Cover Sheet

Table 1 - System/Structure Information, Revision 3

System/Structure Information provides a brief description and functional requirements of each system and structure being screened for "Important to License Renewal" status. The descriptions and functional requirements are used for screening purposes and to identify conceptual system/structure boundaries. System/Structure Information was developed in accordance with Procedure LCM-12, "System Level ITLR Screening," Revision 2 as modified per TPR 93-007.

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Reference(s)
CCNPP, Updated Final Safety Analysis Report, Baltimore Gas and Electric Co., Rev. 11 Sec. 1.0, Figs. 1-2,1-30 Sec. 1.2.5, Pgs.1-4 Sec. 3.1, Pgs 3.1-1,3.1-2 Sec. 3.2, Pg.3.2-2 Sec. 3.2.2, Pg. 3.2-1 Sec. 3.2.3.1, Pgs.3.2-1,3.2-2 Sec. 3.2.3.5, Pg.3.2-4 Sec. 3.3, Pgs.3.3-7,3.3-8 Sec. 3.3.4, Pgs.3.3-10 thru 3.3-12 Sec. 4.1.2, Pg.4-3 Sec. 5.0, App. 5-A, Pgs 5A-3,5A-4,5A-12,5A-18 Sec. 5.1.7, Pg.5-65 Sec. 5.6.1, Pgs.5-90,5-91 Sec. 5.6.2, Pgs.5-93,5-94 Sec. 5.6.3, Pgs.5-94,5-95 Sec. 5.6.4, Pg.5-95 Sec. 6.3.1, Pgs.6-4 thru 6-7 Sec. 6.3.2, Pgs.6-8 thru 6-12 Sec. 6.4.1, Pg.6-21 Sec. 6.4.2, Pg.6-21 Sec. 6.5.1, Pg.6-32 Sec. 6.5.2, Pg.6-32 Sec. 6.5.3, Pg.6-33 Sec. 6.6.1, Pg.6-39 Sec. 6.6.2, Pgs.6-39,6-40 Sec. 6.6.3, Pg.6-40 Sec. 6.7.1, Pg.6-43 Sec. 6.7.2, Pg.6-43 Sec. 6.7.3, Pg.6-44 Sec 6.8.2.1, Pgs.6-48 Sec. 6.8.2.2, Pgs. 6-48,6-49 Sec. 6.8.2.3, Pgs. 6-49 Sec. 7.2.1, Pg.7-2 Sec. 7.2.2, Pgs.7-2,7-3 Sec. 7.3, Pgs.7-21 thru 7-26 Sec. 7.4.1, Pgs.7-39,7-40 Sec. 7.5.2, Pgs.7-60,7-61 Sec. 7.5.4, Pgs.7-67,7-68 Sec. 7.5.5, Pg.7-68 Sec. 7.8.2, Pgs.7-97 thru 7-99 Sec. 8.1, Pg.8-1, Fig.8-1 Sec. 8.2, Pgs.8-3,8-4,8-5 Sec. 8.3.1, Pg.8-7 Sec. 8.3.1.2, Pg.8-7 Sec. 8.3.2.1, Pg.8-8 Sec. 8.3.2.2, Pg.8-8

Reference(s)
Sec. 8.3.3, Pgs.8-9,8-10 Sec. 8.3.5.1, Pg.8-11 Sec. 8.3.5.2, Pgs.8-11,8-12 Sec. 8.3.6.1, Pg.8-14 Sec. 8.3.6.2, Pgs.8-14,8-15 Sec. 8.3.7.1, Pg.8-15 Sec. 8.3.7.2, Pg.8-15 Sec. 8.4.1.1, Pg.8-15 Sec. 8.4.1.2, Pgs.8-16, 8-17 Sec. 9.1.1, Pg.9-1 Sec. 9.1.2.1, Pgs.9-1, 9-2 Sec. 9.1.3.1, Pgs.9-6 thru 9-15 Sec. 9.3.1, Pg.9-22 Sec. 9.3.2, Pgs.9-22,9-23 Sec. 9.3.3, Pg.9-23 Sec. 9.4.1, Pg.9-25 thru 9-27 Sec. 9.4.2, Pg.9-27 Sec. 9.5.1, Pg.9-31 Sec. 9.5.2.1, Pg.9-31 Sec. 9.5.2.2, Pg.9-32 Sec. 9.5.2.3, Pg.9-32,9-33 Sec. 9.6.1, Pg.9-46 Sec. 9.6.2, Pgs.9-46,9-47,9-48 Sec. 9.6.2.5, Pgs.9-47,9-48 Sec. 9.7.2, Pgs.9-50 thru 9-53 Sec. 9.7.3, Pgs. 9-54 thru 9-57 Sec. 9.8.2.2, Pgs.9-58,9-59,9-61 Sec. 9.8.2.3, Pgs.9-61,9-62 Sec. 9.9.1, Pg.9-67 Sec. 9.9.2.1, Pgs.9-67 thru 9-69 Sec. 9.10.1, Pg.9-76 Sec. 9.10.2, Pg.9-76 Sec. 10.1, Pgs.10-1 thru 10-5 Sec. 10.2.2, Pg.10-5,10-6 Sec. 10.3.1, Pg.10-7 Sec. 10.3.2, Pg.10-8 Sec. 10.4, Pg.10-9, Figs.10-6,10-6A,10-6B,10-7A Sec. 10.5.2.1, Pg.10-10 Sec. 10.5.2.2, Pg.10-10 Sec. 11.1.2.1.2, Pgs.11-2 thru 11-5 Sec. 11.1.2.1.3, Pg.11-6 Sec. 11.1.2.1.4, Pgs.11-7 thru 11-9 Sec. 11.1.2.2.2, Pgs.11-9,11-10 Sec. 11.1.2.3.1, Pgs.11-12 Sec. 11.1.2.3.2, Pgs.11-12,11-13 Sec. 11.2.2.5, Pg.11-17 Sec. 11.2.3.1, Pg.11-17 Sec. 11.2.3.2, Pgs.11-18,11-21 Sec. 11.2.3.3, Pgs.11-21,11-22

Reference(s)
LCM Program TPR 93-006 (Recommended Resolution)
LCM Program TPR 92-148 (Recommended Resolution)
LCM Program TPR 92-132 (Recommended Resolution)
LCM Program TPR 92-110 (Recommended Resolution)
LCM Program TPR 91-197 (Recommended Resolution)
LCM Program TPR 91-175 (Recommended Resolution)
LCM Program TPR 91-134 (Interim Disposition)
LCM Program TPR 92-035 (Resolved)
LCM Program TPR 91-164 (Resolved)
LCM Program TPR 91-147 (Resolved)
LCM Program TPR 91-069 (Resolved)
LCM Program TPR 91-021 (Resolved)
LCM Program TPR 91-014 (Resolved)
LCM Program TPR 91-001 (Resolved)
CE LTR BGE CCSO-90-C45
CE LTR BGE CCSO-90-C72
CE LTR BGE CCSO-90-E69
CE LTR BGE CCSO-91-B75
CE LTR BGE CCSO-91-591
CE LTR BGE CCSO-91-608
CE LTR BGE CCSO-91-669
CE LTR BGE CCSO-91-670
CE LTR BGE CCSO-91-781
LCM Program PIR 012 (TPR 91-197)
LCM Program PIR 019 (TPR 91-197)
Salt Water System ITLR Component Level Screening Results Rev.1
SD No.1, Rev.1/83, Per Transmittal Ltr. 90-08, Pgs.1-4, 13, 14
SD No.5, Rev.1, 12/85, Per Transmittal Ltr. 90-09, Pgs.1-6
SD No.6, Rev.2, 6/89, Per Transmittal Ltr. 90-09, Pgs.1-5
SD No.7, Rev.2, 11/85, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,2,3,6
SD No.9, Rev.5/83, Per Transmittal Ltr. 91-05, Pgs.1-4
SD No.10, Rev.7/83, Per Transmittal Ltr. 91-01, Pgs.1,3,4,8-11
SD No.11, Rev.4/89, Per Transmittal Ltr. dated 3/27/90*, Pg.1
SD No.12, Rev.2, 5/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-4
SD No.13, Rev.1, 3/88, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,5,34,35,36
SD No.14A, Rev.1, 3/90, Per Transmittal Ltr. 90-03, Pg.1
SD No.14B, Rev.2, 5/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-6
SD No.14C, Rev.6/90, Per Transmittal Ltr. 90-13, Pgs.2,4
SD No.14D, Rev.1, 3/90, Per Transmittal Ltr. 90-03, Pgs.1-4
SD No.15, Rev.3, 3/90, Per Transmittal Ltr. 90-03, Pgs.2,4-6, 12,14
SD No.16A, Rev.10/83, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-5,7-9
SD No.19, Rev.1/90, Per Transmittal Ltr. dated 3/27/90*, Pgs.2 thru 7
SD No.20, Rev.1, 3/88, Per Transmittal Ltr. dated 3/27/90*, Pg.1
SD No.21A, Rev.0, 4/90, Per Transmittal Ltr. 90-04, Pgs.1-21

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SD No.24A, Rev.1, 1/85, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-8
SD No.24B, Rev.1, 1/85, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-8
SD No.25, Rev.3/84, Per Transmittal Ltr. dated 3/27/90*,Pgs.1,2,3
SD No.26, Rev.1, 6/88, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,2,4,5
SD No.28, Rev.10/81, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-4
SD No.29, Rev.2, 6/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.2,7,8
SD No.30, Rev.4/84, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,2
SD No.31, Rev.6/84, Per Transmittal Ltr. 91-02, Pgs.1-4
SD No.32, Rev.3, 9/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.2,5
SD No.34, Rev.12/90, Per Transmittal Ltr. 91-05, Pgs.1,2,4,6,7
SD No.35, Rev.2, 6/89, Per Transmittal Ltr. 91-06, Pgs.1,2,3
SD No.36, Rev.10/82, Per Transmittal Ltr. dated 3/27/90*, Pg.1
SD No.38, Rev.1, 7/88, Per Transmittal Ltr. 91-08, Pg.1,2
SD No.39, Rev.2, 9/88, Per Transmittal Ltr. 91-06, Pg.1
SD No.41, Rev.2, 4/89, Per Transmittal Ltr. 91-06, Pgs.1-8
SD No.42, Rev.3, 7/90, Per Transmittal Ltr. 90-09 Pgs.25,26, Figs.42-5
SD No.43A, Rev. 11/84, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-12
SD No.43B, Rev.2, 4/90, Per Transmittal Ltr. 90-07, Pgs.1-9,12, 16,17,20,25,42,43,44
SD No.45, Rev.1/92, Per Transmittal Ltr. 92-01, Pgs.1-7,9,12,13, 16,17,21,22,27,59,60,Fig.45-1
SD No.46, Rev.4/80, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-4
SD No.47, Rev.10/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,3-9
SD No.48, Rev.1, 2/91,Per Transmittal Letter 91-03, Pgs.1-4,7
SD No.49, Rev.12/84, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-6
SD No.49A, Rev. 6/90, Per Transmittal Ltr. 90-07, Pgs.1-6
SD No.50, Rev.1, 9/90, Per Transmittal Ltr 90-09, Pgs.1-18
SD No.51, Rev.1, 4/90, Per Transmittal Ltr 90-11, Pgs.1, 2
SD No.53, Rev.1, 6/88, Per Transmittal Ltr. 90-12, Pgs.1-5,19, 20, App. A
SD No.54, Rev.2, 3/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,2, App.A
SD No.56, Rev.1, 9/85, Per Transmittal Ltr. dated 3/27/90*, Pg.1
SD No.59, Rev.5, 9/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,2
SD No.60, Rev.3, 8/89, Per Transmittal Ltr. dated 3/27/90*, Pgs.1-4
SD No.62, Rev.3, 6/90, Per Transmittal Ltr. 90-09, Pgs.1,2
SD No.63, Rev.3, 6/88, Per Transmittal Ltr. 90-02, Pgs.1,2,85,86
SD No.70, Rev.11/90, Per Transmittal Ltr. 90-11, Pgs.1,3
SD No.71, Rev.6/88, Per Transmittal Ltr. dated 3/27/90*, Pgs.1,2, 3,4,5,10,11

Reference(s)
SD No.72, Rev.1, Per Transmittal Ltr. 91-08, Pgs.1-4 SD No.75, Rev.6/84, Per Transmittal Ltr. dated 3/27/90*,Pgs.1,4, 5,15,16 Note: The review of the CLB/D for all systems is not required for this revision per TPR 92-081 (Recommended Resolution)but was performed for systems 024 and 030. *This date represents the date of the transmittal letter which forwarded the controlled copy of the System Description Manuals. The latest revision of these system descriptions predates the transmittal letter.

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TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Switchyard (500 KV) and Switchyard DC	1&2	1	The 500 KV switchyard system is designed to be the interconnection point between the power plant and the Baltimore Gas & Electric Company power grid system. Electrical power from the power grid system to the switchyard is supplied by two physically independent transmission lines designed and located to minimize the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. Two physically independent circuits from the switchyard to the onsite electrical distribution system are also provided. The switchyard is designed with: two battery systems, two air supply systems, two trip coils per breaker, two protective relay schemes, and two auxiliary AC supplies from plant emergency buses. The switchyard is arranged in a breaker-and-one-half arrangement and has two bays consisting of three breakers each and one bay of two breakers with two main buses (the 500 KV red bus and 500 KV black bus) and connections to both of the generator's main power transformers, the two plant service transformers and two 500 KV lines to the Baltimore Gas & Electric Company power system. Each line has sufficient capacity to carry the entire output of both turbine generators. The switchyard 500 KV power circuit breakers, the circuits from the switchyard to the generator main power transformers and from the switchyard to the plant service transformers are provided with disconnect switches or isolating links to permit isolating any power circuit breaker or any circuit from the switchyard while allowing the 500 KV buses to remain tied together. The 500 KV lines to the BG&E power system consist of two physically independent lines designed and located to minimize the likelihood of their simultaneous failure under operating and postulated accident and environmental conditions. Zone relaying is provided for the circuit from the switchyard to the generator main power transformers and for the two switchyard main buses. The main bus zones include the circuit from the switchyard to the plant service transformers.	UFSAR Section 8.2 Pgs., 8-3, 8-4, 8-5	1. To function reliably under all conditions of power plant operations. 2. To furnish service startup power to the power plant. 3. To isolate trouble in the power system grid under power system normal and abnormal conditions. 4. To provide a switching network for power transmission between the Calvert Cliffs nuclear power plant (Units 1 and 2 main generators via their unit transformers) and the Baltimore Gas and Electric Company (BG&E) power grid system. 5. To provide power to the 500 KV red bus and the 500 KV black bus, which supply power to the Calvert Cliffs plant auxiliary loads.	UFSAR Section 8.2 Pg. 8-3
Electrical 125 Volt DC Distribution	1&2	2	The electrical 125V DC distribution system for the plant is divided into four independent and isolated channels. Each channel consists of one battery, one battery monitor, two battery chargers, one DC bus, and multiple DC unit control panels. Power to the DC bus and DC unit control panels is supplied by the station batteries and/or the battery chargers. A reserve 125VDC system for the plant is completely independent and isolated from all four separation groups, yet is capable of replacing any of the 125VDC batteries. This system consists of one battery, one battery charger, one battery monitor, and the associated DC switching equipment. The 125VDC distribution system interfaces with the 120V vital instrument AC system and 480V bus system.	UFSAR Section 8.3.5.2 Pgs. 8-11, 8-12 SD No. 54 Pgs. 1, 2, App. A	1. The 125 VDC is designed to furnish continuous power to the plant vital instrumentation and control systems regardless of auxiliary electrical system condition.	UFSAR Section 8.3.5.1 Pg. 8-11

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TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Electrical 13KV Transformers and Buses	1&2	3	The Electrical 13KV Transformers and Buses system for the plant consists of two plant service transformers (P-13000-1 and P-13000-2) and five service buses. The capacities of the two plant service transformers and associated switchgear and cable are such that either one of the transformers can supply the total auxiliary load of the plant. Each reactor coolant pump is attached to a separate 13,800 volt bus which is fed from either of the two plant service transformers.	UFSAR Section 8.3.1.2 Pg. 8-7	1. To function reliably and supply power to plant auxiliaries during normal operation and under accident conditions. 2. To supply power to the 13-4KV service transformers.	UFSAR Section 8.3.1 Pg. 8-7
Electrical 4KV Transformers and Buses	1&2	4	The Electrical 4KV Transformers and Buses system consists of six unit 13-4KV service transformers, twelve 4160 volt buses, the motor feeder circuits, and 480 volt loadcenter feeder circuits. The 4160 volt buses assemblies with drawout air circuit breakers. Relay protection, ground connections, and structural safeguards are provided to assure adequate personnel protection and to prevent or limit equipment damage during system short circuits. This equipment is designed to function properly while subject to design basis earthquake accelerations. Two of the 4160 volt buses for each unit supply power to engineered safety features. There are six 4160 volt buses per unit, two of which supply power to the engineered safety features. The engineered safety features electrical system incorporates the two-channel concept wherein independent electrical controls and power systems supply redundant 4160 volt engineered safety features. The 4160 volt engineered safety features electrical system meets the single failure criterion defined in Section 4.2 of IEEE-279, and is designed as a Class 1E system. Each of the two buses per unit can be supplied from separate Class I rooms. Feeder cables from the emergency diesel generators and from engineered safety features equipment are also located within Class I structures, and separation is maintained between the feeder cables of the two buses.	UFSAR Section 8.3.2.2 Pg. 8-8	1. To function reliably and supply power during normal operation and under accident conditions. 2. To supply power to the 4160 volt auxiliary loads from the 13,800 volt system through the six unit service transformers. 3. To supply to the engineered safety features.	UFSAR Section 8.3.2.1 Pg. 8-8
Electrical 480V Transformers and Buses	1&2	5	The Electrical 480V Transformers and Buses system is designed as a Class 1E system to function reliably and supply power during normal operation and accident conditions. The 480V system provides power 4160V system through the 4160/480V unit service transformers. The 480V transformers feed the 480V unit load centers and 480V MCCs which in turn supply power to the engineered safety features. The 480V bus system interfaces with the 13-4KV service transformers and 4KV bus system, the 480V MCC system, the 125VDC distribution system and the various engineered safety features. The 480V bus system includes the 4160/480 unit service transformers, 4160/480 screen wash transformers, 480V load centers, 480V buses, and the associated switchgear, controls, and alarms.	UFSAR Section 8.3.3 Pgs. 8-9, 8-10 SD No. 53 Pgs., 1-5 Appendix A	1. To function properly and supply 480VAC electrical power during normal operation to the various plant auxiliary loads. 2. To supply 480VAC electrical power during accident conditions to the engineered safety features.	UFSAR Section 8.3.3 Pgs. 8-9 SD No. 53 Pg. 1

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TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Electrical 480V Motor Control Centers	1&2	6	The Electrical 480V Motor Control Centers system is designed as a Class 1E system. The 480V MCC consists of 36 motor control centers which power various equipment required for normal operations and redundant engineered safety features required during accident conditions. The 480V MCC system interfaces with the 125VDC distribution system, vital instrument AC system, 480V buses system and various redundant engineered safety features. The 480V MCC system consists of the motor control centers and the associated equipment.	UFSAR Section 8.3.3 Pgs. 8-9, 8-10 SD No. 53 Pgs.1,2,19,20 Appendix A	1. To distribute reliable electrical power to various plant auxiliary loads during normal operation. 2. To distribute reliable electrical power to the redundant engineered safety features equipment during emergency conditions.	UFSAR Section 8.3.3 Pg. 8-9 SD No. 53 Pg. 1
Electrical 13KV Unit Buses	1&2	7	The electrical 13KV unit buses system refers to the reactor coolant pump buses. The 13KV unit buses transfer electrical power from the 13KV service transformers and buses system to the reactor coolant pumps. The 13KV unit buses system consists of the associated buses and breakers.	UFSAR Section 8.3.1 Pg. 8-7 SD No. 51 Pg. 1-2	1. To function reliably and supply power to the reactor coolant pumps during normal operations and under accident conditions.	UFSAR Section 8.3.1 Pg. 8-7
Well and Pretreated Water	Both	8	The well and pretreated water system consists of three ground wells, three submersible pumps, two activated carbon filters, two pretreated water storage tanks, and two pretreated water booster pumps. The well and pretreated water system interfaces with the domestic water system, demineralized water system, the warehouse and switchyard contol house domestic water system, fire protection system and plant heating system.	SD No. 45 Pgs. 1 thru 7	1. To supply pretreated water to the demineralized water system for plant makeup. 2. To supply pretreated water to the fire protection system. 3. To supply pretreated water to the domestic water system. 4. To supply pretreated water to the warehouse and switchyard control house domestic water system.	SD No. 45 Pg. 1, 3
Intake Structure	Both	9	The intake structure is a Class 1 structure situated to the east of the main plant and is primarily a reinforced concrete structure, founded on a slab varying in elevation from -26'0" to -14'3". It houses 12 circulating water pumps supplying water from the Chesapeake Bay to the condensers, located under the turbine generators, and to 6 salt water pumps. To protect the condensers from foreign bodies present in the Bay water, trash racks and travelling water screens are provided. Vertical guides are provided down the sides of each intake channel to receive stop-logs. Running the full length of the structure is a gantry crane having a lifting capacity of 35 tons. Fish collection and holding facilities were added to allow environmental aquatic studies. The screen well enclosure is part of the intake structure.	UFSAR Section 5.6.2 Pgs. 5-93, 5-94 UFSAR Section 1.0 Figs. 1-2, 1-30	1. To provide housing and protection for the circulating water system, salt water system, and others contained within. 2. To provide high collection holding capabilities. 3. To permit environmental aquatic studies. 4. To protect the condensers from foreign bodies present in the Chesapeake Bay water. 5. To maintain its integrity and protect safety related equipment under various design loads including a design basis earthquake and missiles.	UFSAR Section 5.6.2 Pgs. 5-93, 5-94 UFSAR Section 1.0 Figs. 1-2, 1-30

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Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Service Water Cooling	1&2	11	The service water cooling system is a closed system and uses plant demineralized water with a corrosion inhibitor added. The system removes heat from turbine plant components, blowdown recovery heat exchangers, containment cooling units, spent fuel pool cooling heat exchangers, and emergency diesel generator heat exchangers. The system has been divided into two subsystems in the auxiliary building to meet single failure criteria. Each subsystem has a head tank to maintain the subsystem's pressure and to allow for thermal expansion. Demineralized water makeup to the head tank is automatically controlled by level controllers. The service water additive tank is connected to both subsystems to allow chemical addition and control to prevent corrosion.	UFSAR Section 9.5.2.2, Pg. 9-32	1. To remove heat from the plant's containment cooling units, spent fuel pool, and emergency diesel generator heat exchangers and transfer that heat to the salt water system. 2. To serve as an intermediate barrier between various auxiliary systems and the salt water system. 3. To provide additional heat removal capacity during a LOCA.	UFSAR Section 9.5.1 Pg. 9-31 SD No. 39, Pg. 1
Salt Water Cooling	1&2	12	The salt water cooling system provides cooling water for various plant systems. The system components are rated for maximum duty requirements during normal and shutdown cooling operations. The salt water system consists of two subsystems per unit. Each subsystem consists of a saltwater pump, a component cooling heat exchanger, a service water heat exchanger, ECCS pump room air cooler, and associated piping, valves, instrumentation and controls. A third saltwater pump is provided along with a sodium hypochlorite system. The saltwater system is designed such that one salt water pump has sufficient head and capacity to provide cooling water for service water and component cooling water systems, as required by 10CFR Part 50, Appendix A. Each salt water subsystem provides cooling water to a service water heat exchanger, a component cooling water heat exchanger and an ECCS pump room air cooler. Seal water for the circulating water pumps is supplied by both subsystems.	UFSAR Section 9.5.2.3 Pg. 9-33 SD No. 38 Pg.2 Salt Water System ITLR Component Level Screening Results	1. To remove heat from the component cooling heat exchangers, the service water heat exchangers, and the emergency core cooling system (ECCS) pump room air coolers, and the circulating water pump seals during normal and shutdown cooling operations and transfer heat to the Chesapeake Bay. 2. To provide heat removal from the ECCS pump room air coolers which provide long term cooling for the safety injection and containment spray pumps during a loss-of-coolant incident.	UFSAR Section 9.5.1 Pg. 9-31 SD No. 38 Pg.1 Salt Water System ITLR Component Level Screening Results
Fire Protection	1&2	13	The fire protection system is designed in accordance with NFPA codes, American Nuclear Insurers and NRC requirements, and applicable Maryland State codes. The fire protection system is made up of several subsystems. These subsystems are: deluge water spray, deluge preaction sprinklers, automatic sprinklers, indoor and outdoor hose stations, halon 1301, foam, and portable extinguishers. The deluge water spray systems protect the steam generator feed pumps and hydrogen seal oil units. The deluge preaction sprinkler systems protect the diesel generator rooms and manually actuated systems protect the turbine generator bearings. The automatic sprinkler systems protect all areas/rooms containing	UFSAR Section 9.9.2.1 Pgs. 9-67 thru 9-69 UFSAR Section 1.0 Fig. 1-2 SD No. 42 Pg. 25,26 Figs. 42-5	1. To protect plant equipment, structures and personnel from fire or explosion. 2. To assure safe shutdown of the plant.	UFSAR Section 9.9.1 Pg. 9-67

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TABLE 1

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Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Fire Protection (continued)	1&2	13	n. ndant trains of safe shutdown equipment located within the Auxiliary Building, lube oil room, warehouses service building, paint shop, baling and drumming room, turbine building under the operating floor and intermediate floor, and the auxiliary boiler room. Dry pipe automatic sprinkler systems protect the equipment hatch access buildings. The sprinkler system also includes the sprinkler tank, which may be referred to as the pressurized tank, located in a butler building on the north side of warehouse #1. Hose stations protect the Auxiliary Building, Intake Structure, Containment Structures, Turbine Building, and Service Building. The halon 1301 system protects the cable spreading room and contiguous cable chargers, switchgear and electrical equipment rooms inside computer cabinets, under the computer floor, and within the cable spreading rooms cabinets. The foam system is manually released to protect the outdoor fuel storage tanks. The foam storage tank is located outside. Portable fire extinguishers are provided at convenient and readily accessible locations throughout the plant. The extinguishing agents utilized are pressurized water, AFFF, 1211, CO2 and dry chemicals as appropriate for the service requirements of the area. Fire protection water is supplied by two full capacity fire pumps. One is electrically driven, the other is steam driven. A jockey pump is provided to maintain fire protection water system full and pressurized. A makeup pump takes suction from service water and discharges to fire protection to meet intermittent water usage requirements other than fire protection. Fire protection supply is provided by the pretreated water storage tanks. All systems are annunciated in the control room.			
Transformer Deluge	1&2	14	The transformer deluge system is a deluge water spray system for protecting the main transformers, service transformers, plant service transformers and intake structure service transformers. The systems are automatically actuated and are annunciated in the control room. The transformer deluge system interfaces with the fire protection system and the annunciation system.	UFSAR Section 9.9.2.1 Pgs. 9-67,9-68	1. To protect the transformers from fire or explosion. 2. To assure safe shutdown of the plant.	UFSAR Section 9.9.1 Pg. 9-67
Component Cooling	1&2	15	Component cooling is a closed system consisting of 3 motor-driven component cooling circulating pumps, 2 component cooling heat exchangers, a head tank, associated valves, piping, instrumentation, and controls.	UFSAR Section 9.5.2.1 Pg. 9-31	1. To remove heat from the plant's various auxiliary systems. 2. To serve as an intermediate barrier between the various auxiliary systems and the salt water system.	UFSAR Section 9.5.1 Pg. 9-31

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Component Cooling (continued)	1&2	15	The items cooled by component cooling water include: • Letdown heat exchanger • Shutdown cooling heat exchangers • Miscellaneous waste processing heat exchanger • Waste gas compressor aftercoolers and jacket coolers • CEDM coolers • Reactor coolant pump mechanical seals and lube oil coolers • Low pressure safety injection seals and coolers • High pressure safety injection seals and coolers • Containment penetration cooling • Reactor support cooling • Steam generator lateral support cooling • Coolant waste evaporators • Reactor coolant and miscellaneous waste sampling system • Degasifier vacuum pump cooler • Post-accident sample system • HC drain tank heat exchanger.		3. To provide heat removal from the reactor plant during cooldown below 300°F (shutdown cooling). 4. To provide heat removal from the reactor plant for maintenance of a constant reactor coolant system temperature during cold shutdown. 5. To provide heat removal from the reactor plant for long-term cooling following a loss-of-coolant incident. 6. To provide cooling to containment spray in the event of a loss-of-coolant incident. 7. To provide spent fuel cooling in the event that the complete core is removed from the reactor vessel and temporarily stored in the spent fuel pool.	
Electrical 250 VDC	1&2	16	The electrical 250 VDC system for the plant consists of one motor control center, two battery chargers, and two batteries. Only one battery is connected to the motor control center. The backup battery is used when the first battery is out-of-service. The battery chargers are sized such that in combination they are capable of supplying the continuous load of the largest connected motor. Each battery charger is fed from a separate engineered safety features 480 volt load center (one from Unit 1 and one from Unit 2). No loads connected to the 250 VDC bus are related to the functioning of engineered safety features. The emergency 250 VDC system includes the following major components: • Emergency 250 V batteries 13 and 23 • Emergency 250 V battery chargers • Emergency 250 VDC bus 13 • Battery monitor • Disconnect switches.	UFSAR Section 8.3.6.2, Pgs. 8-14,8-15 SD No. 56 Pg. 1	1. To supply power to the various plant backup lube oil and seal oil emergency pumps in case of loss of auxiliary AC power or failure of the normal AC pumps.	UFSAR Section 8.3.6.1 Pg. 8-14
Instrument AC	1&2	17	The 208-120 volt instrument ac system for each unit is divided into two panelboard sections. Each section is supplied by a single three-phase transformer connected to an engineered safety features motor control center. In case of loss of normal auxiliary power, the transformers will automatically be energized by the emergency diesel generators. A manually operated bus tie switch has been provided between the two sections. The 208-120V Insturment AC system interfaces with the 125V DC distribution system, the 480V MCC system, the plant computer system, the plant communications system and the low voltage DC control power system.	UFSAR Section 8.3.7.2 Pg. 8-15	1. To furnish power to all plant instruments other than those supplied from the DC and the vital AC systems. 2. To provide a backup supply of power for the computer and the preferred source of power for the public address system.	UFSAR Section 8.3.7.1 Pg. 8-15

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Vital Instrument AC	1&2	18	The 120V Vital Instrument AC system provided for each unit has four separate distribution panelboards which provide power for the four reactor protection system channels and the four engineered safety features and auxiliary feedwater actuation systems channels. Each panelboard is supplied by an inverter which is fed by the 125V DC System. Each of the four DC buses supplies two unique DC/AC inverters (8 inverters total). As a backup, each 120V AC panelboard can be manually switched from the inverter to one of two 120V AC buses fed from an engineered safety feature motor control center though a 480/120V transformer. The 120V Vital Instrument AC system interfaces with the 125V DC distribution system, the 480V MCC system, the reactor protection system, and the engineered safety features and the auxiliary feedwater actuation systems.	UFSAR Section 8.3.5.2 Pgs. 8-11, 8-12 SD No. 54 Pgs. 1, 2, App. A	1. To furnish continuous power to the plant vital instrumentation and control systems regardless of auxiliary electrical system conditions. 2. To provide power to the reactor protective system, engineered safety feature actuation system and auxiliary feedwater actuation system.	UFSAR Section 8.3.5.1 Pg.8-11
Compressed Air	1&2	19	The compressed air system consists of two subsystems: the instrument air system and the plant air system. These subsystems provide the air for pneumatic equipment and other normal plant operations and maintenance requirements. The instrument air subsystem includes two full-capacity non-lubricated compressors for instrument air, each having a separate inlet filter aftercooler and moisture separator. The instrument air compressors then discharge to a single header which is connected to two air receivers. Both air receivers discharge to a compressed air outlet header which supplies instrument air to the air dryers and filter assembly. The compressed air header then divides into branch lines supplying the pretreatment and tank storage area, the intake structure, the service building, the water treatment area, the turbine building, the containment structure, and the auxiliary building. An emergency backup tie from the plant air header has been provided which automatically supplies air to the instrument air system if the pressure to the instrument filter and dryer assembly falls below a preset point. In addition, local controls are provided to prevent plant air use when air is required for instrumentation and controls via the plant air header. The emergency backup source is provided by the salt water compressors, which are considered to be part of the compressed air system. The plant air subsystem consists of one full-capacity plant air compressor with an inlet filter, aftercooler, and moisture separator that discharges to the plant air receiver. The receiver outlet header is connected to the prefilter assembly, which is followed by an outlet header branching into two separate air headers, one to the instrument air dryer and filter assembly, and the other to the plant air pretreatment and storage tank area, the intake structure, the service building, the water treatement area, the turbine building, the containment structure, and the auxiliary building. A system cross-tie between Unit 1 and Unit 2 has been provided for the plant air headers. A major load on the plant air system is the containment breathing air system. Additionally, each plant air subsystem has a permanent connection for the installation of a portable air compressor.	UFSAR Sections 9.10.1, 9.10.2 Pg. 9-76 SD No. 41 Pg. 1-8	1. To provide a reliable supply of dry, oil free air for pneumatic instruments and controls, pneumatically opersted containment isolation valves and other air operated valves. 2. To provide the necessary air requirements for normal plant operation and maintenance. 3. To provide breathing air for personnel in containment.	UFSAR Sections 9.10.1 Pg. 9-76 UFSAR Section 9.10.2 Pg. 9-76 SD No. 41 Pg. 1-8

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Data Acquisition Computer	1&2	20	The data acquisition computer system is referred to as the data acquisition system. It serves as an interface between the plant parameter sensors and the plant computer system and annunciation system. The data acquistion system comprises multiple remote multiplexes (RMX) located throughout the plant which monitor signals, digitize and convert the signals into optical signals and transmit the signals via fiber optic data highways through two different channels to two controller/communication processors (C/CP). The C/CPs control the operation of the RMXs and make the database available in engineering units of up to six host computer systems. Each processor can update the database of each host computer each second. There is only one host computer at CCNPP.	CCSO-90-C45	1. To collect various critical plant process parameters, digitize, conver, and transmit the plant sensor data to the plant computer and annunciation system.	CCSO-90-C45
Domestic Water	Both	21	The domestic water system consists of two domestic water booster pumps, two pump control panels, two variable speed drivers, two hot water storage tanks, two hot water circulation pumps, three heat exchangers, mixer control valves, balancing cocks and other associated valves, piping and control devices. The domestic water system interfaces with the well and pretreated water system, plant heating system and the chilled water system.	SD No. 45 Pgs. 6,7	1. To provide sufficient water to both units for domestic water use. 2. To provide hot and cold potable water to various locations throughout the plant for use in restrooms, showers, drinking fountains, eye wash stations, washing machines, dishwashers, and service sinks. 3. Supply unchlorinated water to the plant heating system and chilled water system.	SD No. 45 Pg. 1
Makeup Demineralizer	1&2	22	The makeup demineralizer system receives water from the Well and Pretreated Water system, purifies the pretreated water, and supplies the pure water to the Demin. Water and Condensate Storage system. The system is grouped into the following areas: • the Arro\- ~ed Industrial Water, Inc. trailers (Vendor Equipment) • the makeup demineralized water ion exchange trains ("out of service") • the chemical system; and • the waste neutralizing system The Arrowhead trailers contain the DEOX System, the FLEXRO System, and the Jumbo Polishing System. The makeup demineralized water subsystem includes six ion exchangers, a degasifier, two degasifier vacuum pumps, and two degasifier booster pumps. The chemical subsystem consists of two trains (one for acid, one for caustic). Each train consists of a storage tank, transfer pump, day tank, and two injection pumps. The waste neutralizing subsystem consists of two holding tanks.	SD No. 45 Pgs.4,5,13,17,22,27 LCM Program PIR-019	1. To purify an adequate supply of treated water of reactor coolant purity for makeup and use throughout the plant. 2. To supply regeneration chemicals to resin beds when they are depleted. 3. To neutralize and dispose of the wastes produced from the regeneration process.	SD No. 45 Pgs.1,12,13

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Diesel Oil	Both	23	The diesel oil system supplies fuel to the emergency diesel generators, auxiliary boilers and the diesel-driven fire pumps. The major components of the system are: • Two fuel oil storage tanks • One fuel oil unloading pump • One auxiliary boiler supply header • Two diesel generator supply headers. The diesel oil system has interfaces with three plant systems: • Emergency diesel generators - fuel oil day tanks are filled by the diesel oil system • Auxiliary boilers - auxiliary boiler fuel oil pumps are supplied by the diesel oil system • Fire protection - fire pump fuel oil tank is filled by the diesel oil system.	UFSAR Section 8.4.1.2 Pgs. 8-16, 8-17 SD No. 75 Pgs. 1, 4, 5	1. To provide a reliable supply of diesel oil to the emergency diesel generators, the auxiliary boilers, and the diesel-driven fire pump.	SD No. 75 Pg. 1 SD No. 48 Pg. 7
Emergency Diesel Generator	Both	24	The emergency diesel generator system consists of three 4160 volt, 3-phase, 60 cycle diesel generators which are independent sets of emergency power sources which supply power to essential auxiliaries if the normal auxiliary power supply is not available. The system consists of the following six major subsystems: • Diesel engine • Governor • Engine auxiliaries • Generator • Electrical connection • Engine, generator, and breaker controls. The EDG interface with the service water system, 13-4KV Service Transformer and 4KV Buses system, 125VDC system, engineered safety features actuation system, 480V motor control center system, diesel oil system, vital instrument AC, and auxiliary building and radwaste building H & V.	UFSAR Section 8.4.1.2 Pg. 8-16 SD No.48 Pgs. 1 thru 4	1. To provide a dependable onsite power source capable of automatically starting and supplying the essential loads necessary to safely shut down the plant and maintain it in a safe shutdown condition under all conditions including accidents.	UFSAR Section 8.4.1.1 Pg. 8-15
Access Control Area Ventilation	Both	25	The access control area ventilation system is located on the 69 foot level, partly in the auxiliary building and partly in the turbine building. The system consists of H&V-11 and HVAC-14 which ventilate the portion of the access control area in the auxiliary building and H&V-13 and HVAC-13 which ventilate the portion of the access control area in the turbine building. The H&V units include a damper, throwaway filters, heating coil, blower and motor. The HVAC units include a filter, heater element, face and bypass damper, cooling coil, compressor-condenser unit, and fan.	SD No. 43B Pgs. 42-44 UFSAR Section 9.8.2.3 Pg. 9-62	1. To provide air conditioned or heated air to auxiliary building laboratories, locker areas, offices, and the computer room.	SD No. 43B Pgs. 42, 43

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Annunciation	1&2	26	The Annunciation system includes the annunciator logic, the electro devices ground eliminator system, the annunciator window cabinets, the interconnection cables and connectors, and the associated cabinets.	CCSO-91-669	1. To provide the operators with audible and visual warnings if limiting conditions are approached. 2. To provide the operators with audible and visual warnings of off-normal conditions exist for any system.	CCSO-91-669
Auxiliary Steam Generators	1&2	27	The auxiliary steam generators system is two boilers sized to satisfy the plant heating plus condensate startup deaeration steam requirements and supply the necessary steam for the operation of the steam generator auxiliary feed pumps and the steam generator feed pumps. The auxiliary steam generators system includes three auxiliary boiler feed pumps, a deaerator, fuel oil atomization system, and two Babcock and Wilcox type FM package boilers. The auxiliary steam generators system interfaces with the auxiliary steam system, diesel oil system, condensate system, makeup demineralizer water system, compressed air system, instrument AC system, and electrical 480V MCC system.	UFSAR Section 10.4 Pg. 10-9 Figs. 10-6, 10-6A, 10-6B SD No. 47 Pgs. 3,4,8,9	1. To produce steam for the auxiliary steam system to distribute.	UFSAR Section 10.4 Pg. 10-9 SD No. 47 Pg. 1
Auxiliary Steam	1&2	28	The auxiliary steam system distributes the steam produced by the auxiliary steam generators system. The auxiliary steam system consists of the auxiliary steam header and various valves, instrumentation and controls. The auxiliary steam system interfaces with the auxiliary feedwater system, feedwater system, gland steam system, condensate system, liquid waste system, plant heating system, domestic water system and the auxiliary steam generators system.	UFSAR Section 10.4 Pg. 10-9 Figs. 10-6, 10-6A, 10-7A SD No. 47 Pgs. 1,3,4,5,6,7	1. To provide a standby source of steam to operate the vital components: auxiliary steam generator feed pumps, main steam generator feed pumps, turbine steam seal systems, main condenser hotwell sparging, reactor coolant waste evaporators, plant heating system hot water generators, boiler deaerator sparger, atomization and "e" coils and south service building hotel loads. 2. To provide a source of steam for component and system testing. 3. To provide a source of steam for heating various plant areas.	UFSAR Section 10.4 Pg. 10-9 SD No. 47 Pg. 1
Plant Heating	Both	29	The plant heating system consists of two main hot water pumps, two main hot water generators, a main circulating loop, an air removal system, and various branch loops and booster pumps. The system is of the closed system design and has provision for automatic makeup from the pretreated water systems. The system is set up for balanced flow conditions, thus maintaining steady flow conditions even if unit heaters or branch loops are isolated.	SD No. 70, Pg. 3	1. To provide heating to numerous unit heaters located throughout the plant. 2. To provide heating to the pretreated water storage tanks. 3. To provide heating to the refueling water storage tanks.	SD No. 70 Pg. 1
Control Room HVAC	Both	30	The control room HVAC system includes the control room HVAC, cable spreading room ventilation, the technical support center HVAC, the battery rooms ventilation, and the smoke removal system.	UFSAR Section 9.8.2.3 Pg. 9-61	1. To provide tempered air to limit the temperature under which the reactor protective system and engineered safety feature actuation system (ESFAS) instrumentation must function.	SD No. 43B Pg. 3

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Control Room HVAC (continued)	Both	30	The control room (elevation 45'-0") and the cable spreading room (elevation 27'-0") are incorporated into a single year-round air-conditioning system serving both Units 1 and 2. Air handling and refrigeration equipment are redundant. The control room and cable spreading room areas have a third source of cooling, which is not safety-related, in the form of a water chiller supplying a second set of coils in the safety-related air handling systems. In the event of an LOCI, a self-contained recirculation system is initiated through a post-LOCI filter system. The control room and/or either cable spreading room can be lined up to the smoke removal system if necessary. The battery rooms ventilation subsystem supplies heated and filtered air to the four battery rooms and the reserve 125V DC battery room on the 27' and 45' levels of the auxiliary building. The system consists of one supply fan, one exhaust fan, heating coil, roughing filter and motor operated dampers.	SD No. 43B Pg. 25 LCM Program PIR 012	2. To provide tempered air to ensure the usability of the control room and cable spreading rooms during an emergency. 3. To provide the ability to remove smoke from the control room areas and/or both cable spreading rooms. 4. To provide tempered air to ensure the usability of the technical support center. 5. To provide heated air flow through the four battery rooms and the reserve battery rooms to ensure the hydrogen concentration remains well below the explosive limit.	LCM Program PIR 012
Meteorology Tower and Misc Computers	1&2	31	The Meteorology Tower and Miscellaneous Computers refer to the primary and secondary Meteorology towers and associated equipment and instrumentation, including computer equipment located in the Technical Support Center (TSC). The Meteorology Tower and Miscellaneous Computers consist of a 60m primary Meteorology tower, a backup Meteorology tower, associated detection equipment, and various computer equipment. The primary tower is equipped with 10m and 60m wind speed/direction anemometers, 10m and 60m temperature sensors, a 10m dewpoint sensor, and aground level precipitation gauge. The 200 foot backup tower is actually the local microwave tower that has been equipped with 125 and 200 foot wind speed/direction anemometers and 30, 125 and 200 foot temperature sensors. The primary tower instrumentation data is sent by modem to an IBM computer system in the TSC for data colection. This computer is referred to as the Meteorological Information and Dose Assessment System (MIDAS) Data Recording Display Terminal (DRDT) Computer. The backup tower instrumentation data feeds, via Control Panel 1C22 in the Control Room, the same MIDAS DRDT Computer. The backup instrumentation data is also fed to the Unit 2 Data Acquisition System (DAS). The MIDAS DRDT Computer has a local printer and is available, by modem, to five seperate remote CRT work stations. The remote CRT's are located in the Control Room, the TSC Annex, the Emergency Offsite Facility (2), and the Rutherford Business Center (Electric Test).	CCSO-90-E69	1. To provide continuous meteorological data. 2. To provide current, local meteorological data for estimating radioactive material dispusion due to accidental atmospheric releases by the plant.	CCSO-90-E69
Aux Building and Radwaste H & V	Both	32	The Auxiliary Building and Radwaste H & V system includes the following subsystems: electrical switchgear room air conditioning and area ventilation, and ECCS ventilation, fuel handling pump room cooling system.	SD No. 43B Pgs. 4 thru 9, 12, 16, 17, 20	1. To provide a suitable environment for equipment and operating personnel with a maximum amount of safety and operating convenience.	SD No. 43B Pgs. 1 thru 3

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Aux Building and Radwaste H & V (continued)	Both	32	The auxiliary building and radwaste building heat and ventilation subsystem is composed of fans, air handling units, controls and ductwork which provide filtered, heated air to various rooms in the auxiliary and radwaste buildings and exhaust all air through the main plant vent. Also included in this system is the main steam penetration room ventilation. The electrical switchgear room air conditioning and ventilation subsystem supplies cooled and filtered air to the electrical switchgear rooms on the 27' and 45' levels in the Auxiliary Building. The subsystems major components are located in the main plant exhaust equipment room on the 69' level of the Auxiliary Building and include two supply fans, cooling coils, roughing filters, and piston and gravity-operated dampers. The fuel handling area ventilation subsystem provides filtered, tempered air to the fuel handling area which includes the spent fuel pool area, new fuel storage room, and the miscellaneous waste evaporator room. The subsystem consists of two redundant supply fans, located on the 66' level of the Auxiliary Building, two filters, two motor-operated dampers and two heating coils. The ECCS pump room cooling subsystem is placed in operation to limit room temperature and provide proper cooling of the safety injection and containment spray pumps. The subsystem consists of one cooling unit for each ECCS pump room, cooling unit fans, dampers and an ECCS pump room exhaust system which includes a roughing filter and HEPA filter. The salt water cooling system provides cooling to the cooling unit. The 480V MCC system powers the cooling units fans.	UFSAR Section 6.6.2 Pgs. 6-39, 6-40 LCM Program PIR 012	2. To supply filtered, heated air to the various rooms in the Auxiliary Building and provide a means of exhausting that air to the atmosphere. 3. To control the spread of particulate radioactive contamination in the Auxiliary and Radwaste Buildings. 4. To provide a means of discharging and controlling exhaust to the atmosphere. 5. To remove potentially radioactive contamination from the penetration room and ECCS pump room exhaust. 6. To provide filtered, tempered air through the areas in which the new and spent nuclear fuel is handled and stored. 7. To ventilate the ECCS pump room prior to entry. 8. To provide cooling necessary to prevent excess heat loading of equipment during plant shutdown or following a loss of coolant incident. 9. To receive and exhaust hydrogen from the containment purge system. 10. To supply cooled and filtered air to the electrical switchgear rooms. 11. To prevent equipment damage from high ambient temperatures. 12. To provide ventilation to the auxiliary feedwater pump room.	UFSAR Section 6.6.1 Pg. 6-39 UFSAR Section 6.6.2 Pgs. 6-39, 6-40 LCM Program PIR 012
Turbine Building Ventilation	Both	33	The turbine building ventilation system supplies a combination of outside fresh air and recirculated air to all levels of the turbine building. The mixing of air is controlled by pneumatically operated inlet dampers. The turbine building ventilation system consists of twelve supply fans, four exhaust fans, four ventilation fans, thirty unit heaters, a heater drain pump area cooling system, and associated dampers, ducts and control circuitry. The turbine building ventilation system interfaces with the plant heating system, instrument air system, and service water system.	SD No. 43A Pgs. 2 thru 4, 12	1. To maintain the temperature of the turbine building air between 60°F and 110°F. 2. To provide heat and/or ventilation to the service water pump rooms, heater drain pump area, auxiliary boiler room and feed pump lube oil conditioning rooms.	SD No. 43A Pgs. 1 thru 4, 12

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Condensate Precoat Filter	1&2	34	The condensate precoat filter system serves to maintain proper chemical inventory and remove particulate matter by filtration of the water entering the condensate polishing demineralizer system. The condensate precoat filter system consists of six precoat type filters with their associated holding pumps, one precoat tank with pump, one resin feed tank, one fill water booster pump, one control panel, valves, and instrumentation. The condensate precoat filter system also includes a backwash solids system made up of a sump, two sump pumps and a solids separator. The condensate precoat filter system interfaces with the condensate system, condensate polishing demineralizer system, and the demineralized water and condensate storage system.	SD No. 31 Pgs. 1 thru 4	1. To remove suspended particulates from the condensate. 2. To maintain proper chemical inventory in the condensate.	SD No. 31 Pgs. 1,3
Chemical Additions - Turbine	1&2	35	The chemical additions - turbine system is the chemical addition system that adds corrosion controlling chemicals to the secondary plant fluid systems. It comprises three subsystems: the feedwater chemical additions, the auxiliary boiler chemical additions and the steam generator (lay up) chemical additions. The feedwater chemical addition subsystem consists of two chemical addition tanks, three metering pumps, a morpholine day tank, and associated piping, valves, instrumentation, and controls. The subsystem is designed for continuous addition of morpholine and hydrazine solutions to the main feedwater and condensate systems or the auxiliary feedwater system. The feedwater chemical addition subsystem is located on the North Service Building 12-foot level next to the steam generator chemical addition subsystem and can be cross-connected with the steam generator chemical addition subsystem, if required. The auxiliary boiler chemical addition subsystem consists of a chemical addition tank, a metering pump, and associated piping, valves, instrumentation, and controls. The subsystem is designed for addition of hydrazine solution to the auxiliary boiler or the auxiliary boiler feedwater. The auxiliary boiler chemical addition subsystem is located in the northwest corner of the Turbine Building 45-foot level next to the auxiliary boiler deaerator. The steam generator chemical addition subsystem has been revised to use a corrosion control method referred to as volatile chemistry (ammonia and hydrazine). The subsystem is not used at Calvert Cliffs during operation; however, the subsystem is used when placing or maintaining the steam generators in wet layup. The subsystem consists of two batching tanks (which are no longer used), a chemical addition tank, four metering pumps, and associated piping, valves, instrumentation, and controls. The subsystem	CCSO-90-C72	1. To add corrosion controlling chemicals to secondary plant fluid systems. 2. To allow control of the plant conditions which enhance corrosion and erosion mechanisms. 3. To prolong the service life of secondary plant equipment and systems. 4. Reduce the potential for a steam generator tube failure.	CCSO-90-C72

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Chemical Additions - Turbine (continued)	1&2	35	is designed for addition of the chemicals into the main feedwater just prior to entering the steam generator. The steam generator chemical addition subsystem is located on the North Service Building 12-foot level and can be cross-connected to the steam generator chemical addition subsystem, if required. The demineralized water system supplies demineralized water for preparing chemical addition solutions.			
Auxiliary Feedwater	1&2	36	The auxiliary feedwater system is normally in standby mode, and provides emergency water from the condensate storage tank (CST) 12 to the steam generator feedwater suction piping. The major components are CST 12, two turbine-driven AFW pumps, one motor-driven AFW pump, AFW blocking valves, AFW flow control valves and associated piping, and the auxiliary feedwater actuation subsystem. The AFW major interfaces are the chemical additions system, the demineralized water and condensate storage system, compressed air system, engineered safety features actuation system, fire protection system, main steam and the auxiliary steam system.	UFSAR Section 10.3.2 Pg. 10-8 SD No. 34 Pgs. 1, 2, 4, 6, 7	1. Provide auxiliary feedwater for the removal of sensible and decay heat, and to cool the primary system to 300°F in case the condensate pumps or the main feed pumps are inoperative. 2. To provide cooling water for normal cooldown of the primary plant and to fill the steam generators.	UFSAR Section 10.3.1 Pg. 10-7 UFSAR Section 10.3.2 Pg. 10-8
Demin. Water and Condensate Storage	Both	37	The Demin. Water and Condensate Storage system stores demineralized water from the makeup demineralizer system for normal plant operations and emergency conditions. The Demineralized Water and Condensate Storage system consists of a demineralized water storage tank, two demineralized water transfer pumps, two condensate storage tanks, and the associated valves, piping, and controls. The demineralized water and condensate storage system interfaces with the: • Auxiliary Boilers • Auxiliary Feedwater System • Chemical and Volume Control System • Component Cooling System • Condensate Demineralizer • Condenser Air Removal System • Miscellaneous Waste System • Post Accident Sampling System • Reactor Coolant and Waste Processing Sampling System • Reactor Coolant System • Reactor Coolant Waste Processing System • Service Water System • Stator Winding Cooling System • Steam Generator Blowdown System • Various Lab Stations and Faucets. • Waterbox Priming System	SD No. 45 Pgs. 4,5,16,17,21,59,60	1. To receive makeup water from the makeup demineralizer system and store it for later use. 2. To provide an adequate supply of treated water of reactor coolant purity to other plant systems for system makeup, chemical addition, flushing, etc.	SD No. 45 Pgs. 1,6,12,13

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Sampling System (NSSS)	1&2	38	The sampling system consists of five subsystems; reactor coolant sampling, steam generator blowdown sampling, radioactive miscellaneous waste sampling, gas analyzing sampling, and post-accident sampling. Each reactor coolant sampling subsystem consists of one stainless steel sink enclosed inside a shielded hood. The hood is ventilated by an individual blower through a high efficiency filter and is located inside the sample room in the Auxiliary Building. Interlocking high-density concrete block shielding separates the hood from the rest of the sample room, which also contains the steam generator blowdown system. The hood contains piping, valves, coolers, instrumentation, and sample bombs necessary to take liquid and gaseous samples from various systems. Each steam generator blowdown sampling subsystem consists of one conditioning rack-panel unit and one ventilating hood and is located inside the same sample room as the reactor coolant hood. The conditioning rack section of the steam generator blowdown system contains isolation valves, primary coolers, rod-in-tube devices, an isothermal bath, and a chiller. The radioactive miscellaneous waste sampling subsystem is located inside the ventilating hood for the steam generator blowdown (Unit 1) and is used to obtain samples from which the chemical and radiochemical content of miscellaneous waste are determined. This subsystem is common to both units. The gas analyzing sampling subsystem is installed in the sample room located in the Auxiliary Building at elevation -10' and consists of three analyzer cabinets and separate manifolds for the isolation valves and sample selection solenoid valves. The post-accident sampling subsystem, located on elevation 45' of the Auxiliary Building, contains piping, valves, coolers, and instrumentation necessary to sample either Unit 1 or Unit 2 reactor coolant via either the normal reactor coolant system sampling line or the Unit 1 or Unit 2 Containment sump via the low pressure safety injection system header. The post-accident sampling subsystem (PASS) is designed to perform an online analysis of coolant boron concentration, total dissolved gases (including % H2 and % O2), pH, and radioisotopic analysis.	UFSAR Section 9.6.2 Pgs. 9-46, 9-47, 9-48	1. The sampling systems are designed to permit the sampling of liquids, steam, and gases for radioactive and chemical control of the plant primary and secondary fluids to determine their chemical and radiochemical condition. 2. The gas analyzing subsystem is used to determine the hydrogen concentration at six points inside the containment and four samples from the reactor coolant waste tanks (receiver and monitor tanks) as well as the oxygen concentration of several samples from the reactor coolant and miscellaneous waste systems. 3. The post-accident sampling subsystem (PASS) provides for the post-accident sampling of the primary coolant, containment sump, and containment atmosphere for post-accident monitoring requirements.	SD No. 16A, Pgs. 1 thru 5, 7 thru 9 UFSAR Section 9.6.1 Pg. 9-46 UFSAR Section 9.6.2 Pg. 9-46 thru 9-48
Condensate Polishing Demineralizer	1&2	39	There is a condensate demineralizer system (CDS) for each unit. Each system consists of five demineralizers, a regeneration facility, an air compression unit, a water supply system, a chemical system, and the Water Treatment Area waste collection facility. The condensate demineralizer system's regeneration facility for each unit has three tanks: a resin mix-holding tank, a separation-cation regeneration tank, and an anion	SD No. 30, Pgs. 1, 2	1. To remove dissolved impurities from the condensate, such as silica and calcium from well-water sources; sodium from salt-water leaks; and iron, copper, nickel, and zinc from system components.	SD No. 30 Pg. 1

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Condensate Polishing Demineralizer (continued)	1&2	39	regeneration tank. The air compression unit consists of an air compressor, an aftercooler, an air receiver, and an oil removal filter. The water supply system consists of an acid train and a caustic train. Each train consists of a day tank and two injection pumps, with a hot water tank supplied for the caustic train. The Water Treatment Area waste collection facility consists of a trench, a sump and two sump pumps for each unit, and a waste booster pump that serves both units. The CDS is bounded by the condensate precoat filter system and the condensate drain coolers.			
Chemical and Volume Control (CVCS)	1&2	41	The CVCS automatically adjusts the volume of water in the RCS using the signal from the level instrumentation located on the PZR. It also purifies and conditions the coolant. The CVCS is composed of two subsystems: letdown and charging, and makeup. The letdown and charging subsystem's major components are: • Letdown stop valves • Regeneration heat exchangers • Excess flow check valves • Letdown control valves • Letdown heat exchangers • Letdown backpressure regulating valves • Purification filters • Ion exchangers • Volume control tank • Charging pumps • Boronometer • Process radiation monitor • VCT isolation valve. The makeup subsystem's major components are: • Boric acid batching tank • Concentrated boric acid storage tanks • Boric acid pumps • Reactor coolant makeup pumps • Chemical addition tank • Chemical addition metering tank • Chemical addition metering pump • Instrumentation, controls, valves and piping.	SD No. 6, Pgs. 2 thru 5 UFSAR Section 9.1.2.1 Pgs. 9-1, 9-2 UFSAR Section 9.1.3.1 Pgs. 9-6 thru 9-15	1. Provide reactivity control. 2. Maintain reactor coolant activity at the desired level by removing corrosion and fission products. 3. Inject chemicals into the reactor coolant system to control coolant chemistry and minimize corrosion. 4. Control the reactor coolant volume by compensating for coolant contraction or expansion resulting from changes in reactor coolant temperature and other coolant losses or additions. 5. Provide means for transferring fluids to the radioactive waste processing system. 6. Inject concentrated boric acid into the reactor coolant system upon a safety injection actuation signal. 7. Control the reactor coolant boric acid concentration. 8. Provide auxiliary pressurizer spray for operator control of reactor coolant system pressure during startup and shutdown. 9. Provide a means for functionally testing the check valves which isolate the safety injection system from the reactor coolant system, and for hydrostatic and leak testing of the reactor coolant system. 10. Provide continuous on-line measurement of reactor coolant boron concentration and fission product activity. 11. Provide a means for degasifying the reactor coolant system prior to maintenance outages and during normal operations.	UFSAR Section 3.1 Pg. 3.1-2 SD No. 6, Pg. 1 UFSAR Section 9.1.1 Pg. 9-1

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Circulating Water	1&2	42	The circulating water system provides cooling water to the condenser and ensures that the heat discharged into the Chesapeake Bay is a maximum ΔH of 12°F at maximum operating condition. The circulating water intake structure consists of 24 (12 for each unit) trash racks and traveling screens, four screen wash pumps, six CW pumps, three main condenser shells, two discharge conduits, and the associated piping, valves and instrumentation. The CW system interfaces with the following: • Salt water system • Main condenser • Condenser water box priming system • Amertap system • Miscellaneous waste processing system • Reactor coolant waste processing system • Steam generator blowdown system • Main steam system • Condensate system • Instrument air system • Plant air system • Plant heating system. Included in the circulating water system is the condenser water box priming subsystem to assist the CW pump in establishing flow through the main condenser during startup and to maintain optimal efficiency during operations.	SD No. 35 Pgs. 2, 3 UFSAR Section 9.3.2 Pgs. 9-22, 9-23 UFSAR Section 9.3.3 Pg. 9-23 SD No. 36 Pg. 1	1. To prevent debris (>1/4") from entering the plant water systems. 2. To remove heat from the turbine exhaust steam in the main condensers and transfer this heat from the secondary system to the Chesapeake Bay. 3. Dilute processed liquid radioactive waste prior to disposal in the Chesapeake Bay.	SD No. 35 Pg. 1 UFSAR Section 9.3.1 Pg. 9-22
Condensate Air Removal	1&2	43	The condenser air removal system removes noncondensable gases from the condenser to the plant vent. There are four air removal units and an air removal header. Each air removal unit consists of a vacuum pump, vacuum pump motor, seal water pump, seal water cooler, separator, air ejector, system diaphragm valve, bypass valve and motive air valve.	UFSAR Section 10.5.2.2 Pg. 10-10 SD No. 28 Pgs. 2 thru 4	1. To remove air and other noncondensable gases from the condensers to help maintain the vacuum during operation. 2. To draw a vacuum in the main condensers during the plant start-up.	UFSAR Section 10.5.2.2 Pg. 10-10 SD No. 28 Pg. 1
Condensate	1&2	44	The exhaust steam from the low pressure (LP) turbines is discharged at a low pressure and temperature into the main condenser shells where the heat necessary to change the exhaust steam from a vapor to a liquid at the same temperature (latent heat of vaporization) is removed. Condensate from the hotwells is pumped by two electric motor-driven condensate pumps through the gland steam condenser, the condensate demineralizer and precoat filtering system, the lowest feedwater heating stage drains coolers, and the two lowest pressure feedwater heating stages (three heaters per stage) to	SD No. 29 Pgs. 2, 7, 8 UFSAR Section 10.2.2 Pg. 10-5	1. To transfer the condensate from the condenser hotwell to the steam generator feed pump suction. 2. To preheat the condensate prior to entering the feedwater system. 3. To maintain the required chemical characteristics of the condensate fluid.	SD No. 29 Pgs. 2, 7, 8

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Condensate (continued)	1&2	44	the suction of the three condensate booster pumps. These pumps deliver the condensate to the two turbine-driven generator feed pumps through two parallel sets of three feedwater heaters. The condensate system interfaces with the following systems and components: • Main feedwater system • Condensate demineralizer system • Condensate pump seals • Condensate precoat filter system • Main turbine exhaust hood spray • Condensate discharge to circulating water system • Auxiliary boiler deaerator • Component cooling and service water makeup • Condensate exhaust trunk expansion joint • Coolant waste evaporator condensate return • Feedwater chemical addition system • Steam generator blowdown heat exchanger • Heater drains.		4. To provide a source of water to the main turbine exhaust hood sprays, to one steam generator blowdown recovery heat exchanger, and to the auxiliary boiler deaerator. 5. To provide a backup source of supply for makeup to the component cooling and service water systems. 6. To provide seal water to the seals of the heater drain pumps and the steam generator feed pumps. 7. To provide cooling water to the drain coolers and steam seal exhaust condenser. 8. To provide a means of condenser hotwell level control.	
Feedwater	1&2	45	The condensate booster pumps deliver the condensate to the two turbine-driven steam generator feed pumps through two parallel sets of three feedwater heaters. The steam generator feed pumps pump the feedwater through two parallel high-pressure heaters to the steam generators. The main feedwater system consists of turbine-driven centrifugal steam generator feed pumps (SGFP), minimum (mini) flow control valves, a pump seal water system, feedwater regulating valves, feedwater regulating valve bypass valves, HP and LP feedwater heaters, and associated piping and instrumentation. The main feedwater system interfaces with the following systems and components: • Condensate system • Main steam system • Chemical addition system • Emergency safety features actuation system • Seal water booster pump • Extraction steam system.	SD No. 32 Pgs. 2, 5 UFSAR Section 10.2.2 Pg. 10-6	1. To transfer feedwater from the steam generator feed pump suction to the steam generators. 2. To regulate the flow of feedwater to the steam generators to maintain a constant water level in the steam generators. 3. To provide a means of raising the temperature of the condensate received by the feed pumps. 4. To provide a means for injecting chemicals into the steam generators from the chemical addition system.	SD No. 32 Pgs. 2, 5 UFSAR Section 10.2.2 Pg. 10-6
Extraction Steam	1&2	46	The extraction steam is used to increase the temperature of the feedwater prior to its entering the steam generators. Wet steam is directed from the low pressure and high pressure feedwater heaters in the condensate and feedwater systems.	SD No. 25 Pgs. 1 thru 3	1. To increase the temperature of the feedwater prior to its entering the steam generators, which results in an increase in overall plant efficiency. 2. To minimize thermal shock in the steam generators.	SD No. 25 Pg. 1

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Extraction Steam (continued)	1&2	46	The major components are the feedwater heaters, turbine bleeder trip valves, extraction line drain valves and associated piping. The extraction steam system interfaces with the following systems and components: • Feedwater heaters, drains, and vents system • Reheat steam system • Scavenging steam • Reactor coolant waste evaporator system • Miscellaneous waste processing system • Main steam system.	UFSAR Section 10.2.2 Pg. 10-5	3. To assist in removing moisture from the high pressure turbine 3rd stage by supplying steam to the 1st stage of the moisture separator reheater.	
Feedwater Heater Drains and Vents	1&2	47	The feedwater heater drains and vents system operates in conjunction with the extraction steam system to preheat condensate and feedwater as it flows from the main condensers to the steam generators. The major components of the system are: • Feedwater heaters • Feedwater heater level control valves • Drain coolers • Heater drain tanks • Heater drain tank pumps • Heater drain pump motor lube oil cooling system • Associated piping, valves, controls, and instrumentation. The feedwater heaters, drains, and vents system interfaces with the following systems and components: • Extraction steam system • Reheat steam system • Steam generator blowdown and recovery system • Main feedwater system • Condensate system • Turbine building ventilation • Nitrogen system • Emergency safety features actuation system.	SD No. 26 Pgs. 1, 2, 4, 5 UFSAR Section 10.2.2 Pg. 10-5	1. To provide a means of removing condensed extraction steam and non-condensable gases from the shells of the feedwater heaters. 2. To provide for recovery of the feedwater heater condensate and its reuse in the main feedwater and condensate systems.	SD No. 26 Pg. 1
Emergency Safety Feature Actuation (ESFAS)	1&2	48	The ESFAS initiates the start of equipment which protects the public and plant personnel from the accidental release of radioactive fission products in the unlikely event of a loss-of-coolant, main steam line break or loss of feedwater incident.	UFSAR Section 7.3 Pgs. 7-21 thru 7-26	1. To protect plant personnel and the general public from accidental release of radioactive fission products in the unlikely event of a loss-of-coolant incident, main steam line break, loss of feedwater incident or loss of electrical power incident.	UFSAR Section 7.3 Pg. 7-21

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Emergency Safety Feature Actuation (ESFAS) (continued)	1&2	48	The ESFAS non-safety related features protect plant equipment by tripping the turbine in the event of a reactor trip on high steam generator water level. The ESFAS is divided into four sensor subsystems, two actuation subsystems, and two logic subsystems for sequential loading of the diesel generators. The sensor subsystems monitor redundant and independent process variables such as: containment pressure, pressurizer pressure, containment radiation, RWT level, steam generator pressure, steam generator level, under voltage (4KV bus, reactor trip bus), west penetration room pressure, and letdown heat exchanger room pressure. The two redundant and independent actuation subsystems monitor the sensor subsystem trip outputs and, by means of coincidence logics, determine whether a protective action is required. Each actuation subsystem initiates independent and redundant equipment. The ESFAS interfaces with the safety injection system, chemical and volume control system, component cooling system, salt water cooling system, containment spray system, primary containment heat and ventilation system, NSSS sampling system, liquid waste system, waste gas system, reactor coolant system, plant heating system, primary containment system, hydrogen recombiner system, reactor protective system, electrical 13-4KV service transformers, and 4 KV buses system, and the annunciation system.	SD No. 63 Pgs. 1,2,85,86	2. To initiate automatic operation of certain plant equipment to localize, control, mitigate and terminate incidents. 3. To minimize the radiation exposure levels for plant personnel and the general public. 4. To protect plant equipment.	SD No. 63 Pg. 1
Simulator Computer	Both	49	The Simulator Computer System is a completely independent system, consisting of a Simulator Control Room, Simulator Computer Room, and all the associated equipment within the two rooms. The Simulator Control Room is designed to closely simulate the physical, visual, and audible CCNPP Control Room environment, e.g., the control panels, switches, lighting and alarms. The Simulator Control Room contains a full scale model of the Unit 1 and common control panels, including the electrical panels, safe shutdown panel, and Unit 2 turbine-generator panels. The Simulator Computer Room houses all the computer equipment and software required to run the simulations and control the I/O functions for the control panels. The simulation software models are run on the four Perkin Elmer Model 3244 main frame computers. The I/O functions for the control panels are performed by the four Perkin Elmer Model 1610 mini computers. The computer room also houses an exact duplicate of the Goulds computer used for the Plant Computer System. This computer is used to duplicate the plant responses to the simulation models presented by the Perkin Elmer main frame computers.	CCSO-90-E69	1. To provide the the means to adequately train, evaluate, test, and requalify licensed operators at CCNPP per 10CFR55 and NUREG 1.149.	CCSO-90-E69

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Solid Waste Disposal	Both	50	The solid waste disposal system is designed to provide for controlled handling and offsite disposal of solid radioactive waste generated from both units. The radioactive waste is handled in accordance with 10CFR61, 10CFR71 and 49CFR. The solid waste disposal system is located at elevation 45'-0" and 30'-0" in the Auxiliary Building. The major system interfaces are: •Reactor coolant waste processing (liquid waste) •Chemical and volume control •Spent fuel pool cooling and purification •Miscellaneous waste processing (liquid waste) •Main steam •Demineralized water •Compressed air •Area radiation monitoring •Process radiation monitoring •Nitrogen and hydrogen. The major components are: •Spent resin metering tank •SHMT dewatering pump •Solid waste control panel •Shipping cask rail car pit and rail car •Drive system •Resin solidification components (no longer used).	UFSAR Section 11.1.2.3.2 Pgs. 11-12, 11-13 SD No. 14C, Pgs. 2,4	1. To prepare solid radioactive waste for shipment to offsite disposal facilities. 2. To minimize the radiation exposure to personnel during solid waste processing and handling operations.	UFSAR Section 11.1.2.3.1 Pg. 11-12
Plant Water	Both	51	The plant water system consists of a variable speed centrifugal plant water service station pump, a plant water accumulation tank with a relief valve, and various piping, valves, hose connections, and emergency wash plumbing. The pump and tank are located in the well water pretreatment building near the tank farm. The water can be drawn from the well water system just as it exits the pretreated water storage tanks or at a point just after it exits the pretreated water booster pumps. The pump discharges to various water stations, emergency eyewashes and showers located throughout the plant which include the north and south intake structures, the acid and caustic storage tank areas, reactor head washdown area inside containment, and various stations within the service building, turbine building and auxiliary pedestals.	CCSO-90-E69	1. To provide nonpotable fresh water for miscellaneous non-safety related activities.	CCSO-90-E69
Safety Injection	1&2	52	The safety injection systems are designed to supply emergency core cooling in the unlikely event of a loss-of-coolant incident. The systems prevent fuel and cladding damage that would interfere with core cooling, and limit the cladding-water reaction for all breaks in the reactor coolant system	SD No. 7 Pgs. 2, 3	1. To inject borated water into the reactor coolant system to flood (i.e., cover) and cool the core during DBE's.	SD No. 7 Pg. 1

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Safety Injection (continued)	1&2	52	piping. The safety injection water contains boron to provide additional shutdown capability. The safety injection systems consist of a high-pressure and a low-pressure subsystem. The major components are: • High-pressure safety injection pumps • Low-pressure safety injection pumps • Safety injection tanks • Refueling water tank • Containment sump level instrumentation • Associated piping, valves, controls and instrumentation. The safety injection systems interface with the following systems: • Containment spray • Chemical and volume control • Spent fuel pool cooling and purification • Component cooling • Nitrogen gas • Emergency safety feature actuation.	UFSAR Section 6.3.1 Pgs. 6-4 thru 6-7 UFSAR Section 6.3.2 Pgs. 6-8 thru 6-12	2. To remove heat from the core for extended periods of time following a loss-of-coolant incident. 3. To inject borated water into the reactor coolant system to increase shutdown margin following a rapid cooldown of the system due to a steam line rupture incident. 4. To remove heat from the reactor coolant system during normal cooldown, and to maintain proper water temperatures during refueling and maintenance. 5. To transfer refueling water from the refueling water tank to the refueling pool and return the refueling water to the tank upon completion of refueling. 6. To provide containment sump level indication. 7. To recirculate lost coolant back to the RCS during an LOCI.	UFSAR Section 6.3.1 Pgs. 6-4 thru 6-7 UFSAR Section 6.3.2 Pgs. 6-8 thru 6-12
Plant Drains	Both	53	The plant drains system is commonly referred to as the plant sump system. The plant drain system includes the floor and equipment drain piping, sump piping, sump pumps, equipment and instrumentation associated with all areas other than the auxiliary building and containment. The plant drains system consists of the turbine building clean and oily waste sumps, the service building clean and oily waste sumps, the intake structure sumps, the yard area sumps, and the fuel oil system drainage. The yard area sumps include the lube oil storage tank area sump, the yard manhole sump, the fire pump house sumps, the acid storage tank area sump, the yard sump, the yard waste oil collection tank, and the yard oil interceptor. The fuel oil system drainage includes the diesel generator room oil drainage subsystem and the fuel oil storage tank 11 area dike and valve pit drainage subsystem.	CCSO-90-C72	1. To collect water and waste oil drainage from various points in the plant. 2. To provide the means to remove the collected waste for disposal. 3. To separate oil and water prior to discharge to the yard storm drainage system.	CCSO-90-C72
Control Rod Drive Mechanism and Electrical	1&2	55	The control rod drive mechanism and electrical system is also referred to as the control element drive mechanism system (CEDM). The control rod drive mechanism and electrical system is a magnetic jack-type drive. Each CEDM is capable of withdrawing, inserting, holding, or tripping the control element assembly (CEA) from any point within its stroke. The CEDM drives the CEA within the reactor core and indicates the position of the CEA with respect to the core. The major components of the CEDM are: • CEDM pressure housing	SD No. 60 Pgs. 1 thru 4 UFSAR Section 3.3.4 Pgs. 3.3-10 thru 3.3-12	1. To control the reactivity of the reactor core. 2. To assist reactor startup through reactivity control. 3. To provide rapid shutdown of the reactor. 4. To assist in controlling the reactor power distribution. 5. To position the CEAs within the reactor core as needed.	UFSAR Section 3.1 Pg. 3.1-2 SD No. 60 Pg. 1

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Control Rod Drive Mechanism and Electrical (continued)	1&2	55	• Magnetic jack assembly • Position indication • Control element assembly disconnect • Control element assemblies.			UFSAR Section 3.2.2 Pg. 3.2-1 UFSAR Section 3.2.3.1 Pgs., 3.2-1, 3.2-2
Reactor Regulating	1&2	56	The reactor regulating system provides control signals which are used to provide a steam dump program and a pressurizer level setpoint program. There are two independent reactor regulating systems for each unit. The reactor regulating system consists of a steam dump program function generator, level setpoint function generator, Tref function generator, Tave-Tref summer, Tave-Tref stability compensation unit, turbine power-reactor power stability compensation unit, and a pressurizer pressure-pressurizer pressure setpoint stability compensation unit. Inputs are received from the Loop 1 Thot, Loop 2 Thot, Loop 1 Tcold, Loop 2 Tcold, pressurizer pressure, neutron flux and first-stage turbine pressure. Outputs are the Tref and Tave signals to the recorders, automatic CEA withdrawal prohibit signals to the CEDM control systems, and deviation alarms for Tave-Tref.	UFSAR Section 7.4.1 Pgs. 7-39, 7-40	1. To monitor the reactor operating conditions and provide control signals for pressurizer level setpoint, steam dump demand, and steam dump quick-opening.	UFSAR Section 7.4.1 Pgs. 7-39, 7-40
Technical Support Center Computer	Both	57	The Technical Support Center Computer System consists of a Controlled Data Cyber model computer w/magnetic tape drive unit and three high speed printers. The system has five work stations that each have a CRT, printer, and pen recorders. In the event of loss of primary power source, the system has a backup battery power supply to immediately resume data aquisition, storage, and display. Incore detector and core exit thermocouple data input to the TSC Computer is provided by a data link with the Plant Computer. Other critical plant parameter data is acquired from field sensors and instrument loops that tie in with three TSC Computer dedicated remote multiplexers, one for each unit and one common.	CCSO-90-E69	1. To gather, trend, store, and display critical plant parameter data to permit accurate accident assessment with minimum interference of control room operation. 2. To provide real time and historical displays and reports of critical plant parameters to assist in analysis of unit shutdown.	CCSO-90-E69
Reactor Protective	1&2	58	The reactor protective system consists of sensors, amplifiers, logic, and other equipment necessary to monitor selected nuclear steam supply system conditions and to effect reliable and rapid reactor shutdown if any one or a combination of conditions deviates from a preselected operating range. Four independent measurement channels that can initiate safety action are	UFSAR Section 7.2.1 Pg. 7-2	To monitor and assess selected nuclear steam supply system parameters and initiate protective action, if any of these parameters exceed an operational limit, by: • Annunciating alarms -or-	UFSAR Section 7.2.1 Pg. 7-2

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Reactor Protective (continued)	1&2	58	provided for each parameter. The protective system AC power is supplied from four separate vital instrument buses. The manual trip subsystem is independent of the automatic trip subsystem. The reactor protective system components are independent of the control system. Electrical circuit isolation is provided between the reactor protective system and the annunciators and the plant computer. The protective system is designed to fail in a fail-safe condition.	UFSAR Section 7.2.2 Pgs., 7-2, 7-3 SD No. 59 Pg. 2	• Prohibiting CEA motion -or- • Shutting down (tripping) the reactor.	SD No. 59 Pg. 1
Primary Containment	1&2	59	The primary containment is a Class I structure, housing the reactor and other NSSS components. The containment consists of a reinforced concrete cylinder and a shallow domed roof which rests on a reinforced concrete foundation slab. The concrete cylinder and dome have a post tensioned contraction design. Attached to the inside of the containment structure is a carbon steel liner. There are three personnel and equipment access openings in the containment: a two-door personnel lock, a large diameter single door equipment hatch, and a two-door personnel escape lock. The primary containment has numerous penetrations for piping and electrical connections. These penetrations are leak tight, inerted assemblies, welded to the containment liner. A fuel transfer tube panetration in the containment is provided permit fuel movement between the refueling pool in the containment and the spent fuel pool in the auxiliary building. Two sumps are provided in the containment floor: a normal sump and an emergency sump. Containment interfaces are: •Liquid waste system •Containment spray system •Safety injection system •Emergency safety features actuation system •Nitrogen and hydrogen system. The primary containment includes the reactor enclosure.	UFSAR Section 1.2.5 Pg. 1-4 SD No.1 Pg. 1-4 UFSAR Section 1.0 Fig. 1-2	1. To provide shielding necessary to maintain radiation levels outside the containment within established limits. 2. To provide shielding for the reactor and NSSS components. 3. To provide a leak-tight barrier and withstand internal pressures of 50 psig resulting from the energy released from a LOCA. 4. To permit fuel movement between the refueling pool and spent fuel pool for refueling operations. 5. To provide leakproof penetrations for mechanical and electrical equipment. 6. To provide access to the containment for maintenance and operations requirements. 7. To provide recirculation cooling capabilities in conjunction with the containment spray and safety injection systems. 8. To maintain its integrity and protect safety related equipment from damage under various design loads including a design basis earthquake and missiles.	UFSAR Section 1.2.5 Pg. 1-4 SD No.1 Pg. 1-4 UFSAR Section 1.0 Fig. 1-2
Primary Containment H & V	1&2	60	The primary containment heat and ventilation system is made up of several subsystems: control element assembly drive mechanism cooling, containment purge, hydrogen purge (containment pressure control), pressurizer compartment cooling system, containment iodine removal, containment penetration room ventilation system, and containment air recirculation and cooling.	UFSAR Section 9.8.2.2 Pgs. 9-58, 9-59	1. To provide cooling for the control element drive mechanism. 2. To purge and ventilate the containment atmosphere. 3. To provide hydrogen removal and backup to the hydrogen recombiners.	UFSAR Section 9.8.2.2 Pgs. 9-58, 9-59

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Primary Containment H & V (continued)	1&2	60	The control element assembly drive mechanism cooling subsystem draws air from the containment and through the reactor head cooling shroud and into two cooling coils of the CRDM cooler which is located on the missile shield above the reactor. From there, 100% redundant fans discharge the cooled air upward into the containment again. Four ducts connect the shroud to the cooler coil house. One pair of ducts directs air to one cooling coil and the other pair supplies air to the opposite coil. Cooling water is pumped through the water-air coils. A power-operated damper, located between each fan and the coil house, prevents short-circuiting of air around the cooler when only one fan is operating. The containment purge subsystem draws air from the containment through an exhaust duct and HEPA filters, and discharges the air into the respective main plant exhaust plenum where fans force it into the plant vent. The air-operated butterfly valves, which fail closed, are located in the supply and exhaust ducts on each side of the containment penetration for these ducts to provide containment isolation when necessary. The hydrogen purge subsystem removes hydrogen from containment in the event that the hydrogen recombiners fail. The purge subsystem consists of a control panel, inlet and outlet purge isolation valves, a backup valve, a moisture separator and one replacement air blower. The pressurizer compartment cooling subsystem supplies cooling to the pressurizer compartment utilizing the containment coolers as the cooling air source. The compartment is pressurized by the cooling air to prevent hot air from entering. The containment iodine removal subsystem removes iodine from the containment following a loss-of-coolant incident. The subsystem consists of three banks of filters made up of moisture separator HEPA filters and activated charcoal filters. An electric-driven induced draft fan is used to pull the containment atmosphere through the filters and to discharge back into the containment. A dousing subsystem is also included to remove heat from the charcoal beds as needed. The containment penetration room ventilation subsystem collects and processes containment penetration leakage during the post incident period. The subsystem consists of two centrifugal blowers to create and maintain a slight negative pressure in the penetration room. A prefilter, HEPA filter, and an activated charcoal filter are positioned in series to minimize radiation release from the exhaust. The containment air recirculation and cooling subsystem removes heat from the containment atmosphere during normal plant operations and accident conditions. The subsystem is independent of the containment spray and safety injection systems. The system consists of four cooling units. Service water is used to circulate through the air cooling coils. The ESFAS provides startup signals as necessary. The electrical 480V bus system provides the power requirements of the containment air recirculation and cooling subsystem.	UFSAR Section 6.6.2 Pg. 6-39 UFSAR Section 6.6.3 Pg. 6-40 UFSAR Section 6.7.2 Pg. 6-43 UFSAR Section 6.7.3 Pg. 6-44 UFSAR Section 6.5.2 Pg. 6-32 UFSAR Section 6.5.3 Pg. 6-33 SD No. 12 Pgs. 3,4 CCSO-90-C45	4. To isolate the containment under accident conditions. 5. To provide cooling for the pressurizer compartment. 6. To prevent overheating of the concrete upon which the pressurizer is resting. 7. To collect and process containment penetration leakage. 8. To minimize the environmental radioactivity levels resulting from post-incident containment leaks. 9. To collect the iodine released to the containment following a loss-of-coolant incident. 10. To cool the containment atmosphere during normal plant operations and accident conditions. 11. To limit the containment pressure rise during a loss-of-coolant incident. 12. To reduce the leakage of airborne and gaseous radioactivity. 13. To provide primary containment pressure, temperature and humidity monitoring and indication for ESFAS and other systems.	UFSAR Section 6.6.1 Pg. 6-39 UFSAR Section 6.7.1 Pg. 6-43 UFSAR Section 6.5.1 Pg. 6-32 SD No. 11 Pg. 1 SD No. 12 Pgs. 3,4

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Containment Spray	1&2	61	The containment spray system sprays cold borated water into the containment atmosphere and then recirculates and cools the water through the shutdown heat exchangers. The initial source of the water is the RWT. The containment spray system is redundant with the containment air cooling system. During normal plant operations, the containment spray is maintained in a standby mode. The major components of the containment spray system are: • Containment spray pump • Containment spray headers • Spray rings and nozzles • Shutdown cooling heat exchangers • Associated piping, valves, controls and instrumentation. The major interfaces of the containment spray system are: • ESFAS • Safety Injection system • Primary containment • Primary containment heat and ventilation system.	UFSAR Section 6.4.2 Pg. 6-21 SD No. 7 Pg. 6	1. To limit the containment atmosphere pressure and temperature after a loss-of-coolant incident. 2. To limit the possibility of airborne radioactivity leaking to the outside environment.	UFSAR Section 6.4.1 Pg. 6-21
Control Boards	1&2	62	The control boards system is comprised of the main control boards in the CCNPP control room only. All main control boards are designed as seismic Class I per the FSAR. This includes the metal work, incoming cable supports, instrument racks, internal wiring, wire-ways,interconnecting wiring terminal blocks, and interconnecting wire. All components mounted in the control boards must, at a minimum, be mounted structurally safety-related, Seismic Class I (SR I/I). All guard rails attached to the main control boards are Seismic Class I. Auxiliary and local control boards/stations located throughout the plant are not included in the Control Boards Seytem, but are included within the system that each board controls.	CCSO-91-669	1. To provide seismic mounting for the controls and instrumentation required to operate the plant.	CCSO-91-669
Cathodic Protection	1&2	63	The cathodic protection system utilizes the impressed current type or galvanic (sacrificial) anode type of cathodic protection, or a combination of the two. The impressed current of cathodic protection uses an external power source (rectifier) to "Force" the current from the anode to the item to be protected, thus, reversing the natural electrical flow. The galvanic type cathodic protection utilizes the natural difference in electrical potential between two metals (the sacrificial anode and the metal to be protected) as the driving voltage.	CCSO-90-C72 UFSAR Section 5.1.7 Pg. 5-65	1. To control corrosion of piping, components, and structures that are exposed to configurations and environments that normally establish an electrochemical corrosion mechanism (a "corrosion cell"), where the loss of metal is accompanied by a flow of electric current.	CCSO-90-C72 UFSAR Section 5.1.7 Pg. 5-65

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Cathodic Protection (continued)	1&2	63	The cathodic protection system protects a variety of items located throughout the plant. Some of the major structures include the containment, the intake structure baffle wall, the traveling water screens, the component cooling water and service water heat exchangers, the condenser water boxes, the ECCS room coolers, the tank farm and piping, the fuel oil storage tank and piping, and, in general, all underground process piping.			
Reactor Coolant	1&2	64	The reactor coolant system is the primary coolant loop, located entirely within the containment, consisting of two heat transfer loops connected in parallel across the reactor pressure vessel. Each loop contains one steam generator, two circulating pumps, connecting piping, and flow and temperature instrumentation. Coolant system pressure is maintained by a pressurizer connected to one of the loop hot legs. During operation, the four pumps circulate water through the reactor vessel where the water serves as both coolant and moderator for the core. The heated water enters the two steam generators, transferring heat to the secondary (steam) system, and then returns to the pumps to repeat the cycle. There are nine instrumentation subsystems associated with the reactor coolant system: loop temperature instrumentation; pressurizer level, temperature, and pressure instrumentation; quench tank level, temperature, and pressure instrumentation; reactor coolant flow instrumentation; reactor coolant pump instrumentation; pressurizer surge line, spray line, and relief valve temperature instrumentation; subcooled margin monitor; loose parts monitoring; and PORVs/ safety valves accoustic monitors. The major system components are: reactor vessel, reactor coolant piping, reactor coolant pumps, pressurizer, steam generators, and quench tank. The major system intefaces are: chemical and volume control, safety injection, reactor protection, reactor regulating, and engineered safety features actuation.	SD No. 5 Pgs. 1 thru 6 UFSAR Section 4.1.2 Pg. 4-3 SD No. 62 Pgs. 1,2	1. To remove heat from the reactor core and reactor internals and transfer it to the secondary (steam generating) system. 2. To contain fission products released by fuel element defects and prevent the release of these fission products to the environment. 3. To provide remote monitoring capability for reactor coolant system parameters. 4. To permit remote control of reactor coolant system parameters. 5. To provide required inputs to the reactor protection system, the reactor regulating system, and the engineered safety features actuation system for protection of the reactor core and reactor coolant system components.	SD No. 5 Pg. 1 UFSAR Section 4.1.2 Pg. 4-3 SD No. 62 Pgs. 1,2
Seismic	Both	65	The seismic system automatically detects and records the seismic activity acceleration response of Class I structures and the free field of the north parking lot. The seismic response is detected by strong transaxial motion transducers that feed to a multi-channel recording and playback station located in the control room.	CCSO-90-E69	1. To ensure complete fulfillment of NRC Safety Guide 12. 2. To automatically detect and record the seismic activity acceleration response of important CCNPP features.	CCSO-90-E69
Cavity Cooling	1&2	66	The cavity cooling system is an open-ventilation system. The entire system is located in the containment, surrounding the primary shield. The two fans and four isolation dampers are at elevation 22'-6". The fan common discharge header is also located at elevation 22'-6". The header splits into	SD No. 9 Pgs. 2 thru 4	1. To cool the neutron detectors. 2. To cool the primary shield penetrations and the primary shield.	SD No. 9 Pg. 1

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			two supply headers that extend around the outside of the primary shield in a horseshoe fashion with nine branches to cavity cooling, and six branches to primary shield penetration cooling. The reactor cavity cooling suction is taken from the containment air cooler plenum, and discharge is to the containment atmosphere.	UFSAR Section 9.8.2.2 Pg. 9-61		UFSAR Section 9.8.2.2 Pg. 9-61
Spent Fuel Pool Cooling	Both	67	The spent fuel pool cooling system is a closed-loop system consisting of two half-capacity heat exchangers in parallel, a bypass filter which removes insoluble particulates, a bypass demineralizer which removes soluble ions, and various piping, valves, and instrumentation. The clarity and purity of the water in the spent fuel pool, refueling pool and refueling water tank are maintained by passing a portion of the flow through the bypass filter and/or demineralizer. Skimmers are provided in the spent fuel pool to remove accumulated dust from the pool. Connections are provided for temporary tie-in to the shutdown cooling system to provide for additional heat removal in the event that 25/3s of a core is put into the pool. Makeup water comes from the refueling water tank. The entire fuel pool cooling and purification system is tornado-protected and is located in a Seismic Class I structure.	SD No. 10 Pgs. 3,4 UFSAR Section 9.4.1 Pg. 9-25 UFSAR Section 9.4.2 Pg. 9-27	1. To remove decay heat from the spent fuel stored in the spent fuel pools, and to provide cooling for the refueling pools. 2. To maintain the clarity of the water in the spent fuel pools, refueling pools, and refueling water storage tanks. 3. To maintain a low radioactivity level for the water in the spent fuel pools, refueling pools, and refueling water storage tanks. 4. To transfer water to and from the refueling water storage tanks as needed.	SD No. 10 Pg. 1 UFSAR Section 9.4.1 Pgs. 9-25 thru 9-27 UFSAR Section 9.4.2 Pg. 9-27
Spent Fuel Storage	Both	68	The spent fuel storage may also be referred to as the spent fuel pool. The spent fuel pool is divided in two halves and located in the auxiliary building. The pool can accommodate 1830 assemblies and one spent fuel shipping cask. Control element assemblies removed from the core are stored in the guide tubes within the fuel assemblies. The pool is constructed of reinforced concrete and lined with stainless steel. Spent fuel assemblies are placed in stainless steel storage racks consisting of vertical cells grouped in parallel rows with boron carbide sandwiched between each storage cell in Unit 1 and Boraflex in Unit 2. Cooling is provided by the spent fuel pool cooling system. The spent fuel shipping cask pit is located on The Unit 1 side of the dividing wall in this pool. Casks are designed to permit placement of fuel bundles with a minimum water level above the bundles. The cask cover is placed on the cask, then the cask is transferred to the washdown area. Washdown water is piped to the miscellaneous waste processing system.	UFSAR Section 9.7.2 Pgs. 9-50 thru 9-52 SD No. 10 Pgs. 8 thru 11	1. To provide safe storage for the spent fuel assemblies. 2. To maintain the spent fuel assemblies in a subcritcal configuration. 3. To prevent the release of fission products to the environment.	UFSAR Section 9.7.2 Pgs. 9-50 thru 9-52 SD No. 10 Pgs. 8 thru 11
Waste Gas	Both	69	The waste gas system is designed to provide controlled handling and disposal of radioactive gaseous wastes from both reactor units. The system stores gases removed from liquid waste and other sources to allow radioactive decay of the short-lived isotopes before the gases are released from the plant. The waste gas system consists of: • Surge tank • Waste gas compressors • Waste gas decay tank	UFSAR Section 11.1.2.2.2 Pgs. 11-9, 11-10 SD No. 14A Pg. 1	1. To minimize the release of radioactivity to the environment by holding gaseous wastes to permit the decay of the short-lived isotopes in the gaseous wastes prior to atmospheric release. 2. To provide controlled handling and disposal of radioactive gaseous wastes.	UFSAR Section 11.1.2.2.2 Pg. 11-9

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Waste Gas (continued)	Both	69	• High-efficiency particulate air filter • Associated piping, valves, controls and instrumentation. The waste gas system major interfaces are: • Reactor coolant waste processing system degasifiers • Pressurizer quench tanks • Reactor coolant drain tanks • Volume control tanks • Miscellaneous hydrogenated sources.			
Refueling Pool	1&2	70	The refueling pool is formed when the refueling cavity around the upper portion of the reactor vessel is filled with water from the RWT via the spent fuel pool cooling pumps. The normal water level is 67 feet, equivalent to that of the spent fuel pool. The pool is constructed of reinforced concrete and lined with stainless steel. The refueling pool interfaces with the spent fuel pool via the fuel transfer tube (primary containment), the safety injection system and the spent fuel pool cooling system.	SD No. 13 Pg. 5	1. To maintain the spent fuel assemblies in a safe condition during refueling operations. 2. To provide a means for underwater fuel handling operation. 3. To prevent the release of radioactivity to the environment. 4. To minimize personnel exposure to radiation.	SD No. 13 Pg. 1 SD No. 10 Pg. 1
Liquid Waste	Both	71	The liquid waste system consists of two subsystems, miscellaneous waste processing and reactor coolant waste processing. The miscellaneous waste processing subsystem provides controlled handling and disposal of various liquid wastes from both plants. The subsystem consists of: • Miscellaneous waste receiver tank • Miscellaneous waste monitor tank • Miscellaneous waste receiver tank pump • Miscellaneous waste monitor tank pump • Miscellaneous waste filters • Miscellaneous waste ion exchanger • Miscellaneous waste metering pump • Associated strainers, piping, valves and instrumentation. The miscellaneous waste processing subsystem receives liquid waste from three major sources:	UFSAR Section 11.1.2.1.3 Pg. 11-6 SD No. 14D Pgs. 1 thru 4	1. To provide controlled handling and disposal of various liquid wastes. 2. To provide temporary storage for liquid wastes. 3. To process liquid wastes prior to disposal. 4. To minimize the release of radioactive material to the environment. 5. To limit the radioactivity concentration of effluents per 10CFR20.	UFSAR Section 11.1.2.1.4 Pgs. 11-7 thru 11-9 SD No. 14D Pg. 1

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Liquid Waste (continued)	Both	71	• Auxiliary building gravity drains • Hot laboratory and soapy drains • Containment normal sump and pumped sumps. Additional sources are: • Service water system • Component cooling system • Blowdown recovery system • Refueling water tanks • Refueling water tank room sump pump • Spent fuel pool. The primary interfaces are: • Reactor coolant waste processing subsystem • Solid waste disposal system • Circulating water system • MaLeup demineralized water system • Nitrogen and hydrogen gas system. The reactor coolant waste processing subsystem provides controlled handling and disposal of radioactive liquid wastes from both reactor units. The subsystem provides temporary storage for reactor coolant wastes, and processes wastes prior to disposal. The reactor coolant waste processing subsystem consists of: • Two reactor coolant drain tanks • Three cartridge filters • Two degasifiers • Four reactor coolant waste ion exchangers • Two reactor coolant waste receiver tanks • Two evaporators • Two reactor coolant waste monitoring tanks • Reactor coolant drain tank pumps • Degasifier vacuum pumps • Reactor coolant waste receiver tank pumps • Reactor coolant waste receiver tank metering pumps • Associated piping, valves, controls and instrumentation. The reactor coolant waste processing subsystem major interfaces are: • Miscellaneous waste processing subsystem • CVCS volume control tanks • Reactor coolant system • Waste gas system surge and decay tanks.	UFSAR Section 11.1.2.1.2 Pgs. 11-2 thru 11-5 SD No. 14B Pgs. 1 thru 6	6. To provide controlled handling and disposal of radioactive liquid wastes. 7. To provide temporary storage for reactor coolant wastes. 8. To process and reduce the volume of reactor coolant wastes prior to disposal. 9. To minimize the release of radioactive material to the environment. 10. To limit the radioactivity concentration of effluents per 10CFR20. 11. To recover boric acid for reuse.	UFSAR Section 11.1.2.1.2 Pg. 11-2 UFSAR Section 11.1.2.1.4 Pg. 11-7 SD No. 14B Pg. 1

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System/structure	U1,2	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Sewage Treatment Plant	Both	72	The sewage treatment plant system is a conventional activated-sludge-type system with two plants for redundancy. The major system components are: • Comminutor assembly • Sewage lift pump assembly • Sealtrode level control model Y60 • Flow splitter box • Blower assembly • Hypochlorinator unit and solution tank • Settling tank • Cl2 contact tank • Aeration tank • Sludge storage tank.	SD No. 46 Pgs. 1 thru 4	1. To provide collection and removal of raw sewage. 2. To process raw sewage in order to meet federal, state, and local discharge (NPDES) standards.	SD No. 46 Pgs. 1 thru 4
Hydrogen Recombiner	1&2	73	The hydrogen recombiner system consists of passive device used to control containment hydrogen levels. There are two recombiners per unit, each capable of accomplishing the required hydrogen-oxygen recombination for a loss-of-coolant incident. Each recombiner is located on opposite sides of the operating deck in the containment. There are no moving parts or controls inside the containment. Air flows by natural convection through the units. The control panels are located in the control room and the power cabinets are located in the auxiliary building. Each recombiner system is isolated from and independent of the other recombiner system. The power is supplied from separate emergency 480 volt load centers for each recombiner system.	UFSAR Section 6.8.2.1 Pg. 6-48 UFSAR Section 6.8.2.2 Pgs. 6-48, 6-49 UFSAR Section 6.8.2.3 Pg. 6-49 SD No. 12 Pgs. 1,2	1. To maintain hydrogen concentration in the containment below four volume percent following a loss-of-coolant incident. 2. To prevent flammable conditions from occuring in the containment following a loss-of-coolant incident.	UFSAR Section 6.8.2.1 Pgs. 6-48 SD No. 12 Pg. 1
Nitrogen and Hydrogen	Both	74	The nitrogen and hydrogen system consists of two independent systems supplying gases for normal plant operations. The nitrogen gas system can be divided into two subsystems, the storage system and distribution header. The storage system includes an insulated storage tank which is kept pressurized by a combination of ambient and electric vaporizers. The distribution header runs throughout the plant, going to a variety of components ranging from the main steam isolation valves to the auxiliary boilers. Nitrogen is used in the safety injection tanks, the main generator as well as virtually all storage tanks and water bearing vessels such as the volume control tanks and the steam generators.	SD No. 71 Pgs. 1, 3 thru 5 SD No. 72 Pgs. 2 thru 4	1. To store and distribute the required amounts of nitrogen for normal plant operations. 2. To provide nitrogen for backup to the instrument air system. However, this is not currently in service. 3. To supply hydrogen to the main generators, the volume control tanks, and Rad Chem Explosive Gas Storage Room.	SD No. 71 Pgs. 4, 5 SD No. 72 Pg. 1

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Nitrogen and Hydrogen (continued)	Both	74	The hydrogen subsystem is a common subsystem consisting of hydrogen gas bottles, a truck fill connection, pressure control unit, distribution header, and the associated piping valves and controls. The hydrogen subsystem interfaces with the main generator and excitation system, and chemical and volume control system.			
Low Voltage DC Control Power	1&2	75	The low voltage DC control power system supplies 48V power to approximately 100 various non-safety related instruments located throughout the plant. The system's cabinet 1(2)-R01A/B is located in the cable spreading room. The low voltage DC control power cabinet is supplied by the 120V instrument AC power. The cabinet contains a converter that converts the 120VAC to 48VDC.	CCSO-90-C72	1. To convert 120VAC to 48VDC. 2. To supply non-safety related instruments with 48V power.	CCSO-90-C72
Secondary Sample	1&2	76	Secondary sample refers to the turbine plant sampling system. The system consists of one sampling station per unit with a stainless steel sink, panel and mechanical chiller as a separate unit. The sink contains the isolation valves, piping, instrumentation, coolers, and grab valves necessary to take samples from the steam, condensate and feedwater systems. The panel contains conductivity, pH, and oxygen recorders, oxygen analyzers, hand switches to control pumps and an annunciator.	UFSAR Section 9.6.2.5 Pgs. 9-47, 9-48	1. To obtain samples to determine the chemical condition (pH, oxygen, conductivity) of the steam, condensate and feedwater systems associated with the turbine plant.	UFSAR Section 9.6.2.5 Pg. 9-47
Area and Process Radiation Monitoring	1&2	77	The area and process radiation monitoring system serves to warn operating personnel of an increasing radiation level or abnormal radioactivity concentrations at selected points in the reactor units. The area and process radiation monitoring system reads and records gamma radiation levels in selected areas throughout the plant and alarms (audible and visual) if these levels exceed a preset value or if the detector malfunctions. Each area monitor is designed to measure gamma radiation in the surrounding environment over a range of 0.1 mR/hr to 10R/hr (all instruments read in RAD). Each detector is a gamma-sensitive Geiger-Mueller tube with a 90 mg/cm2 cathode wall designed for relatively high-flux areas. The area and process radiation monitoring system also includes various process radiation monitoring subsystems such as the plant main vent monitor, the wide range effluent gas monitor, the containment atmosphere monitor, the waste gas discharge monitor, the liquid waste processing discharge monitor, the condenser air removal discharge monitor, the component cooling system monitor, the service water system monitor, the steam generator blowdown tank discharge monitor, the steam generator blowdown recovery radiation monitor, the atmosphere monitors, and the main steam effluent radiation monitor.	UFSAR Section 11.2.3.1 Pg. 11-17 UFSAR Section 11.2.3.2 Pg.11-21 UFSAR Section 11.2.3.3 Pgs.11-21, 11-22 SD No. 15 Pg. 2,6,12,14 UFSAR Section 11.2.3.2 Pg. 11-21 SD No. 15 Pg. 4-6	1. To read out and record gamma radiation levels in selected areas throughout the station and to provide alarms (audible and visual) if these levels exceed a pre-set value or if the detector malfunctions. 2. To provide early warning of a plant malfunction which may result in a radiation hazard or plant damage. 3. To provide a containment radiation signal to isolate the containment. 4. To prevent the release of radiation to the environment. 5. To monitor radioactivity in systems and to ensure that plant effluents are released in accordance with tech. spec. requirements.	UFSAR Section 11.2.3.3 Pgs. 11-21, 11-22 SD No. 15 Pg. 2,6,12,14 UFSAR Section 11.2.3.2 Pgs 11-18, 11-21

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			The area and process radiation monitoring system consists of 29 area radiation monitors located throughout the plant, and 4 area radiation monitors and 2 high range gamma monitors in each containment. The monitors include a detector unit, check source, indicator and trip units, recorder input, a mimic panel light and annunciator input. Also included are the refueling machine area portable monitor and atmosphere monitors (air particle detectors - APDS - and radio-gas monitors), liquid monitors, sampling systems, and associated alarms, instrumentation, and controls.			
Nuclear Instrumentation	1&2	78	The nuclear instrumentation system is composed of an excore nuclear instrumentation subsystem and an incore instrumentation subsystem. The excore nuclear instrumentation subsystem contains nuclear instrumentation which monitors neutron flux over a range greater than ten decades with four independent and redundant channels. These channels generate a startup rate and provide the reactor protective system with four signals, and monitor the change in reactor power to detect a dropped CEA. Furthermore, the nuclear instrumentation monitors the power range with two additional channels for control of the reactor. In addition, an independent excore wide range neutron monitoring channel is provided to indicate neutron flux level on the auxiliary shutdown panel. Ten channels of instrumentation are provided to monitor the neutron flux. The subsystem consists of wide range logarithmic channels, power range safety, and power range control channels. Each channel is complete with separate detectors, power supplies, amplifiers, and bistables to provide independent operation. Four wide range logarithmic channels monitor the flux from source level to above full power. The flux signals, obtained from a combination of sensitive proportional counters and fission chambers, are amplified and transmitted to the power and rate-of-change-of-power amplifiers located in the control room. In addition to the information on the reactor flux, these channels provide a rate-of-change-of-power signal to the reactor protective system for reactor trip and to the CEDM control system for CEA withdrawal prohibit. Four channels are designated as power range safety channels and provide signal outputs to the reactor protective system. These four channels contain detectors composed of dual section ion chambers which monitor the full axial length of the reactor core at four circumferential positions equally spaced around the core.	UFSAR Section 7.5.2 Pgs. 7-60, 7-61 UFSAR Section 7.5.4 Pgs. 7-67, 7-68 CCSO-90-C72	1. To monitor reactor power from the source range to full reactor power. 2. To provide indication of reactor power level and rate-of-change of power in the control room. 3. To provide indication of reactor power level at the auxiliary shutdown panel. 4. To provide reactor power level and rate-of-change of power signals to the reactor protective system. 5. To provide reactor power level signals to the reactor regulating system. 6. To provide information on axial and radial core power distribution 7. To provide information used for fuel burnup calculations. 8. To indicate locations and magnitudes of neutron flux variations in the core.	UFSAR Section 7.5.2 Pgs. 7-60, 7-61 UFSAR Section 7.5.4 Pgs. 7-67, 7-68 CCSO -90-C72

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
			Two separate power range control channels, which are identical to the power range safety channels, provide reactor power signals to the reactor regulating system. The power signal is combined with the average coolant temperature, first-stage turbine pressure, and pressurizer pressure signals as the control parameters to the reactor regulating system. The incore instrumentation subsystem consists of 45 fixed incore detector assemblies inserted into selected fuel assemblies. Each assembly contains four 40-cm-long rhodium detectors and one thermocouple. Rhodium detector outputs are fed via the data acquisition system to the plant computer in the control room for processing and logging.			
New Fuel Storage and Elevator	Both	80	The new fuel storage and elevator system consists of the new fuel dry storage racks and the new fuel inspection machine, but not include the new fuel elevator which is in the fuel handling system (81). The dry storage racks are constructed to provide storage for 2/3 of a core with a maximum enrichment of 5.0 wt% U-235 for the new fuel assemblies. The new fuel will be subjected to a maximum temperature of 110°F and a minimum temperature of 60°F. If there is space in the spent fuel pool, new fuel may be stored there. The new fuel inspection machine is located in the new fuel dry storage area. The machine is designed to automatically detect any fuel deformities such as oversize, twist, bow, or swelling.	CCSO-91-608	1. New fuel storage provides safe storage for new fuel. 2. The new fuel inspection machine is used to perform visual and dimensional inspections of fuel assemblies.	CCSO-91-608
Fuel Handling	Both	81	The fuel handling system refers to the equipment used to move fuel from the time of receipt of new fuel to the storage of spent fuel. The fuel handling system includes the new fuel elevator, reactor refueling machine, control element assembly change machine, spent fuel handling machine, two fuel upending machines, and transfer carriage. The new fuel elevator is a stainless steel square tube mounted on four wheels riding in vertical stainless steel channels bolted to the west spent fuel pool wall. There is one elevator in each half of the spent fuel pool (SFP). The elevator will accommodate one fuel assembly and is controlled from the new fuel elevator control console located on the west edge of the Unit 1 half of the SFP. The Unit 2 new fuel elevator was modified to facilitate inspection of spent fuel elements. This machine includes a TV camera with its associated supports and movement mechanisms, lighting, and a control console.	UFSAR Section 9.7.2 Pgs. 9-50 thru 9-53 UFSAR Section 9.7.3 Pgs. 9-54 thru 9-57 SD No. 13 Pgs. 5,34,35,36 CCSO-91-608	1. To provide for the safe handling of fuel assemblies and control element assemblies during refueling and fueling operations and postulated accidents.	UFSAR Section 9.7.2 Pgs. 9-50 thru 9-53 UFSAR Section 9.7.3 Pgs. 9-54 thru 9-57 SD No. 13 Pg. 1 CCSO-91-608

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Main Steam	1&2	83	The main steam system transfers steam from the steam generators to the turbine throttle stop valves, moisture separator reheaters, steam generator feed pump turbines, auxiliary feed pump turbines, and the steam seal regulator. The main steam system controls steam generator pressure by means of steam bypass valves, steam dump valves or safety valves, and main steam isolation valves. The major components and subsystems of main steam are: the flow restrictors, safety valves, main steam isolation valves, turbine throttle stop valves, steam dump valves, turbine bypass valves, main steam isolation valve bypass valves, auxiliary feed pump turbine steam supply isolation valves, auxiliary feed pump turbine steam supply isolation valves and bypass valves, moisture separator reheater isolation valves, moisture separator reheaters, associated piping and controls, main steam line drainage subsystem, reheat steam subsystem, and the steam generator blowdown subsytem. The major system and component interfaces are steam generators, main turbine, steam generator feed pump turbines, auxiliary feedwater system, steam seal and exhaust system, reactor regulating system, main turbine control system, emergency safety feature actuation system, circulating water system, and main condensers.	UFSAR Section 10.1 Pgs. 10-1 thru 10-5 SD No. 19 Pgs. 2 thru 7 SD No. 20 Pg. 1 CCSO-90-C72	1. To provide the flow path for steam generator output steam which flows to the main high pressure turbines, the moisture separator reheaters, the main feed pump turbines, the auxiliary feed pump turbines, and the steam seal regulator. 2. To provide overpressure protection for the steam generator. 3. To provide for automatic removal of nuclear steam supply system (NSSS) stored energy and sensible heat following a turbine and reactor trip. 4. To provide for operator control of steam generator pressure and reactor coolant system (RCS) temperature during plant cooldown and heatup. 5. To provide a means of heat removal during hot standby and plant cooldown. 6. To remove excessive moisture from the HP turbine exhaust prior to entering the LP turbines via the reheat steam subsystem.	UFSAR Section 10.1 Pgs. 10-1 thru 10-5 SD No. 19 Pgs. 2 thru 7 SD No. 20 Pg. 1
Reactor Vessel Internal	1&2	84	The reactor vessel internal system consists of the reactor core and the reactor internal structures which together provide the heat source and flow distribution for the primary coolant. Also included in the reactor internals system is the reactor component handling equipment. The internals are contained within the reactor pressure vessel which is part of the reactor coolant system, and interact with the control rod drive mechanism and electrical system through the control rod assemblies. The major components of the reactor core are the 217 fuel assemblies and 77 control rod assemblies. The major components of the reactor internal structures are the core support barrel, lower core support structure (including the core shroud) and the upper guide structure (including the 65 CEA shrouds and the in-core instrumentation guide tubes). The reactor component handling equipment includes the spent fuel pool platform and jib crane, reactor vessel head lifting rig, reactor internals lifting rig and the surveillance capsule retrieval tool.	UFSAR Section 3.1 Pg. 3.1-1, UFSAR Section 3.3 Pgs. 3.3-7, 3.3-8 CCSO-91-608	1. To provide a heat source and heat transfer mechanism to the primary coolant (reactor coolant system). 2. To support and orient the fuel assemblies, the control element assemblies (CEAs), and the incore instrumentation and guide the reactor coolant through the reactor vessel. 3. To prevent hydraulic instabilities in the core. 4. To function properly during all steady state conditions and design basis events. 5. To permit assembly and disassembly of the reactor vessel fueling and maintenance purposes.	UFSAR Section 3.1 Pg. 3.1-1 UFSAR Section 3.2 Pg. 3.2-2 UFSAR Section 3.3 Pg. 3.3-7 CCSO-91-608
Plant Access and Surveilance	Both	85	The plant access and surveillance system is designed in accordance with 10CFR73.71 and 10CFR73.26. This system is described in the CCNPP Security Plan. However, this document is considered "Safeguards Information" and cannot be reviewed without qualification.	CCSO-91-B75	1. Plant access security coordinates the screening, issuing and control of access badges for personnel and vehicle passes. Security also provides escort services, when required for outside vendors or vistors.	CCSO-91-B75

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Plant Access and Surveillance (continued)	Both	85	All security related systems and equipment are part of plant access and surveillance system. Plant access security includes entry processing and access control. Access to the protected area is monitored with a variety of detection devices including metal detectors and x-ray machines. Each person is required to have the proper badging and is monitored upon entry for explosives and weapons, as well as other restricted contraband. Similiarly, all vehicles are searched prior to obtaining entry or exit from the protected area. There are individual badge/key cards and card reader devices located throughout the plant that allow for an intrusion alarm system to protect the most vital sections of the plant. Perimeter security of the protected area includes a double barrier of chain link fence with barbed wire or razor wire that is separated by a 20 feet open buffer zone. This buffer zone is patrolled and remotely monitored by intrusion detection equipment such as closed circuit television, infrared and microwave detectors, and alarms. Security alarms will activate alarms in both the central alarm station and secondary alarm station. Security is equipped with independent radio, telephone, and microwave communication equipment, and security diesel generator is dedicated to provide an uninterrupted power supply for security activities.		2. To provide computerized access control in and out of the protected area, as well as in and out of vital plant areas inside the protected area. 3. To maintain continuous communications between all security personnel at both on-site and off-site facilities and maintain communications with the control room. 4. To provide an uninterrupted power supply for security activities.	
Power Plant Security	Both	86	The power plant security system is generally not used for any of the security related systems or equipment at CCNPP. Refer to the description for systen no. 85, plant access and surveillance system.	CCSO-91-B75		CCSO-91-B75
Unit Transformers	1&2	87	The unit transformers system includes the main step-up transformers for the electrical power produced by the main generators. The unit transformers step-up from 25 KV to 500 KV for Unit 1 and from 22 KV to 500 KV for Unit 2, supplying the red and black buses. The transformers are located in the 500 KV switchyard. The main unit transformers are made up of two parallel half-capacity unit transformers for reliability. The transformers require a significant insulation and cooling subsystem consisting of fans, oil coolers, and oil pumps with the associated manual and automatic controls. The oil medium requires a constant oil preservation subsystem which consists of an expansion tank, air cell, pressure-vacuum bleeding, dehydrating breather and mechanical relief device. Other components for the main unit transformers are the current transformers and various instrumentation, alarms, and controls. The current transformers are required to condition the primary voltage and current for various main unit transformer protection relays and meters.	SD No. 50 Pgs. 1 thru 18 UFSAR Section 8.1 Pg. 8-1, Fig. 8-1	1. To step-up the current produced by the main generators as necessary. 2. To provide power to the 500 KV red bus and black bus. 3. To ensure a continuous supply of electrical power to all essential plant equipment during normal operations and accident conditions.	SD No. 50 Pg. 1 UFSAR Section 8.1 Pg. 8-1
Visitor Center Security	Both	88	The visitor center security system consists of two major alarm/detection subsystems: the building intrusion detection, and the building fire and smoke detection. The building intrusion detection subsystem consists of alarm door monitoring, specific location monitoring, and personnel duress alarm reporting.	CCSO-90-C72	1. To provide protection against intrusion in the visitor center. 2. To provide fire detection capabilities in the visitor center. 3. To protect visitors and personnel in the vistor center.	CCSO-90-C72

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Visitor Center Security (continued)	Both	88	The building fire and smoke detection subsystem monitors those parameters that would be indicative of a fire and provides 24-hour facility protection during both occupied and unoccupied periods. Both subsystems report their respective alarm functions to the main entrance facility through the plant communications system.		4. To protect equipment in the visitor center.	
Emergency Operations Facility Security	Both	89	The emergency operations facility security system consists of two major alarm/detection subsystems: the building intrusion detection, and the building fire and smoke detection. The building intrusion detection subsystem consists of alarm door monitoring, glass break detection, and perimeter fence detection, which all work in conjunction to provide proper facility protection against unauthorized entry. The building fire and smoke detection subsystem monitors those parameters that would be indicative of a fire and provides 24-hour facility protection during both occupied and unoccupied periods. Both subsystems report their respective alarm functions to the main entrance facility through the plant communications system.	CCSO-90-C72	1. To provide protection against intrusion in the EOF. 2. To provide fire detection capabilities in the EOF. 3. To protect visitors and personnel in the EOF. 4. To protect equipment in the EOF.	CCSO-90-C72
Service Building and Outlying Building HVAC	Both	90	The service building and outlying building HVAC system refers to the north service building, south service building, intake structure, sewage treatment plant building, fire pump house and well water pretreatment building heat and ventilation systems. The north service building heat and ventilation subsystem includes the Unit 1 and Unit 2 north service building 45' level ventilation systems, the north service building 12' level ventilation and the north service building chilled water subsystem. These systems comprise various fan coil units, heating and ventilation units, HVAC units, ventilation units and exhaust fans. The south service building heat and ventilation subsystem comprises four air conditioning units, one air handling unit, three supply fans, four recirculation fans and eight exhaust fans. The intake structure heat and ventilation subsystem consists of 12 circulating water pump room air coolers, two intake structure exhaust fans, six chlorination room exhaust fans and six unit heaters. The sewage treatment plant building heat and ventilation subsystem consists of one heating and ventilation unit and eight gravity operated dampers.	SD No. 43A Pgs. 3-12 CCSO-91-669	1. To provide filtered, temperature-regulated air for personnel comfort and equipment protection.	SD No. 43A Pgs. 3-12 CCSO-91-669

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Service Building and Outlying Building HVAC (continued)	Both	90	The fire pump house heat and ventilation subsystem consists of four motor-operated dampers, one exhaust fan, and two unit heaters. The well water pretreatment building heat and ventilation subsystem consists of four motor-operated dampers, one exhaust fan and two unit heaters. The major interfaces are: plant heating system, compressed air system, domestic water system, service water system, saltwater system, and south service building hot water supply system.			
Lube Oil Storage	Both	91	The lube oil storage system is also referred to as the turbine lube oil storage and transfer system. The lube oil storage system is the source point for the makeup oil supplied to turbine generator bearing lube oil and steam generator feed pump lube oil reservoirs. The lube oil storage system also stores oil for various components during maintenance operations. Storage consists of a 20,050 gallon capacity tank and level indicator, a rotary transfer pump and a relief valve. The piping and components of this system are located in the CCNPP tank farm. The major interfaces are: main turbine system and feedwater system.	UFSAR Section 10.5.2.1 Pg. 10-10 SD No. 22A Pg. 25 CCSO-90-C45	1. To provide makeup oil to the main turbine lube oil reservoir and steam generator feed pump lube oil reservoir. 2. To provide storage for component lube oil during maintenance operations.	UFSAR Section 10.5.2.1 Pg. 10-10 SD No. 22A Pg. 25
Gland Steam	1&2	92	The gland steam system refers to the steam seal and steam seal exhaust subsystems. These subsystems are associated with the main turbine and steam generator feed pump turbine seals. The steam seal subsystem supply can be provided by: auxiliary steam, main steam, high pressure turbine seals, or control and stop valve leakoff. The steam seal subsystem consists of labyrinth type steam seals, air actuated steam seal regulating valves, motor operated steam seal regulating bypass valves, direct acting steam seal dump valves, motor operated steam seal dump bypass valves and stop valves, pressure switches, transmitters, indicators, and associated piping and wiring. In Unit 2, the steam seal subsystem includes steam seal spillover valves and spillover valve bypass valves, but Unit 1 includes steam seal dump valves and dump bypass valves. The steam seal exhaust subsystem prevents steam leakage to the turbine building and exhaust air that may leak into the turbine. This is accomplished by creating a vacuum between the atmospheric and turbine sides of the labyrinth seals. The steam seal exhaust subsystem consists of the steam seal exhaust blowers, gland steam condensor, miscellaneous drain tank, pressure transmitters, indicators, and associated piping and wiring.	SD No. 24A Pgs. 1 thru 8 SD No. 24B Pgs. 1 thru 8	1. To prevent the escape of steam from the high pressure end of the main turbine and steam generator feed pump turbines. 2. To prevent the introduction of air and non-condensible gases into the turbine low pressure ends. 3. To collect air leakage and steam from the main turbine, the steam generator feed pump turbine seals, and the main turbine control and stop valves.	SD No. 24A Pgs. 1 thru 3 SD No. 24B Pgs. 1 thru 3

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System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Main Turbine	1&2	93	The main turbine receives high pressure steam from the steam generators and converts the steam energy into a rotating force. The Unit 1 main turbine is a GE 13-stage turbine, including six high pressure stages and seven low pressure stages in each of the three sections. The Unit 2 main turbine is a Westinghouse turbine with one eight-stage high pressure turbine and three ten-stage low pressure turbines. The major subsystems and components of the Unit 1 main turbine are: the turbine control and protection subsystem, turbine generator bearing oil subsystem, low pressure turbines, main stop valves, main control valves, combined intercept and intermediate bearing, turning gear, overspeed trip device, low pressure exhaust hood sprays, atmospheric relief diaphragm and the automatic stop and emergency trip subsystem. The major subsystems and components of the Unit 2 main turbine are: the turbine control and protection subsystem, turbine generator bearing oil subsystem, steam chest, throttle valve, governor valve, reheat stop valve, intercept valve, main journal bearings, zero speed indicator, turning gear, exhaust hood sprays, main thrust bearing, and the automatic stop and emergency trip subsystem. The major interfaces are: main steam system, condensate system, extraction steam system, lube oil storage system and ESFAS.	UFSAR Section 10.5.2.1 Pg. 10-10 SD No. 21A Pgs. 1 thru 21 CCSO-90-C45	1. To convert thermal energy to mechanical energy. 2. To drive the shaft of the generator in order to produce electricity.	UFSAR Section 10.5.2.1 Pg. 10-10 SD No. 21A Pg. 1 CCSO-90-C45
Plant Computer (SSS)	Both	94	The plant computer system is a high-speed digital process computer located in the control room which assists the reactor operators in the safe and efficient operation of each unit. The computer performs this function by monitoring digital and analog inputs from process sensors, displaying alarm messages on a CRT, storing process inputs and providing trending information to the operator upon demand, and providing logging services retrievable upon demand. In addition to monitoring, alarming, and logging functions, the computer provides plant performance information by calculating power performance information such as power distribution, burnup, and thermal margin.	UFSAR Section 7.5.5 Pg. 7-68	1. To assist the reactor operators in the safe and efficient operation of each unit. 2. To monitor digital and analog inputs from process sensors. 3. To store process information. 4. To display alarm messages. 5. To provide logging services. 6. To provide performance information.	UFSAR Section 7.5.5 Pg. 7-68
Carbon Dioxide	1&2	95	The carbon dioxide (CO_2) system is a storage and delivery system. The system consists of a refrigerated storage unit, electric vaporizer and the associated controls, instrumentation and piping. The major interfaces are the main generator and excitation system, nitrogen and hydrogen system, and 480 VAC electric system.	SD No. 71 Pgs. 1 thru 4	1. To provide a means for removing hydrogen from the main generators to reduce the possibility of a hydrogen explosion. 2. To remove air from the main generators when it is desired to put a hydrogen atmosphere back into the generators.	SD No. 71 Pg. 1

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Fire and Smoke Detection	Both	96	The fire and smoke detection systems are installed throughout the auxiliary building in all safety related areas/rooms, including all electrical rooms, electrical chases and tunnels, and the intake structure. The detection system includes the protectowire subsystem, heat detection subsystem, smoke detection subsystem, flame detection subsystem, manual alarm subsystem, and associated controls and alarms. The protectowire subsystem uses specially manufactured cable which is laced throughout the cable trays inside the containment. When a fire or overheating cable raises the temperature, the protectowire completes an electrical circuit and provides a fire alarm to the control room. The heat detection subsystem uses bimetallic, rate-compensated heat detectors which are used for both alarm actuation and initiation of certain fire suppression systems. The smoke detection subsystem uses smoke detectors that operate on a radiation ionization principle, and are not to be used in areas where radiation levels could affect their operation. A single smoke detector will alarm the control room, but two smoke detectors must be in alarm condition to actuate a suppression system. The flame detection subsystem uses flame detectors that respond to the presence of infrared radiation emitted from the flames of combustion and provides alarm to the control room. The flame detectors are not affected by radiation and can be used in the high radiation areas where smoke detectors cannot be used. Manual alarm stations are located throughout the plant to provide personnel actuated alarm to the control room and, in some instances, these alarms also actuate suppression systems. The detection system interfaces with the fire protection system and the transformer deluge system.	UFSAR Section 9.9.2.1 Pgs. 9-67 thru 9-69 CCSO-90-C45	1. To provide early warning of fire conditions. 2. To provide the location of fires and facilitate immediate responses. 3. To protect site personnel and prevent loss of equipment. 4. To assure the capability to shut down the plant and maintain the plant in a safe shutdown condition in the event of a fire. 5. To provide indication of cable overheating.	UFSAR Section 9.9.2.1 Pgs. 9-67 thru 9-69 CCSO-90-C45
Lighting and Power Receptacle	1&2	97	Lighting and power receptacle are installed in accordance with the latest edition of the National Electrical Code. In all areas of the plant site, sufficient lighting shall be maintained so that activities may progress safely. The major lighting components for the different various areas of the plant are described below.	CCSO-91-608	1. To provide sufficient lighting required to carry out the necessary task in and around plant areas. 2. To provide lighting for safe access to supplies and equipment. 3. To provide lighting for access and egress routes.	CCSO-91-608

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Lighting and Power Receptacle (continued)	1&2	97	•General Office Areas - These areas utilize florescent fixtures with prismatic diffuser lenses. The fixtures consist of 2 ft by 4 ft, recessed troffers, with 4-lamp, 40 watt, and rapid start ballasts. 2-lamp, 40 watt, rapid start flourscent fixtures are used for corridor lighting. Power recepticles normally consist of 20 amp, 125V, 2 pole, 3 wire, duplex outlets with stainless steel covers. • Control Room - The ceiling consists of an all luminous ceiling assembled from metal egg crate diffusers with continuous rows of single lamp, 40 watt flourescent strip lighting units. Incandescent luminaries are used for emergency lights which are energized from the station battery, 125VDC. • Auxiliary Building and Containment Vessel - High Bay 1500 watt single incandescent fixtures with plug connectors are used in the containment structures. In the Auxiliary Building and other areas of the containment structure, RLM and low bay incandescent fixtures and vaportight fixtures with globes and guards are utilized. Single lamps, 1000 watt rated, quartz iodize waterproof submersible fixtures arranged in pairs are used in the fuel and spent fuel pits. • Turbine Building, Switchgear Room, and Condenser Pits - For general area lighting in the Turbine Building, high bay 1000 watt mercury vapor luminaries are used. In the Heated Bay Area, 400 watt mercury vapor luminaries are used. Flourescent luminaries are used for local lighting at MCC's and switchgears. Low bay incandescent fixtures with RLM reflectors and wire guards are utilized throughout the intermediate and basement floors. • Water Treatment, Pre-Treatment, Fire Pump, Chlorination, Sewage Disposal, Switchyard, Gate House Building, and Wet or Damp Areas - Low bay incandescent fixtures with prismatic glass reflectors and wire guards are utilized in these buildings. 175 watt mercury vapor luminaries or 150 watt high pressure sodium fixtures controlled by self-contained photoelectric cells are located over all exterior doorways. Power recepticles in these areas are 20 amp, 125V, 2 pole, 3 wire, mounted in cast steel boxes with covers. • Intake Structure - General lighting consists of mercury vapor single lamp (color improved) fixtures or high pressure sodium single lamp fixtures. Bay lighting, below El. 25'-0", used for observing trash buildup, utilize 70 watt high pressure sodium wall mounted luminaries. At the bay end of the intake structure, high pressure sodium floodlights are used to observe trash buildup. Vertical ladders are lighted by incandescent, vaportight, bracket type fixtures with screw-on globes and guards. Power recepticles are mounted in galvinized boxes with spring loaded lift cover plates.		4. To provide convenient power supplies throughout the plant for utilization equipment.	

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Lighting and Power Receptacle (continued)	1&2	97	• Switchyard Structure - Mercury vapor or high pressure sodium flood lamps mounted on tapered steel poles are used for general yard lighting. Specified lights are controlled with photoelectric control switches and contactors with manual bypasses for testing. • Roadway and Parking Lot - Mercury vapor or high pressure sodium lamps with prism refractors are used. These lights are controlled with photoelectric control switches and contactors with manual bypasses for testing. • Emergency Lighting - The control room has a permanently installed emergency lighting circuit which is supplied from 125V DC Battery #22. In the event of loss of normal AC, these emergency lights will automatically provide minimum lighting requirements in the control room. Sealed beam hand lanterns are kept by the shift supervisor for emergency use. All areas of the plant contain fixed emergency lighting supplied from individually contained batteries automatically actuate upon the loss of normal AC lighting power.			
Main Generator and Excitation	1&2	98	The main generator subsystem is a hydrogen-cooled AC generator coupled to and driven by the main turbine. The Unit 1 generator consists of a stator frame, stator core and windings, high voltage bushings, rotor and rotor windings, and collector rings and brushes. The Unit 2 generator consists of a stator frame, stator core and windings, high voltage bushings, and rotor and rotor windings. The excitation subsystem supplies the DC excitation to the main generator field, and adjusts the excitation to maintain constant generator output voltage under changing load conditions. The Unit 1 excitation subsystem consists of an exciter, exciter rectifiers, a static voltage regulator, DC and AC regulators, and a field flashing circuit. The exciter is a small, self-excited air-cooled AC generator which connects to and is driven by the generator rotor. The Unit 2 excitation subsystem consists of an exciter, an exciter rectifier, a permanent magnet generator, a thyristor power amplifier, a thyristor firing circuit, a base adjuster, and a voltage regulator. The exciter is a small, air-cooled AC generator which connects to and is driven by the generator rotor. Included in the main generator and excitation system are the generator bearing oil, generator stator cooling and the isolated phase bus duct cooling. The major interfaces for the main generator and excitation system are the main turbine, service water, and the 500 KV switchyard.	SD No.49 Pgs. 1 thru 6 SD No.49A Pgs. 1 thru 6 UFSAR Section 10.5.2.1 Pg. 10-10	1. (Main Generator) To accept the rated output of the main turbine and to convert the mechanical energy to electrical energy. 2. (Excitation) To provide the field current required to maintain constant main generator output under changing load conditions.	SD No.49 Pgs. 1 thru 6 SD No.49A Pgs. 1 thru 6 UFSAR Section 10.5.2.1 Pg. 10-10

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Cranes/Test Equipment	1&2	99	The Crane System consists of all cranes, monorails, and hoisting and jib equipment at CCNPP. This includes approximately 85 cranes which can be grouped into three types: overhead gantry cranes, monorail systems and underhung cranes, and overhead hoists. Some cranes are classified as seismic II/I because their failure or excessive movement could cause the failure of a Class I structure, system or component. The mechanical components of the crane system include overhead monorail systems, cranes, monorail tracks, carriers or trolleys, motor-driven electric hoist carriers, gears, hoists, hooks, bridges and lift-drop sections. Electrical components include motors, collectors, contractors, electric lift and drop sections, motor starters and control panels. The Crane System is made up of eight overhead cranes which includes two polar cranes, two turbine building cranes, an auxiliary building crane, an intake structure crane, a solid waste area crane and a spent fuel pool crane. The monorail and underhung cranes are located in numerous locations throughout the plant to perform special functions. The overhead hoist cranes include the waterbox monorail hoist, precoat filter monorail hoist, etc. The test equipment system consists of a variety of calibrated instruments/devices used in measuring, inspecting, and monitoring safety related and nonsafety related components, systems, and structures during the operations phase of CCNPP.	CCSO-91-669	1. The cranes are used for lifting and lowering loads and moving them horizontally as necessary. 2. The test equipment is used to perform various plant installation, maintenance and testing functions. 3. The test equipment is used to provide information to keep operating personnel informed of plant condtions. 4. The test equipment is used to provide information to evaluate and/or regulate plant processes.	CCSO-91-669
Plant Communications	Both	100	The plant communications system consists of six subsystems: • Plant public address • Commercial telephone • Sound-powered phones for plant use • Sound-powered phones for emergency use • Microwave system • Radio telephone system. For operating purposes, two independent public address subsystems have been provided for the site. The Gaitronics System, originally installed during construction, provides six separate and independent communication channels. For a site emergency address, an executive volume override is activated. Power is supplied by the vital instrument AC system. The Gaitronics System has been replaced as the primary public address system by the Northern Telcom administrative telephone accessed PA system and is now a backup to the primary system. In addition to the normal PA system, an independent page and party system is available for immediate use for communication between the fuel transfer area in the containment, the spent fuel area in the auxiliary building, and the control room. The Northern Telcom System is divided into five zones. Each zone can be accessed individually from any telephone on site and zones may be accessed simultaneously	UFSAR Section 7.8.2 Pgs. 7-97 thru 7-99	1. To provide multiple methods for uninterrupted plant communications. 2. To ensure the availability and ease of operation of the communication system under any conditions.	UFSAR Section 7.8.2 Pgs. 7-97 thru 7-99

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Plant Communications (continued)	Both	100	Priority paging is available on certain phones. Control Room phones can override any non priority page in progress. The primary PA is powered by a diesel backed vital instrument AC bus. The commercial telephone subsystem ties directly to the BG&E switchboard, making Calvert Cliffs a satellite station. Automatic ringdown telephones are installed between certain key emergency centers. There are direct phone links to the Nuclear Regulatory Agency Emergency Notification System, Shift Supervisor's Office, south gate, security office, Technical Support Center, Emergency Operations Facility, NRC Offices, Operational Support Center and Columbia Gas. The sound-powered plant use phone system consists of a hard-wired network with covered jacks at various stations. Phones, headsets, and handsets with extension cords are taken to these stations for remote operations and control communications. The sound-powered emergency use phone system is a backup system which is completely redundant and maintains physical separation from the plant use system. It provides communications capability between the control room and areas of the plant, including the interior of containment in the event of loss of normal communications during a fire. The microwave system provides non-voice communication between the control room, 500 KV switchyard and the electric system load dispatcher at the Electric Operations Building in Baltimore. The microwave system also handles some of the normal telephone traffic between Baltimore and Calvert Cliffs. The microwave communication system links the onsite and remote equipment. The system uses four frequencies (channels) which have different capabilities. The radio telephone system is a system of base stations and repeaters at the plant linked to the Emergency Operations Facility (EOF) and base stations remote from the plant.			
Plant Areas	1&2	102	The plant areas system consists of general plant areas and various structures and equipment at CCNPP which cannot be designated as part of any other system. This includes buildings located throughout the plant, trailers, new facilities and other areas. Equipment associated with these facilities, such as electrical power to a trailer, are included in the plant area system. In some cases, an area or structure is assigned to the plant area system temporarily until a different system can be clearly defined. For example, a sink hole in the ground may be initially assigned to plant area system. If a ruptured pipe belonging to another system is found after escavating, the activity may be transferred to the pipe's system.	CCSO-91-B75	1. To provide a system designation for general plant areas, various structures, and equipment at CCNPP which cannot be designated as part of any other system.	CCSO-91-B75

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Plant Areas (continued)	1&2	102	Plant Engineering cannot identify a clear list of items that are currently with the plant area system, but have identified that there are applicable safety related items. Some of the items identified were seismic structures such as the containment and auxiliary buildings, and the expansion joints in between.			
Lubrication	Both	104	The Lubrication System is not an actual working system, but is established as a means of generally controlling lubrication. As new equipment is installed, different oils and greases are added to the lubrication system to maintain the EQ status of the new equipment.	CCSO-91-591	1. To control lubrication materials for various equipment throughout the plant. 2. To maintain the EQ status of equipment.	CCSO-91-591
Roads	Both	107	The road system is divided into four key paved roads (Roads A, B, C, and D) with various paved branch roads. The system also includes approximately 17.5 miles of unpaved fire roads. Main access from Maryland Routes 2 & 4 to CCNPP is provided by Road A, which is referred to as the Access Road or Calvert Cliffs Road. This road terminates at the CCNPP Site Entrance Facility (Security Post A), which is also known as the Main Gate. This allows uncontrolled public traffic to the Main Gate and the CCNPP Vistors Center. In the event of an emergency, this road is designated as the evacuation route for all site personnel. Road C, also known as Camp Canoy Road, is the continuation of Road A after its termination at the Main Gate. At an intersection near the the Main Gate, Road C intersects with Road B and D. This intersection is known asCalvert Junction. Road C passes just west of the Switchyard and provides access to the CCNPP general parking area and Security Post C. Road C continues on to BG&E Camp Canoy and throughout the entire property. Just past the general parking area, Road C3 branches off from Road C to provide access to the Materials Processing Facility Gate and the secured area. Road B, also known as Old Bay Farm Road or Contractor Access Road, provides access to CCNPP for heavy vehicles and construction equipment from Gate 1 on Old Maryland Route 4. This access point is just south of where Road A intersects with new Maryland Routes 2 & 4. Large and heavy vehicles utilize this road, as well as other construction roads such as branch roads B1, C1 and C3. Road D also provides access to the secured area. From its intersection with Road C, Road D winds past the north side of the Switchyard and around to Security Post B, which is located at the southeast corner of the Switchyard. Road D1, also known as Sewage Treatment Road, branches off from Road D and provides access to the North Parking Area and the Sewage Treatment Facility. All roads and parking areas inside the secured area are referred to as Haul Road with the exception of Barge Dock Road which provides access to the CCNPP docking facilities used to bring in heavy equipment by sea. All roads and parking areas inside the protected area are referred to as Protected Area Road.	CCSO-90-E69	1. To provide BG&E, contractor, and emergency personnel, with vehicles and equipment, road access to and from the various CCNPP facilities 2. To provide, vehicle and equipment, road access within the protected area of CCNPP. 3. To provide access to remote areas for fire control and woodland management.	CCSO-90-E69

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Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Docks and Marine Related Structures	Both	108	The docks and marine related structures system consists of various plant structures that interface directly with the waters of the Chesapeake. This includes the intake channel, the baffle wall, and the dock facilities. The intake channel is a manmade trench dredged on the floor of the Chesapeake Bay. At the intake structure the intake channel is at an elevation of -26 feet. The channel then descends to an elevation of -51 feet at the baffle wall, which is located approximately 300 feet from the intake structure. Up to this point, the intake channel is also referred to as the intake basin. The floor of the intake channel remains at an elevation of -51 feet to a point 1160 feet from the intake structure. The floor then begins a gradual ascent until it reaches -40 feet elevation 1160 feet from the intake structure. The channel's edge is 4800 feet to the east of the intake structure. At the baffle wall, the intake channel is approximately 560 feet wide. At a point approximately 2800 feet from the intake structure, the channel begins to narrow and has an average width of 400m feet for the remainder of the channel. The baffle wall is located approximately 300 feet east of the intake structure and spans the entire 560 feet width of the intake channel. The entire baffle assembly is about 56 feet tall and extends 5 feet above the water. The bottom of the upper baffle wall is at an elevation of -28 feet and is designed to allow bay water to flow under the wall at a rate of less than one half foot per second. The dock is located on the Chesapeake Bay at the end of Barge Road on the southeast end of the plant. The barge road dock was used frequently during CCNPP construction to receive heavy plant components which were transported via water. Currently, the dock is only used lightly as a convenient location for miscellaneous purposes, such as sand blasting and baffle wall repair. The dock contains a two ton fixed crane, electric power for lighting and miscellaneous use, and a communications system.	CCSO-91-B75	1. The intake channel is designed to draw a large volume of water from the bottom strata of the bay at a low velocity and with minimal ecological impact. 2. The baffle wall is designed to ensure that essentially all plant intake water is drawn from the bottom of the bay. 3. The docks provide the ability to accept materials delivered to CCNPP via water.	CCSO-91-B75
Auxiliary Building	Both	--	The auxiliary building is primarily a reinforced concrete structure and the mat foundation supports a structural steel and reinforced concrete frame which consists mainly of reinforced concrete walls and floors. On the top structure and over the fuel handling area is a secondary steel frame structure with missile-resistent concrete walls and roof which houses the spent fuel crane.	UFSAR Section 5.6.1 Pgs. 5-90, 5-91	1. To provide housing for plant systems and ensure safe shutdown under any condition. 2. To provide shielding to maintain radiation levels outside the auxiliary building within established limits.	UFSAR Section 5.6.1 Pgs. 5-90, 5-91

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TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Auxiliary Building (continued)	Both	--	Facilities related to the NSSS which are located in the auxiliary building include: •New and spent fuel handling, storage and shipment •Control room •Waste processing system •Chemical addition system •Safety injection system •Spent fuel pool cooling system •Various elecrical distribution systems •Chemical and volume control system •Component cooling •Containment spray The auxiliary building is a Class I structure below 69' elevation. The reinforced concrete design is in accordance with ACI 318-63 and the structural steel is in accordance with AISC.	UFSAR Section 5.0 Appendix 5-A Pgs. 5A-3, 5A-4	3. To provide safe access to equipment for operation requirements 4. To maintain its integrity and protect safety related plant equipment from damage under various design loads including design basis earthquake and missiles.	UFSAR Section 5.0 Appendix 5-A Pgs. 5A-3, 5A-4, 5A-12, 5A-18 UFSAR Section 11.2.2.5 Pg.11-17
Cond. Storage Tank # 12 Enclosure	Both	--	Condensate storage tank #12 enclosure is a Class I concrete structure located north of the turbine building in the tank farm area. It houses CST 12 which is shared between the units.	UFSAR Section 10.3.2 Pg. 10-8	1. To provide tornado and wind protection for the tank, thereby ensuring that a reliable supply of AFW will always be available.	UFSAR Section 10.3.2 Pg. 10-8
Domestic Water Treatment Plant	Both	--	The Domestic Water Treatment Plant is a water facilities building located east of the OTF at Barge Road. This plant has no interface with the Domestic Water System that services the protected area. The fire protection portion of the Domestic Water Treatment Plant is cross-tied to the protected area Fire Protection System to provide backup capabilities. The Domestic Water Treatment Building is 20 ft tall, has metal siding and roofing, and rests on a 56' by 70' concrete slab. The building contains five rooms: a fire pump room, a domestic pump room, an electrical room, a diesel fuel tank room, and a chemical storage room.	CCSO-91-781	1. To provide housing for equipment providing domestic water and fire protection to the facilities located outside the protected area, such as the NEF, NOF, OTF, ans the MPF.	CCSO-91-781
Engine Gen House	Both	--	The Engine Generator House is a building located southwest of the Turbine Building, near the Spare Transformer Storage Area. The building is built on a cement foundation that supports the diesel generator. There is an underground fuel storage tank associated with the diesel generator that is located south of the building. The walls and roof are paneled galvanized steel that are not insulated or lined. There is a muffler mounted from the inside roof, and the exhaust pipe extends through the roof.	CCSO-91-670	1. To house the security diesel engine generator and its starting batteries.	CCSO-91-670

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TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Equipment Hatch Access Building (#1 and #2)	1&2	–	The equipment hatch access buildings are metal buildings 40 feet wide by 30 feet high which enclose each equipment hatch outside of Unit 1 & 2 containments. A large roll-up door is on the front of each building to allow a crane to enter.	SD No. 1 Pgs. 13, 14	1. To store material which must be removed from the containment structure through the equipment hatch during refueling. 2. To help maintain cleanliness and contamination control of stored material.	SD No. 1 Pgs. 13, 14
Fire Protection Pump House	Both	–	The fire protection pump house contains the two fire pumps, the jockey pump and their control cabinets which are part of the fire protection system.	UFSAR Section 9.9.2.1 Pg. 9-69	1. To provide protection of the fire and jockey pumps and their control cabinets from the weather.	UFSAR Section 9.9.2.1 Pg. 9-69
Fuel Assemblies	Both	–	There are 217 fuel assemblies in the reactor core. The fuel assemblies are arranged to approximate a right circular cylinder with an equivalent diameter of 136 inches and an active height of 136.7 inches. Each fuel assembly consists of 176 rods (pins) and five guide tubes. The pins contain fuel or a neutron poision. The assembly is held together by spacer grids and is closed at the top and bottom by end fittings. Lateral support and positioning of the fuel rods within the assembly is provided by leaf spring spacer grids welded to five full length guide tubes. The guide tubes provide channels to guide CEAs over their entire length and form the longitudinal structure of the assembly. Inselected fuel assemblies the central guide tube houses in-core instrumentation. The fuel is low enrichment uranium dioxide in the form of ceramic pellets encapsulated in zircolloy tubes which are welded into a hermatic enclosure. The fuel is managed in 24-month cycles.	UFSAR Section 3.1 Pgs. 3.1-1, 3.1-2	1. To maintain their structural integrity under steady state conditior s, design basis events, normal handling loads, shipping stresses, and refueling loads. 2. To provide channels to guide CEAs. 3. To provide housing for in-core instrumentation.	UFSAR Section 3.1 Pg. 3.1-1 UFSAR Section 3.2.3.5 Pg. 3.2-4
Fuel Oil Storage Tank No. 21 Bldg.	Both	–	The fuel oil storage tank no. 21 building is a protective building which encloses the fuel oil storage tank no. 21. The building is rated Class I and is constructed of concrete. The structure also acts as a dike to contain the tank's contents in the event of a rupture and allow suction from the diesels to be taken from the concrete structure itself.	UFSAR Section 8.4.1.2 Pg. 8-17	1. To protect the fuel oil storage tank no. 21 against tornado winds, tornado-generated missiles and from the impact of a transmission line tower falling on it. 2. To contain the fuel oil in the event of a fuel oil storage tank no. 21 rupture or spill and allow for suction for the diesels to be taken directly from the concrete structure itself.	UFSAR Section 8.4.1.2 Pg. 8-17
Hydrogen Storage Pad	Both	–	The hydrogen storage pad is a fenced enclosure at grade elevation, outside the turbine building north end. It includes a stanchion with a flexible metal hose for filling the hydrogen bottles from a truck.	SD No. 71 Pgs. 10, 11	1. To provide an enclosed storage area for the hydrogen storage system gas bottles. 2. To provide a safe hydrogen unloading area.	SD No. 71 Pgs. 10, 11
NMD Mods Mech. Lock-up (#3 and #4)	Both	–	NMD Mods Mech Lockup #3 is a building located on the 10' elevation laydown area north of the Intake Structure. It is the metal-sided building closest to the bay. It is currently being used as a welding shop. It is built on concrete approximately 42' north of the Intake Structure. It is 18' tall, 52' 9" long, and 32' 2 1/2" wide; supported by steel columns and beams.	CCSO-91-670	1. To provide housing for the weld shop. 2. To provide housing for the Mech Mod OJT.	CCSO-91-670

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TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
NMD Mods Mech. Lock-up (#3 and #4) (continued)	Both	--	NMD Mods Mech Lockup #4 is a building located on the 10' elevation laydown area north of the Intake Structure. It is the metal-sided building closest to the hill (furthest from the bay). It is currently being used as the Mech Mod OJT building. The building is built on concrete and is supported by steel beams and columns. It is 24' tall, 51' long, and 37' wide.			
Oil Interceptor Pit	Both	--	The oil interceptor pit includes the diesel generator room oil interceptor pit and the fuel oil storage tank 11 oil interceptor pit. The diesel oil interceptor pit is a below-grade concrete pit located west of the auxiliary building. The pit contains the diesel generator room oil interceptor and waste oil collection tank, which are part of the plant drains system. The pit is covered with a metal plate and has a trap door and ladder for access. The fuel oil storage tank 11 interceptor pit is located north of the fuel oil storage tank 11 area dike. The pit contains the fuel oil storage tank oil interceptor and the waste oil collection tank, which are part of the plant drains system. The fuel oil pit is identical in construction to the diesel generator pit.	SD No. 75 Pgs.15,16	1. To house the diesel generator room oil interceptor and waste oil collection tank, and protect them from the elements. 2. To house the fuel oil storage tank 11 oil interceptor and waste oil collection tank, and protect them from the elements.	SD No. 75 Pgs.15,16
Service Building	Both	--	The service building is situated between the turbine building and the intake structure and accommodates a warehouse, lube oil room and water treatment area at elevation 12,' and office space and a machine shop at elevation 45'. The service building is primarily a structural steel frame supporting a reinforced concrete floor slab. At elevation 45', part of the warehouse is covered by a roadway and parking area. The structural steel columns are supported by reinforced concrete piers. The service building is a Class II structure. The structural steel members are designed as a continuous frame across the width of the building in an east-west direction, all being fabricated from ASTM A-36 steel. The floors are made with 3000 psi concrete and ASTM grade 40 reinforcement.	UFSAR Section 5.6.4 Pg. 5-95 UFSAR Section 5.0 Appendix 5-A Pg. 5A-4	1. To provide housing for plant systems and equipment. 2. To provide housing for personnel.	UFSAR Section 5.6.4 Pg. 5-95
South Service Building	Both	--	The south service building is a two story non-seismic structure located south of the turbine building. It is a metal-sided building built on a reinforced cement slab. There is fireproofing sprayed on the beams and the inside of the metal siding. It is a stand alone structure with a metal passageway to the turbine building. Most Concrete Masonry Unit (CMU) walls are 8" nominal with painted cement plaster. In some areas the walls may be 8". The passageway is also made out of metal siding. There are no safety related systems or equipment interfacing with the SSB. The vault room, located on the first floor, provides storage of safety related parts and a computer.	CCSO-91-591	1. To provide housing for personnel and storage areas.	CCSO-91-591

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TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
South Service Building (continued)	Both	–	The first floor contains a cafeteria, kitchen, electrical and mechanical equipment room, bathrooms, building services storage, the machine room, the electrical and I & C shops, test equipment room, electrical & instrumentation modification unit, the telephone equipment room, and the vault room. The passageway is on ground level. It contains a hallway and the breathing air compressor room. The walls in the passageway are designed with two-hour firewalls. Certain sections of the SSB have two-hour rated firewalls, while others sections are rated for one hour. The second floor contains office area, bathrooms, building services storage, electrical room, storage area, library, and telephone equipment room. There are two stairwells on the far ends of the building and an elevator in the center of the building. The elevator has a pit below the 45' elevation. The floor level pit is 40' 6" elevation.			
Switchgear Structure	Both	–	There are many types of switchgear structures at CCNPP. Switchgear structures include Westinghouse low voltage (≤600V) metal enclosures, Westinghouse high voltage metal enclosures, General Electric low voltage (≤600V) metal enclosures, General Electric medium voltage metal enclosures, 480V ITE motor control centers, and 13.8 kV ITE power switching centers. This does not include the structures that enclose the breakers for125 VDC, 208V/120VAC instrument buses, 1(2) Y01, 1(2) Y02, 1D50, and 1D58. The Westinghouse low voltage metal enclosures are an assembly of one or more compartments consisting of a formed welded front enclosure containing the circuit breaker compartments, a rear enclosure for the bus copper, cables, instrument transformers and other detail equipment, with some structures having a bus compartment between the front and rear compartments. Westinghouse high voltage metal enclosures support the instrument panel and contain the busses, instrument transformers and circuit connections. The General Electric low voltage metal enclosures are free standing with a front breaker enclosure, bus compartment, and rear cable compartment. The General Electric medium voltage metal enclosures are are also divided into three compartments. The ITE motor control center is a group of combination starters and other control or protective devices mounted in free standing cubicles. The switchgear structures interface with the switchyard (500kV) and switchyard DC system, the 13kV sevice transformers and buses system, the 13-4kV service transformers and 4kV buses system, the 480V buses system, the 480V motor control center system, and the 13kV unit buses system.	CCSO-91-591	1. To house electrical distribution equipment such as switches, breakers, fuses, and instrumentation.	CCSO-91-591

BG&E LCM Program

TABLE 1
SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Transformer Foundations	Both	–	The transformer foundations are comprised of all of the various foundations provided throughout the facility for supporting transformers. This includes the main unit transformer (25kV/500kV) and plant service transformer (500kV/13.8kV) foundations, the unit service transformer (13.8kV/4kV) foundations, the unit service transformer (4kV/480V) foundations, the unit service transformer (4kV/240V) foundation, the screen wash system transformer foundations, theSola Regulating Transformer foundation, the Sorgel Electric Corp transformer foundation, the SB Hevi Duty Electric transformer foundation, and the SSB Transformer foundation, all of which are located inside the protected area, and the 300 KVA transformer foundation, the OTF transformer foundation, the MPF transformer foundation, the waste treatment transformer foundation, the NEF transformer foundation, the NOF transformer foundation, and the fabrication shop transformer foundation, all of which are located outside the protected area. Large transformer foundations (≥4kV) are made of concrete and reinforcement steel. Smaller transformer foundations (<4kV) are made up of formed concrete pads anchored to exsisting structures or the transformers are anchored directly to the floor. If a small transformer foundation is attached to a structure, then the foundation is considered to be part of that structure. The foundations for the main unit transformers are designed for seismic, wind, and cable forces. The spare transformer foundation and unit service transformer (13.8kV/4kV) foundations are designed for seismic and wind forces.	CCSO-91-591	1. To provide a means of anchoring and supporting transformers. 2. To maintain transformers on a level orientation.	CCSO-91-591
Turbine Building	Both	–	The turbine building is an integrated steel structure, with metal siding, supported on reinforced concrete foundations. Included in the turbine building are the turbine generator bays, heater bays , and the turbine-generator concrete pedestals which project through the building to the operating deck at elevation 45 feet. The turbine generator units 1 and 2 are separated by an expansion joint in the super-structure. The circulating water intake and discharge conduits are incorporated into the spread footings. The turbine building is a Class II structure with the exception of the auxiliary feedwater pump enclosure, which is Class I. All of the structural steel columns, beams and roof trusses of the building have been designed as independent members and in accordance with AISC.	UFSAR Section 5.6.3 Pgs. 5-94, 5-95 UFSAR Section 5.0 Appendix 5-A Pg. 5A-3, 5A-4	1. To provide housing for the turbine-generators and other systems. 2. To provide safe access to equipment for maintenance and operation requirements. 3. To maintain the AFW pump room integrity and protect the AFW pumps from damage under various design loads including a design basis earthquake and missiles.	UFSAR Section 5.6.3 Pgs. 5-94, 5-95 UFSAR Section 5.0 Appendix 5-A Pg. 5A-3, 5A-4
Waste Water Treatment Building	Both	–	The Waste Water Treatment Building houses the equipment used for sewage treatment. It is a masonry walled building built on a concrete foundation, located north of the power plant along the shore. The building was designed for the maximum flood level on record, elevation 6.5 ft. The major system interfaces are: •compressed air •fire protection •480V buses •plant water.	CCSO-91-781	1. To house numerous tanks, pumps, mixers, and other equipment used for sewage treatment.	CCSO-91-781

BG&E LCM Program

TABLE 1

SYSTEM/STRUCTURE INFORMATION

Revision 3

System/structure	Unit	ID	Summary Description	Description Reference	Functional Requirement(s)	Function Reference
Well Observation Building	Both	--	The Well Observation Building is a building located northwest of the Barge Road Dock. It is a small metal-sided building on a concrete slab. It was used for the inital testing of well water. The well is currently capped and the building is no longer in use.	CCSO-91-781	1. The building is no longer in use.	CCSO-91-781
Well Water Pump House	Both	--	The well water pump house (or well water pretreatment building) houses the two activated carbon filters and the pretreated water booster pumps which are part of the well and pretreated water system. It is located at the tank farm near the pretreated water storage tanks.	SD No. 45 Pgs. 9,12 & Fig. 45-1	1. To house the well water carbon filters pretreated water booster pumps and protect them from the weather.	SD No. 45 Pgs. 9,12 & Fig. 45-1

Notes:

(1) Unit designations are "1," "2," "1&2," or "Both." "1&2" designates identical, independent systems for Units 1 and 2. "Both" designates common systems which are shared by both units.

Cover Sheet

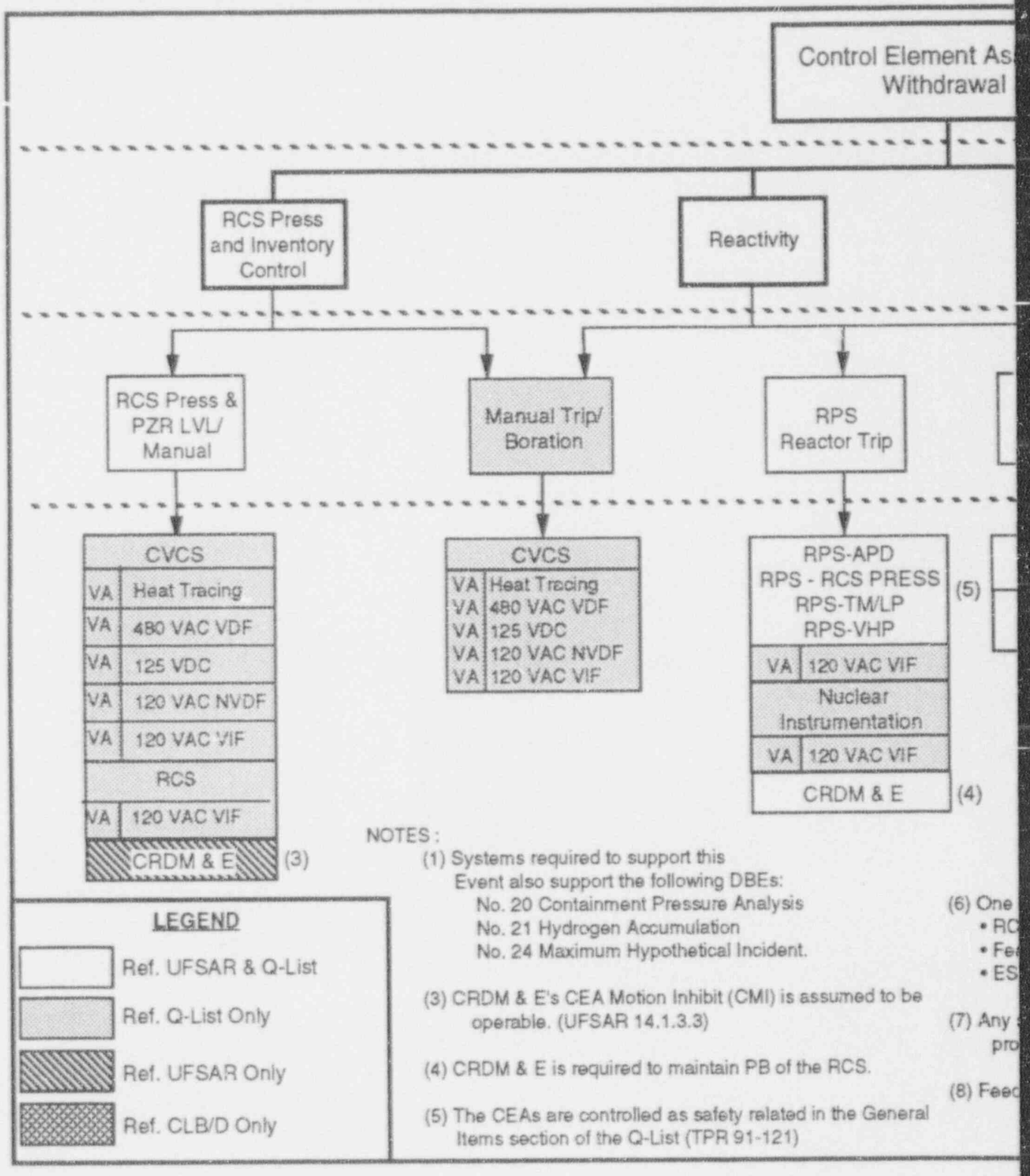
Design Basis Event Flow Charts, Revision 3/Change 1

These flow charts present the results of the review of design basis events (DBEs) to identify systems and structures relied upon in response to DBEs. The following flow charts are attached: Figure 14-2 through 14-26, and 14-50. The review was conducted in accordance with LCM/LR Program Procedure LCM-12, "System/Structure ITLR Screening," Revision 2 as modified per TPR 93-007.

	Name Printed	Signature	Date
Evaluator	PJ PEDEN	PJ Peden	2/24/93
Verifier	C E BOONE	C E Boone	2/24/93
QA Reviewer	#J.N. SORENSEN	J.N. Sorensen	2/25/93
Approver	O.K. Hostetler	O K Hostetler	2/25/93

Reference(s)
CCNPP, Quality List Manual. Baltimore Gas and Electric Co., Attachment A, General Items, Rev.17, Section 1.0 with updates through Transmittal Letter 91-09, 12-9-91
CCNPP, Quality List Manual. Baltimore Gas and Electric Co., Attachment E, Accident Flow Sheets, Rev.17 with updates through Transmittal Letter 91-09, 12-9-91
CCNPP, Updated Final Safety Analysis Report, Baltimore Gas and Electric Co., Rev. 11, Chapters 5 and 14,
LCM Program TPR 91-014 (Resolved)
LCM Program TPR 91-022 (Recommended Resolution)
LCM Program TPR 91-048 (Resolved)
LCM Program TPR 91-134 (Recommended Resolution)
LCM Program TPR 91-178 (Recommended Resolution)
LCM Program TPR 91-188 (Dispositioned)
LCM Program TPR 91-194 (Resolved)
LCM Program TPR 91-217 (Resolved)
LCM Program TPR 92-025 (Interim Disposition)
LCM Program TPR 92-069 (Resolved)
LCM Program TPR 92-108 (Interim Disposition)
LCM Program TPR 92-157 (Recommended Resolution)
LCM Program TPR 92-143 (Recommended Resolution)
LCM Program TPR 92-109 (Interim Disposition)
LCM Program TPR 91-121 (Resolved)
LCM Program TPR 91-009 (Resolved)
LCM Program TPR 92-136 (Recommended Resolution)
LCM Program TPR 92-069 (Resolved)
LCM Program TPR 92-141 (Recommended Resolution)
LCM Program TPR 92-110 (Recommended Resolution)

Reference(s)
LCM Program TPR 92-131 (Resolved)
LCM Program TPR 92-111 (Recommended Resolution)



NOTES :

(1) Systems required to support this Event also support the following DBEs:
No. 20 Containment Pressure Analysis
No. 21 Hydrogen Accumulation
No. 24 Maximum Hypothetical Incident.

(3) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)

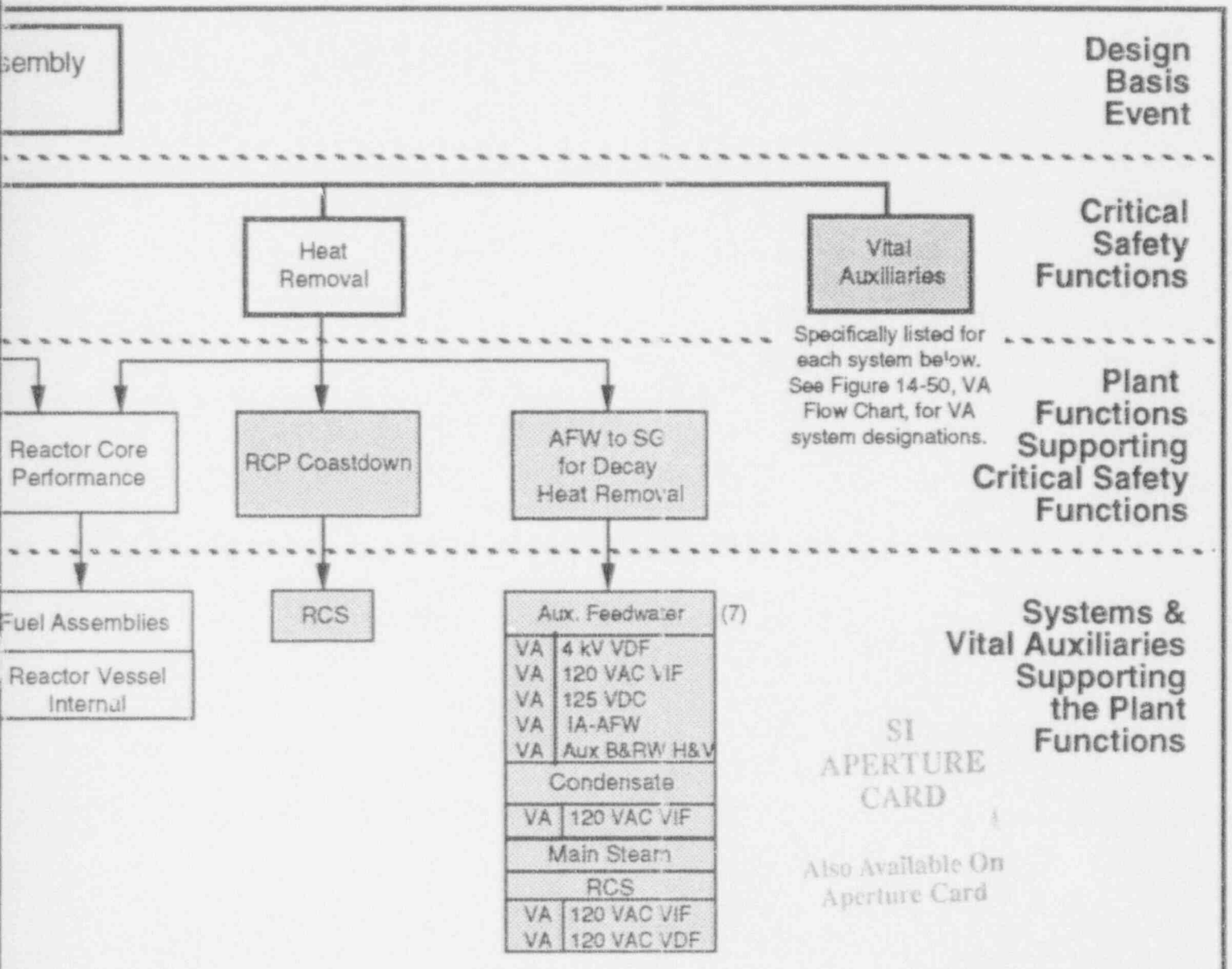
(4) CRDM & E is required to maintain PB of the RCS.

(5) The CEAs are controlled as safety related in the General Items section of the Q-List (TPR 91-121)

(6) One
• RC
• Fe
• ES

(7) Any
pro

(8) Feed



or more of the following systems may provide signals to RPS:
S
dwater
FAS
• Nuclear Instrumentation
• Data Acquisition Computer

system interfacing with RPS should be reviewed to determine if that system vides the function of loop protection and isolation from electrical faults.

water is required to provide signals to AFAS.

FIGURE 14-2
DBE No. 2 FLOW CHART SCREENING TOOL
Revision 3

LCM-12	Rev 2

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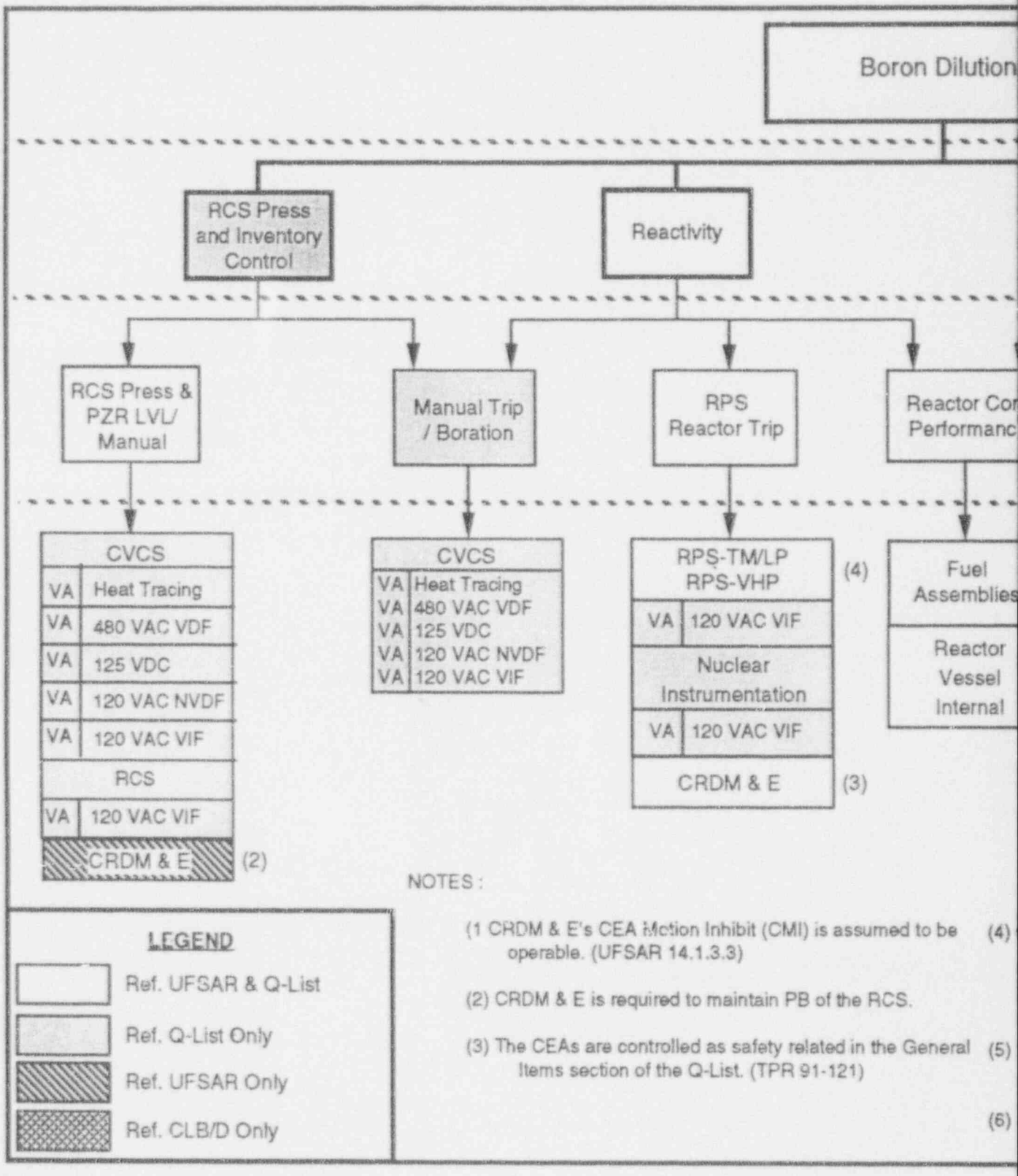
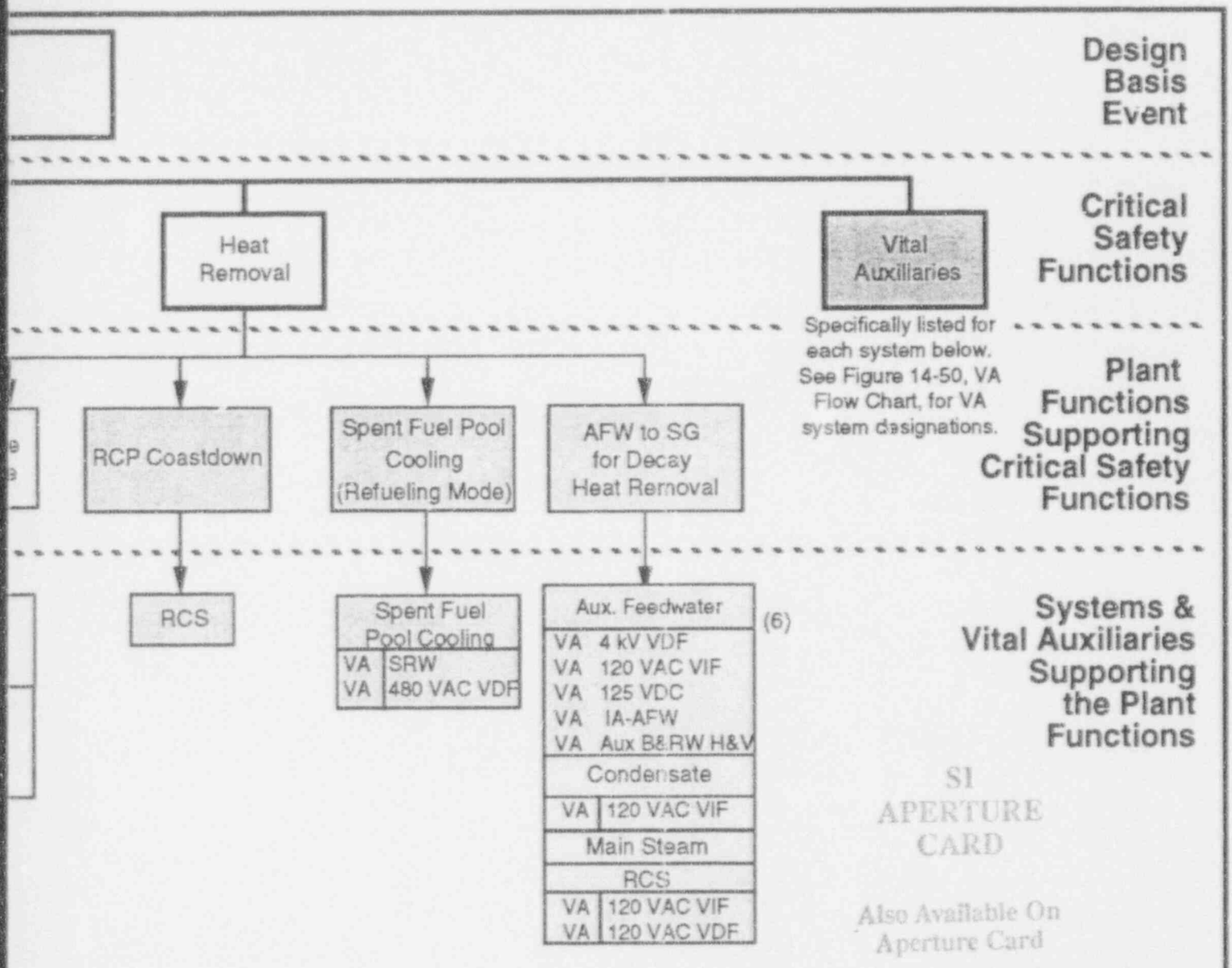

Boron Dilution
RCS Press and Inventory Control
Reactivity
RCS Press & PZR LVL/ Manual
Manual Trip / Boration
RPS Reactor Trip
Reactor Cor Performanc
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RCS
VA 120 VAC VIF
CRDM & E
(2)
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RPS-TM/LP
RPS-VHP
(4)
VA 120 VAC VIF
Nuclear Instrumentation
VA 120 VAC VIF
CRDM & E
(3)
Fuel Assemblies
Reactor Vessel Internal
NOTES :
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
(1 CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)
(4)
(2) CRDM & E is required to maintain PB of the RCS.
(3) The CEAs are controlled as safety related in the General Items section of the Q-List. (TPR 91-121)
(5)
(6)



One or more of the following systems may provide signals to RPS:

- RCS
- Feedwater
- ESFAS
- Nuclear Instrumentation
- Data Acquisition Computer

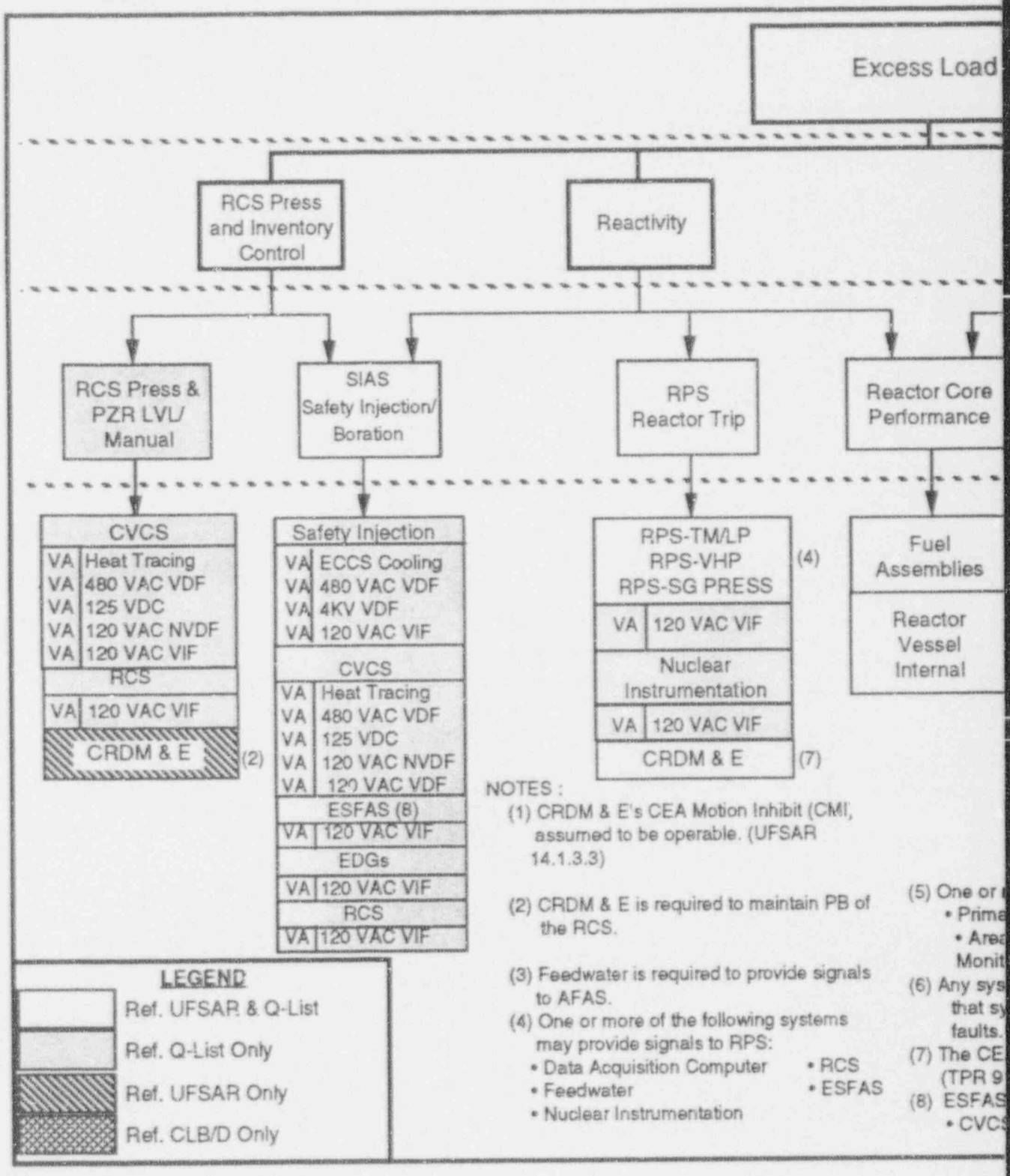
Any system interfacing with RPS should be reviewed to determine if that system provides the function of loop protection and isolation from electrical faults.

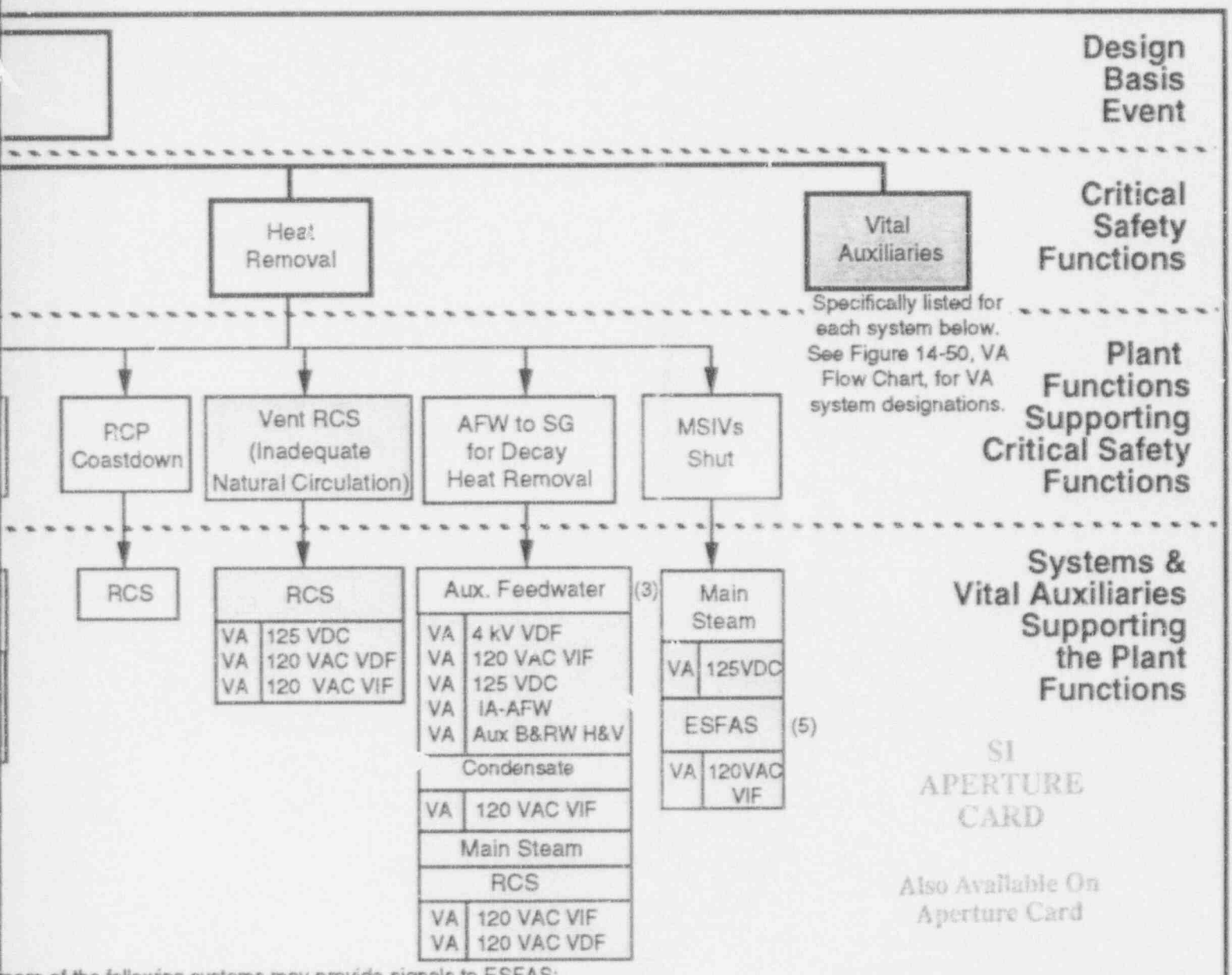
Feedwater is required to provide signals to AFAS.

FIGURE 14-3
DBE No. 3 FLOW CHART SCREENING TOOL
Revision 3

LCM-12 Revision 2

BG&E LCM Program


Excess Load
RCS Press and Inventory Control
Reactivity
RCS Press & PZR LVL/ Manual
SIAS Safety Injection/ Boration
RPS Reactor Trip
Reactor Core Performance
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RCS
VA 120 VAC VIF
CRDM & E
(2)
Safety Injection
VA ECCS Cooling
VA 480 VAC VDF
VA 4KV VDF
VA 120 VAC VIF
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VDF
ESFAS (8)
VA 120 VAC VIF
EDGs
VA 120 VAC VIF
RCS
VA 120 VAC VIF
RPS-TM/LP
RPS-VHP
RPS-SG PRESS
(4)
VA 120 VAC VIF
Nuclear Instrumentation
VA 120 VAC VIF
CRDM & E
(7)
Fuel Assemblies
Reactor Vessel Internal
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI, assumed to be operable. (UFSAR 14.1.3.3)
(2) CRDM & E is required to maintain PB of the RCS.
(3) Feedwater is required to provide signals to AFAS.
(4) One or more of the following systems may provide signals to RPS:
• Data Acquisition Computer
• Feedwater
• Nuclear Instrumentation
• RCS
• ESFAS
(5) One or
• Prima
• Area
Monit
(6) Any sys
that sy
faults.
(7) The CE
(TPR 9
(8) ESFAS
• CVC



more of the following systems may provide signals to ESFAS:

ry Containment • RPS • Electrical 4kV Transformers
& Process Radiation • Safety Injection and Buses
oring • Feedwater • RCS

tem interfacing with RPSand/or ESFAS should be reviewed to determine if stem provides the function of loop protection and isolation from electrical

As are controlled as safety related in the General Items section of the Q-List. -121)

may send signals to the following systems:

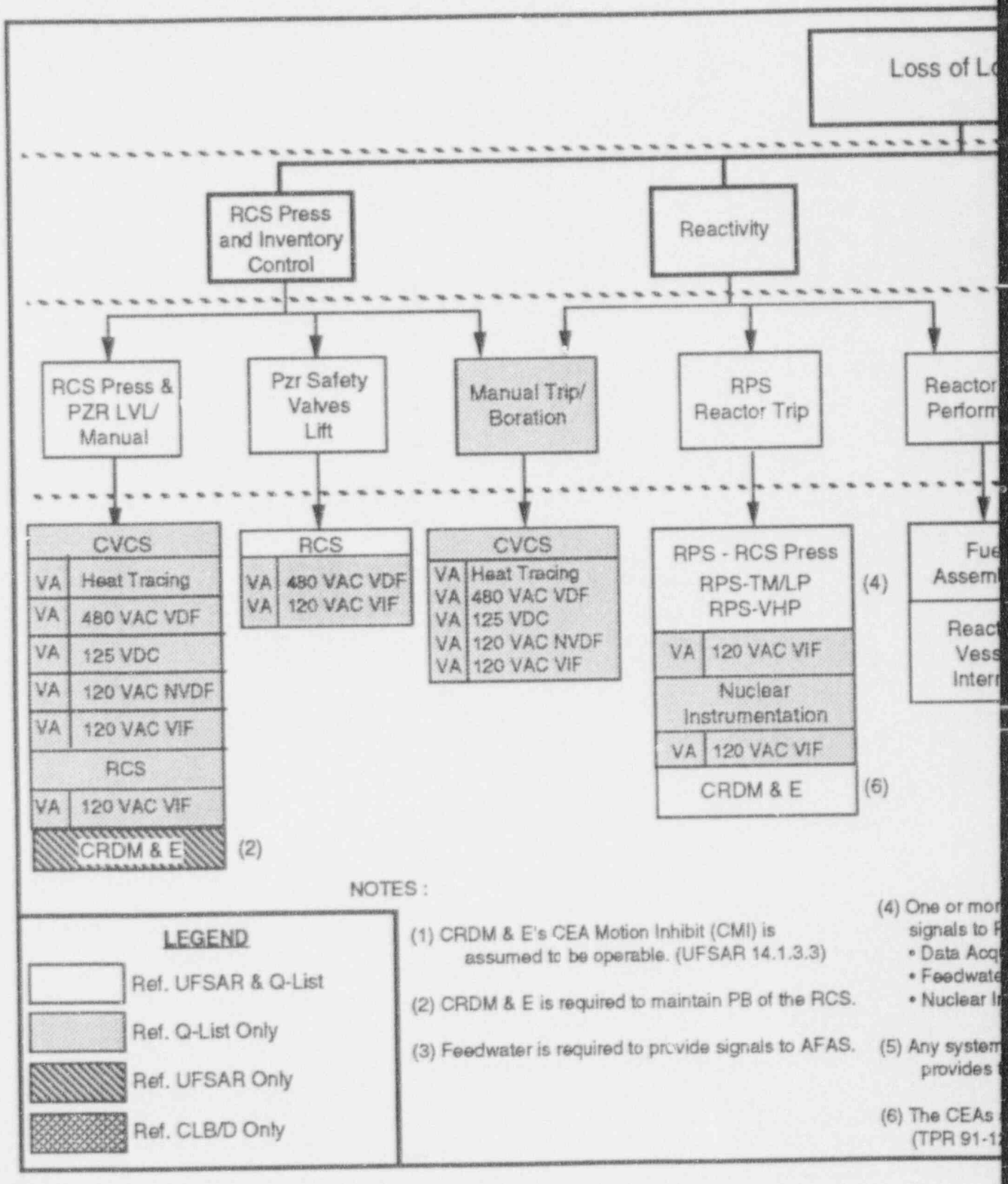
• Safety Injection • Sampling (NSSS)

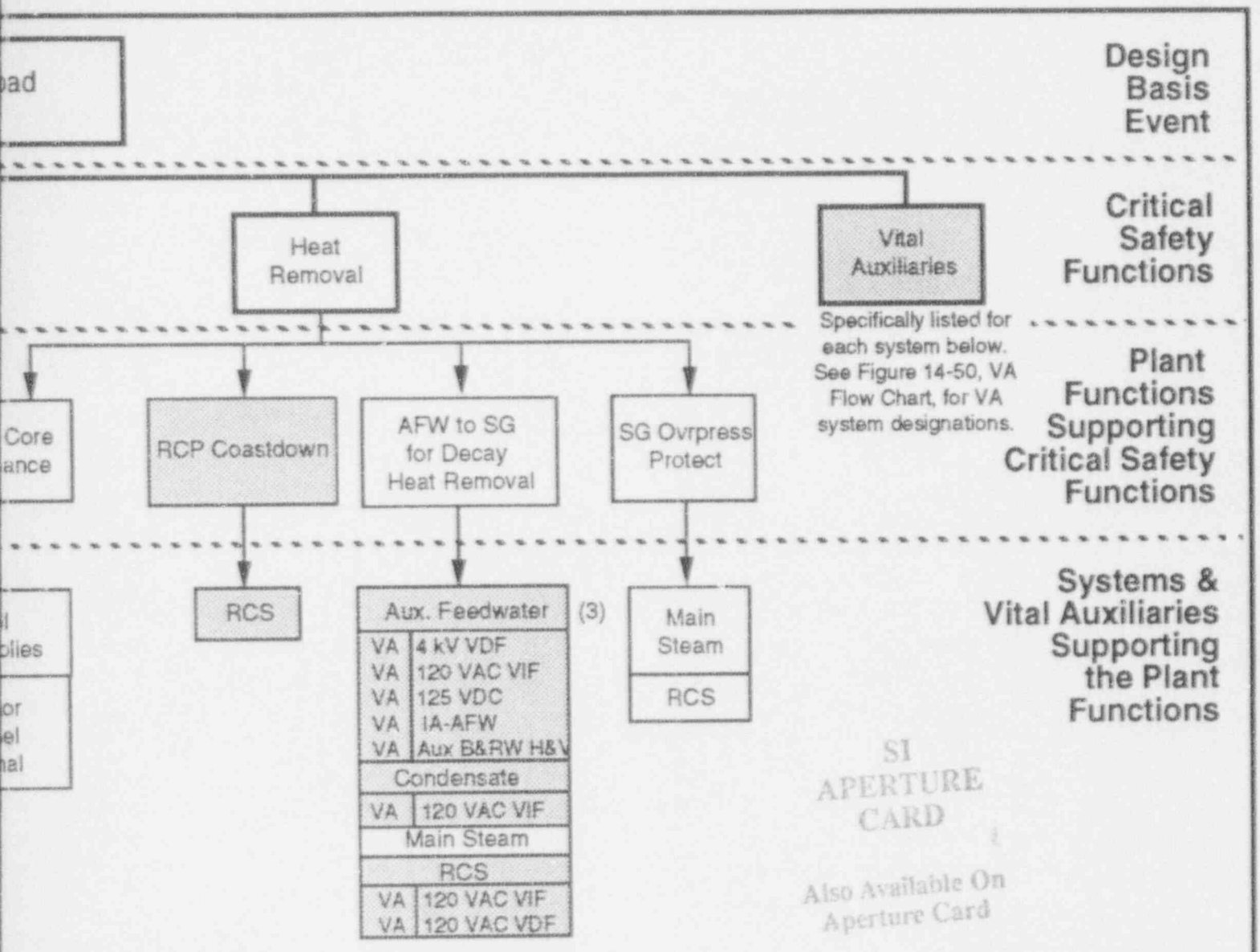
FIGURE 14-4
DBE No. 4 FLOW CHART SCREENING TOOL
Revision 3/Change 1

LCM-12 **Revision 2**

BG&E LCM Program

9303050070-03


Loss of L
RCS Press and Inventory Control
Reactivity
RCS Press & PZR LVL/ Manual
Pzr Safety Valves Lift
Manual Trip/ Boration
RPS Reactor Trip
Reactor Perform
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RCS
VA 120 VAC VIF
CRDM & E
(2)
RCS
VA 480 VAC VDF
VA 120 VAC VIF
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RPS - RCS Press
RPS-TM/LP
RPS-VHP
(4)
VA 120 VAC VIF
Nuclear Instrumentation
VA 120 VAC VIF
CRDM & E
(6)
Fue
Assem
React
Vess
Interr
NOTES :
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)
(2) CRDM & E is required to maintain PB of the RCS.
(3) Feedwater is required to provide signals to AFAS.
(4) One or mor
signals to F
• Data Acq
• Feedwate
• Nuclear In
(5) Any system
provides
(6) The CEAs
(TPR 91-1



of the following systems may provide
RPS:
uisition Computer
r
nstrumentation

- RCS
- ESFAS

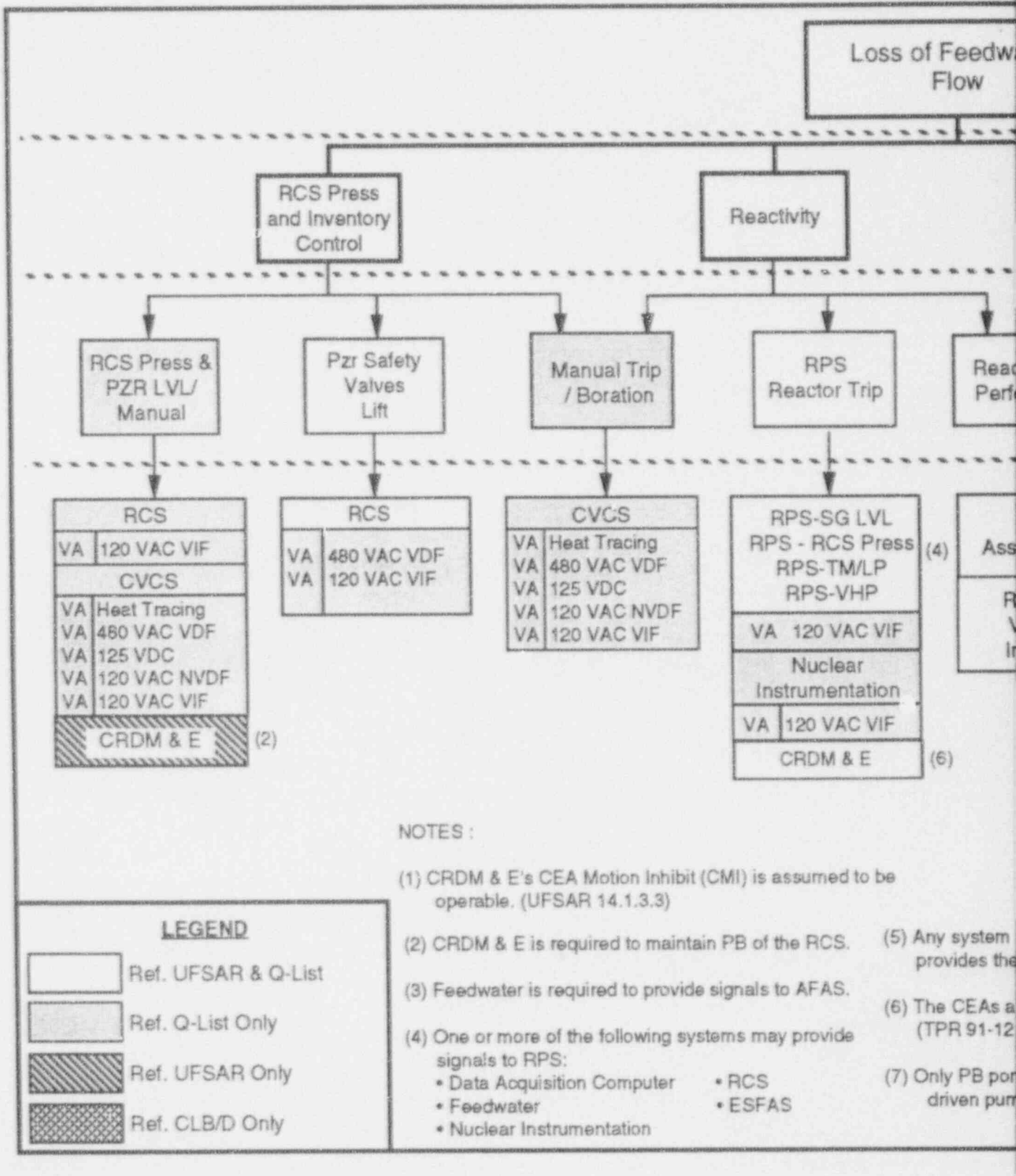
interfacing with RPS should be reviewed to determine if that system
he function of loop protection and isolation from electrical faults.

are controlled as safety related in the General Items section of the Q-List.
21)

FIGURE 14-5
DBE No. 5 FLOW CHART SCREENING TOOL
Revision 3/Change 1

LCM-12	Rev. 2

BG&E LCM Program



NOTES :

(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)

(2) CRDM & E is required to maintain PB of the RCS.

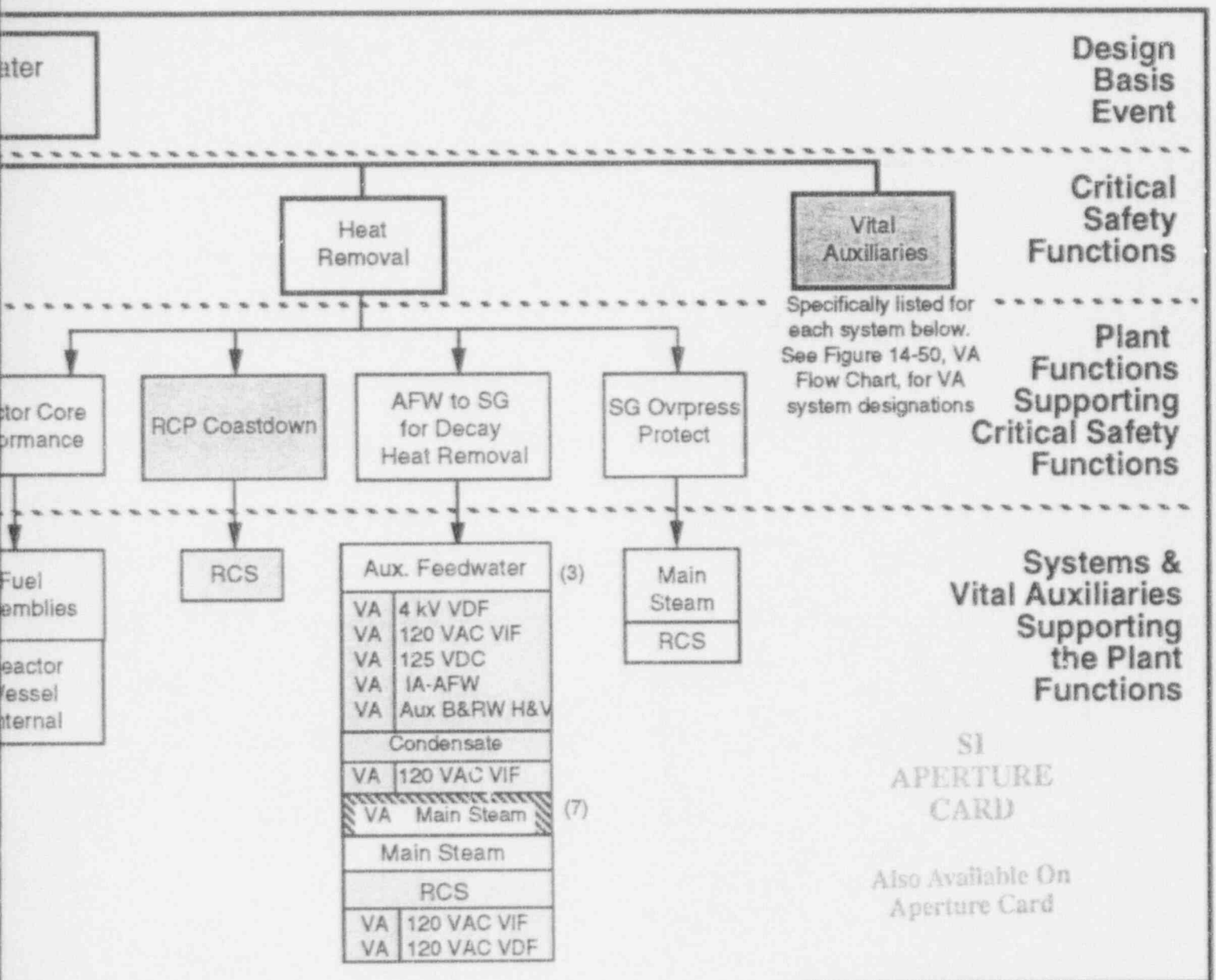
(3) Feedwater is required to provide signals to AFAS.

(4) One or more of the following systems may provide signals to RPS:
- Data Acquisition Computer
- Feedwater
- Nuclear Instrumentation
- RCS
- ESFAS

(5) Any system
provides the

(6) The CEAs a
(TPR 91-12

(7) Only PB por
driven pum



nterfacing with RPS should be reviewed to determine if that system function of loop protection and isolation from electrical faults.

e controlled as safety related in the General Items section of the Q-List.

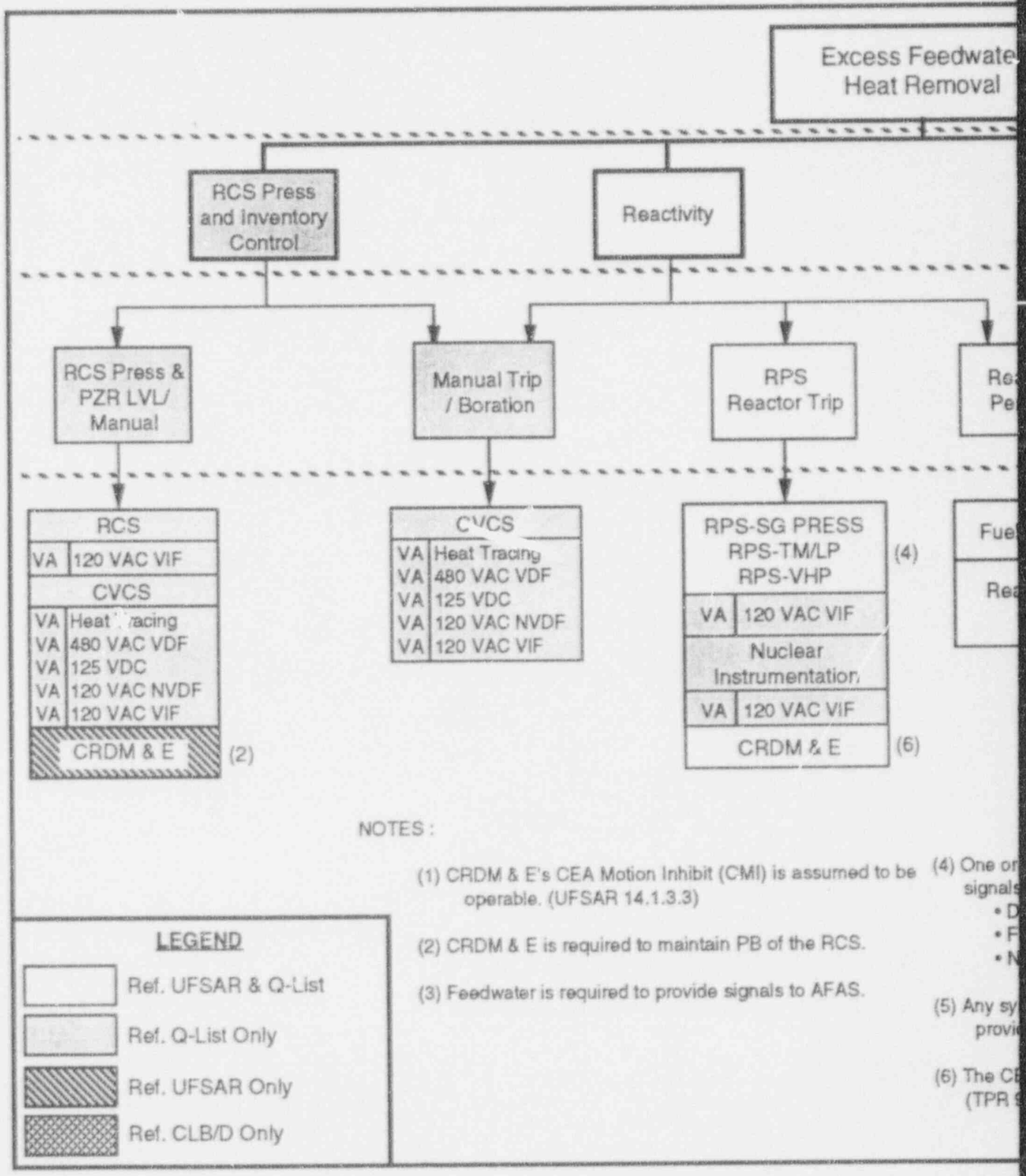
)

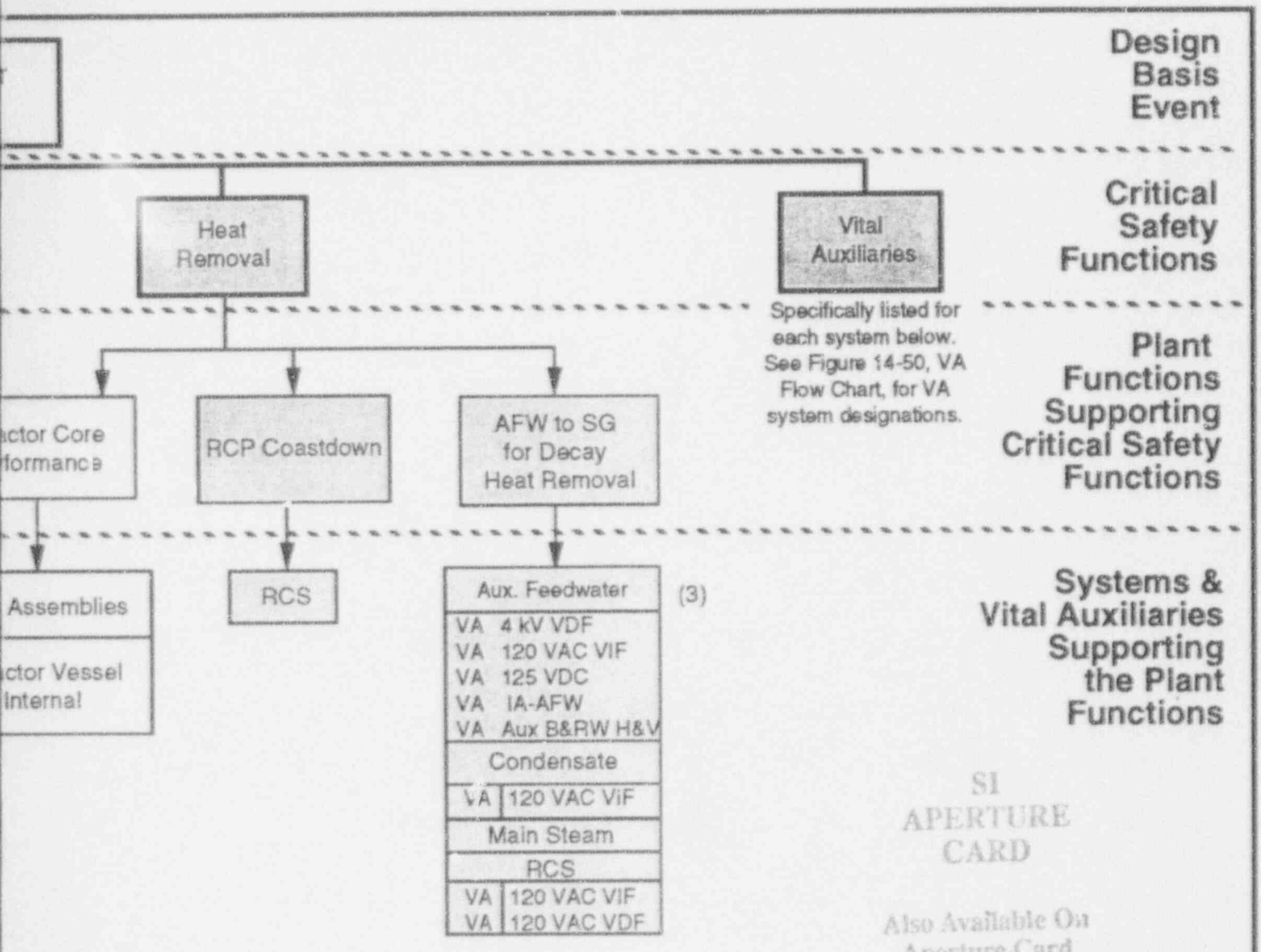
ions of main steam are required to direct steam to supply AFW turbine ps.

FIGURE 14-6
DBE No. 6 FLOW CHART SCREENING TOOL
Revision 3

LCM-12	Rev. 2

BG&E LCM Program


Excess Feedwate
Heat Removal
RCS Press and Inventory Control
Reactivity
RCS Press & PZR LVL/ Manual
Manual Trip / Boration
RPS Reactor Trip
RCS
VA 120 VAC VIF
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
CRDM & E
(2)
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RPS-SG PRESS
RPS-TM/LP
RPS-VHP
(4)
VA 120 VAC VIF
Nuclear Instrumentation
VA 120 VAC VIF
CRDM & E
(6)
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)
(2) CRDM & E is required to maintain PB of the RCS.
(3) Feedwater is required to provide signals to AFAS.
(4) One or
signals
• D
• F
• N
(5) Any sy
provi
(6) The CE
(TPR
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only



more of the following systems may provide
to RPS:
ata Acquisition Computer
edwater
uclear Instrumentation
• RCS
• ESFAS

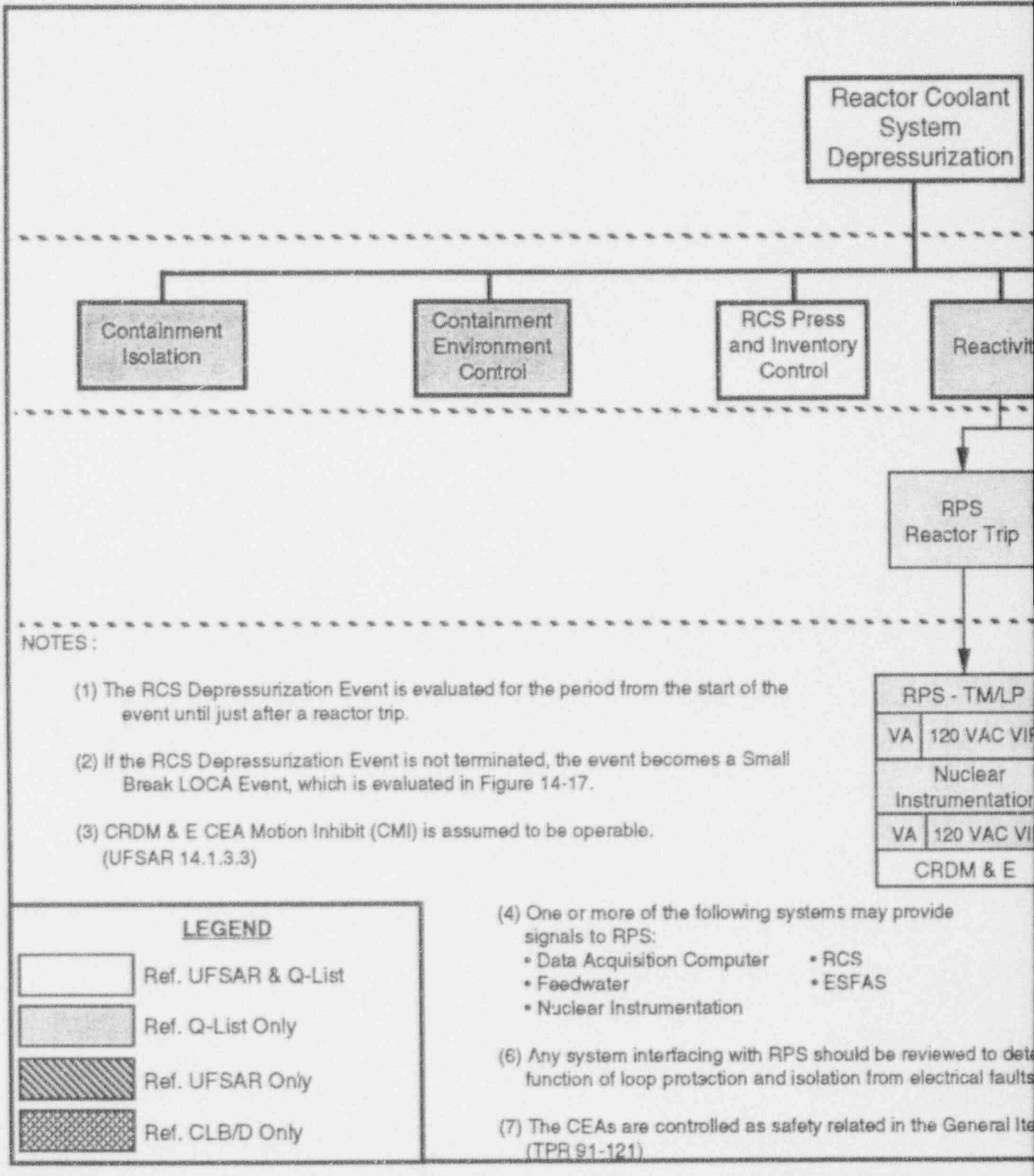
tem interfacing with RPS should be reviewed to determine if that system
es the function of loop protection and isolation from electrical faults.

As are controlled as safety related in the General Items section of the Q-List.
1-121)

FIGURE 14-7
DBE No. 7 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12	Rev. 2

BG&E LCM Program


Reactor Coolant System Depressurization
Containment Isolation
Containment Environment Control
RCS Press and Inventory Control
Reactivit
RPS Reactor Trip
RPS - TM/LP
VA
120 VAC VI
Nuclear Instrumentation
VA
120 VAC VI
CRDM & E
NOTES :
(1) The RCS Depressurization Event is evaluated for the period from the start of the event until just after a reactor trip.
(2) If the RCS Depressurization Event is not terminated, the event becomes a Small Break LOCA Event, which is evaluated in Figure 14-17.
(3) CRDM & E CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
(4) One or more of the following systems may provide signals to RPS:
• Data Acquisition Computer
• RCS
• Feedwater
• ESFAS
• Nuclear Instrumentation
(6) Any system interfacing with RPS should be reviewed to dete function of loop protection and isolation from electrical faults
(7) The CEAs are controlled as safety related in the General Ite (TPR 91-121)

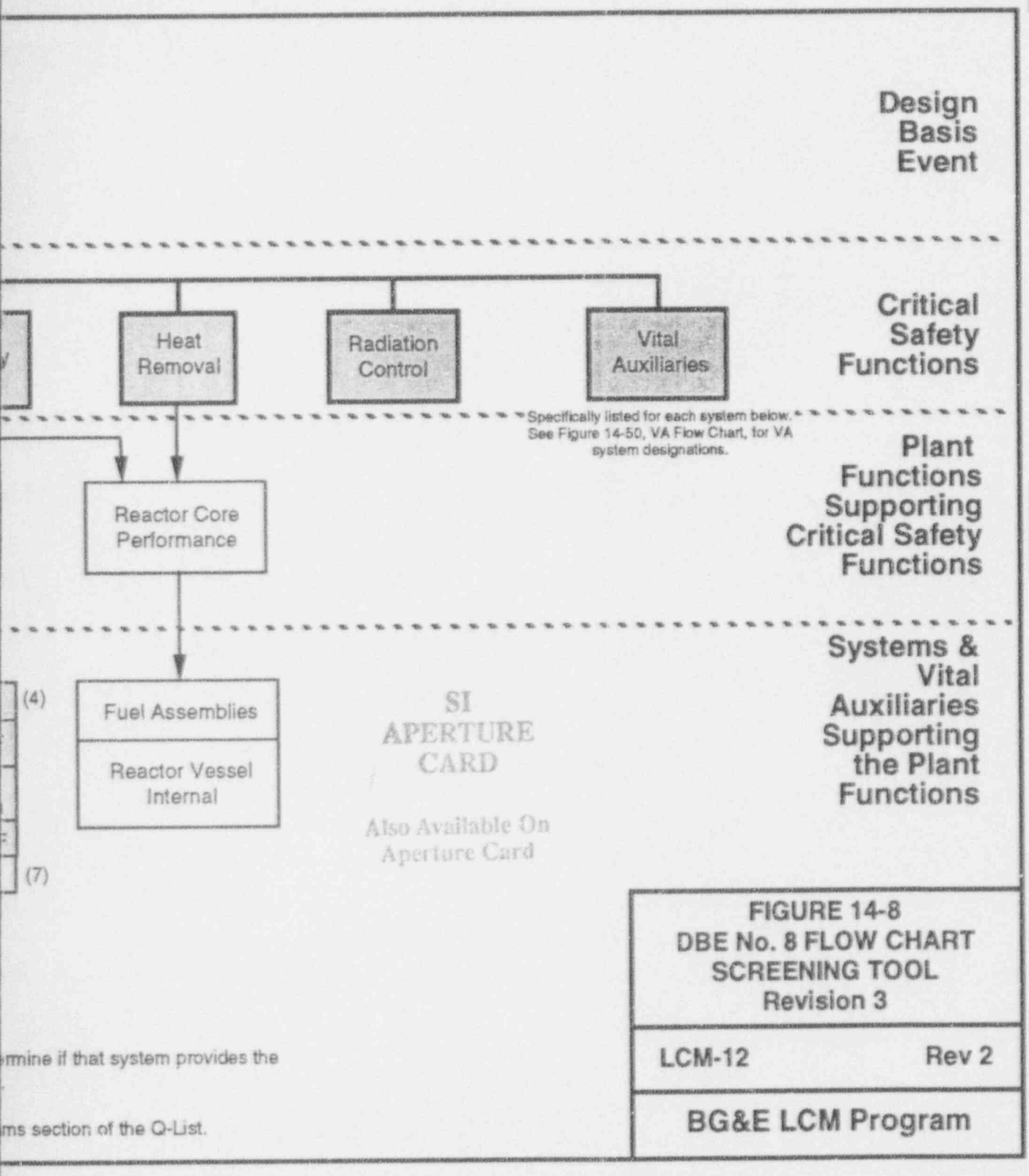


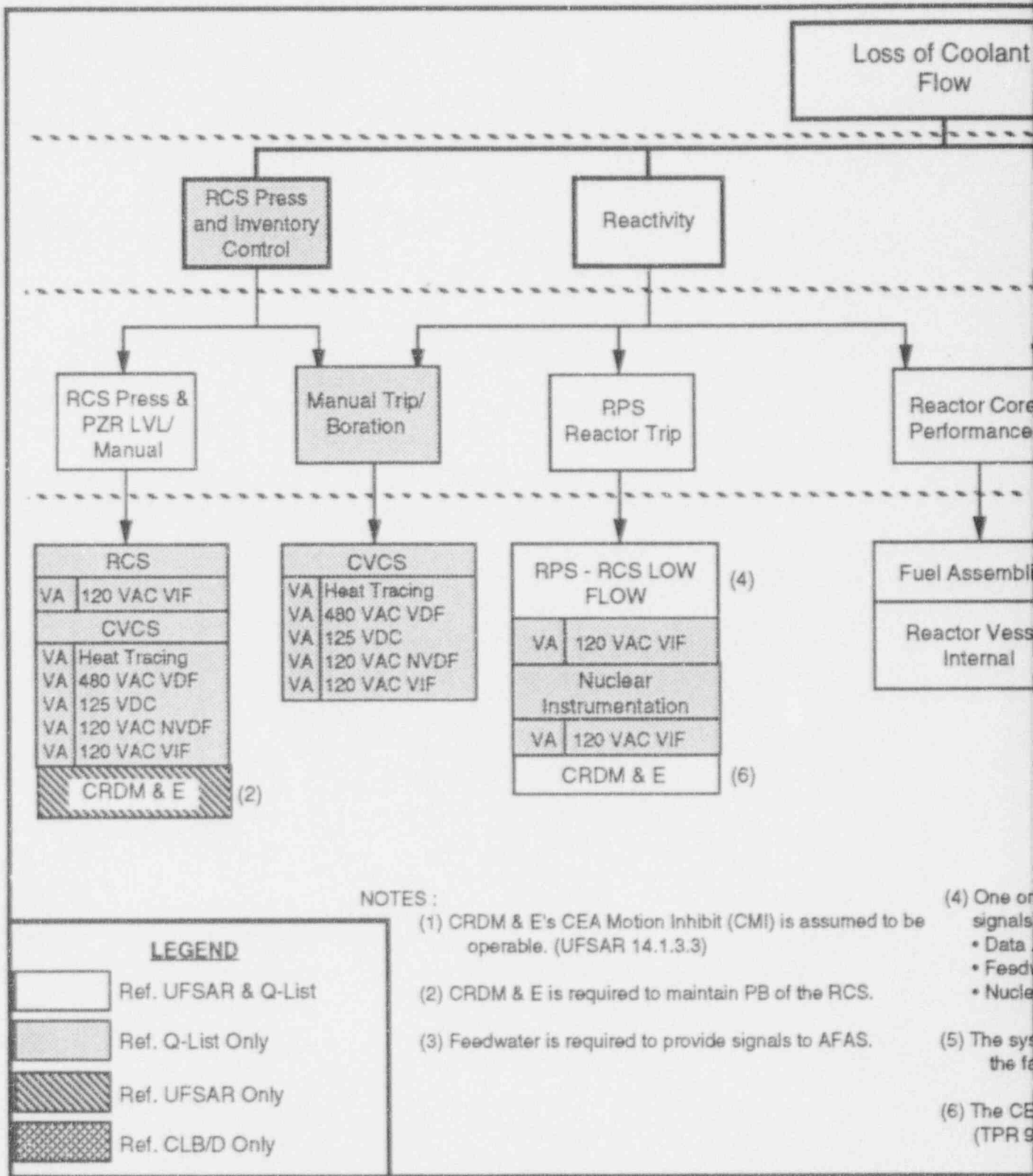
FIGURE 14-8
DBE No. 8 FLOW CHART
SCREENING TOOL
Revision 3

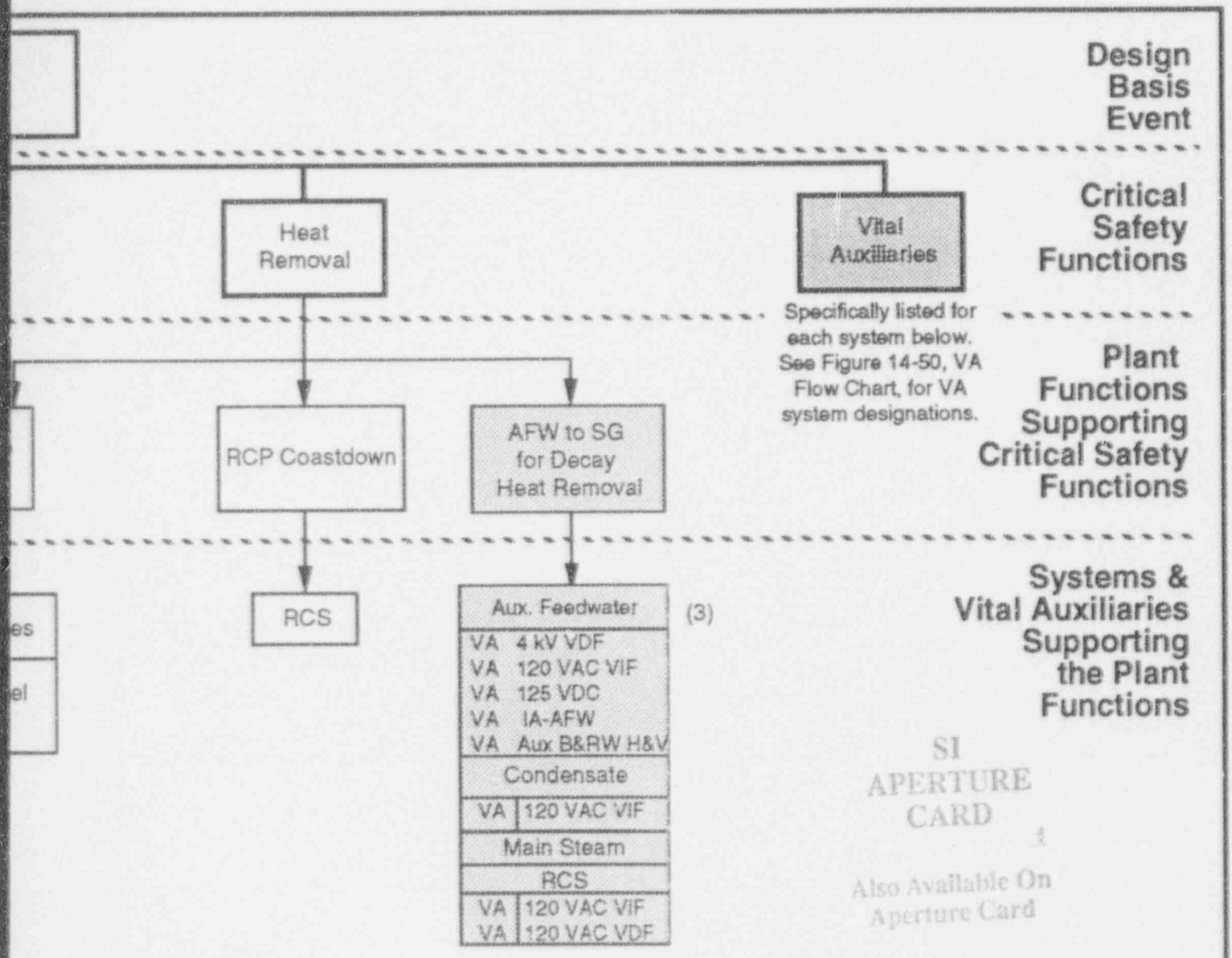
LCM-12 Rev 2

BG&E LCM Program

ermine if that system provides the

ms section of the Q-List.


Loss of Coolant Flow
RCS Press and Inventory Control
Reactivity
RCS Press & PZR LVL/ Manual
Manual Trip/ Boration
RPS Reactor Trip
Reactor Core Performance
RCS
VA 120 VAC VIF
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
CRDM & E
(2)
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RPS - RCS LOW FLOW
(4)
VA 120 VAC VIF
Nuclear Instrumentation
VA 120 VAC VIF
CRDM & E
(6)
Fuel Assembli
Reactor Vess Internal
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)
(2) CRDM & E is required to maintain PB of the RCS.
(3) Feedwater is required to provide signals to AFAS.
(4) One or signals • Data • Feedw • Nucle
(5) The sys the fa
(6) The CE (TPR 9
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only



more of the following systems may provide
to RPS:
Acquisition Computer • RCS
vater • ESFAS
ar Instrumentation

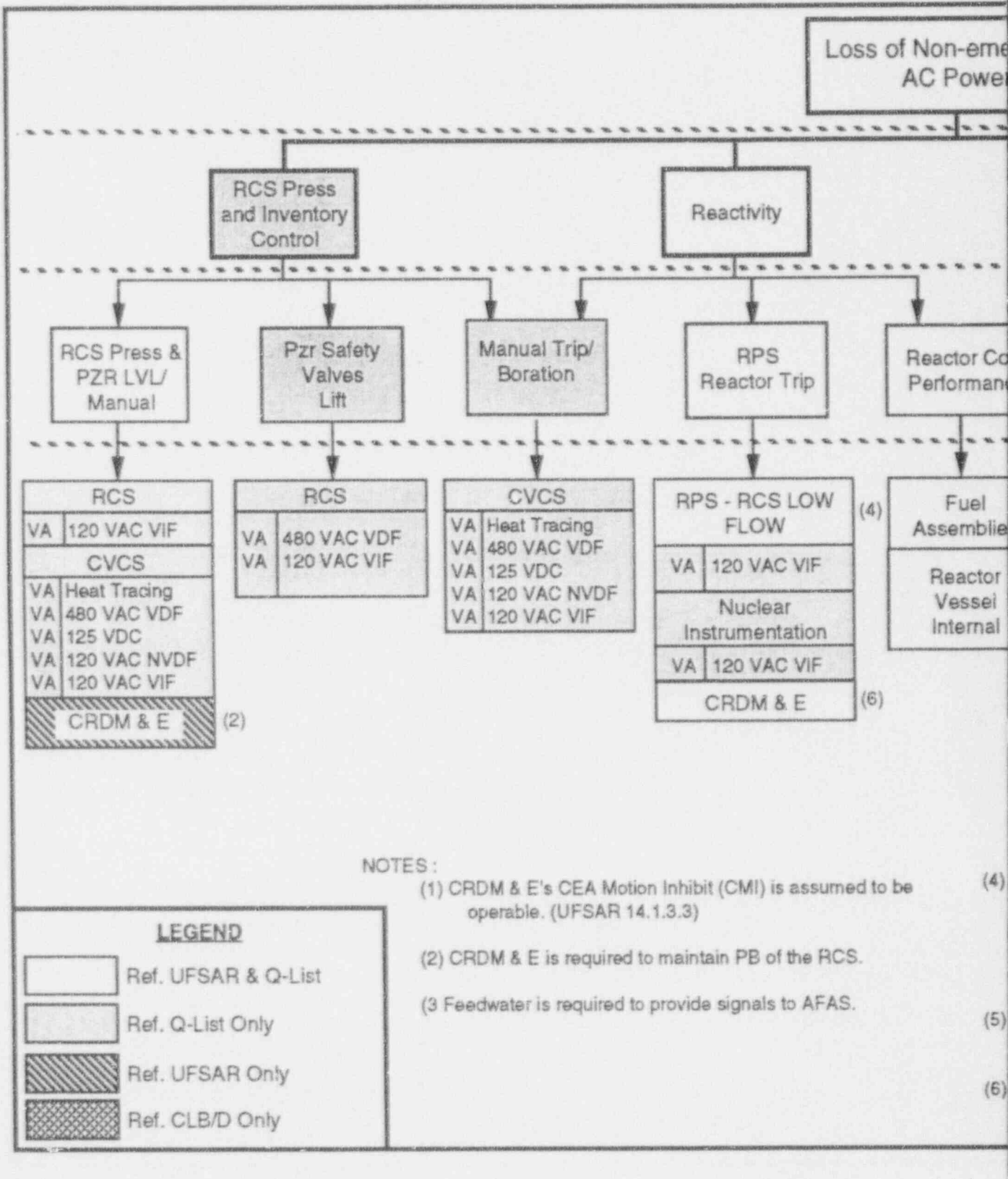
tem(s) providing signals to RPS should be reviewed to determine if they serve
ult isolation function.

As are controlled as safety related in the General Items section of the Q-List.
1-121)

FIGURE 14-9
DBE No. 9 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12 Rev 2

BG&E LCM Program



NOTES :

(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)

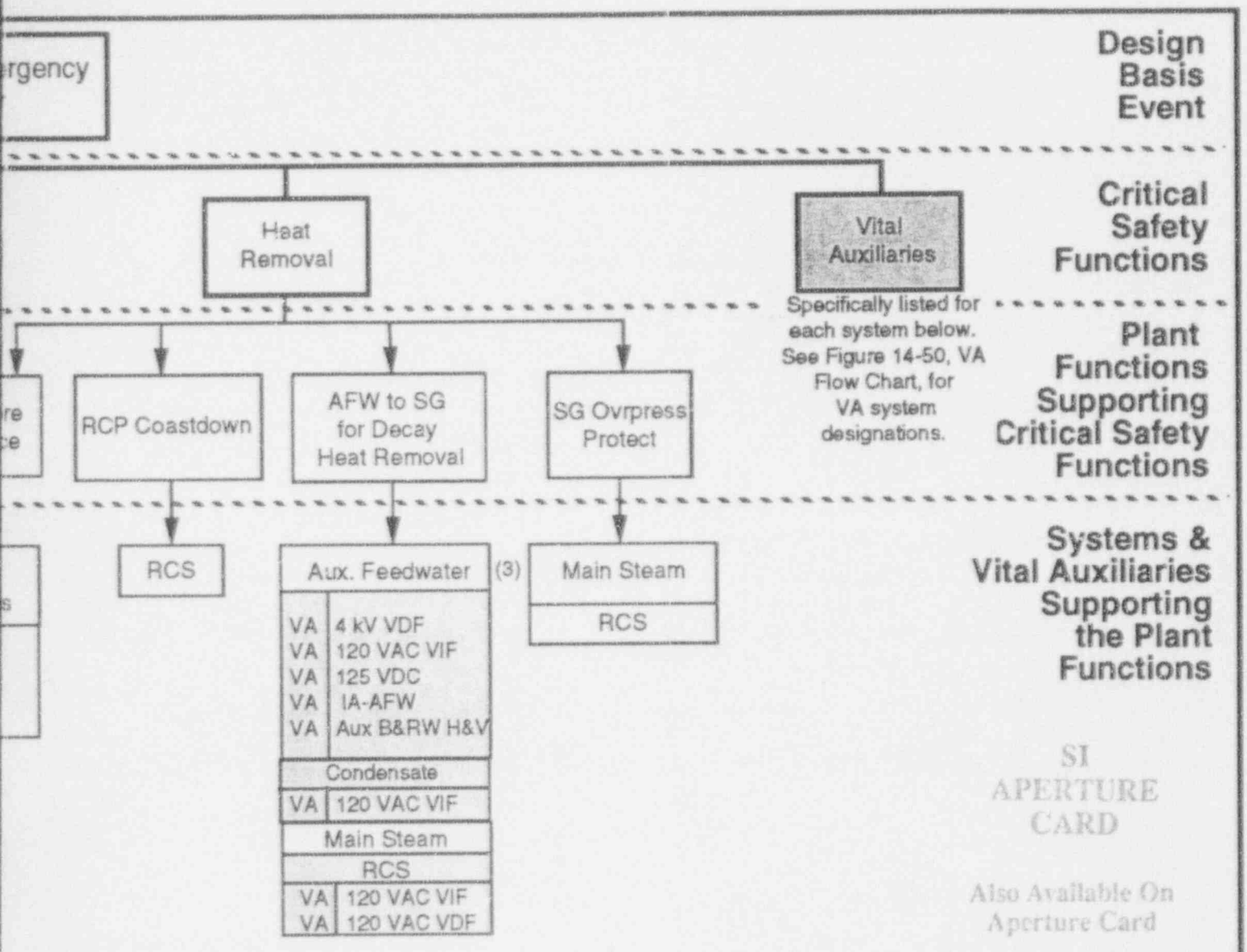
(2) CRDM & E is required to maintain PB of the RCS.

(3 Feedwater is required to provide signals to AFAS.

(4)

(5)

(6)



One or more of the following systems may provide signals to RPS:

- Data Acquisition Computer
- Feedwater
- Nuclear Instrumentation
- RCS
- ESFAS

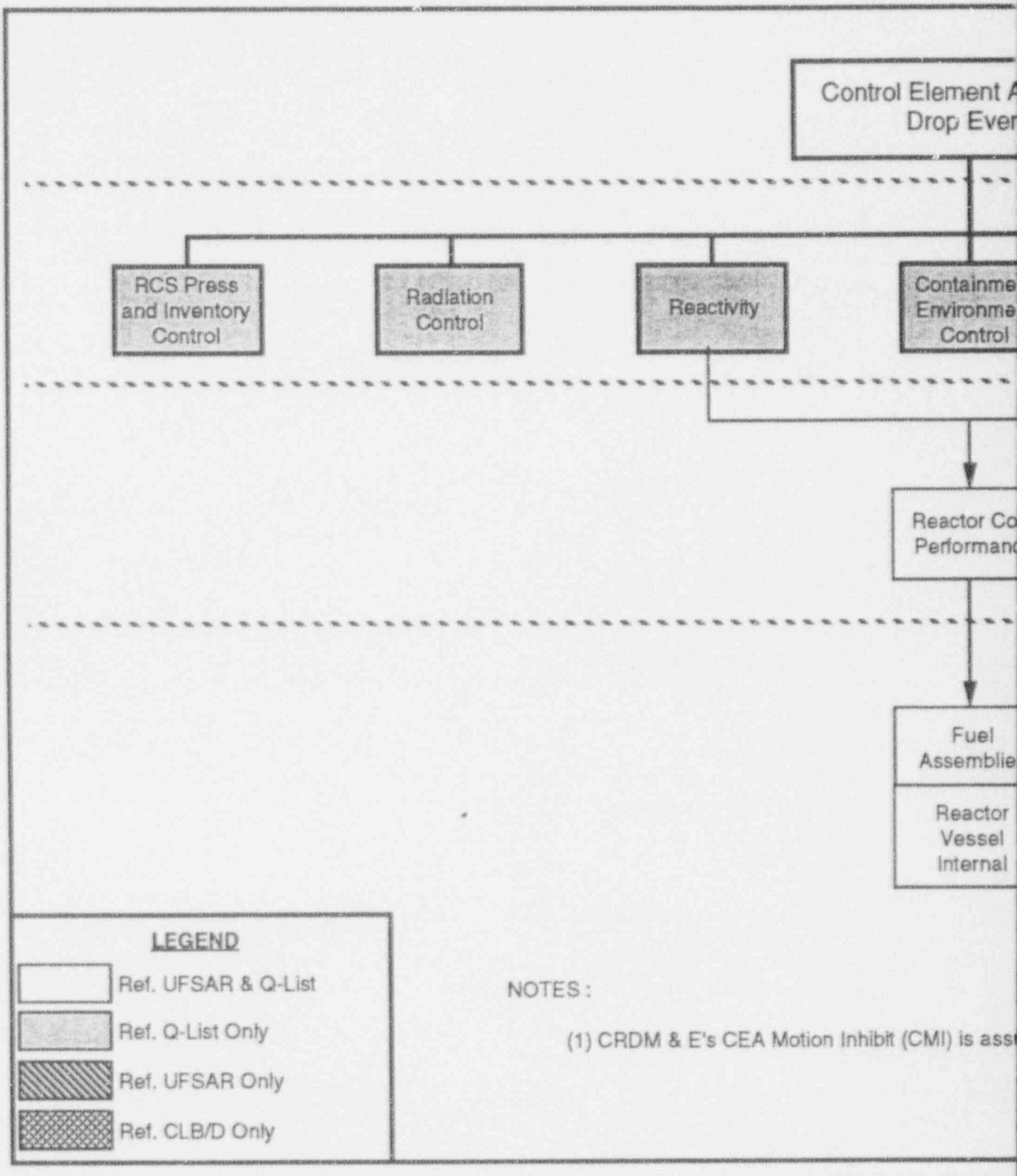
Any system interfacing with RPS should be reviewed to determine if that system provides the function of loop protection and isolation from electrical faults.

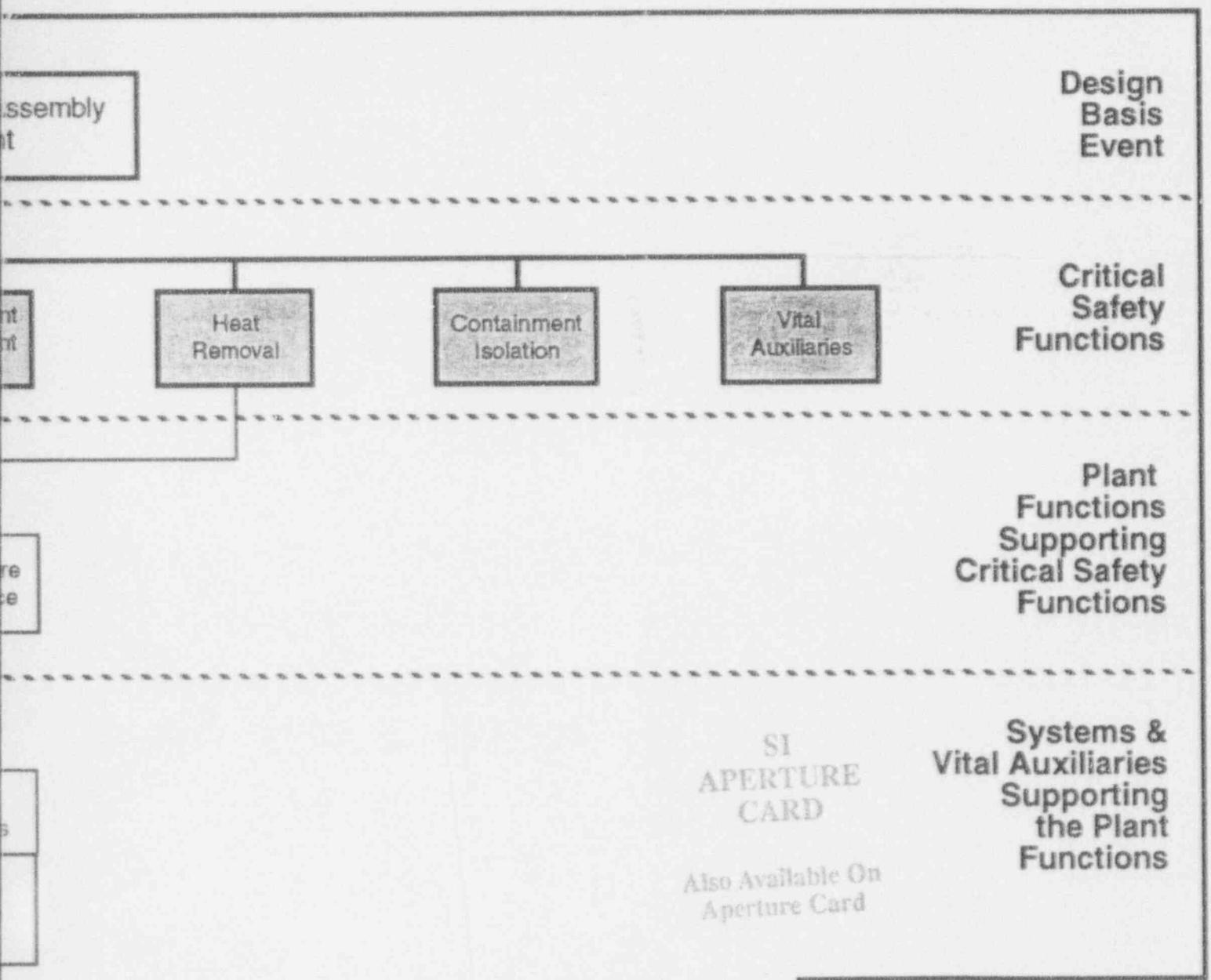
The CEAs are controlled as safety related in the General Items section of the Q-List. (TPR 91-121)

FIGURE 14-10
DBE No. 10 FLOW CHART SCREENING TOOL
Revision 3

LCM-12 **Rev 2**

BG&E LCM Program

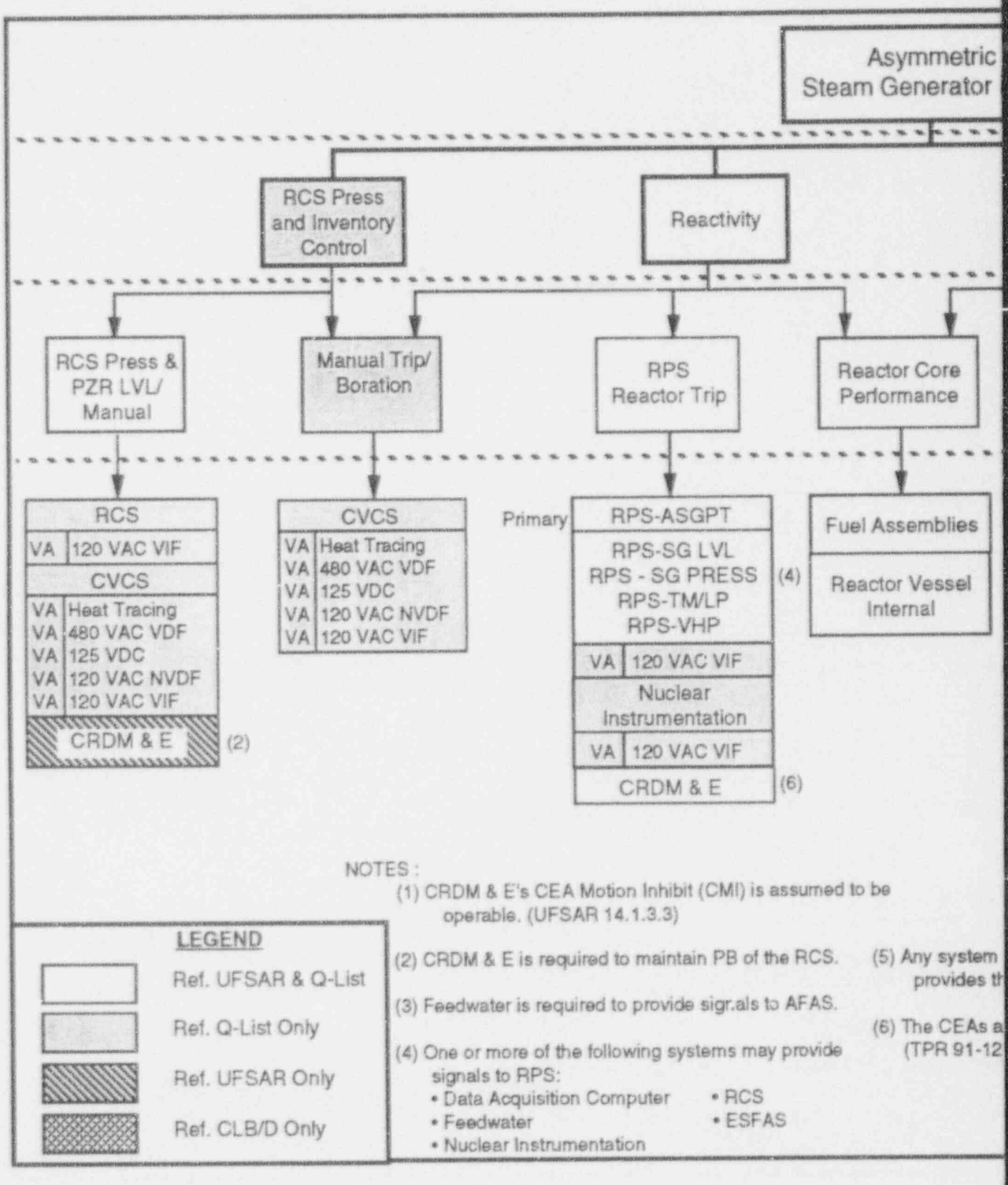

Control Element A
Drop Ever
RCS Press and Inventory Control
Radiation Control
Reactivity
Containme Environme Control
Reactor Co Performanc
Fuel Assemblie
Reactor Vessel Internal
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is ass



umed to be operable. (UFSAR 14.1.3.3)

FIGURE 14-11
DBE No. 11 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12	Rev 2
BG&E LCM Program	



NOTES :

(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)

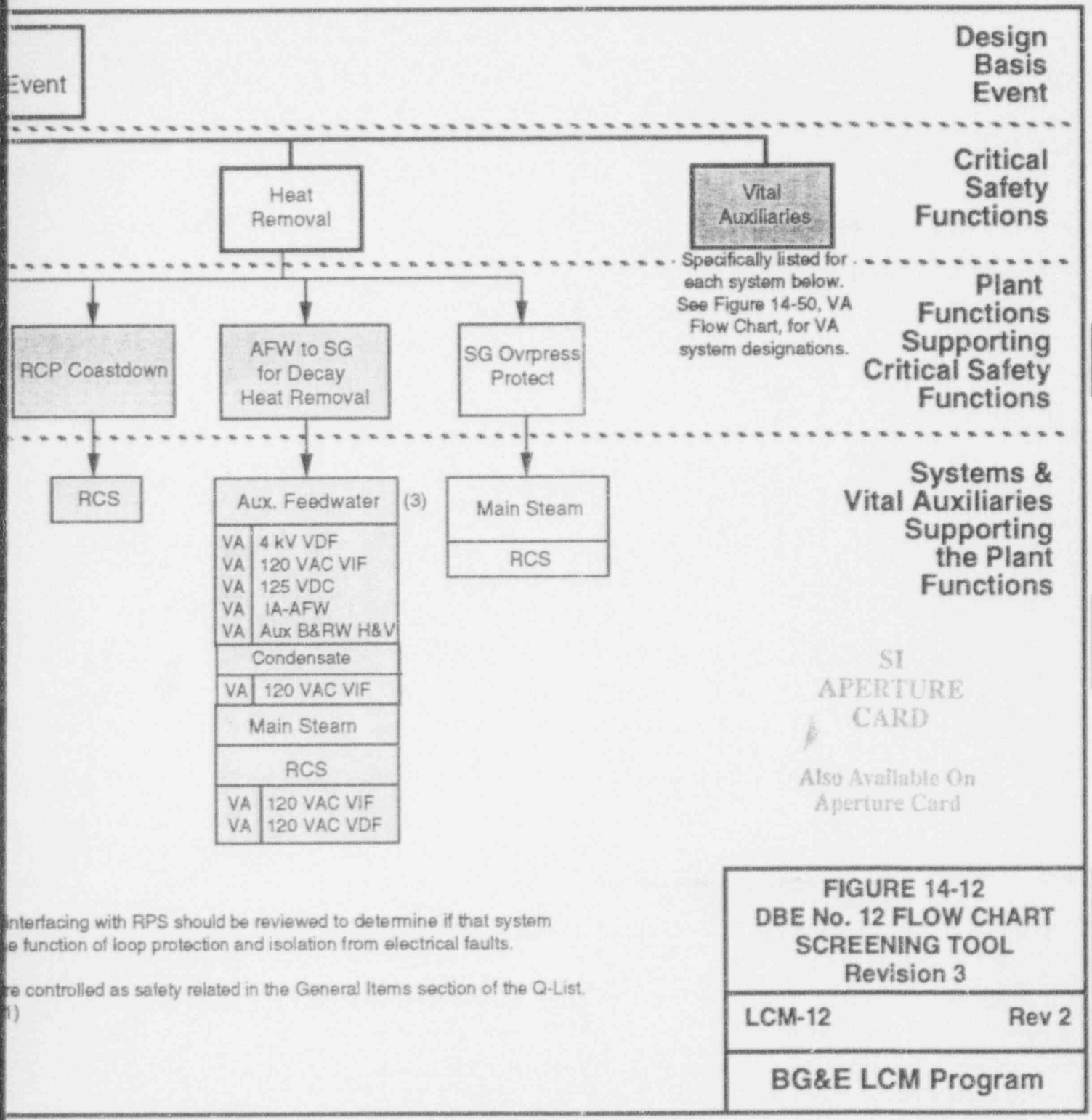
(2) CRDM & E is required to maintain PB of the RCS.

(3) Feedwater is required to provide sigr.als to AFAS.

(4) One or more of the following systems may provide signals to RPS:
- Data Acquisition Computer
- Feedwater
- Nuclear Instrumentation
- RCS
- ESFAS

(5) Any system provides th

(6) The CEAs a (TPR 91-12



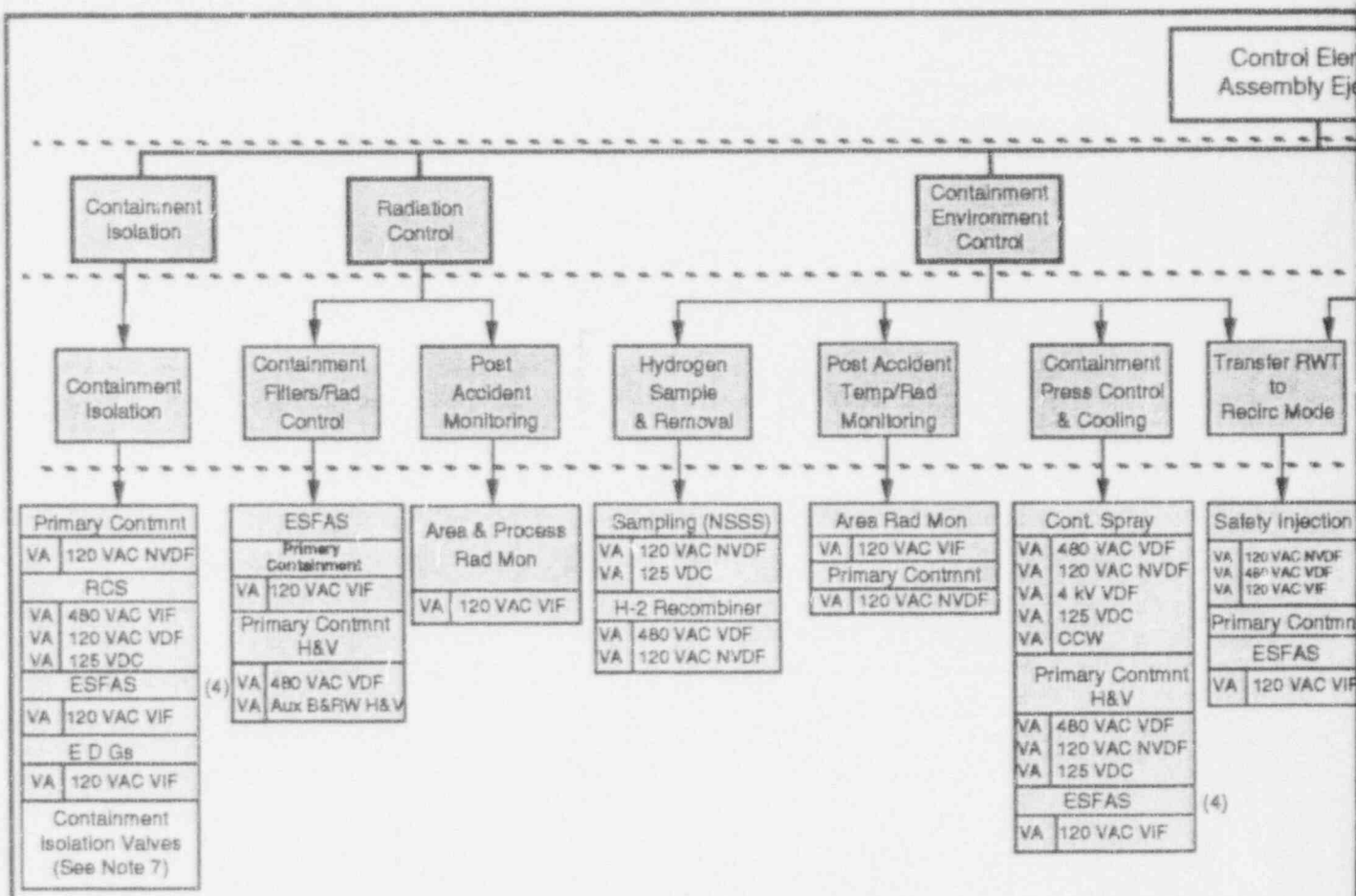
nterfacing with RPS should be reviewed to determine if that system
e function of loop protection and isolation from electrical faults.

re controlled as safety related in the General Items section of the Q-List.
1)

FIGURE 14-12
DBE No. 12 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12 **Rev 2**

BG&E LCM Program



NOTES :

(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)

(2) Feedwater is required to provide signals to AFAS.

(3) One or more of the following systems may provide signals to RPS:
- Data Acquisition Computer
- Feedwater
- Nuclear Instrumentation
- RCS
- ESFAS

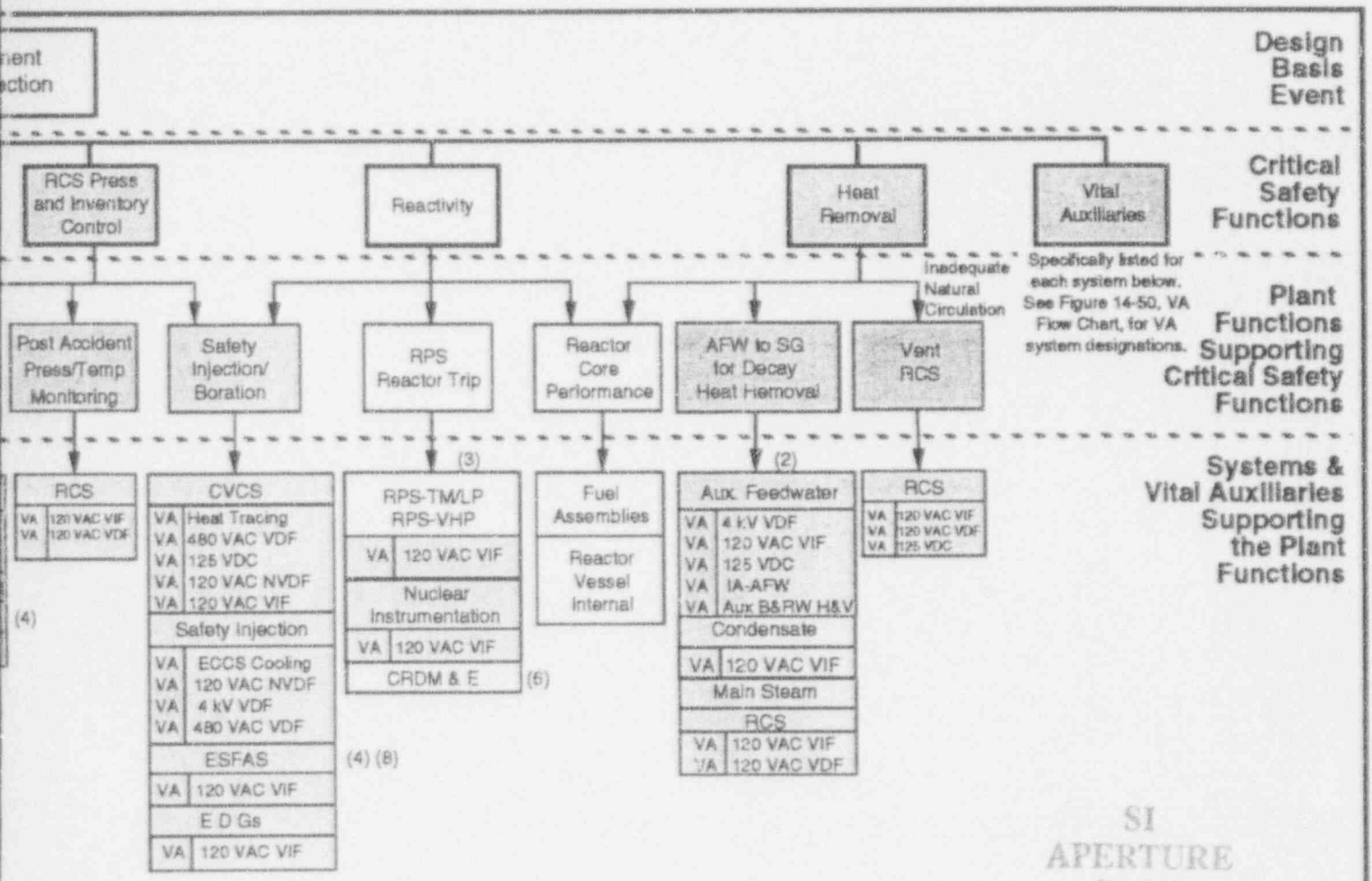
(4) One or more of the following systems may provide signals to ESFAS:
- Primary Containment
- Area Radiation Monitoring
- Feedwater
- RPS
- Safety Injection
- RCS.
- Electrical 4kV Transformers and Buses

(5) Any system interfacing with RPS and/or ESFAS should be reviewed to determine if that system provides the function of loop protection and isolation from electrical faults.

(6) The CEAs are controlled as safety related in the General Items section of the Q-List. (TPR 91-121)

LEGEND

- Ref. UFSAR & Q-List
- Ref. Q-List Only
- Ref. UFSAR Only
- Ref. CLB/D Only



) The following systems provide containment isolation:

- Auxiliary Feedwater
- CVCS
- Component Cooling
- Compressed Air
- Containment Spray
- Demin Water & Cond Storage
- Extraction Steam
- Feedwater
- Fire Protection
- Liquid Waste
- Main Steam
- Nitrogen & Hydrogen System
- Sampling (NSSS)
- Plant Heating
- Plant Water
- Primary Containment
- Primary Containment H&V
- Safety Injection
- Service Water Cooling
- Spent Fuel Pool Cooling
- Spent Fuel Storage
- Waste Gas System
- Area & Process Radiation Monitoring

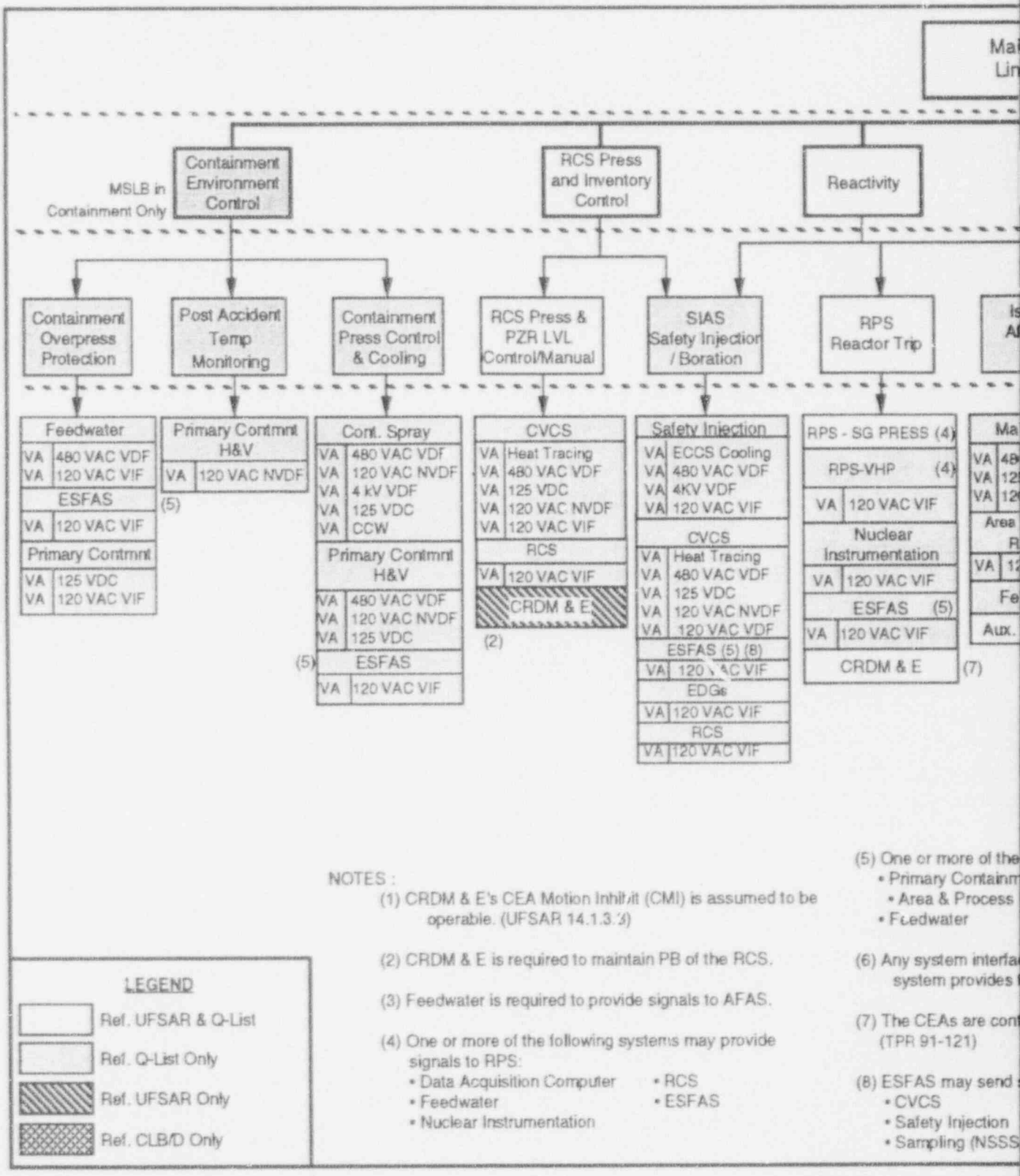
) ESFAS may send signals to the following systems:

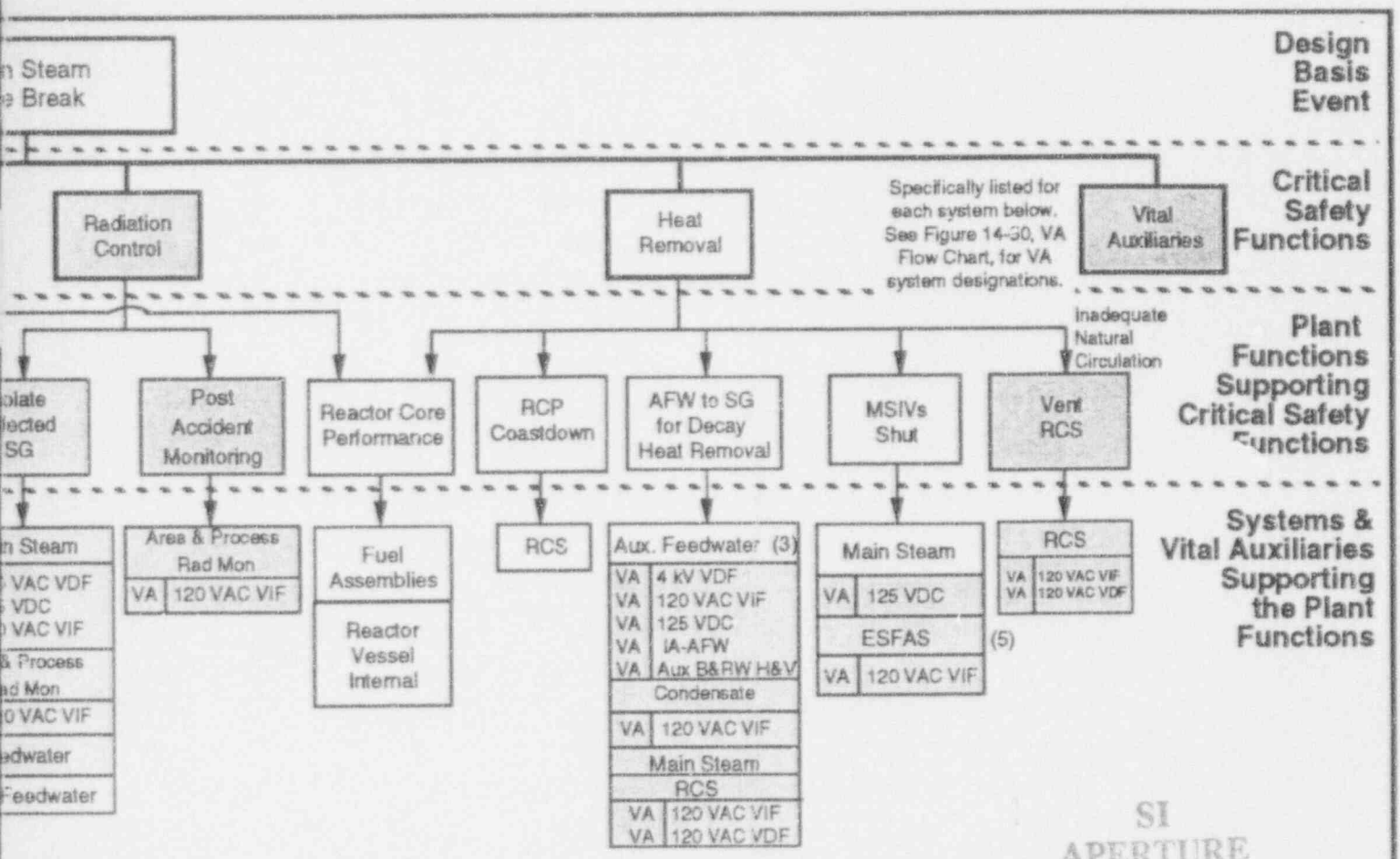
- CVCS
- Safety Injection
- Sampling (NSSS)

FIGURE 14-13
DBE No. 13 FLOW CHART SCREENING TOOL
Revision 3

LCM-12 Rev 2

BG&E LCM Program


Containment Environment Control
MSLB in Containment Only
RCS Press and Inventory Control
Reactivity
Containment Overpress Protection
Post Accident Temp Monitoring
Containment Press Control & Cooling
RCS Press & PZR LVL Control/Manual
SIAS Safety Injection / Boration
RPS Reactor Trip
Feedwater
VA 480 VAC VDF
VA 120 VAC VIF
ESFAS
VA 120 VAC VIF
Primary Containmt
VA 125 VDC
VA 120 VAC VIF
Primary Containmt H&V
VA 120 VAC NVDF
(5)
Cont. Spray
VA 480 VAC VDF
VA 120 VAC NVDF
VA 4 kV VDF
VA 125 VDC
VA CCW
Primary Containmt H&V
VA 480 VAC VDF
VA 120 VAC NVDF
VA 125 VDC
(5)
ESFAS
VA 120 VAC VIF
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RCS
VA 120 VAC VIF
CRDM & E
(2)
Safety Injection
VA ECCS Cooling
VA 480 VAC VDF
VA 4KV VDF
VA 120 VAC VIF
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VDF
ESFAS (5) (8)
VA 120 VAC VIF
EDGs
VA 120 VAC VIF
RCS
VA 120 VAC VIF
RPS - SG PRESS (4)
RPS-VHP (4)
VA 120 VAC VIF
Nuclear Instrumentation
VA 120 VAC VIF
ESFAS (5)
VA 120 VAC VIF
CRDM & E
(7)
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)
(2) CRDM & E is required to maintain PB of the RCS.
(3) Feedwater is required to provide signals to AFAS.
(4) One or more of the following systems may provide signals to RPS:
• Data Acquisition Computer
• Feedwater
• Nuclear Instrumentation
• RCS
• ESFAS
(5) One or more of the
• Primary Containm
• Area & Process
• Feedwater
(6) Any system interfa
system provides
(7) The CEAs are cont
(TPR 91-121)
(8) ESFAS may send
• CVCS
• Safety Injection
• Sampling (NSSS



following systems may provide signals to ESFAS:
ent
Radiation Monitoring
• RPS
• Safety Injection
• RCS.
• Electrical 4kV Transformers and Buses

cing with RPS and/or ESFAS should be reviewed to determine if that he function of loop protection and isolation from electrical faults.

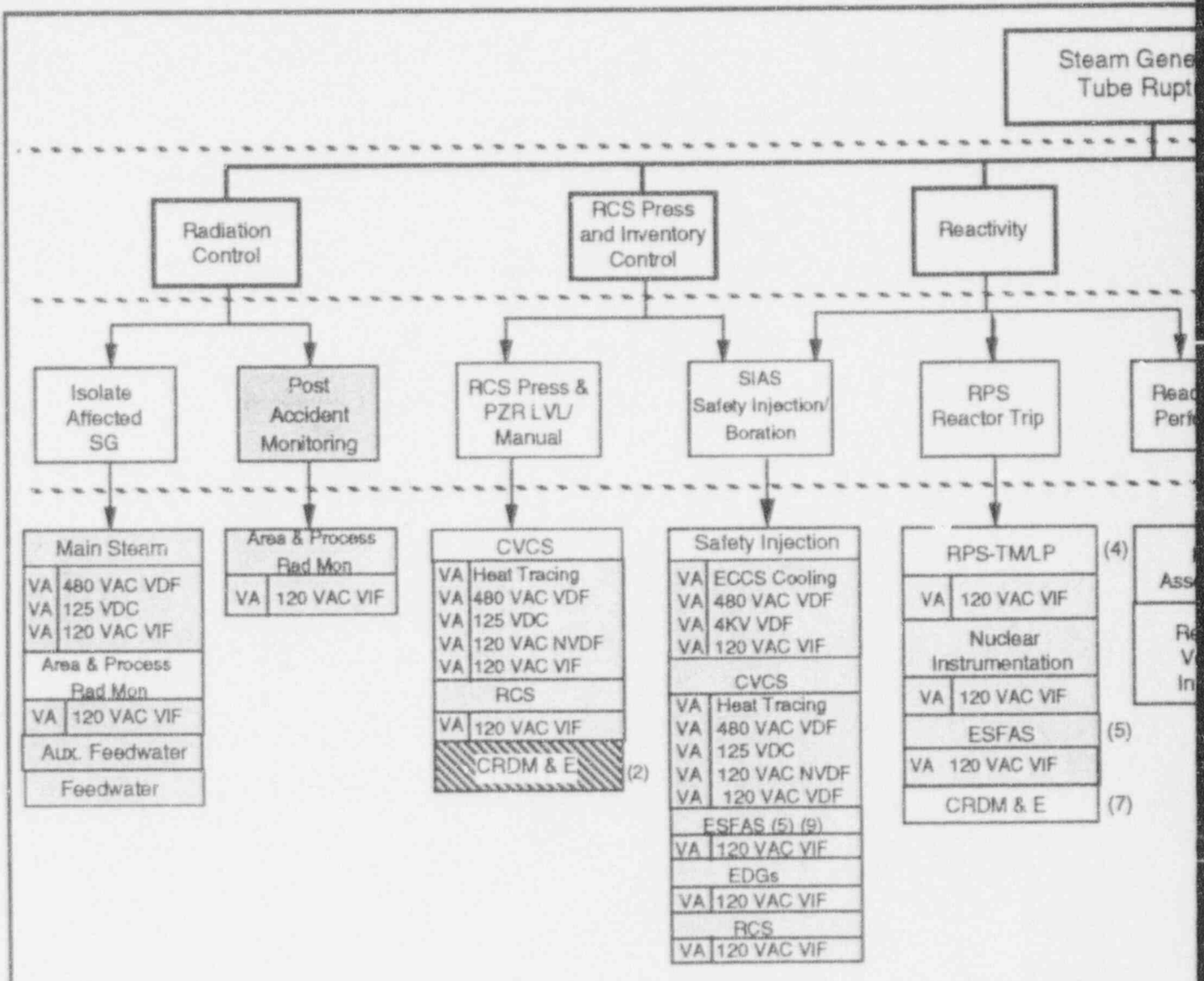
rolled as safety related in the General Items section of the Q-List.

signals to the following systems:

FIGURE 14-14
DBE No. 14 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12 Rev. 2

BG&E LCM Program



NOTES :

(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)

(2) CRDM & E is required to maintain PB of the RCS.

...edwater is required to provide signals to AFAS.

... of more of the following systems may provide signals to RPS:

- RCS
- Feedwater
- ESFAS
- Data Acquisition Computer
- Nuclear Instrumentation

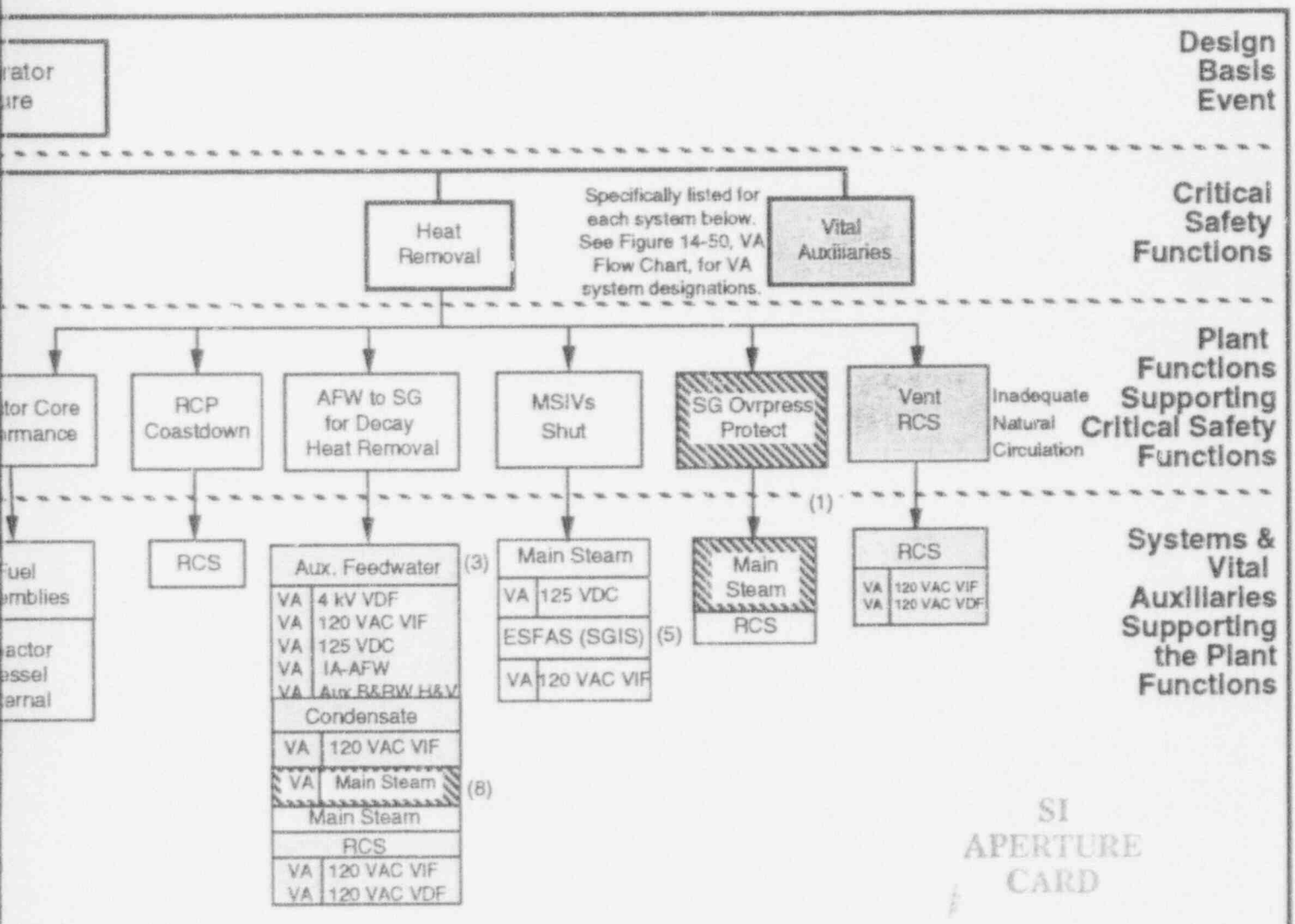
(5) One or more of the
- Primary Contain
- Area & Proces
- Feedwater

(6) Any system interfa... system provides

(7) The CEAs are con... (TPR 91-121)

(8) Only PB portions ... driven pumps.

(9) ESFAS may provi...
- CVCS
- Sa...



following systems may provide signals to ESFAS:
nent • RPS • Electrical 4kV Transformers
s Radiation Monitoring • Safety Injection and Buses
• RCS.

cing with RPS and/or ESFAS should be reviewed to determine if that
he function of loop protection and isolation from electrical faults.
trolled as safety related in the General Items section of the Q-List.

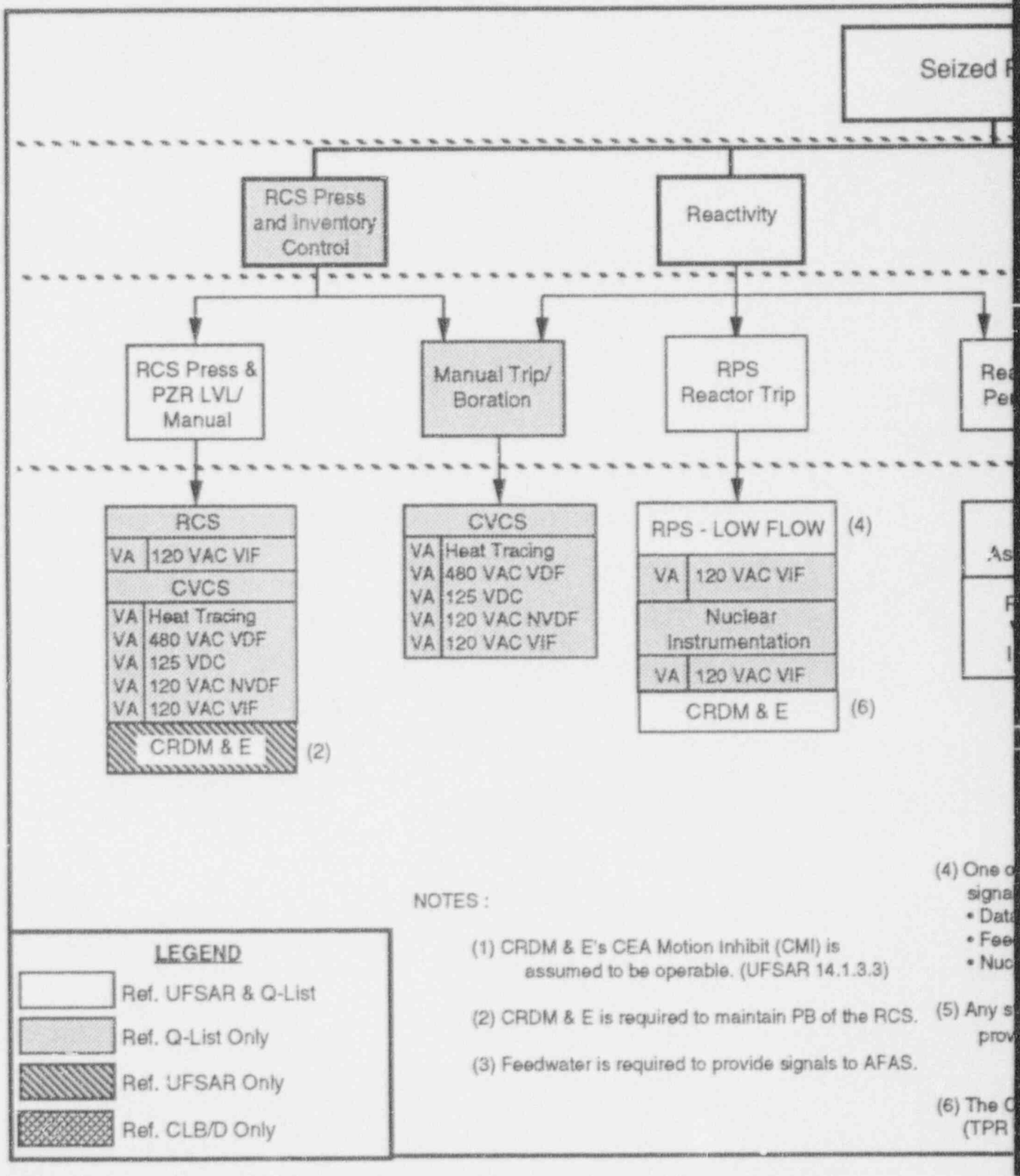
f main steam are required to direct steam to supply AFW turbine

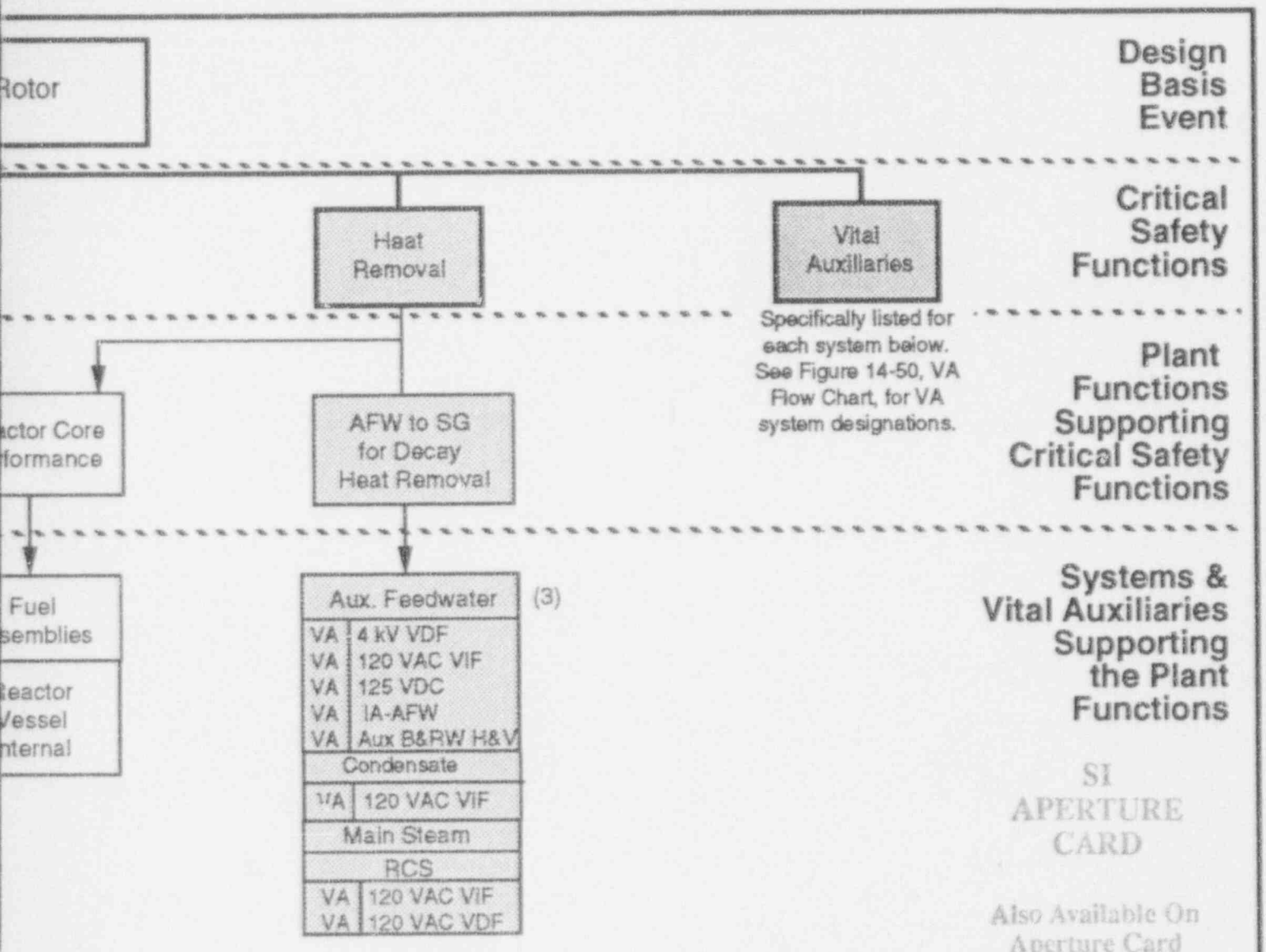
de signals to the following systems:
fety Injection • Sampling (NSSS)

FIGURE 14-15
DBE No. 15 FLOW CHART SCREENING TOOL
Revision 3

LCM-12 Revision 2

BG&E LCM Program


Seized R
RCS Press and Inventory Control
Reactivity
RCS Press & PZR LVL/ Manual
Manual Trip/ Boration
RPS Reactor Trip
Rea Pe
RCS
VA 120 VAC VIF
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
CRDM & E
(2)
CVCS
VA Heat Tracing
VA 480 VAC VDF
VA 125 VDC
VA 120 VAC NVDF
VA 120 VAC VIF
RPS - LOW FLOW
(4)
VA 120 VAC VIF
Nuclear Instrumentation
VA 120 VAC VIF
CRDM & E
(6)
As
F
I
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)
(2) CRDM & E is required to maintain PB of the RCS.
(3) Feedwater is required to provide signals to AFAS.
(4) One o
signa
• Dat
• Fee
• Nuc
(5) Any s
prov
(6) The C
(TPR
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only



r more of the following systems may provide
s to RPS:
Acquisition Computer
dwater
lear Instrumentation
• RCS
• ESFAS

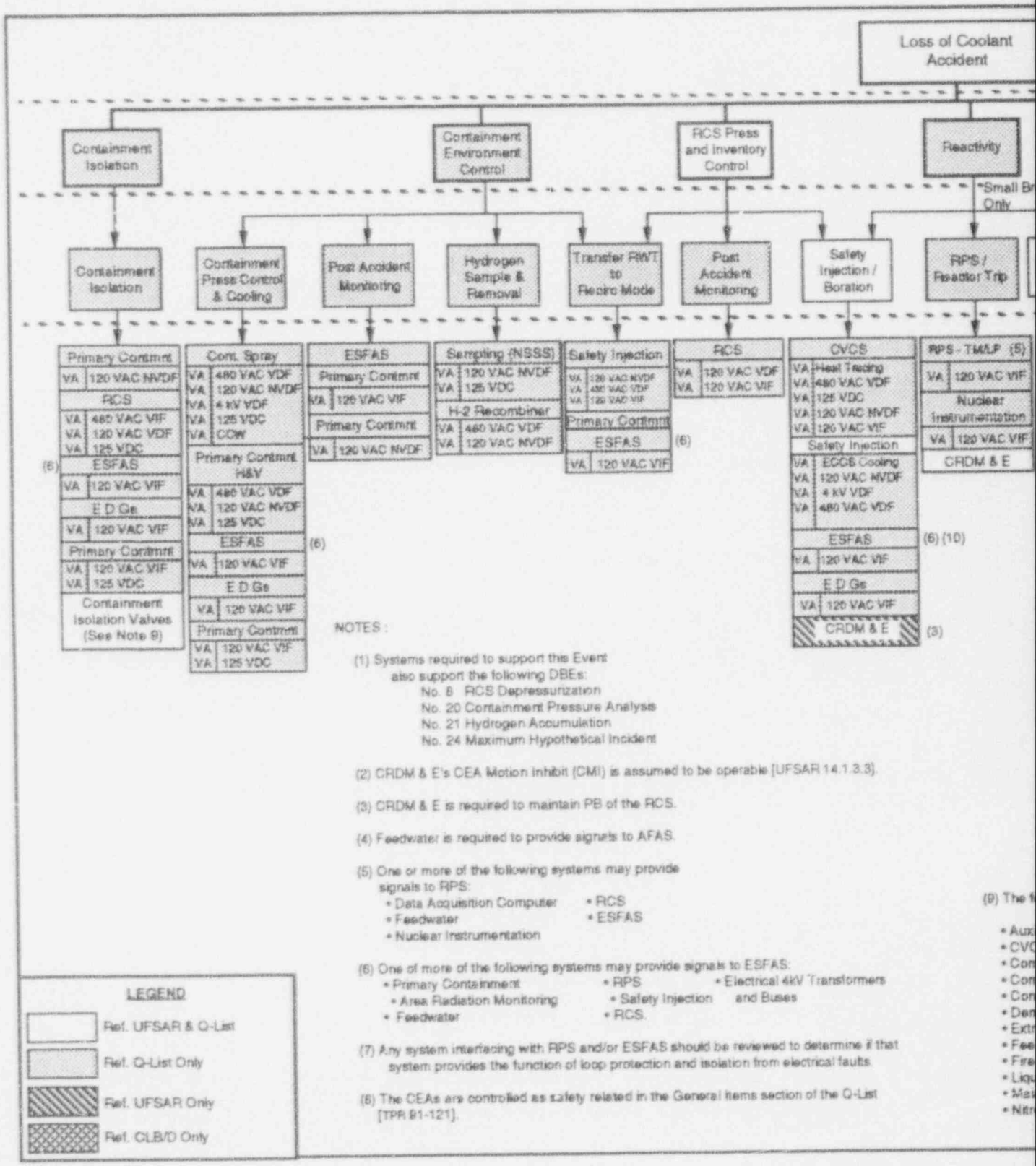
ystem interfacing with RPS should be reviewed to determine if that system
ides the function of loop protection and isolation from electrical faults.

EAs are controlled as safety related in the General Items section of the Q-List.
91-121)

FIGURE 14-16
DBE No. 16 FLOW CHART SCREENING TOOL
Revision 3

LCM-12 **Rev 2**

BG&E LCM Program



NOTES :

(1) Systems required to support this Event also support the following DBEs:
- No. 8 RCS Depressurization
- No. 20 Containment Pressure Analysis
- No. 21 Hydrogen Accumulation
- No. 24 Maximum Hypothetical Incident

(2) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable [UFSAR 14.1.3.3].

(3) CRDM & E is required to maintain PB of the RCS.

(4) Feedwater is required to provide signals to AFAS.

(5) One or more of the following systems may provide signals to RPS:
- Data Acquisition Computer
- Feedwater
- Nuclear Instrumentation
- RCS
- ESFAS

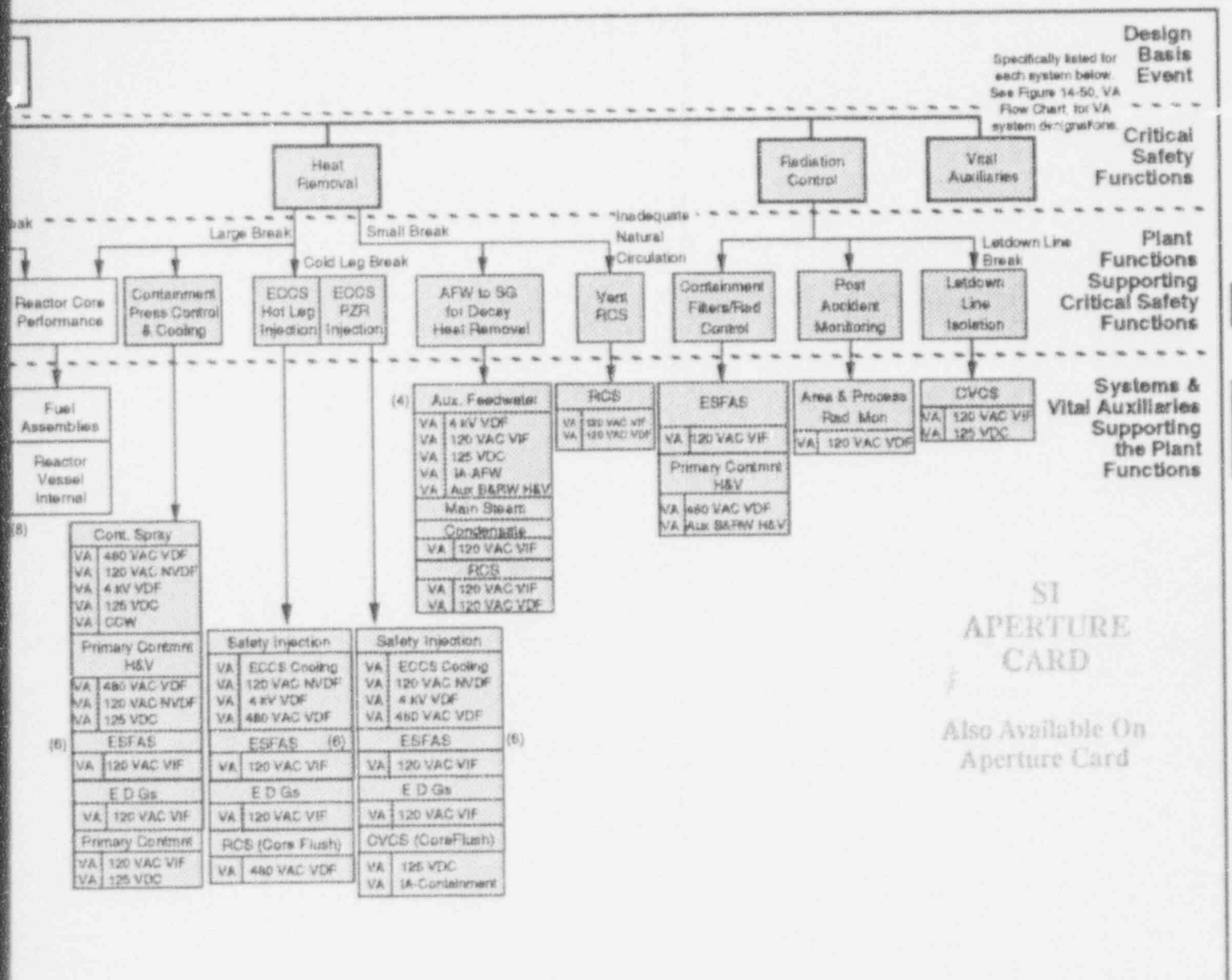
(6) One or more of the following systems may provide signals to ESFAS:
- Primary Containment
- Area Radiation Monitoring
- Feedwater
- RPS
- Safety Injection
- RCS.
- Electrical 4kV Transformers and Buses

(7) Any system interfacing with RPS and/or ESFAS should be reviewed to determine if that system provides the function of loop protection and isolation from electrical faults.

(8) The CEAs are controlled as safety related in the General Items section of the Q-List [TPR 91-121].

(9) The f
- Aux
- CVC
- Con
- Con
- Con
- Den
- Ext
- Fee
- Fire
- Liq
- Mai
- Nitr

LEGEND
- Ref. UFSAR & Q-List
- Ref. Q-List Only
- Ref. UFSAR Only
- Ref. CLB/D Only



llowing systems provide containment isolation:

- ary Feedwater
- G
- ponent Cooling
- ressed Air
- ainment Spray
- n Water & Cond Storage
- ction Steam
- water
- Protection
- d Waste
- Steam
- gen & Hydrogen System
- Sampling (NSSS)
- Plant Heating
- Plant Water
- Primary Containment
- Primary Containment H&V
- Area & Process Rad Mon System
- Safety Injection
- Service Water Cooling
- Spent Fuel Pool Cooling
- Spent Fuel Storage
- Waste Gas System

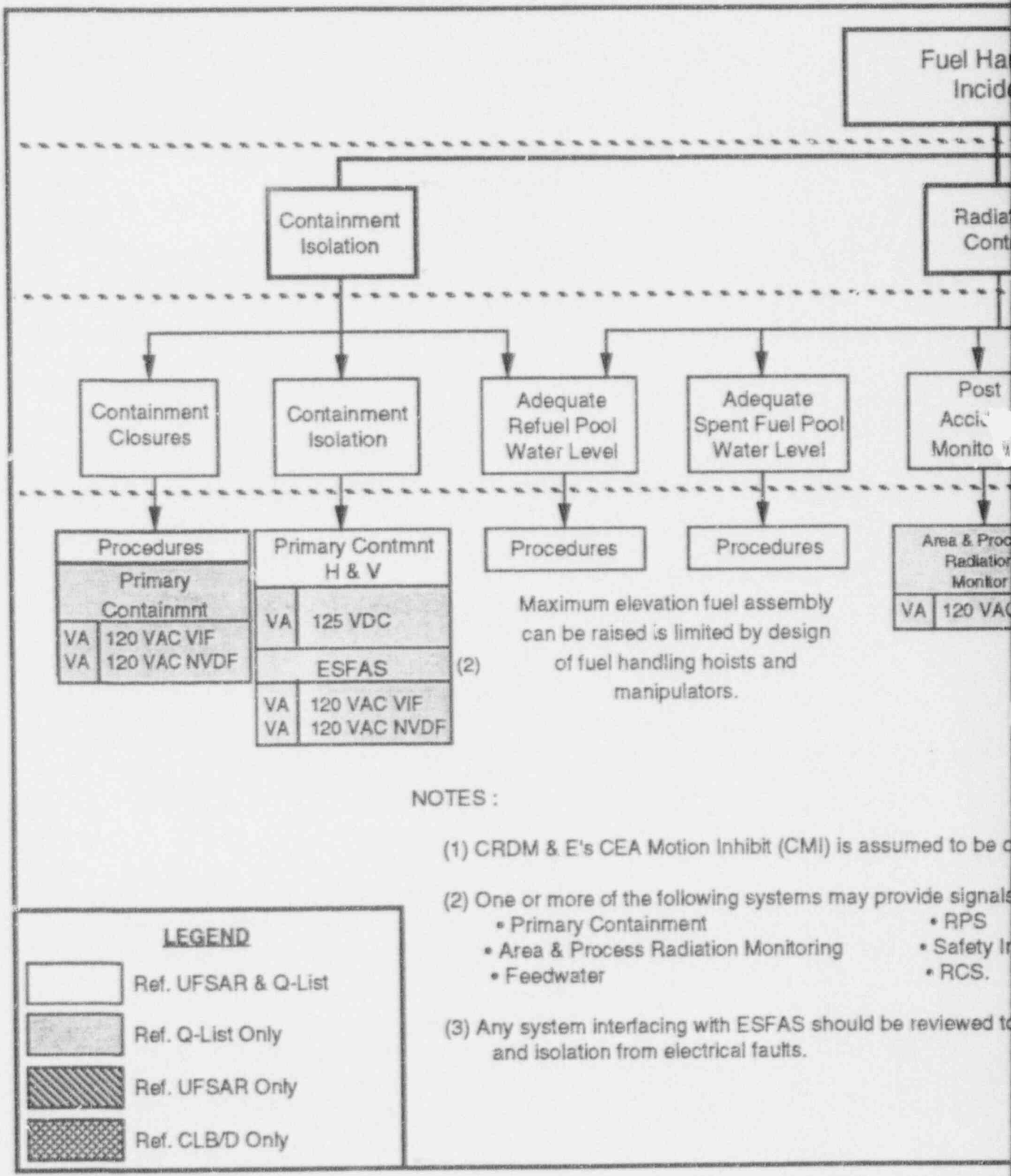
(10) ESFAS may send signals to the following systems:

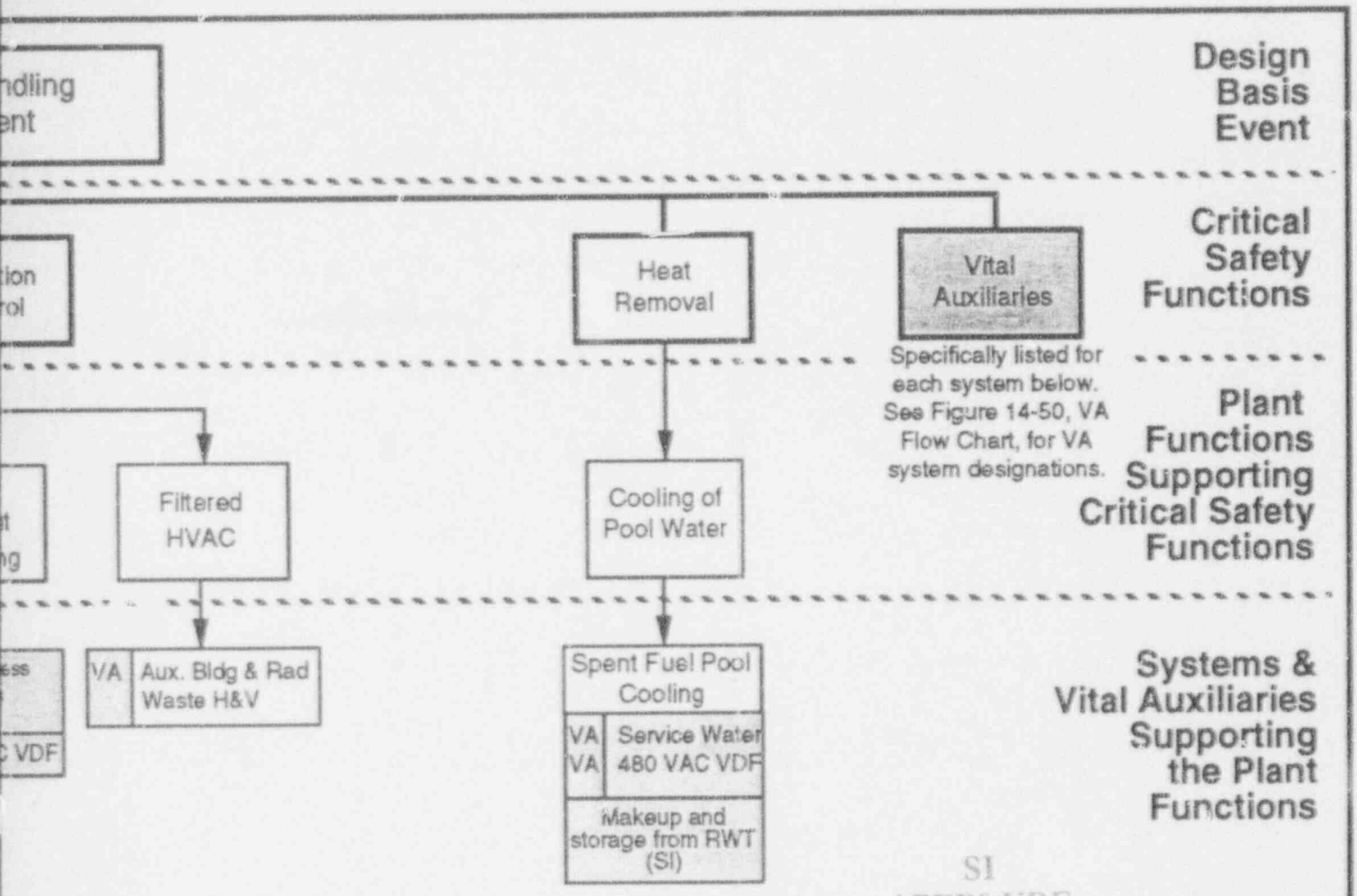
- CVCS
- Safety Injection
- Sampling (NSSS)

FIGURE 14-17
DBE No. 17 FLOW CHART
SCREENING TOOL
Revision 3/Change 1

LCM-12 Revision 2

BG&E LCM Program


Fuel Ha
Incid
Containment Isolation
Radia
Cont
Containment Closures
Containment Isolation
Adequate Refuel Pool Water Level
Adequate Spent Fuel Pool Water Level
Post
Acci
Monito
Procedures
Primary Containmnt
VA 120 VAC VIF
VA 120 VAC NVDF
Primary Contmnt H & V
VA 125 VDC
ESFAS
(2)
VA 120 VAC VIF
VA 120 VAC NVDF
Procedures
Procedures
Area & Proc
Radiation
Monitor
VA 120 VA
Maximum elevation fuel assembly can be raised is limited by design of fuel handling hoists and manipulators.
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be c
(2) One or more of the following systems may provide signals
• Primary Containment
• Area & Process Radiation Monitoring
• Feedwater
• RPS
• Safety In
• RCS.
(3) Any system interfacing with ESFAS should be reviewed to
and isolation from electrical faults.
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only



perable. (UFSAR 14.1.3.3)

to ESFAS:

- Electrical 4kV Transformers and Buses

jection

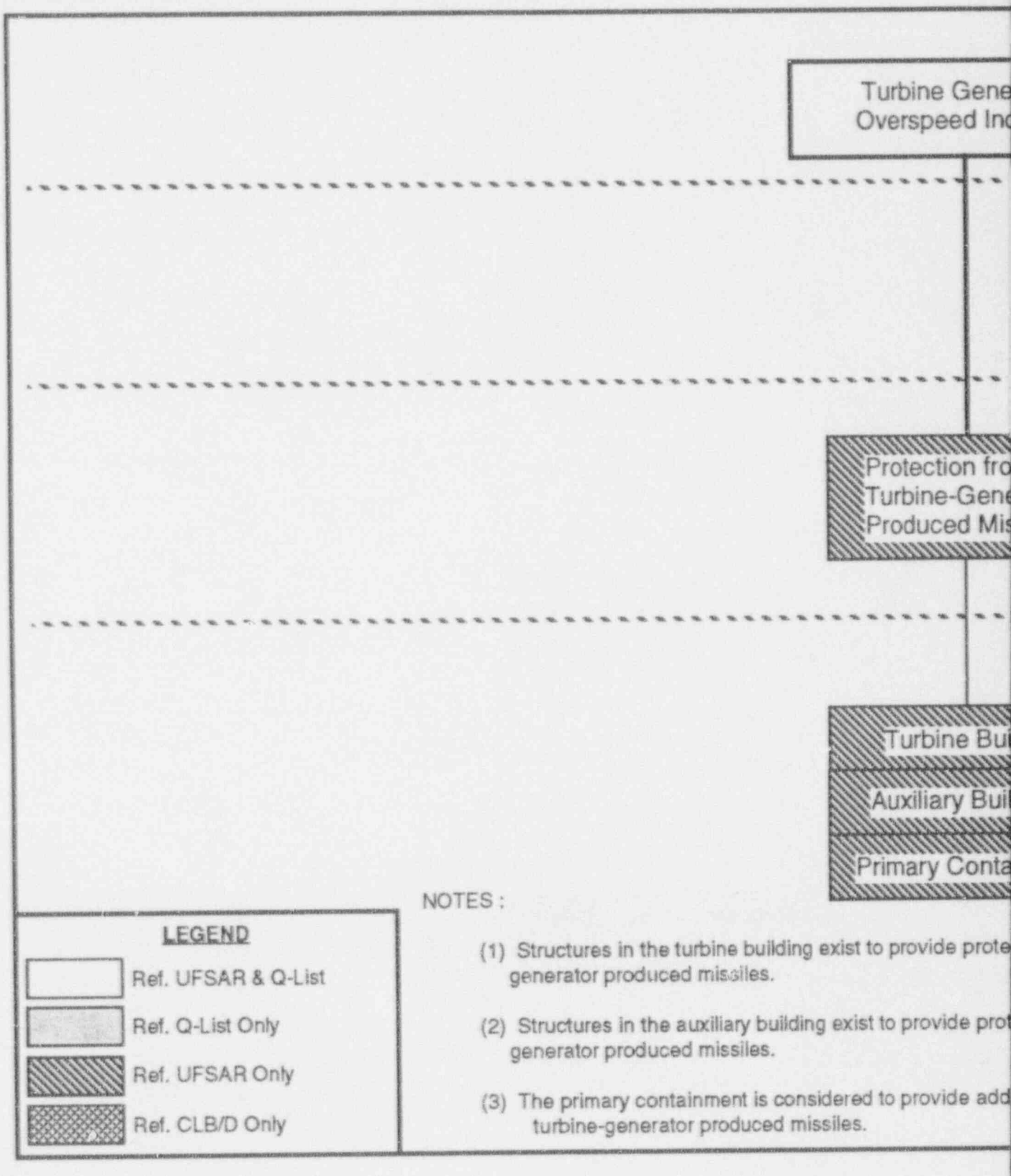
determine if that system provides the function of loop protection

FIGURE 14-18
DBE No. 18 FLOW CHART
SCREENING TOOL
Revision 3/Change 1

LCM-12	Rev 2

BG&E LCM Program

1


Turbine Gene
Overspeed Inc
Protection fro
Turbine-Gene
Produced Mis
Turbine Bui
Auxiliary Buil
Primary Conta
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) Structures in the turbine building exist to provide prote
generator produced missiles.
(2) Structures in the auxiliary building exist to provide prot
generator produced missiles.
(3) The primary containment is considered to provide add
turbine-generator produced missiles.

rator
ident

Design Basis Event

Critical Safety Functions

m
erator
ssiles

Plant Functions Supporting Critical Safety Functions

lding
ding
inment

Systems & Vital Auxiliaries Supporting the Plant Functions

ction from turbine-

ection from turbine-

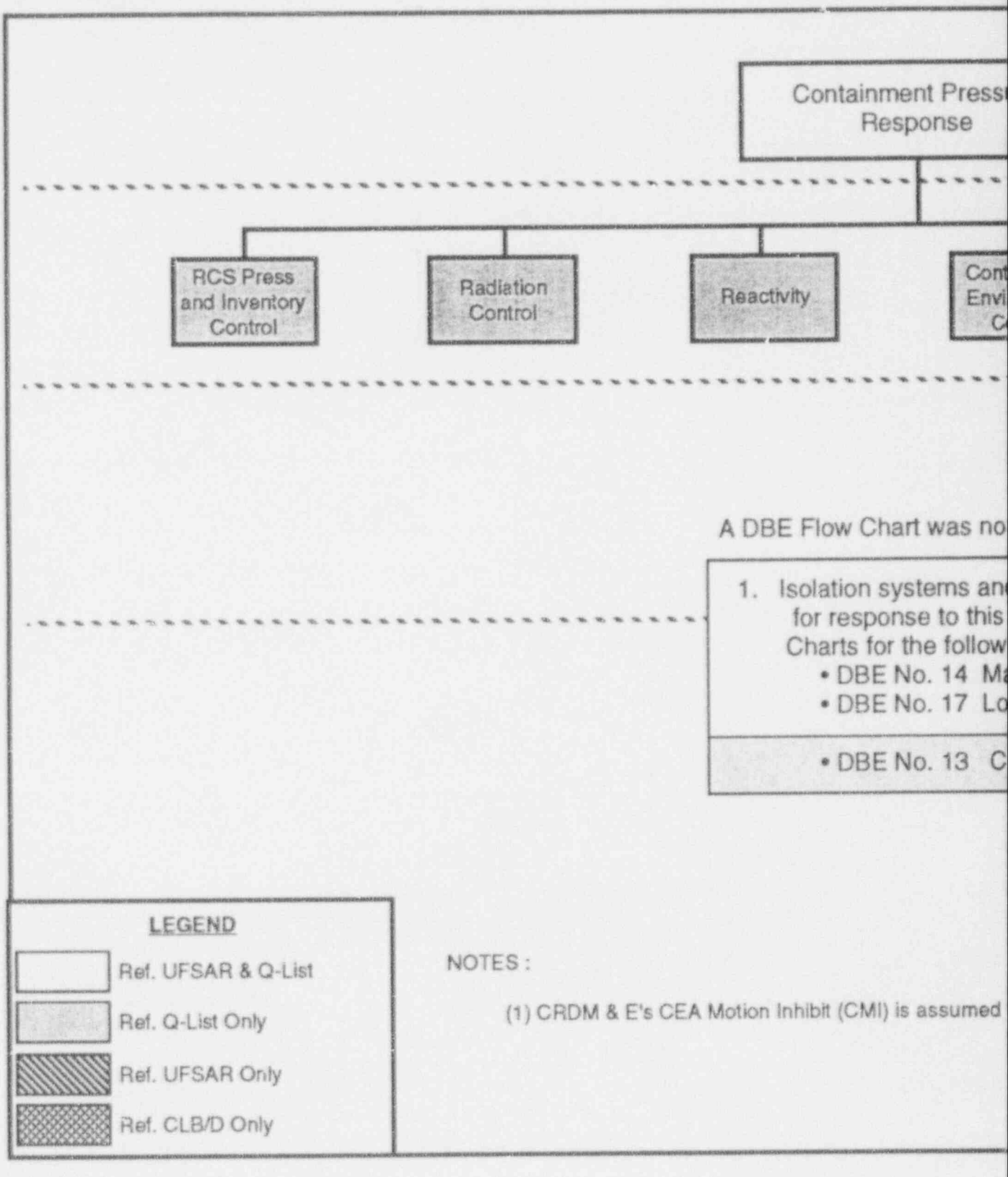
itional protection from

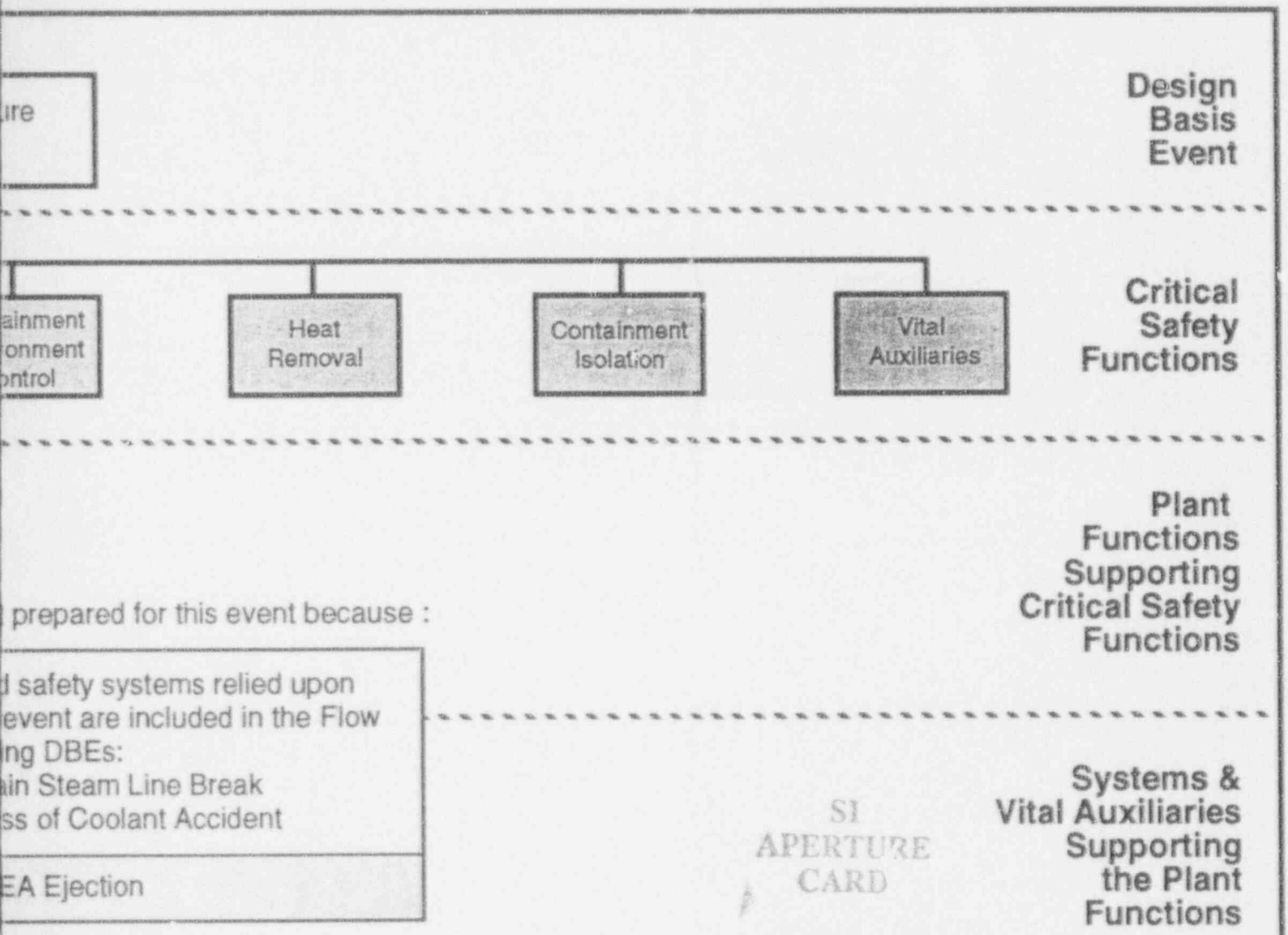
(4) CRDM&Es CEA Motion Inhibit (CMI) is assumed to be operable. (UFSAR 14.1.3.3)

FIGURE 14-19
DBE No. 19 FLOW CHART SCREENING TOOL
Revision 3

LCM-12 **Rev 2**

BG&E LCM Program


Containment Press
Response
RCS Press and Inventory Control
Radiation Control
Reactivity
Cont
Envi
C
A DBE Flow Chart was no
1. Isolation systems an
for response to this
Charts for the follow
• DBE No. 14 M
• DBE No. 17 Lo
• DBE No. 13 C
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed

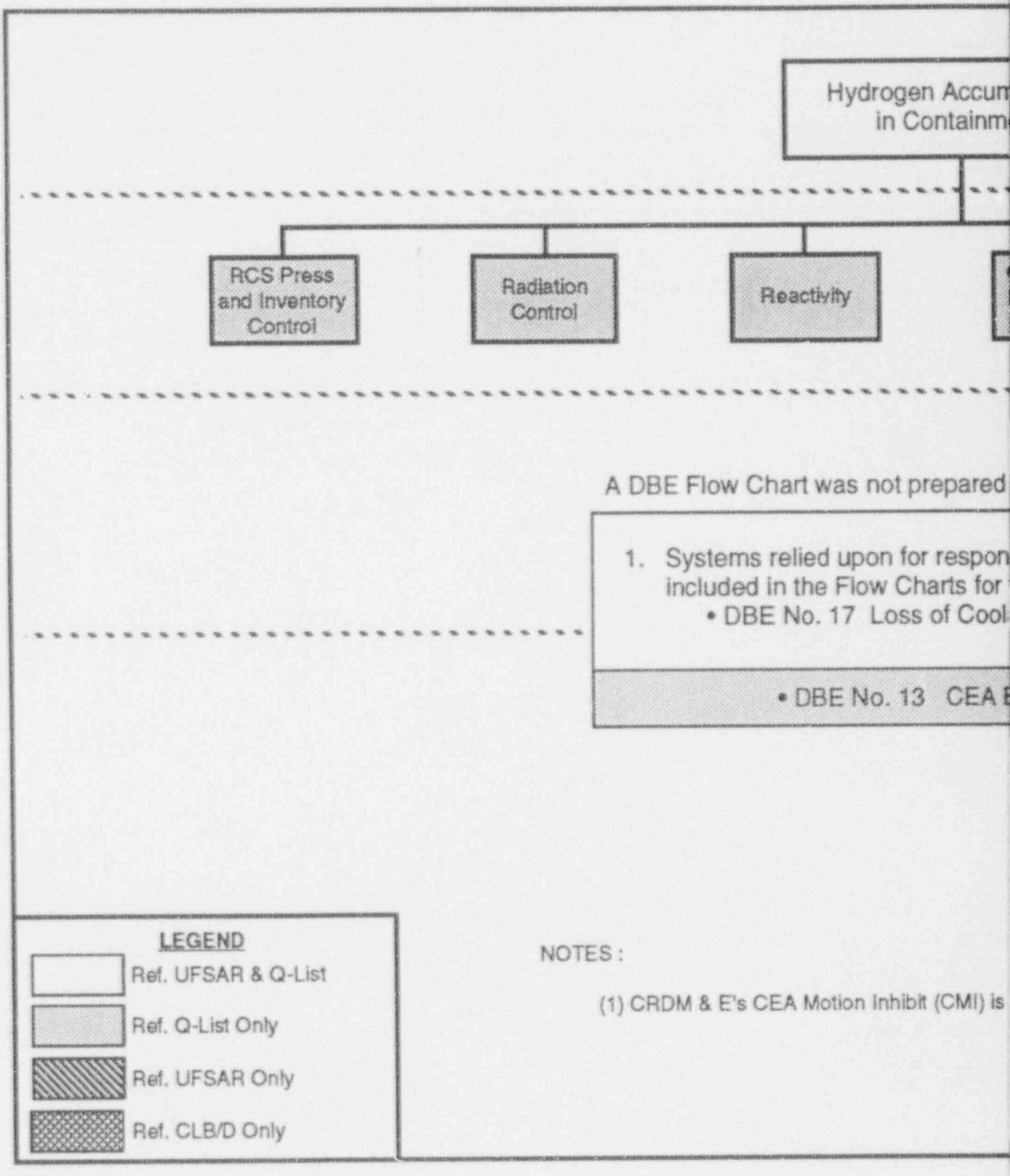


o be operable. (UFSAR 14.1.3.3)

FIGURE 14-20
DBE No. 20 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12	Rev 2

BG&E LCM Program


Hydrogen Accum
in Containm
RCS Press and Inventory Control
Radiation Control
Reactivity
A DBE Flow Chart was not prepared
1. Systems relied upon for respon
included in the Flow Charts for
• DBE No. 17 Loss of Cool
• DBE No. 13 CEA
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI) is

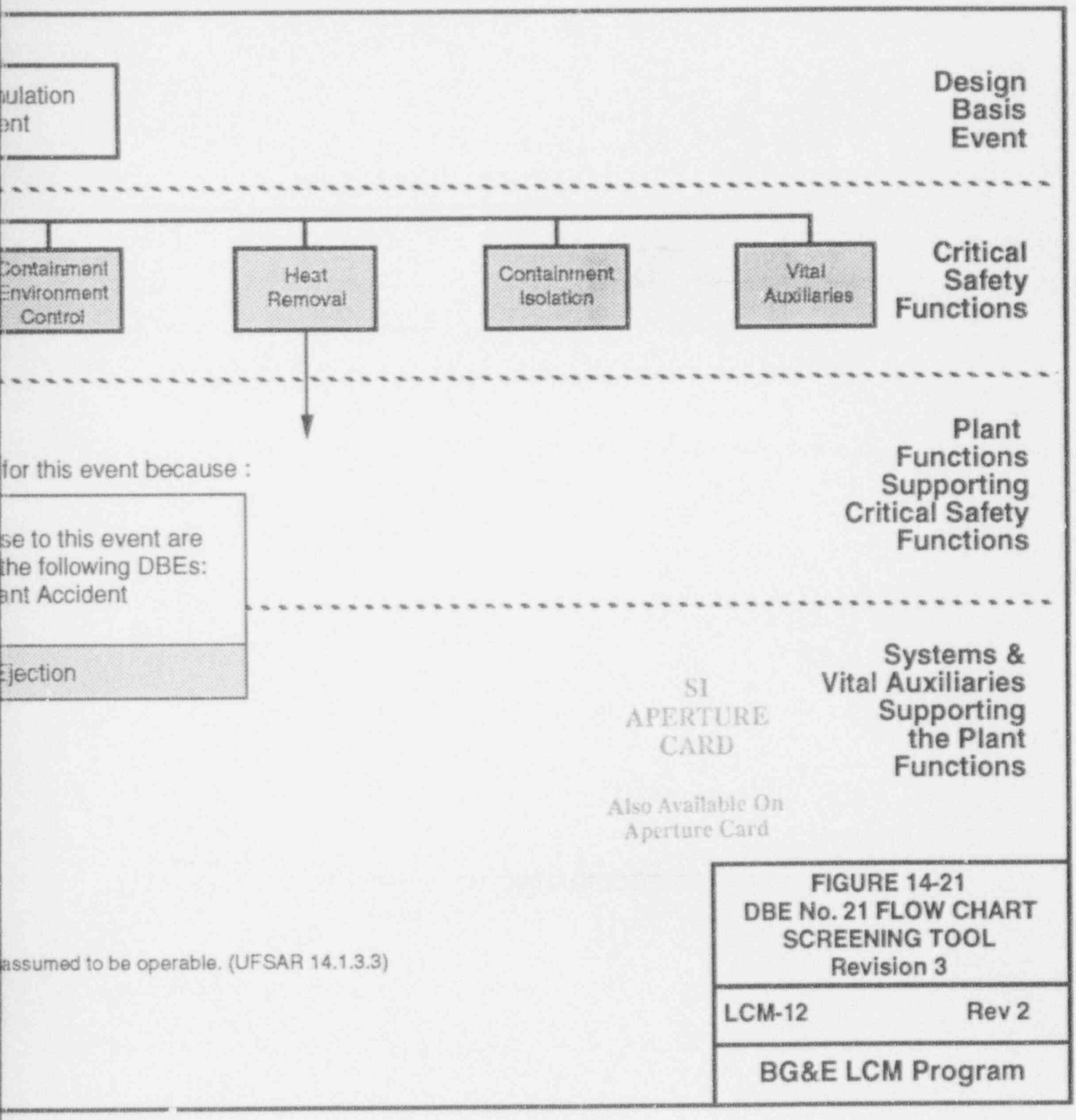
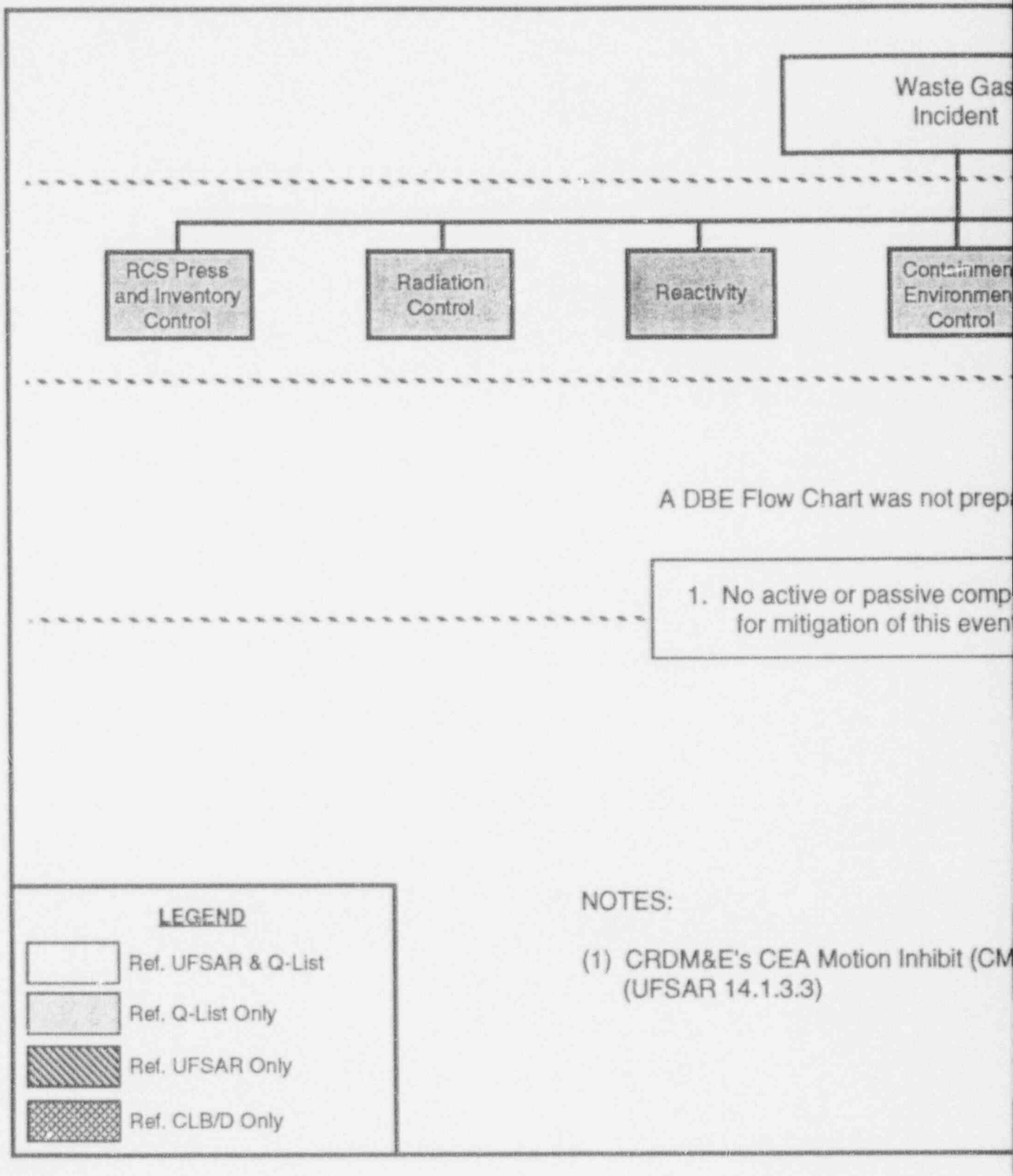
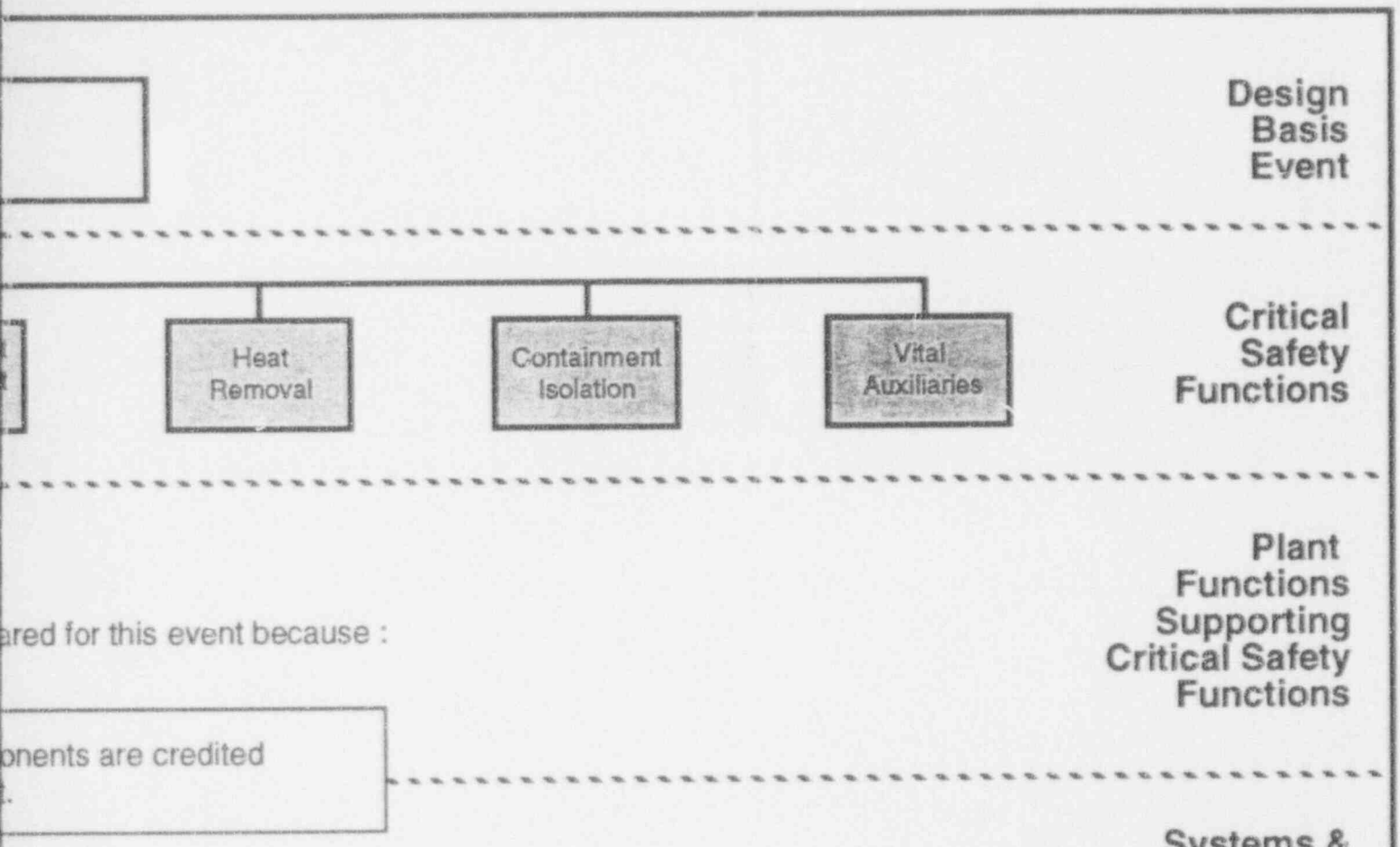


FIGURE 14-21
DBE No. 21 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12	Rev 2
BG&E LCM Program	


Waste Gas
Incident
RCS Press and Inventory Control
Radiation Control
Reactivity
Containmen
Environmen
Control
A DBE Flow Chart was not prep
1. No active or passive comp
for mitigation of this even
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES:
(1) CRDM&E's CEA Motion Inhibit (CM
(UFSAR 14.1.3.3)

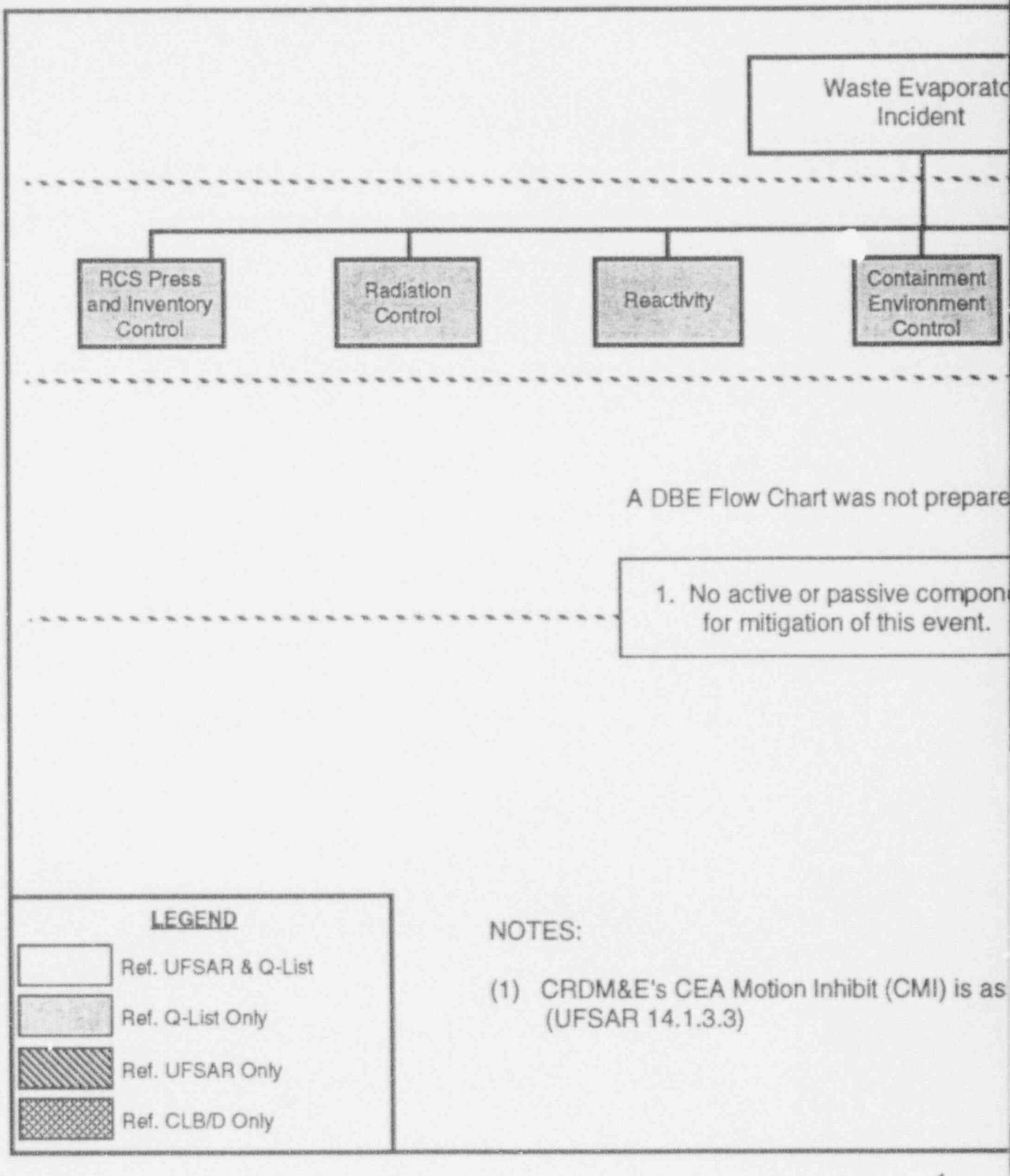


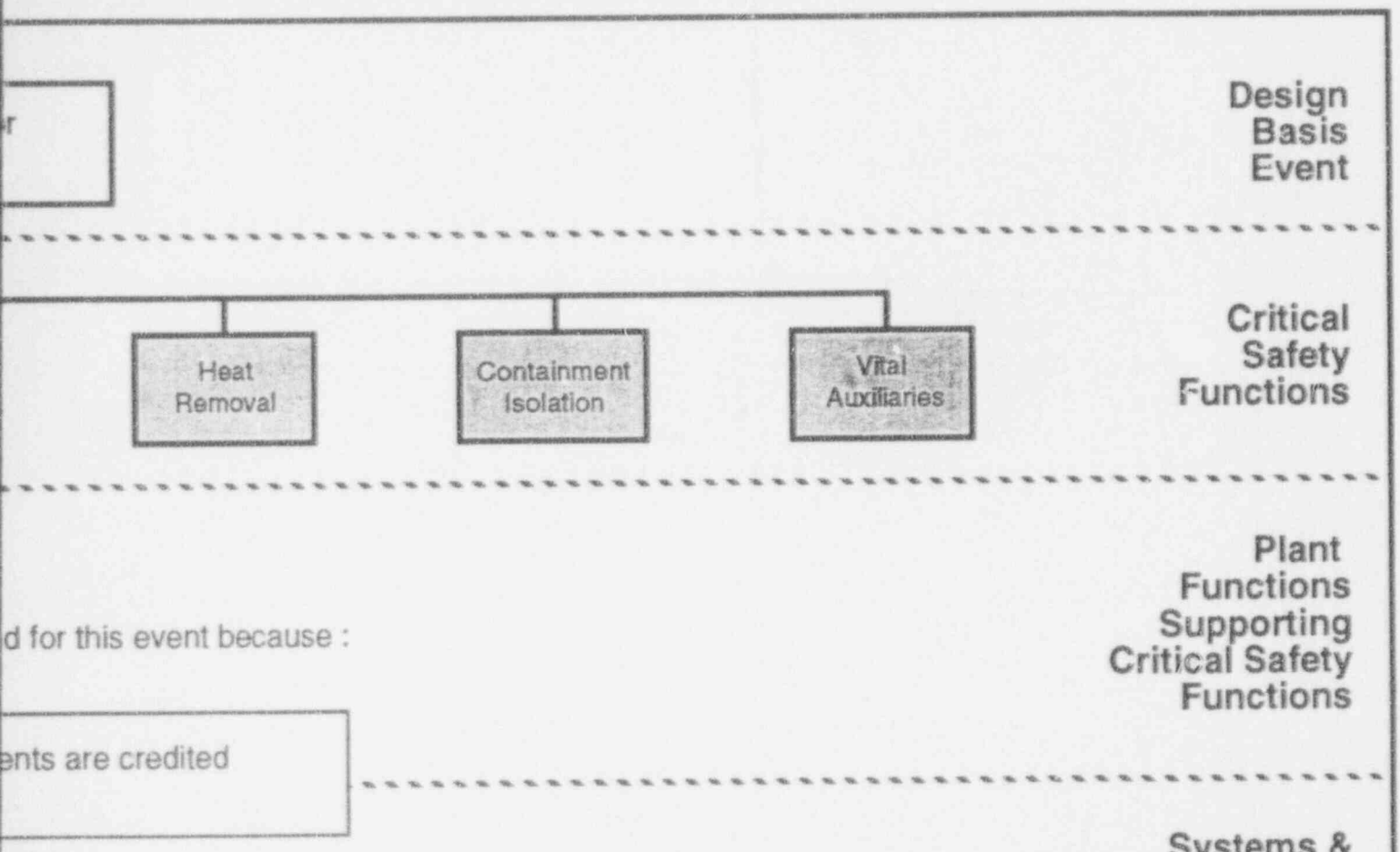
l) is assumed to be operable.

FIGURE 14-22
DBE No. 22 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12 Rev 2

BG&E LCM Program


Waste Evaporato
Incident
RCS Press and Inventory Control
Radiation Control
Reactivity
Containment Environment Control
A DBE Flow Chart was not prepare
1. No active or passive compon
for mitigation of this event.
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES:
(1) CRDM&E's CEA Motion Inhibit (CMI) is as
(UFSAR 14.1.3.3)



d for this event because :

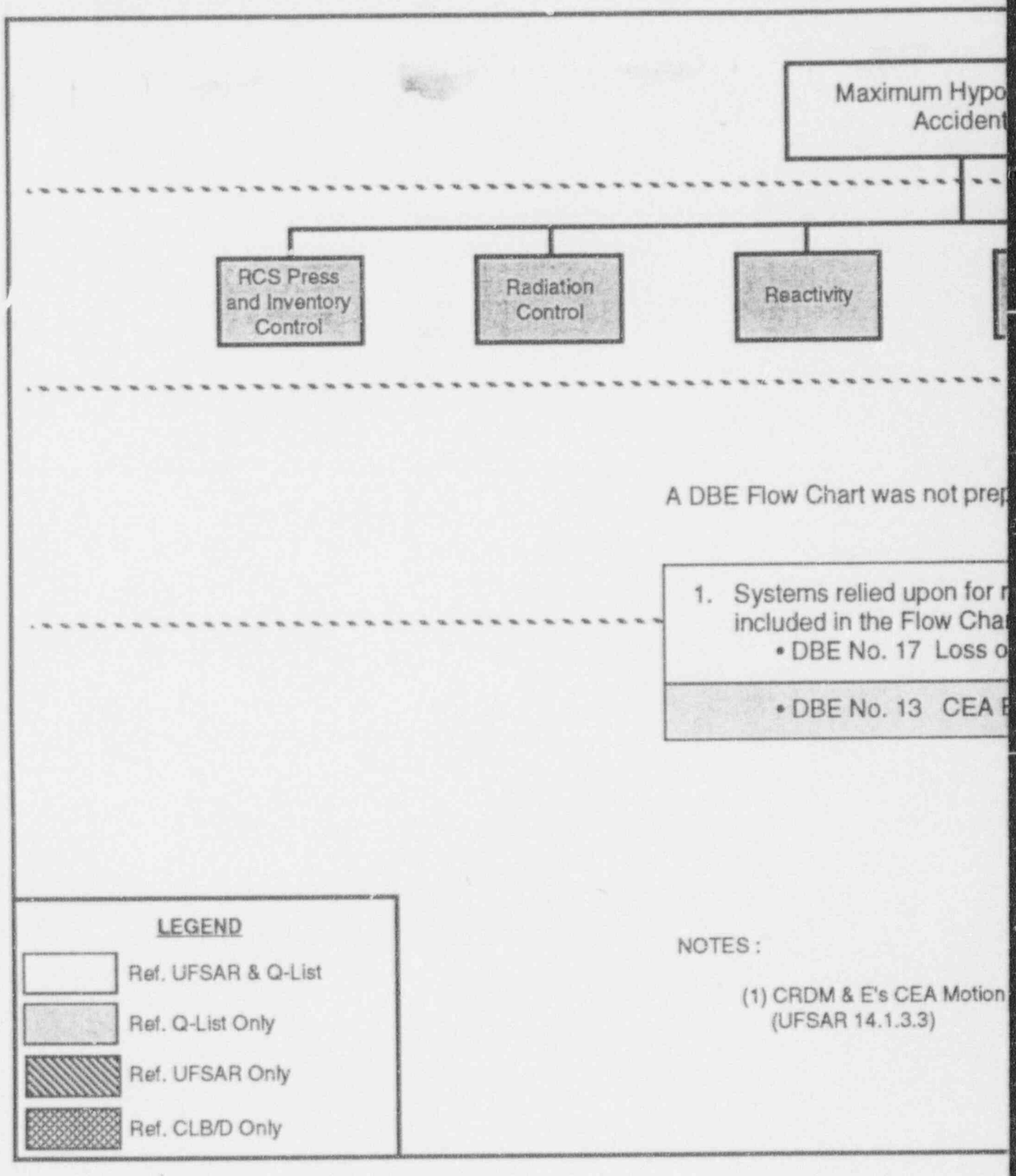
ents are credited

sumed to be operable.

FIGURE 14-23
DBE No. 23 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12 Rev 2

BG&E LCM Program


Maximum Hypo
Accident
RCS Press and Inventory Control
Radiation Control
Reactivity
A DBE Flow Chart was not prep
1. Systems relied upon for r
included in the Flow Cha
• DBE No. 17 Loss o
• DBE No. 13 CEA E
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) CRDM & E's CEA Motion
(UFSAR 14.1.3.3)

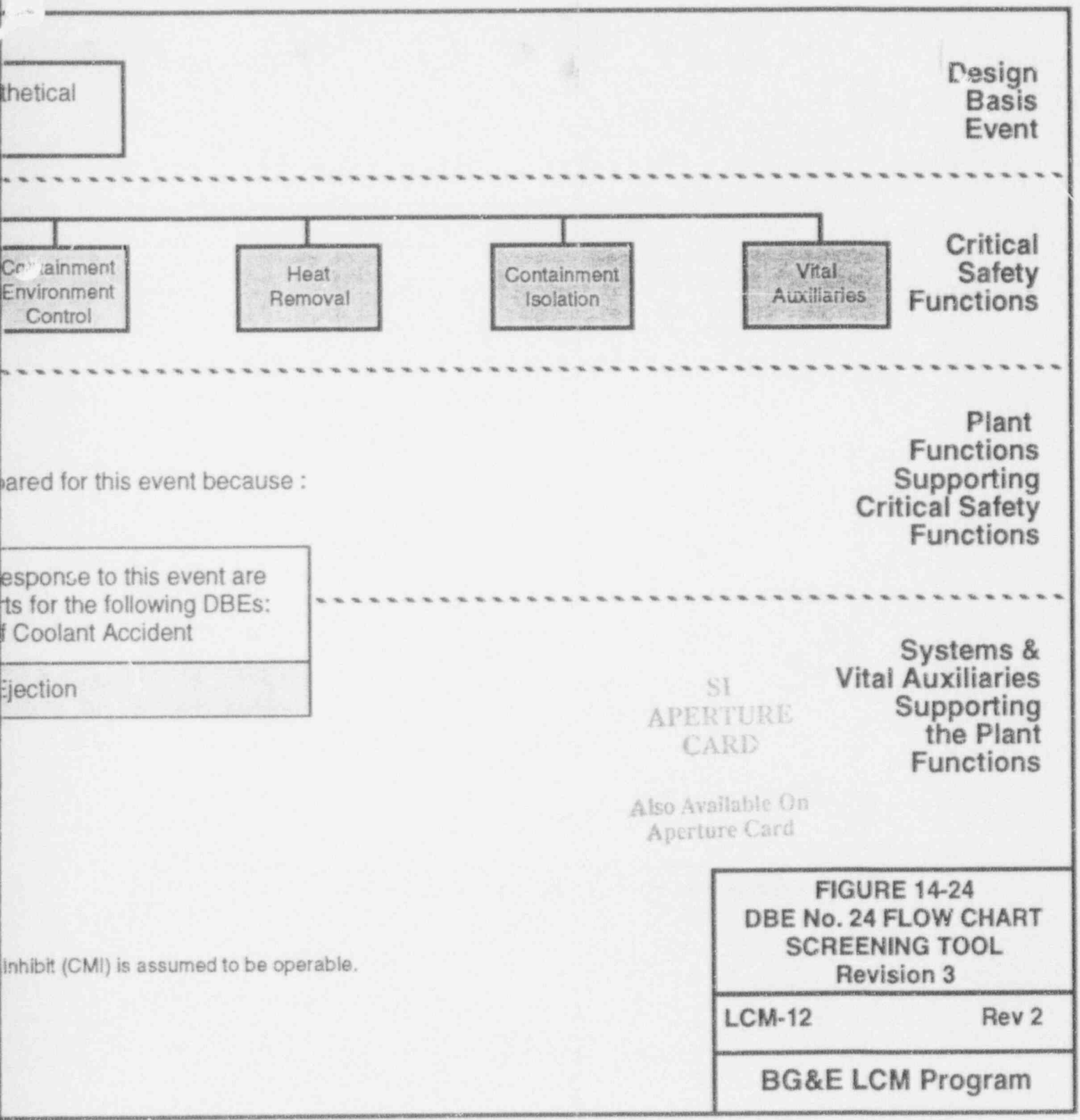
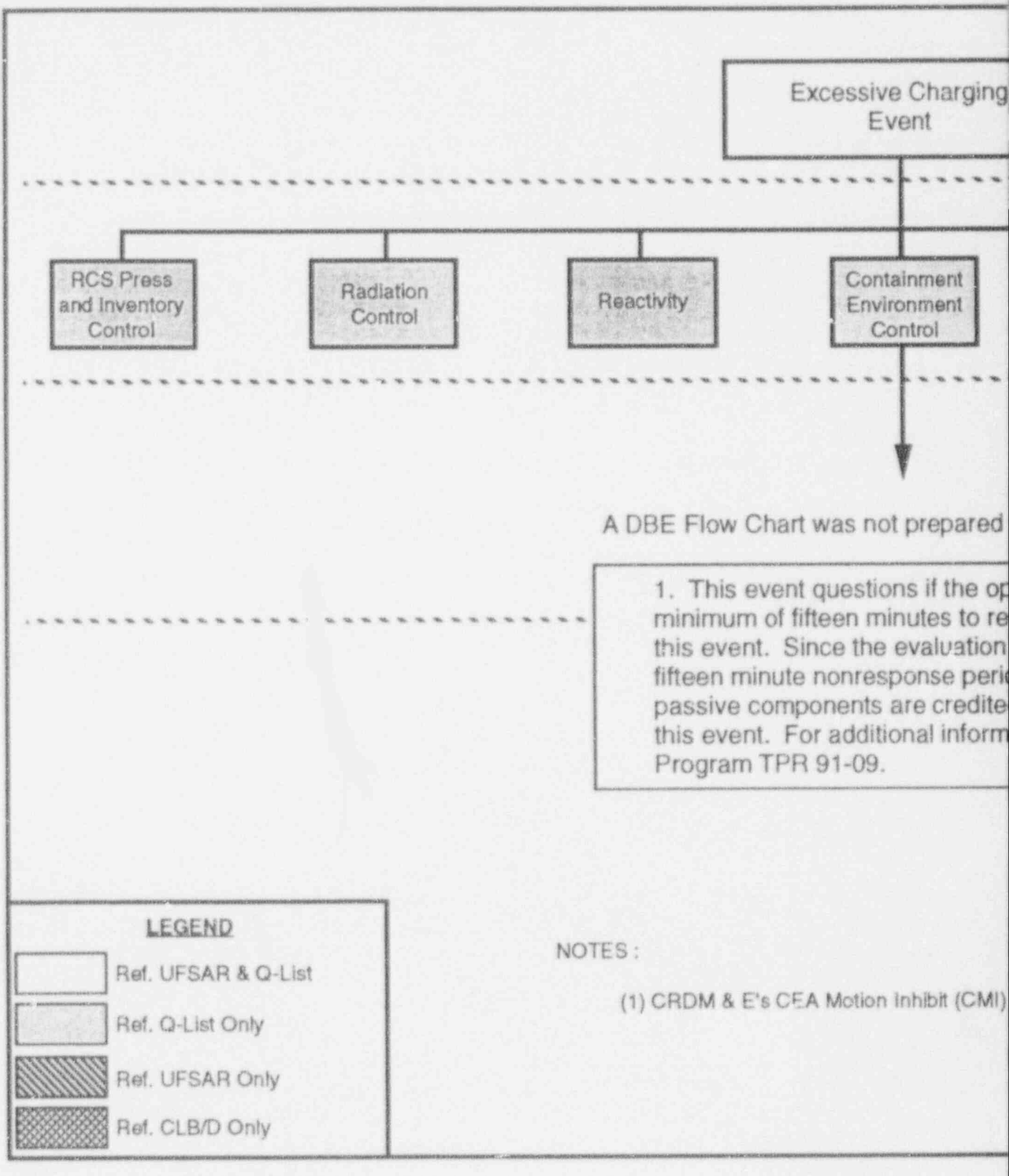


FIGURE 14-24
DBE No. 24 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12 **Rev 2**

BG&E LCM Program


Excessive Charging Event
RCS Press and Inventory Control
Radiation Control
Reactivity
Containment Environment Control
A DBE Flow Chart was not prepared
1. This event questions if the op
minimum of fifteen minutes to re
this event. Since the evaluation
fifteen minute nonresponse perio
passive components are credite
this event. For additional inform
Program TPR 91-09.
LEGEND
Ref. UFSAR & Q-List
Ref. Q-List Only
Ref. UFSAR Only
Ref. CLB/D Only
NOTES :
(1) CRDM & E's CEA Motion Inhibit (CMI)

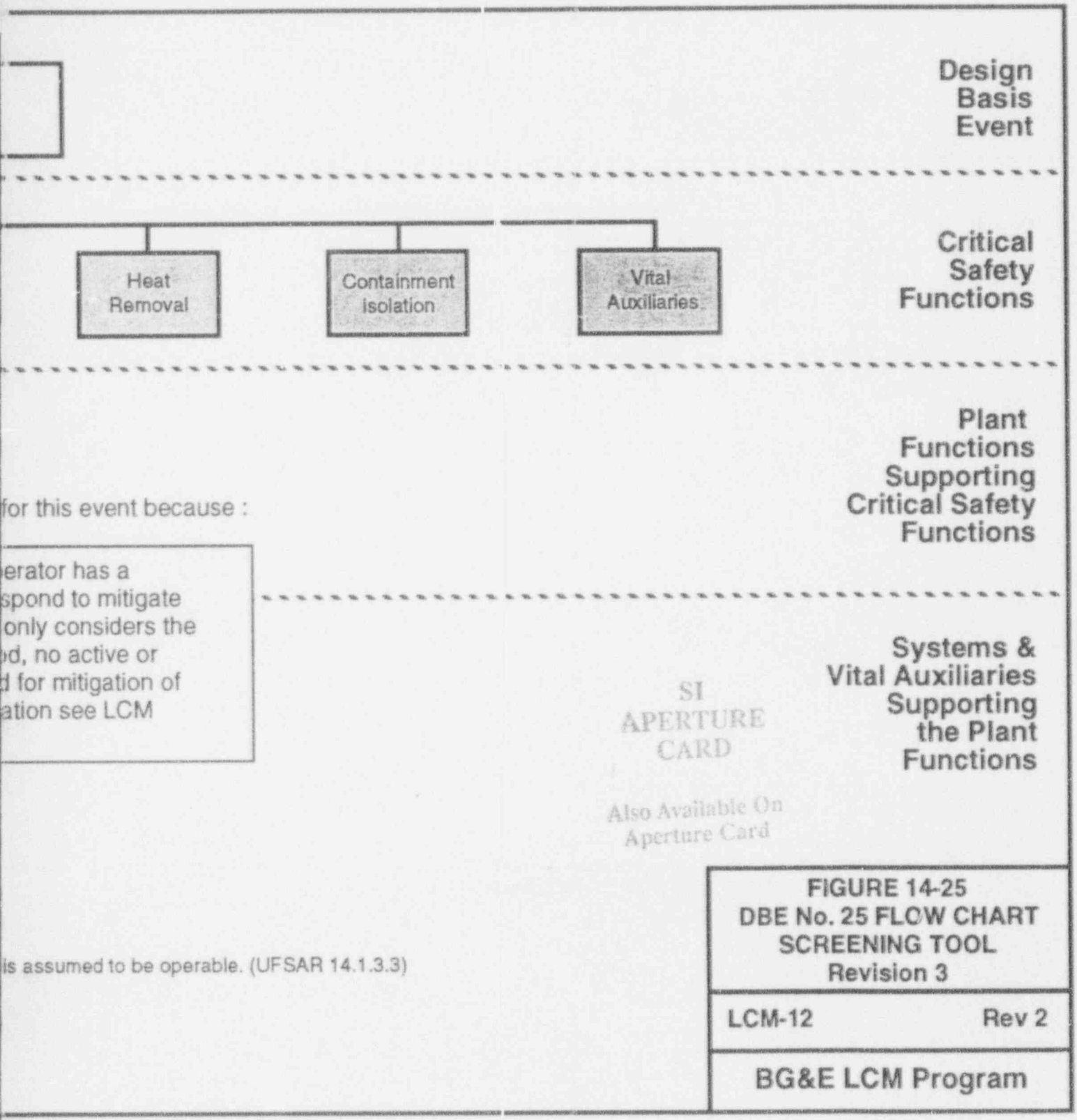
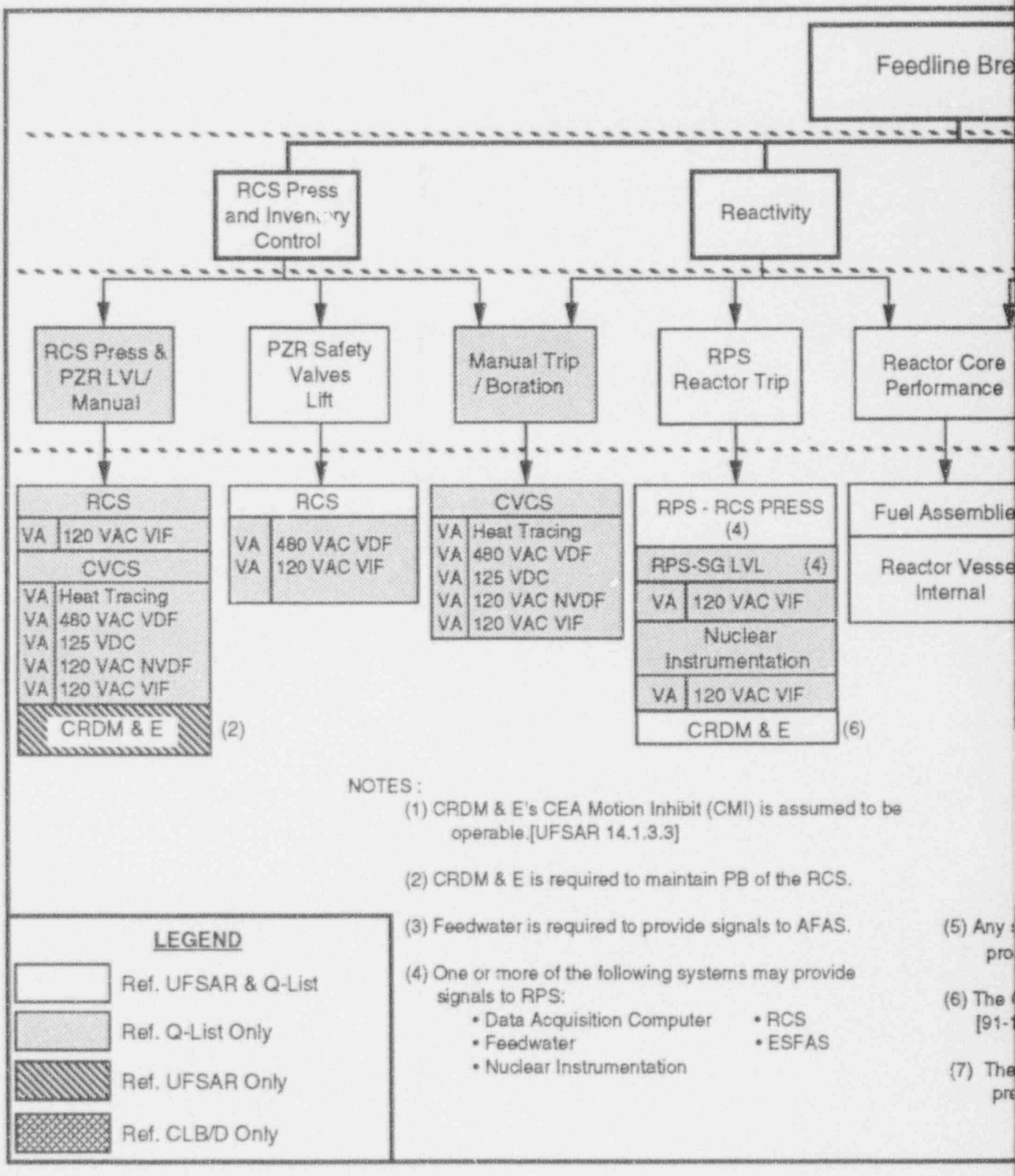


FIGURE 14-25
DBE No. 25 FLOW CHART
SCREENING TOOL
Revision 3

LCM-12	Rev 2

BG&E LCM Program



NOTES :

(1) CRDM & E's CEA Motion Inhibit (CMI) is assumed to be operable.[UFSAR 14.1.3.3]

(2) CRDM & E is required to maintain PB of the RCS.

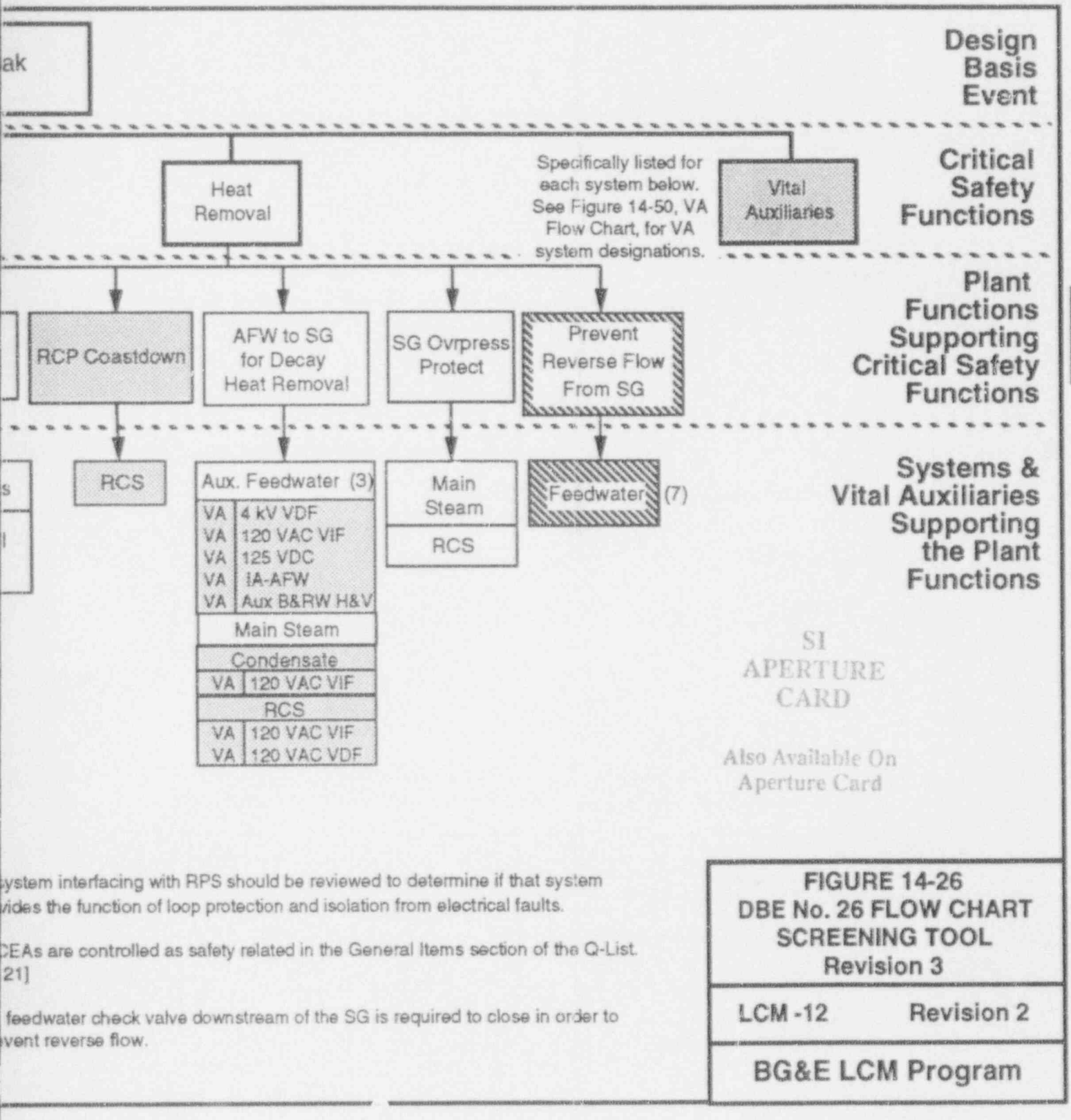
(3) Feedwater is required to provide signals to AFAS.

(4) One or more of the following systems may provide signals to RPS:
- Data Acquisition Computer
- Feedwater
- Nuclear Instrumentation
- RCS
- ESFAS

(5) Any
pro

(6) The
[91-1

(7) The
pre



ystem interfacing with RPS should be reviewed to determine if that system vides the function of loop protection and isolation from electrical faults.

CEAs are controlled as safety related in the General Items section of the Q-List. 21]

feedwater check valve downstream of the SG is required to close in order to vent reverse flow.

FIGURE 14-26
DBE No. 26 FLOW CHART SCREENING TOOL
Revision 3

LCM -12 **Revision 2**

BG&E LCM Program

VITAL AUXILIARIES

POWER DISTRIBUTION SYSTEMS

EDG
Emergency Diesel Generator
ESFAS (Note 1)
Diesel Oil System
Electrical 4 KV Transf. & Buses

VA	SRW
VA	480 VAC VDF
VA	125 VDC
VA	HVAC - EDG

4 KV VDF
Electrical 4KV Transformers & Buses

VA	EDG
VA	HVAC - SWGR
VA	125 VDC

480 VAC VDF
Elect. 480 KV Buses
Elect. 480 V Motor Control Center

VA	4 KV VDF
VA	HVAC -SWGR
VA	125 VDC

120 VAC VIF
Vital Intrument AC

VA	HVAC- CR/CSR

WATER COOLING SYSTEMS

SRW
Service Water Cooling

VA	SW
VA	4 KV VDF
VA	125 VDC
VA	HVAC-SRW/AFW

CCW
Component Cooling

VA	SW
VA	480 VAC VDF
VA	125 VDC
VA	120 VAC NVDF

SW
Salt Water Cooling

VA	IA - SWAC
VA	4 KV VDF
VA	480 VAC VDF
VA	125 VDC

HVAC

HVAC - CR / CSR
Control Room HVAC

VA	480 VAC VDF
VA	120 VAC VDF
VA	125 VDC

HVAC - BAT
Aux. Building and Radwaste H & V

VA	480 VAC VDF

HVAC - ECCS
Aux. Building and Radwaste H & V

VA	480 VAC VDF
VA	125 VDC
VA	120 VAC VDF

HVAC - PEN
Aux. Building and Radwaste H & V

VA	480 VAC VDF
VA	125 VDC

HVAC - SWGR
Aux. Building and Radwaste H & V

INSTRUMENT AIR

IA - SWAC
Compressed Air

VA	480 VAC VDF

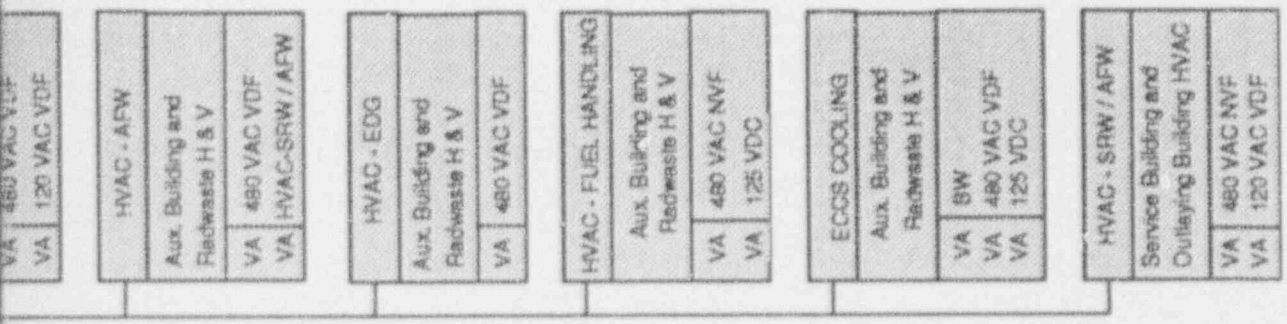
IA - AFW
Compressed Air

VA	IA - SWAC

IA - CNTMT
Compressed Air

VA	480 VAC VDF
VA	120 VAC VIF

Note(s):
(1) Syst
Loa



REFERENCE

Q-List (Rev. 17)

KEY

VA	Identifier
System (s) performing the support function	
VA	VA 's of the systems listed above

VA -VITAL AUXILIARY
SL -ELECTRICAL SINGLE LINE
VIF -VITAL INVERTER FED
VDF -VITAL DIESEL FED
NVDF -NON-VITAL DIESEL FED
NVF -NON-VITAL FED
CPT -CONTROL POWER TRANSFORMER

ems 4,19, 32, 64, and 66 support ESFAS
Shedding --see flowsheet 109A

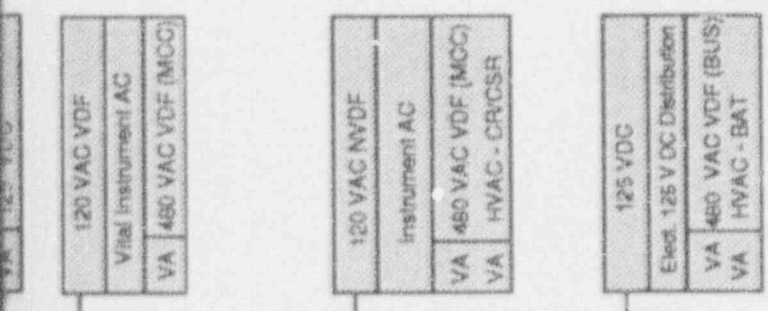


FIGURE 14-50
VITAL AUXILIARIES FLOW CHART SCREENING TOOL
Revision 3

LCM-12 **Revision 2**

BG &E LCM PROGRAM

Cover Sheet

Post Accident Monitoring Screening Tool, Revision 3

This table identifies the systems and structures that provide a post accident monitoring (PAM) function. This table was developed in accordance with Procedure LCM-12, "System/Structure ITLR Screening," Revision 2 as modified per TPR 93-007.

	Name Printed	Signature	Date
Evaluator	P.J. Peden	P.J. Peden	2/17/93
Verifier	Christopher Browne	C.E. Browne	2/17/93
QA Reviewer	J.N. SORENSEN	J.N. Sorensen	2/17/93
Approver	D.R. Horbeller	D.R. Horbeller	2/17/93

Reference(s)
Calvert Cliffs Nuclear Power Plant Units 1 and 2; Docket Nos. 50-317 and 50-318 Regulatory Guide 1.97 Review Update, Baltimore Gas and Electric Company, August 9, 1988
LCM Program TPR 93-007(Recommmended Resolution)
LCM Program TPR 93-001(Recommmended Resolution)
LCM Program TPR 92-157(Recommmended Resolution)
LCM Program TPR 92-155(Recommmended Resolution)
LCM Program TPR 92-137(Recommmended Resolution)
LCM Program TPR 92-136(Recommmended Resolution)
LCM Program TPR 92-135(Recommmended Resolution)
LCM Program TPR 92-132(Recommmended Resolution)
LCM Program TPR 92-131(Recommmended Resolution)
LCM Program TPR 92-125(Recommmended Resolution)
LCM Program TPR 92-111(Recommmended Resolution)
LCM Program TPR 92-110(Recommmended Resolution)
LCM Program TPR 92-080(Recommmended Resolution)
LCM Program TPR 92-011(Recommmended Resolution)
LCM Program TPR 91-226(Recommmended Resolution)
LCM Program TPR 91-215(Recommmended Resolution)
LCM Program TPR 91-008 (Recommmended Resolution)
LCM Program TPR 92-121(Interim Disposition)
LCM Program TPR 92-117(Interim Disposition)
LCM Program TPR 92-108(Interim Disposition)

Reference(s)
LCM Program TPR 91-188(Dispositioned)
LCM Program TPR 91-186(Dispositioned)
LCM Program TPR 91-196(Resolved)
LCM Program TPR 91-193(Resolved)
LCM Program TPR 91-123(Resolved)

• Reference 1 Calvert Cliffs Nuclear Power Plant Units 1 and 2; Docket Nos. 50-317 and 50-318 Regulatory Guide 1.97 Review Update, Baltimore Gas and Electric Company, August 9,1988

SYSTEM/ STRUCTURE	SYSTEM ID No.	MONITORING VARIABLE(S)/FUNCTION(S)	REF 1 ITEM No.
Electrical 125 Volt DC Distribution	2	• Status of standby power. (voltage, current, ground)	52
		• Battery breaker open indication.	52
		• Battery charger status. (current)	52
		• DC panel potential indication	52
Electrical 4KV Transformers and Buses	4	• Status of standby power. (voltage, current)	52
		• Switchyard feeder status (current)	52
Electrical 480V Transformers and Buses	5	• Status of standby power. (voltage, current)	52
Service Water Cooling	11		
		• Service water pump status. (motor current)	52
		• Containment cooler cooling water flow.	46
Salt Water Cooling	12		
		• Salt water pump status. (motor current)	52
Fire Protection	13	• Fire protection supply line cont. isol. valve posit. indic.	48
Component Cooling	15		
		• Component cooling heat exchanger outlet temperature.	49
		• CCW to RCPs cont. isol. valve position indication.	48
		• Component cooling pump discharge pressure (for flow indic.)	50
		• CCW return from RCPs cont. isol. valve position indic.	48
Vital Instrument AC	18	• Status of standby power. (voltage and ground)	52
		• Inverter position switch indication.	52
Compressed Air	19	• Instrument air containment isolation valve posit. indic.	48
		• Plant (breathing) air containment isolation valve posit. indic.	48
Data Acquisiton Computer	20	• Provide fault protection for I&C loops.	7

Emergency Diesel Generator	24	• Diesel generator status. (voltage, current, VAR, power, frequency, engine or exciter shutdown, and generator fault trip) See Note (1)	52
Plant Heating	29	• Containment plant heating I/O cont. isol. valve posit. indic.	48
Auxiliary Building & Radwaste H&V	32	• ECCS pump room exhaust fan status.	51
		• Fuel pool exhaust fan damper position indication.	51
Auxiliary Feedwater	36	• AFW flow to steam generators.	35
		• Mot. dr. aux. feedwater pump status. (motor current)	52
		• Condensate storage tank 12 level.	21
		• AFW supply to SG cont. isol. valve position indication.	48
Demin. Water and Condensate Storage	37	• Demin water supply to PZR Quench Tank containment isolation valve position indication.	48
Sampling System (NSSS)	38	• Containment hydrogen concentration.	45
		• PZR quench tank O-2 sample line cont. isol. valve posit. indic.	48
		• Containment atmosphere hydrogen sample line (supply and return) valve position indication	48
Chemical and Volume Control (CVCS)	41	• Charging pumps discharge flow.	40
		• Letdown line to purific. demins. cont. isol. valve posit. indic.	48
		• RCP bleed-off I/O containment isolation valve posit. indic.	48
Feedwater	45	• Steam generator pressure	8
		• Steam generator level.	7
Safety Injection	52	• Refueling water storage tank level.	20
		• HPSI flow.	36
		• LPSI (shutdown cooling) flow.	37/38
		• HPSI aux. header cont. isol. valve position indication.	48
		• HPSI header cont. isol. valve position indication.	48
		• HPSI pump status. (motor current)	52
		• LPSI header cont. isol. valve position indication.	48

Safety Injection (continued)	52	• LPSI pump status. (motor current)	N/A
		• Shut/down cooling HX outlet/return temperature.	39
		• Shut/down cooling return header cont. isol. valve posit. indic.	48
		• Containment sump wide range level.	23
		• Cont. sump recirc header cont. isol. valve posit. indic.	48
		• Safety injection tank test line cont. isol. valve posit. indic.	48
Plant Drains	53	• Containment sump discharge cont. isol. valve posit. indic.	48
Reactor Protective	58	• RCS hot leg temperature.	27
		• RCS cold leg temperature.	28
		• Steam generator pressure.	8
Primary Containment	59		
		• Containment ILRT penetration cont. isol. valve posit. indic.	48
		• Containment wide range pressure.	43
		• Containment narrow range pressure.	43
		• Cont. pressure monitoring inst. cont. isol. valve posit. indic.	48
Primary Containment H&V	60	• Containment atmosphere dome temperature.	44
		• Containment cooler fan status. (motor current)	46
		• Containment cooler service water inlet flow.	46
		• Containment hydrogen purge I/O cont. isol. valve posit. indic.	48
		• Containment purge air I/O cont. isol. valve posit. indic.	48
Containment Spray	61	• Containment spray header flow.	47
		• Containment spray pump status. (motor current)	52
Reactor Coolant	64	• Pressurizer level.	1
		• Pressurizer wide range pressure.	2
		• Pressurizer heater (porportional & backup) status.	5
		• Pressurizer PORV/ safety relief valve position indication.	6
		• Pressurizer PORV/ safety relief valve acoustic monitor flow indication.	6
		• Shut/down cooling return header cont. isol. valve position indication	48
		• RCS hot leg temperature.	27
		• RCS cold leg temperature.	28
		• Degrees of subcooling.	29
		• Core exit T/C temperature.	31
		• Reactor vessel coolant inventory level. (RVLMS)	30

Spent Fuel Pool Cooling	67	• Refueling pool I/O to/from SFPC cont. isol. vlv. posit. ind.	48
Waste Gas	69	• Waste gas containment isolation valve position indic.	48
Liquid Waste	71		
		• RCDT drains containment isolation valve position indic.	48
		• Steam supply to RV head washdown area containment isolation valve position indication.	48
Nitrogen and Hydrogen	74	• N-2 sup. to S.I. tanks cont. isol. vlv. posit. indic.	48
		• N-2 supply to RCDT cont. isol. valve posit. indic.	48
		• N-2 sup. to SGs & PZR quench Tk cont. isol. vlv. posit. ind.	48
Area and Process Radiation Monitoring	77	• Containment area radiation - high range.	55
		• Main (common) plant vent - wide range effluent gaseous activity	57
		• Main (common) plant vent - wide range effluent gaseous activity release rate	57
		• Rad monitor for SG safety relief valves & atmospheric dump valves.	59
		• Cont atm & purge monitor cont. isol. valve posit. indic.	48
Nuclear Instrumentation	78	• Wide range logarithmic excore neutron flux.	41
		• Power range excore neutron flux.	41
Main Steam	83		
		• MSIV position indication.	48
		• Steam generator blowdown cont. isol. valve posit indic.	48
		• MSIV bypass cont. isol. valve posit. indic.	48
		• SG atmospheric dump cont. isol. valve posit. indic.	48

Note:
(1) Voltage or frequency abnormal, engine or exciter shutdown and generator fault trip alarms are processed by system 024 components, but their annunciation takes place in system 026. This annunciation is NOT considered PAM. (TPR 91-193)

Cover Sheet

'Q' Screening Tool, Revision 2/Change 1

This table identifies the systems and structures containing components designated by the Q-List Committee as requiring the same level of quality assurance coverage as provided for items required to ensure the integrity of the reactor coolant system pressure boundary, the capability to shutdown the reactor and maintain it in a safe condition and/or prevent or mitigate the consequences of an accident which could result in potential off-site exposure to individuals in excess of exposures specified in 10CFR100. This table was developed in accordance with LCM-12, "System/Structure ITLR Screening," Revision 2 as modified per TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C E Browne	C E Browne	2/24/93
Verifier	R J Peden	R J Peden	2/25/93
QA Reviewer	J. N. Sorensen	J N Sorensen	2/25/93
Approver	O. R. Hostetler	O R Hostetler	2/25/93

Reference(s)

CCNPP, Quality List Manual, Baltimore Gas and Electric Co., Attachment D, Q-List Items Report, Rev.17, with updates through Transmittal Letter 91-09, 12-9-91

CCNPP, Master Equipment List and NUCLEIS Database, Baltimore Gas and Electric Co.

LCM Program TPR 92-110 (Recommended Resolution)

LCM Program TPR 91-171 (Dispositioned)

LCM Program TPR 92-103 (Resolved)

LCM Program TPR 92-075 (Resolved)

'Q' Screening Tool — Revision 2

- Reference 1: Calvert Cliffs Nuclear Power Plant, Quality List Manual, Attachment D, Q-List Items Report, Rev. 17
- Reference 2: Calvert Cliffs Nuclear Power Plant, NUCLEIS Equipment Data Base

SYSTEM	System ID No.	Equipment ID No.	Description
Service Water Cooling	11	1LS1650	11 SRW PUMP RM HI LS
		1LS1651	11 SRW PUMP RM HI LS
		2LS1650	SRW 21 PP RM HI LS
		2LS1651	SRW 21 PP RM HI LS
Component Cooling	15	1LS3860	1 CC PUMP RM LEVEL HI
		1LS3861	1 CC PUMP RM LEVEL Hi
		2LS3860	2 CC PUMP RM LEVEL HI
		2LS3861	2 CC PUMP RM LEVEL HI
Auxiliary Building and Radwaste Building H & V	32	0ACC5419	AIR ACCUMULATOR FOR 0SV5419
		0ACC5420	AIR ACCUMULATOR FOR 0SV5420
		0HS5416	0 HVAC/P FUEL POOL EXH FILT HS
		0HS5419	0 HVAC/A FUEL POOL EXH FAN 11 HS
		0HS5420	0 HVAC/A FUEL POOL EXH FAN 12 HS
		0JL5416W1	0 HVAC/A FUEL POOL EXH FILT 11 JL
		0JL5416W2	0 HVAC/A FUEL POOL EXH FILT 11 JL
		0PDIS5418	0 HVAC/A FUEL POOL EXH FILT PDIS
		0PDI5417	0 HVAC/A FUEL POOL EXH FILT PDI
		0PO5416-11	0 HVAC/A FUEL POOL EXH FILT CHAR FILT BY-PASS D PO
		0PO5416-12	0 HVAC/A FUEL POOL BY-PASS D PO
		0PO5416-13	0 HVAC/A FUEL POOL BY-PASS D PO
		0PO5416-14	0 HVAC/A FUEL POOL BY-PASS D PO
		0PO5416-15	0 HVAC/A FUEL POOL BY-PASS D PO
		0PO5416-16	0 HVAC/A FUEL POOL BY-PASS D PO
		0PO5416-17	0 HVAC/A FUEL POOL BY-PASS D PO
		0PO5416-18	0 HVAC/A FUEL POOL BY-PASS D PO
		0DAMP5417	FUEL POOL EXH FILT CHAR FILT INLET DMPR

SYSTEM	SYSTEM ID No.	Equipment ID No.	Description
Auxiliary Building and Radwaste Building H & V (continued)	32	0PO5417	0 HVAC/A FUEL POOL EXH FILTER INLET D PO
		0DAMP5418	FUEL POOL EXH FILT CHAR FILT INLET DMPR
		0PO5418	0 HVAC/A FUEL POOL EXH FILT INLET D PO
		0DAMP5419	FUEL POOL EXH FAN NO 11 DISCH DMPR
		0PO5419	FUEL POOL EXH FAN 11 DMPR
		0DAMP5420	FUEL POOL EXH FAN NO 12 DISCH DMPR
		0PO5420	FUEL POOL EXH FAN 12 DMPR
		0SV5416	0 HVAC/A FUEL POOL EXH FACE D SV
		0SV5416A	0 HVAC/A FUEL POOL BY-PASS D SV
		0SV5419	0 HVAC/A FUEL POOL FAN 11 D SV
		0SV5420	0 HVAC/A FUEL POOL FAN 12 D SV
		0ZL5416G	0 HVAC/A FUEL POOL EXH FILT 11 ZL
		0ZL5416R	0 HVAC/A FUEL POOL EXH FILT 11 ZL
		0ZL5419G	0 HVAC/A 11 FUEL POOL EXH FAN 11 ZL
		0ZL5419G1	FUEL POOL EXH FAN 11 DAMPER LG
		0ZL5419R	0 HVAC/A FUEL POOL EXH FAN 11 ZL
		0ZL5419R1	FUEL POOL EXH FAN 11 DAMPER LR
		0ZL5420G	0 HVAC/A FUEL POOL EXH FAN ZL
		0ZL5420G1	FUEL POOL EXH FAN 12 DAMPER LG
		0ZL5420R	0 HVAC/A FUEL POOL EXH FAN ZL
		0ZL5420R1	FUEL POOL EXH FAN 12 DAMPER LR
		0ZS5416AA	1 HVAC/A FUEL POOL BYPASS D 11 ZS
		0ZS5416AB	FUEL POOL BYPASS DAMPER 12
		0ZS5416AC	FUEL POOL BYPASS DAMPER 13
		0ZS5416AD	FUEL POOL BYPASS DAMPER 14
		0ZS5416AE	FUEL POOL BYPASS DAMPER 15
		0ZS5416AF	FUEL POOL BYPASS DAMPER 16
		0ZS5416AG	FUEL POOL BYPASS DAMPER 17
		0ZS5416AH	FUEL POOL BYPASS DAMPER 18
		0ZS5416BA	0 HVAC/A FUEL POOL BYPASS D 11 ZS
		0ZS5416BB	FUEL POOL BYPASS DAMPER 12
		0ZS5416BC	FUEL POOL BYPASS DAMPER 13
		0ZS5416BD	FUEL POOL BYPASS DAMPER 14
		0ZS5416BE	FUEL POOL BYPASS DAMPER 15
		0ZS5416BF	FUEL POOL BYPASS DAMPER 16
		0ZS5416BG	FUEL POOL BYPASS DAMPER 17
		0ZS5416BH	FUEL POOL BYPASS DAMPER 18
		0ZS5419A	FUEL POOL EXH FAN 11 DAMPER
		0ZS5419B	FUEL POOL EXH FAN 11 DAMPER
		0ZS5420A	FUEL POOL EXH FAN 12 DAMPER
		0ZS5420B	FUEL POOL EXH FAN 12 DAMPER
		1LS5437	1 HVAC/A EAST ECCS PUMP RM LS

SYSTEM	SYSTEM ID No.	Equipment ID No.	Description
Auxiliary Building and Radwaste Building H & V (continued)	32	1LS5439	1 HVAC/A WEST ECCS PUMP RM LS
		1M0203	0 HVAC/A FUEL POOL EXH FAN 11 MTR
		2LS5437	2 HVAC/A EAST ECCS PUMP RM LS
		2LS5439	2 HVAC/A WEST ECCS PUMP RM LS
		2M0203	0 HVAC/A FUEL POOL EXH FAN 12 MTR
Auxiliary Feedwater	36	1ZS161A	12 AFW CST MAN VLV ZS
		1ZS161B	12 AFW CST MAN VLV ZS
		2ZL161R	12 DW CST MAN VLV HV161 ZL
		2ZS161A	12 AFW CST MAN VLV ZS
		2ZS161B	12 AFW CST MAN VLV ZS
		2ZL161G	12 CST MAN ISO VLV POS LG2
NSSS Sampling	38	1HS5107	1 PS LPSI SMPL TO PASS
		1SV5107	U-1 LPSI SAMP
		2HS5107	2 PS LPSI SMPL TO PASS
		2SV5107	U-2 LPSI SAMP
Circulating Water	42	1LS4412	CONDENSER PIT HI LS
		1LS4414	CONDENSER PIT HI LS
		1LS5251A	CW INTAKE STRUCTURE HI LVL SW
		1LS5251B	CW INTAKE STRUCTURE HI LVL SW
		1LS5251C	CW INTAKE STRUCTURE HI LVL SW
		1LS5251D	CW INTAKE STRUCTURE HI LVL SW
		2LS4412	CONDENSER PIT HI LS
		2LS4414	CONDENSER PIT HI LS
		2LS5251A	CW INTAKE STRUCTURE HI LVL SW
		2LS5251B	CW INTAKE STRUCTURE HI LVL SW
		2LS5251C	CW INTAKE STRUCTURE HI LVL SW
		2LS5251D	CW INTAKE STRUCTURE HI LVL SW
Safety Injection	52	1HS3658	LPSI SUPP TO SDC HX MOV HS
		1MOV658	LPSI SUPP TO SDC HX
		2HS3658	2 SI LPSI SUPP TO SDC HX MOV HS
		2MOV658	LPSI SUPP TO SDC

SYSTEM	SYSTEM ID No.	Equipment ID No.	Description
Primary Containment H & V	60	1PIA5277	1 HVAC/P EAST PENET RM PIA
		1PIA5278	1 HVAC/P EAST PENET RM PIA
		1PIA5281	1 HVAC/P WEST PENET RM PIA
		1PIA5282	1 HVAC/P WEST PENET RM PIA
		1PT5277	1 HVAC/P EAST PENET RM PT
		1PT5278	1 HVAC/P EAST PENET RM PT
(continued)		1PT5281	1 HVAC/P WEST PENET RM PT
		1PT5282	1 HVAC/P WEST PENET RM PT
		2PIA5277	2 HVAC/P EAST PENET RM PIA
		2PIA5278	2 HVAC/P EAST PENET RM PIA
		2PIA5281	2 HVAC/P WEST PENET RM PIA
		2PIA5282	2 HVAC/P WEST PENET RM PIA
		2PT5277	2 HVAC/P EAST PENET RM PT
		2PT5278	2 HVAC/P EAST PENET RM PT
		2PT5281	2 HVAC/P WEST PENET RM PT
		2PT5282	2 HVAC/P WEST PENET RM PT
Containment Spray	61	1HS3662	12 S/D CLG HX OUT RECIRC CONTR VLV HS
		1HS3663	11 S/D CLG HX OUT RECIRC CONTR VLV HS
		1MOV662	SDC RECIRC TO 13 HPSI PP
		1MOV663	SDC RECIRC TO 11 HPSI PP
		2HS3662	22 HPSI S/D CLR RECIRC VLV CONTR HS
		2HS3663	21 HPSI S/D CLR RECIRC VLV CONTR HS
		2MOV662	SDC RECIRC TO 23 HPSI PP {SHUT
		2MOV663	SDC RECIRC TO 21 & 22 HPSI PP
Spent Fuel Pool Cooling	67	0LS2001	11 SFP LVL SW
		0LS2002	21 SFP LVL SW
Area and Process Radiation Monitoring	77	0HS5349A	RE CONTR RM VENT RAD MON UNIT 1 & 2 OP SEL HS
		0HS5349B	CONTROL RM VENT RAD MON 1&2
Nuclear Instrumentation	78	1NE009	CHANNEL 1 PWR RNG CONTR NE
		1NE010	CHANNEL 2 PWR RNG CONTR NE
		1NI009	CHANNEL 1 PWR RNG CNTRL NI
		1NI010	CHANNEL 2 PWR RNG CONTR NI
		2NE009	2 NI POWER RANGE CONTROL CH 1 NE
		2NE010	2 NI POWER RANGE CONTROL CH 2 NE
		2NI009	2 NI POWER RANGE CONTROL CH 1 NI
		2NI010	2 NI POWER RANGE CONTROL CH 2 NI

Cover Sheet

Fire Protection (FP) Screening Tool
Revision 2

This table identifies those systems and structures relied upon to detect and suppress fires as well as support achievement and maintenance of safe shutdown of the plant in the event of a fire. This table was developed in accordance with LCM Program Procedure LCM-12, System/Structure Level ITLR Screening, Revision 2, as modified by TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C E Browne	C E Browne	2/18/93
Verifier	R J Peden	R J Peden	2/18/93
QA Reviewer	J. N. Sorensen	J N Sorensen	2/18/93
Approver	D. R. Hostetler	D R Hostetler	2/17/93

Reference(s)
BGE LTR (A. E. Lundvall) NRC (Stello), 770315, "Fire Protection Program Evaluation in Response to APCSB 9.5-1 Appendix A - Fire Protection for Nuclear Power Plants BGE LTR (A. E. Lundvall) NRC (R. A. Reid), 790419, "Fire Protection Program, NRC Review" BGE LTR (A. E. Lundvall) NRC (R. A. Reid), 790806, "Fire Protection Program, NRC Review" BGE LTR (N. J. Bowmaker) NRC (R. A. Clark), 800620, "Fire Protection Safety Evaluation Report and Amendments to Facility Operating License" BGE LTR (A. E. Lundvall) NRC (R. A. Clark), 811106, "Fire Protection Safety Evaluation Report and Amendments to Facility Operating License" BGE LTR (R. F. Ash) NRC (R. A. Clark), 820224, "Appendix R Open Item 3.2.2(3)" NRC LTR (R. A. Clark) BGE (A. E. Lundvall), 820816, "Fire Protection Exemption Request" BGE LTR (A. E. Lundvall) NRC (J. R. Miller), 831121, "Request for Exemption from Fire Protection Requirements" BGE LTR (G. C. Creel) NRC (Document Control Desk), 900629, "Request for Exemption - 10 CFR 50 Appendix R Emergency Lighting" CCNPP, Interactive Cable Analysis (ICA) for Units 1 & 2, Rev. 1, 5-10-91 GEI LTR (D. R. Hostetler) BGE (B. Tilden), 911031, #1065.10-2.1.91-497 GEI LTR (D. R. Hostetler) BGE (B. Tilden), 920228, #1065.14.1.92-012A

Reference(s)
LCM Program TPR 93-006 (Recommended Resolution)
LCM Program TPR 92-157 (Recommended Resolution)
LCM Program TPR 92-134 (Recommended Resolution)
LCM Program TPR 92-127 (Recommended Resolution)
LCM Program TPR 92-112 (Recommended Resolution)
LCM Program TPR 92-111 (Recommended Resolution)
LCM Program TPR 92-094 (Recommended Resolution)
LCM Program TPR 92-082 (Resolved)
LCM Program TPR 92-035 (Resolved)

Fire Protection (FP) Screening Tool — Revision 2

Reference 1	-	BGE LTR (A. E. Lundvall) NRC (Stello), 770315, "Fire Protection Program Evaluation in Response to APCSB 9.5-1 Appendix A - Fire Protection for Nuclear Power Plants"
Reference 2	-	BGE LTR (A. E. Lundvall) NRC (R. W. Reid), 790419, "Fire Protection Program, NRC Review"
Reference 3	-	BGE LTR (A. E. Lundvall) NRC (R. W. Reid), 790806, "Fire Protection Program, NRC Review"
Reference 4	-	BGE LTR (N. J. Bowmaker) NRC (R. A. Clark), 800620, "Fire Protection Safety Evaluation Reports and Amendments to Facility Operating License"
Reference 5	-	BGE LTR (A. E. Lundvall) NRC (R. A. Clark), 811106, "Fire Protection Safety Evaluation Report and Amendments to Facility Operating License"
Reference 6	-	BGE LTR (R. F. Ash) NRC (R. A. Clark), 820224, "Appendix R Open Item 3.2.2(3)"
Reference 7	-	NRC LTR (R. A. Clark) BGE (A. E. Lundvall), 820816, "Fire Protection Exemption Request"
Reference 8	-	BGE LTR (A. E. Lundvall) NRC (J. R. Miller), 831121, "Request for Exemption from Fire Protection Requirements"
Reference 9	-	BGE LTR (G. C. Creel) NRC (Document Control Desk), 900629, "Request for Exemption - 10 CFR 50 Appendix R Emergency Lighting"
Reference 10	-	CCNPP, Interactive Cable Analysis (ICA) for Units 1 & 2, Rev. 1, 910510

GENERAL - References 1 through 10 (above) meet the BG&E Source Document Screening Criteria as described in GEI LTR BGE, 920228, 1065.14.1.92-012A. The listed references identify all Fire Protection functions credited or assumed to have been performed in the analyses demonstrating BG&E's compliance with 10 CFR 50.48 and have been accepted by the NRC via the Fire Protection Safety Evaluation Report (FPSER), FPSER supplement, exemption grant, or other correspondence located in the NRC docket for CCNPP.

NOTE 1 - Service Bldg. added to Systems/Structures list per LCM Program TPR 92-035 (Resolved).

NOTE 2 - Air operated valves in this system may require alternate operation, at or near the valve, to ensure achievement of safe shutdown following a postulated severe fire by:
a) manually positioning the valve; or
b) isolating air to the valve and venting the actuator; or
c) isolating air to the valve, venting the actuator, and manually positioning the valve; or
d) operating local override hand valves.

NOTE 3 - Valves in this system may require manual realignment to ensure achievement of safe shutdown following a postulated severe fire.

NOTE 4 - This function requires removal of check valve internals and back-flow of CC water through the affected Unit's liquid waste evaporator supply and return lines.

NOTE 5 - Containment entry may be required to alternately operate valve(s) in this system to ensure achievement of safe shutdown following a postulated severe fire.

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Electrical 480V Transformers and Buses	5	• Provides Reactivity Control by interrupting 480 VAC power supply to CEDM MG Sets to ensure safe shutdown in the event of a postulated severe fire. Components include but are not limited to switchgear and associated controls.	Ref 10 - Att 1, p. 4
Well and Pretreated Water	8	• Provides make-up water to the fire protection system to ensure safe shutdown in the event of a postulated severe fire.	Ref 1 - Encl, Item E.2 Ref 3 - Encl 1, Item 3.3.7 Ref 10 - Att 1, pp. 21, 55
		• Provides alarms in the MCR and at the fire pump house for low level in the PWSTs.	Ref 5 - Encl 1, Item 3.1.9
Intake Structure	9	• Provides rated fire barriers to confine or retard a fire from spreading to adjacent areas of the plant. Components include but are not limited to walls, floors, curbs, ceilings, & fire barrier penetration seals.	Ref 1 - Encl, Item D.1
Service Water Cooling	11	• Provides required cooling water to EDG & Cntmt Cooler loads to ensure safe shutdown in the event of a postulated severe fire. [Notes 2, 3] * Includes isolation of non-essential Turbine Bldg loads * Includes head tank make-up operations	Ref 10 - Att 1, pp. 9, 14-16, 49-53, 59, 67-68
Salt Water Cooling	12	• Provides ultimate heat sink for SRW/CC systems to ensure safe shutdown in the event of a postulated severe fire. [Note 2]	Ref 10 - Att 1, pp. 8, 16-17, 23, 59, 67

Fire Protection (FP) Screening Tool — Revision 2

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT	PAGE
Fire Protection	13	• Protects personnel/SSCs from fire effects via suppression subsystems: deluge water sprays, deluge preaction sprinklers, automatic fixed water sprinklers, indoor & outdoor hose stations, Halon 1301, foam, & portable extinguisher systems.	Ref 6 Ref 1 Ref 5	- p. 1 - Encl, Items E.2-E.6, F - Encl 1, Items 3.1.6, 3.1.10, 3.1.21, 3.2.2, 3.2.8, 3.3.5
		• Provides water curtains as rated fire barrier for unrated hatches and doors.	Ref 7 Ref 8	- Atts 1 & 2 - p. 2
		• Provides pressurized fire fighting water to hose stations inside containment by opening normally shut CI MOVs. [Note 3]	Ref 1	- Encl, Item F.1
		• Provides make-up water via fire hose station connections through system #37 & #44 fire hose connections & test manifolds to SRW/CC systems and the back-up AFW tanks to ensure safe shutdown in the event of a postulated severe fire.	Ref 10	- Att 1, pp. 15, 19-20, 23, 48-49, 54-56, 68
		• Provides alternate water source via spool piece & fire hose station for SG heat removal at reduced SG pressures to ensure safe shutdown in the event of a postulated severe fire.	Ref 10	- Att 1, pp. 8-9, 21, 55
		• Provides isolation for ventilation duct penetrations to confine or retard a	Ref 1	- Encl, Item D.1
Transformer Deluge	14	• Protects main transformers, service transformers, neutral ground & potential transformers from fire effects via automatically actuated deluge	Ref 1	- Encl, Item D.1(h)

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Component Cooling	15	• Provides heat sink for essential shutdown cooling loads to ensure safe shutdown in the event of a postulated severe fire. [Notes 2, 3] * Includes isolation of non-essential cntmt heat loads * Includes head tank make-up operations * Includes removal of power or air from CVs	Ref 10 - Att 1, pp. 23, 39-40, 56, 59
		• Provides alternate heat sink via unaffected unit for essential shutdown cooling loads in the event of a severe fire at the CC room. [Note 4] * Unit 2(1) CC system cools Unit 1(2) shutdown cooling loads	Ref 10 - Att 1, pp. 23-24, 39, 56-59
Compressed Air	19	• Provides control air to essential loads to ensure safe shutdown in the event of a postulated severe fire. Components include but are not limited to IA/PA compressors, associated system valves, piping and controls. * Includes manual isolation of non-essential air loads	Ref 10 - Att 1, pp. 5, 8, 15-16, 23, 30, 67-68
Diesel Oil	23	• Provides essential fuel oil to FP pump DG to ensure safe shutdown in the event of a postulated severe fire. * Includes isolation of the non-essential auxiliary boiler fuel oil	Ref 10 - Att 1, pp. 55, 92, 134
Annunciation	26	• Provides supervisory indication of fire for fire detection & suppression	Ref 1 - Encl, Item E.1
Plant Heating	29	• Provides heating (freeze protection) to the pretreated water storage tanks.	Ref 3 - Encl 1, Item 3.3.7

Fire Protection (FP) Screening Tool — Revision 2

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Control Room HVAC	30	• Provides capability to detect/remove smoke & supply fresh air to affected zones in the Control Room & Cable Spreading Rooms.	Ref 1 - Encl, Item D.4
		• Provides supply and exhaust ventilation duct isolation for Tech Support Center to confine or retard a fire from spreading to adjacent areas. Components include but are not limited to smoke detector/damper assemblies in the Tech Support Center areas.	Ref 1 - Encl, Items D.1, D.4
Aux Building and Radwaste H&V	32	• Provides required cooling of AFW pump room. * Includes removal of emergency ventilation damper cover (as needed)	Ref 1 - Encl, Item D.4 Ref 10 - Att 1, pp. 19, 47
Auxiliary Feedwater	36	• Provides alternate control via local hand valves, FTs, & I/Ps at the ASP (Aux. Shutdown Panel) to ensure safe shutdown.	Ref 10 - Att 1, pp. 6-7, 19-21, 41, 43, 47-48, 54
		• Provides monitoring of essential AFW parameters to ensure safe shutdown in the event of a postulated severe fire. Parameters monitored include AFW pump pressure & CST 12 level. * Includes monitoring at the ASP (Auxiliary Shutdown Panel) * Includes monitoring locally at the instrument(s)	Ref 10 - Att 1, pp. 6-7, 19-21, 26, 41, 43, 47-48, 54
Demin. Water and Condensate Storage	37	• Provides back-up source of AFW water to ensure safe shutdown in the event of a postulated severe fire. * Includes manual realignment of CST * Includes condenser make-up path isolation	Ref 10 - Att 1, pp. 21, 48, 54
		• Provides make-up water to SRW/CC systems via system hose connections.	Ref 10 - Att 1, pp. 15, 23, 49, 56

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Chemical and Volume Control (CVCS)	41	• Provides RCS Pressure & Inventory Control to ensure safe shutdown in the event of a postulated severe fire. * Includes realignment to auxiliary spray mode [Notes 3, 5]	Ref 10 - Att 1, pp. 13, 36-37, 45
Condensate	44	• Provides make-up water to SRW/CC systems via system hose connections.	Ref 10 - Att 1, pp. 15, 21, 23, 49, 51, 56
Feedwater System	45	• Monitor Steam Generator Level and Pressure	Ref 10 - Att 1, pp. 6-7
Safety Injection	52	• Provides RCS Pressure & Inventory Control to ensure safe shutdown in the event of a postulated severe fire. * Includes SI tank isolation [Notes 3, 5]	Ref 10 - Att 1, pp. 14, 37
		• Provides RCS Heat Removal by realigning and operating in the shutdown cooling mode to ensure safe shutdown in the event of a postulated severe fire. [Notes 2, 3, 5]	Ref 10 - Att 1, pp. 22, 39-40
Plant Drains	53	• Provides back-flow protection to prevent communication of combustibles between fire areas. • Provides drainage of fire fighting water in rooms containing safe shutdown equipment.	Ref 4 - Encl, Item 3.2.5 Ref 5 - Encl 1, Item 3.2.5 Ref 5 - Encl 1, Item 3.2.10 Ref 1 - Encl, Item D.1

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Control Rod Drive Mechanism & Electrical	55	• Provides Reactivity Control by interrupting CEDM MG Set 240 VAC output power to ensure safe shutdown in the event of a postulated severe fire.	Ref 10 - Att 1, pp. 4, 12, 35
Reactor Protective	58	• Provides monitoring of essential parameters to ensure safe shutdown in the event of a postulated severe fire. Parameters include pressurizer pressure indications, and RCS natural cooldown indication via hot/cold leg temperature channels.	Ref 10 - Att 1, pp. 6, 25, 60-62
Primary Containment	59	• Provides rated fire barriers to confine or retard a fire from spreading from adjacent areas of the plant. Components include but are not limited to fire barrier penetration seals.	Ref 1 - Encl, Item D.1
Primary Containment H&V	60	• Provides cntmt habitability to support containment entry and manual operation of valves necessary to ensure safe shutdown in the event of a postulated severe fire.	Ref 10 - Att 1, pp. 15-16, 22, 36, 51-53
Containment Spray	61	• Provides RCS Heat Removal to ensure safe shutdown in the event of a postulated severe fire. * Includes valve lineup to ensure shutdown cooling path [Notes 3, 5] * Includes control of shutdown cooling temperature [Notes 2, 5]	Ref 10 - Att 1, pp. 22, 39
Reactor Coolant	64	• Provides monitoring of essential parameters to ensure safe shutdown in the event of a postulated severe fire. Parameters include pressurizer pressure & level indication and hot/cold leg temperature indication.	Ref 10 - Att 1, pp. 6, 25, 60-62

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT	PAGE
Reactor Coolant	64	* Includes monitoring in the Control Room * Includes monitoring at the ASP (Auxiliary Shutdown Panel)		
		• Provides lube oil collection system for RCP motors sized to accomodate the largest potential oil leak.	Ref 8	- pp. 3-4
		• To control RCS pressure by regulating PZR water temperature during shutdown following a postulated severe fire using proportional/backup heaters, banks 1 & 3.	Ref 10	- Att 1, pp. 13, 36
Liquid Waste	71	• Provides back-flow protection to prevent communication of combustibles between fire areas.	Ref 4	- Encl, Item 3.2.5
		• Provides drainage of fire fighting water in rooms containing safe shutdown equipment.	Ref 5	- Encl 1, Item 3.2.10
Nuclear Instrumentation	78	• Provides monitoring of reactivity control via WRNI channels to ensure safe shutdown in the event of a postulated severe fire. * Includes monitoring at the ASP (Auxiliary Shutdown Panel)	Ref 10	- Att 1, pp. 7, 35
Main Steam	83	• Provides RCS Heat Removal to ensure safe shutdown in the event of a postulated severe fire. * Includes cooldown using ADVs, SG safety valves, or TBVs [Notes 2, 3] * Includes main steam line/blowdown path isolation [Notes 2, 3].	Ref 10	- Att 1, pp. 5, 18-19, 38, 47

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Main Steam (continued)	83	• Provides alternate method of isolating MS system using a combination of gland steam & 2nd stage MSR MOVs & HVs to support heat removal and ensure safe shutdown in the event of a postulated severe fire. [Note 3]	Ref 10 - Att 1, pp. 18-19, 41-44
Main Turbine	93	• Provides Reactivity Control by tripping turbine both in the MCR & locally to restrict uncontrolled RCS cooldown and to ensure safe shutdown in the event of a postulated severe fire.	Ref 10 - Att 1, pp. 12, 35
Fire and Smoke Detection	96	• Provides early warning of flame, smoke, or heat conditions indicative of a fire and initiates suppression systems. Subsystems include Protectowire, heat, smoke, & flame detectors, and various manual actuation stations.	Ref 1 - Encl, Items E.1, E.4 Ref 2 - Encl, Item P-1 Ref 5 - Encl 1, Items 3.1.19, 3.2.2 Ref 8 - pp. 5-6
Lighting and Power Receptacle	97	• Provides 8-hour emergency lighting source to support containment entry for manual operation of Appendix R safe shutdown equipment. Components include but are not limited to pre-charged portable handlights staged outside of containment.	Ref 9 - p. 2
		• Provides 8-hour emergency lighting source on loss of normal AC power until EDG loads pick up. Components include but are not limited to fixed lighting units in all Appendix R safe shutdown areas (outside containment) and access/egress routes thereto.	Ref 1 - Encl, Item D.5 Ref 5 - Encl 1, Item 3.3.2

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Lighting and Power Receptacle (continued)	97	• Provides essential cooling support for the AFW pump room by reducing the total room heat load (L06) to ensure safe shutdown in the event of a postulated severe fire.	Ref 10 - Att 1, pp. 19, 47
Plant Communications	100	• Provides communication between the control room and all areas of the plant in the event of a postulated severe fire. Subsystems include a 5-channel page/party system, normal & dedicated sound-powered phone systems & portable radios.	Ref 1 - Encl, Item D.5 Ref 5 - Encl 1, Item 3.1.13
Plant Areas	102	• Provides rated fire barriers to confine or retard a fire from spreading to adjacent areas of the plant. Components include but are not limited to fire doors.	Ref 1 - Encl, Item D.1
Auxiliary Bldg.	N/A	• Provides rated fire barriers to confine or retard a fire from spreading to adjacent areas of the plant. Components include but are not limited to walls, floors, sumps, curbs, ceilings, fire/watertight/bulletproof doors, & fire barrier penetration seals.	Ref 1 - Encl, Items D.1, D.3 Ref 2 - Encl, Item P-1 Ref 3 - Encl 1, Item 3.3.24 Ref 4 - Encl, Item 3.2.5 Ref 7 - Atts 1 & 2 Ref 8 - pp. 2, 5-6 Ref 5 - Encl 1, Items 3.1.1, 3.1.15, 3.1.18

SYSTEM/ STRUCTURE	ID No.	FP FUNCTION(S)	SOURCE DOCUMENT PAGE
Turbine Bldg.	N/A	• Provides rated fire barriers to confine or retard a fire from spreading to adjacent areas of the plant. Components include but are not limited to walls, floors, curbs, sumps, ceilings, watertight doors, & fire barrier penetration seals.	Ref 1 - Encl, Item D.1
		• Provides alternate AFW room ventilation support via open room doors to ensure safe shutdown in the event of a postulated severe fire.	Ref 10 - Att 1, pp. 19, 47
Service Bldg.	N/A	• Provides rated fire barriers to confine or retard a fire from spreading to adjacent areas of the plant. Components include but are not limited to walls, floors, ceilings, & fire barrier penetration seals. [Note 1]	Ref 1 - Encl, Item D.1

Cover Sheet

Anticipated Transients Without SCRAM Screening Tool
Revision 3

This table identifies the systems and structures required to respond to Anticipated Transients Without SCRAM (ATWS). This table was developed in accordance with LCM Program Procedure LCM-12, System Level ITLR Screening, Revision 3, as modified by TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C E Browne	C E Brown	2/17/93
Verifier	R T Peden	R T Peden	2/18/93
QA Reviewer	J. N. Sorensen	J N Sorensen	2/18/93
Approver	D. R. Hoelzer	D R Hoelzer	2/19/93

Reference(s)

BGE LTR (J. A. Tiernan) NRC (A. C. Thadani), 860627, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"

BGE LTR (J. A. Tiernan) NRC (Document Control Desk), 870611, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"

BGE LTR (J. A. Tiernan) NRC (Document Control Desk), 880512, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"

GEI LTR (D. R. Hostetler) BGE (B. Doroshuk), 910702, #1065.08.1.91-292

LCM Program TPR 91-196 (Resolved)

LCM Program TPR 92-066 (Recommended Resolution)

LCM Program TPR 92-127 (Recommended Resolution)

LCM Program TPR 92-143 (Recommended Resolution)

LCM Program TPR 92-157 (Recommended Resolution)

Reference 1 - BGE LTR (J. A. Tiernan) NRC (A. C. Thadani), 860627, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"

Reference 2 - BGE LTR (J. A. Tiernan) NRC (Document Control Desk), 870611, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"

Reference 3 - BGE LTR (J. A. Tiernan) NRC (Document Control Desk), 880512, "Compliance with 10 CFR 50.62, Reduction of Risk from ATWS Events"

SYSTEM/ STRUCTURE	ID No.	ATWS FUNCTION(S)	SOURCE DOCUMENT PAGE
Electrical 480V Transformers and Buses	5	* Interrupt power to the CEDMs/manually initiate reactor trip from the control room on conditions indicative of an ATWS; components include CEDM motor generator input breakers.	Ref 1 - Att A, pp. 2-3
Auxiliary Feedwater	36	* Provide AFAS START signal (diverse from RPS) on low steam generator water level conditions indicative of an ATWS (AFAS); components include logic modules only.	Ref 1 - Att A, p. 1
Feedwater	45	* Provide AFAS START signal (diverse from RPS) on low steam generator water level conditions indicative of an ATWS (AFAS) ; components include level transmitters, isolators, bistables, and initiation relays.	Ref 1 - Att A, p. 1
Emergency Safety Feature Actuation (ESFAS)	48	* Process sensed signals/provide reactor trip signal (diverse from RPS) on high pressurizer pressure conditions indicative of an ATWS (DSS); components include isolators, bistables, logic modules, and initiation relays.	Ref 1 - Att A, pp. 2-3 Ref 2 - Att A, Table 1, p. 2 Att B, p. 1 Att D, Table 1, pp. 3-6
		* Process sensed signals/provide turbine trip signal (diverse from RPS) on CEDM undervoltage conditions indicative of an ATWS (DTT); components include isolators, bistables, logic modules, and initiation relays.	Ref 1 - Att A, p. 1 Ref 2 - Att A, Table 1, p. 2 Att B, p. 1 Att D, Table 1, pp. 3-6
Control Rod Drive Mechanism and Electrical	55	* Interrupt power to the CEDMs/initiate reactor trip on DSS signal; components include CEDM motor generator output contactors.	Ref 1 - Att A, p. 2 Ref 2 - Att B, p. 1 Att D, p. iii Att D, Table 1, p. 8
		* Provide manual initiation of DSS circuits at several locations outside the control room; components include handswitches.	Ref 1 - Att A, pp. 3-4

SYSTEM/ STRUCTURE	ID No.		ATWS FUNCTION(S)	SOURCE DOCUMENT	PAGE
Reactor Protective	58	*	Process sensed voltage signals for ESFAS (DTT) trips; components include CEDM power bus undervoltage sensors, intermediate sensor relays.	Ref 1 - Att A, p. 1 Ref 2 - Att D, p. ii Att D, Table 1, pp. 1-2	
Reactor Coolant	64	*	Provide signal to DSS circuits on high pressurizer pressure conditions; components include pressure transmitters.	Ref 1 - Att A, p. 2 Ref 2 - Att D, p. ii Att D, Table 1, p. 1	
Main Turbine	93	*	Interrupt power to the Main Turbine Trip solenoid valves/initiate turbine trip on DTT signal; components include solenoid valves, and Unit 1 intermediate initiation relays.	Ref 3 - Att, p. 1 Ref 2 - Att A, Table 1, p. 2 Att D, pp. ii-iii Att D, Table 1, pp. 6-8	
	GENERAL -		References 1 through 3 (above) meet the BG&E Source Document Screening Criteria as described in GEI LTR BGE, 910702, 1065.08.1.91-292.		
	GENERAL -		Any systems providing signal inputs to the systems listed above should be reviewed to determine if that system provides the function of loop protection and isolation from electrical faults.		

Cover Sheet

Station Blackout Screening Tool, Revision 3/Change 1

This table identifies systems and structures relied upon in response to a station blackout (SBO) event. This table was developed in accordance with Procedure LCM-12, "System Level ITLR Screening," Revision 2 as modified per TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C.E. Browne	Natalie Gulley for	2/25/93
Verifier	PJ PEDEN	PJ Peden	2/25/93
QA Reviewer	J.N. SORENSEN	J.N. Sorensen	2/25/93
Approver	D.R Hostetler	DR Hostetler	2/25/93

Reference(s)

CCNPP, Quality List Manual, Baltimore Gas and Electric Co., Attachment D, Q-List Item Report, Rev. 17, with updates through Transmittal Letter 91-09, 12-9-91

Station Blackout Analysis, Baltimore Gas & Electric Co., Rev. 0

LCM Program TPR 92-157 (Recommended Resolution)

LCM Program TPR 92-155 (Recommended Resolution)

LCM Program TPR 92-152 (Recommended Resolution)

LCM Program TPR 92-136 (Recommended Resolution)

LCM Program TPR 92-132 (Recommended Resolution)

LCM Program TPR 92-131 (Recommended Resolution)

LCM Program TPR 92-127 (Recommended Resolution)

LCM Program TPR 92-125 (Recommended Resolution)

LCM Program TPR 92-111 (Recommended Resolution)

LCM Program TPR 92-108 (Recommended Resolution)

LCM Program TPR 91-231 (Recommended Resolution)

LCM Program TPR 91-209 (Recommended Resolution)

LCM Program TPR 91-207 (Interim Disposition)

LCM Program TPR 91-191 (Interim Disposition)

LCM Program TPR 91-028 (Interim Disposition)

LCM Program TPR 91-123 (Dispositioned)

Note: The review of the CLB/D for all systems is not required for this revision per TPR 92-081 (Recommended Resolution) but was performed for systems 24 and 30.

•Reference 1 Station Blackout Analysis, BG&E

SYSTEM	ID NO.	SOURCE DOCUMENT/PG		SBO COPING FUNCTION
Instrument A C	17	Ch VII	Pgs. 5, 6	• Deenergize the plant computer.
Auxiliary Feedwater	36	Ch IV	Pgs. 6,7	• Decay heat removal and condensate inventory.
Demin. Water & Condensate Storage	37	Ch IV	Pg.6	• Heat removal and condensate inventory.
Sampling System (NSSS)	38	Ch IV	Pg. 2	• Provide RCS isolation to maintain RCS inventory.
Feedwater	45			
		Ch IV	Pg. 7	• Provide SG level indication.
Safety Injection	52	Ch IV	Pg. 2	• Provide RCS isolation to maintain RCS inventory.
		Ch IV	Pgs.11,13 15,16	• Provide valve position indication and manual closure of containment isolation valves.
Plant Drains	53	Ch IV	Pg. 11	• Provide valve position indication and manual closure of containment isolation valves.
Control Rod Drive Mechanism & Electrical	55	Ch IV	Pgs.4,5	• Insert CEAs to provide negative reactivity for shutdown.
Reactor Protective	58	Ch IV	Pg. 4	• Provide RPS low flow trip.
Reactor Coolant	64	Ch IV	Pg. 2	• Detect leakage from the RCS.
		Ch IV	Pg. 2	• Provide RCS isolation to maintain RCS inventory.
		Ch IV	Pg. 4	• Provide reactor vessel level indication.
		Ch IV	Pg. 4	• Provide flow signal to RPS.
		Ch IV	Pg. 5	• Provide indication of natural circulation (CET indication).
		Ch IV	Pg. 5	• Provide decay heat removal (steam generator).
		Ch IV	Pg. 1	• Provide RCS overpressure protection via pzr code safety valve. 1
Nuclear Instrumentation	78	Ch IV	Pg. 5	• Provide shutdown indication.
Main Steam	83	Ch IV	Pg. 5	• Decay heat removal and condensate inventory.
		Ch IV	Pg. 6	• Provide steam to AFW pumps
		Ch IV	Pg. 7	• Provide MS isolation to prevent excessive RCS cooldown and condenser overpressure.
		Ch IV	Pg. 7	• Provide SG blowdown isolation.
		Ch IV	Pgs.12,13,16	• Provide valve position indication and manual closure of containment isolation valves.
		Ch IV	Pg. 7	• Prevent excessive RCS cooldown.
				• Provide condenser overpressure protection.

Lighting & Power Receptical	97	Ch IV	Pg. 21	• Provide emergency lighting in the control room. • Provide portable lighting outside the control room.
Plant Communications	100	Ch V	Pg. 11	• Provide communications capability inside and outside the plant.

Cover Sheet

Pressurized Thermal Shock Screening Tool, Revision 3

This table presents the results of the review of NUREG/CR-4022, Pressurized Thermal Shock (PTS) Evaluation of the Calvert Cliffs Unit 1 Nuclear Power Plant to identify systems and structures relied upon in response to PTS events. The review was conducted in accordance with LCM Program Procedure LCM-12. "System Level ITLR Screening", Revision 2 as modified per TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C E Browne	C E Browne	2/17/93
Verifier	R J PEDEN	R J Peden	2/17/93
QA Reviewer	J. N. SORENSEN	J. N. Sorensen	2/17/93
Approver	J. A. Hebdon	D R Heatherly	2/17/93

Reference(s)

Pressurized Thermal Shock Evaluation of [illegible]lvert Cliffs Unit 1 Nuclear Power Plant, NUREG/CR-4022, ORNL/[illegible] 9408 Oak Ridge National Laboratory PTS Study Group, Sept. 1985

LCM Program TPR 92-127 (Recommended Resolution)

LCM Program TPR 92-111 (Recommended Resolution)

LCM Program TPR 92-108 (Interim Disposition)

Note: The review of the CLB/D for all systems is not required for this revision per TPR 92-081 (Recommended Resolution) but was performed for systems 24 and 30.

Pressurized Thermal Shock Screening Tool

•Reference: Pressurized Thermal Shock Evaluation of The Calvert Cliffs Unit 1 Nuclear Power Plant, NUREG/CR-4022, ORNL/TM-9408 Oak Ridge National Laboratory PTS Study Group, Sept. 1985

SYSTEM/ STRUCTURE	SYS ID No.	Souce Document Page No.	PTS Function(s)
Auxiliary Feedwater	36	Pg. 30	• Limit the maximum AFW flow rate that can be provided (control valves).
		Pg. 31	• Isolate AFW to the steam generators (block valves).
Chemical and Volume Control System	41	Pg. 18	• Control RCS pressure increase (auxiliary spray).
		Pg. 34	• Isolate letdown (stop and control valves).
Emergency Safety Feature Actuation System	48	Pgs. 24, 304	• Provide steam generator isolation signal (SGIS).
		Pgs. 35, 309	• Provide letdown isolation signal (SIAS).
Safety Injection	52	Pgs. 31, 33	• Maintain RWT water temperature greater than 45°F.
Reactor Coolant	64	Pgs. 11, 203	• Maintain fracture toughness of the reactor vessel.
		Pg. 16	• Maintain small continuous flow through PZR spray lines.
		Pg. 17	• Provide overpressure protection (PSRVs).
		Pg. 18	• Control pressure increase (pressurizer spray and/or de-energization of proportional heaters and backup heater banks 2 & 4).
Main Steam	83	Pg. 23	• Provide isolation of steam generators (MSIVs).
		Pg. 25	• Limit blowdown of water in the steam generators (flow orifice).
Reactor Vessel Internals	84	Pgs. 11, 12	• Minimize neutron fluence on the reactor vessel wall (core design).

Cover Sheet

Environmental Qualification Screening Tool, Revision 2

This table identifies the systems and structures required to use environmentally qualified (EQ) electrical equipment. This table was developed in accordance with LCM-12, "System/Structure ITLR Screening", Revision 2 as modified by TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C E Browne	C E Browne	2/18/93
Verifier	R J Peden	R J Peden	2/18/93
QA Reviewer	J. N. Sorensen	J N Sorensen	2/18/93
Approver	D. R. Hostetler	D R Hostetler	2/19/93

Reference(s)

CCNPP, Quality List Manual. Baltimore Gas and Electric Co., Attachment D, Q-List Item Report, Rev. 17, with updates through Transmittal Letter 91-09, 12-9-91

CCNPP, Master Equipment List and NUCLEIS Database, Baltimore Gas and Electric Co.

LCM Program TPR 92-110 (Recommended Resolution)

LCM Program TPR 91-177 (Recommended Resolution)

Environmental Qualification Screening Tool

- Reference 1 — Calvert Cliffs Nuclear Power Plant, Quality List Manual, Attachment D, Q-List Items Report, Rev. 17
- Reference 2 — Calvert Cliffs Nuclear Power Plant, NUCLEIS Equipment Data Base

SYSTEM	SYSTEM ID No.
Service Water Cooling	11
Salt Water Cooling	12
Component Cooling	15
Compressed Air	19
Plant Heating	29
Auxiliary Building and Radwaste Building H & V	32
Auxiliary Feedwater	36
NSSS Sampling	38
Chemical and Volume Control	41
Feedwater	45
Safety Injection	52
Plant Drains	53
Primary Containment	59
Primary Containment H & V	60
Containment Spray	61
Reactor Coolant	64
Waste Gas	69
Liquid Waste	71
Hydrogen Recombiner	73
Area and Process Radiation Monitoring	77
Nuclear Instrumentation	78
Main Steam	83
Lighting and Power Receptacle	97

Cover Sheet

Limiting Conditions for Operation Screening Tool, Revision 1

This table identifies the systems and structures that are subject to operability requirements in the Limiting Conditions of Operation in the plant Technical Specifications. This table was developed in accordance with Procedure LCM-12, "System/Structure ITLR Screening," Revision 2 as modified by TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C E Browne	C E Browne	2/17/93
Verifier	R T PEDEN	R T Peden	2/17/93
QA Reviewer	J. N. SORENSEN	J. N. Sorensen	2-17-93
Approver	O. R. Hostetler	O R Hostetler	2/17/93

Reference(s)
CCNPP, Technical Specifications, Units 1 and 2, Baltimore Gas and Electric Company, with updates through Transmittal Letter 92-04
LCM Program TPR 92-112 (Recommended Resolution)
LCM Program TPR 92-110 (Recommended Resolution)
LCM Program TPR 92-094 (Recommended Resolution)

LCO Screening Tool

Revision 1

• Reference 1 Calvert Cliffs Nuclear Power Plant, Technical Specifications, Units 1 & 2, Sections 3.0 and 4.0, BG&E.

SYSTEM/ STRUCTURE	ID No.	Operability Requirement(s)	Additional Criterion	LCO No.
Electrical 13KV Transformers and Buses (VA)	3	Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
Electrical 480V Transformers and Buses	5	The cont. gaseous and particulate monitors shall be operable with adequate alarm/trip setpoints.	3	3.3.3.1
		The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1
		Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reator coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
Electrical 480V Motor Control Centers	6	The cont. gaseous and particulate monitors shall be opearable with adequate alarm/trip setpoints.	3	3.3.3.1
		The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1
		Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reator coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3

Electrical 13KV Unit Buses (VA)	7	Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
Component Cooling (VA)	15	Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
Intrument AC (VA)	17	The CEA Motion Inhibit and all shutdown and regulating CEAs shall be operable.	2	3.1.3.1
		Two of the following three CEA position indicator channels shall be operable; voltage divider reed switch, "Full Out" or "Full In" reed switch, pulse counting.	2	3.1.3.3
		The RMS instrumentation channels shown in the table shall be operable with adequate alarm/trip setpoints. Only the cont. gaseous and particulate monitors are not already SR.	3	3.3.3.1
		The incore detection sys. shall be operable as specified in T. S.	2	3.3.3.2
		Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
		The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1
Data Acquisition Computer	20	Two of the following three CEA position indicator channels shall be operable; voltage divider reed switch, "Full Out" or Full In" reed switch and pulse counting.	2	3.1.3.3
		The incore detection sys. shall be operable as specified in T. S.	2	3.3.3.2
Annunciation	26	The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1

Safety Injection (Note 4)	52	The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1
		Shutdown cooling loop(s) shall be operable.	(Note 7)	3.9.8.1 3.9.8.2
Control Rod Drive Mechanism and Electrical	55	The CEA Motion Inhibit and all shutdown and regulating CEAs shall be operable.	2	3.1.3.1
		Two of the following three CEA position indicator channels shall be operable; voltage divider reed switch, "Full Out" or "Full In" reed switch, pulse counting.	2	3.1.3.3
Containment Spray	61	Shutdown cooling loop(s) shall be operable.	(Note 7)	3.9.8.1 3.9.8.2
Reactor Coolant (Notes 4 & 5)	64	Both reactor coolant loops and both reactor coolant pumps in each loop shall be in operation.	2	3.4.1.1
		At least one reactor coolant loop, with one associated pump, shall be in operation.	2	3.4.1.2
		At least two of the coolant loops (i.e. reactor coolant and shutdown cooling loops) listed in the T.S. shall be operable.	2	3.4.1.3
		Shutdown cooling loop(s) shall be operable.	(Note 7)	3.9.8.1 3.9.8.2
Area and Process Radiation Monitoring (Note 4)	77	The cont. gaseous and particulate monitors shall be operable with adequate alarm/trip setpoints.	3	3.3.3.1
		The following RCS leakage detection systems shall be operable; cont atmosphere particulate and gaseous monitors and the cont. sump level alarm system.	1	3.4.6.1
Nuclear Instrumentation (Note 5)	78	The incore detection sys. shall be operable as specified in T. S.	2	3.3.3.2
Plant Computer (SSS)	94	Two of the following three CEA position indicator channels shall be operable; voltage divider reed switch, "Full Out" or "Full In" reed switch, pulse counting.	2	3.1.3.3
		The incore detection sys. shall be operable as specified in T. S.	2	3.3.3.2
Systems and Structures	All	All safety related snubbers shall be operable. (Note 3)	3	3.7.8.1

Notes:

(1) LCOs 3.3.3.7, 3.6.4, 3.7.11, 3.7.12 are being deferred (see TPN No. 92-062) until the Technical Specifications are revised as part of the Tech. Spec. Improvement Program. These LCOs should be ignored for screening purposes for this revision.

(2) The Switchyard (500kV) and Switchyard DC System, No. 1, and the non-safety related portions of the Electrical 13kV Transformers and Buses, No. 3, and Electrical 4kV Transformers and Buses, No. 4, systems are not included in the tool as ITLR for LCOs 3.8.1.1, 3.8.1.2, 3.8.2.1, and 3.8.2.2 because they do not meet any of the NRC criteria.

(3) Screening of snubbers will be conducted as part of the screening and evaluation of plant structures. Therefore all systems with safety related snubbers and Class 1 structures are included as ITLR for T. S. 3.7.8.1. Reference TPR 91-127.

(4) One or more of the following systems may provide signals to ESFAS for LCO 3.3.2.1:

- •Primary Containment
- •Area Radiation Monitoring
- •Feedwater
- •Reactor Protective
- •Safety Injection
- •Reactor Coolant
- •Electrical 4kV Transformers and Buses

(5) One or more of the following systems may provide signals to RPS for LCO 3.3.1.1:

- •Data Acquisition Computer
- •Feedwater
- •Nuclear Instrumentation
- •Reactor Coolant
- •ESFAS

(6) In accordance with the procedure only those S/Ss that provide unique LCO functions are listed. That is, if the operability requirement is related to a function that has already been identified as safety related through the Q-List, it has not been included in this tool. Reference TPR 92-066

(7) LCOs 3.9.8.1 and 3.9.8.2 do not meet the three NRC criteria, however, the shutdown cooling and coolant circulation function is listed on this tool for systems 52, 61 and 64. It is the NRC's policy that licensees retain the LCOs for systems that have generally been shown to be important based on operating experience and probalistic risk assessments. The Residual Heat Removal System (RHR) is considered to be one of these systems.

(8) VA stands for vital auxiliary.

Cover Sheet

Table 2 - ITLR System Level Screening Results, Revision 3/Change 1

This table presents the results of the screening which was performed to determine those systems and structures that are important to license renewal. The screening was performed through a review of source documents in accordance with Procedure LCM-12, "System/Structure ITLR Screening," Revision 2 as modified per TPR 93-007.

	Name Printed	Signature	Date
Evaluator	C E Browne	C E Browne	2/24/93
Verifier	R.J. PEDEN	R J Peden	2/25/93
QA Reviewer	J. N. SORENSEN	J. N. Sorensen	2/25/93
Approver	D.K. Hostetler	DK Hostetler	2/25/93

Reference(s)
CCNPP, Updated Final Safety Analysis Report, Baltimore Gas and Electric Co., Rev. 12, Chapter 5
ATWS Screening Tool, Revision 3
Design Basis Event Flow Charts Screening Tool, Revision 3
Environmental Qualification Screening Tool, Revision 2
Fire Protection Screening Tool, Revision 2
LCO Screening Tool, Revision 1
Post Accident Monitoring Screening Tool, Revision 3
Pressurized Thermal Shock Screening Tool, Revision 3
'Q' Screening Tool, Revision 2
Station Blackout Screening Tool, Revision 3
Table 1 - System/Structure Information, Revision 3
LCM Program TPR 91-188 (Dispositioned)
LCM Program TPR 92-109 (Dispositioned)
LCM Program TPR 92-110 (Recommended Resolution)
LCM Program TPR 92-125 (Interim Disposition)
LCM Program TPR 92-096 (Resolved)

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System/Structure	Unit	ID	CRITERIA 1 & 2					CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	{3} LCO	LCO No.	Yes/No
Switchyard (500 KV) and Switchyard DC	1&2	1	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Electrical 125 Volt DC Distribution	1&2	2	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 16 No. 17 No. 18 No. 26 No. 50	VA for CVCS VA for Aux Feedwater VA for Main Steam VA for Containment Spray VA for Primary Cont H&V VA for NSSS Sampling VA for Primary Containment VA for EDGs VA for 4KV Transformers & Buses VA for 480V MCC VA for 480V Bus System VA for Vital Instrument AC VA for Service Water VA for Component Cooling VA for Salt Water Cooling VA for Control Room HVAC VA for Aux Bld & Rad Bld H&V VA for RCS VA for CVCS (Core Flush) VA for ESFAS VA for Diesel Oil System	No	N/A	N/A	Yes	No	No	No	No	No	No	None	Yes
Electrical 13KV Transformers and Buses	1&2	3	No	None	No	N/A	N/A	No	No	No	No	No	No	Yes	3.4.1.1 3.4.1.2 3.4.1.3	Yes
Electrical 4KV Transformers and Buses	1&2	4	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13	VA for Aux Feedwater VA for Safety Injection VA for Containment Spray VA for 480V Bus VA for 480V MCC VA for Service Water VA for Salt Water Provide Signals to, and shed loads for, ESFAS	No	N/A	N/A	Yes	No	No	No	No	No	No	None	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2 Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	CRITERION 3 PAM	FP	ATWS	SBO	PTS	EQ	CRITERION 4 (3) LCO	LCO No.	ITLR Yes/No
Electrical 4KV Transformers and Buses	1&2	4	No. 14 No. 15 No. 16 No. 17 No. 26 No. 50													
Electrical 480V Transformers and Buses	1&2	5	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No.18 No. 26 No. 50	VA for CVCS VA for SFP Cooling VA for Safety Injection VA for RCS VA for Containment Spray VA for Hydrogen Recombiner VA for Primary Containment H&V VA for Main Steam VA for EDGs VA for Instrument AC VA for Vital Instrument AC VA for 125V DC Distribution VA for Component Cooling VA for Service Water VA for Control Room HVAC VA for Aux Bld & Rad Bld H & V VA for Service & Outlying Blds HVAC VA for Compressed Air VA for Feedwater VA for RCS (Core Flush) VA for ESFAS VA for Diesel Oil System VA for 4KV Transformers & Buses VA for 480 MCC	No	N/A	N/A	Yes	Yes	Yes	No	No	No	Yes	3.3.3.1 3.4.6.1	Yes
Electrical 480V Motor Control Centers	1&2	6	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9	VA for CVCS VA for SFP Cooling VA for Safety Injection VA for RCS VA for Containment Spray VA for Hydrogen Recombiner VA for Primary Containment H&V	No	N/A	N/A	No	No	No	No	No	No	Yes	3.3.3.1 3.4.6.1	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	BQ	(3) LCO	LCO No.	Yes/No
Electrical 480V Motor Control Centers (continued)	1&2	6	No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No.18 No. 26 No. 50	VA for Main Steam VA for EDGs VA for Instrument AC VA for Vital Instrument AC VA for 125V DC Distribution VA for Component Cooling VA for Service Water VA for Control Room HVAC VA for Aux Bld & Rad Bld H & V VA for Service & Outlying Blds HVAC VA for Compressed Air VA for Feedwater												
Electrical 13KV Unit Buses	1&2	7	No	None	No	N/A	N/A	No	No	No	No	No	No	Yes	3.4.1.1 3.4.1.2 3.4.1.3	Yes
Well and Pretreated Water	Both	8	No	None	No	N/A	N/A	No	Yes	No	No	No	No	No	None	Yes
Intake Structure	Both	9	No	None	No	Yes	UFSAR, Rev 12 Chapter 5 Q-List, Rev 17 DBE Flow Charts, Rev 2	No	Yes	No	No	No	No	No	None	Yes
Service Water Cooling	1&2	11	No. 3 No. 13 No. 17 No. 18 No. 50	Containment Isolation Start IAW Shutdown Sequencer Load Shed for ESFAS VA for SFP Cooling VA for EDGs VA for Containment Coolers	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	No	None	Yes
Salt Water Cooling	1&2	12	No. 50	VA for Service Water Cooling VA for Component Cooling VA for ECCS Cooling	No	N/A	N/A	Yes	Yes	No	No	No	Yes	No	None	Yes
Fire Protection	1&2	13	No. 13 No. 17	Containment Isolation	No	N/A	N/A	Yes	Yes	No	No	No	No	No	None	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2					CRITERION 3						CRITERION 4		
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	BΩ	{3} LCO	LCO No.	*TLR Yes/No
Transformer Deluge	1&2	14	No	None	No	N/A	N/A	No	Yes	No	No	No	No	No	None	Yes
Component Cooling	1&2	15	No. 13 No. 14 No. 17 No. 50	Containment Isolation VA for Containment Spray	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	Yes	3.4.1.1 3.4.1.2 3.4.1.3	Yes
Electrical 250VDC	1&2	16	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Instrument AC	1&2	17	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 18 No. 26	VA for CVCS VA for RCS VA for Safety Injection VA for Aux Feedwater VA for Primary Containment VA for Primary Containment H&V VA for Containment Spray VA for NSSS Sampling VA for Hydrogen Recombiner VA for Process Rad Mon VA for Component Cooling	No	N/A	N/A	No	No	No	Yes	No	No	Yes	3.1.3.1 3.1.3.3 3.3.3.1 3.3.3.2 3.4.1.1 3.4.1.2 3.4.1.3 3.4.6.1	Yes
Vital Instrument AC	1&2	18	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10	VA for CVCS VA for RCS VA for RPS VA for Nuclear Instrumentation VA for Aux Feedwater VA for Primary Containment VA for Condensate VA for EDGs VA for ESFAS	No	N/A	N/A	Yes	No	No	No	No	No	No	None	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR Yes/No
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	
Vital Instrument AC (continued)	1&2	18	No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 18 No. 26 No. 50	VA for Area Rad Mon VA for Process Rad Mon VA for Aux Bld & Rad Bld H&V VA for Control Room HVAC VA for Service & Outlying Blds HVAC VA for Compressed Air												
Compressed Air	1&2	19	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26 No. 50	VA for Aux Feedwater VA for CVCS (Core Flush) Containment Isolation Shed loads for ESFAS	No	N/A	N/A	Yes	Yes	No	No	No	Yes	No	None	Yes
Data Acquisition Computer	1&2	20	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13	Provide Signals to RPS	No	N/A	N/A	No	No	No	No	No	No	Yes	3.1.3.3 3.3.3.2	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2					CRITERION 3						CRITERION 4		ITLR Yes/No
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	
Data Acquisition Computer (continued)	1&2	20	No. 14 No. 15 No. 16 No. 17 No. 18 No. 26													
Domestic Water	Both	21	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Makeup Demineralizer	1&2	22	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Diesel Oil	Both	23	No. 50	Vital Auxiliary for EDGs.	No	N/A	N/A	No	Yes	No	No	No	No	No	None	Yes
Emergency Diesel Generator	Both	24	No. 4 No. 13 No. 14 No. 15 No. 17 No. 50	Containment Isolation SIAS Safety Injection/Boration ECCS Hot Leg Injection ECCS Pzr Injection VA for 4KV Transformers & Buses Containment Press Control & Cooling	No	N/A	N/A	Yes	No	No	No	No	No	No	None	Yes
Access Control Area Ventilation	Both	25	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Annunciation	1&2	26	No	None	No	N/A	N/A	No	Yes	No	No	No	No	Yes	3.4.6.1	Yes
Auxiliary Steam Generators	1&2	27	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Auxiliary Steam	1&2	28	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Plant Heating	Both	29	No. 13 No. 17	Containment Isolation	No	N/A	N/A	Yes	Yes	No	No	No	Yes	No	None	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	Yes/No
Control Room HVAC	Both	30	No. 50	VA for Vital Instrument AC VA for Instrument AC	No	N/A	N/A	No	Yes	No	No	No	No	No	None	Yes
Meteorology Tower and Misc. Computers	1&2	31	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Aux Building and Radwaste H&V	Both	32	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 18 No. 26 No. 50	VA for Aux Feedwater VA for Primary Containment H&V VA for Filtered HVAC VA for EDGs VA for 4KV Transformers & Buses VA for 480VAC Bus VA for 480VAC MCC VA for 125VDC	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	No	None	Yes
Turbine Building Ventilation	Both	33	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Condensate Precoat Filter	1&2	34	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Chemical Additions - Turbine	1&2	35	No	None	No	N/A		No	No	No	No	No	No	No	None	No
Auxiliary Feedwater	1&2	36	No. 2 No. 3 No. 4 No. 5 No. 6	AFW to SG for Decay Heat Rem Containment Isolation Provide Loop Protection and Isolation Isolate Affected S/G	Yes	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	No	None	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR Yes/No	
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	
Auxiliary Feedwater (continued)	1&2	36	No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26													
Demin. Water and Condensate Storage	Both	37	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26	Containment Isolation Decay Heat Removal	No	N/A	N/A	Yes	Yes	No	Yes	No	No	No	None	Yes	
Sampling System (NSSS)	1&2	38	No. 4 No. 13 No. 14 No. 15 No. 17	Hydrogen Sample & Removal Containment Isolation Safety Injection/Boration	Yes	N/A	N/A	Yes	No	No	Yes	No	Yes	No	None	Yes	1
Condensate Polishing Demineralizer	1&2	39	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	
Chemical and Volume Control (CVCS)	1&2	41	No. 2 No. 3 No. 4	Manual Trip/Boration RCS Press & PZR Lvl/Manual SIAS Safety Injection/Boration	No	N/A	N/A	Yes	Yes	No	No	Yes	Yes	No	None	Yes	1 1 1

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	BQ	(3) LCO	LCO No.	Yes/No
Chemical and Volume Control (CVCS) (Continued)	1&2	41	No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26	Letdown Line Isolation Containment Isolation												
Circulating Water	1&2	42	No	None	Yes	N/A	N/A	No	No	No	No	No	No	No	None	Yes
Condenser Air Removal	1&2	43	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Condensate	1&2	44	No	None	No	N/A	N/A	No	Yes	No	No	No	No	No	None	Yes
Feedwater	1&2	45	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 18 No. 26	Containment Overpressure Protection Prevent Reverse Flow from SG Containment Isolation Provide Signals to ESFAS Provide Signals to RPS Provide Signals to AFAS Isolate Affected S/G	No	N/A	N/A	Yes	Yes	Yes	Yes	No	Yes	No	None	Yes
Extraction Steam	1&2	46	No. 13 No. 17	Containment Isolation	No	N/A	N/A	No	No	No	No	No	No	No	None	Yes

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR Yes/No	
			Req'd for DBE	DBE Plant Function(s)	Q	Class 1 or SR-1M	Class 1 or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	{3} LCO	LCO No.	
Feedwater Heaters, Drains, and Vents	1&2	47	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	
Emergency Safety Feature Actuation (ESFAS)	1&2	48	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 17 No. 18 No. 26	Containment Isolation Containment Press Control & Cooling Transfer RWT to Recirc Mode SIAS Safety Injection/Boration Containment Overpressure Protection Reactor Trip AFW to SG for Decay Heat Rem ECCS Hot Leg Injection ECCS Pressurizer Injection Provide Signals to RPS MSIVs Shut Containment Filters/Rad. Control	No	N/A	N/A	No	No	Yes	No	Yes	No	No	None	Yes	1 1 1
Simulator Computer	Both	49	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	
Solid Waste Disposal	Both	50	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	
Plant Water	1&2	51	No. 13 No. 17	Containment Isolation	No	N/A	N/A	No	No	No	No	No	No	No	None	Yes	
Safety Injection	1&2	52	No. 4 No. 13 No. 14 No. 15 No. 17 No. 18 No. 26	Transfer RWT to Recirc Mode SIAS Safety Injection/Boration RCS Press & PZR Lvl/Manual ECCS Hot leg ECCS PZR Injection Containment Isolation Provide Signals to ESFAS Cooling of Pool Water	Yes	N/A	N/A	Yes	Yes	No	Yes	Yes	Yes	Yes	3.4.6.1 3.9.8.1 3.9.8.2	Yes	1 1
Plant Drains	Both	53	No	None	No	N/A	N/A	Yes	Yes	No	Yes	No	Yes	No	None	Yes	

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR	
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	BQ	(3) LCO	LCO No.	Yes/No	
Control Rod Drive Mechanism & Electrical	1&2	55	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 11 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 18 No. 26	RPS Reactor Trip Prevent Control Rod Motion RCS Press & PZR Lvl/Manual	No	N/A	N/A	No	Yes	Yes	Yes	No	No	Yes	3.1.3.1 3.1.3.3	Yes	1 1
Reactor Regulating	1&2	56	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	1
Technical Support Center Computer	Both	57	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	
Reactor Protective	1&2	58	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16	RPS Reactor Trip Provide Signals to ESFAS	No	N/A	N/A	Yes	Yes	Yes	Yes	No	No	No	None	Yes	1

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System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR Yes/No
			Req'd for DBE	D3E Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	
Reactor Protective	1&2	58	No. 17 No. 18 No. 26													
Primary Containment	1&2	59	No. 13 No. 14 No. 17 No. 18 No. 19	Containment Isolation Transfer RWT to Recirc Mode Containment Overpressure Protection Post Accident Temp/Rad Monitoring Cont Pres Control & Cooling Containment Closures Provide Signals to ESFAS Protection from Turbine-Generator Produced Missiles	No	Yes	UFSAR, Rev 12 Chapter 5	Yes	Yes	No	No	No	Yes	No	None	Yes
Primary Containment H&V	1&2	60	No. 13 No. 14 No. 17 No. 18	Containment Press Control & Cooling Containment Filters/Radiation Control Containment Isolation Post Accident Temp Monitoring	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	No	None	Yes
Containment Spray	1&2	61	No. 13 No. 14 No. 17	Containment Press Control & Cooling Containment Isolation	Yes	N/A	N/A	Yes	Yes	No	No	No	Yes	Yes	3.9.8.1 3.9.8.2	Yes
Control Boards	1&2	62	No	None	No	Yes	Table 1 - S/S Information Rev 2	No	No	No	No	No	No	No	None	Yes
Cathodic Protection	1&2	63	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Reactor Coolant	1&2	64	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10	RCS Press PZR Lvl/Manual AFW to SG for Decay Heat Removal Vent RCS(Inadequate Natural Circ) PZR Safety Valves Lift RCP Coastdown Post Accident Monitoring Post Accident Press/Temp Monitoring Containment Isolation Provide Signals to RPS	No	N/A	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	3.4.1.1 3.4.1.2 3.4.1.3 3.9.8.1 3.9.8.2	Yes

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TABLE 2

SYSTEM/STRUCTURE INFOMATION

Revision 3

System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	Yes/No
Reactor Coolant (Continued)	1&2	64	No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 18 No. 26	Provide Signals to, and Shed Loads for, ESFAS SG Overpressure Protection ECCS Hot Leg Injection												
Seismic	Both	65	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Cavity Cooling	1&2	66	No. 50	Shed Loads for ESFAS	No	N/A	N/A	No	No	No	No	No	No	No	None	Yes
Spent Fuel Pool Cooling	Both	67	No. 3 No. 13 No. 17 No. 18	SFP Cooling (Refueling Mode) Cooling of Pool Water Containment Isolation	Yes	N/A	N/A	Yes	No	No	No	No	No	No	None	Yes
Spent Fuel Storage	Both	68	No. 13 No. 17	Containment Isolation	No	Yes	UFSAR Rev 12 Chapter 5	No	No	No	No	No	No	No	None	Yes
Waste Gas	Both	69	No. 13 No. 17	Containment Isolation	No	N/A	N/A	Yes	No	No	No	No	Yes	No	None	Yes
Refueling Pool	1&2	70	No	None	No	Yes	UFSAR 5.1.5.2, 14.18.1	No	No	No	No	No	No	No	None	Yes
Liquid Waste	Both	71	No. 13 No. 17	Containment Isolation	No	N/A	N/A	Yes	Yes	No	No	No	Yes	No	None	Yes
Sewage Treatment Plant	Both	72	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Hydrogen Recombiner	1&2	73	No. 13 No. 17	Hydrogen Sample & Removal	No	N/A	N/A	No	No	No	No	No	Yes	No	None	Yes
Nitrogen and Hydrogen	Both	74	No. 13 No. 17	Containment Isolation	No	N/A	N/A	Yes	No	No	No	No	No	No	None	Yes

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SYSTEM/STRUCTURE INFOMATION

Revision 3/Change 1

System/Structure	Unit	ID	CRITERIA 1 & 2					CRITERION 3						CRITERION 4			
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	{3} LCO	LCO No.	ITLR Yes/No	
Low Voltage DC Control Power	1&2	75	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	
Secondary Sample	1&2	76	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No	
Area and Process Radiation Monitoring	1&2	77	No. 13 No. 14 No. 15 No. 17 No. 18	Post Accident Monitoring Post Accident Temp/Rad Monitoring Provide Signals to ESFAS Adequate Refuel Pool Water Level Adequate Spent Fuel Pool Water Level Isolate Affected S/G Containment Isolation	Yes	N/A	N/A	Yes	No	No	No	No	Yes	Yes	3.3.3.1	Yes	1 1
Nuclear Instrumentation	1&2	78	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26	RPS Reactor Trip Provide Signals to RPS	Yes	N/A	N/A	Yes	Yes	No	Yes	No	Yes	Yes	3.3.3.2	Yes	1
New Fuel Storage and Elevator	Both	80	No	None	No	Yes	Q-List General Items Report	No	No	No	No	No	No	No	None	Yes	
Fuel Handling	Both	81	No	None	No	No	Table 1 - S/S Information Rev 2	No	No	No	No	No	No	No	None	No	

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SYSTEM/STRUCTURE INFOMATION

Revision 3/Change 1

System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class 1 or SR-1M	Class 1 or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	BQ	(3) LCO	LCO No.	Yes/No
Main Steam	1&2	83	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26	AFW to SG for Decay Heat Removal SG Overpressure Protection Containment Isolation VA for AFW Isolate Affected S/G MSIVs Shut	No	N/A	N/A	Yes	Yes	No	Yes	Yes	Yes	No	None	Yes
Reactor Vessel Internal	1&2	84	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26	Reactor Core Performance	No	N/A	N/A	No	No	No	No	Yes	No	No	None	Yes
Plant Access and Surveillance	Both	85	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Power Plant Security (1)	Both	86	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No

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SYSTEM/STRUCTURE INFOMATION

Revision 3

System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	Yes/No
Unit Transformers	1&2	87	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Visitor Center Security	Both	88	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Emergency Operations Facility Security	Both	89	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Service Building and Outlying Building HVAC	Both	90	No. 50	Vital Auxiliary for HVAC - SRW/AFW	No	N/A	N/A	No	No	No	No	No	No	No	None	Yes
Lube Oil Storage	Both	91	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Gland Steam	1&2	92	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Main Turbine	1&2	93	No	None	No	N/A	N/A	No	Yes	Yes	No	No	No	No	None	Yes
Plant Computer (SSS)	Both	94	No	None	No	N/A	N/A	No	No	No	No	No	No	Yes	3.1.3.3	Yes
Carbon Dioxide	1&2	95	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Fire and Smoke Detection	Both	96	No	None	No	N/A	N/A	No	Yes	No	No	No	No	No	None	Yes
Lighting and Power Receptacle	1&2	97	No	None	No	N/A	N/A	No	Yes	No	Yes	No	Yes	No	None	Yes
Main Generator and Excitation	1&2	98	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Cranes/Test Equipment	1&2	99	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No

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SYSTEM/STRUCTURE INFOMATION

Revision 3

System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	BQ	(3) LCO	LCO No.	Yes/No
Plant Communications	Both	100	No	None	No	N/A	N/A	No	Yes	No	Yes	No	No	No	None	Yes
Plant Areas	1&2 Both	102	No	None	No	Yes (2)	Table 1- S/S Information Rev 2	No	Yes	No	No	No	No	No	None	Yes
Lubrication	Both	104	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Roads	Both	107	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Docks and Marine Related Structures	Both	108	No	None	No	N/A	N/A	No	No	No	No	No	No	No	None	No
Auxiliary Bldg.	Both	--	No. 19	Protection From Turbine-Generator Produced Missiles	No	Yes	UFSAR, Rev 12 Chapter 5	No	Yes	No	No	No	No	No	None	Yes
Condensate Storage Tank #12 Enclosure	Both	--	No	None	No	Yes	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	Yes
Domestic Water Treatment Plant	Both	--	No	None	No	No	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	No
Engine G[illegible]	Both	--	No	None	No	No	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	No
Equipment Hatch Access Bldg. #1	1&2	--	No	None	No	No	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	No
Equipment Hatch Access Bldg. #2	1&2	--	No	None	No	No	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	No
Fire Protection Pump House	Both	--	No	None	No	No	Table 1 - S/S Information Rev 2	No	No	No	No	No	No	No	None	No

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SYSTEM/STRUCTURE INFOMATION

Revision 3

System/Structure	Unit	ID	CRITERIA 1 & 2					CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	EQ	(3) LCO	LCO No.	Yes/No
Fuel Assemblies	1&2	--	No. 2 No. 3 No. 4 No. 5 No. 6 No. 7 No. 8 No. 9 No. 10 No. 12 No. 13 No. 14 No. 15 No. 16 No. 17 No. 26	Reactor Core Performance	No	N/A	N/A	No	No	No	No	No	No	No	None	Yes
Fuel Storage Tank No. 21 Bldg.	Both	--	No	None	No	Yes	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	Yes
Hydrogen Storage Pad	Both	--	No	None	No	No	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	No
NMD Mods Mech. Lock-up (#3)	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No
NMD Mods Mech. Lock-up (#4)	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No
Oil Interceptor Pit	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No
Service Bldg.	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	Yes	No	No	No	No	No	None	Yes

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Revision 3

System/Structure	Unit	ID	CRITERIA 1 & 2				CRITERION 3						CRITERION 4		ITLR
			Req'd for DBE	DBE Plant Function(s)	Q	Class I or SR-1M	Class I or SR-1M Reference	PAM	FP	ATWS	SBO	PTS	BD	{3} LCO	LCO No.	Yes/No
South Service Bldg.	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No
Switchgear Structure	1&2	--	No	None	No	Yes	UFSAR, Rev 12 Chapter 5	No	No	No	No	No	No	No	None	Yes
Transformer Foundations	1&2	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No
Turbine Bldg.	Both	--	No. 19	Protection from Turbine-Generator Produced Missiles	No	Yes	UFSAR, Rev 12 Chapter 5	No	Yes	No	No	No	No	No	None	Yes
Waste Water Treatment Bldg.	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No
Well Observation Bldg	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No
Well Water Pump House	Both	--	No	None	No	No	Table 1- S/S Information Rev 2	No	No	No	No	No	No	No	None	No

Notes:

{1} Power Plant Security is not used for security related equipment at Calvert Cliffs Nuclear Power Plant.

{2} Plant Areas may include safety related equipment and structures at any given time since it is used as a miscellaneous system/structure designation.

{3} The Table 2 does not reflect the systems and structures required for LCO 3.7.8.1. This does not affect the screening outcome of any system or structure.

{4} There is no correspondence between the Req'd for DBE column entries and the DBE Plant Function(s) column entries.

{5} Unit designations are "1," "2," "1&2," or "Both." "1&2" designates identical, independent systems for Units 1 and 2. "Both" designates common systems which are shared by both units.

Attributes for Table 2 -
ITLR System Level Screening Results

Column	Content
System/Structure	Indicates the official name used to identify the system or structure.
Unit	"1 and 2" indicates that a separate system or structure exists for each unit."1" indicates that the system or structure exists for unit 1 only. "2" indicates that the system or structure exists for unit 2 only. "Both" indicates that the system or structure supports units 1 and 2.
ID	Indicates the official identification number for the system or structure. "--" indicates there is no assigned identification number for the system or structure.
CRITERIA 1&2 - Req'd for DBE	Indicates the identification number for the design basis event(s) that require the system or structure for mitigation of the event(s). "None" indicates that the system or structure is not required for any design basis events.
CRITERIA 1&2 - DBE Plant Function(s)	Indicates the plant function(s) provided by the system or structure as stated in the DBE flow charts. "None" indicates that the system or structure provides no plant functions to mitigate design basis events.
CRITERIA 1& 2 - Q	Indicates whether a system or structure is or is not (Yes/No) identified by the Q Screening Tool. "{#}" indicates a footnote is provided to address why Q screening cannot be indicated.
CRITERIA 1& 2- Class I or SR-1M	Indicates the Class I classification status for the structure (Yes/No).
CRITERIA 1& 2 - Class I or SR-1M Reference	Indicates the source documents used to determine the Class I status for the system or structure. "N/A" indicates the Class I classification is not applicable to the system.
CRITERIA 3 - PAM	Indicates whether a system or structure is or is not (Yes/No) identified by the PAM Screening Tool. "{#}" indicates a footnote is provided to address why PAM screening cannot be indicated.

Column	Content
CRITERION 3 - FP	Indicates whether a system or structure is or is not (Yes/No) identified by the FP Screening Tool.
CRITERION 3 - ATWS	Indicates whether a system or structure is or is not (Yes/No) identified by the ATWS Screening Tool.
CRITERION 3 - SBO	Indicates whether a system or structure is or is not (Yes/No) identified by the SBO Screening Tool.
CRITERION 3 - PTS	Indicates whether a system or structure is or is not (Yes/No) identified by the PTS Screening Tool. "{#}" indicates a footnote is provided to address why PTS screening cannot be indicated.
CRITERION 3 - EQ	Indicates whether a system or structure does or does not (Yes/No) contain components requiring environmental qualification.
CRITERION 4 - LCO	Indicates whether a system or structure is or is not (Yes/No) identified by the LCO Screening Tool.
CRITERION 4 - LCO No.	Indicates the LCO Number(s) affect the system or structure. "None" indicates that the system or structure is not affected by an LCO.
ITLR Yes/No	Indicates the ITLR status of the system or structure. "Deferral" indicates that the structure's ITLR status cannot be determined without additional information. "{#}" indicates a footnote is provided to address the deferral.