

MC 0609 Training

A. Summary of Changes

1. Revised the Counting Rule
2. Added Usage Rules

B. Phase 2 PWR Example Problem

1. Division I EDG is out of service for 25 days
2. No credit for operator recovery

C. SDP Self Study

1. Break into small groups (2-3 people per group)
2. Solve examples
3. Each person record answers on the website
4. Rudy is available for questions at (24618)

Troy is available for questions at (24575)

All

Counting Rule Worksheet	
Step	Instructions
(1)	Enter the number of sequences with a risk significance equal to 9. (1) _____
(2)	Divide the result of Step (1) by 3 and round down. (2) _____
(3)	Enter the number of sequences with a risk significance equal to 8. (3) _____
(4)	Add the result of Step (3) to the result of Step (2). (4) _____
(5)	Divide the result of Step (4) by 3 and round down. (5) _____
(6)	Enter the number of sequences with a risk significance equal to 7. (6) _____
(7)	Add the result of Step (6) to the result of Step (5). (7) _____
(8)	Divide the result of Step (7) by 3 and round down. (8) _____
(9)	Enter the number of sequences with a risk significance equal to 6. (9) _____
(10)	Add the result of Step (9) to the result of Step (8). (10) _____
(11)	Divide the result of Step (10) by 3 and round down. (11) _____
(12)	Enter the number of sequences with a risk significance equal to 5. (12) _____
(13)	Add the result of Step (12) to the result of Step (11). (13) _____
(14)	Divide the result of Step (13) by 3 and round down. (14) _____
(15)	Enter the number of sequences with a risk significance equal to 4. (15) _____
(16)	Add the result of Step (15) to the result of Step (14). (16) _____
<ul style="list-style-type: none"> • If the result of Step 16 is greater than zero, then the risk significance of the inspection finding is of high safety significance (RED). • If the result of Step 13 is greater than zero, then the risk significance of the inspection finding is at least of substantial safety significance (YELLOW). • If the result of Step 10 is greater than zero, then the risk significance of the inspection finding is at least of low to moderate safety significance (WHITE). • If the result of Steps 10, 13, and 16 are zero, then the risk significance of the inspection finding is of very low safety significance (GREEN). <p>Phase 2 Result: <input type="checkbox"/> GREEN <input type="checkbox"/> WHITE <input type="checkbox"/> YELLOW <input type="checkbox"/> RED</p>	

Table 6 - Counting Rule Worksheet

Attachment 2

Site Specific Risk-Informed Inspection Notebook Usage Rules

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Remaining Mitigation Capability Credit (with Examples)							
Initiating Event Likelihood	6	5	4	3	2	1	0
	2 Multi-Train Systems OR 1 Train + 1 Multi-Train System + Recovery of Failed Train	1 Train + 1 Multi-Train System OR 1 Multi-Train System + 1 Automatic Steam-Driven (ASD) Train + Recovery of Failed Train	2 Diverse Trains OR 1 Multi-Train System + Recovery of Failed Train	1 Train + Recovery of Failed Train OR 1 Multi-Train System	1 Train OR 1 Automatic Steam-Driven (ASD) Train + Recovery of Failed Train	Recovery of Failed Train OR 1 Automatic Steam-Driven (ASD) Train	None
1	Green	White	Yellow	Red	Red	Red	Red
2	Green	Green	White	Yellow	Red	Red	Red
3	Green	Green	Green	White	Yellow	Red	Red
4	Green	Green	Green	Green	White	Yellow	Red
5	Green	Green	Green	Green	Green	White	Yellow
6	Green	Green	Green	Green	Green	Green	White
7	Green	Green	Green	Green	Green	Green	Green
8	Green	Green	Green	Green	Green	Green	Green

Table 4 - Risk Significance Estimation Matrix

SDP PHASE 1 SCREENING WORKSHEET FOR IE, MS, and B CORNERSTONES

Reference/Title (LER #, Inspection Report #, etc):

Performance Deficiency (concise statement clearly stating the deficient licensee performance):

Factual Description of Identified Condition (statement of facts known about the finding, without hypothetical failures included):

System(s) and train(s) degraded by identified condition:

Licensing Basis Function of System(s) or Train(s) (as applicable):

Other Safety Function of System(s) or Train(s) (as applicable):

Maintenance Rule category (check one): risk-significant non-risk-significant

Time that identified condition existed or is assumed to have existed:

Functions and Cornerstones degraded as a result of this identified condition (check ✓)

INITIATING EVENT CORNERSTONE

- Transient initiator contributor (e.g., reactor/turbine trip, loss offsite power)
- Primary or Secondary system LOCA initiator contributor (e.g., RCS or main steam/feedwater pipe degradations and leaks)

MITIGATION SYSTEMS CORNERSTONE

BARRIERS CORNERSTONE

- | | |
|---|---|
| <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Core Decay Heat Removal Degraded <input checked="" type="checkbox"/> Initial Injection Heat Removal Degraded <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Primary (e.g., Safety Inj) <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Low Pressure <input checked="" type="checkbox"/> High Pressure <input checked="" type="checkbox"/> Secondary - PWR only (e.g., AFW) <input checked="" type="checkbox"/> Long Term Heat Removal Degraded (e.g., ECCS sump recirculation, suppression pool cooling) <input type="checkbox"/> Reactivity Control Degraded <input checked="" type="checkbox"/> Fire/Flood/Seismic/Weather Protection Degraded | <ul style="list-style-type: none"> <input type="checkbox"/> RCS LOCA Mitigation Boundary Degraded (e.g., PORV block valve, PTS issue) <input checked="" type="checkbox"/> Containment Barrier Degraded <ul style="list-style-type: none"> <input type="checkbox"/> Reactor Containment Degraded <ul style="list-style-type: none"> <input type="checkbox"/> Actual Breach or Bypass <input checked="" type="checkbox"/> Heat Removal, Hydrogen or Pressure Control Degraded <input type="checkbox"/> Control Room, Aux Bldg, or Spent Fuel Bldg Barrier Degraded <input type="checkbox"/> Fuel Cladding Barrier Degraded |
|---|---|

SDP PHASE 1 SCREENING WORKSHEET FOR IE, MS, and B CORNERSTONES

Check the appropriate boxes ✓

If the finding is assumed to degrade:

1. fire protection defense in depth (DID), detection, suppression, barriers, fire brigade. **STOP. Go to IMC 0609, Appendix F**
2. the safety of a shutdown reactor. **STOP. Go to IMC 0609, Appendix G**
3. the safety of an operating reactor, identify the degraded areas:
 Initiating Event Mitigation Systems RCS Barrier Fuel Barrier Containment Barriers
4. **Two or more of the above areas degraded** → **STOP. Go to Phase 2**
5. If only one of the above areas is degraded, continue only in the appropriate column below.

<u>Initiating Event</u>	<u>Mitigation Systems</u>	<u>RCS Barrier or Fuel Barrier</u>	<u>Containment Barriers</u>
<p>1. Does the finding contribute to the likelihood of a Primary or Secondary system LOCA initiator?</p> <p><input type="checkbox"/> If YES → Stop. Go to Phase 2</p> <p><input type="checkbox"/> If NO, continue</p> <p>2. Does the finding contribute to both the likelihood of a reactor trip AND the likelihood that mitigation equipment or functions will not be available?</p> <p><input type="checkbox"/> If YES → Stop. Go to Phase 2</p> <p><input type="checkbox"/> If NO, continue</p> <p>3. Does the finding increase the likelihood of a fire or internal/external flood?</p> <p><input type="checkbox"/> If YES → Use the IPEEE or other existing plant-specific analyses to identify core damage scenarios of concern and factors that increase the frequency. Provide this input for Phase 3 analysis.</p> <p><input type="checkbox"/> If NO, screen as Green</p>	<p>1. Is the finding a design or qualification deficiency confirmed not to result in loss of function per GL 91-18 (rev 1)?</p> <p><input type="checkbox"/> If YES → screen as Green</p> <p><input type="checkbox"/> If NO, continue</p> <p>2. Does the finding represent an actual loss of safety function of a System?</p> <p><input type="checkbox"/> If YES → Stop. Go to Phase 2</p> <p><input type="checkbox"/> If NO, continue</p> <p>3. Does the finding represent an actual loss of safety function of a single Train, for > its Tech Spec Allowed Outage Time?</p> <p><input type="checkbox"/> If YES → Stop. Go to Phase 2</p> <p><input type="checkbox"/> If NO, continue</p> <p>4. Does the finding represent an actual loss of safety function of one or more non-Tech Spec Trains of equipment designated as risk-significant per 10CFR50.65, for >24 hrs?</p> <p><input type="checkbox"/> If YES → Stop. Go to Phase 2</p> <p><input type="checkbox"/> If NO, continue</p> <p>5. Does the finding screen as potentially risk significant due to a seismic, fire, flooding, or severe weather initiating event, using the criteria on page 3 of this Worksheet?</p> <p><input type="checkbox"/> If YES → Use the IPEEE or other existing plant-specific analyses to identify core damage scenarios of concern and provide this input for Phase 3 analysis.</p> <p><input type="checkbox"/> If NO, screen as Green</p>	<p>1. RCS Barrier</p> <p>Stop. Go to Phase 2</p> <p>2. Fuel Barrier</p> <p>screen as Green</p>	<p>1. Does the finding <u>only</u> represent a degradation of the radiological barrier function provided for the control room, or auxiliary building, or spent fuel pool, or SBT system (BWR)?</p> <p><input type="checkbox"/> If YES → screen as Green</p> <p><input type="checkbox"/> If NO, continue</p> <p>2. Does the finding represent a degradation of the barrier function of the control room against smoke or a toxic atmosphere?</p> <p><input type="checkbox"/> If YES → Stop. Go to Phase 3</p> <p><input type="checkbox"/> If NO, continue</p> <p>3. Does the finding represent an actual open pathway in the physical integrity of reactor containment or an actual reduction of the atmospheric pressure control function of the reactor containment?</p> <p><input type="checkbox"/> If YES → Stop. Go to Appendix H of IMC 0609</p> <p><input type="checkbox"/> If NO, screen as Green</p>

SDP PHASE 1 SCREENING WORKSHEET FOR IE, MS, and B CORNERSTONES

Seismic, Fire, Flooding, and Severe Weather Screening Criteria

1. Does the finding involve the loss or degradation of equipment or function **specifically** designed to mitigate a seismic, flooding, or severe weather initiating event (e.g., seismic snubbers, flooding barriers, tornado doors)? (Equipment and functions for the mitigation or suppression of fire initiating events, such as thermal wrap or sprinkler systems, should be evaluated using IMC 0609 Appendix F and are not evaluated here)

If YES → continue to question 2

If NO → skip to question 3

2. If the equipment or safety function is assumed to be completely failed or unavailable, are ANY of the following three statements TRUE? The loss of this equipment or function by itself, during the external initiating event it was intended to mitigate

a) would cause a plant trip or any of the Initiating Events used by Phase 2 for the plant in question;

b) would degrade **two or more** Trains of a multi-train safety system or function;

c) would degrade one or more Trains of a system that supports a safety system or function.

If YES → the finding is potentially risk significant due to external initiating event core damage sequences - return to page 2 of this Worksheet

If NO, screen as Green

3. Does the finding involve the total loss of any safety function, identified by the licensee through a PRA, IPEEE, or similar analysis, that contributes to external event initiated core damage accident sequences (i.e., initiated by a seismic, fire, flooding, or severe weather event)?

If YES → the finding is potentially risk significant due to external initiating event core damage sequences - return to page 2 of this Worksheet

If NO, screen as Green

Result of Phase 1 screening process:

Screen as Green

Go to Phase 2

Go to Phase 3

Important Assumptions (as applicable):

Table 2 Initiators and System Dependency for Generic PWR Nuclear Power Plant

Affected Systems	Major Components	Support Systems	Initiating Event Scenarios
Auxiliary Feedwater (AFW)	Three MDPs ^(1,2)	4.16-kV, DC, ESFAS, dedicated room cooling	All except MLOCA, LLOCA
	One TDP ⁽²⁾	DC, ESFAS	All except MLOCA, LLOCA, SGTR, MSLB
	Feedwater isolation valves for MDPs	480V	SGTR, MSLB
	Feedwater isolation valve for TDP	DC	
Chemical and Volume Control System (CVCS)	Two centrifugal charging pumps (CCP) ⁽³⁾ , 160 gpm @ 2575 psi	4.16-kV, 480V, DC, CCW, room cooling ⁽³⁾	SGTR, ATWS
	Two boric acid transfer pumps ⁽³⁾		ATWS
Component Cooling Water System (CCW)	Three trains, each with one pump	4.16-kV, DC, ECW, ESFAS	LCCW
Electric Power System	Three Class 1E 4.16-kV buses	EAB HVAC, DC	All
	Three Standby Diesel Generators ⁽⁴⁾	DC, ESFAS, ECW	LOOP, LEAC
	Three trains of Class 1E 480V load centers and motor control centers	4.16kV, DC, EAB HVAC	All
	Class 1E vital 120V AC (4 trains)	DC, 480V, EAB HVAC	All

Affected Systems	Major Components	Support Systems	Initiating Event Scenarios
	Four Class 1E 125V DC distribution buses, each supplied by two chargers and one battery. The duration of the batteries is 6 to 8 hours.	480V, EAB HVAC	All
Engineered Safeguards Features Actuation System (ESFAS)	Three actuation trains, each with a load sequencer	120V vital AC, DC	All
Essential Cooling Water System (ECWS)	Three trains, each with one pump	4.16-kV, 480V (for MOVs), DC, ESFAS	All
High Head Safety Injection (HHSI) System	Three pumps (800 gpm @ 1275 psi, shutoff head = 1650 psid)	4.16-kV, 480V, DC, ESFAS, SI pump room cooling ⁽⁸⁾	All except LLOCA, ATWS, LODC
Instrument Air (IA)	Two IA compressors (per unit). Back up is two station air compressors	Offsite power, BOP diesel ⁽⁵⁾	LOIA
Low Head Safety Injection (LHSI) System	Three pumps	4.16-kV, 480V, DC, ESFAS, SI pump room cooling ⁽⁸⁾	All except ATWS, LCCW, LODC
Main Steam Isolation System	For each steam generator: one MSIV [FW isolation and Control Valves ⁽¹⁰⁾]	Offsite power and IA, DC, ESFAS	SGTR, MSLB
	For each steam generator: one PORV	480V, DC, 120V vital AC	All except LLOCA, and MLOCA
	For each steam generator: five safety relief valves	None	TPCS, LOOP, ATWS, LEAC
Primary Relief System	Two PORVs	DC ⁽⁹⁾	TPCS, SLOCA, SORV, LOOP, SGTR, ATWS, MSLB, LEAC
	Two block valves	480V ⁽⁹⁾	SORV

Affected Systems	Major Components	Support Systems	Initiating Event Scenarios
	Pressurizer normal spray	DC (for valves). RCPs 1A and 1D for two spray valves, IA	SGTR
	Pressurizer auxiliary spray	DC (for valve), CVCS (CCP) flow, IA	
	Three safety relief valves	None	ATWS
Reactor Containment Fan Coolers (RCFCs)	Three trains, each with two cooler units	480V, DC, ESFAS, CCW	TPCS, SLOCA, SORV, MLOCA, LLOCA, LOOP, SGTR, MSLB, LEAC
Reactor Coolant Pump Seal Cooling (RCP)	Seals and thermal barriers of four Reactor Coolant Pumps (RCP)	CCW, CVCS. The success criteria is 1 / 3 CCW pumps to the RCP thermal barriers (1 multi-train system) or 1 / 2 centrifugal charging pumps for RCP seal injection (1 multi-train system)	SLOCA
Residual Heat Removal System (RHRS)	Three trains; pumps, valves, and heat exchangers	480V, DC, CCW	TPCS, SLOCA, SORV, MLOCA, LLOCA, LOOP, SGTR, MSLB, LEAC
SI Pump Room Cooling ⁽⁸⁾	Supplemental coolers and three manual valves in the chilled water line	480V, ECW	TPCS, SLOCA, SORV, MLOCA, LLOCA, LOOP, SGTR, MSLB, LEAC

Notes:

1. The licensee indicated that no support system for room cooling is required for MDAFW pumps. It therefore referred to as dedicated room cooling.
2. The licensee indicated that no support system for cooling these components is required, e.g. turbine driven AFW pump room.
3. The CCPs need room cooling as indicated in the table. Emergency boration and use of the boric acid transfer pumps are not credited in the IPE. We consider that they are part of the CVCS.
4. Each of the three standby diesel generators per unit has individual fuel oil storage tanks with enough fuel for seven days. These tanks are mounted above the diesel generator bays. The fuel oil is gravity fed to the individual engine driven booster pump and to the standby booster pump.
5. The BOP diesel generator supplies power to instrument air compressor 12 and the auxiliary cooling water pump. On loss of offsite power, operator action is necessary to restore these components to operation.
6. MSIVs close on loss of instrument air after loss of offsite power.
7. The steam generator PORVs are hydraulically actuated. The hydraulic system stores energy in an accumulator which is pressurized by a pump powered from Class 1E 480V power. The PORVs are modeled by the licensee as failing to operate on loss of AC power.
8. Loss of pump room cooling is of concern if more than one train is running. Since in SI all trains will be actuated, room cooling is assumed to be needed.
9. PORV and the associated Block valve are fed from the same division of DC and AC respectively.
10. FW isolation and control valves fail closed on loss of power.

Table 1 - Categories of Initiating Events for Generic PWR Nuclear Power Plant

Row	Approximate Frequency	Example Event Type	Initiating Event Likelihood (IEL)		
			1	2	3
I	> 1 per 1-10 yr	Loss of Power Conversion System (TPCS)	1	2	3
II	1 per 10-10 ² yr	Loss of offsite power (LOOP), Loss of Class 1E 125V DC Bus A or B (LODC)	2	3	4
III	1 per 10 ² - 10 ³ yr	Steam Generator Tube Rupture (SGTR), Stuck open PORV/SRV (SORV), Small LOCA including RCP seal failures (SLOCA), Main Steam Line Break Outside Containment (MSLB)	3	4	5
IV	1 per 10 ³ - 10 ⁴ yr	Medium LOCA (MLOCA) . I.OOP with Loss of One Class 1E 4.16-kV BUS (LEAC)	4	5	6
V	1 per 10 ⁴ - 10 ⁵ yr	Large LOCA (LLOCA), Loss of Component Cooling Water (LCCW)	5	6	7
VI	less than 1 per 10 ⁵ yr	ATWS ⁽¹⁾	6	7	8
			> 30 days	3-30 days	< 3 days
			Exposure Time for Degraded Condition		

Notes:

- The SDP worksheets for ATWS core damage sequences assume that the ATWS is not recoverable by manual actuation of the reactor trip function. Thus, the ATWS frequency to be used by these worksheets must represent the ATWS condition that can only be mitigated by the systems shown in the worksheet (e.g., boration). Any inspection finding that represents a loss of capability for manual reactor trip for a postulated ATWS scenario should be evaluated by a risk analyst to consider the probability of a successful manual trip.

**Table 3.6 SDP Worksheet for Generic PWR Nuclear Power Plant —
Loss of Offsite Power (LOOP)**

<u>Safety Functions Needed:</u>		<u>Full Creditable Mitigation Capability for Each Safety Function:</u>			
Emergency AC Power (EAC) Secondary Heat Removal (TDAFW) Secondary Heat Removal (AFW) Recovery of AC Power in < 2 hrs (REC2) Recovery of AC power in < 5 hrs (REC5) Early Inventory, HP Injection (EIHP) Primary Heat Removal, Feed/Bleed (FB) Low Pressure Recirculation (LPR)		1/3 Standby Diesel Generators (1 multi-train system) (1/2 = MULTITRAIN) (RULE 23) 1/1 TDAFW pump (1 ASD train) with 1/5 safety relief valves per SG that is fed by AFW 1/3 MDAFW trains (1 multi-train system) or 1/1 TDAFW train (1 ASD train) Recovery of AC power (operator action = 1) ⁽¹⁾ Recovery of AC power (operator action = 2) ^(3,4) 1/3 HHSI pumps (1 multi-train system) 2/2 pressurizer PORVs open for Feed/Bleed (operator action = 2) (PORVs ARE DC POWERED) 1/3 LHSI trains and with the associated 1/3 RHR heat exchangers or 2/6 RCFCs with cooling flow aligned to CCW (1 multi-train system)			
<u>Circle Affected Functions</u>	<u>IEL</u>	<u>Remaining Mitigation Capability Rating for Each Affected Sequence</u>	<u>Recovery of Failed Train</u>	<u>Results</u>	
1 LOOP - AFW - LPR (3) 2 + 4 + 3	9				
2 LOOP - AFW - FB (4) 2 + 4 + 2	8				
3 LOOP - AFW - EIHP (5) 2 + 4 + 3	9				
4 LOOP - EAC - LPR (7, 11) 2 + 3 + 3 (AC Recovered)	8	3	3 + 3	0 9	
5 LOOP - EAC - EIHP (8, 13) 2 + 3 + 3 (AC Recovered)	8	3	3 + 3	0 9	
6 LOOP - EAC - REC5 (9) 2 + 3 + 2	7	3	3 + 2	0 8	
7 LOOP - EAC - TDAFW - FB (12) 2 + 3 + 1 + 2 (AC Recovered)	8	3	3 + 1 + 2	0 9	

8 LOOP - <u>EAC</u> - TDAFW - REC2 (14) 2 + 3 + 1 + 1	7	3	3 + 1 + 1	∅	8
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Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating event:

If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be given only if the following criteria are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use.

Notes:

1. For the function "Recovery of AC Power in < 2 hrs (REC2)", generic value was used.
2. The HEP value provided by the licensee for this action is 0.3.
3. For the function "Recovery of AC Power in < 5 hrs (REC5)", no human error probability was found in the IPE. We used the generic value for this human action.
4. In an SBO situation, an RCP seal LOCA may occur, with subsequent core damage at about 5 hours.

TOTALS

9 = 3

8 = 2

RULE 1.6 (INCREASE IEL BY 2 ORDERS OF MAGNITUDE + SOME LOOP SHEET)

Table 3.12 SDP Worksheet for Generic PWR Nuclear Power Plant — LOOP and Loss of One Class 1E 4.16-kV Bus (LEAC)⁽¹⁾

Safety Functions Needed:		Full Creditable Mitigation Capability for Each Safety Function:			
PORV Recloses (PORV) Secondary Heat Removal (AFW) High Pressure Injection for FB (EIHP) Primary Heat Removal, Feed/Bleed (FB) Low Pressure Recirculation (LPR)		2/2 Pressurizer PORVs reclose after opening during transient (1 train) ½ MDAFW trains (1 multi-train system) or 1/1 TDAFW train (1 ASD train) with 1/5 safety relief valve per SG that is fed by AFW ½ HHSI pumps (1 multi-train system) 2/2 pressurizer PORVs open for Feed/Bleed (operator action = 2) ½ LHSI pumps with (associated ½ RHR heat exchangers or 2/4 RCFCs with cooling flow aligned to CCW) (1 multi-train system)			
Circle Affected Functions		IEL <i>(would normally be "5")</i>	Remaining Mitigation Capability Rating for Each Affected Sequence	Recovery of Failed Train	Results
1 LEAC - AFW - LPR (3) 4 + 4 + 3	11	3	4+3	∅	10
2 LEAC - AFW - FB (4) 4 + 4 + 2	10	3	4+2	∅	9
3 LEAC - AFW - EIHP (5) 4 + 4 + 3	11	3	4+3	∅	10
4 LEAC - PORV - LPR (7) 4 + 2 + 3	9	3	2+3	∅	8
5 LEAC - PORV - EIHP (8) 4 + 2 + 3	9	3	2+3	∅	8
6 LEAC - PORV - AFW (9) 4 + 2 + 4	10	3	2+4	∅	9
Identify any operator recovery actions that are credited to directly restore the degraded equipment or initiating event: If operator actions are required to credit placing mitigation equipment in service or for recovery actions, such credit should be given only if the following criteria are met: 1) sufficient time is available to implement these actions, 2) environmental conditions allow access where needed, 3) procedures exist, 4) training is conducted on the existing procedures under conditions similar to the scenario assumed, and 5) any equipment needed to complete these actions is available and ready for use.					

Notes:

1. The plant has three Class 1E 4.16-kV buses. The dominant impact is the loss of Class 1E 4.16-kV bus E1A because bus E1B does not support a charging pump, and bus E1C does not support a pressurizer PORV. Loss of Class 1E 4.16-kV bus E1A has the following impact: EDG11 lost; the battery charger of the Class 1E 125V DC buses E1A11 and E1D11 lose power, and the batteries will eventually fail due to depletion; channels I and II of Class 1E Vital 120V AC fail and as a result, SSPS train R is lost (reactor is tripped) and ESFAS train A is lost; MDAFW pump 11 is lost; SG PORVs SGA and SGD are modeled by the licensee as failing to operate on loss of AC power; charging pump 1B is lost; HP SI pump 1A is lost; block valve of pressurizer PORV PCV655A loses power; LP SI pump 1A; containment spray pump A is lost; SI recirculation pump A is lost; it appears that each RHR pump can be powered from two Class 1E 4.16-kV buses, and hence no RHR pump is lost; and reactor coolant fan coolers 11A and 12A are lost. We assume that one train of ECW and CCW will also be unavailable. When Vital 4.16 kV AC Bus E1A is lost, there is not motive power available to close the block valve of a stuck open PORV.

TOTALS

$$10 = 2 + 0 = 2$$

$$9 = 2 + 3 = 5$$

$$8 = 2 + 2 = 4$$

Counting Rule Worksheet	
Step	Instructions
(1)	Enter the number of sequences with a risk significance equal to 9. (1) <u>5</u> (1.67)
(2)	Divide the result of Step (1) by 3 and round down. (2) <u>1</u>
(3)	Enter the number of sequences with a risk significance equal to 8. (3) <u>4</u>
(4)	Add the result of Step (3) to the result of Step (2). (4) <u>5</u> (1.67)
(5)	Divide the result of Step (4) by 3 and round down. (5) <u>1</u>
(6)	Enter the number of sequences with a risk significance equal to 7. (6) <u>0</u>
(7)	Add the result of Step (6) to the result of Step (5). (7) <u>1</u> (1.033)
(8)	Divide the result of Step (7) by 3 and round down. (8) <u>0</u>
(9)	Enter the number of sequences with a risk significance equal to 6. (9) <u>0</u>
(10)	Add the result of Step (9) to the result of Step (8). (10) <u>0</u>
(11)	Divide the result of Step (10) by 3 and round down. (11) <u>0</u>
(12)	Enter the number of sequences with a risk significance equal to 5. (12) <u>0</u>
(13)	Add the result of Step (12) to the result of Step (11). (13) <u>0</u>
(14)	Divide the result of Step (13) by 3 and round down. (14) <u>0</u>
(15)	Enter the number of sequences with a risk significance equal to 4. (15) <u>0</u>
(16)	Add the result of Step (15) to the result of Step (14). (16) <u>0</u>

If the result of Step 16 is greater than zero, then the risk significance of the inspection finding is of high safety significance (RED).
 If the result of Step 13 is greater than zero, then the risk significance of the inspection finding is at least of substantial safety significance (YELLOW).
 If the result of Step 10 is greater than zero, then the risk significance of the inspection finding is at least of low to moderate safety significance (WHITE).
 If the result of Steps 10, 13, and 16 are zero, then the risk significance of the inspection finding is of very low safety significance (GREEN).

Phase 2 Result: GREEN WHITE YELLOW RED

Table 6 - Counting Rule Worksheet

ARE YOU DONE? ALMOST.

EXTERNAL EVENTS ⇒ SEE SRA FOR "7" (MC 0609, APP-A, STEP 2.5)

LERF ⇒ SEE SRA FOR "7" (MC 0609 APP-A STEP 2.6)