOCA at RCS/CCW interface (Reactor Coolant Pump Cooler rupture)
%T1	REACTOR TRIP
%T15	LOSS OF COMPONENT COOLING WATER (CCW)
%T23	PARTIAL LOAD REJECTION
%T25	REACTOR TRIP WITH PORV OPENING
%T4	LOSS OF MAIN FEEDWATER
%T5C	GRID-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T5D	WEATHER-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T5P	PLANT-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T6	STEAMLINE/FEED LINE BREAK UPSTREAM OF MAIN STEAM ISOLATION VALVE
AFWA-FTR	Motor-driven AFW Pump A fails to run
AFWA-FTS	Motor-driven AFW Pump A fails to start

TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
AFWB-FTR	Steam-drivens AFW-B fails to run
AFWB-FTS	Steam-drivens AFW-B fails to start
AFWC-FTR	Diesel-drivern AFW Pump C fails to run
AFWC-FTS	Diesel-drivern AFW Pump C fails to start
AOV-1_FTC	PORV AOV-1 fails to CLOSE
AOV-1_FTO	PORV AOV-1 fails to open
AOV-3_FTC	AOV-3 FAILS TO CLOSE
CCW_FAILS	FAILURE OF COMPONENT COOLING WATER AFTER TRIP
COMP-1_FTR	AIR COMPRESSOR 1 FAILS TO RUN
EPS-120VBUSAF	120V BUS A FAULT
EPS-120VBUSAINVF	FAILURE OF 120V BUS A INVERTER
EPS-120VBUSBF	120V BUS B FAULT
EPS-120VBUSBINVF	FAILURE OF 120V BUS B INVERTER
EPS-125VDCBUSAF	FAULT ON 125V DC BUS A
EPS-125VDCBUSBF	FAULT ON 125V DC BUS B
EPS-125VDCPNLAF	FAULT ON 125V DC PANEL A
EPS-125VDCPNLBF	FAULT ON 125V DC PANEL B
EPS-480VLC1F	480V LOAD CENTER 1 FAULT
EPS-480VLC1XTF	480V LOAD CENTER 1 TRANSFORMER FAILS
EPS-480VLCAF	480V LOAD CENTER A FAULT
EPS-480VLCAXTF	480V LOAD CENTER A TRANSFORMER FAILS
EPS-480VLCBF	480V LOAD CENTER B FAULT
EPS-480VLCBXTF	480V LOAD CENTER B TRANSFORMER FAILS
EPS-480VMCCA1F	480V MCC A1 FAULT

TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
EPS-480VMCCB1F	480V MCC B1 FAULT
EPS-4VBUS1F	4KV BUS 1 FAULT
EPS-4VBUSAF	4KV BUS A FAULT
EPS-4VBUSBF	4KV BUS B FAULT
EPS-BATA	FAILURE OF BATTERY A
EPS-BATB	FAILURE OF BATTERY B
EPS-BCAF	FAILURE OF BATTERY CHARGER A
EPS-BCBF	FAILURE OF BATTERY CHARGER B
EPS-DGAF	FAILURE OF DIESEL GENERATOR A
EPS-DGBF	FAILURE OF DIESEL GENERATOR B
HPIA_FTR	HPIA fails to run
HPIA_FTS	HPIA fails to start
HPIA_HVAC	LOSS OF HVAC COOLING TO HPI PUMP A ROOM
HPIB_FTR	HPIB fails to run
HPIB_FTS	HPIB fails to start
HPIB_HVAC	LOSS OF HVAC COOLING TO HPI PUMP B ROOM
MFWFAIL	MAIN FEEDWATER SYSTEM FAILURE AFTER REACTOR TRIP
MOV-10_FTO	MOV-10 fails to open
MOV-11_FTO	MOV-11 fails to open
MOV-14_FTO	MOV-14 FAILS TO OPEN
MOV-15_FTO	MOV-15 FAILS TO OPEN
MOV-18_FTO	MOV-18 fails to open
MOV-1_FTO	MOV-1 FAILS TO OPEN
MOV-2_FTC	MOV-2 fails to close

TABLE 3: LIST OF BASIC EVENTS IN PRA MODEL	
Basic Event	**Description**
MOV-3_FTO	MOV-3 fails to open
MOV-4_FTO	MOV-4 fails to open
MOV-5_FTC	MOV-5 fails to close
MOV-5_FTO	MOV-5 fails to open
MOV-6_FTC	MOV-6 fails to close
MOV-6_FTO	MOV-6 fails to open
MOV-9_FTO	MOV-9 FAILS TO OPEN
OPER-1	Operator fails to switch over to recirculation
OPER-4	Operator fails to establish feed an bleed cooling
OPER-7	OPERATOR FAILS TO TRIP REACTOR COOLANT PUMP
PT-1_FL	PRESSURE TRANSMITTER PT-1 FAILS LOW
RCPSEAL	RCP SEAL LOCA GIVEN LOSS OF CCW AND SUCCESSFUL RCP TRIP
RHRB-FTR	RHR PUMP B FAILS TO RUN
RHRB-FTS	RHR PUMP B FAILS TO START
RHRB-HVAC	LOSS OF RHR PUMP B ROOM HVAC COOLING
SUTF	FAILURE OF START-UP TRANSFORMER (SUT)
UATF	FAILURE OF UNIT AUXILIARY TRANSFORMER (UAT)

Continuation of Step2 and Including Steps 4 thru 6:

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
HPI-A	High pressure safety injection pump A	4.16kV Bus A		Y		
HPI-B	High pressure safety injection pump B	4.16kV Bus B		Y		
RHR-B	RHR pump	4.16kV Bus B		Y		
COMP-1	Instrument air compressor	480 V LC 1		Y		
AFW-A	Motor-driven AFW pump A	4.16kV Bus A		Y		
AFW-B	Steam-driven AFW Pump B	N/A		Y		
AFW-C	Diesel-driven AFW Pump C	NA		N		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
AOV-1 (SOV-1)	Pressure operated relief valve	120VAC Bus A		Y (only to ensure remains closed)		
AOV-2 (SOV-2)	Letdown isolation valve	125 VDC Bus B		Y (for normal letdown)		
AOV-3 (SOV-3)	Charging pump injection valve	125 VDC Bus B		Y (for normal charging)		
AOV-4	Atmospheric dump valve	DC-Bus-1		Y		
MOV-1	HPI-A discharge valve	480V MCC A1		N		
MOV-2	VCT isolation valve	480V MCC B1		Y (for normal suction to charging)		
MOV-3	Cont. sump recirc valve	480V MCC A1		N		
MOV-4	Cont. sump recirc valve	480V MCC B1		N		
MOV-5	RWST isolation valve	480V MCC A1		N		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
MOV-6	RWST isolation valve	480V MCC B1		N		
MOV-7	RHR inboard suction valve	480V MCC A1		Y (for shutdown cooling)		
MOV-8	RHR outboard suction valve	480V MCC B1		Y (for shutdown cooling)		
MOV-9	HPI-B discharge valve	480V MCC B1		N		
MOV-10	AFW-A discharge valve	480V MCC A1		Y		
MOV-11	AFW-B discharge valve	125 VDC Bus B		Y		
MOV-13	PORV block valve	480V MCC A1		Y		
MOV-14	AFW-B turbine steam line isolation valve	125 VDC Bus B		Y		
MOV-15	AFW-B steam inlet throttle valve	125 VDC Bus B		Y		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
MOV-16	AFW-A test line isolation valve	480V MCC A1		N		
MOV-17	AFW-B test line isolation valve	480V MCC B1		N		
MOV-18	AFW-C discharge valve	480 V MCC-B1		N		
MOV-19	AFW-C test line isolation valve	480 V MCC-B1		N		
MOV-20	Shutdown cooling discharge valve	480 V MCC-B1		Y		
LI-1	RWST level	120VAC Bus A		Y		
LI-2	RWST level	120VAC Bus B		Y		
LI-3	Containment sump level	120VAC Bus A		N		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
LI-4	Containment sump level	120VAC Bus B		N		
LI-5	SG secondary level	120VAC Bus A		Y		
LI-6	SG secondary level	120VAC Bus B		Y		
TI-1	Letdown heat exchanger outlet temperature	120VAC Bus A		N		
PT-1	RCS pressure	120VAC Bus B		Y		
A-1	AFW-B motor high temp	120VAC Bus A		N		
SWGR-A	Train A 4160 V Bus	SUT-1 EDG-A		Y		
SWGR-B	Train B 4160 V Bus	SUT-1		Y		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
		EDG-B				
SWGR-1	Non-Safety 4160 V Bus	UAT-1 SUT-1		Y		
SWGR-2	Non-Safety 4160 V Bus	UAT-1 SUT-1		N		
SUT-1	Startup Transformer	OSP		Y		
UAT-1	Auxiliary Transformer	Main generator		N		
EDG-A	Train A Emergency Diesel Generator	PNL-A		Y		
EDG-B	Train B Emergency Diesel Generator	PNL-B		Y		
LC-1	Non-Safety 480 V Load Center	SST-1		Y		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
LC-2	Non-Safety 480 V Load Center	SST-2		N		
LC-A	Train A 480 V Load Center	SST-A		Y		
LC-B	Train B 480 V Load Center	SST-B		Y		
SST-1	Non-Safety Station Service Transformer	SWGR-1		Y		
SST-2	Non-Safety Station Service Transformer	SWGR-2		N		
SST-A	Train A Station Service Transformer	SWGR-A		Y		
SST-B	Train B Station Service Transformer	SWGR-B		Y		
MCC-1	Non-Safety 480 V Motor	LC-1		Y		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
	Control Center					
MCC-2	Non-Safety 480 V Motor Control Center	LC-2		N		
MCC-A1	Train A 480 V Motor Control Center	LC-A		Y		
MCC-B1	Train B 480 V Motor Control Center	LC-B		Y		
BC-1	Non-Safety Swing Battery Charger	MCC-1 MCC-2		Y		
BC-A	Train A Battery Charger	MCC-A1		Y		
BC-B	Train B Battery Charger	MCC-B1		Y		
BAT-1	Non-Safety Battery	N/A		Y		
BAT-A	Train A Battery	N/A		Y		
BAT-B	Train B Battery	N/A		Y		
DC BUS-1	Non-Safety 125 VDC Bus	BC-1		Y		

TABLE 4: DISPOSTION OF COMPONENTS IN PRA AND APPENDIX R (USE TABLES 1-3 AND FIGURES 1-3)						
Equipment ID	**Equipment Description**	**Power Supply**	**In PRA Model? (Y or N)**	**In Appendix R? (Y or N)**	**Add to Fire PRA Equipment List? (Y or N)**	**Comments**
		BAT-1				
DC BUS-A	Train A 125 VDC Bus	BC-A BAT-A		Y		
DC BUS-B	Train B 125 VDC Bus	BC-B BAT-B		Y		
INV-A	Train A Inverter	DC BUS-A		Y		
INV-B	Train B Inverter	DC BUS-B		Y		
VITAL-A	Train A 120 VAC Vital Bus	INV-A		Y		
VITAL-B	Train B 120 VAC Vital Bus	INV-B		Y		
PNL-A	Train A 125 VDC Panel	DC BUS-A		Y		
PNL-B	Train B 125 VDC Panel	DC BUS-B		Y		

Step 3: Identify Fire-Induced Initiating Events Based on Equipment Affected

Will need to examine each fire compartment / analysis unit and determine based on the equipment and cables located there, which of the initiators (from Step 1 of Task 2) can be caused by a fire in that compartment / analysis unit. If any new initiators are identified, include in the Fire PRA. The Fire PRA will then include fires mapped to initiating events in the model. Each compartment / analysis unit should have a disposition with regard to the initiating event(s) that occur as a result of a fire in each location (even if “none”).

INITIATING EVENTS IN INTERNAL EVENTS PRA	
Initiating Event	**Description**
%I1	Interfacing Systems LOCA at RCS/LPI Interface (2 MOVs and 1 check valve in series)
%I2	Interfacing Systems LOCA at RCS/RHR Interface (2 MOVs in series)
%I3	Interfacing Systems LOCA at RCS/CCW interface (Reactor Coolant Pump Cooler rupture)
%T1	REACTOR TRIP
%T15	LOSS OF COMPONENT COOLING WATER (CCW)
%T23	PARTIAL LOAD REJECTION
%T25	REACTOR TRIP WITH PORV OPENING
%T4	LOSS OF MAIN FEEDWATER
%T5C	GRID-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T5D	WEATHER-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T5P	PLANT-CENTERD LOSS OF OFFSITE POWE INITIATING EVENT
%T6	STEAMLINE/FEED LINE BREAK UPSTREAM OF MAIN STEAM ISOLATION VALVE

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
1	AFW-A	Motor-driven AFW pump A	
	AFW-B	Steam-driven AFW pump B	
	AFW-C	Diesel-driven AFW pump C	
	A-1	AFW motor high temperature	
	AOV-1	Power operated relief valve	
	AOV-2	Letdown isolation valve	
	AOV-3	Charging pump injection valve	
	AOV-4	Atmospheric dump valve	
	LC-1	Non-safety 480 V load center 1	
	LC-2	Non-safety 480 V load center 2	
	LC-A	Train A 480 V load center	
	LC-B	Train B 480 V load center	
	SWGR-1	Non-safety 4160 V switchgear 1	
	SWGR-2	Non-safety 4160 V switchgear 2	
	SWGR-A	Train A 4160 V switchgear	
	SWGR-B	Train B 4160 V switchgear	
	EDG-A	Train A emergency diesel generator	
	EDG-B	Train B emergency diesel generator	
	HPI-A	High pressure safety injection pump A	
	HPI-B	High pressure safety injection pump B	
	LI-1	RWST level instrument	
	LI-2	RWST level instrument	
	LI-3	Containment sump level instrument	
	LI-4	Containment sump level instrument	
	LI-5	SG secondary level instrument	
	LI-6	SG secondary level instrument	
	MFW	Main feedwater	
	MOV-1	HPI discharge valve	

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
	MOV-10	AFW pump A discharge valve	
	MOV-11	AFW pump B discharge valve	
	MOV-13	PORV block valve	
	MOV-14	AFW pump B steam line isolation valve	
	MOV-15	AFW pump B steam inlet throttle valve	
	MOV-18	AFW pump C discharge valve	
	MOV-2	VCT isolation valve	
	MOV-3	Cont. sump recirc. valve	
	MOV-4	Cont. sump recirc. valve	
	MOV-5	RWST isolation valve	
	MOV-6	RWST isolation valve	
	MOV-9	HPI discharge valve	
	PT-1	RCS pressure instrument	
	RCP-1	Reactor coolant pump 1	
	SUT-1	Startup transformer	
	TI-1	Letdown heat exchanger outlet temperature	
2	A-1	AFW motor high temperature	
	AOV-2	Letdown isolation valve	
	AOV-3	Charging pump injection valve	
	HPI-A	High pressure safety injection pump A	
	HPI-B	High pressure safety injection pump B	
	MFW	Main feedwater	
	MOV-1	HPI discharge valve	
	MOV-2	VCT isolation valve	
	MOV-3	Cont. sump recirc. valve	
	MOV-4	Cont. sump recirc. valve	
	MOV-5	RWST isolation valve	
	MOV-6	RWST isolation valve	

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
	MOV-9	HPI discharge valve	
	RCP-1	Reactor coolant pump 1	
	TI-1	Letdown heat exchanger outlet temperature	
3	AFW-A	Motor-driven AFW pump A	
	AFW-B	Steam-driven AFW pump B	
	AFW-C	Diesel-driven AFW pump C	
	A-1	AFW motor high temperature	
	AOV-1	Power operated relief valve	
	AOV-2	Letdown isolation valve	
	AOV-3	Charging pump injection valve	
	AOV-4	Atmospheric dump valve	
	INV-A	Train A inverter	
	INV-B	Train B inverter	
	LC-1	Non-safety 480 V load center 1	
	LC-2	Non-safety 480 V load center 2	
	LC-A	Train A 480 V load center	
	LC-B	Train B 480 V load center	
	SWGR-1	Non-safety 4160 V switchgear 1	
	SWGR-2	Non-safety 4160 V switchgear 2	
	SWGR-A	Train A 4160 V switchgear	
	SWGR-B	Train B 4160 V switchgear	
	EDG-A	Train A emergency diesel generator	
	EDG-B	Train B emergency diesel generator	
	HPI-A	High pressure safety injection pump A	
	HPI-B	High pressure safety injection pump B	
	LI-1	RWST level instrument	
	LI-2	RWST level instrument	
	LI-3	Containment sump level instrument	

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
	LI-4	Containment sump level instrument	
	LI-5	SG secondary level instrument	
	LI-6	SG secondary level instrument	
	MFW	Main feedwater	
	MOV-1	HPI discharge valve	
	MOV-10	AFW pump A discharge valve	
	MOV-11	AFW pump B discharge valve	
	MOV-13	PORV block valve	
	MOV-14	AFW pump B steam line isolation valve	
	MOV-15	AFW pump B steam inlet throttle valve	
	MOV-18	AFW pump C discharge valve	
	MOV-2	VCT isolation valve	
	MOV-3	Cont. sump recirc. valve	
	MOV-4	Cont. sump recirc. valve	
	MOV-5	RWST isolation valve	
	MOV-6	RWST isolation valve	
	MOV-9	HPI discharge valve	
	PT-1	RCS pressure instrument	
	RCP-1	Reactor coolant pump 1	
	TI-1	Letdown heat exchanger outlet temperature	
9	AFW-A	Motor-driven AFW pump A	
	AFW-B	Steam-driven AFW pump B	
	A-1	AFW motor high temperature	
	AOV-1	Power operated relief valve	
	AOV-2	Letdown isolation valve	
	AOV-3	Charging pump injection valve	
	AOV-4	Atmospheric dump valve	
	VITAL-A	Train A 120 VAC vital bus	

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
	INV-A	Train A inverter	
	VITAL-B	Train B 120 VAC vital bus	
	INV-B	Train B inverter	
	MCC-A1	Train A 480 V motor control center	
	MCC-B1	Train B 480 V motor control center	
	SWGR-B	Train B 4160 V switchgear	
	BC-A	Train A battery charger	
	BC-B	Train B battery charger	
	MFW	Main feedwater	
	MOV-1	HPI discharge valve	
	MOV-10	AFW pump A discharge valve	
	MOV-11	AFW pump B discharge valve	
	MOV-13	PORV block valve	
	MOV-2	VCT isolation valve	
	MOV-3	Cont. sump recirc. valve	
	MOV-4	Cont. sump recirc. Valve	
	MOV-7	RHR inboard suction valve	
	MOV-8	RHR outboard suction valve	
	MOV-9	HPI discharge valve	
	TI-1	Letdown heat exchanger outlet temperature	
10	AFW-A	Motor-driven AFW pump A	
	AOV-1	Power operated relief valve	
	VITAL-A	Train A 120 VAC vital bus	
	INV-A	Train A inverter	
	DC BUS-A	Train A 125 VDC bus	
	PNL-A	Train A 125 VDC panel	
	LC-A	Train A 480 V load center	
	SST-A	Train A station service transformer	

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
	MCC-A1	Train A 480 V motor control center	
	SWGR-A	Train A 4160 V switchgear	
	BAT-A	Train A battery	
	BC-A	Train A battery charger	
	EDG-A	Train A emergency diesel generator	
	EDG-B	Train B emergency diesel generator	
	HPI-A	High pressure safety injection pump A	
	MFW	Main feedwater	
	MOV-1	HPI discharge valve	
	MOV-3	Cont. sump recirc. valve	
11	AFW-B	Motor-driven AFW pump B	
	AOV-4	Atmospheric dump valve	
	VITAL-B	Train B 120 VAC vital bus	
	INV-B	Train B inverter	
	DC BUS-B	Train B 125 VDC bus	
	PNL-B	Train B 125 VDC panel	
	LC-B	Train B 480 V load center	
	SST-B	Train B station service transformer	
	MCC-B1	Train B 480 V motor control center	
	SWGR-B	Train B 4160 V switchgear	
	BAT-B	Train B battery	
	BC-B	Train A battery charger	
	HPI-B	High pressure safety injection pump B	
	MFW	Main feedwater	
	MOV-11	AFW pump B discharge valve	
	MOV-2	VCT isolation valve	
	MOV-4	Cont. sump recirc. valve	

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
12	AFW-C	Diesel-driven AFW pump C	
	AOV-4	Atmospheric dump valve	
	COMP1	Instrument air compressor	
	DC BUS-1	Non-safety 250 VDC bus	
	LC-1	Non-safety 480 V load center 1	
	SST-1	Non-safety station service transformer 1	
	LC-2	Non-safety 480 V load center 2	
	SST-2	Non-safety station service transformer 2	
	MCC-1	Non-safety 480 V motor control center 1	
	MCC-2	Non-safety 480 V motor control center 2	
	SWGR-1	Non-safety 4160 V switchgear 1	
	SWGR-2	Non-safety 4160 V switchgear 2	
	SWGR-A	Train A 4160 V switchgear	
	SWGR-B	Train B 4160 V switchgear	
	EPS-ATS1	Non-safety DC bus transfer switch	
	EPS-BC1	Non-safety DC bus battery charger	
	EDG-A	Train A emergency diesel generator	
	EDG-B	Train B emergency diesel generator	
	LI-1	RWST level instrument	
	LI-2	RWST level instrument	
	LI-3	Containment sump level instrument	
	LI-4	Containment sump level instrument	
	MFW	Main feedwater	
	MOV-10	AFW pump A discharge valve	
	MOV-11	AFW pump B discharge valve	
	MOV-14	AFW pump B steam line isolation valve	
	MOV-15	AFW pump B steam inlet throttle valve	
	MOV-18	AFW pump C discharge valve	

MAPPING OF INITERNAL EVENTS INITIATING EVENTS TO FIRE COMPARTMENT			
Compartment	**Equipment Impacted by Fire**	**Equipment Description**	**Internal Events Initiating Event (s)**
	MOV-5 MOV-6 MOV-7 MOV-8 RCP-1 SUT-1	RWST isolation valve RWST isolation valve RHR inboard suction valve RHR outboard suction valve Reactor coolant pump 1 Startup transformer	
13	SWGR-1 SWGR-2 SWGR-A SWGR-B LI-1 LI-2 MFW SUT-1	Non-safety 4160 V switchgear 1 Non-safety 4160 V switchgear 2 Train A 4160 V switchgear Train B 4160 V switchgear RWST level instrument RWST level instrument Main feedwater Startup transformer	
15	BAT-1 MFW	Non-safety battery Main feedwater	