

1. Consequence Segment ID: RHR-C-01A4
2. Segment Functional ID: RHRA-HL-CONT
3. Segment Description: RHRA HLA Suction, Between MOV 1-8701A and Penetration 316
4. Configuration: Standby // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 14
6. Spatial Effects: Containment
7. Consequence Key: RWST\*-ISO// SD LOCA\* (ISO=F) // LSDCA\* (ISO=S)
8. Isolation: YES: MOV 1-8809A // NO // YES (1-8702A or 1-8701A)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours The breaks in this line during standby can be detected by RWST low level alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CDDP Estimate:  $CDDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$
20. CLERP Estimate:  $CLERP = LERF(\text{Loss of RWST}) * \text{Exposure Time} = 2.4E-4 * 2.7E-3 = 6.7E-7$
21. Rank: MEDIUM

See Template for Shutdown\* A

1. Consequence Segment ID: RHR-C-01A5
2. Segment Functional ID: RHA-HL-PAA1201
3. Segment Description: RHRA HLA Suction, Between Penetration 316 and PAA-12-01/ABB-97-02N Penetration
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: PAA-12-01
7. Consequence Key: RWST - ISO // SD LOCA (ISO=F) // LSDCA (ISO=S) // IS-LOCA(2MOV<sub>s</sub>)
8. Isolation: YES: MOV 1-8809A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA // IS-LOCA(2MOV<sub>s</sub>)
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem. For ISLOCA(2MOV<sub>s</sub>), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains // RHR
13. Disabled Trains (Indirect Effects): N/A
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA // Containment Bypass
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDP (2 MOV<sub>s</sub> fail open).  $2.1E-6$
20. CLERP Estimate:  $6.7E-7$  //  $2.1E-6$
21. Rank: MEDIUM

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-01A6
2. Segment Functional ID: RHRA-HL-AB9702N
3. Segment Description: RHRA HLA Suction, Between PAA-12-01/ABB-97-02N Pen and ABB-97-02N/AB-97-02S Pen
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-97-02N
7. Consequence Key: RWST (RHR) - ISO // SD LOCA (ISO=F) // LSDCA (ISO=S) // IS-LOCA(2MOVs)
8. Isolation: YES MOV 1-8809A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA // IS-LOCA(2MOVs)
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem. For ISLOCA(2MOVs), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains // RHR A
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA // Containment Bypass
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDP (2MOVs fail open):  $2.1E-6$
20. CLERP Estimate:  $6.7E-7$  //  $2.1E-6$
21. Rank: MEDIUM

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-01A7
2. Segment Functional ID: RHRA-PMP-S
3. Segment Description: RHRA Suction, Between AB-97-02S/AB-74-17 Pen to Pump XPP-31A-RH
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-74-17
7. Consequence Key: RWST (RHR) - ISO // SD LOCA (ISO=F) // LSDCA (ISO=S) // IS-LOCA(2MOV's)
8. Isolation: YES: MOV 1-8809A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA // IS-LOCA(2MOV's)
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem. For ISLOCA(2MOV's), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains // RHR A
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA // Containment Bypass
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time}$ .  $1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDP (2MOV's fail open):  $2.1E-6$
20. CLERP Estimate:  $6.7E-7$  //  $2.1E-6$
21. Rank: MEDIUM

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-01B1
2. Segment Functional ID: RHRB-RWST1
3. Segment Description: RHRB Suction, From RWST, Between MOV 1-8809B and CV 1-8958B
4. Configuration: Standby
5. Analyzed Break Size (Inches): 14
6. Spatial Effects: AB-97-02
7. Consequence Key: RWST (RHR) - ISO
8. Isolation: YES: MOV 1-8809B
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$
20. CLERP Estimate:  $CLERP = LERF(\text{Loss of RWST}) * \text{Exposure Time} = 2.4E-4 * 2.7E-3 = 6.7E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: RHR-C-01B2
2. Segment Functional ID: RHB-RWST2
3. Segment Description: RHRB Suction, From RWST, Between CV 1-8958B and Suction Line B, MOV-8812B, and AB-97-02N/AB-74-16 Pen
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-97-02
7. Consequence Key: RWST (RHR) - ISO // SD LOCA (ISO=F) // LSDCB (ISO=S) // IS-LOCA(2MOV's)
8. Isolation: YES: MOV 1-8809B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA // IS-LOCA(2MOV's)
11. Exposure Time: 24 hours The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem. For ISLOCA(2MOV's), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains // RHR B
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA // Containment Bypass
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDP (2 MOV's fail open)  $2.1E-6$
20. CLERP Estimate:  $6.7E-7$  //  $2.1E-6$
21. Rank: MEDIUM

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-01B3
2. Segment Functional ID: RHRB-SUMP
3. Segment Description: RHRB Sump Suction, Between MOVs 1-8811B and 1-8812B
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 14
6. Spatial Effects: AB-97-02
7. Consequence Key: RHR/SUMP (ISO=GF)
8. Isolation: NO // NC: MOV 1-8818B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: Gravity from sump, isolation is not credited, could be less than 10 minutes
10. Initiating Event: Assumed LOCA and Recirc
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): RHR B Suction from Sump
13. Disabled Trains (Indirect Effects): Possible Flooding of RHR Pumps
14. Disabled Trains (ISO Success): RHR B Sump Suction
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): RHR A Recirc
17. Containment Isolation: Possible Containment Bypass
18. LERF Effects: Containment Bypass, if isolation fails.
19. CCDP Estimate: ISO=F, Loss of RHR, not tested piping: CCDP =  $1.1E-3$
20. CLERP Estimate:  $1.1E-3$
21. Rank: HIGH

1. Consequence Segment ID: RHR-C-01B4
2. Segment Functional ID: RHRB-HL-CONT
3. Segment Description: RHRB HLB Suction, Between MOV 1-8701B and Penetration 226
4. Configuration: Standby // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 14
6. Spatial Effects: Containment
7. Consequence Key: RWST\* - ISO // SD LOCA\* (ISO=F) // LSDCB (ISO=S)
8. Isolation: YES: MOV 1-8809B // NO // YES (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$
20. CLERP Estimate:  $CLERP = LERF(\text{Loss of RWST}) * \text{Exposure Time} = 2.4E-4 * 2.7E-3 = 6.7E-7$
21. Rank: MEDIUM

See Template for Shutdown\* B



1. Consequence Segment ID: RHR-C-01B5
2. Segment Functional ID: RHRB-HL-PAI1201
3. Segment Description: RHRB HLB Suction, Between Pen 226 and PAI-12-01/IB-22-01 Penetration
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: PAI-12-01
7. Consequence Key: RWST (CCW, AFW) - ISO // SD LOCA (ISO=F) // LSDCB (ISO=S) // IS-LOCA(2MOV<sub>s</sub>)
8. Isolation: YES: MOV 1-8809B // NO // YES (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA // IS-LOCA(2MOV<sub>s</sub>)
11. Exposure Time: 24 hours - The breaks in this line during standby can be detected by RWST low level alarms and area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift - 6 hours), the time before a controllable shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill RWST). For isolable breaks, it was assumed that 24 hours total is needed to solve the problem. For ISLOCA(2MOV<sub>s</sub>), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, all ECCS trains // RHR B
13. Disabled Trains (Indirect Effects): Possible damage to CCW, AFW
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDP (2 MOV<sub>s</sub> fail open: 2.1E-6)
20. CLERP Estimate: 6.7E-7 // 2.1E-6
21. Rank: MEDIUM

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-01B6
2. Segment Functional ID: RHRB-HL-IB1202
3. Segment Description: RHRB HLB Suction, Between PAI-12-01/IB-12-02 Penetration & IB-12-02/PAA-12-01 Penetration in IB-12-02
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: IB-12-02
7. Consequence Key: RWST (CCW, AFW) - ISO // SD LOCA (ISO=F) // LSDCB (ISO=S) // IS-LOCA(2MOV<sub>s</sub>)
8. Isolation: YES: MOV 1-8809B // NO // YES (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours - The breaks in this line during standby can be detected by RWST low level alarms and area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift - 6 hours), the time before a controllable shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill RWST). For isolable breaks, it was assumed that 24 hours total is needed to solve the problem. For ISLOCA(2MOV<sub>s</sub>), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Possible damage to CCW, AFW.
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDP (2 MOV<sub>s</sub> fail open):  $2.1E-6$
20. CLERP Estimate:  $6.7E-7$  //  $2.1E-6$
21. Rank: MEDIUM

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-01B7
2. Segment Functional ID: RHRB-HL-PAA1201
3. Segment Description: RHRB HLB Suction, Between IB-12-02/PAA-12-01 Penetration and PAA-12-01/AB-97-02N Penetration in PAI-12-01
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: PAA-12-01
7. Consequence Key: RWST - ISO // SD LOCA (ISO=F) // LSDCB (ISO=S) // IS-LOCA(2MOV's)
8. Isolation: YES: MOV 1-8809B // NO // YES (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA // IS-LOCA(2MOV's)
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem. For ISLOCA(2MOV's), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains // RHR
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA // Containment Bypass
19. CCDF Estimate:  $CCDF = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDF (2 MOV's fail open)  $2.1E-6$
20. CLERP Estimate:  $6.7E-7$  //  $2.1E-6$
21. Rank: MEDIUM

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-01B8
2. Segment Functional ID: RHRB-PMP-S
3. Segment Description: RHRB Suction, Between AB-97-02N/AB-74-16 Pen to Pump XPP-31B-RH
4. Configuration: Standby // Shutdown // Shutdown // Operating
5. Analyzed Break Size (Inches): 10, 14
6. Spatial Effects: AB-74-16
7. Consequence Key: RWST (RHR) - ISO // SD LOCA (ISO=F) // LSDCB (ISO=S) // IS-LOCA(2MOV's)
8. Isolation: YES: MOV 1-8809B // NO // YES (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA // IS-LOCA(2MOV's)
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours), the time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem. For ISLOCA(2MOV's), exposure time is 3 months, since the RHR system is tested quarterly, and it was assumed that the test will detect MOV leakage.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains // RHR B
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA // Containment Bypass
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time}$ .  $1.2E-3 * 2.7E-3 = 3.4E-6$  // CCDP (2 MOV's fail open)  $2.1E-6$
20. CLERP Estimate:  $6.7E-7$  //  $2.1E-6$
21. Rank: MEDIUM

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-02A
2. Segment Functional ID: RHRA-PMP-D
3. Segment Description: RHRA Discharge, Between Pump XPP-31A-RH and AB-74-17/AB-97-02S Pen
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10, 14
6. Spatial Effects: AB-74-17
7. Consequence Key: RHR/RWST (ISO=F) // RHRA (ISO=S) // SD LOCA (ISO=F) // LSDCA (ISO=S)
8. Isolation: NO // NC: MOV 1-8889A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: Isolation was credited, with flow from one RHR pump, there is more than 45 minutes available for isolation.
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): RHR Train A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): RHR Train B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Isolation credited, ISO=F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ ,  
ISO=S, CCDP Loss of RHR A:  $1.3E-5$
20. CLERP Estimate:  $2.3E-8$  //  $6.2E-7$
21. Rank: MEDIUM

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-02B
2. Segment Functional ID: RH-B-AB7416(D)
3. Segment Description: RHRB Discharge, Between Pump XPP-31B-RH and AB-74-16/AB-97-02 Pen
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 12, 14
6. Spatial Effects: AB-74-16
7. Consequence Key: RHR/RWST (ISO=F) // RHRB (ISO=S) // SD LOCA (ISO=F) // LSDCB (ISO=S)
8. Isolation: NO // NC: MOV 1-8889B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: Isolation was credited, with flow from one RHR pump, there is more than 45 minutes available for isolation.
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): RHR Train B
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): RHR Train A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Isolation credited, ISO=F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7 \times 10^{-4} * 1 \times 10^{-2} = 2.7 \times 10^{-6}$ ,  
ISO=S, CCDP Loss of RHR B:  $5.6 \times 10^{-6}$
20. CLERP Estimate:  $2.3 \times 10^{-8}$  //  $2.6 \times 10^{-8}$
21. Rank: MEDIUM

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-03A2
2. Segment Functional ID: RHRA-DIS-AB9702S
3. Segment Description: RHRA Discharge, Between AB-74-17/AB-97-02S Pen and AB-97-02S/AB-12-06 Pen in AB-97-02S
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 12, 14
6. Spatial Effects: AB-97-02S
7. Consequence Key: RHR/RWST (ISO=F) // RHRA (ISO=S) // SD LOCA (ISO=F) // LSDCA (ISO=S)
8. Isolation: NO // NC: MOV 1-8889A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: Isolation was credited, with flow from one RHR pump, there is more than 45 minutes available for isolation.
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): RHR Train A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): RHR Train B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Isolation credited, ISO=F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ , ISO=S, CCDP Loss of RHR A:  $1.3E-5$
20. CLERP Estimate:  $2.3E-8$  //  $6.2E-7$
21. Rank: MEDIUM

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-03B2
2. Segment Functional ID: RHRB-DIS-AB9702
3. Segment Description: RHRB Discharge, Between AB-74-16/AB-97-02 Pen and AB-97-02/AB-12-05 Pen in AB-97-02
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-97-02
7. Consequence Key: RHR/RWST (ISO=F) // RHRB (ISO=S) // SD LOCA (ISO=F) // LSDCB (ISO=S)
8. Isolation: NO // NC: MOV 1-8889B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: Isolation was credited, with flow from one RHR pump, there is more than 45 minutes available for isolation.
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): RHR Train B
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): RHR Train A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Isolation credited, ISO=F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ , ISO=S, CCDP Loss of RHR B:  $5.6E-6$
20. CLERP Estimate:  $2.3E-8$  //  $2.6E-8$
21. Rank: MEDIUM

See Template for Shutdown B



1. Consequence Segment ID: RHR-C-04A1
2. Segment Functional ID: RHRA-HX1
3. Segment Description: RHRA Discharge, Between AB-97-02S/AB-12-06 Pen and CV 1-8716A (thru 1-FCV-605A and 1-HCV-603A), MOV 1-8706A
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-12-06
7. Consequence Key: RHR/RWST (ISO=F) // RHRA (ISO=S) // SD LOCA (ISO=F) // LSDCA (ISO=S)
8. Isolation: NO // NC: MOV 1-8889A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: Isolation was credited, with flow from one RHR pump, there is more than 45 minutes available for isolation.
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Isolation credited, ISO=F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ , ISO=S, CCDP Loss of RHR A:  $1.3E-5$
20. CLERP Estimate:  $2.3E-8 // 6.2E-7$
21. Rank: MEDIUM

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-04A2
2. Segment Functional ID: RHRA-HX2
3. Segment Description: RHRA Discharge, Between CV 1-8716A and AB-12-06/AB-26-01 Pen.
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-12-06
7. Consequence Key: RHR/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDCA (ISO=S)
8. Isolation: NO // NC: MOV 1-8809A and 1-8887A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2.3E-6
21. Rank: HIGH

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-04B1
2. Segment Functional ID: RHRB-HX1
3. Segment Description: RHRB Discharge, Between AB-97-02/AB-12-05 Pen and CV 1-8716B (thru 1-FCV-605B and 1-HCV-603B), MOV 1-8706B
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 8, 10
6. Spatial Effects: AB-12-05
7. Consequence Key: RHR/RWST (ISO=F) // RHRB (ISO=S) // SD LOCA (ISO=F) // LSDCB (ISO=S)
8. Isolation: NO // NC: MOV 1-8889B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: Isolation was credited, with flow from one RHR pump, there is more than 45 minutes available for isolation.
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: Isolation credited, ISO=F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ , ISO=S, CCDP Loss of RHR B:  $5.6E-6$
20. CLERP Estimate:  $2.3E-8 // 2.6E-8$
21. Rank: MEDIUM

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-04B2
2. Segment Functional ID: RHRB-HX2
3. Segment Description: RHRB Discharge, Between CV 1-8716B and AB-12-05/AB-12-06 Pen
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-12-05
7. Consequence Key: RHR/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDCB (ISO=S)
8. Isolation: NO // NC: MOV 1-8809B and 1-8887B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2.3E-6
21. Rank: HIGH

**See Template for Shutdown B**

1. Consequence Segment ID: RHR-C-05A
2. Segment Functional ID: RHRA-HXD-AB2601
3. Segment Description: RHRA HX Discharge, Between AB-12-06/AB-26-01 Pen and AB-26-01/PAA-12-01 Pen in AB-26-01
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-26-01
7. Consequence Key: RHR/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDCA (ISO=S)
8. Isolation: NO // NC: MOV 1-8809A and 1-8887A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2.3E-6
21. Rank: HIGH

See Template for Shutdown A

1. Consequence Segment ID: RHR-C-05B
2. Segment Functional ID: RHRB-HXD-AB1206
3. Segment Description: RHRB HX Discharge, Between AB-12-05/AB-12-06 Pen and AB-12-06/AB-12-11 Pen in AB-12-06
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-12-06
7. Consequence Key: RHR/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDCB (ISO=S)
8. Isolation: NO // NC: MOV 1-8809B and 1-8887B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2 3E-6
21. Rank: HIGH

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-06B
2. Segment Functional ID: RHRB-HXD-CL
3. Segment Description: RHRB HX Discharge, Between AB-12-06/AB-12-11 Pen and AB-12-11/PAA-12-01 Pen in AB-12-11
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 8, 10
6. Spatial Effects: AB-12-11
7. Consequence Key: RHR/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDCB (ISO=S)
8. Isolation: NO // NC: MOV 1-8809B and 1-8887B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR Train B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2.3E-6
21. Rank: HIGH

See Template for Shutdown B

1. Consequence Segment ID: RHR-C-07A
2. Segment Functional ID: RHRA-HXD-CL
3. Segment Description: RHRA Hx Discharge to Cold Legs, Between AB-26-01/PAA-12-01 Pen and MOVs 1-8888A, 1-8887A
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-12-01
7. Consequence Key: RHR<sup>D</sup>/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDCA (ISO=S)
8. Isolation: NO // NC: MOV 1-8809A and 1-8887A // NO // YES: (1-8702A or 1-8701A and 1-8702B or 1-8701B)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR lost due to a flow diversion.
13. Disabled Trains (Indirect Effects): Flooding of the RHR system and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2.3E-6
21. Rank: HIGH

See Template for Shutdown



1. Consequence Segment ID: RHR-C-07B
2. Segment Functional ID: RHRB-HXD-CL
3. Segment Description: RHRB HX Discharge to Cold Legs, Between AB-12-11/PAA-12-01, and MOV 1-8888B, 1-8887B
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-12-01
7. Consequence Key: RHR<sup>D</sup>/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDCB (ISO=S)
8. Isolation: NO // NC: MOV 1-8809B and 1-8887B // NO // YES: (1-8702A or 1-8701A and 1-8702B or 1-8701B)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR lost due to a Flow Diversion
13. Disabled Trains (Indirect Effects): Flooding of the RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2.3E-6
21. Rank: HIGH

See Template for Shutdown

1. Consequence Segment ID: RHR-C-07C
2. Segment Functional ID: RHRAB-HXD-HL
3. Segment Description: RHRAB HX Discharge to Hot Legs, Between MOVs 1-8887A, 1-8887B, and 1-8889
4. Configuration: Demand // Demand // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-12-01
7. Consequence Key: RHRD/RWST (ISO=GF) // SD LOCA (ISO=F) // LSDC (ISO=S)
8. Isolation: NO // NC: MOV 1-8887A and 1-8887B // NO // YES: (1-8702A or 1-8701A, and 1-8702B or 1-8701B)
9. Time to Isolate: Isolation was not credited, given there is flow from both RHR pumps, less than 30 minutes are available for isolation
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): RHR lost due to a flow diversion.
13. Disabled Trains (Indirect Effects): Flooding of the RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: Loss of RHR: 2.7E-4
20. CLERP Estimate: 2.3E-6
21. Rank: HIGH

See Template for Shutdown

1. Consequence Segment ID: RHRA1
2. Segment Functional ID: RHR-HLA
3. Segment Description: RHR HLA Suction From HLA to 1-8702A
4. Configuration: Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: LLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: LLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LLO
19. CCDP Estimate: 3.8E-03
20. CLERP Estimate: 3.5E-05
21. Rank: HIGH

1. Consequence Segment ID: RHRA2
2. Segment Functional ID: RHR HLA - ISO
3. Segment Description: RHR HLA Suction From 1-8702A to 1-8701A
4. Configuration: Operating // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: PLLO(MOV) // SD LOCA\* (ISO=F) // LSDCA (ISO=S)
8. Isolation: MOV: 1-8702A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: N/A
10. Initiating Event: PLLO(MOV)
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): None
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): None
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): All
17. Containment Isolation: Not Affected
18. LERF Effects: LLO, if isolation fails
19. CCDP Estimate: Potential LLOCA isolated by a normally closed MOV:  $3.82E-3 * 4.4E-3 = 1.7E-5$
20. CLERP Estimate:  $1.5E-7$
21. Rank: MEDIUM

See Template for Shutdown\* A

1. Consequence Segment ID: RHRA3
2. Segment Functional ID: RHR-HLA-PT-MLO
3. Segment Description: RHR HLA SUC LINE to PT1A, To First Reducer
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate:  $3.6 \times 10^{-3}$
20. CLERP Estimate:  $3.5 \times 10^{-5}$
21. Rank: HIGH

1. Consequence Segment ID: RHRA4
2. Segment Functional ID: RHR-HLA-PT-SLOC
3. Segment Description: RHR HLA LINE to PT1A, From First Reducer to Second Reducer
4. Configuration: Operating
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: SLOC
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: SLOC
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA effects
13. Disabled Trains (Indirect Effects): LOCA effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: SLOC
19. CCDP Estimate:  $3.4E-3$
20. CLERP Estimate:  $3.4E-5$
21. Rank: HIGH

1. Consequence Segment ID: RHRA5
2. Segment Functional ID: RHR-HLA-PT-ISO-MLO
3. Segment Description: RHR HLA SUC LINE to PT2A, To First Reducer
4. Configuration: Operating // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: Containment
7. Consequence Key: PMLO (MOV) // SD LOCA\* (ISO=F) // LSDCA (ISO=S)
8. Isolation: MOV: 1-8702A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: N/A
10. Initiating Event: PMLO(MOV)
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): Loss of RHR/SI Single HL Injection
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): None
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): All
17. Containment Isolation: Not Affected
18. LERF Effects: MLOC, if isolation fails
19. CCDP Estimate: Potential MLO isolated by a normally closed MOV:  $3.6E-3 * 4.4E-3 = 1.6E-5$
20. CLERP Estimate:  $1.5E-7$
21. Rank: MEDIUM

See Template for Shutdown\* A

1. Consequence Segment ID: RHRA6
2. Segment Functional ID: RHR-HLA-PT-ISO-PT-SLOC
3. Segment Description: RHR HLA SUC LINE to PT2A, from First Reducer to Second Reducer
4. Configuration: Operating // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(MOV) // SD LOCA\* (ISO=F) // LSDCA (ISO=S)
8. Isolation: MOV: 1:8702A // NO // YES: (1-8702A or 1-8701A)
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(MOV)
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): None
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): None
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): All
17. Containment Isolation: Not affected
18. LERF Effects: PSLOC, if isolation fails
19. CCDP Estimate: Potential SLOC isolated by a normally closed MOV =  $3.42\text{E-}03 * 4.4\text{E-}3 = 1.5\text{E-}5$
20. CLERP Estimate:  $1.5\text{E-}7$
21. Rank: MEDIUM

See Template for Shutdown\* A



1. Consequence Segment ID: RHRC1
2. Segment Functional ID: RHR-HLC
3. Segment Description: RHR HLC Suction From HLC to 1-8702B
4. Configuration: Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: LLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: LLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LLO
19. CCDP Estimate:  $3.8E-03$
20. CLERP Estimate:  $3.5E-05$
21. Rank: HIGH

1. Consequence Segment ID: RHRC2
2. Segment Functional ID: RHR-HLC-ISO
3. Segment Description: RHR HLC Suction From 1-8702B to 1-8701B
4. Configuration: Operating // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: PLLO(MOV) // SD LOCA\* (ISO=F) // LSDCB (ISO=S)
8. Isolation: MOV: 1-8702B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: PLLO(MOV)
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): Loss of RHR/SI Single HL Injection
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): None
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): All
17. Containment Isolation: Not Affected
18. LERF Effects: LLOCA, if isolation fails
19. CCDP Estimate: Potential LLOCA isolated by a normally closed MOV:  $3.82E-3 * 4.4E-3 = 1.7E-5$
20. CLERP Estimate:  $1.5E-7$
21. Rank: MEDIUM

See Template for Shutdown\* B

1. Consequence Segment ID: RHRC3
2. Segment Functional ID: RHR-HLC-PT-MLO
3. Segment Description: RHR HLC SUC LINE to PTIC , To First Reducer
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate:  $3.6E-03$
20. CLERP Estimate:  $3.5E-05$
21. Rank: HIGH

1. Consequence Segment ID: RHRC4
2. Segment Functional ID: RHR-HLC-PT-SLOC
3. Segment Description: RHR HLC SUC LINE to PT1C, From First Reducer to Second Reducer
4. Configuration: Operating
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: SLOC
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: SLOC
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA effects
13. Disabled Trains (Indirect Effects): LOCA effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: SLOC
19. CCDP Estimate:  $3.4E-3$
20. CLERP Estimate:  $3.4E-5$
21. Rank: HIGH

1. Consequence Segment ID: RHRC5
2. Segment Functional ID: RHR-HLC-PT-ISO-MLO
3. Segment Description: RHR HLC LINE to PT2C, To First Reducer
4. Configuration: Operating // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: Containment
7. Consequence Key: PMLO (MOV) // SD LOCA\* (ISO=F) // LSDCB (ISO=S)
8. Isolation: MOV: 1-8702B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: PMLO(MOV)
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): Loss of RHR/SI Single HL Injection
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): None
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): All
17. Containment Isolation: Not Affected
18. LERF Effects: MLO, if isolation fails
19. CCDP Estimate: Potential MLO isolated by a normally closed MOV:  $3.6E-3 * 4.4E-3 = 1.6E-5$
20. CLERP Estimate:  $1.5E-7$
21. Rank: MEDIUM

See Template for Shutdown\* B

1. Consequence Segment ID: RHRC6
2. Segment Functional ID: RHR-HLC-PT-ISO-SLOC
3. Segment Description: RHR HLC SUC LINE to PT2C, From First Reducer to Second Reducer
4. Configuration: Operating // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(MOV) // SD LOCA\* (ISO=F) // LSDCB (ISO=S)
8. Isolation: MOV: 1-8702B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(MOV)
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): None
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): None
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): All
17. Containment Isolation: Not Affected
18. LERF Effects: PSLOC, if isolation fails
19. CCDP Estimate: Potential SLOC isolated by a normally closed MOV =  $3.4E-3 * 4.4E-3 = 1.5E-5$
20. CLERP Estimate:  $1.5E-7$
21. Rank: MEDIUM

See Template for Shutdown\* B

1. Consequence Segment ID: RHRC7
2. Segment Functional ID: RHR-HLC-VT-ISO SLOC
3. Segment Description: RHR SUC LINE to Vent, To First Reducer
4. Configuration: Operating // Shutdown // Shutdown
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(MOV) // SD LOCA\* (ISO=F) // LSDCB (ISO=S)
8. Isolation: MOV: 1-8702B // NO // YES: (1-8702B or 1-8701B)
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(MOV)
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): None
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): None
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): All
17. Containment Isolation: Not Affected
18. LERF Effects: PSLOC, if isolation fails
19. CCDP Estimate: Potential SLOC isolated by a normally closed MOV =  $3.4E-3 * 4.4E-3 = 1.5E-5$
20. CLERP Estimate:  $1.5E-7$
21. Rank: MEDIUM

See Template for Shutdown\* B

1. Consequence Segment ID: RWST-C-01
2. Segment Functional ID: RWST-AB1204
3. Segment Description: RWST Discharge in AB-12-04, Between RWST XTK-25-RW and AB-12-04/AB-00-01W Pen
4. Configuration: Standby
5. Analyzed Break Size (Inches): 20
6. Spatial Effects: AB-12-04
7. Consequence Key: RWST
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 Hours - The breaks in this line during standby can be detected by RWST low level alarms and sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift - 6 hours) The time before a controllable shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill RWST). For unisolable breaks, it was assumed that a day and one half total is need to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $CLERP = 2.4E-4 * 4.1E-3 = 1E-6$
21. Rank: MEDIUM



1. Consequence Segment ID: RWST-C-02
2. Segment Functional ID: RWST-AB0001W
3. Segment Description: RWST Discharge in AB-00-01W, Between AB-12-04/AB-00-01W Pen and AB-00-01W/AB-00-01 Pen
4. Configuration: Standby
5. Analyzed Break Size (Inches): 20
6. Spatial Effects: AB-00-01W
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-03
2. Segment Functional ID: RWST-CVCS/SI
3. Segment Description: RWST Discharge in AB-00-01, Between AB-00-01W/AB-00-01 Pen and AB-00-01/AB88-13S Pen, AB-00-01E Pen and MOVs 1-LCV-115B and 1-LCV-115D
4. Configuration: Standby
5. Analyzed Break Size (Inches): 8,12,14,20
6. Spatial Effects: AB-00-01
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-04
2. Segment Functional ID: RWST-AB8813S
3. Segment Description: RWST Discharge in AB-88-13S, Between AB-00-01/AB-88-13S Pen and AB-88-13S/AB88-25 Pen
4. Configuration: Standby
5. Analyzed Break Size (Inches): 14
6. Spatial Effects: AB-88-13S
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-05
2. Segment Functional ID: RWST-AB8825
3. Segment Description: RWST Discharge in AB-88-25, Between AB-88-13S/AB88-25 Pen and AB-88-25/AB-97-02S Pen
4. Configuration: Standby
5. Analyzed Break Size (Inches): 14
6. Spatial Effects: AB-88-25
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-06
2. Segment Functional ID: RWST-RHR
3. Segment Description: RWST Discharge in AB-97-02S, Between AB-88-25/AB-97-02S Pen and AB-97-02S/PAA-12-01 Pen (toward 1-8881) and MOVs 1-8809B and 1-8309A
4. Configuration: Standby
5. Analyzed Break Size (Inches): 8,14
6. Spatial Effects: AB-97-02S
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-07
2. Segment Functional ID: RWST-RHR Recirc
3. Segment Description: RWST Discharge, Between AB-97-02S/PAA-12-01 Pen and MV 1-8881 (Flow Change)  
-From RHR Between MV-1-8881 & PAA12-01/AB-97-02S
4. Configuration: Standby
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: PAA-12-01
7. Consequence Key: RWST
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 Hours - The breaks in this line during standby can be detected by RWST low level alarms and sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift - 6 hours). The time before a controllable shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill RWST) For unisolable breaks, it was assumed that a day and one half total is need to solve the problem
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $CLERP = 2.4E-4 * 4.1E-3 = 1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-08
2. Segment Functional ID: RHR-SP1
3. Segment Description: RWST Discharge toward MOVs 3001A-SP and 3001B-SP in Area AB-00-01E
4. Configuration: Standby
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-00-01E
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time) For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time. } 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-09
2. Segment Functional ID: RHR-SP2
3. Segment Description: RWST Discharge toward MOVs 3001A-SP and 3001B-SP in Area AB-97-02E, Between AB-00-01E/AB-97-02 Pen and MOVs 3001A-SP & 3001B-SP
4. Configuration: Standby
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-97-02N/AB-97-02S
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time) For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate: 1E-6
21. Rank: MEDIUM



1. Consequence Segment ID: RWST-C-10
2. Segment Functional ID: SP-RECIRC1
3. Segment Description: RB Spray Recirculation to RWST, Between MV 3011-SP and Flow Orifice XPS-67-SP
4. Configuration: Standby
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-74-16
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $\text{CCDP} = \text{CDF (Loss of RWST)} * \text{Exposure Time} = 1.2\text{E-}3 * 4.1\text{E-}3 = 5.1\text{E-}6$
20. CLERP Estimate:  $1\text{E-}6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-11
2. Segment Functional ID: SP-RECIRC2
3. Segment Description: RB Spray Recirculation to RWST, Between Flow Orifice XPS-67-SP and AB-74-16/AB-97-02 Pen
4. Configuration: Standby
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-74-16
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: RWST-C-12
2. Segment Functional ID: SP-RECIRC3
3. Segment Description: RB Spray Recirculation to RWST, Between AB-74-16/AB-97-02 Pen and AB-97-02/AB-00-01W Pen
4. Configuration: Standby
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-97-02
7. Consequence Key: RWST (RHR)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 36 hours The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours) The time before a controlled shutdown (LCO = 1 hour), plus time in S/D to solve the problem (refill time). For an unisolable breaks, it was conservatively assumed that 1 1/2 days total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 4.1E-3 = 5.1E-6$
20. CLERP Estimate:  $1E-6$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-01
2. Segment Functional ID: SI-SUCT COM
3. Segment Description: SI/Charging Pump Suction Common Line to Pumps, Between 1-LCV-115B, 1-LCV-115D, AB-00-01/AB-00-01E Penetrations To Pumps, (RHRA) Pen AB-00-01C/AB-00-01 and (RHRB) Pen AB-00-02/AB-00-01
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-00-01
7. Consequence Key: PST
8. Isolation: YES. CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-02A
2. Segment Functional ID: SIA-SUCT-AB0001E
3. Segment Description: SI/Charging Pump A Suction, Between AB-00-01/AB-00-01E Pen and AB-00-01E/AB-88-25 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-88-25
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-02B
2. Segment Functional ID: SIB-SUCT-AB0001E
3. Segment Description: SI/Charging Pump B Suction, Between AB-00-01/AB-00-01E Pen and AB-00-01E/AB-88-23 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-00-01E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2 \times 10^{-6}$
20. CLERP Estimate:  $1.5 \times 10^{-8}$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-02C
2. Segment Functional ID: SIC-SUCT-AB0001E
3. Segment Description: SI/Charging Pump C Suction, Between AB-00-01/AB-00-01E Pen and AB-00-01E/AB-88-24 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-00-01E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate: 2.1E-6
20. CLERP Estimate: 1.5E-8
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-03A
2. Segment Functional ID: SIA-SUCT-AB8825
3. Segment Description: SI/Charging Pump A Suction, Between AB-00-01E/AB-88-25 Pen and Pump XPP-43A-CS
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6,8
6. Spatial Effects: AB-88-25
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): - CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM



1. Consequence Segment ID: SI-C-03B
2. Segment Functional ID: SIB-SUCT-AB8823
3. Segment Description: SI/Charging Pump B Suction, Between AB-00-01E/AB-88-23 Pen and Pump XPP-43B-CS
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6,8
6. Spatial Effects: AB-88-23
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-03C
2. Segment Functional ID: SIC-SUCT-AB8824
3. Segment Description: SI/Charging Pump C Suction, Between AB-00-01E/AB-88-24 Pen and Pump XPP-43C-CS
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6,8
6. Spatial Effects: AB-88-24
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-04A
2. Segment Functional ID: SIA/RHRA-AB0001C
3. Segment Description: SI/Charging Pump A Suction from RHRA, Between AB-00-01/AB-00-01C Pen and AB-00-01C/AB-00-01E Pen in AB-00-01C
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-00-01C
7. Consequence Key: PST
8. Isolation: YES- CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-04B
2. Segment Functional ID: SIB/RHRB-AB0002
3. Segment Description: SI/Charging Pump B Suction from RHRB, Between AB-00-01/AB-00-02 Pen and AB-00-02/AB-97-02 Pen in AB-00-02
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-00-02
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS -
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-05A
2. Segment Functional ID: SIA/RHRA-AB0001E
3. Segment Description: SI/Charging Pump A Suction from RHRA, Between AB-00-01C/AB-00-01E Pen and AB-00-01E/AB-97-02 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-00-01E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CDDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-05B
2. Segment Functional ID: SIB/RHRB-AB9702
3. Segment Description: SI/Charging Pump B Suction from RHRB, Between AB-00-02/AB-97-02 Pen and AB-97-02/AB-12-05 Pen in AB-97-02
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-97-02
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-06A
2. Segment Functional ID: SIA/RHRA-AB9702
3. Segment Description: SI/Charging Pump A Suction from RHRA, Between AB-00-01E/AB-97-02 Pen and MOV 1-8706A
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-97-02
7. Consequence Key: PST
8. Isolation: YES CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-06B
2. Segment Functional ID: SIB/RHRB-AB1205
3. Segment Description: SI/Charging Pump B Suction from RHRB, Between AB-97-02/AB-12-05 Pen and MOV 1-8706B
4. Configuration: Operating
5. Analyzed Break Size (Inches): 8
6. Spatial Effects: AB-12-05
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM



1. Consequence Segment ID: SI-C-07A
2. Segment Functional ID: SIA-DISCHA1
3. Segment Description: SI/Charging Pump A Discharge, Between Pump XPP-43A-CS and CVs 1-8480A and 1-8481A
4. Configuration: Demand
5. Analyzed Break Size (Inches): 2,3,4
6. Spatial Effects: AB-88-25
7. Consequence Key: RHR/RWST (ISO=F) // SIA (ISO=S)
8. Isolation: NO // YES: 1-LCV-115B and MOVs 1-8130A or 1-8130B
9. Time to Isolate: There is time to isolate, 747 minutes to flood RHR, 329 minutes to empty 1/2 RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Pump A of SI Injection Pump
13. Disabled Trains (Indirect Effects): Flooding of RHR pumps and a possible loss of RWST
14. Disabled Trains (ISO Success): Train A of SI Injection
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SI Pump B or C
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: ISO = F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ ; ISO=S: Loss of SI A, CCDP:  $5.8E-6$
20. CLERP Estimate:  $2.3E-8$  //  $8.1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-07B
2. Segment Functional ID: SIB-DISCHB1
3. Segment Description: SI/Charging Pump B Discharge, Between Pump XPP-43B-CS and CVs 1-8480B and 1-8481B
4. Configuration: Demand
5. Analyzed Break Size (Inches): 2,3,4
6. Spatial Effects: AB-88-23
7. Consequence Key: RHR/RWST (ISO=F) // SIB (ISO=S)
8. Isolation: NO // YES: MOVs (1-8130B or 1-8130A) and (1-8131A or 1-8131B)
9. Time to Isolate: There is time to isolate, 747 minutes to flood RHR, 329 minutes to empty 1/2 RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Pump B of SI Injection
13. Disabled Trains (Indirect Effects): Flooding of RHR pumps and a possible loss of RWST
14. Disabled Trains (ISO Success): Train B of SI Injection
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SI Pump A or C
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: ISO = F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ ;  
ISO=S: Loss of SI B: CCDP =  $8.3E-6$
20. CLERP Estimate:  $2.3E-8 // 1.9E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-07C
2. Segment Functional ID: SIC-DISCHC1
3. Segment Description: SI/Charging Pump C Discharge, Between Pump XPP-43C-CS and CVs 1-8480C and 1-8481C
4. Configuration: Demand
5. Analyzed Break Size (Inches): 2,3,4
6. Spatial Effects: AB-88-24
7. Consequence Key: RHR/RWST (ISO=F) // SIC (ISO=S)
8. Isolation: NO // YES: 1-LCV-115D and MOVs 1-8131A or 1-8131B
9. Time to Isolate: There is time to isolate, 747 minutes to flood RHR, 329 minutes to empty 1/2 RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Pump C of SI Injection
13. Disabled Trains (Indirect Effects): Flooding of RHR pumps and a possible loss of RWST
14. Disabled Trains (ISO Success): Pump C of SI Injection
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SI Pump A and B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA events
19. CCDP Estimate: ISO = F, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$ ;  
ISO=S: Loss of SI C: CCDP =  $8.3E-6$
20. CLERP Estimate:  $2.3E-8$  //  $1.9E-9$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-08A
2. Segment Functional ID: SIA-DISCHA2
3. Segment Description: SI/Charging Pump A Discharge, Between CV 1-8481A and MV 1-8485A
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-88-25
7. Consequence Key: PST
8. Isolation: YES. CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-08B
2. Segment Functional ID: SIB-DISCHB2
3. Segment Description: SI/Charging Pump B Discharge, Between CV 1-8481B and MV 1-8485B
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-88-23
7. Consequence Key: PST
8. Isolation: YES CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-08C
2. Segment Functional ID: SIC-DISCHC2
3. Segment Description: SI/Charging Pump C Discharge, Between CV 1-8481C and MV 1-8485C
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-88-24
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-09A
2. Segment Functional ID: SIA-DISCH-AB8825
3. Segment Description: SI/Charging Pump A Discharge, Between MV 1-8485A and Penetrations  
AB-88-25/AB-00-01E & AB-88-25/AB-00-02E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-88-25
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-09B1
2. Segment Functional ID: SIB-DISCH-AB8823
3. Segment Description: SI/Charging Pump B Discharge, Between MV 1-8485B and Penetrations  
AB-88-23/AB-00-01E & AB-88-23/AB-88-24 (toward 1-8886) and AB-88-23/AB-88-24  
(toward 1-8801B)
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3,4
6. Spatial Effects: AB-88-23
7. Consequence Key: PST
8. Isolation: YES. CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM



1. Consequence Segment ID: SI-C-09B2
2. Segment Functional ID: SIB-DISCH-AB0001E
3. Segment Description: SI/Charging Pump B Discharge, Between AB-88-23/AB-00-01E Pen and AB-00-01E/AB-00-01 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 4
6. Spatial Effects: AB-00-01E
7. Consequence Key: PST
8. Isolation: YES CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-09C1
2. Segment Functional ID: SIC-DISCH-AB8824
3. Segment Description: SI/Charging Pump C Discharge, Between MV 1-8485C and Penetrations  
AB-88-24/AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-88-24
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-09C2
2. Segment Functional ID: SIC-DISCH-AB0001E
3. Segment Description: SI/Charging Pump C Discharge, Between AB-88-24/AB-00-01E Pen and AB-00-01E/AB-00-01 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-00-01E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-10A1
2. Segment Functional ID: SICVCS-AB0002E
3. Segment Description: SI/Charging Pump Discharge to CVCS, Between AB-88-25/AB-00-02E Pen and AB-00-02E/PAA-12-01 Pen in AB-00-02E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-00-02E
7. Consequence Key: PST
8. Isolation: YES. CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1 \times 10^{-6}$
20. CLERP Estimate:  $1.5 \times 10^{-8}$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-10A2
2. Segment Functional ID: SIACVCS-PAA1201
3. Segment Description: SI/Charging Pump Discharge to CVCS, Between AB-00-02E/PAA-12-01 Pen and MV 1-8402B
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: PAA-12-01
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate: 2.1E-6
20. CLERP Estimate: 1.5E-8
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-11A1
2. Segment Functional ID: SIA-CLHL-AB0001E
3. Segment Description: SI/Charging Pump A Discharge Line to Hot/Cold Legs, Between AB-88-25/AB-00-01E Pen and AB-00-01E/AB-97-02 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-00-01E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CDDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-11A2
2. Segment Functional ID: SIA-CLHL-AB9702
3. Segment Description: SI/Charging Pump A Discharge Line to Hot/Cold Legs, Between AB-00-01E/AB-97-02 Pen and AB-97-02/PAA-12-01 Pen, in AB-97-02
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3, 4
6. Spatial Effects: AB-97-02
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-11A3
2. Segment Functional ID: SIA-CLHL-8884
3. Segment Description: SI/Charging Pump A Discharge Line to Hot/Cold Legs Between AB-97-02/AB-12-01 Pen and MOV 1-8884, PAA-12-01/IB-12-01 Pen
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: PAA-12-01
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM



1. Consequence Segment ID: SI-C-11A4
2. Segment Functional ID: SIA-CLHL-8885
3. Segment Description: SI/Charging Pump A Discharge Line to Hot/Cold Legs from Pump A Discharge, Between PAA-12-01/IB-12-01 Pen and MOV 1-8885
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: IB-12-02
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CDDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-11B1
2. Segment Functional ID: SIB-CL-AB8824
3. Segment Description: SI/Charging Pump B Discharge to CLs, Between AB-88-23/AB-88-24 Pen and AB-88-24/AB-00-02E Pen in AB-88-24
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-88-24
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS -
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1 \times 10^{-6}$
20. CLERP Estimate:  $1.5 \times 10^{-8}$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-11B2
2. Segment Functional ID: SIB-CL-AB0002E
3. Segment Description: SI/Charging Pump B Discharge to CL, Between AB-88-24/AB-00-02E Pen and AB-00-02E/AB-26-01 Pen in AB-00-02E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-00-02E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CDDP Estimate: 2.1E-6
20. CLERP Estimate: 1.5E-8
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-11B3
2. Segment Functional ID: SIB-CL-AB2601
3. Segment Description: SI/Charging Pump B Discharge to CL, Between AB-00-02E/AB-26-01 Pen and AB-26-01/FH-12-01 Pen in AB-26-01
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-26-01
7. Consequence Key: PST
8. Isolation: YES CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-11B4
2. Segment Functional ID: SIB-CL-8801A/B
3. Segment Description: SI/Charging Pump B Discharge to CL, Between AB-26-01/FH-12-01 Pen and MOVs  
1-8801A and 1-8801B
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: FH-12-01
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1 \times 10^{-6}$
20. CLERP Estimate:  $1.5 \times 10^{-8}$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-12
2. Segment Functional ID: SIB-HL-AB0824
3. Segment Description: SI/Charging Pump B Discharge Line to Hot Legs, Between AB-88-23/AB-88-24 Pen and AB-88-24/AB-00-02E Pen in AB-88-24
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-88-24
7. Consequence Key: PST
8. Isolation: YES CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-13
2. Segment Functional ID: SIB-HL-AB0002E
3. Segment Description: SI/Charging Pump B Discharge Line to Hot Legs, Between AB-88-24/AB-00-02E Pen  
AB-00-02E/PAA-12-01 Pen, in AB-00-02E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: AB-00-02E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate: 2 1E-6
20. CLERP Estimate: 1.5E-8
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-14
2. Segment Functional ID: SIB-HL-8886
3. Segment Description: SI/Charging Pump B Discharge Line to Hot Legs Between AB-00-02E/PAA-12-01 Pen and MOV 1-8886
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3
6. Spatial Effects: PAA-12-01
7. Consequence Key: PST
8. Isolation: YES CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM



1. Consequence Segment ID: SI-C-15
2. Segment Functional ID: SI-XTIE-AB0001E
3. Segment Description: SI/Charging Pumps Discharge XTIE, Between AB-88-25/AB-00-01E Pen and AB-00-01E/AB-00-01 Pen in AB-00-01E
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3,4
6. Spatial Effects: AB-00-01E
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate: 2.1E-6
20. CLERP Estimate: 1.5E-8
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-16
2. Segment Functional ID: SI-XTIE-AB0001
3. Segment Description: SI/Charging Pumps Discharge XTIE, Between AB-00-01E/AB-00-01 Pen and AB-00-01/AB-88-19 Pen, and the two AB-00-01/AB-00-01E Pens
4. Configuration: Operating
5. Analyzed Break Size (Inches): 3,4
6. Spatial Effects: AB-00-01
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1E-6$
20. CLERP Estimate:  $1.5E-8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-17
2. Segment Functional ID: SI-SEAL AB8819
3. Segment Description: Charging-Seal Injection, Between AB-00-01/AB-88-19 Pen and AB-88-19/AB-36-16 Pen in AB-88-19
4. Configuration: Operating
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: AB-88-19
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SI-C-18
2. Segment Functional ID: SI-SEAL-AB3616
3. Segment Description: Charging-Seal Injection, Between AB-88-19/AB-36-16 Pen and Valves MV 1-8389 and MOV 1-8105
4. Configuration: Operating
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: AB-36-16
7. Consequence Key: PST
8. Isolation: YES: CVCS Suction MOVs
9. Time to Isolate: N/A
10. Initiating Event: PST - Loss of charging was modeled as a Primary System Transient.
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): CVCS
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): N/A
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.1\text{E-}6$
20. CLERP Estimate:  $1.5\text{E-}8$
21. Rank: MEDIUM

1. Consequence Segment ID: SIAC-A1
2. Segment Functional ID: ACC I
3. Segment Description: ACC I Line Between CV 1-8956A and 1-8948A
4. Configuration: Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: PLLO(CV) // ACC1
8. Isolation: CV: 1-8948A // NO
9. Time to Isolate: N/A
10. Initiating Event: PLLO(CV) // Assumed LOCA
11. Exposure Time: N/A // All Year
12. Disabled Trains (Direct Effects):  
O. None  
D. Injection ACC1 is disabled
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O. All  
D: Injection ACC2 and 3
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA Effects
19. CCDP Estimate: O: Potential LLO isolated by a closed check valve:  $3.82E-3 * 4.4E-03 = 1.7E-05$   
D: Loss of ACC1:  $2.1E-05$
20. CLERP Estimate: O:  $1.5E-07$  // D:  $1.5E-07$
21. Rank: MEDIUM

1. Consequence Segment ID: SIAC-A2
2. Segment Functional ID: ACC I CLA
3. Segment Description: ACC I Line, CV 1-8948A to CLA
4. Configuration: Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: LLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: LLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LLO
19. CCDP Estimate:  $3.8E-03$
20. CLERP Estimate:  $3.5E-05$
21. Rank: HIGH

1. Consequence Segment ID: SIAC-B1
2. Segment Functional ID: ACC 2
3. Segment Description: ACC 2 Line Between CV 1-8956B and 1-8948B
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: PLLO(CV) // ACC2
8. Isolation: CV: 1-8948B // NO
9. Time to Isolate: N/A
10. Initiating Event: PLLO(CV) // Assumed LOCA
11. Exposure Time: N/A // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection ACC2 is disabled
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection Acc1 and 3
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA Effects
19. CCDP Estimate: O: Potential LLO isolated by a closed check valve:  $3.8E-03 * 4.4E-03 = 1.7E-05$  // Loss of ACC2:  
2.1E-05
20. CLERP Estimate: O: 1.5E-07 // D 1.5E-07
21. Rank: MEDIUM

1. Consequence Segment ID: SIAC-B2
2. Segment Functional ID: ACC 2 CLA
3. Segment Description: ACC 2 Line, CV 1-8948B to CLB
4. Configuration: Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: LLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: LLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LLO
19. CCDP Estimate:  $3.8E-03$
20. CLERP Estimate:  $3.5E-05$
21. Rank: HIGH



1. Consequence Segment ID: SIAC-C1
2. Segment Functional ID: ACC 3
3. Segment Description: ACC 3 Line Between CV 1-8956C and 1-8948C
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: PLLO(CV) // ACC3
8. Isolation: CV: 1-8948C // NO
9. Time to Isolate: N/A
10. Initiating Event: PLLO(CV) // Assumed LOCA
11. Exposure Time: N/A // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D. Injection ACC3 is disabled
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O. All  
D. Injection ACC1 and 2
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA Effects
19. CCDP Estimate: O: Potential LLO isolated by a closed check valve:  $3.82 \times 10^{-3} * 4.4 \times 10^{-3} = 1.7 \times 10^{-5}$  // D. Loss of ACC3:  
 $2.1 \times 10^{-5}$
20. CLERP Estimate: O  $1.5 \times 10^{-7}$  // D.  $1.5 \times 10^{-7}$
21. Rank: MEDIUM

1. Consequence Segment ID: SIAC-C2
2. Segment Functional ID: ACC 3 CLA
3. Segment Description: ACC 3 Line, CV 1-8948C to CLC
4. Configuration: Operating
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: Containment
7. Consequence Key: LLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: LLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LLO
19. CCDP Estimate:  $3.8E-03$
20. CLERP Estimate:  $3.5E-05$
21. Rank: HIGH

1. Consequence Segment ID: SIHL-A1
2. Segment Functional ID: SI/RHR HLA ISO6"
3. Segment Description: SI/RHR Injection to HLA, CV 1-8988A to 1-8993A, 6" HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: PMLO(CV) // HLA
8. Isolation: CV: 1-8993A // NC
9. Time to Isolate: N/A
10. Initiating Event: PMLO(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to HLA (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to HLB and HLC (RHR and SI)
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential MLO isolated by a closed check valve:  $3.6E-3 * 4.4E-3 = 1.6E-5$  // D: Loss of HLA:  
<1E-6
20. CLERP Estimate: O:  $1.5E-7$  // D: <1E-7
21. Rank: MEDIUM

1. Consequence Segment ID: SIHL-A2
2. Segment Functional ID: SI/RHR HLA ISO2"
3. Segment Description: SI/RHR Injection to HLA, CV 1-8990A & 1-8992A to 2x6 Tee, 2" HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // HLA
8. Isolation: CV: 1-8993A // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) // Assumed LOCA
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to HL A (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to HLB and HLC (RHR and SI)
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential SLOC isolated by a closed check valve:  $3.42\text{E-}3 * 4.4\text{E-}3 = 1.5\text{E-}5$  // D: Loss of HLA:  
<1E-6
20. CLERP Estimate: O:  $1.5\text{E-}7$  // D <1E-7
21. Rank: MEDIUM

1. Consequence Segment ID: SIHL-A3
2. Segment Functional ID: SI/RHR HLA
3. Segment Description: SI/RHR Injection to HLA, CV 1-8993A to HLA
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate:  $3.6E-03$
20. CLERP Estimate:  $3.5E-05$
21. Rank: HIGH

1. Consequence Segment ID: SIHL-B1
2. Segment Functional ID: SI/RHR HLB ISO6"
3. Segment Description: SI/RHR Injection to HLB, CV 1-8988B to 1-8993B, 6" HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: PMLO(CV) // HLB
8. Isolation: CV: 1-8993B // NC
9. Time to Isolate: N/A
10. Initiating Event: PMLO(CV) / Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects): O: None  
D: Injection to HLB (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): O: All  
D: Injection to HLA and HLC (RHR and SI)
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential MLO isolated by a closed check valve:  $3.6E-3 * 4.4E-3 = 1.6E-5$  // D: Loss of HLB:  
<1E-6
20. CLERP Estimate: O:  $1.5E-7$  // D <1E-7
21. Rank: MEDIUM

1. Consequence Segment ID: SIHL-B2
2. Segment Functional ID: SI/RHR HLB ISO2"
3. Segment Description: SI/RHR Injection to HLB, CV 1-8990B & 1-8992B to 2x6 Tee, SI HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // HLB
8. Isolation: CV: 1-8993B // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) // Assumed LOCA
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to HLB (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to HLA and HLC (RHR and SI)
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential SLOC isolated by a closed check valve.  $3.42E-3 * 4 4E-3 = 1.5E-5$  // D. Loss HLB:  
<1E-6
20. CLERP Estimate: O. 1.5E-7 // D: <1E-7
21. Rank: MEDIUM

1. Consequence Segment ID: SIHL-B3
2. Segment Functional ID: SI/RHR HLB
3. Segment Description: SI/RHR Injection to HLB, CV 1-8993B to HLB
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate: 3.6E-03
20. CLERP Estimate: 3.5E-05
21. Rank: HIGH



1. Consequence Segment ID: SIHL-C1
2. Segment Functional ID: SI HLC ISO6"
3. Segment Description: SI Injection to HLC, CV 6X2 Reducer, 6" HDR to CV 1-8993C
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: PMLO(CV) // HLC
8. Isolation: CV. 1-8993C // NC
9. Time to Isolate: N/A
10. Initiating Event: PMLO(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects): O: None  
D: Injection to HLC (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): O: All  
D: Injection to HLA and HLB (RHR and SI)
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O. Potential MLO isolated by a closed check valve:  $3.6E-3 * 4.4E-3 = 1.6E-5$  // D: Loss of HLC =  $<1E-6$
20. CLERP Estimate: O.  $1.5E-7$  // D.  $<1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SIHL-C2
2. Segment Functional ID: SI-HLC ISO2"
3. Segment Description: SI Injection to HLC, CV 1-8990C & 1-8992C to 2x6 Reducer, 2 " HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // HLC
8. Isolation: CV: 1-8993C // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) // Assumed LOCA
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to HLC (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to HLA and HLB (RHR and SI)
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential SLOC isolated by a closed check valve:  $3.42\text{E-}3 * 4.4\text{E-}3 = 1.5\text{E-}5$  // D: Loss of HLC =  $<1\text{E-}6$
20. CLERP Estimate: O  $1.5\text{E-}7$  // D:  $<1\text{E-}7$
21. Rank: MEDIUM

1. Consequence Segment ID: SIHL-C3
2. Segment Functional ID: SI HLC
3. Segment Description: SI Injection to HLC, CV 1-8993C to HLC
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate:  $3.6E-03$
20. CLERP Estimate:  $3.5E-05$
21. Rank: HIGH

1. Consequence Segment ID: SIRH-A1
2. Segment Functional ID: RHR/SI CLA ISO6"
3. Segment Description: RHR Injection to CLA, CV 1-8973A to 1-8998A
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: PMLO(CV) // CLA
8. Isolation: CV: 1-8998A // NC
9. Time to Isolate: N/A
10. Initiating Event: PMLO(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection CLA disabled
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection CLB, CLA
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O. Potential MLO isolated by a closed check valve:  $3.6\text{E-}3 * 4.4\text{E-}3 = 1.6\text{E-}5$  // D. Loss of CLA:  
4.7E-5
20. CLERP Estimate: O 1.5E-7 // D. 5.4E-7
21. Rank: MEDIUM

1. Consequence Segment ID: SIRH-A2
2. Segment Functional ID: RHR/SI CLA
3. Segment Description: RHR/SI Injection to CLA, CV 1-8998A to CLA
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate: 3.6E-03
20. CLERP Estimate: 3.5E-05
21. Rank: HIGH

1. Consequence Segment ID: SIRH-AS11
2. Segment Functional ID: SIB/RHR CLA ISO2"
3. Segment Description: SIB/RHR Injection to CLA, CV 1-8995A to 2x6 Tee, SI HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // CLA
8. Isolation: CV: 1-8998A // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to CLA (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to CLB and CLC
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O Potential SLOC isolated by a closed check valve:  $3.42E-3 * 4.4E-3 = 1.5E-5$  // D: Loss of CLA:  
4.7E-5
20. CLERP Estimate: O:  $1.5E-7$  // D:  $5.4E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SIRH-ASI2
2. Segment Functional ID: SIA/RHR CLA ISO2"
3. Segment Description: SIA/RHR Injection to CLA, CV 1-8997A to 2x6 Tee, SI HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // CLA
8. Isolation: CV: 1-8998A // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to CLA (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to CLB and CLC
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O Potential SLOC isolated by a closed check valve:  $3.42E-3 * 4.4E-3 = 1.5E-5$  // D: Loss of CLA:  $4.7E-5$
20. CLERP Estimate: O:  $1.5E-7$  // D:  $5.4E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SIRH-B1
2. Segment Functional ID: RHR/SI CLB ISO6"
3. Segment Description: RHR/SI Injection to CLB, CV 1-8973B to 1-8998B
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: PMLO(CV) // CLB
8. Isolation: CV: 1-8998B // NC
9. Time to Isolate: N/A
10. Initiating Event: PMLO(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection CLB disabled
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection CLA, CLC
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential MLO isolated by a closed check valve:  $3.6E-3 * 4.4E-3 = 1.6E-5$  // D: Loss of CLB:  $4.7E-5$
20. CLERP Estimate: O:  $1.5E-7$  // D:  $5.4E-7$
21. Rank: MEDIUM



1. Consequence Segment ID: SIRH-B2
2. Segment Functional ID: RHR/SI CLB
3. Segment Description: RHR/SI Injection to CLB, CV 1-8998B to CLB
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate: 3.6E-03
20. CLERP Estimate: 3.5E-05
21. Rank: HIGH

1. Consequence Segment ID: SIRH-BSI1
2. Segment Functional ID: SI CLB ISO 2",CVCS A
3. Segment Description: SI Injection to CLB, CV 1-8995B to 2x6 Tee, SI HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // CLB
8. Isolation: CV: 1-8998B // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to CLB (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to CLA and CLC
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O. Potential SLOC, isolated by a closed check valve:  $3.42\text{E-}3 * 4.4\text{E-}3 = 1.5\text{E-}5$  // D: Loss of CLB  
4.7E-5
20. CLERP Estimate: O.  $1.5\text{E-}7$  // D:  $5.4\text{E-}7$
21. Rank: MEDIUM

1. Consequence Segment ID: SIRH-BSI2
2. Segment Functional ID: SIA/RHR CLB ISO2"
3. Segment Description: SI/RHR Injection to CLB, CV 1-8997B to 2x6 Tee, SI HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // CLB
8. Isolation: CV: 1-8998B // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D.-Injection to CLB (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O. All  
D. Injection to CLA and CLC
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O. Potential SLOC, isolated by a closed check valve:  $3.42 \times 10^{-3} * 4.4 \times 10^{-3} = 1.5 \times 10^{-5}$  // D: Loss of CLB  
4.7E-5
20. CLERP Estimate: O.  $1.5 \times 10^{-7}$  // D.  $5.4 \times 10^{-7}$
21. Rank: MEDIUM

1. Consequence Segment ID: SIRH-C1
2. Segment Functional ID: RHR/SI CLC ISO6"
3. Segment Description: RHR/SI Injection to CLC, CV 1-8973C to 1-8998C
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: PMLO(CV) // CLC
8. Isolation: CV: 1-8998C // NC
9. Time to Isolate: N/A
10. Initiating Event: PMLO(CV) // Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection CLC disabled
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection CLA, CLB
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential MLO isolated by a closed check valve:  $3.6E-3 * 4.4E-3 = 1.6E-5$  // D: Loss of CLC:  
4.7E-5
20. CLERP Estimate: O:  $1.5E-7$  //  $5.4E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SIRH-C2
2. Segment Functional ID: RHR/SI CLC
3. Segment Description: RHR/SI Injection to CLC, CV 1-8998C to CLC
4. Configuration: Operating
5. Analyzed Break Size (Inches): 6
6. Spatial Effects: Containment
7. Consequence Key: MLO
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: MLO
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): LOCA Effects
13. Disabled Trains (Indirect Effects): LOCA Effects
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): All
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: MLO
19. CCDP Estimate: 3.6E-03
20. CLERP Estimate: 3.5E-05
21. Rank: HIGH

1. Consequence Segment ID: SIRH-CSI1
2. Segment Functional ID: SIB/RHR CLC ISO2"
3. Segment Description: SIB/RHR Injection to CLC, CV 1-8995C to 2x6 Tee, SI HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // CLC
8. Isolation: CV: 1-8998C // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) / Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O. None  
D. Injection to CLC (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to CLA and CLB
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential SLOC, isolated by a closed check valve:  $3.42\text{E-}3 * 4.4\text{E-}3 = 1.5\text{E-}5$  // D: Loss of CLC:  $4.7\text{E-}5$
20. CLERP Estimate: O:  $1.5\text{E-}7$  // D:  $5.4\text{E-}7$
21. Rank: MEDIUM

1. Consequence Segment ID: SIRH-CS12
2. Segment Functional ID: SIA/RHR CLC ISO2"
3. Segment Description: SIA/RHR Injection to CLC, CV 1-8997C to 2x6 Tee, SI HDR
4. Configuration: Operating // Demand
5. Analyzed Break Size (Inches): 2
6. Spatial Effects: Containment
7. Consequence Key: PSLOC(CV) // CLC
8. Isolation: CV: 1-8998C // NC
9. Time to Isolate: N/A
10. Initiating Event: PSLOC(CV) / Assumed LOCA
11. Exposure Time: All Year // All Year
12. Disabled Trains (Direct Effects):  
O: None  
D: Injection to CLC (RHR and SI)
13. Disabled Trains (Indirect Effects): Break in Containment
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure):  
O: All  
D: Injection to CLA and CLB
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA effects
19. CCDP Estimate: O: Potential SLOC, isolated by a closed check valve:  $3.42E-3 * 4.4E-3 = 1.5E-5$  // D: Loss of CLC:  $4.7E-5$
20. CLERP Estimate: O:  $1.5E-7$  // D:  $5.4E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-01A
2. Segment Functional ID: SPA-SUCT1
3. Segment Description: RB A Spray Suction, Between MOV 3001A-SP and AB-97-02S/AB-74-17 Pen, MOV 3005A-SP
4. Configuration: Standby
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-97-02S
7. Consequence Key: RWST (RHR) - ISO
8. Isolation: YES. MOV 3001A-SP
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours) The time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$
20. CLERP Estimate:  $CLERP = LERF(\text{Loss of RWST}) * \text{Exposure Time} = 2.4E-4 * 2.7E-3 = 6.7E-7$
21. Rank: MEDIUM



1. Consequence Segment ID: SP-C-01A2
2. Segment Functional ID: SPA-SUMP
3. Segment Description: RB A Spray Sump Suction, Between MOV 3004A-SP and MOV 3005A-SP
4. Configuration: Demand
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-97-02S
7. Consequence Key: RHR/SUMP (ISO=GF)
8. Isolation: NO // NC: MOV 3004A-SP
9. Time to Isolate: Gravity flow from sump, could be less than 10 minutes, isolation is not credited.
10. Initiating Event: Assumed LOCA and Recirc
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): SP A Suction from Sump
13. Disabled Trains (Indirect Effects): Possible Flooding of RHR pumps, SP Pumps
14. Disabled Trains (ISO Success): SP A Sump Suction
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP B Recirc
17. Containment Isolation: Possible Containment Bypass
18. LERF Effects: Containment Bypass, if isolation fails
19. CCDP Estimate: ISO=F, Loss of RH, not tested piping. CCDP =  $1.1\text{E-}3$
20. CLERP Estimate:  $1.1\text{E-}3$
21. Rank: HIGH

1. Consequence Segment ID: SP-C-01B
2. Segment Functional ID: SPB-SUCT1
3. Segment Description: RB B Spray Suction, Between MOV 3001B-SP and AB-97-02S/AB-74-17 Pen, MOV 3005-SP
4. Configuration: Standby
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-97-02N
7. Consequence Key: RWST (RHR) - ISO
8. Isolation: YES MOV 3001B-SP
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time. } 1.2E-3 * 2.7E-3 = 3.4E-6$
20. CLERP Estimate:  $CLERP = LERF(\text{Loss of RWST}) * \text{Exposure Time: } 2.4E-4 * 2.7E-3 = 6.7E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-01B2
2. Segment Functional ID: SPB-SUMP
3. Segment Description: RB B Spray Sump Suction, Between MOV 3004B-SP and MOV 3005B-SP
4. Configuration: Demand
5. Analyzed Break Size (Inches): 12
6. Spatial Effects: AB-97-02N
7. Consequence Key: RHR/SUMP (ISO=GF)
8. Isolation: NO // NC: MOV 3004B-SP
9. Time to Isolate: Gravity flow from sump, could be less than 10 minutes, isolation is not credited.
10. Initiating Event: Assumed LOCA and Recirc
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): SP A Suction from Sump
13. Disabled Trains (Indirect Effects): Possible Flooding of RHR pumps, SP Pumps
14. Disabled Trains (ISO Success): SP A Sump Suction
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP B Recirc
17. Containment Isolation: Possible Containment Bypass
18. LERF Effects: Containment Bypass, if isolation fails
19. CCDP Estimate: ISO=F, Loss of RH, not tested piping: CCDP = 1.1E-3
20. CLERP Estimate: 1.1E-3
21. Rank: HIGH

1. Consequence Segment ID: SP-C-02A
2. Segment Functional ID: SPA-SUCT2
3. Segment Description: RB A Spray Suction, Between AB-97-02S/AB-74-17 Pen and RB Spray Pump  
XPP-38A-SP
4. Configuration: Standby
5. Analyzed Break Size (Inches): 10,12
6. Spatial Effects: AB-74-17
7. Consequence Key: RWST (RHR) - ISO
8. Isolation: YES: MOV 3001A-SP
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$
20. CLERP Estimate:  $CLERP = LERF(\text{Loss of RWST}) * \text{Exposure Time} = 2.4E-4 * 2.7E-3 = 6.7E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-02B
2. Segment Functional ID: SPB-SUCT2
3. Segment Description: RB B Spray Suction, Between AB-97-02N/AB-74-16 Pen and RB Spray Pump XPP-38B-SP
4. Configuration: Standby
5. Analyzed Break Size (Inches): 10,12
6. Spatial Effects: AB-74-16
7. Consequence Key: RWST (RHR) - ISO
8. Isolation: YES MOV 3001B-SP
9. Time to Isolate: N/A
10. Initiating Event: Possible LOCA
11. Exposure Time: 24 hours. The breaks in this line during standby can be detected by RWST low level alarms or different area sump alarms. Exposure time is equal to the time to detect the problem (1/2 the normal plant shift = 6 hours). The time before a controlled shutdown (LCO = 1 hour), plus the time in S/D to solve the problem (refill time). For isolable breaks, it was conservatively assumed that one day total is needed to solve the problem.
12. Disabled Trains (Direct Effects): RWST, All ECCS Trains
13. Disabled Trains (Indirect Effects): Flooding of RHR Pumps
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: LOCA
19. CCDP Estimate:  $CCDP = CDF(\text{Loss of RWST}) * \text{Exposure Time} = 1.2E-3 * 2.7E-3 = 3.4E-6$
20. CLERP Estimate:  $CLERP = LERF(\text{Loss of RWST}) * \text{Exposure Time} = 2.4E-4 * 2.7E-3 = 6.7E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-03A
2. Segment Functional ID: SPA-DISCH
3. Segment Description: RB A Spray Discharge, Between RB Spray Pump XPP-38A-SP and MV 3010A-SP, AB-74-17/AB-97-02S Pen
4. Configuration: Demand
5. Analyzed Break Size (Inches): 8,10
6. Spatial Effects: AB-74-17
7. Consequence Key: RHR/RWST (ISO=F) // SPA (ISO=S)
8. Isolation: NO // NC: MOV 3001A-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST. (approximately 2 hours to flood RHR pumps)
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): SP A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): SP A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: ISO = F, Isolation credited, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$   
ISO = S, Loss of SPA CCDP <  $1E-6$
20. CLERP Estimate:  $2.3E-8$  // <  $1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-03B
2. Segment Functional ID: SPB-DISCH
3. Segment Description: RB B Spray Discharge, Between RB Spray Pump XPP-38B-SP and MV 3010B-SP, AB-74-16/AB-97-02 Pen
4. Configuration: Demand
5. Analyzed Break Size (Inches): 8, 10
6. Spatial Effects: AB-74-16
7. Consequence Key: RHR/RWST (ISO=F) // SPB (ISO=S)
8. Isolation: NO // NC: MOV 3001B-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST. (approximately 2 hours to flood RHR pumps)
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): SP B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): SP B
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$   
ISO=S, Loss of SPB CCDP <  $1E-6$
20. CLERP Estimate:  $2.3E-8$  // <  $1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-03X1
2. Segment Functional ID: SP-XA
3. Segment Description: RB Spray XTie, Between MV 3010A-SP and AB-74-17/AB-74-16 Pen
4. Configuration: Demand\*
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-74-17
7. Consequence Key: ISO-Xtie
8. Isolation: ISOLATED
9. Time to Isolate: N/A. This is normally isolated piping. Demand will only occur if an Xtie is needed
10. Initiating Event: None
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): None
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): ALL
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: None
19. CCDP Estimate:  $< 1E-6$
20. CLERP Estimate:  $< 1E-7$
21. Rank: LOW



1. Consequence Segment ID: SP-C-03X2
2. Segment Functional ID: SP-XB
3. Segment Description: RB Spray XTie, Between MV 3010B-SP, MV 3011-SP and AB-74-16/AB-74-17 Pen
4. Configuration: Demand\*
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-74-16
7. Consequence Key: ISO-Xtie
8. Isolation: ISOLATED
9. Time to Isolate: N/A. This is normally isolated piping Demand will only occur if an Xtie is needed
10. Initiating Event: None
11. Exposure Time: All Year
12. Disabled Trains (Direct Effects): None
13. Disabled Trains (Indirect Effects): None
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): ALL
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: None
19. CCDP Estimate:  $< 1E-6$
20. CLERP Estimate:  $< 1E-7$
21. Rank: LOW

1. Consequence Segment ID: SP-C-04A
2. Segment Functional ID: SPA-AB9702S
3. Segment Description: RB A Spray Discharge Between AB-74-17/AB-97-02S Pen and AB-97-02S/AB-97-02 Pen in AB-97-02S
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-97-02S
7. Consequence Key: RHR/RWST (ISO=F) // SPA (ISO=S)
8. Isolation: NO // NC: MOV 3001A-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST. (approximately 2 hours to flood RHR pumps)
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): SP A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): SP A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$   
ISO=S, Loss of SPA CCDP <  $1E-6$
20. CLERP Estimate:  $2.3E-8$  // <  $1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-04B
2. Segment Functional ID: SPB-AB9702
3. Segment Description: RB B Spray Discharge Between AB-74-16/AB-97-02 Pen and AB-97-02/PAA-12-01 Pen in AB-97-02
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-97-02
7. Consequence Key: RHR/RWST (ISO=F) // SPB (ISO=S)
8. Isolation: NO // NC: MOV 3001B-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST. (approximately 2 hours to flood RHR pumps)
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): SP B
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): SP B
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP A
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$   
ISO=S, Loss of SPB CCDP <  $1E-6$
20. CLERP Estimate:  $2.3E-8$  // <  $1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-05A
2. Segment Functional ID: SPA-AB9702
3. Segment Description: RB A Spray Discharge Between AB-97-02S/AB-97-02 Pen and AB-97-02/AB-26-02 Pen in AB-97-02
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-97-02
7. Consequence Key: RHR/RWST (ISO=F) // SPA (ISO=S)
8. Isolation: NO // NC: MOV 3001A-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST. (approximately 2 hours to flood RHR pumps)
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): SP A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): SP A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$   
ISO=S, Loss of SPA CCDP <  $1E-6$
20. CLERP Estimate:  $2.3E-8$  // <  $1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-05B
2. Segment Functional ID: SPB-PAA1201
3. Segment Description: RB B Spray Discharge Between AB-97-02/PAA-12-01 Pen and PAA-12-01/PAA-36-01 Pen in PAA-12-01
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-12-01
7. Consequence Key: RWST (ISO=F) // SPB (ISO=S)
8. Isolation: NO // NC: MOV 3001B-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Train B of Reactor Building Spray
13. Disabled Trains (Indirect Effects): Possible Loss of RWST
14. Disabled Trains (ISO Success): Train B of Reactor Building Spray
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): All but SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (RWST Loss) \* Exposure Time \* Isolation Error:  $1.2\text{E-}3 * .25 * 1\text{E-}2 = 3\text{E-}6$ , ISO=S, Loss of SP B, CCDP  $< 1\text{E-}6$
20. CLERP Estimate:  $6\text{E-}7 // < 1\text{E-}7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-06A
2. Segment Functional ID: SPA-AB2602
3. Segment Description: RB A Spray Discharge Between AB-97-02/AB-26-02 Pen and AB-26-02/AB-36-01B Pen  
in AB-26-02
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-26-02
7. Consequence Key: RHR/RWST (ISO=F) // SPA (ISO=S)
8. Isolation: NO // NC: MOV 3001A-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST.  
(approximately 2 hours to flood RHR pumps)
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): SP A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): SP A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$   
ISO=S, Loss of SPA CCDP <  $1E-6$
20. CLERP Estimate:  $2.3E-8$  // <  $1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-06B
2. Segment Functional ID: SPB-PAA3601
3. Segment Description: RB B Spray Discharge Between PAA-12-01/PAA-36-01 and PAA-36-01/PAA-63-03 Pen in PAA-36-01
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-36-01
7. Consequence Key: RWST (ISO=F) // SPB (ISO=S)
8. Isolation: NO // YES: MOV 3001B-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Train B of Reactor Building Spray
13. Disabled Trains (Indirect Effects): Possible Loss of RWST
14. Disabled Trains (ISO Success): Train B of Reactor Building Spray
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): All but SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (RWST Loss) \* Exposure Time \* Isolation Error:  $1.2E-3 * .25 * 1E-2 = 3E-6$ , ISO=S, Loss of SP B, CCDP  $<1E-6$
20. CLERP Estimate:  $6E-7$  //  $<1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-07A
2. Segment Functional ID: SPA-AB3601B
3. Segment Description: RB A Spray Discharge Between AB-26-02/AB-36-01B Pen and AB-36-01B/PAA-36-01 Pen in AB-36-01B
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: AB-36-18
7. Consequence Key: RHR/RWST (ISO=F) // SPA (ISO=S)
8. Isolation: NO // NC: MOV 3001A-SP
9. Time to Isolate: Isolation was credited. Approximately one hour available before emptying half of the RWST. (approximately 2 hours to flood RHR pumps)
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): SP A
13. Disabled Trains (Indirect Effects): Flooding of RHR System and a possible loss of RWST
14. Disabled Trains (ISO Success): SP A
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard for LOCA Events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (Loss of RHR) \* Isolation Failure:  $2.7E-4 * 1E-2 = 2.7E-6$   
ISO=S, Loss of SPA CCDP <  $1E-6$
20. CLERP Estimate:  $2.3E-8$  // <  $1E-7$
21. Rank: MEDIUM



1. Consequence Segment ID: SP-C-08A
2. Segment Functional ID: SPA-PAA3601
3. Segment Description: RB A Spray Discharge Between AB-36-01B/PAA-36-01 Pen and PAA-36-01/PAA-63-03 Pen in PAA-36-01
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-36-01
7. Consequence Key: RWST (ISO=F) // SPA (ISO=S)
8. Isolation: NO // YES: MOV 3001A-SP
9. Time to Isolate: Isolation was credited Approximately one hour available before emptying half of the RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Train A of Reactor Building Spray
13. Disabled Trains (Indirect Effects): Possible loss of RWST
14. Disabled Trains (ISO Success): Train A of Reactor Building Spray
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): All but SPA
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (RWST Loss) \* Exposure Time \* Isolation Failure:  $1.2\text{E-}3 * .25 * 1\text{E-}2 = 3\text{E-}6$ , ISO=S, Loss SPA = CCDP  $<1\text{E-}6$
20. CLERP Estimate:  $6\text{E-}7 // <1\text{E-}7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-09A
2. Segment Functional ID: SPA-DS-3003A
3. Segment Description: RB A Spray Discharge Between PAA-36-01/PAA-63-03 Pen and MOV 3003A-SP
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-63-03
7. Consequence Key: RWST (ISO=F) // SPA (ISO=S)
8. Isolation: NO // YES: MOV 3003A-SP
9. Time to Isolate: Isolation was credited Approximately one hour available before emptying half of the RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Train A of Reactor Building Spray
13. Disabled Trains (Indirect Effects): Possible loss of RWST
14. Disabled Trains (ISO Success): Train A of Reactor Building Spray
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): All but SPA
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (RWST Loss) \* Exposure Time \* Isolation Error:  $1.2E-3 * .25 * 1E-2 = 3E-6$ , ISO=S, Loss SPA, CCDP  $<1E-6$
20. CLERP Estimate:  $6E-7$  //  $<1E-7$
21. Rank: MEDIUM

1. Consequence Segment ID: SP-C-09B
2. Segment Functional ID: SPB-DS-3003B
3. Segment Description: RB B Spray Discharge Between PAA-36-01/PAA-63-03 Pen and MOV 3003B-SP
4. Configuration: Demand
5. Analyzed Break Size (Inches): 10
6. Spatial Effects: PAA-63-03
7. Consequence Key: RWST (ISO=F) // SPB (ISO=S)
8. Isolation: NO // YES: MOV 3003B-SP
9. Time to Isolate: Isolation credited before RWST is lost. Approximately one hour available before emptying half of the RWST
10. Initiating Event: Assumed LOCA
11. Exposure Time: Tested Quarterly
12. Disabled Trains (Direct Effects): Train B of Reactor Building Spray
13. Disabled Trains (Indirect Effects): Possible Loss of RWST
14. Disabled Trains (ISO Success): Train B of Reactor Building Spray
15. Available Trains (ISO Failure): None
16. Available Trains (ISO Success): All but SP B
17. Containment Isolation: Not Affected
18. LERF Effects: Standard LOCA events
19. CCDP Estimate: ISO=F, Isolation credited, CCDP = CDF (RWST Loss) \* Exposure Time \* Isolation Error:  $1.2\text{E-}3 * .25 * 1\text{E-}2 = 3\text{E-}6$ , ISO=S, Loss of SP B, CCDP  $< 1\text{E-}6$
20. CLERP Estimate:  $6\text{E-}7 // < 1\text{E-}7$
21. Rank: MEDIUM

1. Consequence Segment ID: SW-C-01A
2. Segment Functional ID: SWA-PAA6303
3. Segment Description: Service Water Cooling, Between MOV 3106A-SW, 3110A-SW and Containment Penetration 304
4. Configuration: Demand
5. Analyzed Break Size (Inches): 12, 16
6. Spatial Effects: PAA-63-03
7. Consequence Key: FLD2 (See Assumption 24)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: FLD2
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): SW A
13. Disabled Trains (Indirect Effects): SW A
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): SW B
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.4E-05$
20. CLERP Estimate:  $1.7E-07$
21. Rank: MEDIUM

1. Consequence Segment ID: SW-C-01B
2. Segment Functional ID: SWB-FH6301
3. Segment Description: Service Water Cooling, Between MOV 3106B-SW, 3116B-SW and Containment Penetration 403
4. Configuration: Demand
5. Analyzed Break Size (Inches): 12, 16
6. Spatial Effects: FH-63-01
7. Consequence Key: FLD3 (See Assumption 24)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: FLD 3
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): SW A
13. Disabled Trains (Indirect Effects): SW A
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): SW B
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate: 2.9E-06
20. CLERP Estimate: 1.9E-08
21. Rank: MEDIUM

1. Consequence Segment ID: SW-C-02A
2. Segment Functional ID: SWA-CONT
3. Segment Description: Service Water Cooling, Between Containment Penetration 304 and CV 3137A-SW
4. Configuration: Demand
5. Analyzed Break Size (Inches): 16
6. Spatial Effects: Containment
7. Consequence Key: FLD2 (See Assumption 24)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: FLD2
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): SW A
13. Disabled Trains (Indirect Effects): SW A
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): SW B
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.4E-05$
20. CLERP Estimate:  $1.7E-07$
21. Rank: MEDIUM

1. Consequence Segment ID: SW-C-02B
2. Segment Functional ID: SWB-CONT
3. Segment Description: Service Water Cooling, Between Containment Penetration 403 and CV 3137B-SW
4. Configuration: Demand
5. Analyzed Break Size (Inches): 16
6. Spatial Effects: Containment
7. Consequence Key: FLD3 (See Assumption 24)
8. Isolation: NO
9. Time to Isolate: N/A
10. Initiating Event: FLD 3
11. Exposure Time: N/A
12. Disabled Trains (Direct Effects): SW A
13. Disabled Trains (Indirect Effects): SW A
14. Disabled Trains (ISO Success): N/A
15. Available Trains (ISO Failure): SW B
16. Available Trains (ISO Success): N/A
17. Containment Isolation: Not Affected
18. LERF Effects: Transient
19. CCDP Estimate:  $2.9\text{E-}06$
20. CLERP Estimate:  $1.9\text{E-}08$
21. Rank: MEDIUM

1. Consequence Segment ID: SHUTDOWN A
2. Segment Functional ID: Various
3. Segment Description: Various
4. Configuration: Shutdown
5. Analyzed Break Size (Inches):
6. Spatial Effects: Various
7. Consequence Key: SHUTDOWN A
8. Isolation: MOVs : 1-8701A and 1-8702A

In order to prevent a LOCA outside the containment, during a shutdown operation, either one of the isolation valves needs to close. In order to prevent boiling, the operator needs to recognize the problem, isolate the break and establish a primary makeup source. Multiple means of detecting the problem will be available: low RCS level and high temperatures, area sump alarms, and radiation monitors. It is assumed that the operator has an error probability of  $1E-02$  for early problem detection and isolation of the break. If this isolation fails, later in the event, operators are assumed to have another opportunity to isolate and establish core cooling. This late isolation is credited at  $1E-03$ . Total operator failure to isolate is estimated to be  $1E-05$

9. Time to Isolate: Estimate time for isolation, to prevent a LOCA outside Containment, is approximately one hour. This is based on an estimated time to drain the RCS to the hot legs, and subsequent time to boil
10. Initiating Event: LOCA or Loss of Shutdown Cooling (if break is isolated)
11. Exposure Time: Demand 1/yr, Exposure times: 0.1 yr
12. Disabled Trains (Direct Effects): Train A Shutdown Cooling
13. Disabled Trains (Indirect Effects): Various
14. Disabled Trains (ISO Success): Train A RHR (Shutdown Cooling)
15. Available Trains (ISO Failure): If isolation fails, and we have a LOCA outside containment (containment bypass), no credit was given for a primary makeup.
16. Available Trains (ISO Success): ISO Success would result in a loss of Train A RHR. There are two cases considered: S/D Start: At least one RHR and two steam generators should be available for decay heat removal.  
  
S/D Operation: During the time when S/Gs are not available, and the refueling cavity is not full, only one train of RHR would be available given loss of the other train due to isolation. We consider this to be approximately 10% of the S/D time.
17. Containment Isolation: Containment Bypass, if the break is not isolated.
18. LERF Effects: Possible Containment Bypass
19. CCDP Estimate: S/D Start  
ISO=S CCDP [2 Trains for DHR] =  $1E-04$   
ISO=F CCDP [Isolation Failure] =  $1E-05$   
S/D Operation:  
ISO=S: CCDP [Exposure Time]\*[1 train of DHR] =  $0.1*0.1*1E-2=1E-4$   
ISO=F: CCDP [Isolation Failure] =  $1E-5$
20. CLERP Estimate:  $1E-5//1E-5$
21. Rank: MEDIUM
1. Consequence Segment ID: SHUTDOWN B
2. Segment Functional ID: Various



3. Segment Description: Various

4. Configuration: Shutdown

5. Analyzed Break Size (Inches):

6. Spatial Effects: Various

7. Consequence Key: SHUTDOWN B

8. Isolation: MOVs : 1-8701B and 1-8702B

In order to prevent a LOCA outside the containment, during a shutdown operation, either one of the isolation valves needs to close. In order to prevent boiling, the operator needs to recognize the problem, isolate the break and establish a primary makeup source. Multiple means of detecting the problem will be available: low RCS level and high temperatures, area sump alarms, and radiation monitors. It is assumed that the operator has an error probability of  $1E-02$  for early problem detection and isolation of the break. If this isolation fails, later in the event, operators are assumed to have another opportunity to isolate and establish core cooling. This late isolation is credited at  $1E-03$ . Total operator failure to isolate is estimated to be  $1E-05$ .

9. Time to Isolate: Estimate time for isolation, to prevent a LOCA outside Containment, is approximately one hour. This is based on an estimated time to drain the RCS to the hot legs, and subsequent time to boil

10. Initiating Event: LOCA or Loss of Shutdown Cooling (if break is isolated)

11. Exposure Time: Demand 1/yr, Exposure times: 0.1 yr

12. Disabled Trains (Direct Effects): Train B Shutdown Cooling

13. Disabled Trains (Indirect Effects): Various

14. Disabled Trains (ISO Success): Train B RHR (Shutdown Cooling)

15. Available Trains (ISO Failure): If isolation fails, and we have a LOCA outside containment (containment bypass), no credit was given for a primary makeup

16. Available Trains (ISO Success): ISO Success would result in a loss of Train B RHR. There are two cases considered: S/D Start: At least one RHR and two steam generators should be available for decay heat removal.

S/D Operation: During the time when S/Gs are not available, and the refueling cavity is not full, only one train of RHR would be available given loss of the other train due to isolation. We consider this to be approximately 10% of the S/D time.

17. Containment Isolation: Containment Bypass, if the break is not isolated.

18. LERF Effects: Possible Containment Bypass

19. CCDP Estimate: S/D Start:

ISO=S CCDP [2 Trains for DHR] =  $1E-04$

ISO=F CCDP [Isolation Failure] =  $1E-05$

S/D Operation:

ISO=S: CCDP [Exposure Time] \* [1 train of DHR] =  $0.1 * 0.1 * 1E-2 = 1E-4$

ISO=F: CCDP [Isolation Failure] =  $1E-5$

20. CLERP Estimate:  $1E-5 // 1E-5$

21. Rank: MEDIUM

1. Consequence Segment ID: SHUTDOWN
2. Segment Functional ID: Various
3. Segment Description: Various
4. Configuration: Shutdown
5. Analyzed Break Size (Inches):
6. Spatial Effects: Various
7. Consequence Key: SHUTDOWN
8. Isolation: MOVs : RHR Train A - 1-8701A, 1-8702A and RHR Train B - 1-8701B, 1-8702B

In order to prevent a LOCA outside the containment, during a shutdown operation, either one of the isolation valves in both RHR Trains needs to close. In order to prevent boiling, the operator needs to recognize the problem, isolate the break and establish a primary makeup source. Multiple means of detecting the problem will be available: low RCS level and high temperatures, area sump alarms, and radiation monitors. It is assumed that the operator has an error probability of  $1E-02$  for early problem detection and isolation of the break. If this isolation fails, later in the event, operators are assumed to have another opportunity to isolate and establish core cooling. This late isolation is credited at  $1E-03$ . Total operator failure to-isolate is estimated to be  $1E-05$ .

9. Time to Isolate: Estimate time for isolation, to prevent a LOCA outside Containment, is approximately one hour. This is based on an estimated time to drain the RCS to the hot legs, and subsequent time to boil
10. Initiating Event: LOCA or Loss of Shutdown Cooling (if break is isolated)
11. Exposure Time: Demand 1/yr, Exposure times: 0.1 yr
12. Disabled Trains (Direct Effects): Shutdown Cooling
13. Disabled Trains (Indirect Effects): Various
14. Disabled Trains (ISO Success): Train A and B RHR (Shutdown Cooling)
15. Available Trains (ISO Failure): If isolation fails, and we have a LOCA outside containment (containment bypass), no credit was given for a primary makeup.
16. Available Trains (ISO Success): ISO Success would result in a loss of Trains A and B RHR. There are two cases considered S/D Start: At least two steam generators should be available for decay heat removal. One RCS boration flowpath for primary makeup is available.  
S/D Operation: During the time when S/Gs are not available, and the refueling cavity is not full, only one train of DHR would be available given loss of RHR due to isolation. One RCS boration flowpath for primary makeup is available. We consider this to be approximately 10% of the S/D time.
17. Containment Isolation: Containment Bypass, if the break is not isolated.
18. LERF Effects: Possible Containment Bypass
19. CCDP Estimate: S/D Start:  
ISO=S CCDP [2 Train for DHR] =  $1E-04$   
ISO=F CCDP [Isolation Failure] =  $1E-05$   
S/D Operation:  
ISO=S: CCDP [Exposure Time]\*[1 train of DHR] =  $0.1*0.1*1E-2=1E-4$   
ISO=F: CCDP [Isolation Failure] =  $1E-5$
20. CLERP Estimate:  $1E-5//1E-5$
21. Rank: MEDIUM

1. Consequence Segment ID: SHUTDOWN\* A

2. Segment Functional ID:

3. Segment Description: Various

4. Configuration: Shutdown

5. Analyzed Break Size (Inches): 12

6. Spatial Effects: Containment

7. Consequence Key: SHUTDOWN\* A

8. Isolation: MOVS 1-8701A and 1-8702A

In order to prevent a LOCA, during a shutdown operation, either one of the isolation valves in both RHR Trains needs to close. In order to prevent boiling, the operator needs to recognize the problem, isolate the break and establish a primary makeup source. Multiple means of detecting the problem will be available: low RCS level and high temperatures, containment sump level and radiation monitors. It is assumed that the operator has an error probability of  $1E-02$  for detection and isolation of the break.

9. Time to Isolate: Not critical, primary makeup is available, break is inside containment

10. Initiating Event: SD Start

11. Exposure Time: Shutdown demand: 1/year, Exposure time: 0.1 year

12. Disabled Trains (Direct Effects): Train A Shutdown Cooling

13. Disabled Trains (Indirect Effects): Break is inside Containment

14. Disabled Trains (ISO Success): Loss of train A of Shutdown Cooling (RHR)

15. Available Trains (ISO Failure): Isolation failure would result in a LOCA in Containment. At least one train of makeup would be available.

16. Available Trains (ISO Success): ISO Success would result in a loss of Train A RHR. There are two cases considered:

S/D Start: At least one RHR and two steam generators should be available for decay heat removal.

S/D Operation: During the time when S/Gs are not available, and the refueling cavity is not full, only one train of RHR would be available given loss of the other train due to isolation. We consider this to be approximately 10% of the S/D time.

17. Containment Isolation: Not affected

18. LERF Effects: None

19. CCDP Estimate: S/D Start:

ISO=S CCDP [2 Trains for DHR] =  $1E-04$

ISO=F CCDP [Isolation Failure] \* [1 Train of Makeup] =  $1E-04$

S/D Operation:

ISO=S. CCDP [Exposure Time]\*[1 Train of DHR] =  $0.1*0.1*1E-2=1E-4$

ISO=F: CCDP [Isolation Failure] \* [1 Train of Makeup] =  $1E-4$

20. CLERP Estimate:  $1E-5$  //  $1E-5$

21. Rank: MEDIUM

1. Consequence Segment ID: SHUTDOWN\* B

2. Segment Functional ID:

3. Segment Description: Various

4. Configuration: Shutdown

5. Analyzed Break Size (Inches): 12

6. Spatial Effects: Containment

7. Consequence Key: SHUTDOWN\* B

8. Isolation: MOVS 1-8701B and 1-8702B

In order to prevent a LOCA, during a shutdown operation, either one of the isolation valves in both RHR Trains needs to close. In order to prevent boiling, the operator needs to recognize the problem, isolate the break and establish a primary makeup source. Multiple means of detecting the problem will be available: low RCS level and high temperatures, containment sump level and radiation monitors. It is assumed that the operator has an error probability of  $1E-02$  for problem detection and isolation of the break.

9. Time to Isolate: Not critical, primary makeup is available, break is inside containment

10. Initiating Event: SD Start

11. Exposure Time: Shutdown demand: 1/year, Exposure time: 0.1 year

12. Disabled Trains (Direct Effects): Train B Shutdown Cooling

13. Disabled Trains (Indirect Effects): Break is inside Containment

14. Disabled Trains (ISO Success): Loss of train B of Shutdown Cooling (RHR)

15. Available Trains (ISO Failure): Isolation failure would result in a LOCA in Containment. At least one train of makeup will be available.

16. Available Trains (ISO Success): ISO Success would result in a loss of Train A RHR. There are two cases considered: S/D Start: At least one RHR and two steam generators should be available for decay heat removal.

S/D Operation: During the time when S/Gs are not available, and the refueling cavity is not full, only one train of RHR would be available given loss of the other train due to isolation. We consider this to be approximately 10% of the S/D time.

17. Containment Isolation: Not affected

18. LERF Effects: None

19. CCDP Estimate: S/D Start:

ISO=S CCDP [2 Trains for DHR] =  $1E-4$

ISO=F CCDP [Isolation Failure] \* [1 Train of Makeup] =  $1E-4$

S/D Operation:

ISO=S: CCDP [Exposure Time]\*[1 train of DHR] =  $0.1*0.1*1E-2=1E-4$

ISO=F: CCDP [Isolation Failure] \* [1 Train of Makeup] =  $1E-4$

20. CLERP Estimate:  $1E-5/1E-5$

21. Rank: MEDIUM

**1. Consequence Segment ID: SHUTDOWN\*****2. Segment Functional ID:****3. Segment Description:** Various portions of the RHR System**4. Configuration:** Shutdown**5. Analyzed Break Size (Inches):** 12**6. Spatial Effects:** Containment**7. Consequence Key:** SHUTDOWN\***8. Isolation:** MOVs : RHR Train A - 1-8701A, 1-8702A and RHR Train B - 1-8701B, 1-8702B

In order to prevent a LOCA, during a shutdown operation, either one of the isolation valves in both RHR Trains needs to close. In order to prevent boiling, the operator needs to recognize the problem, isolate the break and establish a primary makeup source. Multiple means of detecting the problem will be available: low RCS level and high temperatures, containment sump level and radiation monitors. It is assumed that the operator has an error probability of  $1E-02$  for problem detection and isolation of the break.

**9. Time to Isolate:** Not critical, primary makeup is available, break is inside containment**10. Initiating Event:** SD Start**11. Exposure Time:** Shutdown demand: 1/year, Exposure time: 0.1 year**12. Disabled Trains (Direct Effects):** Train A and B Shutdown Cooling**13. Disabled Trains (Indirect Effects):** Break is inside Containment**14. Disabled Trains (ISO Success):** Loss of train A and B of Shutdown Cooling (RHR)**15. Available Trains (ISO Failure):** Isolation failure would result in a LOCA in Containment. At least one train of makeup would be available.**16. Available Trains (ISO Success):** ISO Success would result in a loss of Train A RHR. There are two cases considered: S/D Start: At least two steam generators should be available for decay heat removal.

S/D Operation. During the time when S/Gs are not available, and the refueling cavity is not full, only one train of DHR would be available given loss of RHR due to isolation. We consider this to be approximately 10% of the S/D time.

**17. Containment Isolation:** Not affected**18. LERF Effects:** None**19. CCDP Estimate:** S/D Start.ISO=S CCDP [2 Trains for DHR] =  $1E-04$ ISO=F CCDP [Isolation Failure] \* [1 Train of Makeup] =  $1E-04$ S/D Operation:ISO=S: CCDP [Exposure Time] \* [1 Train of Primary Makeup] =  $0.1 * 0.1 * 1E-2 = 1E-4$ ISO=F: CCDP [Isolation Failure] \* [1 Train of Makeup] =  $1E-4$ **20. CLERP Estimate:**  $1E-5 // 1E-5$ **21. Rank:** MEDIUM