NUCLEAR POWER PLANT
SYSTEM SOURCEBOOK

PEACH BOTTOM 2 AND 3

50-277 and 50-278

SAIC

SAIC-89/1020

NUCLEAR POWER PLANT SYSTEM SOURCEBOOK

PEACH BOTTOM 2 AND 3

50-277 and 50-278

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CAUTION

The information in this report has been developed over an extended period of time based on a site visit, the Final Safety Analysis Report, system and layout drawings, and other published information. To the best of our knowledge, it accurately reflects the plant configuration at the time the information was obtained, however, the information in this document has not been independently verified by the licensee or the NRC.

NOTICE

This sourcebook will be periodically updated with new and/or replacement pages as appropriate to incorporate additional information on this reactor plant. Technical errors in this report should be brought to the attention of the following:

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Correction and other recommended changes should be submitted in the form of marked up copies of the affected text, tables or figures. Supporting documentation should be included if possible.

PEACH BOTTOM 2 AND 3
RECORD OF REVISIONS

REVISION	ISSUE	COMMENTS
0	1/89	Original report

PEACH BOTTOM 2 & 3 SYSTEM SOURCEBOOK

This sourcebook contains summary information on Peach Bottom 2 and 3. Summary data on these plants are presented in Section 1, and similar nuclear power plants are identified in Section 2. Information on selected reactor plant systems is presented in Section 3, and the site and building layout is illustrated in Section 4. A bibliography of reports that describe features of this plant or site is presented in Section 5. Symbols used in the system and layout drawings are defined in Appendix A. Terms used in data tables are defined in Appendix B.

1. SUMMARY DATA ON PLANT

Basic information on the Peach Bottom nuclear plant is listed below:

- Docket number	50-277 (Unit 2) and 50-278 (Unit 3)
- Operator	Philadelphia Electric Co.
- Location	19 miles south of Lancaster, PA
- Commercial operation date	7/74 (Unit 2), 12/74 (Unit 3)
- Reactor type	BWR/4
- NSSS vendor	General Electric
- Power (MWt/MWe)	3293/1065
- Architect-engineer	Bechtel
- Containment type	Steel drywell and wetwell (Mark I)

2. IDENTIFICATION OF SIMILAR NUCLEAR POWER PLANTS

The Peach Bottom nuclear plant has two General Electric BWR/4 nuclear steam supply systems on the site. These are designated Units 2 and 3. Each unit has a Mark I BWR containment incorporating the drywell/pressure suppression concept. Each has a secondary containment structure of reinforced concrete. Other BWR/4 plants in the United States are as follows:

Vermont Yankee
Browns Ferry Units 1,2 and 3
Hatch Units 1 and 2
Cooper Nuclear Station
Duane Arnold
Fitzpatrick
Brunswick Units 1 and 2
Fermi Unit 2
Hope Creek Unit 1
Limerick Units 1 and 2 (Mark II Containment)
Shoreham (Mark II Containment)
Susquehanna Units 1 and 2 (Mark II Containment)

The Peach Bottom plants have a high pressure coolant injection system, a single mode reactor core isolation cooling system, a low pressure core spray system and a multi-mode RHR system with no steam condensing capabilities.

3. SYSTEM INFORMATION

This section contains descriptions of selected systems at Peach Bottom 2 and 3 in terms of general function, operation, system success criteria, major components, and support system requirements. In many cases, only the systems for Peach Bottom 2 are described in detail. In these cases, the system configuration and equipment locations at Peach Bottom 3 are believed to be comparable. A summary of major systems at Peach Bottom 2 and 3 is presented in Table 3-1. In the "Report Section" column of this table, a section reference (i.e. 3.1, 3.2, etc.) is provided for all systems that are described in this report. An entry of "X" in this column means that the system is not described in this report. In the "FSAR Section Reference" column, a cross-reference is provided to the section of the Final Safety Analysis Report where additional information on each system can be found. Other sources of information on this plant are identified in the bibliography in Section 5.

Several cooling water systems are identified in Table 3-1. The functional relationships that exist among cooling water systems required for safe shutdown are shown in Figure 3-1. Details on the individual cooling water systems are provided in the report sections identified in Table 3-1.

Table 3-1. Summary of Peach Bottom 2 & 3 Systems Covered in this Report

Generic System Name	Plant-Specific System Name	Report Section	UFSAR Section Reference
Reactor Heat Removal Systems			
- Reactor Coolant System (RCS)	Same	3.1	4
- Reactor Core Isolation Cooling (RCIC) Systems	Same	3.2	4.6
- Emergency Core Cooling Systems (ECCS)	Core Standby Cooling Systems		
- High-Pressure Injection & Recirculation	High-Pressure Coolant Injection (HPCI) System	3.3	6.4.1
- Low-pressure Injection & Recirculation	Core Spray (CS) System,	3.3	6.4.2
	Low-Pressure Coolant Injection (LPCI) System (an operating mode of the RHR system)	3.3	4.8.6.3, 6.4.4
- Automatic Depressurization System (ADS)	Same	3.3	4.4, 6.4.2
- Decay Heat Removal (DHR) System (Residual Heat Removal (RHR) System)	Residual Heat Removal (RHR) System (a multi-mode system)	3.3	4.8
- Main Steam and Power Conversion Systems	Main Steam System,	X	4.5, 4.6, 4.11
	Condensate and Feedwater Systems,	X	11.8
	Circulating Water System	X	11.6

Table 3-1. Summary of Peach Bottom 2 & 3 Systems Covered in this Report (Continued)

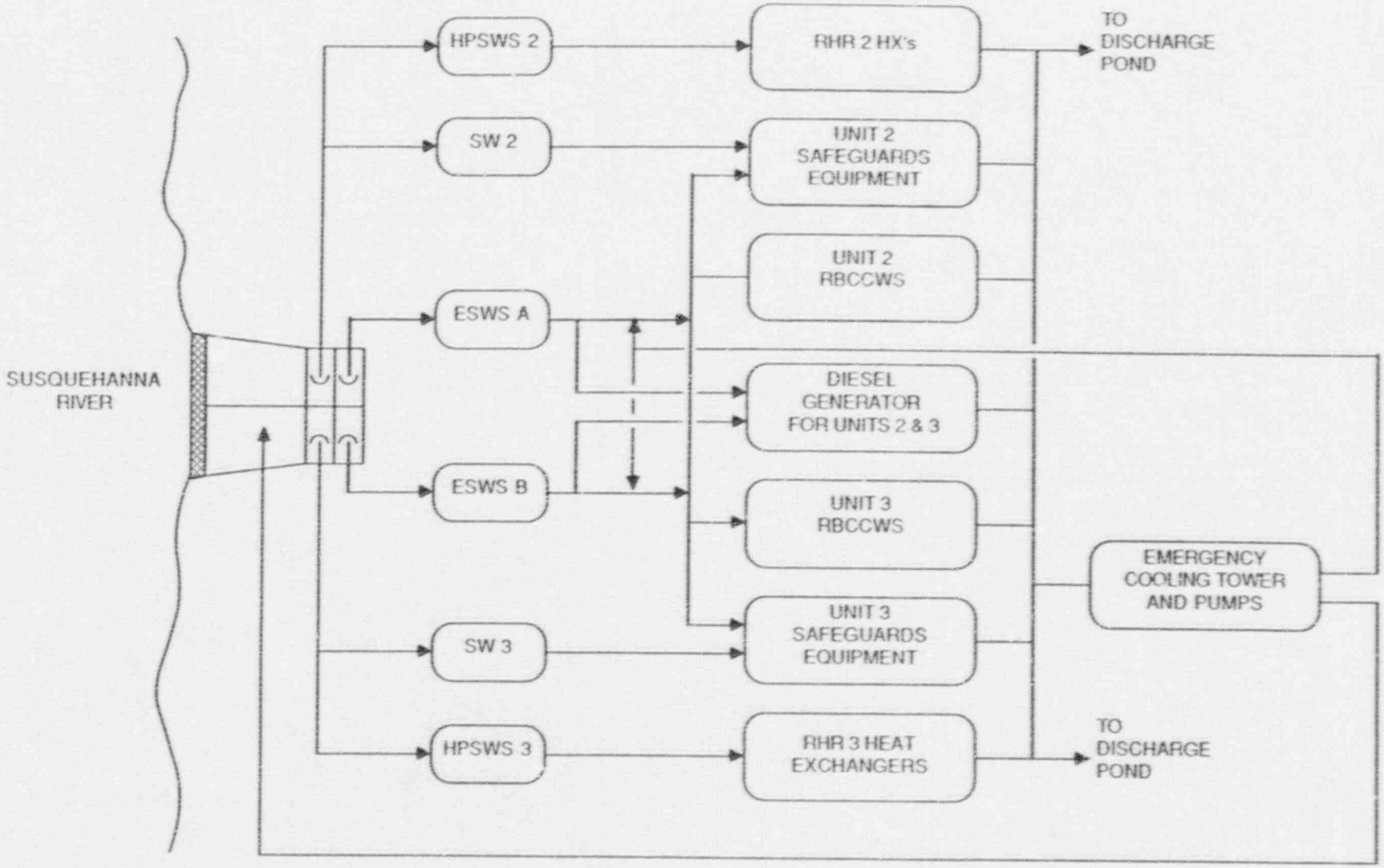
Generic System Name	Plant-Specific System Name	Report Section	UFSAR Section Reference
Reactor Coolant Inventory Control Systems			
- Reactor Water Cleanup (RWCU) System	Same	X	4.9
- ECCS	See Core Standby Cooling Systems above	-	-
- Control Rod Drive Hydraulic System (CRDHS)	Same	3.6	3.5.5.2
Containment Systems			
- Primary Containment	Same (drywell and pressure suppression chamber)	X	5.2
- Secondary Containment	Same	X	5.3
- Standby Gas Treatment System (SGTS)	Same	X	5.3.3
- Containment Heat Removal Systems			
- Suppression Pool Cooling System	Containment Cooling Subsystem (an operating mode of the RHR system)	3.3	4.8.6.2
- Containment Spray System	Containment Cooling Subsystem (an operating mode of the RHR system)	3.3	4.8.6.2
- Containment Fan Cooler System	Primary Containment (Drywell) Cooling and Ventilation System	X	5.2.3.7
- Containment Normal Ventilation Systems	Primary Containment Cooling and Ventilation System,	X	5.2.3.7
	Reactor Building Heating and Ventilating System	X	5.3.2
- Combustible Gas Control Systems	Containment Inerting System,	X	5.2.3.8
	Containment Atmospheric Dilution System (CADS)	X	5.2.3.9

Table 3-1. Summary of Peach Bottom 2 & 3 Systems Covered in this Report (Continued)

Generic System Name	Plant-Specific System Name	Report Section	UFSAR Section Reference
Reactor and Reactivity Control Systems			
- Reactor Core	Same	X	3
- Control Rod System	Control Rod Drive Mechanisms	X	3.4.5.2
- Chemical Poison System	Standby Liquid Control System (SLCS)	X	3.8
Instrumentation & Control (I&C) Systems			
- Reactor Protection System (RPS)	Same	3.4	7.2
- Engineered Safety Feature Actuation System (ESFAS)	Primary Containment and Reactor Vessel Isolation Control System,	X	7.3
	Core Standby Cooling System Control and Instrumentation,	3.3, 3.4	7.4
- Remote Shutdown System	Separate Shutdown Control Panels	3.4	7.18
- Other I&C Systems	Various other systems	X	7.5 to 7.17, 7.19 to 7.21
Support Systems			
- Class 1E Electric Power System	Same	3.5	8
- Non-Class 1E Electric Power System	Same	3.5	8
- Diesel Generator Auxiliary Systems	Same	3.5	8.5.3
- Component Cooling Water (CCW) System	Reactor Building Cooling Water System	X	10.8

Table 3-1. Summary of Peach Bottom 2 & 3 Systems Covered in this Report (Continued)

Generic System Name	Plant-Specific System Name	Report Section	UFSAR Section Reference
Support Systems (continued)			
- Service Water System (SWS)	Service Water and Emergency Service Water System	3.7	10.6, 10.9
- Residual Heat Removal Service Water (RHRSW) System	High Pressure Service Water System	3.8	10.7
- Other Cooling Water Systems	Turbine Building Cooling Water System, Chilled Water System	X	10.10, 10.11
- Fire Protection Systems	Same	X	10.12
- Room Heating, Ventilating, and Air-Conditioning (HVAC) Systems	Same	X	10.13, 10.15
- Instrument and Service Air Systems	Same, also Instrument Nitrogen Systems	X	10.17
- Refueling and Fuel Storage Systems	Same	X	10.2, 10.3, 10.5
- Radioactive Waste Systems	Same	X	9
- Radiation Protection Systems	Same	X	12.3, 12.4



ESWS = Emergency Service Water System
HPSWS = High Pressure Service Water System
RBCCWS = Reactor Building Closed Cooling Water System

Figure 3-1. Cooling Water Systems Functional Diagram for Peach Bottom Units 2 and 3

3.1 REACTOR COOLANT SYSTEM (RCS)

3.1.1 System Function

The RCS, also called the Nuclear Steam Supply System (NSSS), is responsible for directing the steam produced in the reactor to the turbine where it is used to rotate a generator and produce electricity. The RCS pressure boundary also establishes a boundary against the uncontrolled release of radioactive material from the reactor core and primary coolant.

3.1.2 System Definition

The RCS includes: (a) the reactor vessel, (b) two recirculation loops, (c) recirculation pumps, (d) safety valves, and (e) connected piping out to a suitable isolation valve boundary. Simplified diagrams of the RCS and important system interfaces are shown in Figures 3.1-1 and 3.1-2. A summary of data on selected RCS components is presented in Table 3.1-1.

3.1.3 System Operation

During power operation, circulation in the RCS is maintained by one recirculation pump in each of the two recirculation loops and the associated jet pumps internal to the reactor vessel. The steam water mixture flows upward in the core to the steam dryers and separators where the entrained liquid is removed. The steam is piped through the main steam lines to the turbine. The separated liquid returns to the core, mixes with the feedwater and is recycled again.

About 1/3 of the liquid in the downcomer region of the reactor vessel is drawn off by the recirculation pumps. The discharge of these pumps is returned to the inlet nozzles of the jet pumps at high velocity. As the liquid enters the jet pumps, the slow moving liquid in the upper region of the downcomer is induced to flow through the jet pumps, producing reactor coolant circulation.

The steam that is produced by the reactor is piped to the turbine via the main steam lines. There are two main steam isolation valves (MSIVs) in each main steam line. Condensate from the turbine is returned to the RCS as feedwater.

Following a transient that involves the loss of the main condenser or loss of feedwater, heat from the RCS is dumped to the suppression chamber via safety/relief valves on the main steam lines. A LOCA inside containment or operation of the Automatic Depressurization System (ADS) also dumps heat to the suppression chamber. Makeup to the RCS is provided by the Reactor Core Isolation Cooling (RCIC) system (see Section 3.2) or by the Emergency Core Cooling System (ECCS, see Section 3.3). Heat is transferred from the containment to the ultimate heat sink by the Residual Heat Removal (RHR) system operating in the containment cooling mode. Actuation systems provide for automatic closure of the MSIVs and isolation of other lines connected to the RCS.

RCS overpressure protection is provided by eleven relief valves and two safety valves. The relief valves discharge to the suppression pool while the safety valves discharge directly to the drywell.

3.1.4 System Success Criteria

The RCS success criteria can be described in terms of LOCA and transient mitigation, as follows:

- An unmitigatible LOCA is not initiated.
- If a mitigatible LOCA is initiated, then LOCA mitigating systems are successful.
- If a transient is initiated, then either:
  - RCS integrity is maintained and transient mitigating systems are successful, or
  - RCS integrity is not maintained, leading to a LOCA-like condition (i.e. stuck-open safety or relief valve, reactor coolant pump seal failure), and LOCA mitigating systems are successful.

3.1.5 Component Information

A. RCS
1. Total volume: Unknown
2. Water volume: Unknown
3. Steam volume: Unknown
4. Steam flow: 14.03×10^6 lb/hr.
5. Normal operating pressure: 1020 psig

B. Relief Valves (11)
1. Set pressure: 1105 to 1125 psig
2. Relief capacity: approximately 819,000 to 834,000 lb/hr each

C. Safety Valves (2)
1. Set pressure: 1230 psig
2. Relief capacity: unknown

D. Recirculation Pumps (2)
1. Rated flow: 45,200 gpm @ 710 ft. head (308 psid)
2. Type: Vertical centrifugal

E. Jet Pumps (20)
1. Total flow: 102.5×10^6 lb/hr @ 76 ft. head (33 psid)

3.1.6 Support Systems and Interfaces

A. Motive Power
1. The recirculation pumps are supplied with Nonclass 1E power.

B. MSIV Operating Power

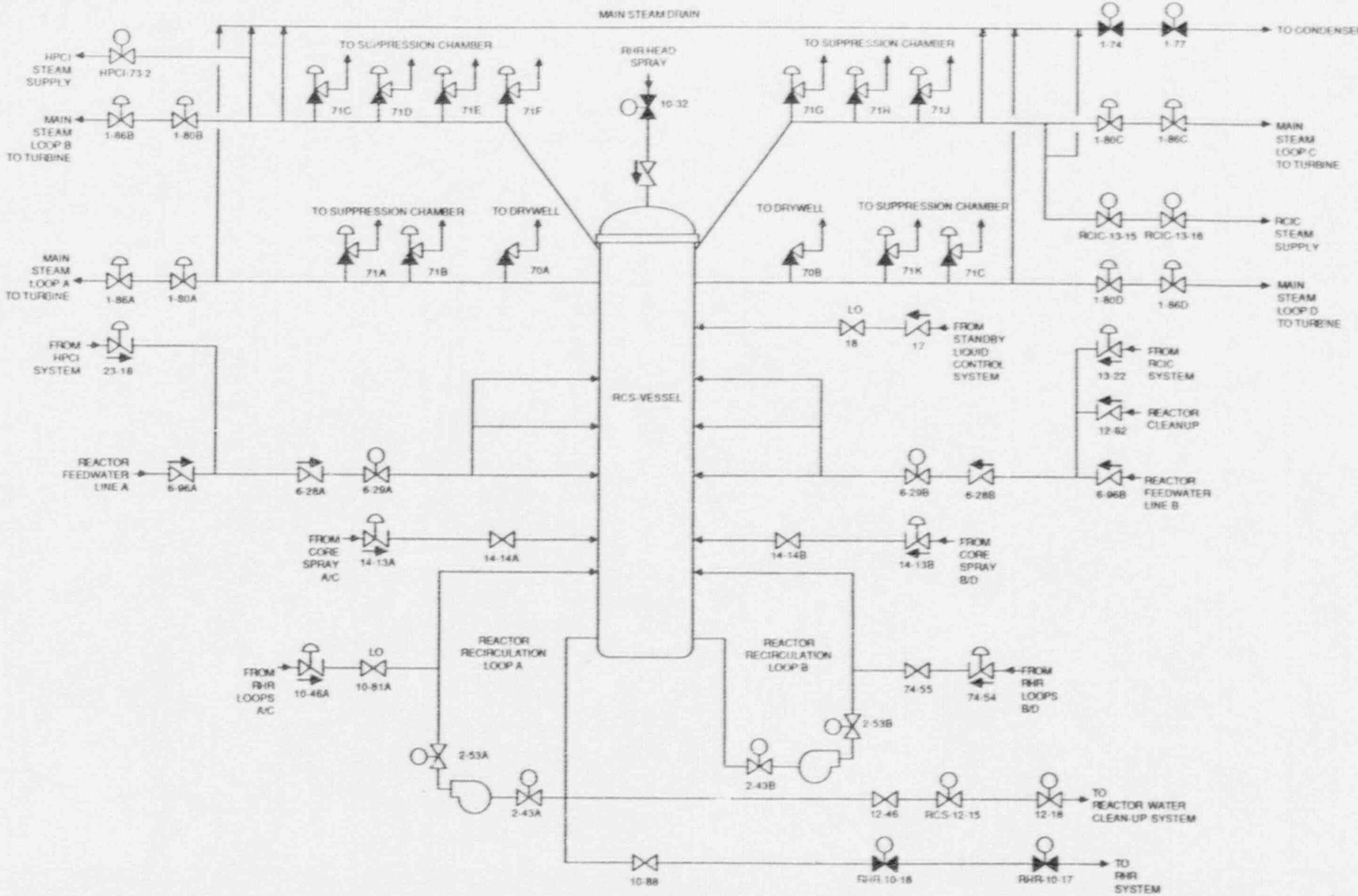
The instrument air system and the instrument nitrogen system support normal operation of the MSIVs outside containment and inside containment, respectively. Valve operation is controlled by an AC and a DC solenoid pilot valve. Both solenoid valves must be deenergized to cause MSIV closure. This design prevents spurious closure of an MSIV if a single solenoid valve should fail. MSIVs are designed to fail closed if the pneumatic supply is lost or if both AC and DC control power is lost to the solenoid pilot valves. This is achieved by a local dedicated air accumulator for each MSIV and an independent valve closing spring.

C. Relief Valve Operating Power

The instrument nitrogen system is the normal pneumatic source for all relief valves. Pneumatic accumulators inside containment are provided for relief valve 71A, B, C, G, and K which form the Automatic Depressurization System

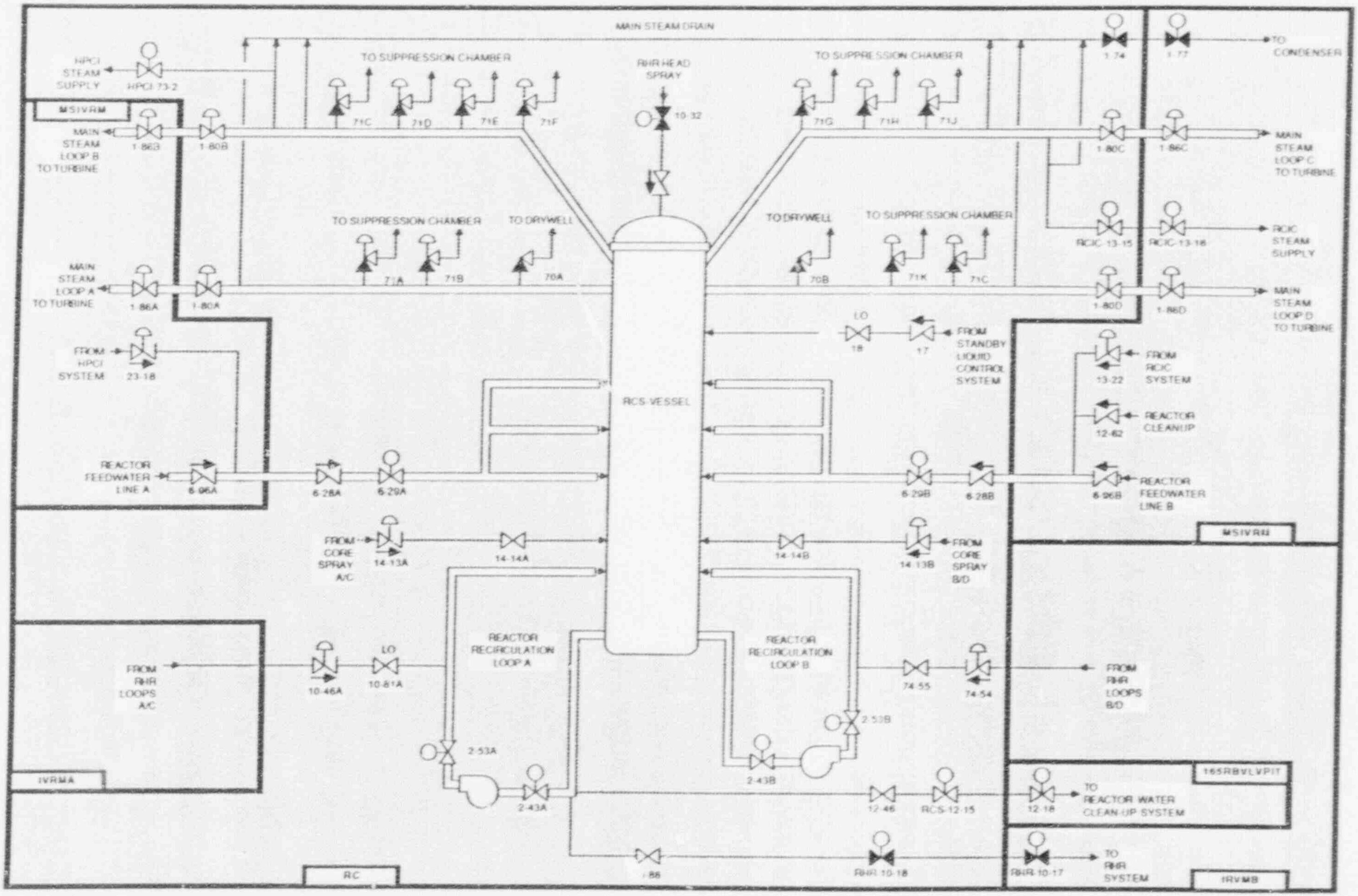
(ADS). Safety grade nitrogen cylinders outside of containment serve as a long-term pneumatic source for ADS valves.

D. Recirculation Pump Cooling
The reactor building closed cooling water (RBCCW) system provides cooling water to the recirculation pump coolers.



NOTE: Safety/relief valves (SRVs) 71A, 71B, 71C, 71G, and 71K are controlled by the Automatic Depressurization System (ADS). SRVs 71D, 71E, 71F, 71H, 71J and 71L are non-ADS valves that can be remotely controlled by the operator. Safety valve 70A and 70B only operate mechanically (ie. no remote control capability).

Figure 3.1-1. Peach Bottom 2 and 3 Nuclear Boiler System



NOTE: Safety/relief valves (SRVs) 71A, 71B, 71C, 71G, and 71K are controlled by the Automatic Depressurization System (ADS). SRVs 71D, 71E, 71F, 71H, 71J and 71L are non-ADS valves that can be remotely controlled by the operator. Safety valve 70A and 70B only operate mechanically (ie. no remote control capability).

Figure 3.1-2. Peach Bottom 2 and 3 Nuclear Boiler System Showing Component Locations

Table 3.1-1. Peach Bottom 2 Reactor Coolant System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
1-74	MOV	RC	MCC-20B36	480	165RB	AC A
1-77	MOV	MSIVRM	PNL-20D11	250	135RB	DC B
1-80A	NV	RC				
1-80B	NV	RC				
1-80C	NV	RC				
1-80D	NV	RC				
1-86A	NV	MSIVRM				
1-86B	NV	RC				
1-86C	NV	RC				
1-86D	NV	RC				
10-17	MOV	IVRMB	PNL-20D11	250	135RB	DC B
10-18	MOV	RC	MCC-20B36	480	165RB	AC A
12-15	MOV	RC	MCC-20B36	480	165RB	AC A
12-18	MOV	165RBVLVPIT	PNL-20D11	250	135RB	DC B
13-15	MOV	RC	MCC-20B37	380	135RB	AC B
13-16	MOV	MSIVRM	PNL-20D12	250	RBCCWHX	DC A
2-70A	SV	RC				
2-70B	SV	RC				
2-71A	SRV	RC				
2-71B	SRV	RC				
2-71C	SRV	RC				
2-71D	SRV	RC				
2-71E	SRV	RC				
2-71F	SRV	RC				
2-71G	SRV	RC				
2-71H	SRV	RC				
2-71J	SRV	RC				

Table 3 i-1. Peach Bottom 2 Reactor Coolant System Data Summary for Selected Components (Continued)

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
2-71K	SRV	RC				
2-71L	SRV	RC				
23-15	MOV	RC	MCC-20B36	480	165RB	AC A
23-16	MOV	IVRMB	PNL-20D11	250	135RB	DC B

3.2 REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM

3.2.1 System Function

The reactor core isolation cooling system provides adequate core cooling in the event that reactor isolation is accompanied by loss of feedwater flow. This system provides makeup at reactor operating pressure and does not require RCS depressurization.

The RCIC system is not considered to be part of the Emergency Core Cooling System (ECCS, see Section 3.3) and does not have a LOCA mitigating function.

3.2.2 System Definition

The reactor core isolation cooling system consists of a steam-driven turbine pump and associated valves and piping for delivering makeup water from the condensate storage tank or the suppression pool to the reactor pressure vessel.

Simplified drawings of the reactor core isolation cooling system are shown in Figures 3.2-1 and 3.2-2. A summary of data on selected RCIC system components is presented in Table 3.2-1.

3.2.3 System Operation

During normal operation the RCIC is in standby with the steam supply valve to the RCIC turbine driven pump closed and the pump suction aligned to the condensate storage tank.

Upon receipt of an RPV low water level signal, the turbine-pump steam supply valve is opened and makeup water is supplied to the RPV. The primary water supply for the RCIC is the condensate storage tank. The suppression pool is used as a backup water supply. Reactor core heat is dumped to the suppression pool via the safety/relief valves which cycle as needed to limit RCS pressure. The RCIC turbine also exhausts to the suppression pool.

3.2.4 System Success Criteria

For the RCIC system to be successful there must be at least one water source and supply path to the turbine-driven pump, an open steam supply path to the turbine, an open discharge path to the RCS, and an open turbine exhaust path to the suppression pool.

3.2.5 Component Information

A. Steam turbine-driven RCIC pump:
   1. Rated Flow: 600 gpm @ 2800 ft. head (1214 psid)
   2. Rated Capacity: 100%
   3. Type: centrifugal

B. Condensate Storage Tank
   1. Capacity: 200,000 gal

3.2.6 Support System and Interfaces

A. Control Signals
   1. Automatic
      a. The RCIC pump is automatically actuated on a reactor vessel low water level signal.
      b. The RCIC pump is automatically shutdown on a reactor vessel high water level signal by closing the steam supply valve. This valve automatically reopens on a subsequent reactor vessel low water level signal to restart the RCIC pump.

c. The RCIC system will be automatically shutdown by closing the turbine trip valve if any of the following conditions exist; however, the system must be manually restarted:

- Turbine overspeed
- Pump low suction pressure
- High exhaust pressure from RCIC turbine

d. The RCIC steam line is automatically isolated if any of the following conditions exist:

- RCIC equipment space high temperature
- RCIC turbine high steam flow
- RCIC turbine steam line pressure low

e. The RCIC pump suction is automatically realigned to the suppression pool if the CST is unavailable.

2. Remote Manual
The RCIC system can be actuated and controlled by remote manual means from the main control room.

B. Motive Power
1. The RCIC turbine driven pump is supplied with steam from main steam loop C, upstream of the main steam isolation valves.
2. All RCIC valves and supporting equipment are Class 1E loads that are supplied from the DC and AC power systems as described in Section 3.5. The RCIC system is designed to be operable on DC power only. Valves that must open to start the system are DC-powered. Normally open isolation valve 13-15 is AC-powered.

C. Other
1. Lubrication and cooling for the turbine-driven pump are supplied locally. It should be noted that the pump lube oil cooler is cooled by water diverted from the RCIC pump discharge and returned to the barometric condenser. Design maximum lube oil cooling water temperature for the RCIC pump is not known.
2. RCIC pump room cooling is provided by two fan cooling units powered from 480 VAC MCC-20B36 and cooled by the ESW system (see Section 3.7).
3. RCIC pump gland seal leakoff is collected, condensed and returned to the pump suction. A vacuum pump maintains condenser vacuum.

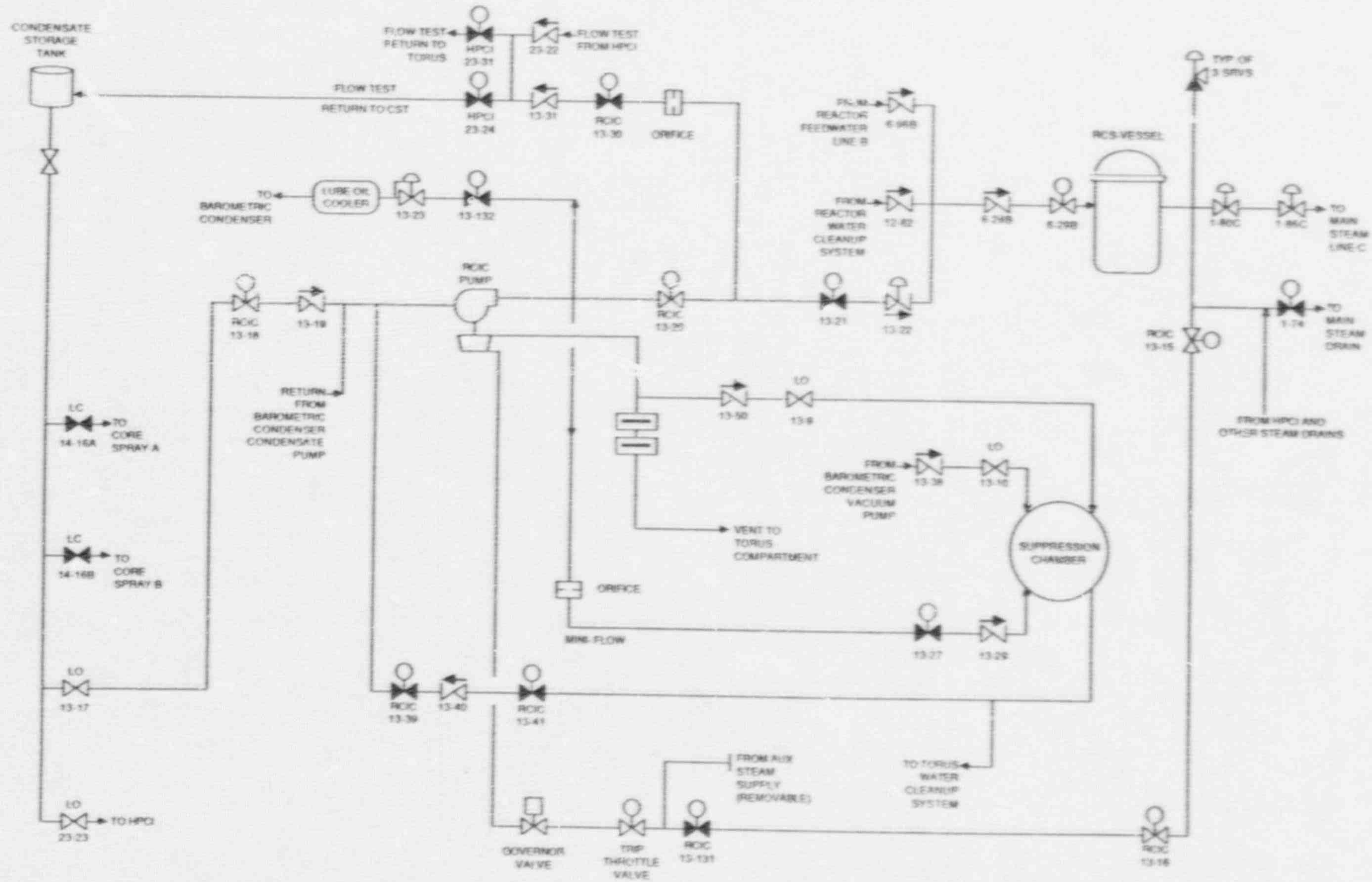


Figure 3.2-1. Peach Bottom 2 Reactor Core Isolation Cooling (RCIC) System

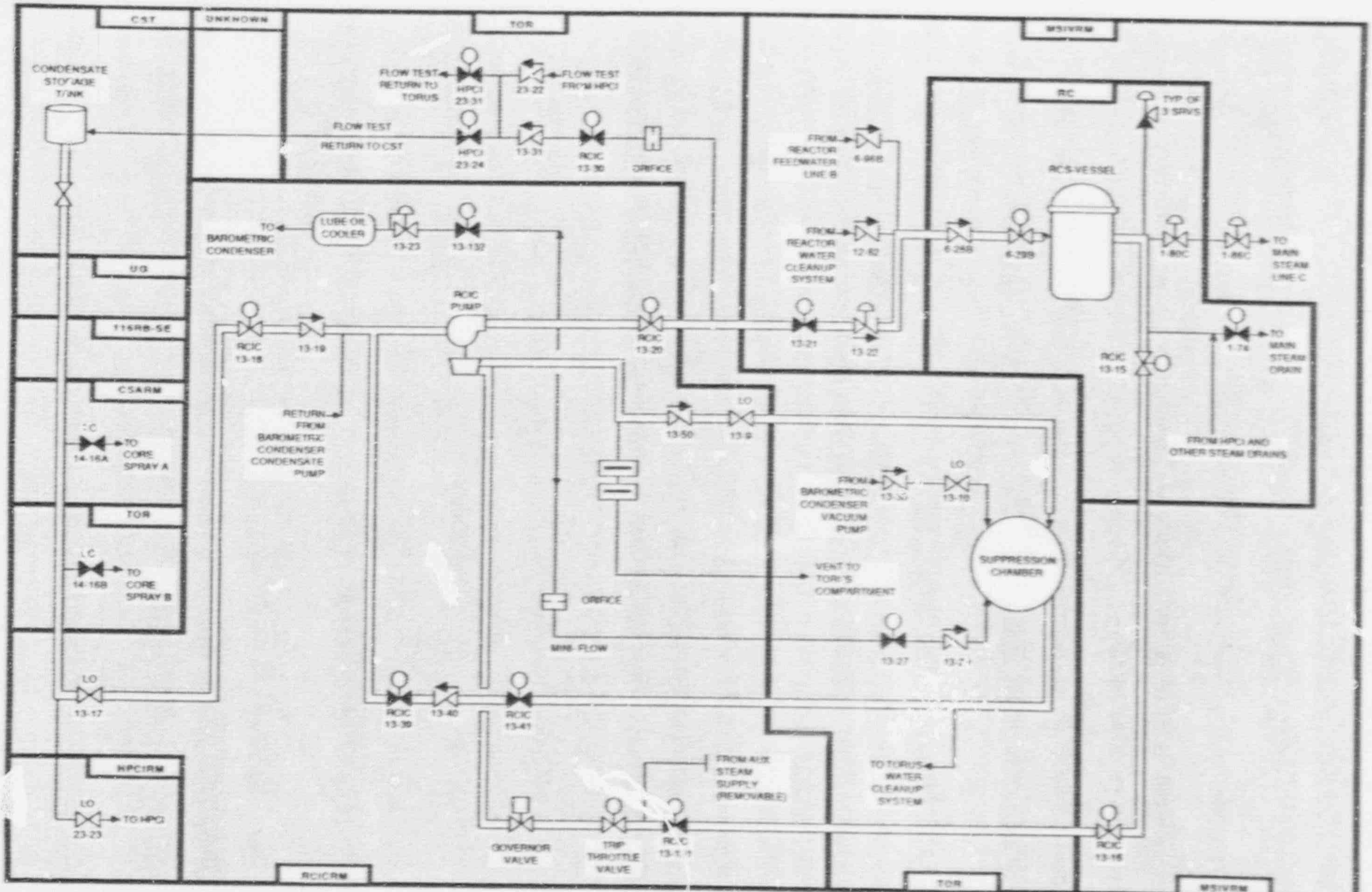


Figure 3.2-2. Peach Bottom 2 Reactor Core Isolation Cooling (RCIC) System Showing Component Locations

Table 3.2-1. Peach Bottom 2 Reactor Core Isolation Cooling System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
13-131	MOV	RCICRM	PNL-20D12	250	RBCCWHX	DC A
13-15	MOV	RC	MCC-20B37	480	135RB	AC B
13-16	MOV	MSIVRM	PNL-20D12	250	RBCCWHX	DC A
13-18	MOV	RCICRM	PNL-20D12	250	RBCCWHX	DC A
13-20	MOV	RCICRM	PNL-20D12	250	RBCCWHX	DC A
13-21	MOV	MSIVRM	PNL-20D12	250	RBCCWHX	DC A
13-30	MOV	TOR	PNL-20D12	250	RBCCWHX	DC A
13-39	MOV	RCICRM	PNL-20D12	250	RBCCWHX	DC A
13-41	MOV	RCICRM	PNL-20D12	250	RBCCWHX	DC A
13-P36	TDP	RCICRM				
6-29B	MOV	RC	MCC-20B37	480	135RB	AC B
CST	TK	CST				

3.3 EMERGENCY CORE COOLING SYSTEM (ECCS)

3.3.1 System Function

The ECCS is an integrated set of subsystems that perform emergency coolant injection and recirculation functions to maintain reactor core coolant inventory and adequate decay heat removal following a LOCA. The ECCS also performs suppression pool cooling and containment spray functions and has a capability for mitigating transients.

3.3.2 System Definition

The emergency core cooling system consists of the following subsystems:

- High-pressure Coolant Injection (HPCI) System
- Automatic Depressurization System (ADS)
- Core Spray System (CSS)
- Low-pressure Coolant Injection (LPCI) System

The HPCI system provides make-up water to the reactor pressure vessel (RPV) in the event of a small break LOCA which does not result in a rapid depressurization of the reactor vessel. The HPCI system consists of a steam-turbine driven pump, system piping, valves and controls.

The automatic depressurization system (ADS) provides automatic RPV depressurization following a small break LOCA or transient so that the low pressure systems (LPCI and CSS) can provide makeup to the RCS. The ADS utilizes 5 of the 11 safety/relief valves that perform the RCS overpressure protection function and discharge the high pressure steam to the suppression pool.

The core spray system supplies make-up water to the reactor vessel at low pressure. The system consists of two independent trains, each of which has two motor-driven pumps to supply water from the suppression pool to a spray sparger in the reactor vessel above the core.

The low-pressure coolant injection system is an operating mode of the Residual Heat Removal (RHR) system, and provides make-up water to the reactor vessel at low pressure. The LPCI system consists of two independent trains each with two motor-driven pumps which deliver water from the suppression pool to one of the RCS recirculation loops.

The Condensate Storage Tank (CST) provides a water source for the ECCS and for the RCIC system. The HPCI system is shown in Figures 3.3-1 and 3.3-2. Simplified diagrams of the LPCI system are presented in Figures 3.3-3 and 3.3-4 and the core spray system is shown in Figures 3.3-5 and 3.3-6. Interfaces between these systems and the RCS are shown in Section 3.1. A summary of data on selected ECCS components is presented in Table 3.3-1.

3.3.3 System Operation

All ECCS systems normally are in standby. The manner in which the ECCS operates to protect the reactor core is a function of the rate at which coolant is being lost from the RCS. The HPCI system is normally aligned to take a suction on the Condensate Storage Tank (CST). The HPCI system is automatically started in response to decreasing RPV water level, and will serve as the primary source of makeup if RCS pressure remains high. Reactor core heat is dumped to the suppression pool via the safety/relief valves which cycle as needed to limit RCS pressure. The HPCI flow controller maintains constant water flow over the pressure range of HPCI operation. The HPCI turbine also exhausts to the suppression pool. Operation of the HPCI system is not directly dependent on AC electric power. If the LOCA is of such a size that the coolant loss exceeds the HPCI system capacity or if reactor pressure is too low to operate the steam turbine-driven HPCI pump, then the CSS and LPCI systems can provide higher capacity makeup to the reactor vessel.

Automatic depressurization is provided to automatically reduce RCS pressure if a small break has occurred and RPV water level is not maintained by the HPCI system. Rapid depressurization permits flow from the CSS or LPCI systems to enter the vessel. Water is taken from the suppression pool by each of these systems for injection into the core. The CSS can be aligned to take a suction or the CST.

A large LOCA results in rapid depressurization of the RCS. This class of LOCA is mitigated by the CSS or LPCI systems without the need for the ADS.

3.3.4 System Success Criteria

LOCA mitigation requires that both the emergency coolant injection (ECI) and emergency coolant recirculation (ECR) functions be accomplished. The ECI system success criteria for a large LOCA are the following (Ref. 1):

- 2 of 4 core spray pumps with a suction on the suppression pool, or
- 1 of the 4 low pressure coolant injection pumps with a suction on the suppression pool.

The ECI system success criteria for a small LOCA are the following (Ref. 1):

- The high-pressure coolant injection (HPCI) pump with a suction on the suppression pool or the condensate storage tank, or
- The automatic depressurization system (ADS) and 1 of 4 LPCI pumps with a suction on the suppression pool, or
- The automatic depressurization system and 2 of 4 core spray pumps with a suction on the suppression pool.

The success criterion for the ADS is the use of any 1 of 2 ADS trains. It is possible that the coolant inventory control function for some small LOCAs can be satisfied by low-capacity high-pressure injection systems such as the control rod drive hydraulic system (see Section 3.6). The ECR success criteria for LOCAs are related to the ECI success criteria above. All injection systems essentially are operating in a recirculation mode when drawing water from the suppression pool.

For transients, the success criteria for reactor coolant inventory control involve the following:

- Either the reactor core isolation cooling (RCIC) system (not part of the ECCS, see Section 3.2), or
- Small LOCA mitigating systems

For the suppression pool cooling function to be successful, one of four RHR trains must be aligned for containment heat removal and the associated high pressure service water train must be operating to complete the heat transfer path from the RHR heat exchanger to the ultimate heat sink.

3.3.5 Component Information

A. Steam turbine-driven HPCI pump
   1. Rated flow: 5000 gpm @ 2800 ft head (1214 psid)
   2. Type: centrifugal

B. Low-pressure Core Injection (RHR) Pumps (A, B, C and D)
   1. Rated flow: 10,000 gpm @ 542 ft. head (235 psid)
   2. Type: centrifugal

C. Core spray pumps (A, B, C and D)
   1. Rated flow: 3125 gpm @ 582 ft. head (252 psid)
   2. Type: centrifugal

D. Automatic-depressurization valves (5)
   1. Rated flow: approximately 819,000 to 834,000 lb/hr each

E. Pressure Suppression Chamber
   1. Design pressure: 56 psig
   2. Design temperature: 281°F
   3. Minimum operating temperature: 95°F (assumed)
   4. Minimum water volume: 122,900 ft^3

F. RHR Heat Exchangers (A, B, C and D)
   1. Rated Capacity: 70 x 10^6 Btu/hr each
   2. Type: Shell-and-tube

G. Condensate Storage tank
   1. Capacity: 200,000 gallons

3.3.6 Support Systems and Interfaces

A. Actuation and Control
   1. HPCI Actuation and Control
      a. The HPCI pump is actuated by high drywell pressure or low reactor water level.
      b. The HPCI turbine is automatically shutdown on a reactor vessel high water level signal, and is capable of automatic restart. Other conditions resulting in turbine shutdown are:
         - Turbine overspeed
         - Low suction pressure
         - High turbine exhaust pressure
         - Automatic isolation
      c. The HPCI pump section is automatically switched to the suppression pool on high suppression pool water level or low CST level.
      d. HPCI control power requirements are described in Section 3.4.
   2. ADS Actuation and Control
      a. The ADS system is actuated upon coincident signals of the reactor vessel low water level, drywell high pressure and discharge pressure indication on at least one LPCI or two CSS pumps.
      b. The ADS valves fail closed on loss of 125 VDC control power (125 VDC A and B), loss of 125 VDC solenoid pilot valve power (125 VDC A and D) or loss of pneumatic pressure.
   3. LPCI and Core Spray Actuation and Control
      a. The LPCI and Core Spray Systems are automatically actuated on receipt of: (1) low reactor water level, or (2) high drywell pressure coincident with low RCS pressure.
      b. LPCI initiation automatically causes all RHR components to perform their function under the LPCI mode.

c. LPCI and CSS control power requirements are described in Section 3.4.

B. Motive Power

1. The ECCS motor-driven pumps and motor-operated valves are Class 1E AC and DC loads that can be supplied from the emergency diesel generator or station battery, as described in Section 3.5.
2. The steam supply valves to the HPCI turbine are Class 1E loads. Valves that must open to start the pump are DC-powered. Normally open isolation valve 23-15 is AC-powered.
3. The HPCI turbine-driven pump is supplied with steam from main steam loop B upstream of the main steam isolation valves.

C. Pump Cooling Water

1. Lubrication and cooling for the HPCI turbine-driven pump are supplied locally. It should be noted that the pump lube oil cooler is cooled by water diverted from the HPCI pump discharge and returned to the pump suction. Design maximum cooling water temperature for the HPCI pump is not known.
2. The LPCI (RHR) and CSS pump seals are cooled by the emergency service water (ESW) system (see Section 3.7).

D. Pump Room Cooling

Two fan cooling units are provided in each ECCS pump room. These units are powered from 4[illegible] VAC motor cooler centers as follows:

Pump Room	MCC
HPCI	20B37
RHR A	20B36
RHR B	20B37
RHR C	20B38
RHR D	20B39
CS A	20B36
CS B	20B37
CS C	20B38
CS D	20B39

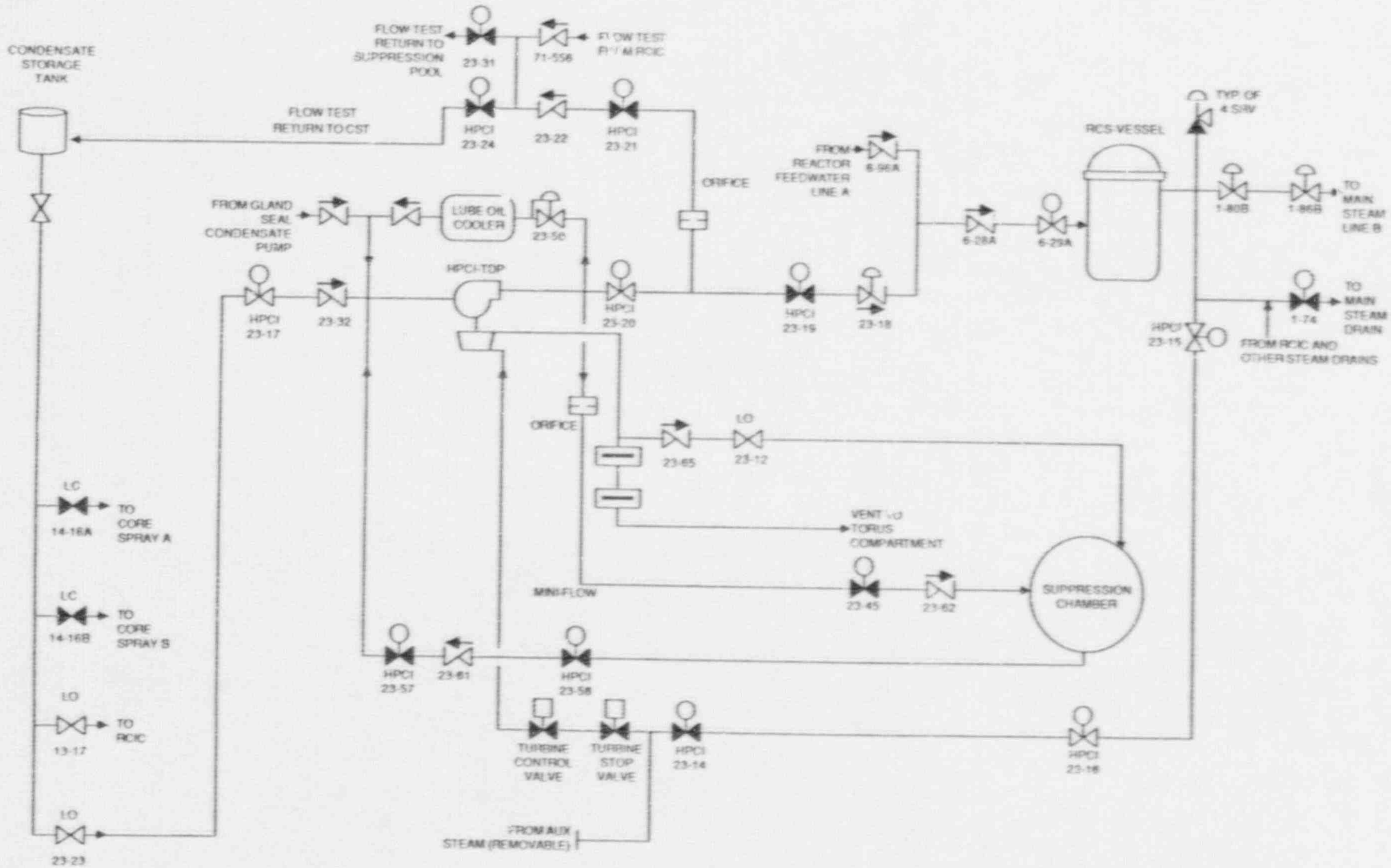
All room fan coolers are supplied with cooling water from a common ESW header (see Section 3.7).

E. Other

1. The hydraulic steam turbine stop and control valves for the HPCI pump are normally closed. These valves must be opened by a DC-powered auxiliary oil pump in order to start the HPCI pump. A shaft-driven oil pump provides hydraulic pressure to maintain these valves open once the HPCI pump is operating.
2. HPCI pump and valve leakoff is collected and condensed in a gland seal condenser. A condensate pump returns the condensate to the HPCI pump suction. A vacuum pump maintains condenser vacuum. The vacuum pump exhausts to the standby gas treatment system.

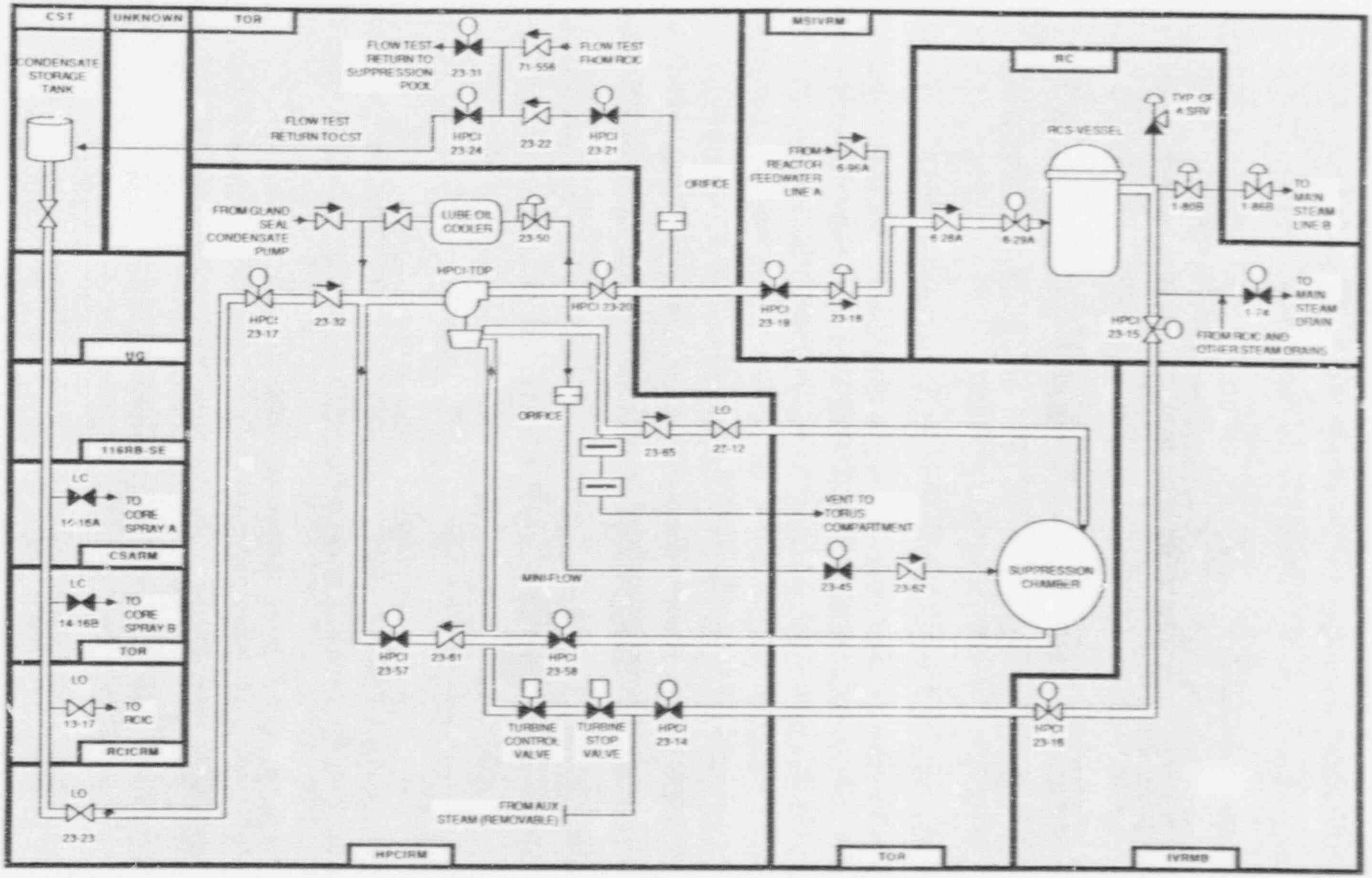
3.3.7 Section 3.3 References

1. NUREG/CR-4550, Volume 4, "Analysis of Core Damage Frequency From Internal Events: Peach Bottom Unit 2", Sandia National Laboratories, October 1986.



NOTE: HPCI pump and HPCI booster are shown as a single unit

Figure 3.3-1. Peach Bottom 2 High Pressure Coolant Injection (HPCI) System



NOTE: HPCI pump and HPCI booster are shown as a single unit

Figure 3.3-2. Peach Bottom 2 High Pressure Coolant Injection (HPCI) System Showing Component Locations

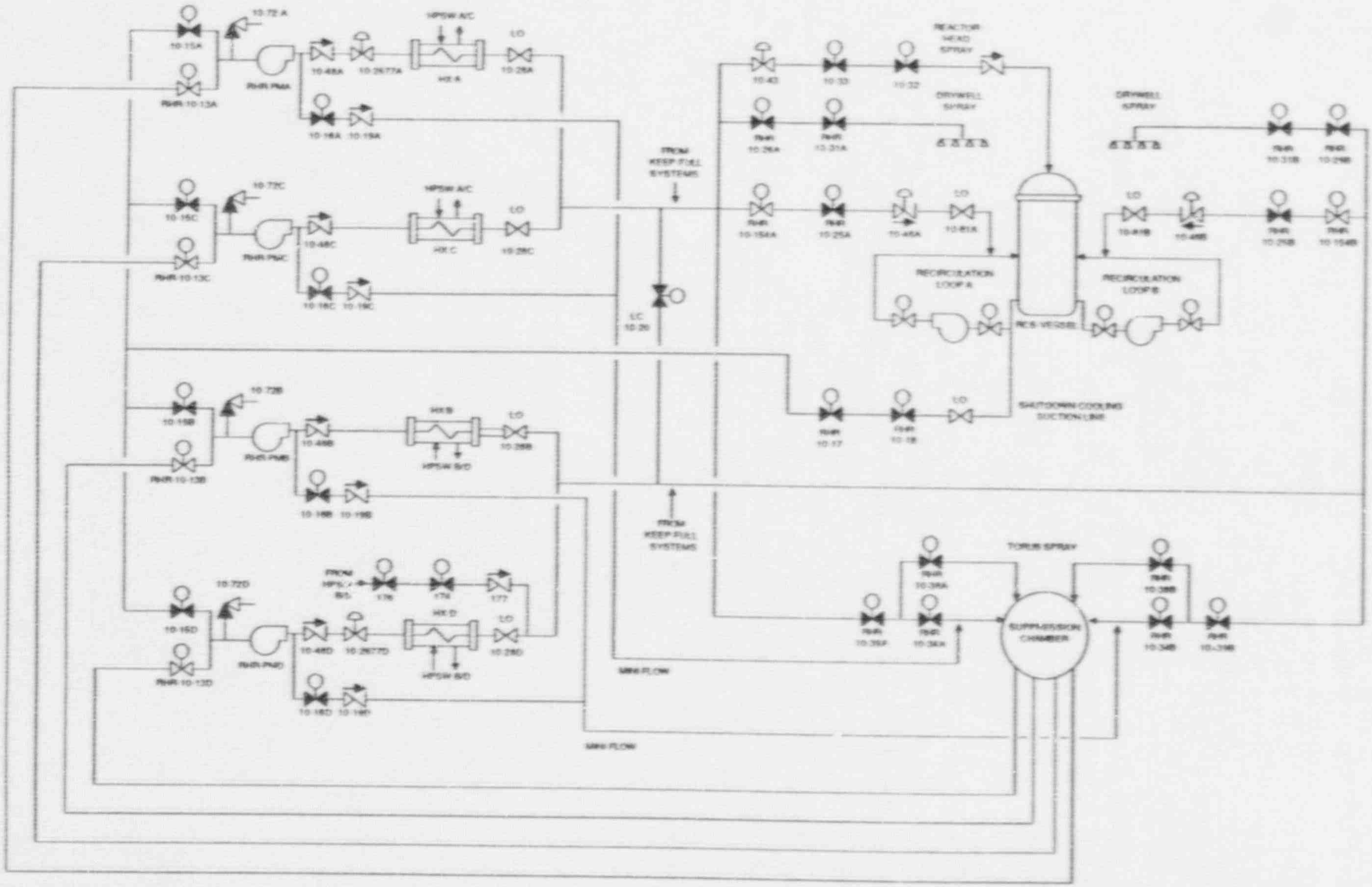


Figure 3.3-3. Peach Bottom 2 Low Pressure Coolant Injection System

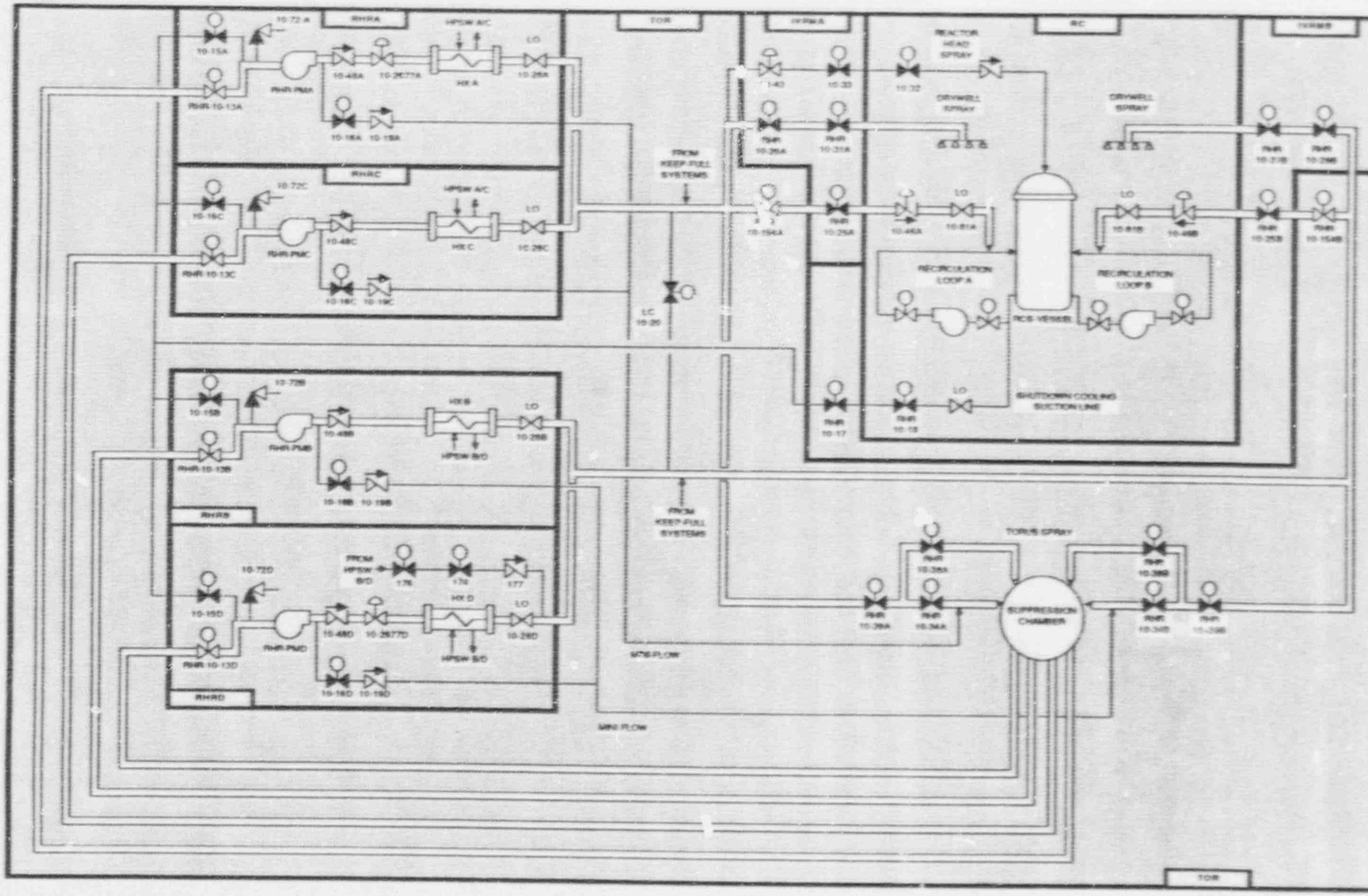


Figure 3.3-4. Peach Bottom 2 Low Pressure Coolant Injection System Showing Component Locations

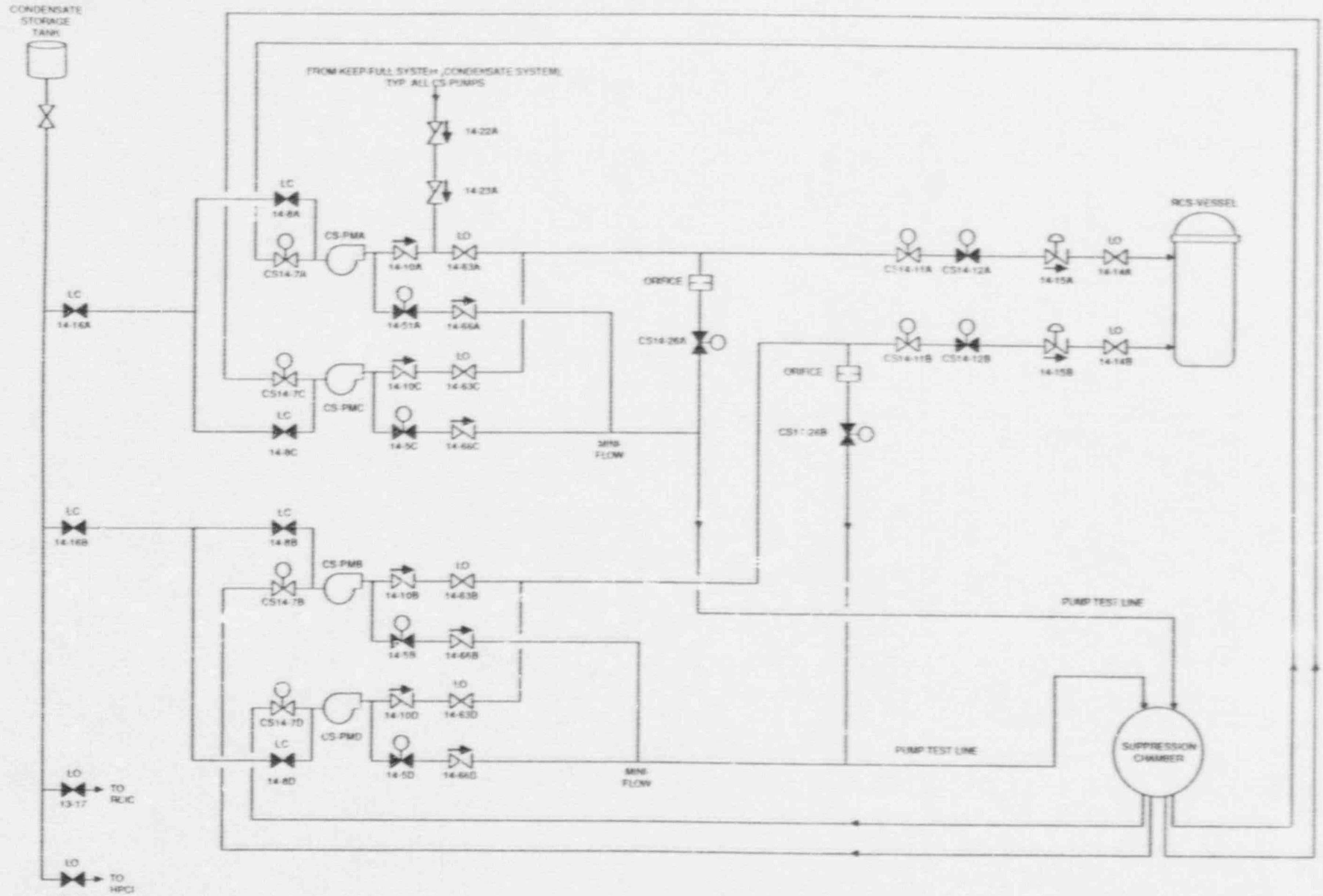


Figure 3.3-5. Peach Bottom 2 Core Spray System (CSS)

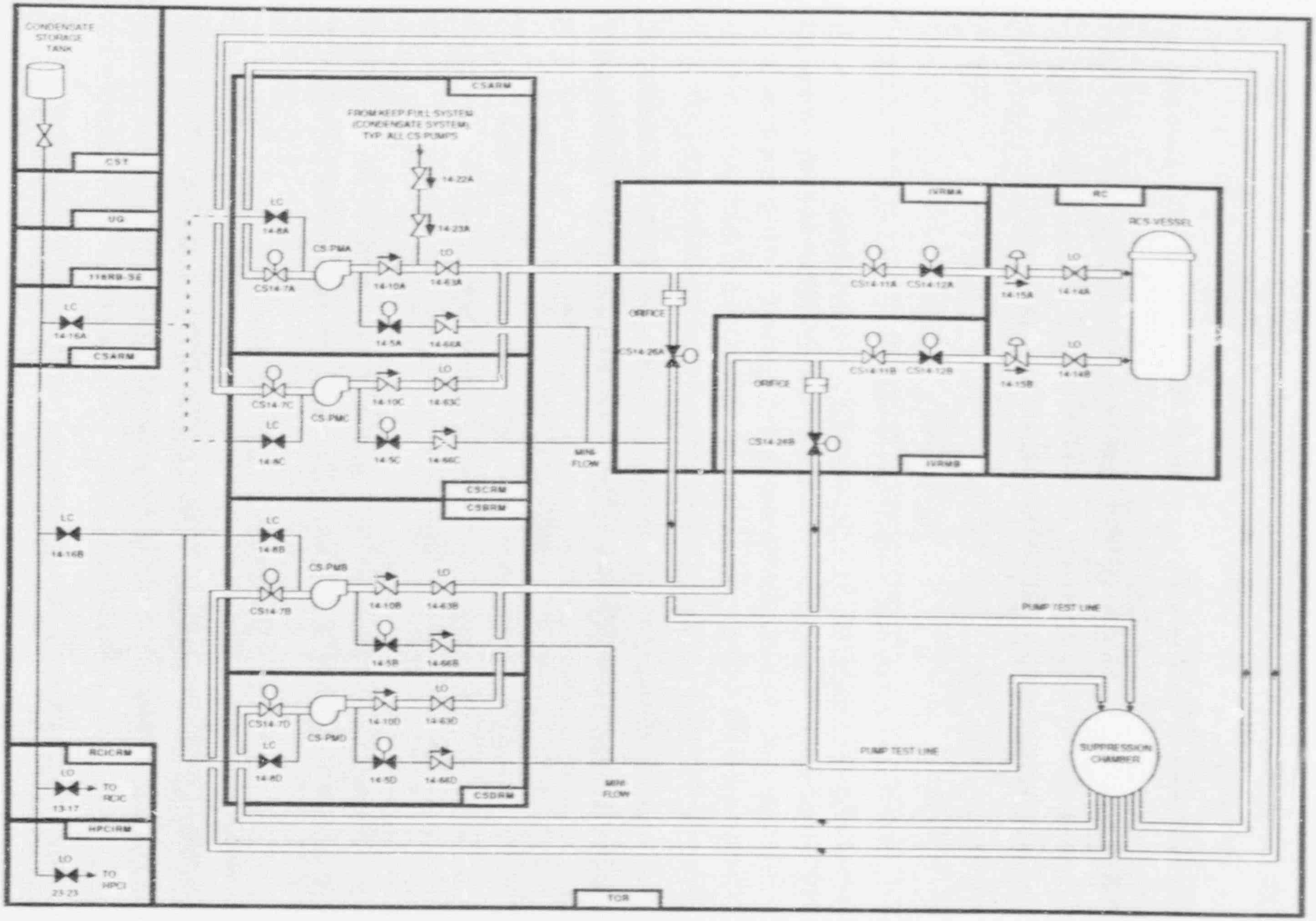


Figure 3.3-6. Peach Bottom 2 Core Spray System (CSS) Showing Component Locations

Table 3.3-1. Peach Bottom 2 Emergency Core Cooling System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
10-13A	MOV	RHRA	MCC-20B36	480	165RB	AC A
10-13B	MOV	RHRB	MCC-20B37	480	135RB	AC B
10-13C	MOV	RHRC	MCC-20B38	480	135RB	AC C
10-13D	MOV	RHRD	MCC-20B39	480	RBCCWHX	AC D
10-154A	MOV	TOR	MCC-20B38	480	135RB	AC C
10-154B	MOV	TOR	MCC-20B39	480	RBCCWHX	AC D
10-15A	MOV	RHRA	MCC-20B36	480	165RB	AC A
10-15B	MOV	RHRB	MCC-20B37	480	135RB	AC B
10-15C	MOV	RHRC	MCC-20B38	480	135RB	AC C
10-15D	MOV	RHRD	MCC-20B39	480	RBCCWHX	AC D
10-20	MOV	TOR	MCC-20B38	480	135RB	AC C
10-25A	MOV	IVRMA	MCC-20B36	480	165RB	AC A
10-25A	MOV	IVRMA	MCC-20B38	480	135RB	AC C
10-25B	MOV	IVRMB	MCC-20B39	480	RBCCWHX	AC D
10-25B	MOV	IVRMB	MCC-20B39	480	RBCCWHX	AC D
10-2677A	NV	RHRA				
10-2677D	NV	RHRD				
10-26A	MOV	IVRMA	MCC-20B38	480	135RB	AC C
10-26B	MOV	IVRMB	MCC-20B39	480	RBCCWHX	AC D
10-31A	MOV	IVRMA	MCC-20B38	480	135RB	AC C
10-31B	MOV	IVRMB	MCC-20B39	480	RBCCWHX	AC D
10-32	MOV	RC	MCC-20B36	480	165RB	AC A
10-33	MOV	IVRMA	PNL-20D11	250	135RB	DC B
10-34A	MOV	TOR	MCC-20B38	480	135RB	AC C
10-34B	MOV	TOR	MCC-20B39	480	RBCCWHX	AC D
10-38A	MOV	TOR	MCC-20B38	480	135RB	AC C
10-38B	MOV	TOR	MCC-20B39	480	RBCCWHX	AC D

Table 3.3-1. Peach Bottom 2 Emergency Core Cooling System Data Summary for Selected Components (Continued)

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
10-39A	MOV	TOR	MCC-20B38	480	135RB	AC C
10-39B	MOV	TOR	MCC-20B39	480	RBCCWHX	AC D
14-11A	MOV	IVRMA	MCC-20B38	480	135RB	AC C
14-11B	MOV	IVRMB	MCC-20B39	480	RBCCWHX	AC D
14-12A	MOV	IVRMA	MCC-20B38	480	135RB	AC C
14-12B	MOV	IVRMB	MCC-20B39	480	RBCCWHX	AC D
14-26A	MOV	IVRMA	MCC-20B38	480	135RB	AC C
14-26B	MOV	IVRMB	MCC-20B39	480	RBCCWHX	AC D
14-7A	MOV	CSARM	MCC-20B36	480	165RB	AC A
14-7B	MOV	CSBRM	MCC-20B37	480	135RB	AC B
14-7C	MOV	CSCRM	MCC-20B38	480	135RB	AC C
14-7D	MOV	CSDRM	MCC-20B39	480	RBCCWHX	AC D
2-71A	SRV	RC				
2-71B	SRV	RC				
2-71C	SRV	RC				
2-71G	SRV	RC				
2-71K	SRV	RC				
23-14	MOV	HPCIRM	PNL-20D11	250	135RB	DC B
23-15	MOV	RC	MCC-20B36	480	165RB	AC A
23-16	MOV	IVRMB	PNL-20D11	250	135RB	DC B
23-17	MOV	HPCIRM	PNL-20D11	250	135RB	DC B
23-19	MOV	MSIVRM	PNL-20D11	250	135RB	DC B
23-20	MOV	HPCIRM	PNL-20D11	250	135RB	DC B
23-21	MOV	TOR	PNL-20D11	250	135RB	DC B
23-24	MOV	TOR	PNL-20D11	250	135RB	DC B
23-31	MOV	TOR	PNL-20D11	250	135RB	DC B
23-57	MOV	HPCIRM	PNL-20D11	250	135RB	DC B

Table 3.3-1. Peach Bottom 2 Emergency Core Cooling System Data Summary for Selected Components (Continued)

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
23-58	MOV	HPCIRM	PNL-20D11	250	135RB	DC B
23-P1	TDP	HPCIRM				
2AP35	MDP	RHRA	E12-SWGR	4160	SWGR2A	AC A
2AP37	MDP	CSARM	E12-SWGR	4160	SWGR2A	AC A
2BP35	MDP	RHRB	E22-SWGR	4160	SWGR2B	AC B
2BP37	MDP	CSBRM	E22-SWGR	4160	SWGR2B	AC B
2CP35	MDP	RHRC	E32-SWGR	4160	SWGR2C	AC C
2CP37	MDP	CSCRM	E32-SWGR	4160	SWGR2C	AC C
2DP35	MDP	RHRD	E42-SWGR	4160	SWGR2D	AC D
2DP37	MDP	CSDRM	E42-SWGR	4160	SWGR2D	AC D
6-29A	MOV	RC	MCC-20B36	480	165RB	AC A
CONTROL VALVE	HV	HPCIRM				
CST	TK	CST				
HPCI-AUX-LUB	MDP	HPCIRM	PNL-20D11	250	135RB	DC B
STOP VALVE	HV	HPCIRM				

3.4 INSTRUMENTATION AND CONTROL (I&C) SYSTEMS

3.4.1 System Function

The instrumentation and control systems consist of the Reactor Protection System (RPS), other actuation and control systems, and systems for the display of plant information to the operators. The RPS monitors the reactor plant, and alerts the operator to take corrective action before specified limits are exceeded. The RPS will initiate an automatic reactor trip (scram) to rapidly shutdown the reactor when plant conditions exceed one or more specified limits. The other actuation systems will automatically actuate various safety systems based on the specific limits or combinations of limits that are exceeded.

3.4.2 System Definition

The RPS includes sensor and transmitter units, logic units, and output trip relays that interface with the control circuits for components in the scram portion of the Control Rod Drive Hydraulic System (see Section 3.6). Other actuation and control systems include independent sensor and transmitter units and relay units that interface with the control circuits of many different components in safety systems. Operator instrumentation display systems consist of display panels that are powered from various DC buses (see Section 3.5).

3.4.3 System Operation

A. RPS

The RPS has four input instrument channels and two output actuation trains. RPS inputs are listed below:

- Neutron monitoring system
- RCS high pressure
- Low water level in reactor vessel
- Turbine stop valve closure
- Turbine control valve fast closure
- Main steam line isolation signal
- Scram discharge volume high water level
- Primary containment high pressure
- Main steam line high radiation
- Main condenser low vacuum
- Manual
- Mode Switch in SHUTDOWN

Both output channels must be de-energized to initiate a scram. The failure of a single component or power supply does not prevent a desired scram or cause an unwanted scram.

B. Other Actuation and Control Systems

Other actuation and control systems cause the various safety systems to be started, stopped or realigned as needed to respond to abnormal plant conditions. Details regarding actuation logic are included in the system description of the actuated system.

C. Remote Shutdown

Separate shutdown control panels for Units 2 and 3 are located in a common area on the 165' elevation of the Radwaste Building (in the emergency ventilation equipment area). Each unit can be controlled from two adjacent panels that are powered from the emergency buses. These panels contain controls for the following equipment:

- RCIC remotely operated valves including the supply valves from the CST and the suppression pool.
- Main steam line power-operated relief valves
- RHR shutdown cooling suction valves
- Emergency service water pumps
- Emergency switchgear

The control panels contain transfer switches, where appropriate, to avoid interaction with any damaged equipment in the control room. Instrumentation is provided for monitoring the reactor coolant system and the RCIC system.

In the event that the control room must be evacuated, the reactor is scrammed prior to evacuation. The reactor is maintained in a stable hot shutdown condition by the combined action of the main turbine pressure regulator and the main feedwater control system. RCS pressure is maintained by rejecting heat to the main condenser via the turbine bypass valves. RCS coolant inventory is maintained by the main feedwater system. If this operating mode cannot be maintained, the main steam isolation valves are manually closed (i.e., by tripping the RPS motor-generator sets). RCS pressure is controlled by manually cycling the power-operated relief valves and dumping steam to the suppression pool. RCS coolant inventory is maintained by the RCIC system, and if available, the control rod drive hydraulic system pumps. The RCS can be cooled down from outside the main control room.

3.4.4 System Success Criteria

A. RPS
The RPS uses hindrance logic (normal = 1, trip = 0) in both the input and output logic. Therefore, a channel will be in a trip state when input signals are lost, when control power is lost, or when the channel is temporarily removed from service for testing or maintenance (i.e. the channel has a fail-safe failure mode). A reactor scram will occur upon loss of control power to the RPS. A reactor scram is implemented by the scram pilot valves in the control rod drive hydraulic system (see Section 3.6). Details of the RPS for Peach Bottom 2 and 3 have not been determined.

B. Other Actuation Systems
A single component usually receives a signal from only one actuation system output train. Trains A and B must be available in order to automatically actuate their respective components. Actuation systems other than the RPS typically use hindrance input logic (normal = 1, trip = 0) and transmission output logic (normal = 0, trip = 1). In this case, an input channel will be in a trip state when input signals are lost, when control power is lost, or when the channel is temporarily removed from service for testing or maintenance (i.e. the channel has a fail-safe failure mode). Control power is needed for the actuation system output channels to send an actuation signal. Note that there may be some actuation subsystems that utilize hindrance output logic. For these subsystems,

loss of control power will cause system or component actuation, as is the case with the RPS. Details of the other actuation systems for Peach Bottom 2 and 3 have not been determined.

C. Manually-Initiated Protective Actions
When reasonable time is available, certain protective actions may be performed manually by plant personnel. The control room operators are capable of operating individual components using normal control circuitry, or operating groups of components by manually tripping the RPS or other actuation subsystem. The control room operators also may send qualified persons into the plant to operate components locally or from some other remote control location (i.e., the remote shutdown panel or a motor control center). To make these judgments, data on key plant parameters must be available to the operators.

3.4.5 Support Systems and Interfaces

A. Control Power
1. RPS
The RPS is powered via motor-generator sets from the 250 VDC Class 1E electric power system.
2. Other actuation and control systems
The control power interfaces for the various front-line safety systems at Peach Bottom 2 are summarized in Table 3.4-1.
3. Operator instrumentation
Power sources for operator instrumentation systems have not been identified.

Table 3.4-1. Matrix of Peach Bottom 2 Control Power Sources

SYSTEM	DC POWER SOURCE					
	DC-125-2A	DC-125-2B	DC-125-2C	DC-125-2D	DC-125-3C	DC-125-3D
RCIC System Control	■					
RCIC Auxiliary Relays	■					
HPCI System Control		■				
HPCI Auxiliary Relays		■				
ADS A Logic	■					
ADS B Logic		■				
RHR (LPCI) A Logic			■			
RHR (LPCI) B Logic				■		
Core Spray A Logic	■					
Core Spray B Logic		■				
E1 Diesel Control	■					
E2 Diesel Control		■				
E3 Diesel Control					■	
E4 Diesel Control						■
MSIV 80 A, B, C & D Solenoid Valves	■					
MSIV 86 A, B, C & D Solenoid Valves		■				
Backup Scram Valves	■	■				
Emergency Shutdown Control			■	■		

NOTE: DC-125-2A = 125 VDC Panel 2PPA and
125 VDC Battery 2A or 125 VDC Battery Charger 2BCA

DC-125-2B = 125 VDC Panel 2PPB and
125 VDC Battery 2B or 125 VDC Battery Charger 2BCB

DC-125-2C = 125 VDC Panel 2PPC and
125 VDC Battery 2C or 125 VDC Battery Charger 2BCC

DC-125-2D = 125 VDC Panel 2PPD and
125 VDC Battery 2D or 125 VDC Battery Charger 2BCD

DC-125-3C = 125 VDC Panel 3PPC and
125 VDC Battery 3C or 125 VDC Battery Charger 3BCC

DC-125-3D = 125 VDC Panel 3PPD and
125 VDC Battery 3D or 125 VDC Battery Charger 3BCD

3.5 ELECTRIC POWER SYSTEM

3.5.1 System Function

The electric power system supplies power to various equipment and systems needed for normal operation and/or response to accidents. The onsite Class 1E electric power system supports the operation of safety class systems and instrumentation needed to establish and maintain a safe shutdown plant condition following an accident, when the normal electric power sources are not available.

3.5.2 System Definition

The onsite Class 1E AC electric power system consists of a total of four diesel generators and four 4160 VAC buses and four 480 VAC load centers at each unit. In addition, there are many 480 VAC motor control centers at each unit. The Class 1E plant DC power system consists of four 125 VDC batteries at each unit. These batteries are connected to supply four trains of 125 VDC distribution panels and two trains of 250 VDC distribution panels at each unit.

The 4160 and 480 VAC electric power distribution system at Peach Bottom 2 and 3 is shown in Figures 3.5-1 and 3.5-2. Division I of the 125/250 VDC distribution system is shown in Figures 3.5-3 and 3.5-4. Division II is shown in Figures 3.5-5 and 3.5-6. The 120 VAC instrumentation power system is shown in Figure 3.5-7 and 3.5-8. A summary of data on selected electric power system components is presented in Table 3.5-1. A summary of the major elements in each division is presented in Table 3.5-2. A partial listing of electrical sources and loads is presented in Table 3.5-3.

3.5.3 System Operation

During normal operation, station auxiliary power is provided from the main generators via the Unit 2 and Unit 3 auxiliary switchgear.The Class 1E 4kV emergency auxiliary switchgear are supplied from offsite via the startup and emergency auxiliary transformers. There are four separate AC divisions at each unit.

The four standby diesel generators serve 4160 VAC buses at both Units 2 and 3 when the normal sources of power are not available. The diesel generators are automatically started and connected to their respective buses when rated voltage and frequency conditions have been established by the generator (about 10 seconds after a start command). Essential loads then are automatically reenergized in a predetermined sequence. Nonessential loads are not reenergized.

There are two independent 125/250 VDC, 3-wire DC power divisions per unit. Each division includes two 125 VDC batteries, each with its own battery charger. The two divisions at each unit are considered to be redundant based on the distribution of DC loads between the two divisions. Battery capacity is sufficient to support essential loads for about 6 hours (Ref. 1).

Power required for the larger DC loads, such as DC motor-driven valves and pumps, is supplied at 250 VDC from the two 125 VDC sources of each division connected in series, and distributed through 250 VDC distribution panels. Power for all DC control functions, including circuit breaker control, control relays and annunciators, is supplied at 125 VDC from each of the two 125 VDC sources in each division. Separate 125 VDC distribution panels serve the 125 VDC loads.

The 120 VAC system provides power for essential instrumentation and for control relays for inboard and outboard RCS and containment isolation valves. This system is powered from 480 VAC MCCs or from a 250 VDC distribution panel as shown in Figures 3.5-7 and 3.5-8.

3.5.4 System Success Criteria

Basic system success criteria for mitigating transients and loss-of-coolant accidents are defined by front-line systems, which then create demands on support systems. Electric power system success criteria are defined as follows, without taking credit for cross-ties that may exist between independent load groups:

- Each Class 1E DC load group is supplied initially from its respective battery (also needed for diesel starting)
- Each Class 1E AC load group is isolated from the non-Class 1E system and is supplied from its respective emergency power source (i.e. diesel generator)
- Power distribution paths to essential loads are intact
- Power to the battery chargers is restored before the batteries are exhausted

3.5.5 Component Information

A. Standby diesel generators (E1, E2, E3 and E4)
   1. Power rating: 2600 kW continuous
   2. Rated voltage: 4160 VAC
   3. Manufacturer: Fairbanks Morse

B. Station batteries (2A, 2B, 2C, 2D, 3A, 3B, 3C and 3D)
   1. Rated voltage: 125 VDC
   2. Rated capacity: 6 hours with design loads

3.5.6 Support Systems and Interfaces

A. Control Signals
   1. Automatic
      The standby diesel generators are automatically started on the following signals:

      - Loss of offsite power
      - Accident signal at any unit (drywell high pressure or RPV low water level)

   2. Remote manual
      The diesel generators can be started, and connected to the emergency buses from the main control room.

   3. Local
      The diesel generators can be started locally, but not connected to the emergency buses.

B. Diesel Generator Auxiliary Systems
   The following auxiliaries are provided for the emergency diesel generator:

   1. Cooling
      The emergency service water system provides for diesel cooling (see Section 3.7).
   2. Fueling
      a. An individual day tank is provided for each diesel generator. The day tank has a capacity for 2.5 hours of diesel generator operation at full load.
      b. A long-term diesel fuel supply is provided underground, near the diesel building. This fuel supply is designed to support the operation of the diesel generators for seven days.

3. Lubrication
   Each diesel generator has a self-contained lubrication system.
4. Starting
   Two independent starting air systems are provided for each diesel generator. Each air accumulator is capable of storing air for five normal starts of a diesel engine.
5. Control power
   Each diesel generator is dependent on 125 VDC power from a station battery for control power, as follows:

Diesel Generator	DC Panels	Battery
E1	2PPA and 2DPA	2A
E2	2PPB and 2DPB	2B
E3	3PPC and 3DPA	3C
E4	3PPD and 3DPB	3D

   Note that the Unit 2 batteries support diesel generators E1 and E2 while the Unit 3 batteries support diesel generators E3 and E4.
6. Diesel room ventilation
   The diesel room ventilation system is described in Section 3.9. Diesel room fans are Class 1E loads that are powered from 480 VAC motor control centers.

C. Switchgear and Battery Room Ventilation.
   The emergency ventilation system for the switchgear and battery rooms is described in Section 3.9.

3.5.7 Section 3.5 References

1. NUREG/CR-4550, Vol. 4, "Analysis of Core Damage Frequency From Internal Events: Peach Bottom, Unit 2", Sandia National Laboratories, October 1986

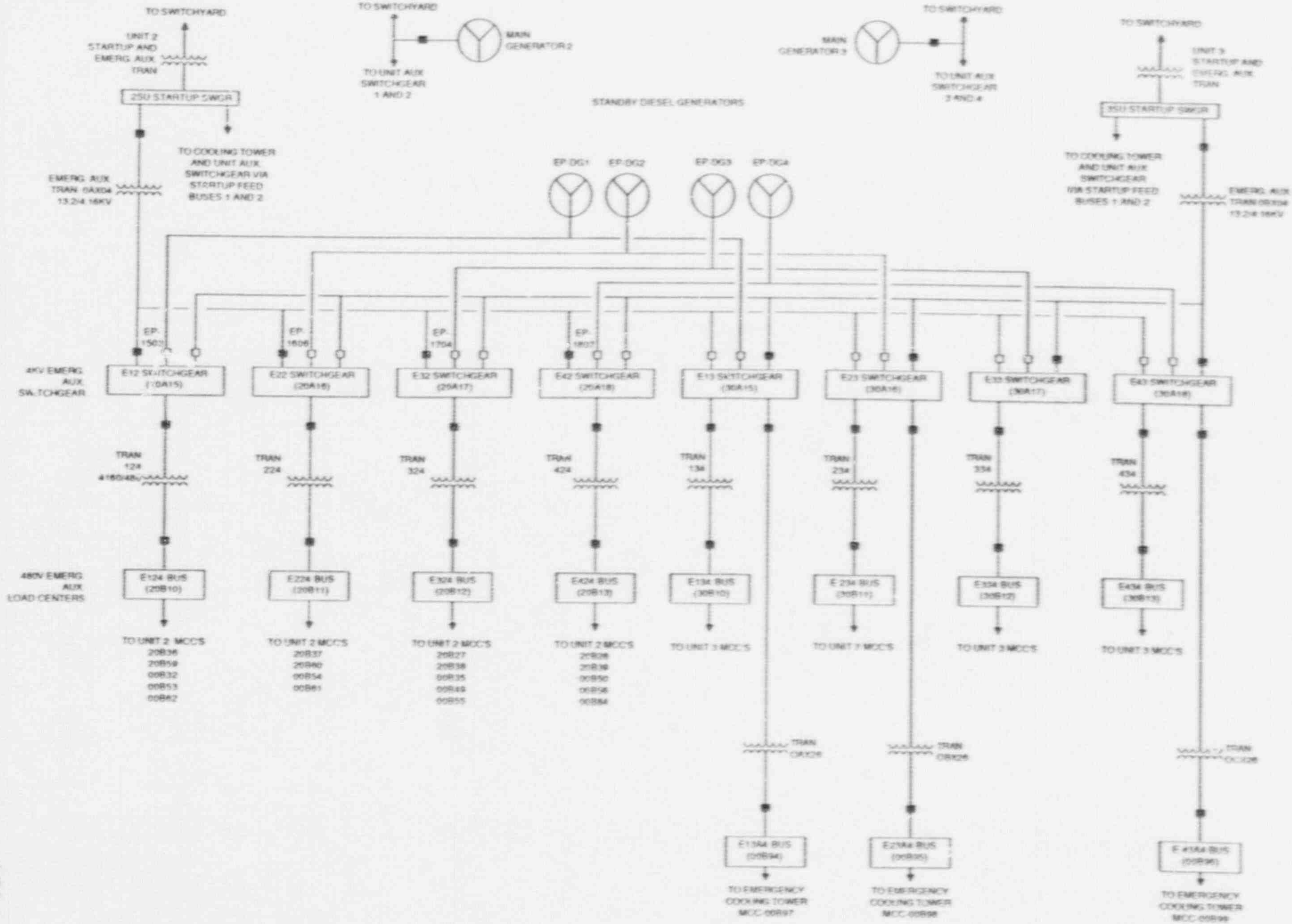


Figure 3.5-1. Peach Bottom 2 and 3 4160 and 480 VAC Electric Power Distribution System

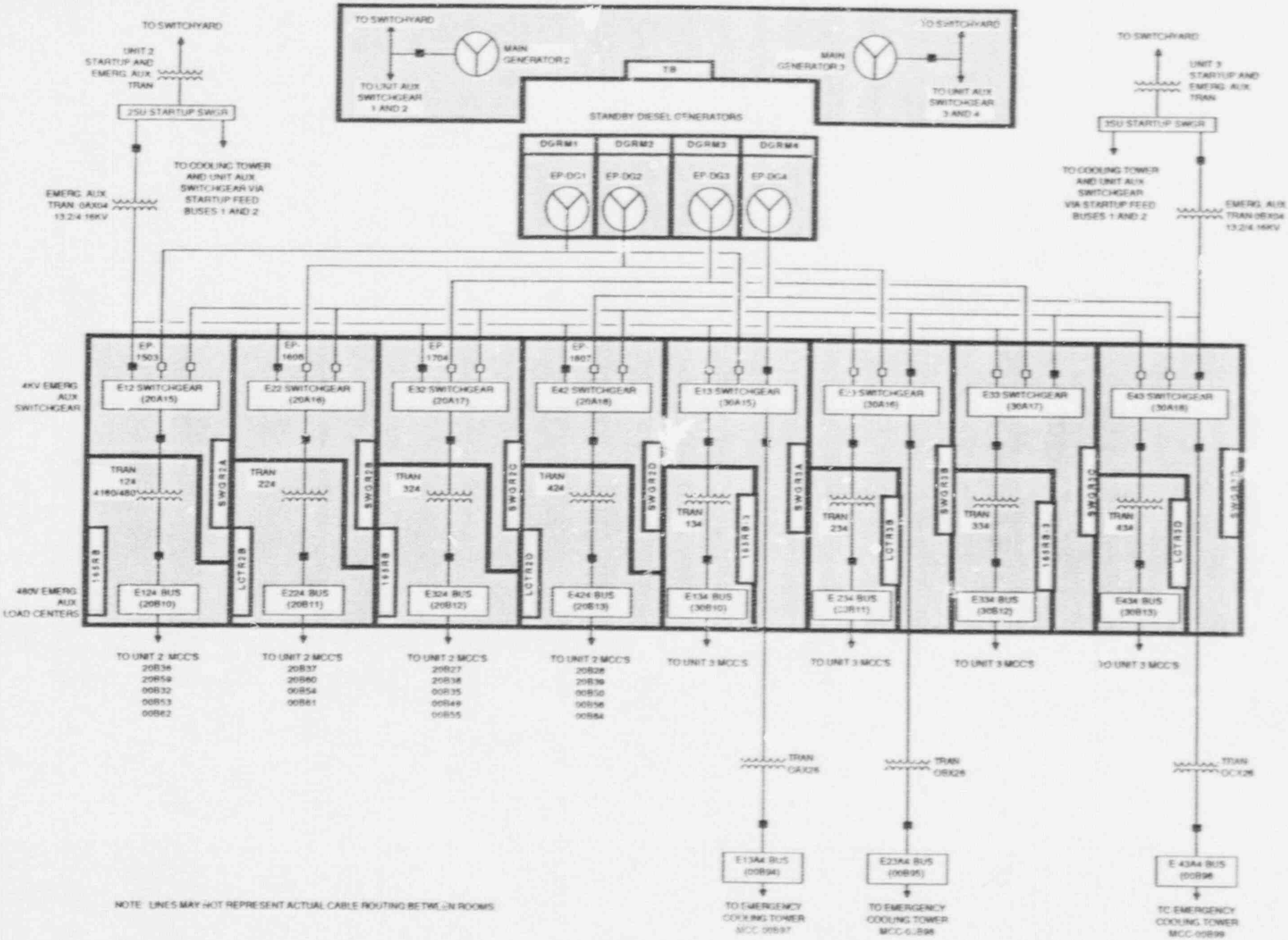


Figure 3.5-2. Peach Bottom 2 and 3 4160 and 480 VAC Electric Power Distribution System Showing Component Locations

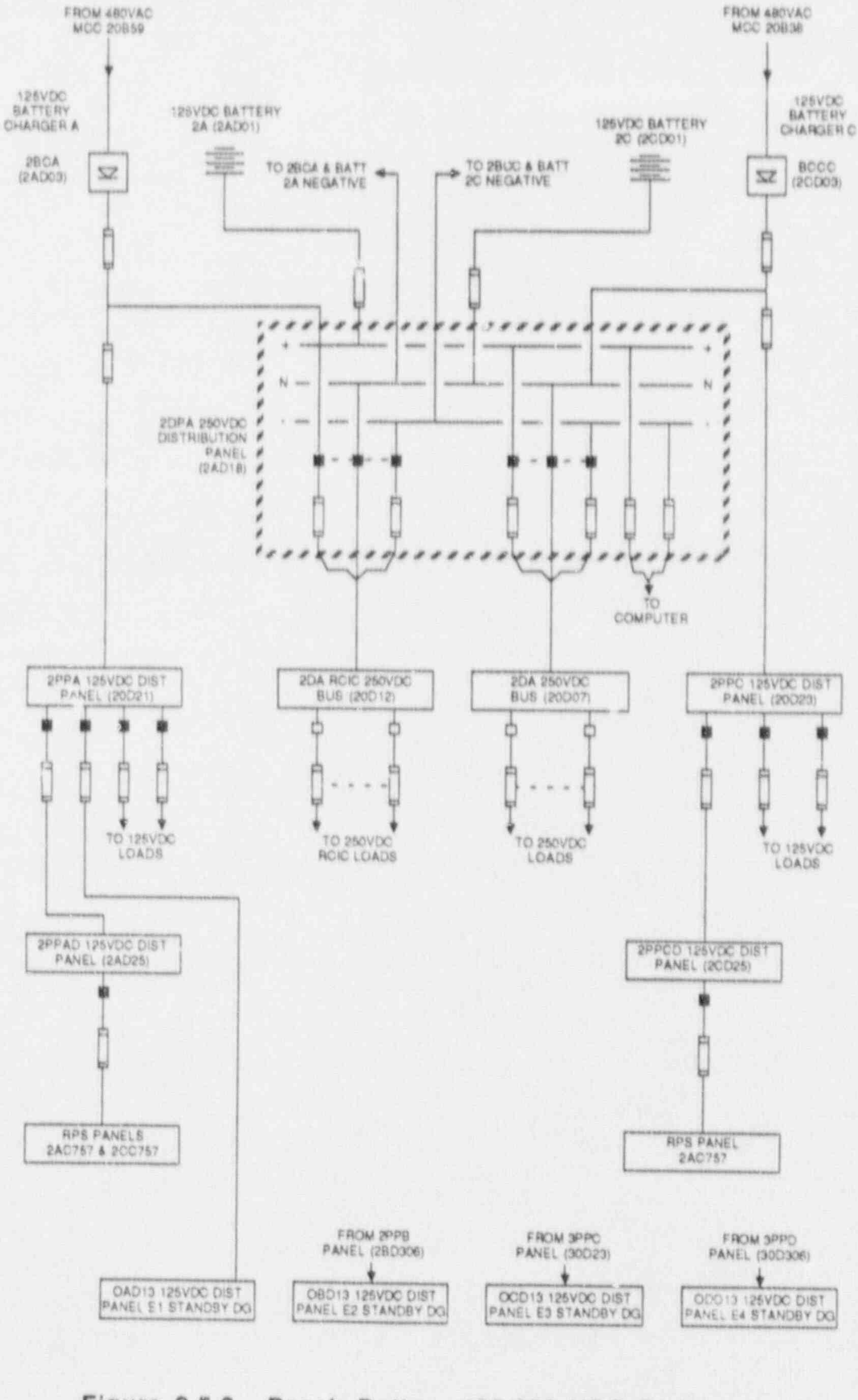
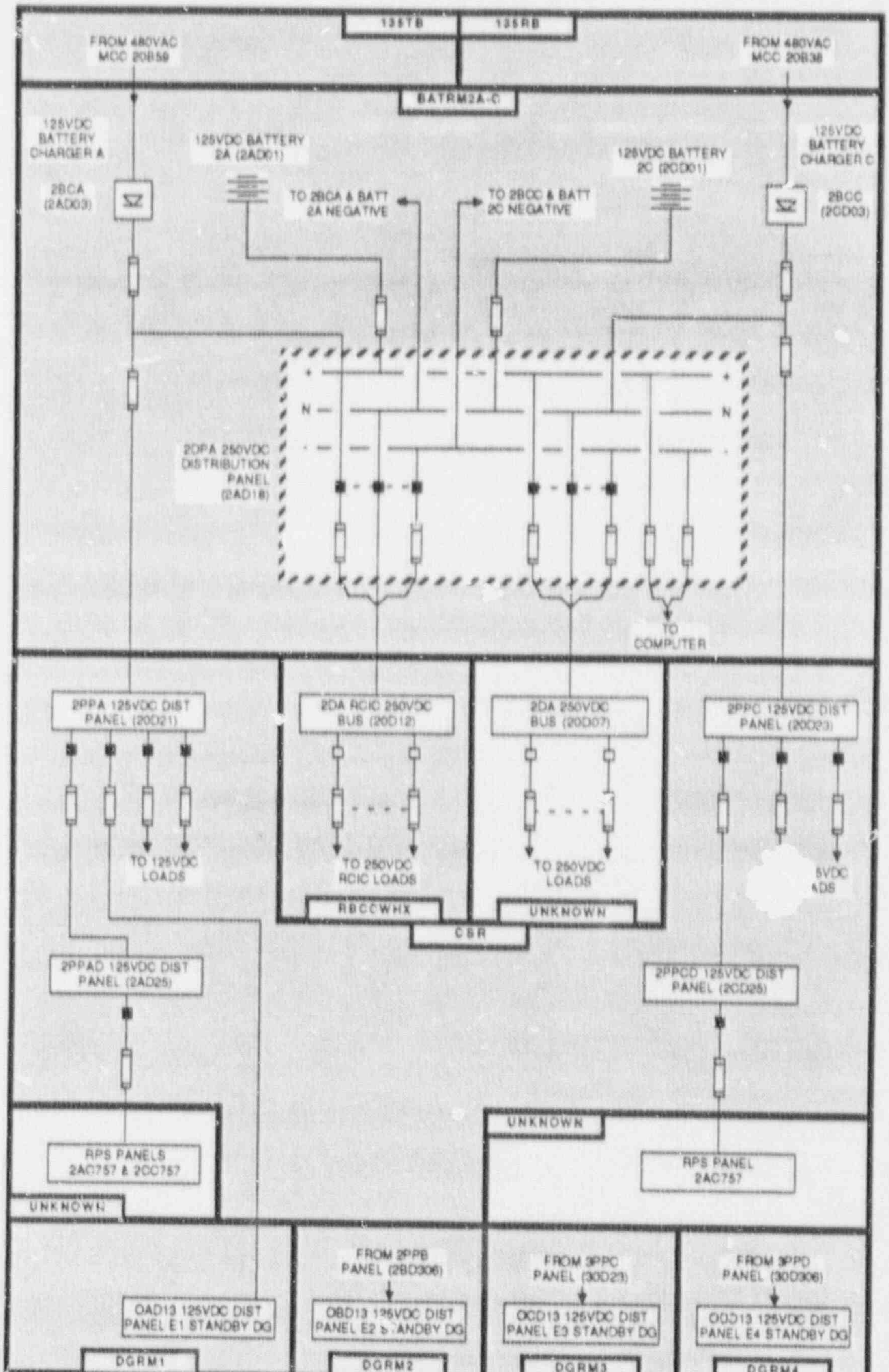


Figure 3.5-3. Peach Bottom 125/250 VDC Division I Electric Power Distribution System



NOTE: LINES MAY NOT REPRESENT ACTUAL CABLE ROUTING BETWEEN ROOMS.

Figure 3.5-4. Peach Bottom 125/250 VDC Division I Electric Power Distribution System Showing Component Locations

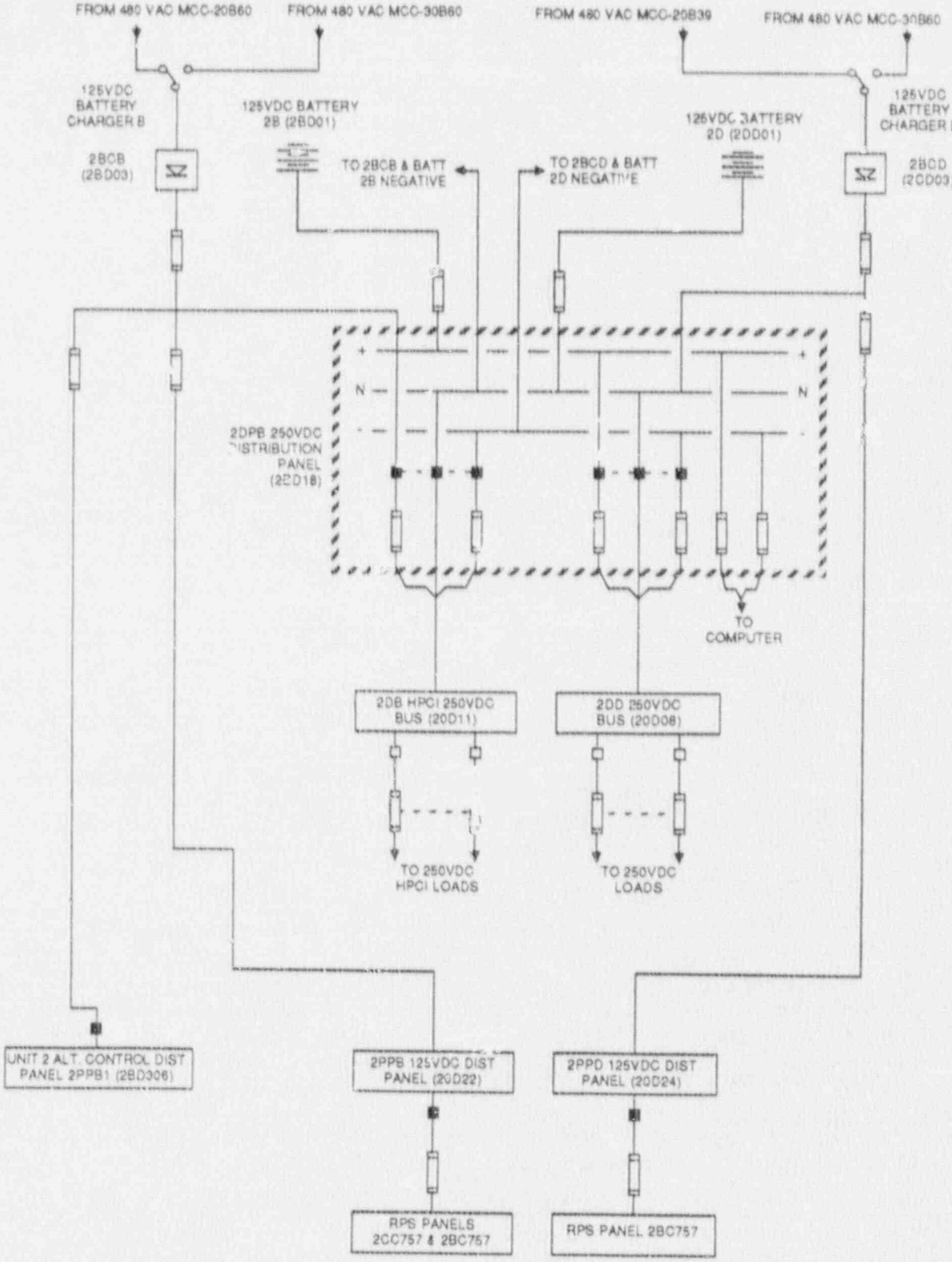
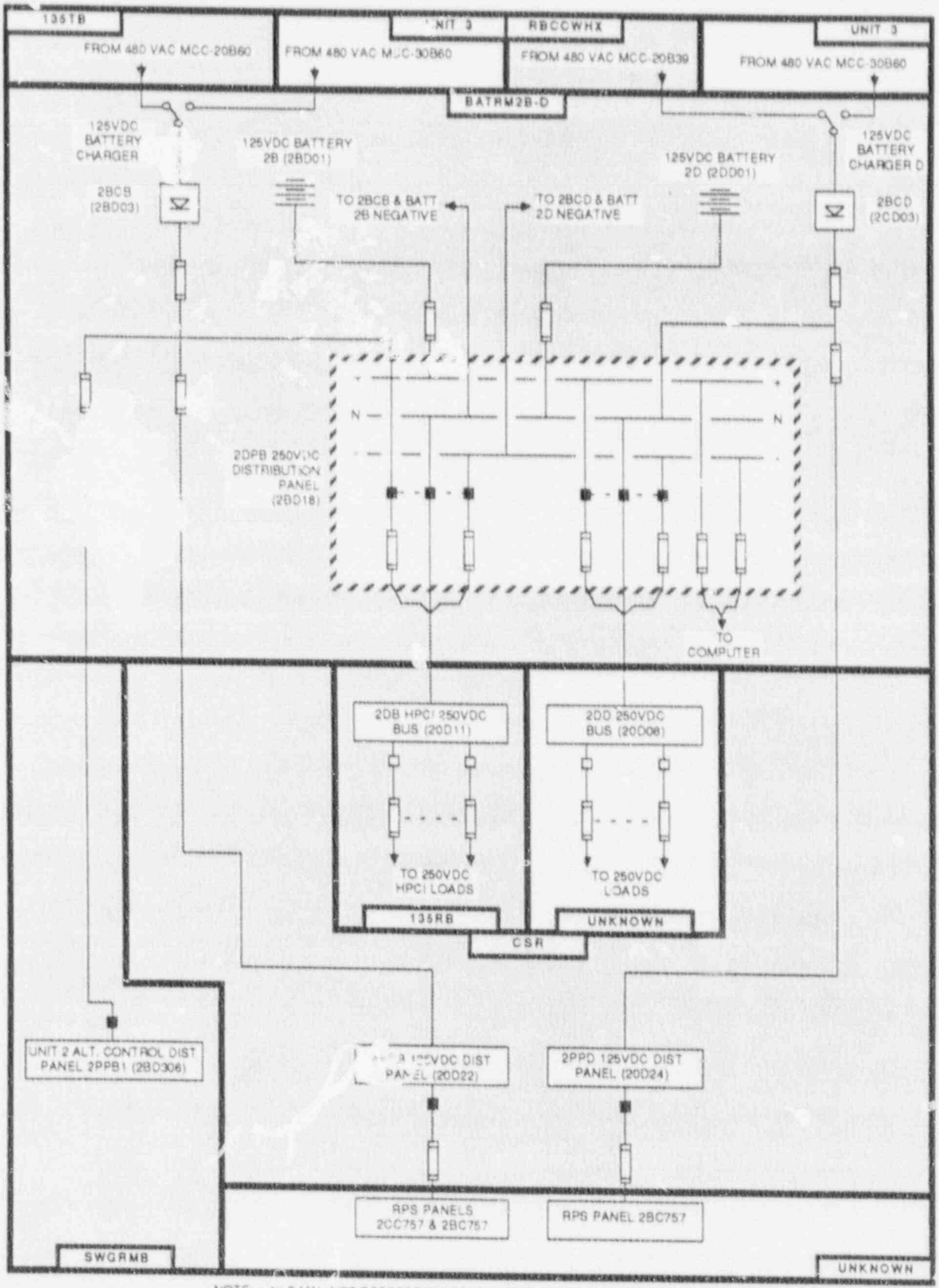


Figure 3.5-5. Peach Bottom 125/250 VDC Division II Electric Power Distribution System



NOTE: LINES MAY NOT REPRESENT ACTUAL CABLE ROUTING BETWEEN ROOMS.

Figure 3.5-6. Peach Bottom 125/250 VDC Division II Electric Power Distribution System Showing Component Locations

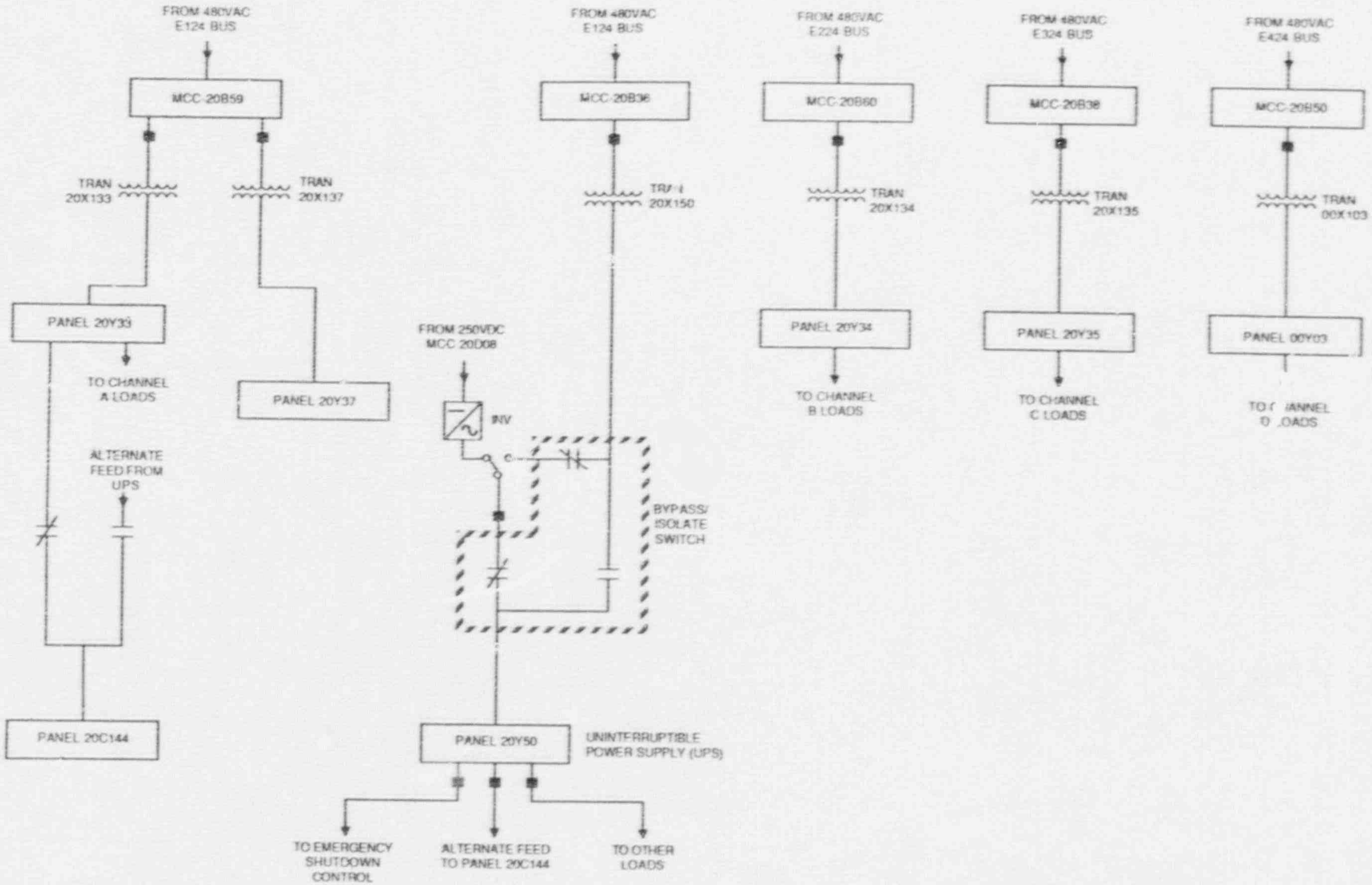


Figure 3.5-7. Peach Bottom 2 120 VAC Instrumentation Power System and Uninterruptible Power Supply

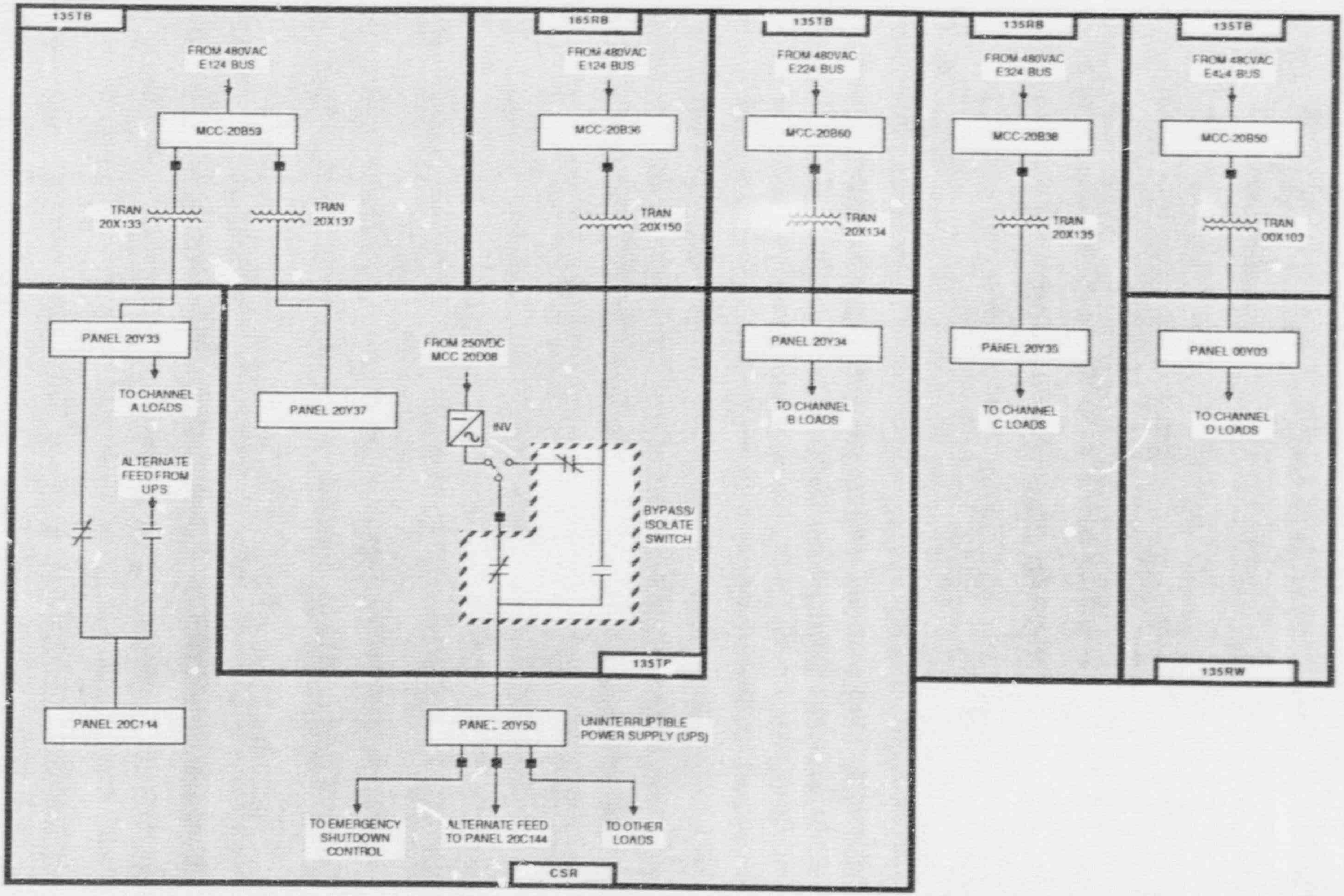


Figure 3.5-8. Peach Bottom 2 120 VAC Instrumentation Power System and Uninterruptible Power Supply Showing Component Locations

Table 3.5-1. Peach Bottom 2 Electric Power System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
BATT-2A	BATT	BATRM2A-C				
BATT-2B	BATT	BATRM2B-D				
BATT-2C	BATT	BATRM2A-C				DC C
BATT-2D	BATT	BATRM2B-D				DC D
BATT-3C	BATT	BATRM3A-C				
BATT-3D	BATT	BATRM3B-D				
BC-2BCA	BC	BATRM2A-C	MCC-20B59	480	135TB	AC A
BC-2BCB	BC	BATRM2B-D	MCC-20B60	480	135TB	AC B
BC-2BCC	BC	BATRM2A-C	MCC-20B38	480	135RB	AC C
DC-2BCD	BC	BATRM2B-D	MCC-20B39	480	RBCCWR	AC D
E12-SWGR	BUS	SWGR2A	EP-DG1	4160	DGRM1	AC A
E12-SWGR	BUS	SWGR2A	OFF SITE			
E124-BUS	BUS	165RB	TRAN-124	480	165RB	AC A
E13-SWGR	BUS	SWGR3A	EP-DG1	4160	DGRM1	AC A
E13-SWGR	BUS	SWGR3A	OFF SITE			
E13A4-BUS	BUS	UNKNOWN	TRAN-OAX26	480	UNKNOWN	AC A
E22-SWGR	BUS	SWGR2B	EP-DG2	4160	DGRM2	AC B
E22-SWGR	BUS	SWGR2B	OFF SITE			
E224-BUS	BUS	LCTR2B	TRAN-224	480	LCTR2B	AC B
E23-SWGR	BUS	SWGR3B	EP-DG2	4160	DGRM2	AC B
E23-SWGR	BUS	SWGR3B	OFF SITE			
E23A4-BUS	BUS	UNKNOWN	TRAN-OBX26	480	UNKNOWN	AC B
E32-SWGR	BUS	SWGR2C	EP-DG3	4160	DGRM3	AC C
E32-SWGR	BUS	SWGR2C	OFF SITE			
E324-BUS	BUS	165RB	TRAN-324	480	165RB	AC C
E33-SWGR	BUS	SWGR3C	EP-DG3	4160	DGRM3	AC C
E33-SWGR	BUS	SWGR3C	OFF SITE			

Table 3.5-1. Peach Bottom 2 Electric Power System Data Summary for Selected Components (Continued)

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
E42-SWGR	BUS	SWGR2D	EP-DG4	4160	DGRM4	AC D
E42-SWGR	BUS	SWGR2D	OFF SITE			
E424-BUS	BUS	LCTR2D	TRAN-424	480	LCTR2D	AC D
E43-SWGR	BUS	SWGR3D	EP-DG4	4160	DGRM4	AC D
E43-SWGR	BUS	SWGR3D	OFF SITE			
E43A4-BUS	BUS	UNKNOWN	TRAN-OCX26	480	UNKNOWN	AC D
EP-1503	CB	SWGR2A				
EP-1606	CB	SWGR2B				
EP-1704	CB	SWGR2C				
EP-1807	CB	SWGR2D				
EP-DG1	DG	DGRM1				
EP-DG2	DG	DGRM2				
EP-DG3	DG	DGRM3				
EP-DG4	DG	DGRM4				
MCC-00B32	MCC	UNKNOWN	E124-BUS	480	165RB	AC A
MCC-00B35	MCC	UNKNOWN	E324-BUS	480	165RB	AC C
MCC-00B49	MCC	135TB	E324-BUS	480	165RB	AC C
MCC-00B50	MCC	135TB	E424-BUS	480	LCTR2D	AC D
MCC-00B53	MCC	DGRM1	E124-BUS	480	165RB	AC A
MCC-00B54	MCC	DGRM2	E224-BUS	480	LCTR2B	AC B
MCC-00B55	MCC	DGRM3	E324-BUS	480	165RB	AC C
MCC-00B56	MCC	DGRM4	E424-BUS	480	LCTR2D	AC D
MCC-00B61	MCC	PUMPHS2	E224-BUS	480	LCTR2B	AC B
MCC-00B62	MCC	PUMPHS2	E124-BUS	480	165RB	AC A
MCC-00B84	MCC	UNKNOWN	E424-BUS	480	LCTR2D	AC D
MCC-00B97	MCC	UNKNOWN	E13A4-BUS	480	UNKNOWN	AC A
MCC-00B98	MCC	UNKNOWN	E23A4-BUS	480	UNKNOWN	AC B

Table 3.5-1. Peach Bottom 2 Electric Power System Data Summary for Selected Components (Continued)

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
MCC-00B99	MCC	UNKNOWN	E43A4-BUS	480	UNKNOWN	AC D
MCC-20B27	MCC	195RB	E324-BUS	480	165RB	AC C
MCC-20B28	MCC	195RB	E424-BUS	480	LCTR2D	AC D
MCC-20B36	MCC	165RB	E124-BUS	480	165RB	AC A
MCC-20B37	MCC	135RB	E224-BUS	480	LCTR2B	AC B
MCC-20B38	MCC	135RB	E324-BUS	480	165RB	AC C
MCC-20B39	MCC	RBCCWHX	E424-BUS	480	LCTR2D	AC D
MCC-20B59	MCC	135TB	E124-BUS	480	165RB	AC A
MCC-20B60	MCC	135TB	E224-BUS	480	LCTR2B	AC B
PNL-00Y03	PNL	135RW	TRAN-00X103	120	135TB	AC D
PNL-20D12	PNL	135RB	PNL 2DPB	250	BATRM2B-D	DC B
PNL-20D12	PNL	RBCCWHX	PNL-2DPA	250	BATRM2A-C	DC A
PNL-20Y33	PNL	CSR	TRAN-20X133	120	135TB	AC A
PNL-20Y34	PNL	CSR	TRAN-20X134	120	135TB	AC B
PNL-20Y35	PNL	135RB	TRAN-20X135	120	135RB	AC C
PNL-2DPA	PNL	BATRM2A-C	BATT-2A	125	BATRM2A-C	DC A
PNL-2DPA	PNL	BATRM2A-C	BC-2BCA	125	BATRM2A-C	DC A
PNL-2DPA	PNL	BATRM2A-C	BATT-2C	125	BATRM2A-C	DC C
PNL-2DPA	PNL	BATRM2A-C	BC-2BCC	125	BATRM2A-C	DC C
PNL-2DPB	PNL	BATRM2B-D	BATT-2B	125	BATRM2B-D	DC B
PNL-2DPB	PNL	BATRM2B-D	BC-2BCB	125	BATRM2B-D	DC B
PNL-2DPB	PNL	BATRM2B-D	BATT-2D	125	BATRM2B-D	DC D
PNL-2DPB	PNL	BATRM2B-D	BC-2BCD	125	BATRM2B-D	DC D
PNL-2PPA	PNL	CSR	PNL-2DPA	250	BATRM2A-C	DC A
PNL-2PPB	PNL	CSR	PNL-2DPB	250	BATRM2B-D	DC B
PNL-2PPB	PNL	CSR	PNL-2DPB	250	BATRM2B-D	DC B
PNL-2PPC	PNL	CSR	PNL-2DPA	250	BATRM2A-C	DC A

Table 3.5-1. Peach Bottom 2 Electric Power System Data Summary for Selected Components (Continued)

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
PNL-3DPA	PNL	BATRM3A-C	BATT-3A	125	BATRM3A-C	DC A
PNL-3DPA	PNL	BATRM3A-C	BC-3BCA	125	BATRM3A-C	DC A
PNL-3DPA	PNL	BATRM3A-C	BATT-3C	125	BATRM3A-C	DC C
PNL-3DPA	PNL	BATRM3A-C	BC-3BCC	125	BATRM3A-C	DC C
PNL-3DPB	PNL	BATRM3B-D	BATT-3B	125	BATRM3B-D	DC B
PNL-3DPB	PNL	BATRM3B-D	BC-3BCB	125	BATRM3B-D	DC B
PNL-3DPB	PNL	BATRM3B-D	BATT-3D	125	BATRM3B-D	DC D
PNL-3DPB	PNL	BATRM3B-D	BC-3BCD	125	BATRM3B-D	DC D
PNL-3PPC	PNL	CSR	PNL-3DPA	250	BATRM3A-C	DC A
PNL-3PPD	PNL	CSR	PNL-3DPB	250	BATRM3B-D	DC B
TRAN-00X103	TRAN	135TB	TRAN-20B50	480	135TB	AC D
TRAN-124	TRAN	165RB	E12-SWGR	4160	SWGR2A	AC A
TRAN-20X133	TRAN	135TB	MCC-20B59	480	135TB	AC A
TRAN-20X134	TRAN	135TB	MCC-20B60	480	135TB	AC B
TRAN-20X135	TRAN	135RB	MCC-20B38	480	135RB	AC C
TRAN-224	TRAN	LCTR2B	E22-SWGR	4160	SWGR2B	AC B
TRAN-324	TRAN	165RB	E32-SWGR	4160	SWGR2C	AC C
TRAN-324	TRAN	LCTR2D	E42-SWGR	4160	SWGR2D	AC D
TRAN-OAX26	TRAN	UNKNOWN	E13-SWGR	4160	SWGR3A	AC A
TRAN-OBX26	TRAN	UNKNOWN	E23-SWGR	4160	SWGR3B	AC B
TRAN-OCX26	TRAN	UNKNOWN	E43-SWG4	4160	SWGR3D	AC D

Table 3.5-2. Peach Bottom 2 4160 and 480 VAC Power Distribution Summary

Diesel Generator	Location	4160 Switchgear	Location	480 Load Center	Location	480 MCCs	Location	Notes
Diesel 1 (E1)	DGRM1	E12 (2A015)	SWGR2A	E124 (2B010)	165RB	20B36	165RB	Emergency MCC
						20B59	135TB	Inst panels & BCs & Misc
						00B32	?	Off-gas stack MCC
						00B53	DGRM1	Diesel 1 auxiliary MCC
						00B62	PUMPHS2	Service water loads
Diesel 2 (E2)	DGRM2	E22 (2A016)	SWGR2B	E224 (2B011)	LCTR2B	20B37	135RB	Emergency MCC
						20B60	135TB	Inst panels & BCs & Misc
						00B54	DGRM2	Diesel 2 auxiliary MCC
						00B61	PUMPHS2	Service water loads
Diesel 3 (E3)	DGRM3	E32 (2A017)	SWGR2C	E324 (2B012)	165RB	20B27	?	Rx Bldg fans & Misc
						20B38	135RB	Emergency MCC
						00B35	?	Off-gas Stack MCC
						00B49	135TB	Fans & A/C units
						00B55	DGRM3	Diesel 3 auxiliary MCC
Diesel 4 (E4)	DGRM4	E42 (2A018)	SWGR2D	E424 (2B013)	LCTR2D	20B28	195RB	Rx Bldg fans & Misc
						20B39	RBCCWHX	Emergency MCC
						00B50	135TB	Fans & A/C units
						00B56	DGRM4	Diesel 4 auxiliary MCC
						00B84	?	Off-gas Stack MCC

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
BATT-2A	125	DC A	BATRM2A-C	EP	PNL-2DPA	PNL	BATRM2A-C
BATT-2B	125	DC B	BATRM2B-D	EP	PNL-2DPB	PNL	BATRM2B-D
BATT-2C	125	DC C	BATRM2A-C	EP	PNL-2DPA	PNL	BATRM2A-C
BATT-2D	125	DC D	BATRM2B-D	EP	PNL-2DPB	PNL	BATRM2B-D
BATT-3A	125	DC A	BATRM3A-C	EP	PNL-3DPA	PNL	BATRM3A-C
BATT-3B	125	DC B	BATRM3B-D	EP	PNL-3DPB	PNL	BATRM3B-D
BATT-3C	125	DC C	BATRM3A-C	EP	PNL-3DPA	PNL	BATRM3A-C
BATT-3D	125	DC D	BATRM3B-D	EP	PNL-3DPB	PNL	BATRM3B-D
BC-2BCA	125	DC A	BATRM2A-C	EP	PNL-2DPA	PNL	BATRM2A-C
BC-2BCB	125	DC B	BATRM2B-D	EP	PNL-2DPB	PNL	BATRM2B-D
BC-2BCC	125	DC C	BATRM2A-C	EP	PNL-2DPA	PNL	BATRM2A-C
BC-2BCD	125	DC D	BATRM2B-D	EP	PNL-2DPB	PNL	BATRM2B-D
BC-3BCA	125	DC A	BATRM3A-C	EP	PNL-3DPA	PNL	BATRM3A-C
BC-3BCB	125	DC B	BATRM3B-D	EP	PNL-3DPB	PNL	BATRM3B-D
BC-3BCC	125	DC C	BATRM3A-C	EP	PNL-3DPA	PNL	BATRM3A-C
BC-3BCD	125	DC D	BATRM3B-D	EP	PNL-3DPB	PNL	BATRM3B-D
E12-SWGR	4160	AC A	SWGR2A	CRD	2AP39	MDP	UNKNOWN
E12-SWGR	4160	AC A	SWGR2A	ECCS	2AP35	MDP	RHRA
E12-SWGR	4160	AC A	SWGR2A	ECCS	2AP37	MDP	CSARM
E12-SWGR	4160	AC A	SWGR2A	EP	TRAN-124	TRAN	165RB
E12-SWGR	4160	AC A	SWGR2A	HPSW	2AP42	MDP	PUMPHS2
E124-BUS	480	AC A	165RB	EP	MCC-00B32	MCC	UNKNOWN
E124-BUS	480	AC A	165RB	EP	MCC-00B53	MCC	DGRM1
E124-BUS	480	AC A	165RB	EP	MCC-00B62	MCC	PUMPHS2
E124-BUS	480	AC A	165RB	EP	MCC-20B36	MCC	165RB
E124-BUS	480	AC A	165RB	EP	MCC-20B59	MCC	135TB
E13-SWGR	4160	AC A	SWGR3A	EP	TRAN-OAX26	TRAN	UNKNOWN
E13A4-BUS	480	AC A	UNKNOWN	EP	MCC-00B97	MCC	UNKNOWN
E13A4-BUS	480	AC A	UNKNOWN	ESW	OBK32	FAN	ECOOLTWR
E22-SWGR	4160	AC B	SWGR2B	ECCS	2BP35	MDP	RHRB
E22-SWGR	4160	AC B	SWGR2B	ECCS	2BP37	MDP	CSBRM

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2 (Continued)

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
E22-SWGR	4160	AC B	SWGR2B	EP	TRAN-224	TRAN	LCTR2B
E22-SWGR	4160	AC B	SWGR2B	ESW	OAP163	MDP	127DGBLDG
E22-SWGR	4160	AC B	SWGR2B	ESW	OAP57	MDP	PUMPHS2
E22-SWGR	4160	AC B	SWGR2B	HPSW	2BP42	MDP	PUMPHS2
E224-BUS	480	AC B	LCTR2B	EP	MCC-00B54	MCC	DGRM2
E224-BUS	480	AC B	LCTR2B	EP	MCC-00B61	MCC	PUMPHS2
E224-BUS	480	AC B	LCTR2B	EP	MCC-20B37	MCC	135RB
E224-BUS	480	AC B	LCTR2B	EP	MCC-20B60	MCC	135TB
E23-SWGR	4160	AC B	SWGR3B	EP	TRAN-OBX26	TRAN	UNKNOWN
E23A4-BUS	480	AC B	UNKNOWN	EP	MCC-00B98	MCC	UNKNOWN
E23A4-BUS	480	AC B	UNKNOWN	ESW	OAK32	FAN	ECOOLTWR
E32-SWGR	4160	AC C	SWGR2C	ECCS	2CP35	MDP	RHRC
E32-SWGR	4160	AC C	SWGR2C	ECCS	2CP37	MDP	CSCRM
E32-SWGR	4160	AC C	SWGR2C	EP	TRAN-324	TRAN	165RB
E32-SWGR	4160	AC C	SWGR2C	ESW	OBP163	MDP	127DGBLDG
E32-SWGR	4160	AC C	SWGR2C	ESW	OBP57	MDP	PUMPHS3
E32-SWGR	4160	AC C	SWGR2C	HPSW	2CP42	MDP	PUMPHS2
E324-BUS	480	AC C	165RB	EP	MCC-00B35	MCC	UNKNOWN
E324-BUS	480	AC C	165RB	EP	MCC-00B49	MCC	135TB
E324-BUS	480	AC C	165RB	EP	MCC-00B55	MCC	DGRM3
E324-BUS	480	AC C	165RB	EP	MCC-20B27	MCC	195RB
E324-BUS	480	AC C	165RB	EP	MCC-20B38	MCC	135RB
E42-SWGR	4160	AC D	SWGR2D	CRD	2BP39	MDP	UNKNOWN
E42-SWGR	4160	AC D	SWGR2D	ECCS	2DP35	MDP	RHRD
E42-SWGR	4160	AC D	SWGR2D	ECCS	2DP37	MDP	CSDRM
E42-SWGR	4160	AC D	SWGR2D	EP	TRAN-324	TRAN	LCTR2D
E42-SWGR	4160	AC D	SWGR2D	HPSW	2DP42	MDP	PUMPHS2
E424-BUS	480	AC D	LCTR2D	EP	MCC-00B50	MCC	135TB
E424-BUS	480	AC D	LCTR2D	EP	MCC-00B56	MCC	DGRM4
E424-BUS	480	AC D	LCTR2D	EP	MCC-00B84	MCC	UNKNOWN
E424-BUS	480	AC D	LCTR2D	EP	MCC-20B28	MCC	195RB

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2 (Continued)

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
E424-BUS	480	AC D	LCTR2D	EP	MCC-20B39	MCC	RBCCWHX
E43-SWG4	4160	AC D	SWGR3D	EP	TRAN-OCX26	TRAN	UNKNOWN
E43A4-BUS	480	AC D	UNKNOWN	EP	MCC-00B99	MCC	UNKNOWN
E43A4-BUS	480	AC D	UNKNOWN	ESW	OCK32	FAN	ECOOLTWR
EP-DG1	4160	AC A	DGRM1	EP	E12-SWGR	BUS	SWGR2A
EP-DG1	4160	AC A	DGRM1	EP	E13-SWGR	BUS	SWGR3A
EP-DG2	4160	AC B	DGRM2	EP	E22-SWGR	BUS	SWGR2B
EP-DG2	4160	AC B	DGRM2	EP	E23-SWGR	BUS	SWGR3B
EP-DG3	4160	AC C	DGRM3	EP	E32-SWGR	BUS	SWGR2C
EP-DG3	4160	AC C	DGRM3	EP	E33-SWGR	BUS	SWGR3C
EP-DG4	4160	AC D	DGRM4	EP	E42-SWGR	BUS	SWGR2D
EP-DG4	4160	AC D	DGRM4	EP	E43-SWGR	BUS	SWGR3D
MCC-00B49	480	AC C	135TB	HVAC	OAV34	FAN	UNKNOWN
MCC-00B49	480	AC C	135TB	HVAC	OAV35	FAN	UNKNOWN
MCC-00B49	480	AC C	135TB	HVAC	OAV36	FAN	UNKNOWN
MCC-00B50	480	AC D	135TB	HVAC	OBV34	FAN	UNKNOWN
MCC-00B50	480	AC D	135TB	HVAC	OBV35	FAN	UNKNOWN
MCC-00B50	480	AC D	135TB	HVAC	OBV36	FAN	UNKNOWN
MCC-00B53	480	AC A	DGRM1	HPSW	2486	MOV	127DGBLDG
MCC-00B53	480	AC A	DGRM1	HVAC	OAV64	FAN	151DGBLDG
MCC-00B53	480	AC A	DGRM1	HVAC	OAV91	FAN	151DGBLDG
MCC-00B54	480	AC B	DGRM2	HVAC	OBV64	FAN	151DGBLDG
MCC-00B54	480	AC B	DGRM2	HVAC	OBV91	FAN	151DGBLDG
MCC-00B55	480	AC C	DGRM3	HPSW	2803	MOV	127DGBLDG
MCC-00B55	480	AC C	DGRM3	HVAC	OCV64	FAN	151DGBLDG
MCC-00B55	480	AC C	DGRM3	HVAC	OCV91	FAN	151DGBLDG
MCC-00B56	480	AC D	DGRM4	ESW	498	MOV	127DGBLDG
MCC-00B56	480	AC D	DGRM4	HVAC	ODV64	FAN	151DGBLDG
MCC-00B56	480	AC D	DGRM4	HVAC	ODV91	FAN	151DGBLDG
MCC-00B61	480	AC B	PUMPHS2	ESW	2209	MOV	PUMPHS2
MCC-00B61	480	AC B	PUMPHS2	ESW	2213	MOV	PUMPHS2

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2 (Continued)

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
MCC-00B61	480	AC B	PUMPHS2	ESW	2233B	MOV	PUMPHS2
MCC-00B61	480	AC B	PUMPHS2	ESW	3233B	MOV	PUMPHS3
MCC-00B62	480	AC A	PUMPHS2	ESW	2233A	MOV	PUMPHS2
MCC-00B62	480	AC A	PUMPHS2	ESW	3213	MOV	PUMPHS3
MCC-00B62	480	AC A	PUMPHS2	ESW	3233A	MOV	PUMPHS3
MCC-00B97	480	AC A	UNKNOWN	ESW	0501B	MOV	ECOOLTWR
MCC-00B97	480	AC A	UNKNOWN	HPSW	0502B	MOV	ECOOLTWR
MCC-00B98	480	AC B	UNKNOWN	ESW	0501A	MOV	ECOOLTWR
MCC-00B98	480	AC B	UNKNOWN	ESW	2804A	MOV	ECOOLTWR
MCC-00B98	480	AC B	UNKNOWN	HPSW	0502A	MOV	ECOOLTWR
MCC-00B99	480	AC D	UNKNOWN	ESW	0501C	MOV	ECOOLTWR
MCC-00B99	480	AC D	UNKNOWN	ESW	3604B	MOV	ECOOLTWR
MCC-00B99	480	AC D	UNKNOWN	ESW	841	MOV	ECOOLTWR
MCC-00B99	480	AC D	UNKNOWN	HPSW	0502C	MOV	ECOOLTWR
MCC-20B36	480	AC A	165RB	ECCS	10-13A	MOV	RHRA
MCC-20B36	480	AC A	165RB	ECCS	10-15A	MOV	RHRA
MCC-20B36	480	AC A	165RB	ECCS	10-25A	MOV	IVRMA
MCC-20B36	480	AC A	165RB	ECCS	10-32	MOV	RC
MCC-20B36	480	AC A	165RB	ECCS	14-7A	MOV	CSARM
MCC-20B36	480	AC A	165RB	ECCS	23-15	MOV	RC
MCC-20B36	480	AC A	165RB	ECCS	6-29A	MOV	RC
MCC-20B36	480	AC A	165RB	HPSW	89A	MOV	RHRA
MCC-20B36	480	AC A	165RB	HVAC	2AV22	FAN	RCICRM
MCC-20B36	480	AC A	165RB	HVAC	2AV24	FAN	CSARM
MCC-20B36	480	AC A	165RB	HVAC	2AV25	FAN	RHRA
MCC-20B36	480	AC A	165RB	HVAC	2BV22	FAN	RCICRM
MCC-20B36	480	AC A	165RB	HVAC	2BV24	FAN	CSARM
MCC-20B36	480	AC A	165RB	HVAC	2BV25	FAN	RHRA
MCC-20B36	480	AC A	165RB	RCS	1-74	MOV	RC
MCC-20B36	480	AC A	165RB	RCS	10-18	MOV	RC
MCC-20B36	480	AC A	165RB	RCS	12-15	MOV	RC

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2 (Continued)

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
MCC-20B36	480	AC A	165RB	RCS	23-15	MOV	RC
MCC-20B37	480	AC B	135RB	ECCS	10-13B	MOV	RHRB
MCC-20B37	480	AC B	135RB	ECCS	10-15B	MOV	RHRB
MCC-20B37	480	AC B	135RB	ECCS	14-7B	MOV	CSBRM
MCC-20B37	480	AC B	135RB	HPSW	89B	MOV	RHRB
MCC-20B37	480	AC B	135RB	HVAC	2AV23	FAN	HPCIRM
MCC-20B37	480	AC B	135RB	HVAC	2BV23	FAN	HPCIRM
MCC-20B37	480	AC B	135RB	HVAC	2EV24	FAN	CSBRM
MCC-20B37	480	AC B	135RB	HVAC	2EV25	FAN	RHRB
MCC-20B37	480	AC B	135RB	HVAC	2FV24	FAN	CSBRM
MCC-20B37	480	AC B	135RB	HVAC	2FV25	FAN	RHRB
MCC-20B37	480	AC B	135RB	RCIC	13-15	MOV	RC
MCC-20B37	480	AC B	135RB	RCIC	6-29B	MOV	RC
MCC-20B37	380	AC B	135RB	RCS	13-15	MOV	RC
MCC-20B38	480	AC C	135RB	ECCS	10-13C	MOV	RHRC
MCC-20B38	480	AC C	135RB	ECCS	10-154A	MOV	TOR
MCC-20B38	480	AC C	135RB	ECCS	10-15C	MOV	RHRC
MCC-20B38	480	AC C	135RB	ECCS	10-20	MOV	TOR
MCC-20B38	480	AC C	135RB	ECCS	10-25A	MOV	IVRMA
MCC-20B38	480	AC C	135RB	ECCS	10-26A	MOV	IVRMA
MCC-20B38	480	AC C	135RB	ECCS	10-31A	MOV	IVRMA
MCC-20B38	480	AC C	135RB	ECCS	10-34A	MOV	TOR
MCC-20B38	480	AC C	135RB	ECCS	10-38A	MOV	TOR
MCC-20B38	480	AC C	135RB	ECCS	10-39A	MOV	TOR
MCC-20B38	480	AC C	135RB	ECCS	14-11A	MOV	IVRMA
MCC-20B38	480	AC C	135RB	ECCS	14-12A	MOV	IVRMA
MCC-20B38	480	AC C	135RB	ECCS	14-26A	MOV	IVRMA
MCC-20B38	480	AC C	135RB	ECCS	14-7C	MOV	CSCRM
MCC-20B38	480	AC C	135RB	EP	BC-2BCC	BC	BATRM2A-C
MCC-20B38	480	AC C	135RB	EP	TRAN-20X135	TRAN	135RB
MCC-20B38	480	AC C	135RB	HPSW	89C	MOV	RHRC

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2 (Continued)

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
MCC-20B38	480	AC C	135RB	HVAC	2CV24	FAN	CSCRM
MCC-20B38	480	AC C	135RB	HVAC	2CV25	FAN	RHRC
MCC-20B38	480	AC C	135RB	HVAC	2DV24	FAN	CSCRM
MCC-20B38	480	AC C	135RB	HVAC	2DV25	FAN	RHRC
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-13D	MOV	RHRD
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-154B	MOV	TOR
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-15D	MOV	RHRD
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-25B	MOV	IVRMB
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-25B	MOV	IVRMB
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-26B	MOV	IVRMB
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-31B	MOV	IVRMB
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-34B	MOV	TOR
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-38B	MOV	TOR
MCC-20B39	480	AC D	RBCCWHX	ECCS	10-39B	MOV	TOR
MCC-[illegible]39	480	AC D	RBCCWHX	ECCS	14-11B	MOV	IVRMB
MCC-20B39	480	AC D	RBCCWHX	ECCS	14-12B	MOV	IVRMB
MCC-20B39	480	AC D	RBCCWHX	ECCS	14-26B	MOV	IVRMB
MCC-20B39	480	AC D	RBCCWHX	ECCS	14-7D	MOV	CSDRM
MCC-20B39	480	AC D	RBCCWHX	EP	DC-2BCD	BC	BATRM2B-D
MCC-20B39	480	AC D	RBCCWHX	ESW	2972	MOV	RBCCWHX
MCC-20B39	480	AC D	RBCCWHX	HPSW	89D	MOV	RHRD
MCC-20B39	480	AC D	RBCCWHX	HVAC	2GV24	FAN	CSDRM
MCC-20B39	480	AC D	RBCCWHX	HVAC	2GV25	FAN	RHRD
MCC-20B39	480	AC D	RBCCWHX	HVAC	2HV24	FAN	CSDRM
MCC-20B39	480	AC D	RBCCWHX	HVAC	2HV25	FAN	RHRD
MCC-20B59	480	AC A	135TB	EP	BC-2BCA	BC	BATRM2A-C
MCC-20B59	480	AC A	135TB	EP	TRAN-20X133	TRAN	135TB
MCC-20B60	480	AC B	135TB	EP	BC-2BCB	BC	BATRM2B-D
MCC-20B60	480	AC B	135TB	EP	TRAN-20X134	TRAN	135TB
OFF SITE				EP	E12-SWGR	BUS	SWGR2A
OFF SITE				EP	E13-SWGR	BUS	SWGR3A

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2 (Continued)

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
OFF SITE				EP	E22-SWGR	BUS	SWGR2B
OFF SITE				EP	E23-SWGR	BUS	SWGR3B
OFF SITE				EP	E32-SWGR	BUS	SWGR2C
OFF SITE				EP	E33-SWGR	BUS	SWGR3C
OFF SITE				EP	E42-SWGR	BUS	SWGR2D
OFF SITE				EP	E43-SWGR	BUS	SWGR3D
PNL-20D11	250	DC B	135RB	ECCS	10-33	MOV	IVRMA
PNL-20D11	250	DC B	135RB	ECCS	23-14	MOV	HPCIRM
PNL-20D11	250	DC B	135RB	ECCS	23-16	MOV	IVRMB
PNL-20D11	250	DC B	135RB	ECCS	23-17	MOV	HPCIRM
PNL-20D11	250	DC B	135RB	ECCS	23-19	MOV	MSIVRM
PNL-20D11	250	DC B	135RB	ECCS	23-20	MOV	HPCIRM
PNL-20D11	250	DC B	135RB	ECCS	23-21	MOV	TOR
PNL-20D11	250	DC B	135RB	ECCS	23-24	MOV	TOR
PNL-20D11	250	DC B	135RB	ECCS	23-31	MOV	TOR
PNL-20D11	250	DC B	135RB	ECCS	23-57	MOV	HPCIRM
PNL-20D11	250	DC B	135RB	ECCS	23-58	MOV	HPCIRM
PNL-20D11	250	DC B	135RB	ECCS	HPCI-AUX-LUB	MDP	HPCIRM
PNL-20D11	250	DC B	135RB	RCS	1-77	MOV	MSIVRM
PNL-20D11	250	DC B	135RB	RCS	10-17	MOV	IVRMB
PNL-20D11	250	DC B	135RB	RCS	12-18	MOV	165RBVLVPIT
PNL-20D11	250	DC B	135RB	RCS	23-16	MOV	IVRMB
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-131	MOV	RCICRM
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-16	MOV	MSIVRM
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-18	MOV	RCICRM
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-20	MOV	RCICRM
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-21	MOV	MSIVRM
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-30	MOV	TOR
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-39	MOV	RCICRM
PNL-20D12	250	DC A	RBCCWHX	RCIC	13-41	MOV	RCICRM
PNL-20D12	250	DC A	RBCCWHX	RCS	13-16	MOV	MSIVRM

Table 3.5-3. Partial Listing of Electrical Sources and Loads at Peach Bottom 2 (Continued)

POWER SOURCE	VOLTAGE	EMERG LOAD GRP	POWER SOURCE LOCATION	LOAD SYSTEM	LOAD COMPONENT ID	COMP TYPE	COMPONENT LOCATION
PNL-2DPA	250	DC A	BATRM2A-C	EP	PNL-20D12	PNL	RBCCWHX
PNL-2DPA	250	DC A	BATRM2A-C	EP	PNL-2PPA	PNL	CSR
PNL-2DPA	250	DC A	BATRM2A-C	EP	PNL-2PPC	PNL	CSR
PNL-2DPB	250	DC B	BATRM2B-D	EP	PNL-20D12	PNL	135RB
PNL-2DPB	250	DC B	BATRM2B-D	EP	PNL-2PPB	PNL	CSR
PNL-2DPB	250	DC B	BATRM2B-D	EP	PNL-2PPB	PNL	CSR
PNL-3DPA	250	DC A	BATRM3A-C	EP	PNL-3PPC	PNL	CSR
PNL-3DPB	250	DC B	BATRM3B-D	EP	PNL-3PPD	PNL	CSR
TRAN-00X103	120	AC D	135TB	EP	PNL-00Y03	PNL	135RW
TRAN-124	480	AC A	165RB	EP	E124-BUS	BUS	165RB
TRAN-20B50	480	AC D	135TB	EP	TRAN-00X103	TRAN	135TB
TRAN-20X133	120	AC A	135TB	EP	PNL-20Y33	PNL	CSR
TRAN-20X134	120	AC B	135TB	EP	PNL-20Y34	PNL	CSR
TRAN-20X135	120	AC C	135RB	EP	PNL-20Y35	PNL	135RB
TRAN-224	480	AC B	LCTR2B	EP	E224-BUS	BUS	LCTR2B
TRAN-324	480	AC C	165RB	EP	E324-BUS	BUS	165RB
TRAN-424	480	AC D	LCTR2D	EP	E424-BUS	BUS	LCTR2D
TRAN-OAX26	480	AC A	UNKNOWN	EP	E13A4-BUS	BUS	UNKNOWN
TRAN-OBX26	480	AC B	UNKNOWN	EP	E23A4-BUS	BUS	UNKNOWN
TRAN-OCX26	480	AC D	UNKNOWN	EP	E43A4-BUS	BUS	UNKNOWN
UNKNOWN				ESW	00P186	MDP	ECOOLTWR
UNKNOWN				ESW	2804B	MOV	ECOOLTWR
UNKNOWN				ESW	3804A	MOV	ECOOLTWR
UNKNOWN				ESW	3972	MOV	RBCCWHX3

3.6 CONTROL ROD DRIVE HYDRAULIC SYSTEM (CRDHS)

3.6.1 System Function

The CRDHS supplies pressurized water to operate and cool the control rod drive mechanisms during normal operation. This system implements a scram command from the reactor protection system (RPS) and drives control rods rapidly into the reactor. The CRDHS also can provide makeup water to the RCS.

3.6.2 System Definition

The CRDHS con' ᵃ of high-head, low-flow pumps, piping, filters, control valves, one hydraulic con. . unit for each control rod drive mechanism, and instrumentation. Water is supplied from condensate and from the condensate storage tank. The CRDHS also includes scram valves, scram accumulators, and a scram discharge volume (dump tank).

Details of the scram portion of typical BWR CRDHS are shown in Figure 3.6-1 (adapted from Ref. 1).

3.6.3 System Operation

During normal operation the CRDHS pumps provide a constant flow for drive mechanism cooling and system pressure stabilization. Excess water not used for cooling is discharged to the RCS. Control rods are driven in or out by the coordinated operation of the direction control valves. Insertion speed is controlled by flow through the insert speed control valve. Rod motion may be either stepped or continuous.

A reactor scram is implemented by pneumatic scram valves in the CRDHS. An inlet scram valve opens to align the insert side of each control rod drive mechanism (CRDM) to its scram accumulator. An outlet scram valve opens to vent the opposite side of each CRDM to the dump tank (or discharge volume). This coordinated action results in rapid insertion of control rods into the reactor.

Although not intended as a makeup system, the CRDHS can provide a source of cooling water to the RCS during vessel isolation. It is noted in NUREG-0626 (Ref. 2), that this function is particularly important for some BWR/1 and BWR/2 plants for which the CRDHS is the primary source of makeup on vessel isolation. In later model BWR plants, such as Peach Bottom, RCS makeup at high pressure is performed by the RCIC (see Section 3.2) and HPCI (see Section 3.3) systems. The maximum RCS makeup rate of the CRDHS with both pumps operating at Peach Bottom is about 210 gpm with the RCS at operating pressure and approximately 300 gpm when the RCS is depressurized (Ref. 3).

3.6.4 System Success Criteria

For the scram function to be accomplished, the following actions must occur in the CRDHS:

- A scram signal must be transmitted by the RPS to the actuated devices (i.e., pilot valves) in the CRDHS.
- The pneumatic inlet scram valve and outlet scram valve must open in the hydraulic control units (HCUs) for the individual control rod drives. This is accomplished by venting the instrument air supply to each valve as follows:
  - Both scram pilot valves in each HCU must be deenergized, or
  - Either backup scram pilot valve must be energized.
- A high-pressure water source must be available from the scram accumulator in each HCU.
- A hydraulic vent path to the scram discharge volume must be available and sufficient collection volume must exist in the scram discharge volume.
- A specified number of control rods must responds and insert into the reactor core (specific number needed is not known).

3.6.5 Component Information

A. Control rod drive pumps
   1. Rated capacity: 100% (for control rod drive function)
   2. Flow rate: 100 gpm @ 3675 ft. head, est. (1593 psid, est.)
   3. Type: centrifugal

B. Condensate Storage Tanks
   1. Capacity: 200,000 gallons

3.6.6 Support Systems and Interfaces

A. Control Signals
   1. Automatic
      The RPS transmits scram commands to solenoid pilot valves which control the pneumatic scram valves.

   2. Remote Manual
      a. A reactor scram can be initiated manually from the control room.
      b. The CRDHS can be operated manually from the control room to insert and withdraw rods, or to inject water into the RCS.

B. Motive Power
   1. The CRDHS pumps are Class 1E AC loads that can be powered from the diesel generators as described in Section 3.5.

3.6.7 Section 3.6 References

1. NEDO-24708A, "Additional Information Required for NRC Staff Generic Report on Boiling Water Reactors," General Electric Company, December 1980.

2. NUREG-0626, "Generic Evaluation of Feedwater Transients and Small Break Loss-of-Coolant-Accidents in GE-designed Operating Plants and Near-term Operating License Applications," USNRC, January 1980.

3. NUREG/CR-4550, Volume 4, "Analysis of Core Damage Frequency From Internal Events: Peach Bottom Unit 2", Sandia National Laboratories, October 1986.

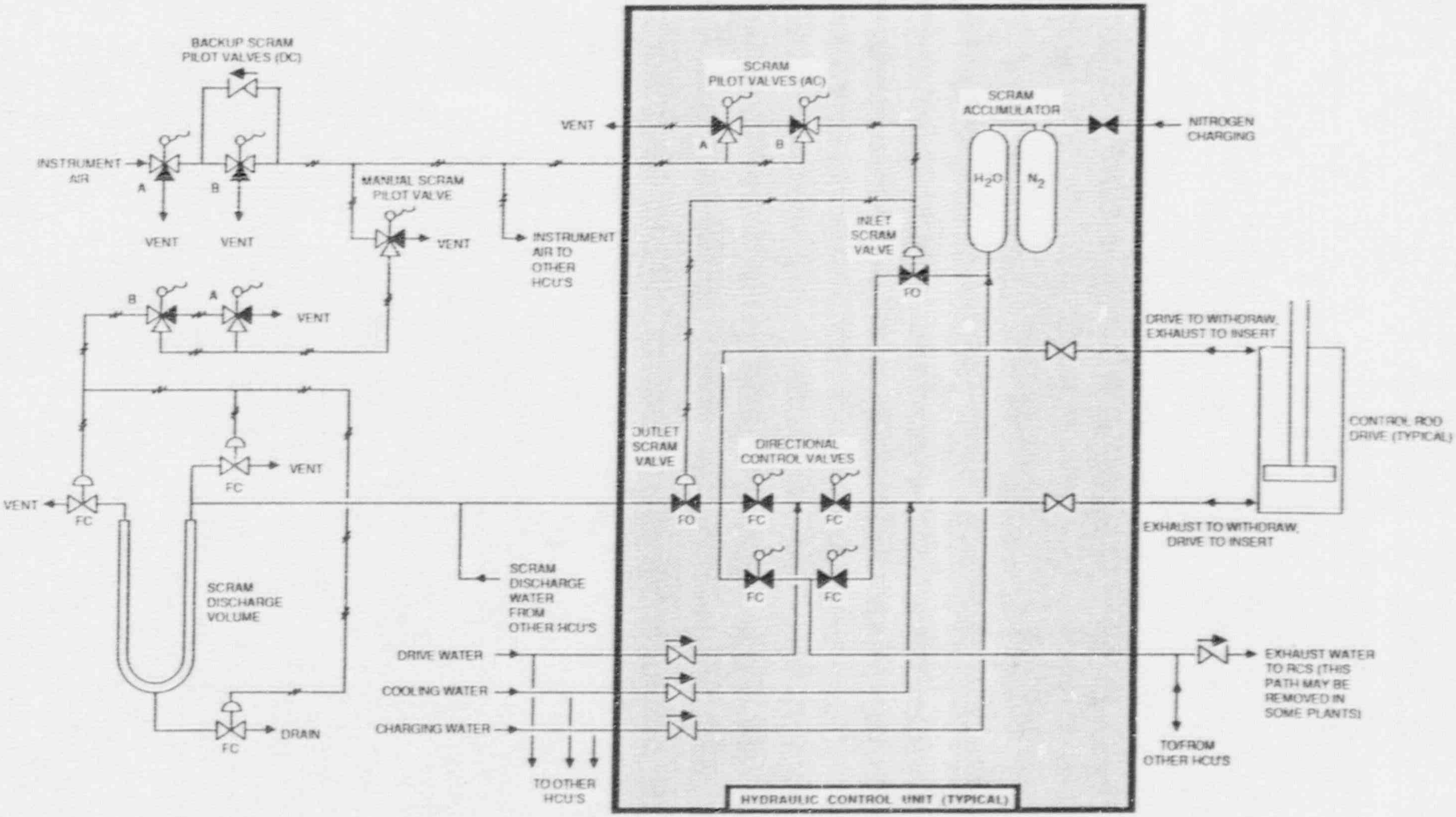


Figure 3.6-1. Simplified Diagram Of Portions Of The Control Rod Drive Hydraulic System That Are Related To The Scram Function

Table 3.6-1. Peach Bottom 2 Control Rod Drive Hydraulic System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
2AP39	MDP	UNKNOWN	E12-SWGR	4160	SWGR2A	AC A
2BP39	MDP	UNKNOWN	E42-SWGR	4160	SWGR2D	AC D

3.7 EMERGENCY SERVICE WATER (ESW) SYSTEM

3.7.1 System Function

The ESW system provides cooling water from the ultimate heat sink (Conowingo Pond) to various component heat loads in the plant, including the diesel generator heat exchangers, RHR, CSS, HPCI and RCIC pump room coolers, RHR and CSS pump coolers, and various other heat loads. The ESW system also serves as a backup for the service water system which is the normal water source for some operating systems, including the reactor building component cooling water (RBCCW) system and the pump room fan cooler units.

3.7.2 System Definition

The ESW system consists of two motor-driven emergency service water pumps that take a suction through strainers and sluice gates in the intake structure and supply two headers that serve both Peach Bottom units. Cooling water normally is returned to the ultimate heat sink via a discharge pond. The ESW system also can operate in a closed-loop mode with cooling water discharged to the emergency cooling towers and then recirculated back to the intake structure.

A simplified drawing of the ESW system is shown in Figures 3.7-1. More detailed system drawings are shown in Figures 3.7-2 and 3.7-3. Note that the ESW suction well is inside the service water (SW) suction well. The SW and ESW suction wells are separated by sluice gates that are normally open. A summary of the data on selected ESW system components is presented in Table 3.7-1.

3.7.3 System Operation

The ESW system normally is in standby, with the system aligned for open-loop operation. When the system is placed in operation, water is drawn from the the ESW suction wells, supplied to the various system heat loads, and returned to a discharge pond.

The ESW system also can operate on a closed-loop mode in conjunction with the emergency cooling towers and associated reservoir, which constitute an emergency heat sink for the ESW system and the high-pressure service water system (see Section 3.8). In this mode of operation, the normal ESW suction path is isolated by closing the sluice gates in the service water suction wells, the normal ESW discharge path is isolated by closing valve 0498, and an alternate flow path via the emergency cooling towers is established. One of two ESW booster pumps is needed to pump water from the ESW discharge header to the emergency cooling tower where one of three fans is needed to provide adequate cooling. Water collects in the emergency cooling tower reservoir and flows by gravity in two full-capacity return lines to the service water suction wells. This return flow is regulated by two series motor-operated valves in each return line. The water capacity of the emergency cooling tower reservoir is adequate for one week of operation without makeup.

Emergency cooling water pump OP186 is almost identical to the two ESW pumps and can be used to supply the ESW system following loss of the two ESW pumps. The emergency cooling water pump takes a suction on the emergency cooling tower reservoir and delivers water to the two ESW supply headers. The ESW return flow is directed back to the emergency cooling towers by the path described previously.

3.7.4 System Success Criteria

The ESW system can operate in either of two modes: open-loop or closed-loop. The success criteria for open-loop operation are 1 of 2 ESW pumps must operate and there must be an intact flow path from the pump to the heat loads. The success criteria for closed-loop operation are, (a) 1 of 2 ESW pumps or the emergency cooling water pump must operate, (b) 1 of 2 ESW booster pumps must operate, and (c) there must be an intact closed-loop flow path. If the main ESW pumps are used, the closed-loop flow path includes the gravity feed line from the cooling tower reservoir back to the suction wells. If the emergency cooling water pump is used, the closed-loop flow path includes the line from this pump to the two ESW supply headers.

3.7.5 Component Information

A. ESW Pumps (OAP57 and OBP57, common to both units)
   1. Rated flow: 8000 gpm @ 96 ft. head (42 psid)
   2. Shutoff head: 132 ft. (57 psid)
   3. Rated capacity: 100%
   4. Type: vertical turbine

B. ESW Booster Pumps (OAP163 and OBP163, common to both units)
   1. Rate flow: 8000 gpm @ 231 ft. head (100 psid)
   2. Rated capacity: 100%
   3. Type: horizontal centrifugal

C. Emergency Cooling Water Pump (OP186, common to both units)
   1. Rated flow: 8000 gpm @ 96 ft. head (42 psid)
   2. Shutoff head: 132 ft.
   3. Rated capacity: 100%
   4. Type: vertical turbine

D. Emergency Cooling Tower
   1. Type: Multi-cell, mechanical, induced draft with integral water storage reservoir.
   2. Number of cells: 3
   3. Fans per cell: 1
   4. Total heat load: 3.57×10^8 Btu/hr
   5. Rating per cell: 100% of the heat load of one RHR heat exchanger operating in the shutdown cooling mode with RCS temperature at 300°F, plus part of the plant auxiliary cooling requirements
   6. Water storage capacity: 3.7×10^6 gallons (adequate for one week without makeup)

3.7.6 Support Systems and Interfaces

A. Control Signals
   1. Automatic
      The ESW pumps automatically start when the diesel generators are started.
   2. Remote manual
      a. The ESW system can be controlled by remote manual means from the control room.
      b. Following an automatic start of the ESW pumps, one of the two ESW pumps is stopped by the control room operators.
      c. The ESW system is manually aligned for closed-loop operation in conjunction with the emergency cooling towers.

B. Motive Power
   The ESW pumps and valves are Class 1E AC loads that can be powered from the diesel generators as described in Section 3.5.

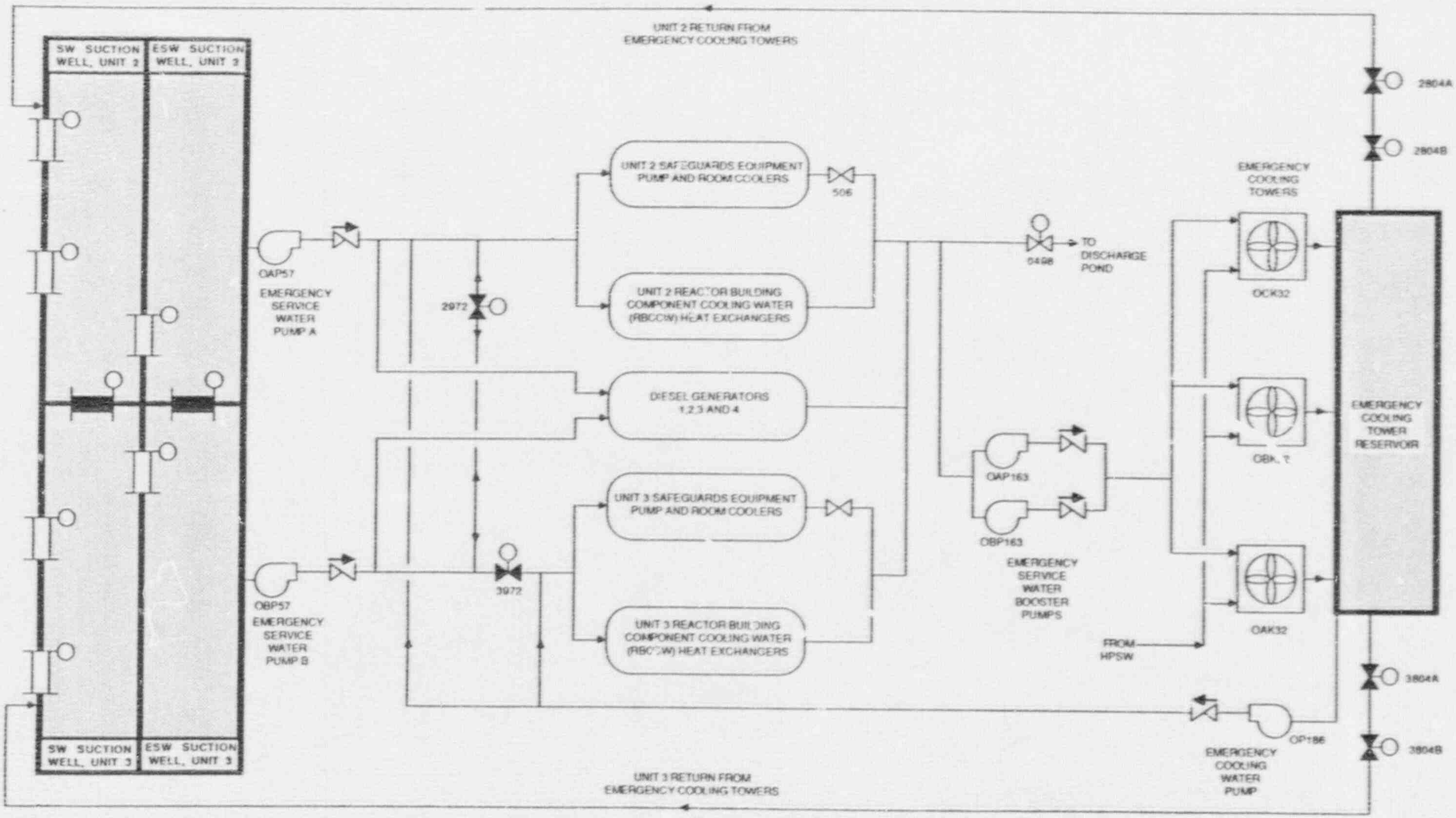


Figure 3.7-1. Simplified Flow Diagram of Peach Bottom 2 and 3 Emergency Service Water System

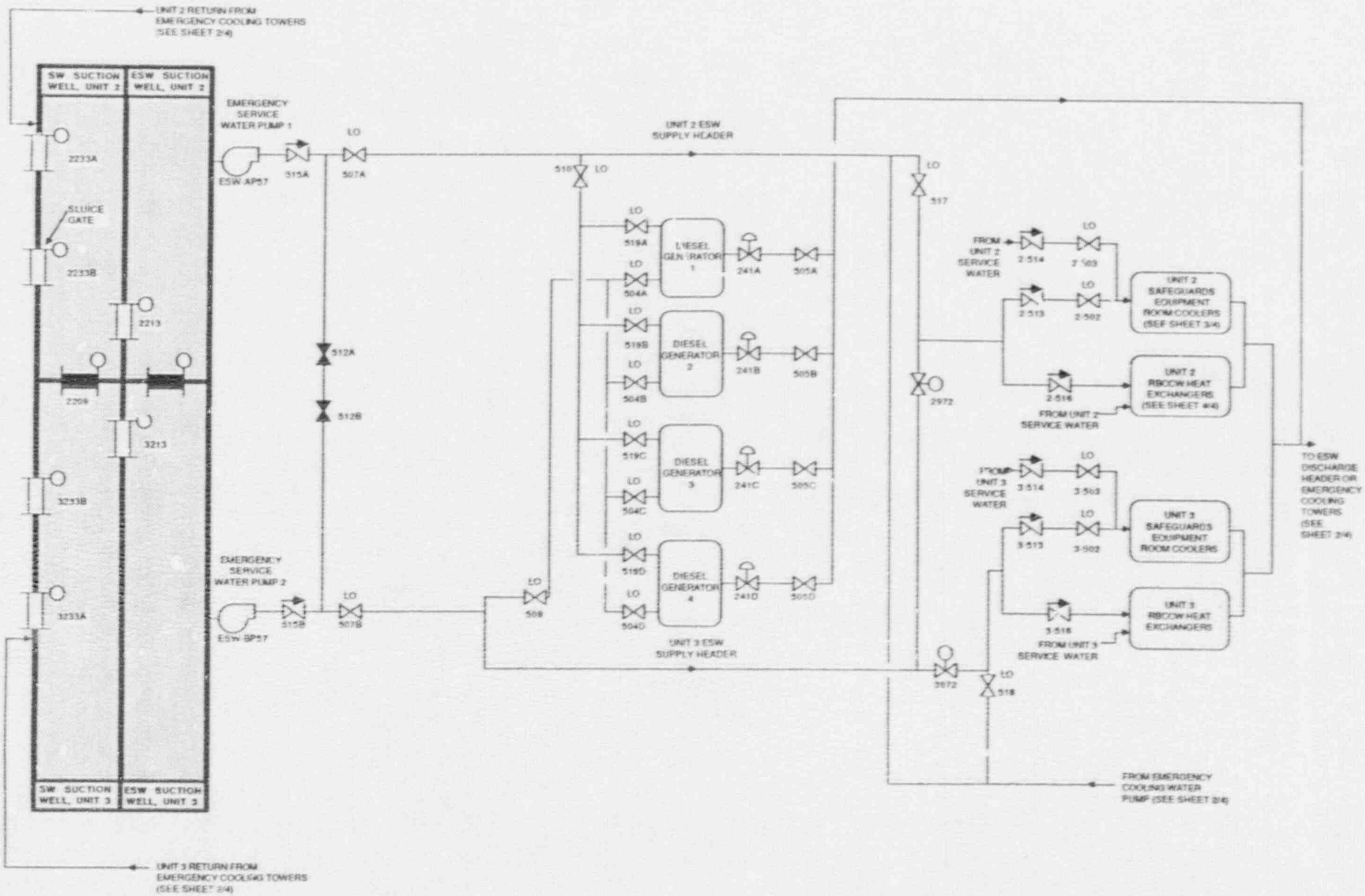


Figure 3.7-2. Peach Bottom 2 and 3 Emergency Service Water System (sheet 1 of 4)

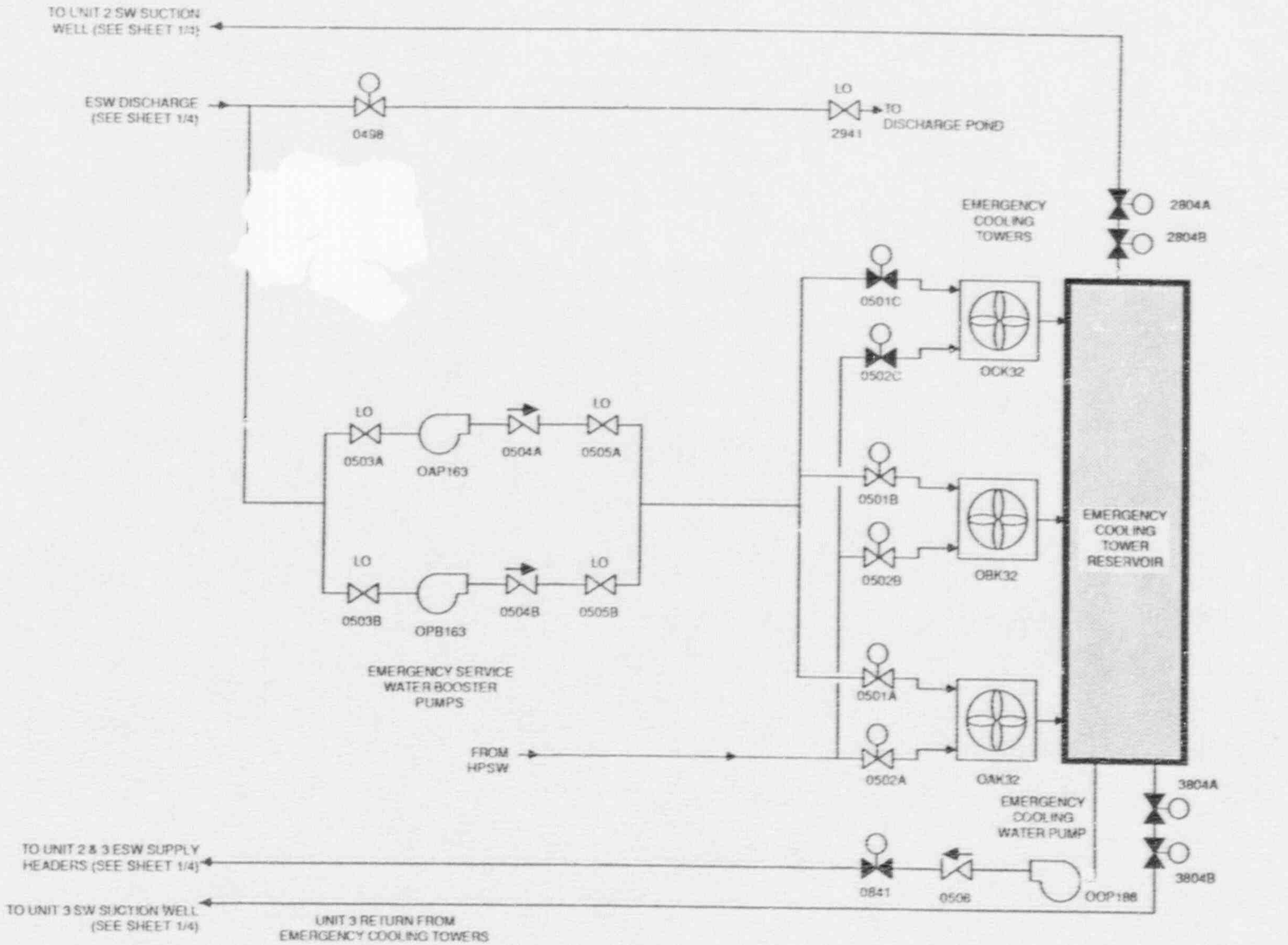
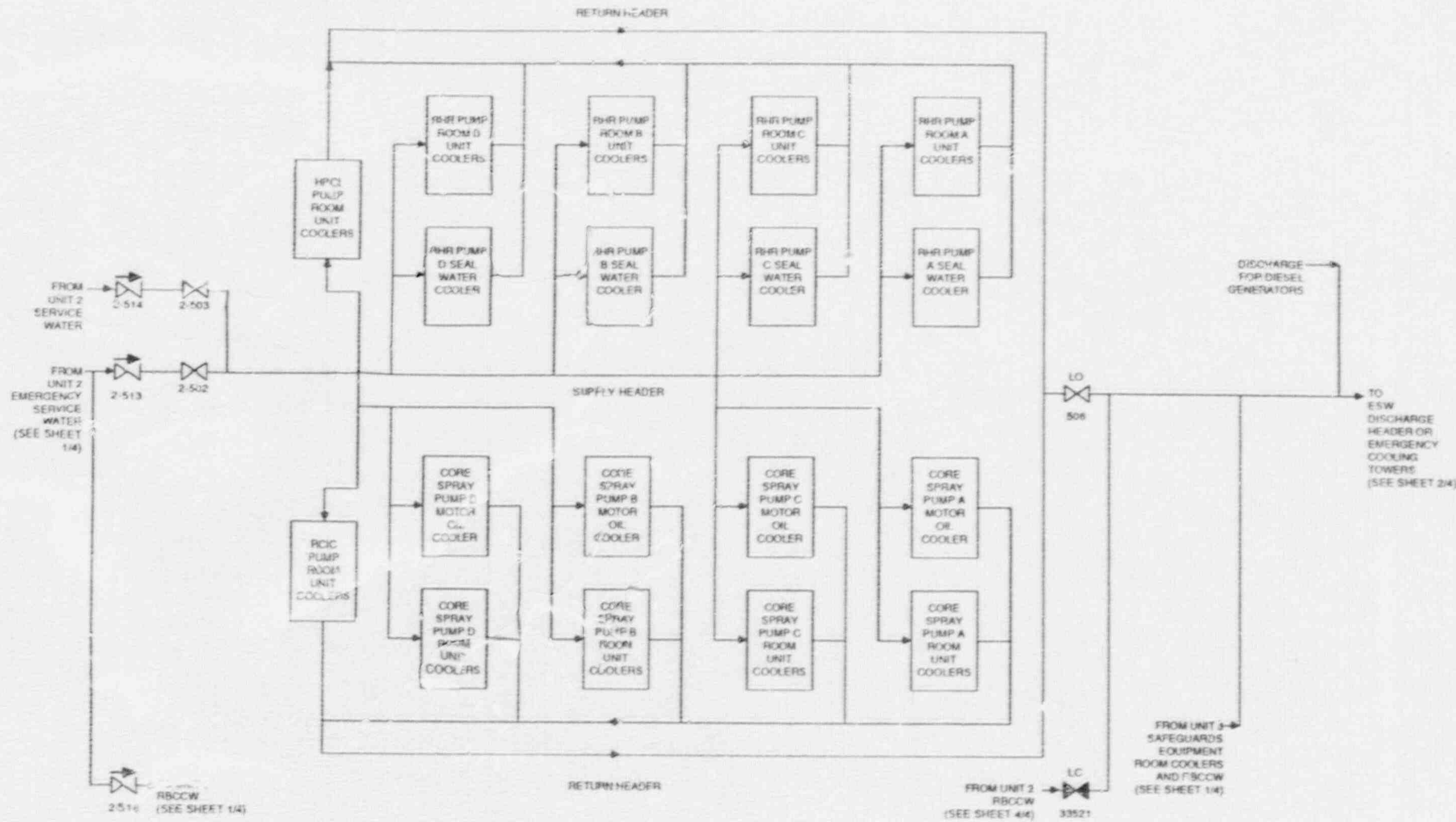


Figure 3.7-2. Peach Bottom 2 and 3 Emergency Service Water System (sheet 2 of 4)



NOTES: (1) AT UNIT 3, THE SEQUENCE OF THE RHR AND THE CS SUPPLY AND RETURN TAPS IS A,C,B,D
(2) LOCKED OPEN MANUAL VALVES ARE ON THE INLET SIDES OF ALL PUMP SEAL AND MOTOR COOLERS
(3) A PNEUMATIC CONTROL VALVE ON THE INLET SIDE OF ALL ROOM COOLERS MODULATES COOLING WATER FLOW. THESE VALVES FAIL OPEN

Figure 3.7-2. Peach Bottom 2 and 3 Emergency Service Water System (sheet 3 of 4)

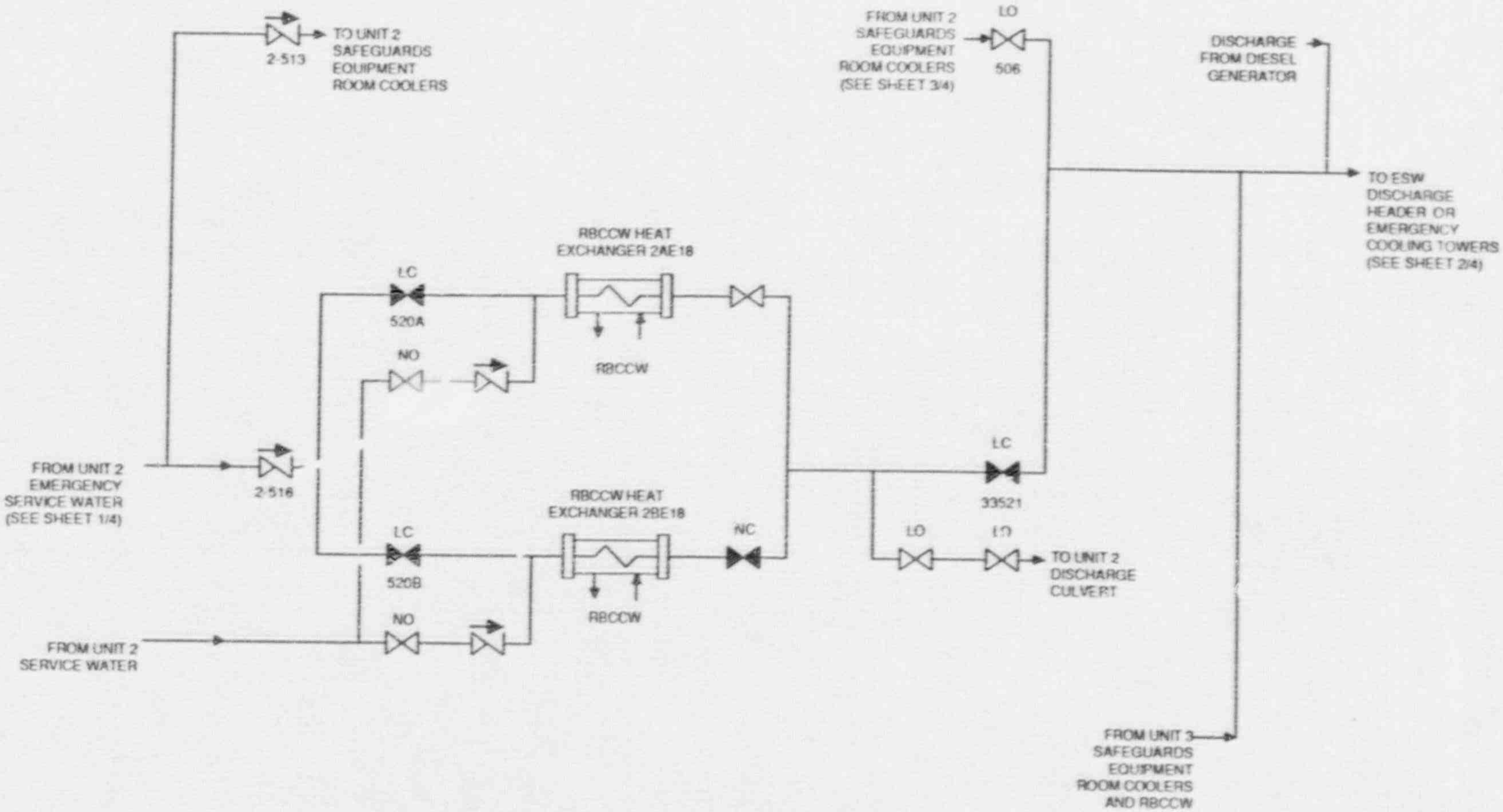


Figure 3.7-2. Peach Bottom 2 and 3 Emergency Service Water System (sheet 4 of 4)

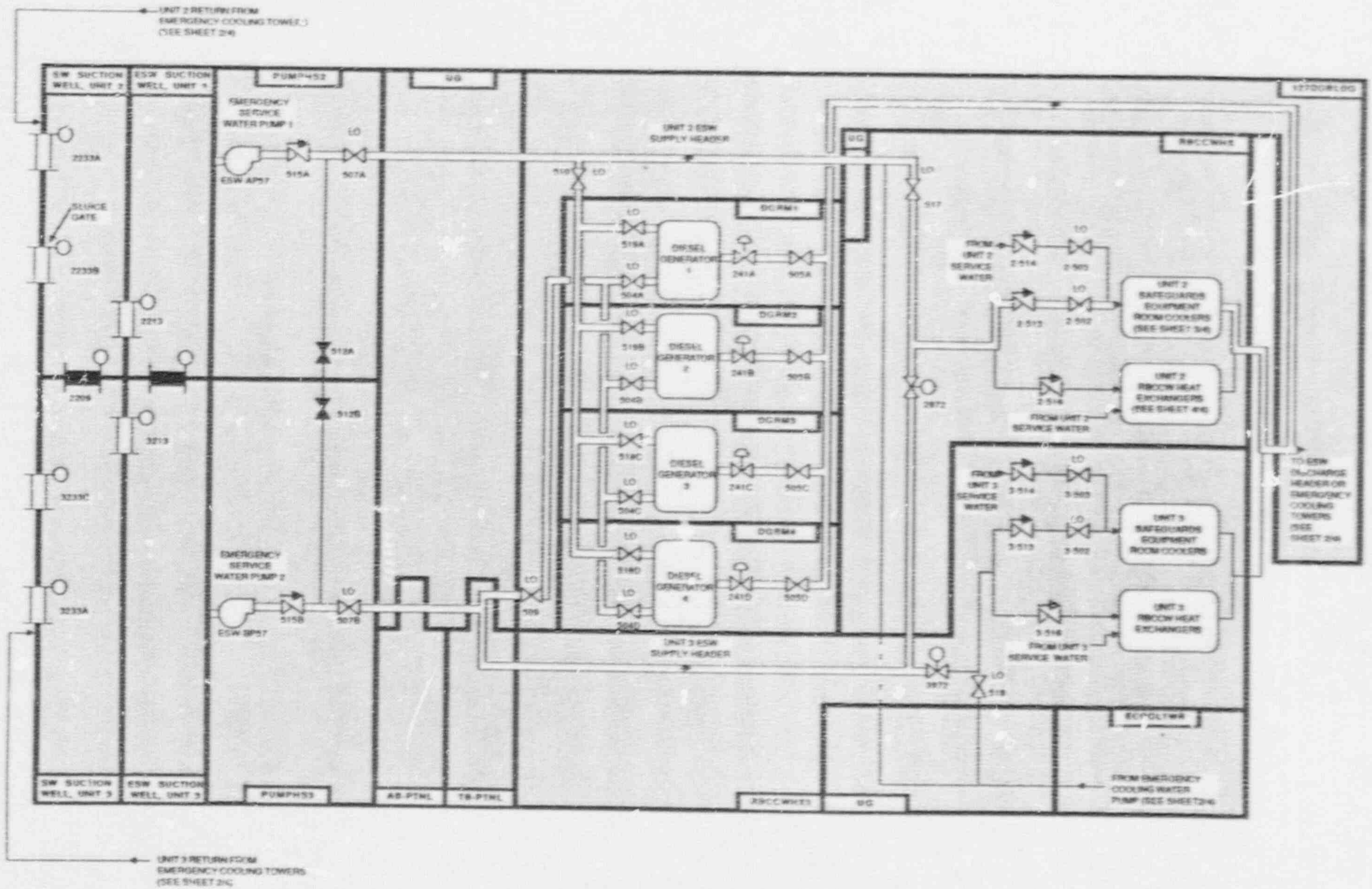


Figure 3.7-3. Peach Bottom 2 and 3 Emergency Service Water System Showing Component Locations (sheet 1 of 4)

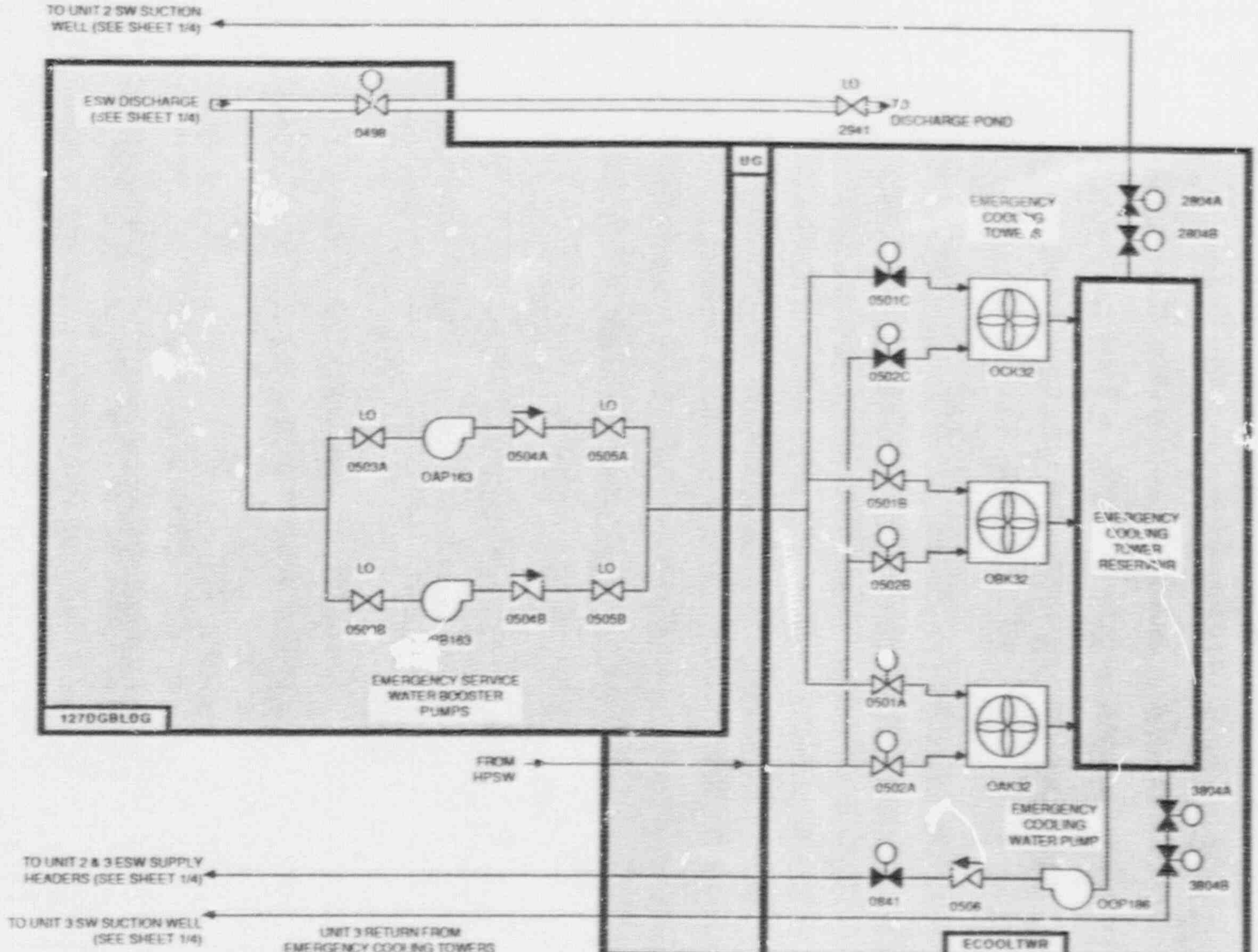
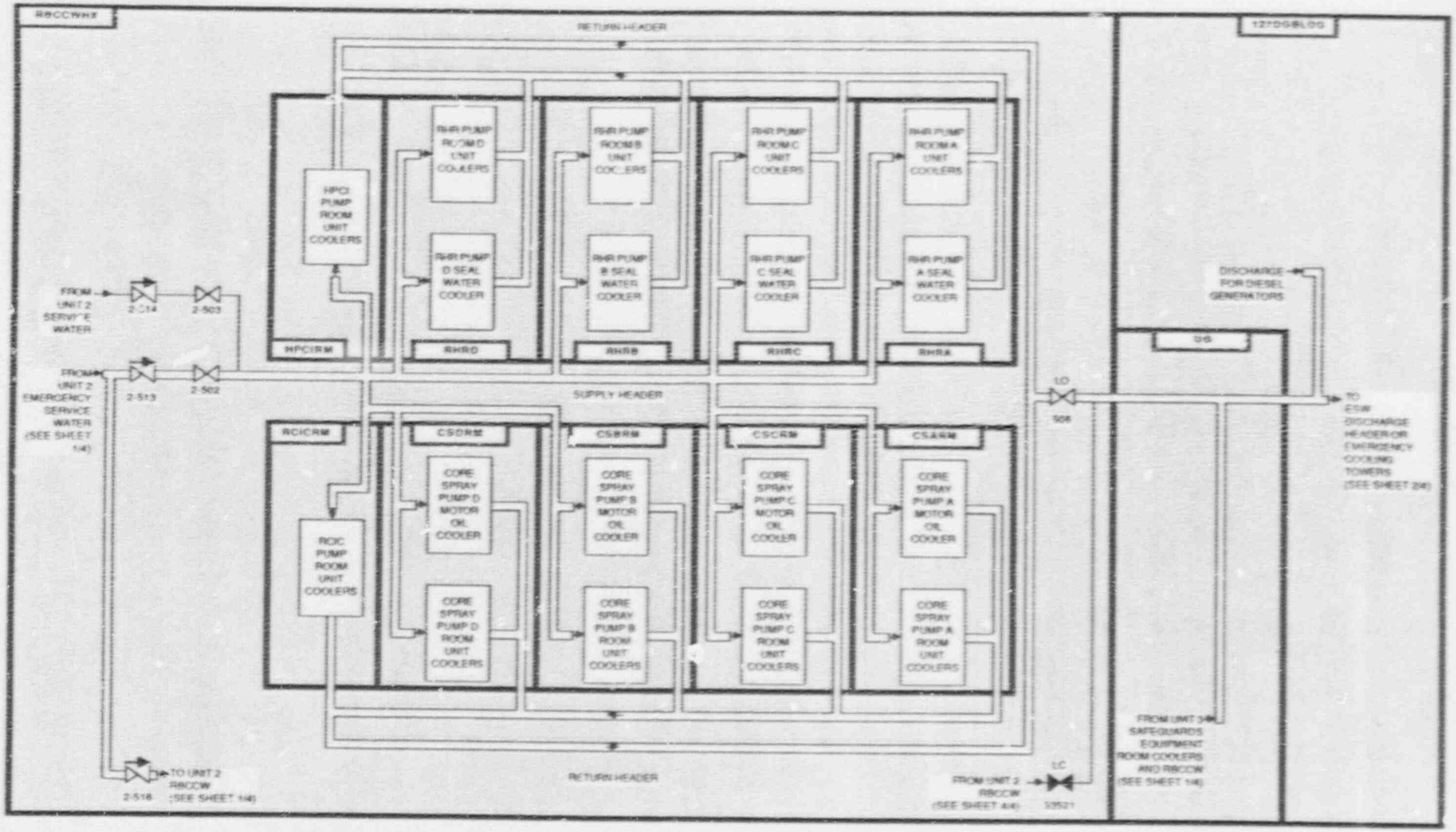


Figure 3.7-3. Peach Bottom 2 and 3 Emergency Service Water System Showing Component Locations (sheet 2 of 4)



NOTES: (1) AT UNIT 3, THE SEQUENCE OF THE RHR AND THE CS SUPPLY AND RETURN TAPS IS A,C,B,D

(2) LOCKED OPEN MANUAL VALVES ARE ON THE INLET SIDES OF ALL PUMP SEAL AND MOTOR COOLERS

(3) A PNEUMATIC CONTROL VALVE ON THE INLET SIDE OF ALL ROOM COOLERS MODULATES COOLING WATER FLOW. THESE VALVES FAIL OPEN.

Figure 3.7-3. Peach Bottom 2 and 3 Emergency Service Water System Showing Component Locations (sheet 3 of 4)

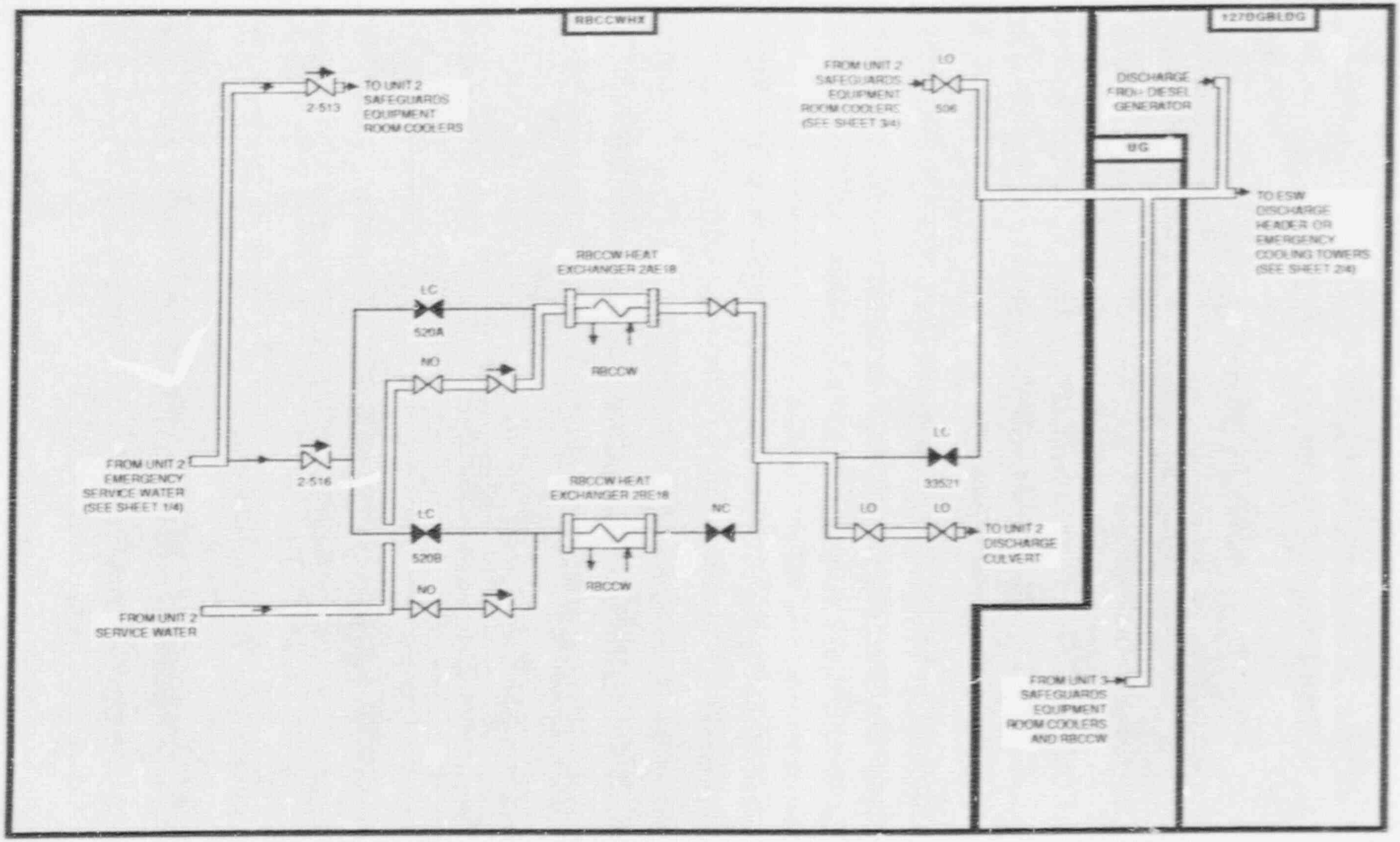


Figure 3.7-3. Peach Bottom 2 and 3 Emergency Service Water System Showing Component Locations (sheet 4 of 4)

Table 3.7-1. Peach Bottom 2 Emergency Service Water System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
00P186	MDP	ECOOLTWR	UNKNOWN			
0501A	MOV	ECOOLTWR	MCC-00B98	480	UNKNOWN	AC B
0501B	MOV	ECOOLTWR	MCC-00B97	480	UNKNOWN	AC A
0501C	MOV	ECOOLTWR	MCC-00B99	480	UNKNOWN	AC D
2209	MOV	PUMPHS2	MCC-00B61	480	PUMPHS2	AC B
2213	MOV	PUMPHS2	MCC-00B61	480	PUMPHS2	AC B
2233A	MOV	PUMPHS2	MCC-00B62	480	PUMPHS2	AC A
2233B	MOV	PUMPHS2	MCC-00B61	480	PUMPHS2	AC B
2804A	MOV	ECOOLTWR	MCC-00B98	480	UNKNOWN	AC B
2804B	MOV	ECOOLTWR	UNKNOWN			
2972	MOV	RBCCWHX	MCC-20B39	480	RBCCWHX	AC D
3213	MOV	PUMPHS3	MCC-00B62	480	PUMPHS2	AC A
3233A	MOV	PUMPHS3	MCC-00B62	480	PUMPHS2	AC A
3233B	MOV	PUMPHS3	MCC-00B61	480	PUMPHS2	AC B
3804A	MOV	ECOOLTWR	UNKNOWN			
3804B	MOV	ECOOLTWR	MCC-00B99	480	UNKNOWN	AC D
3972	MOV	RBCCWHX3	UNKNOWN			
498	MOV	127DGBLDG	MCC-00B56	480	DGRM4	AC D
506	XV	RBCCWHX				
841	MOV	ECOOLTWR	MCC-00B99	480	UNKNOWN	AC D
OAK32	FAN	ECOOLTWR	E23A4-BUS	480	UNKNOWN	AC B
OAP163	MDP	127DGBLDG	E22-SWGR	4160	SWGR2B	AC B
OAP57	MDP	PUMPHS2	E22-SWGR	4160	SWGR2B	AC B
OBK32	FAN	ECOOLTWR	E13A4-BUS	480	UNKNOWN	AC A
OBP163	MDP	127DGBLDG	E32-SWGR	4160	SWGR2C	AC C
OBP57	MDP	PUMPHS3	E32-SWGR	4160	SWGR2C	AC C
OCK32	FAN	ECOOLTWR	E43A4-BUS	480	UNKNOWN	AC D

3.8 HIGH PRESSURE SERVICE WATER (HPSW) SYSTEM

3.8.1 System Function

The HPSW system provides cooling water from the ultimate heat sink (Conowingo Pond) to remove reactor core heat via the RHR heat exchangers. By means of a cross-tie with the RHR system, the HPSW system also can supply makeup to the RCS when all emergency core cooling systems have failed.

3.8.2 System Definition

The HPSW system consists of four motor-driven pumps per unit (a total of eight HPSW pumps) that take a suction through strainers and sluice gates in the intake structure and discharge into two headers per unit that supply cooling water to the four RHR heat exchangers. Cooling water normally is returned to the ultimate heat sink via a discharge pond. The HPSW system also can operate in a closed-loop mode with cooling water discharged to the emergency cooling towers and then recirculated back to the intake structure.

Simplified diagrams of the HPSW system are shown in Figures 3.8-1 and 3.8-2. A summary of the data on selected HPSW system components is presented in Table 3.8-1.

3.8.3 System Operation

The HPSW system normally is in standby, with the system aligned for open-loop operation. When needed, the system is placed in operation manually.

The HPSW system also can operate on a closed-loop mode in conjunction with the emergency cooling towers and associated reservoir, which constitute an emergency heat sink for the HPSW system and the ESW system (see Section 3.7). In this mode of operation, the normal HPSW suction path is isolated by closing the sluice gates in the service water suction wells, the normal HPSW discharge paths are isolated by closing valves 2486 and 3486, and an alternate flow path via the emergency cooling towers is established. The discharge head of the HPSW pumps is high enough that the system does not require booster pumps for closed-loop operation with the emergency cooling towers. Water collects in the emergency cooling tower reservoir and flows by gravity in two full-capacity return lines to the service water suction wells. This return flow is regulated by two series motor-operated valves in each return line. The water capacity of the emergency cooling tower reservoir is adequate for one week of operation without makeup.

3.8.4 System Success Criteria

One HPSW pump is required for each RHR heat exchanger that is in service. The HPSW pumps are normally aligned to specific RHR heat exchangers as shown in Figures 3.8-1 and 3.8-2, but crossties exist. An intact flow path is required between the pumps and heat exchangers being supplied. Either the open-loop or closed-loop flow paths can be used.

3.8.5 Component Information

A. High Pressure Service Water Pumps (4 per unit)
   1. Rated flow: 4500 gpm @ 700 ft. head (303 psid)
   2. Shutoff head: 1000 ft. head (434 psid)
   3. Rated capacity: 100% of the cooling water required by one RHR heat exchanger
   4. Type: vertical turbine

B. Emergency Cooling Tower
   See details in Section 3.7.

3.8.6 Support Systems and Interfaces

A. Control Signals
   1. Automatic
      None

   2. Remote manual
      The HPSW pumps are placed in service by remote manual means from the control room.

B. Motive Power
   The HPSW pump and valves are Class 1E AC loads that can be powered from the diesel generators as described in Section 3.5.

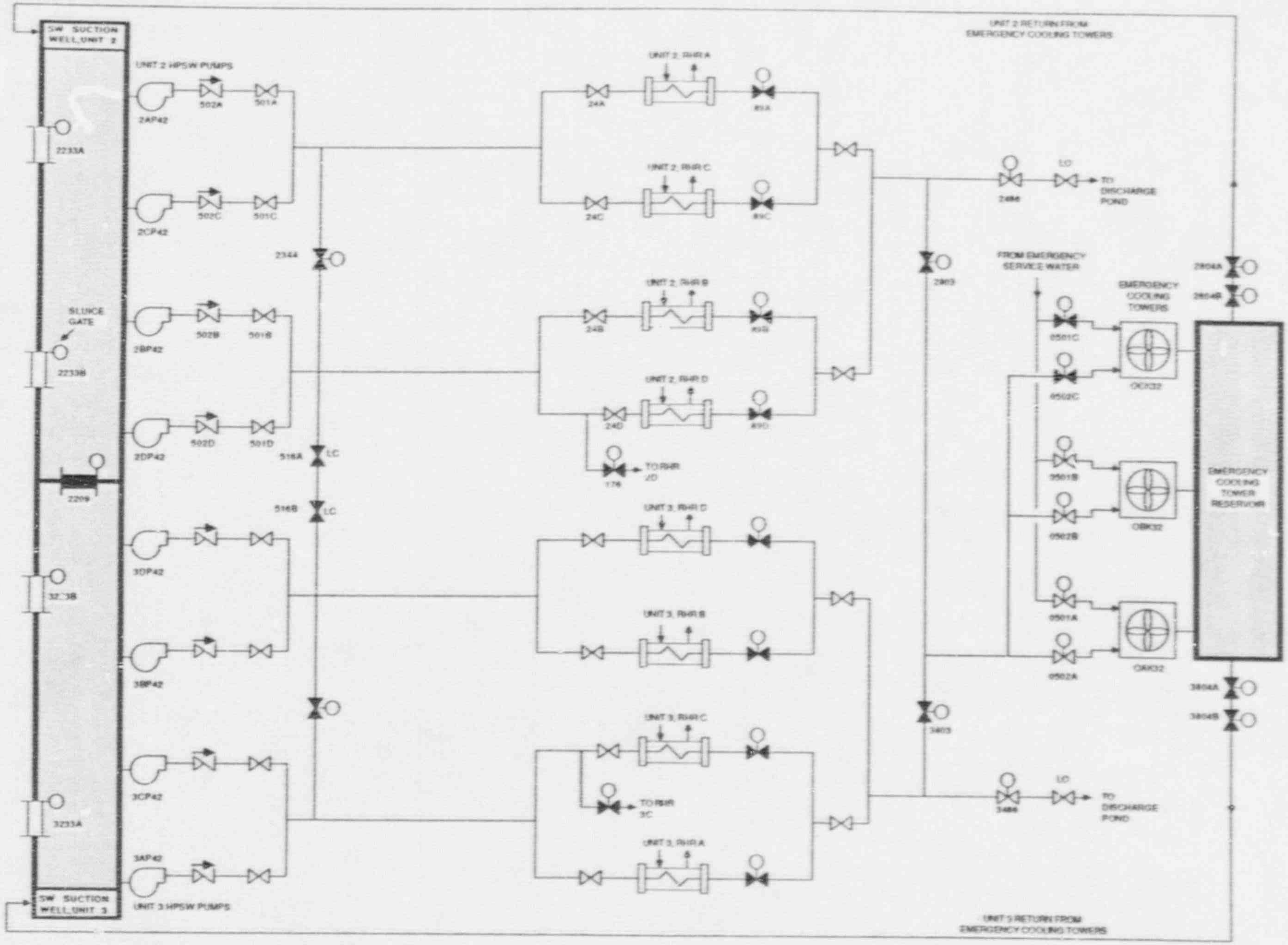


Figure 3.8-1. Peach Bottom 2 & 3 High Pressure Service Water System

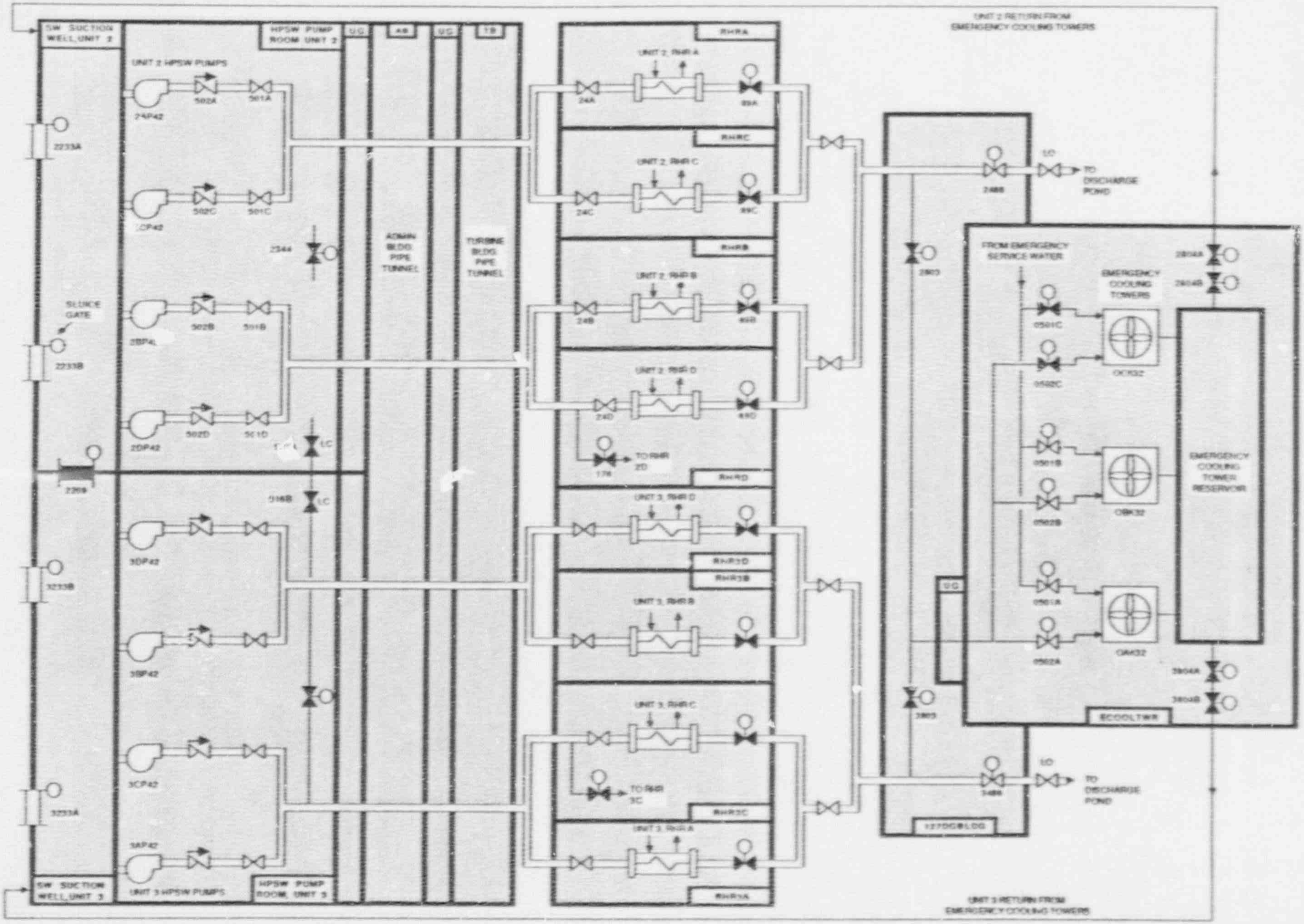


Figure 3.8-2. Peach Bottom 2 & 3 High Pressure Service Water System Showing Component Locations

Table 3.8-1. Peach Bottom 2 High Pressue Service Water System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
0502A	MOV	ECOOLTWR	MCC-00B98	480	UNKNOWN	AC B
0502B	MOV	ECOOLTWR	MCC-00B97	480	UNKNOWN	AC A
0502C	MOV	ECOOLTWR	MCC-00B99	480	UNKNOWN	AC D
2486	MOV	127DGBLDG	MCC-00B53	480	DGRM1	AC A
2803	MOV	127DGBLDG	MCC-00B55	480	DGRM3	AC C
2AP42	MDP	PUMPHS2	E12-SWGR	4160	SWGR2A	AC A
2BP42	MDP	PUMPHS2	E22-SWGR	4160	SWGR2B	AC B
2CP42	MDP	PUMPHS2	E32-SWGR	4160	SWGR2C	AC C
2DP42	MDP	PUMPHS2	E42-SWGR	4160	SWGR2D	AC D
89A	MOV	RHRA	MCC-20B36	480	165RB	AC A
89B	MOV	RHRB	MCC-20B37	480	135RB	AC B
89C	MOV	RHRC	MCC-20B38	480	135RB	AC C
89D	MOV	RHRD	MCC-20B39	480	RBCCWHX	AC D

3.9 EMERGENCY VENTILATION SYSTEM

3.9.1 System Function

The emergency ventilation system provides equipment room ventilation and cooling to support the long-term operation of equipment in the various rooms.

3.9.2 System Definition

The emergency ventilation system includes fans that provide ventilation for the diesel generator rooms, the switchgear rooms, battery rooms and ESW pump rooms. The system also includes fan cooler units in the pump rooms for the RCIC, HPCI, RHR (LPCI) and core spray systems. The diesel room and switchgear and battery room ventilation systems are shown in Figure 3.9-1 (from Ref.1). The pump room fan cooler units are cooled by the ESW system and are shown in the diagram for that system in Section 3.7.

3.9.3 System Operation

The diesel room fans normally are in standby. One of two supply fans are required when the respective diesel generator is operating.

One of two supply fans and one of two exhaust fans normally are operating for switchgear and battery room ventilation. The remaining supply and exhaust fans are in standby.

One of two fan cooler units in the RCIC, HPCI, RHR and CSS pump rooms normally is in operation with cooling supplied by the service water system.

3.9.4 System Success Criteria

For any pump room that requires ventilation, one of two fan cooler units is required, with cooling provided by the ESW system or the service water system.

3.9.5 Component Information

None

3.9.6 Support Systems and Interfaces

A. Actuation and Control
1. The diesel room fans are automatically started when the diesels start.
2. The diesel room fans are automatically tripped by a carbon dioxide discharge signal from the fire protection system, unless a LOCA signal is present.
3. The standby fans for the switchgear and battery rooms are automatically started on low flow in the ventilation duct.

B. Motive Power
1. The emergency ventilation system fans and fan cooler units are Class 1E loads that can be supplied from the diesel generators, as described in Section 3.5.
2. Dampers in the emergency ventilation system are pneumatically operated by instrument air.

C. Instrument Air System
1. Half of the supply dampers in the diesel room emergency ventilation system fail open on loss of instrument air, and the remainder fail closed. The dampers which fail open are associated with fans OAV91, OBV91, OCV91 and ODV91.

2. The dampers in the switchgear and battery room emergency ventilation system fail closed on loss of instrument air. These dampers are provided with backup pneumatic accumulators to support damper operation following loss of the instrument air system.

D. Cooling Water
1. The service water system is the normal source of cooling water for the pump room fan cooler units.
2. The emergency service water system is the backup source of cooling water for the pump room fan cooler units (see Section 3.7).

3.9.7 Section 3.9 References

1. NUREG/CR-4550, Vol. 4, "Analysis of Core Damage Frequency From Internal Events: Peach Bottom, Unit 2", Sandia National Laboratories, October, 1987

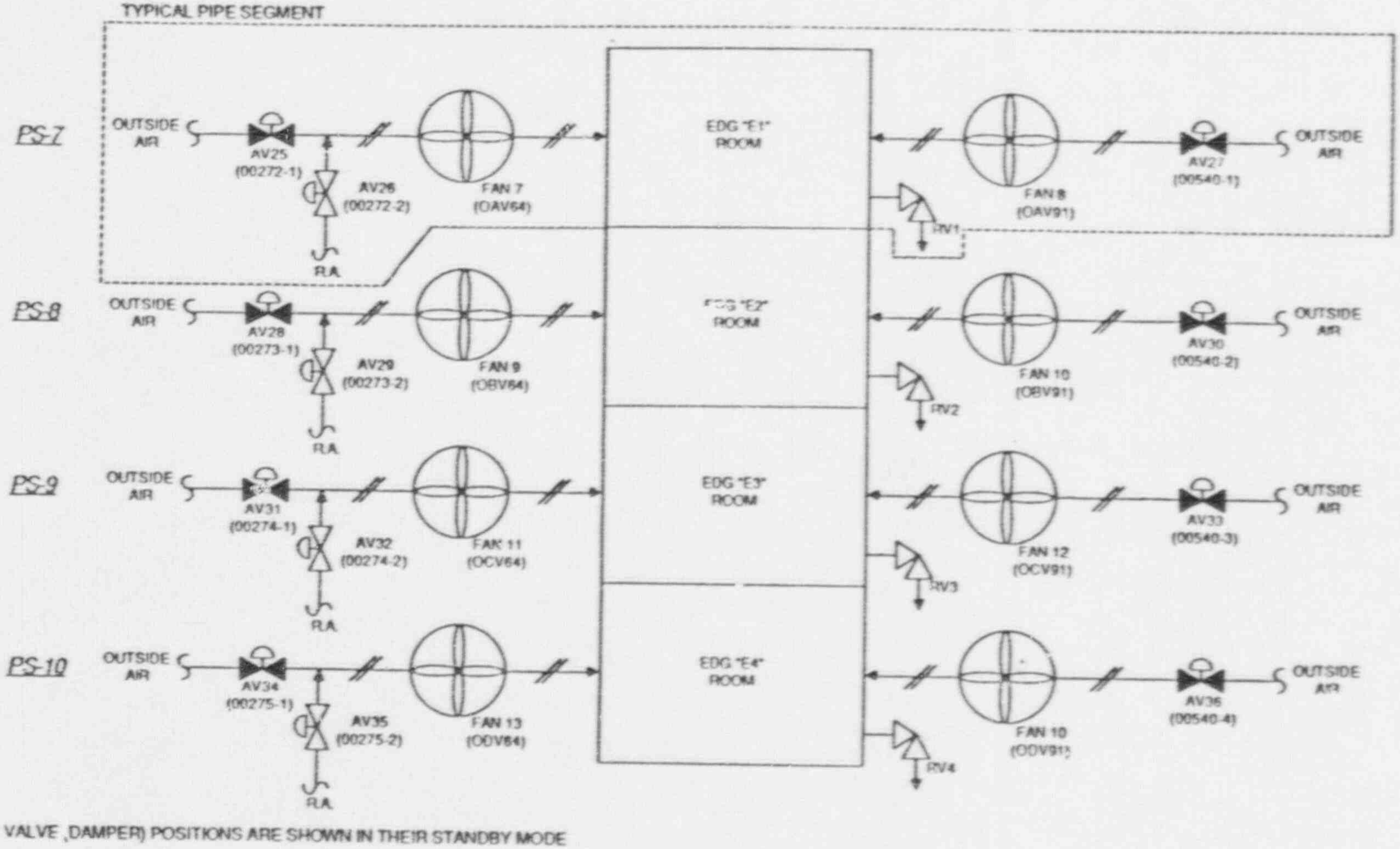


Figure 3.9-1 Peach Bottom 2 Emergency Ventilation System Schematic (Sheet 1 of 2)

1/89

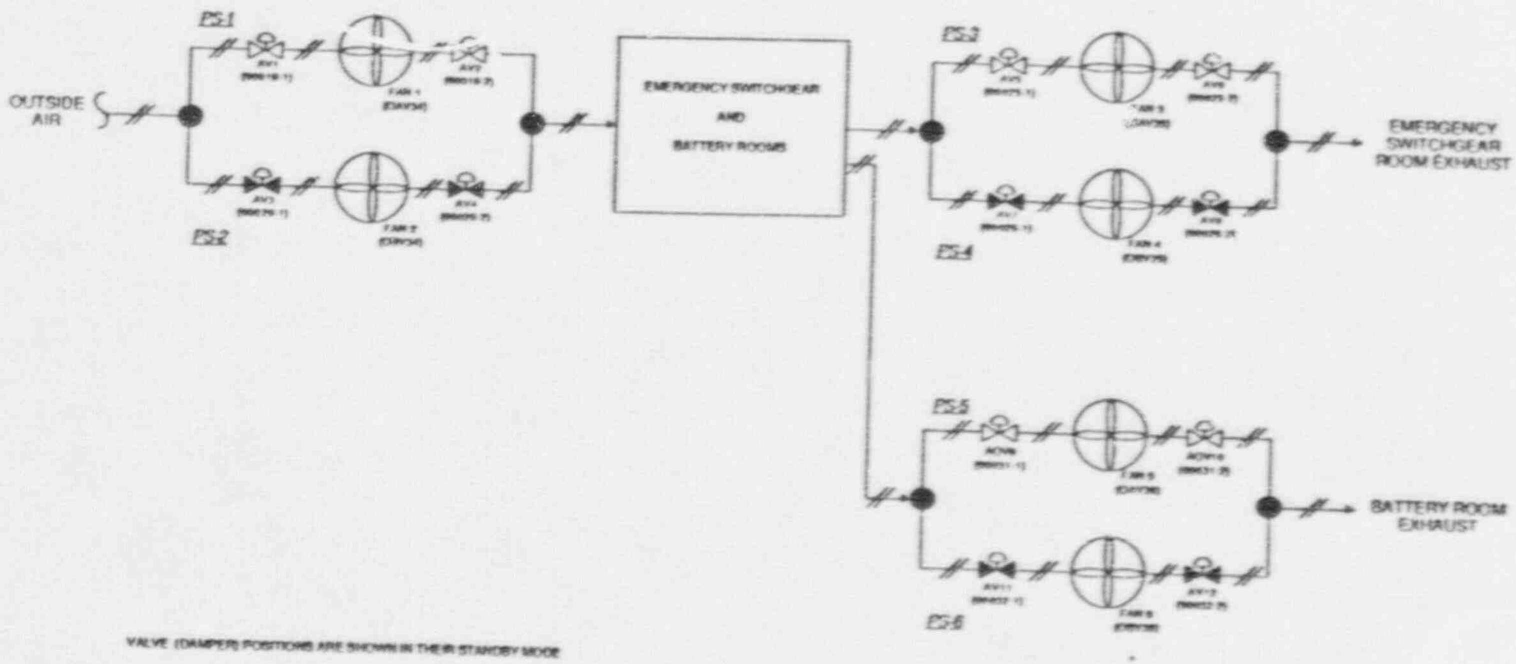


Figure 3.9-1 Peach Bottom 2 Emergency Ventilation System Schematic (Sheet 2 of 2)

Table 3.9-1. Peach Bottom 2 Emergency Ventilation System Data Summary for Selected Components

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
2AV22	FAN	RCICRM	MCC-20B36	480	165RB	AC A
2AV23	FAN	HPCIRM	MCC-20B37	480	135RB	AC B
2AV24	FAN	CSARM	MCC-20B36	480	165RB	AC A
2AV25	FAN	RHRA	MCC-20B36	480	165RB	AC A
2BV22	FAN	RCICRM	MCC-20B36	480	165RB	AC A
2BV23	FAN	HPCIRM	MCC-20B37	480	135RB	AC B
2BV24	FAN	CSARM	MCC-20B36	480	165RB	AC A
2BV25	FAN	RHRA	MCC-20B36	480	165RB	AC A
2CV24	FAN	CSCRM	MCC-20B38	480	135RB	AC C
2CV25	FAN	RHRC	MCC-20B38	480	135RB	AC C
2DV24	FAN	CSCRM	MCC-20B38	480	135RB	AC C
2DV25	FAN	RHRC	MCC-20B38	480	135RB	AC C
2EV24	FAN	CSBRM	MCC-20B37	480	135RB	AC B
2EV25	FAN	RHRB	MCC-20B37	480	135RB	AC B
2FV24	FAN	CSBRM	MCC-20B37	480	135RB	AC B
2FV25	FAN	RHRB	MCC-20B37	480	135RB	AC B
2GV24	FAN	CSDRM	MCC-20B39	480	RBCCWHX	AC D
2GV25	FAN	RHRD	MCC-20B39	480	RBCCWHX	AC D
2HV24	FAN	CSDRM	MCC-20B39	480	RBCCWHX	AC D
2HV25	FAN	RHRD	MCC-20B39	480	RBCCWHX	AC D
OAV34	FAN	UNKNOWN	MCC-00B49	480	135TB	AC C
OAV35	FAN	UNKNOWN	MCC-00B49	480	135TB	AC C
OAV36	FAN	UNKNOWN	MCC-00B49	480	135TB	AC C
OAV64	FAN	151DGBLDG	MCC-00B53	480	DGRM1	AC A
OAV91	FAN	151DGBLDG	MCC-00B53	480	DGRM1	AC A
OBV34	FAN	UNKNOWN	MCC-00B50	480	135TB	AC D
OBV35	FAN	UNKNOWN	MCC-00B50	480	135TB	AC D

Table 3.9-1. Peach Bottom 2 Emergency Ventilation System Data Summary for Selected Components (Continued)

COMPONENET ID	COMP. TYPE	LOCATION	POWER SOURCE	VOLTAGE	POWER SOURCE LOCATION	EMERG. LOAD GRP.
OBV36	FAN	UNKNOWN	MCC-00B50	480	135TB	AC D
OBV64	FAN	151DGBLDG	MCC-00B54	480	DGRM2	AC B
OBV91	FAN	151DGBLDG	MCC-00B54	480	DGRM2	AC B
OCV64	FAN	151DGBLDG	MCC-00B55	480	DGRM3	AC C
OCV91	FAN	151DGBLDG	MCC-00B55	480	DGRM3	AC C
ODV64	FAN	151DGBLDG	MCC-00B56	480	DGRM4	AC D
ODV91	FAN	151DGBLDG	MCC-00B56	480	DGRM4	AC D

4. PLANT INFORMATION

4.1 SITE AND BUILDING SUMMARY

The Peach Bottom site is located on the Susquehanna River in Pennsylvania about 19 miles south of Lancaster. The site contains two operating BWR/4 plants (Units 2 and 3) and one decommissioned high-temperature gas-cooled reactor plant (Unit 1). A general view of the site is shown in Figure 4-1 (from Ref. 1) and more details of the major site buildings can be seen in Figures 4-2 and 4-3.

The Unit 2 and 3 reactor buildings are separated by a radwaste building which contains equipment for both units. Unit 2 is at the south end, and Unit 3 is at the north end. The turbine buildings are on the east side of the reactor buildings.

There is one diesel generator building, containing four diesel generators, located south of the Unit 2 turbine building. Near the diesel generator building is an underground long-term diesel fuel oil supply. Additional fuel oil is available in the oil storage tank southwest of the reactor building complex.

A pumping station to the east of the reactor building complex contains the main circulating water pumps, service water pumps, emergency service water pumps and high pressure service water pumps. These pumps draw water from the Susquehanna River which is the ultimate heat sink for the Peach Bottom site.

The condensate storage tank which serves the Unit 2 ECCS, RCIC system and control rod drive hydraulic system is located on the south side of the reactor building. The Unit 3 CST is on the north side of the reactor building.

Other structures on the site include a standby gas treatment facility on the north side of the Unit 3 reactor building, an emergency cooling tower, shops, and an administration building. A water treatment plant is located south of the pumping station.

4.2 FACILITY LAYOUT DRAWINGS

Two elevation views of Peach Bottom 2 are shown in Figure 4-4. Simplified layout drawings for Unit 2 are in Figures 4-5 to 4-11. Similar drawings for Unit 3 are presented in Figures 4-12 to 4-18. Details of the diesel generator building are shown in Figures 4-19 to 4-21 and the pumping station is shown in Figures 4-22 to 4-23.

Major rooms, stairways, elevators, and doorways are shown in the simplified layout drawings, however, many interior walls have been omitted for clarity. Labels printed in uppercase correspond to the location codes listed in Table 4-1 and used in the component data listings and system drawings in Section 3. Some additional labels are included for information and are printed in lowercase type.

A listing of components by location is presented in Table 4-2. Components included in Table 4-2 are those found in the system data tables in Section 3, therefore this table is only a partial listing of the components and equipment that are located in a particular room or area of the plant.

4.3 SECTION 4 REFERENCES

1. Heddleson, F.A., "Design Data and Safety Features of Commercial Nuclear Power Plants.", ORNL-NSIC-55, Volume 1, Oak Ridge National Laboratory, Nuclear Safety Information Center, December 1973.

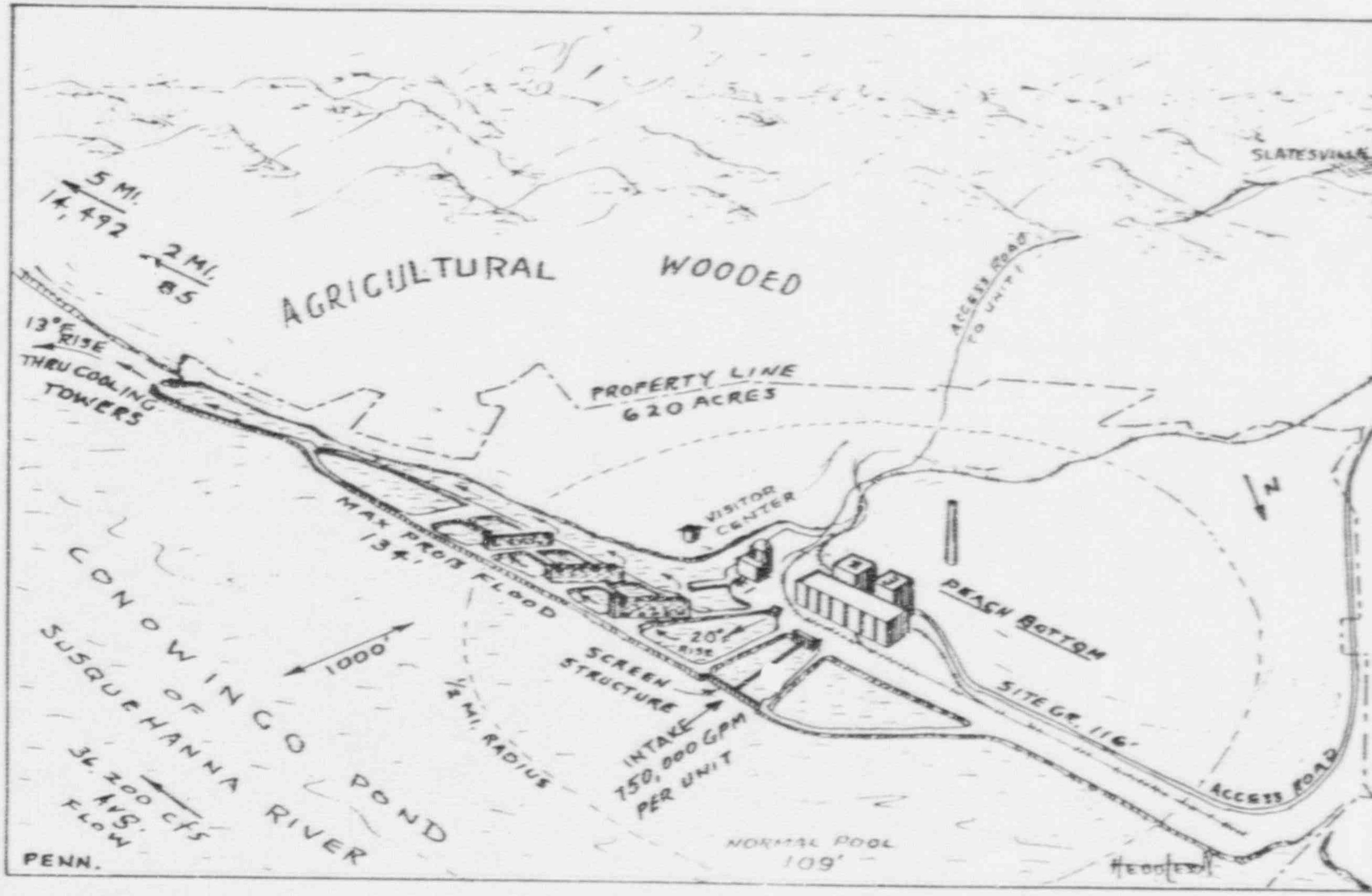


Figure 4-1. General View of Peach Bottom Site and Vicinity

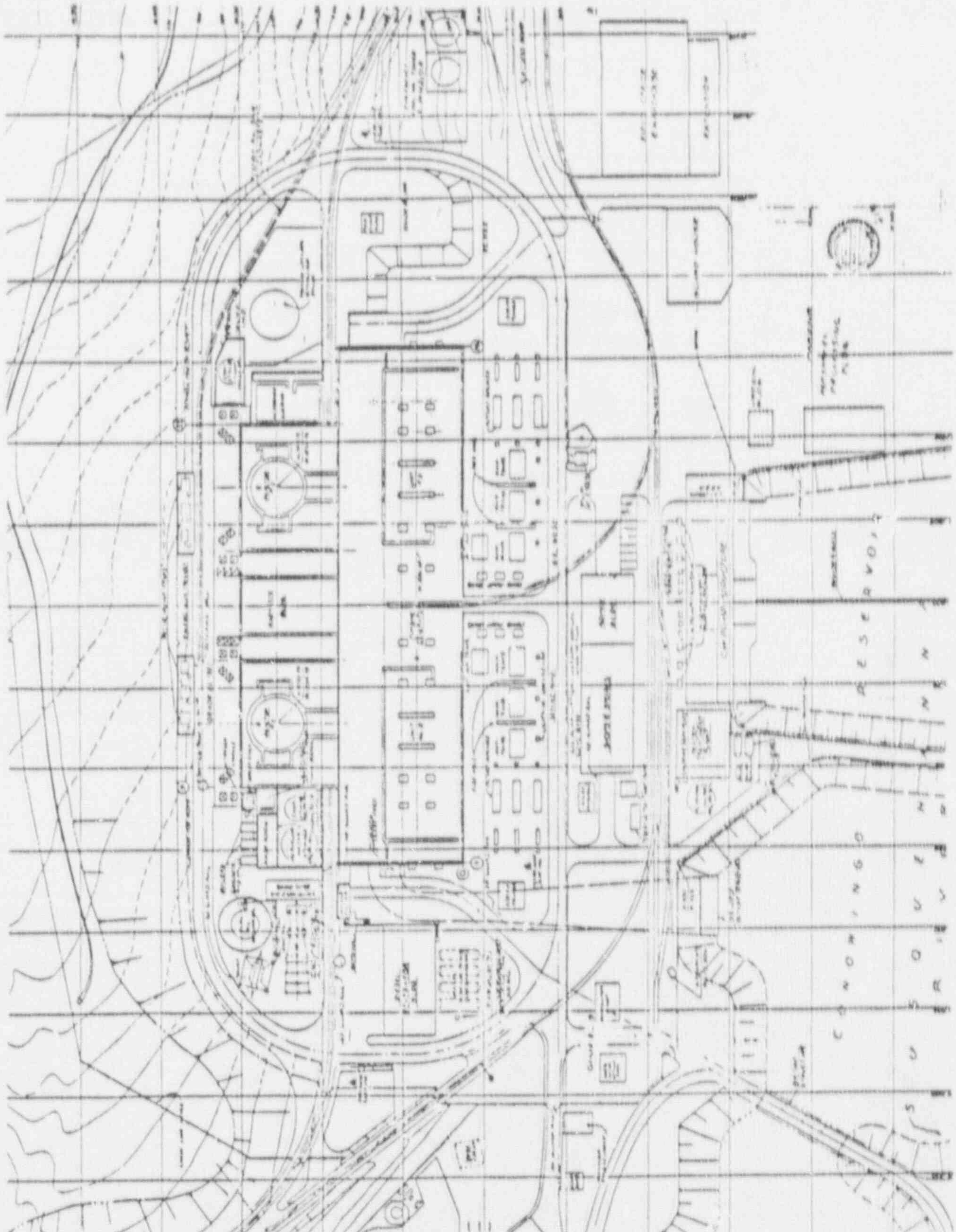


Figure 4-2. Peach Bottom Site Map

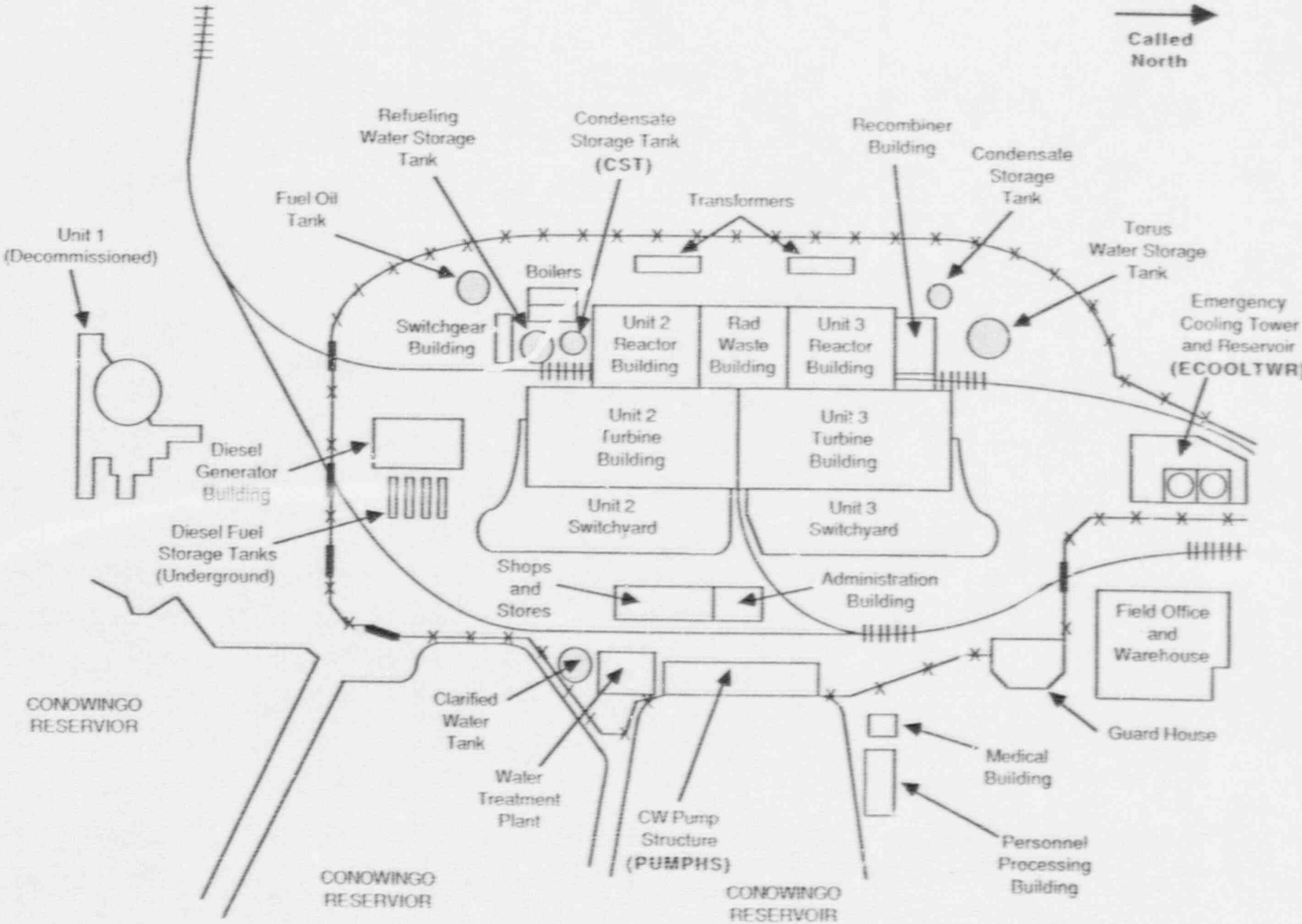


Figure 4-3. Simplified Peach Bottom Site Plan

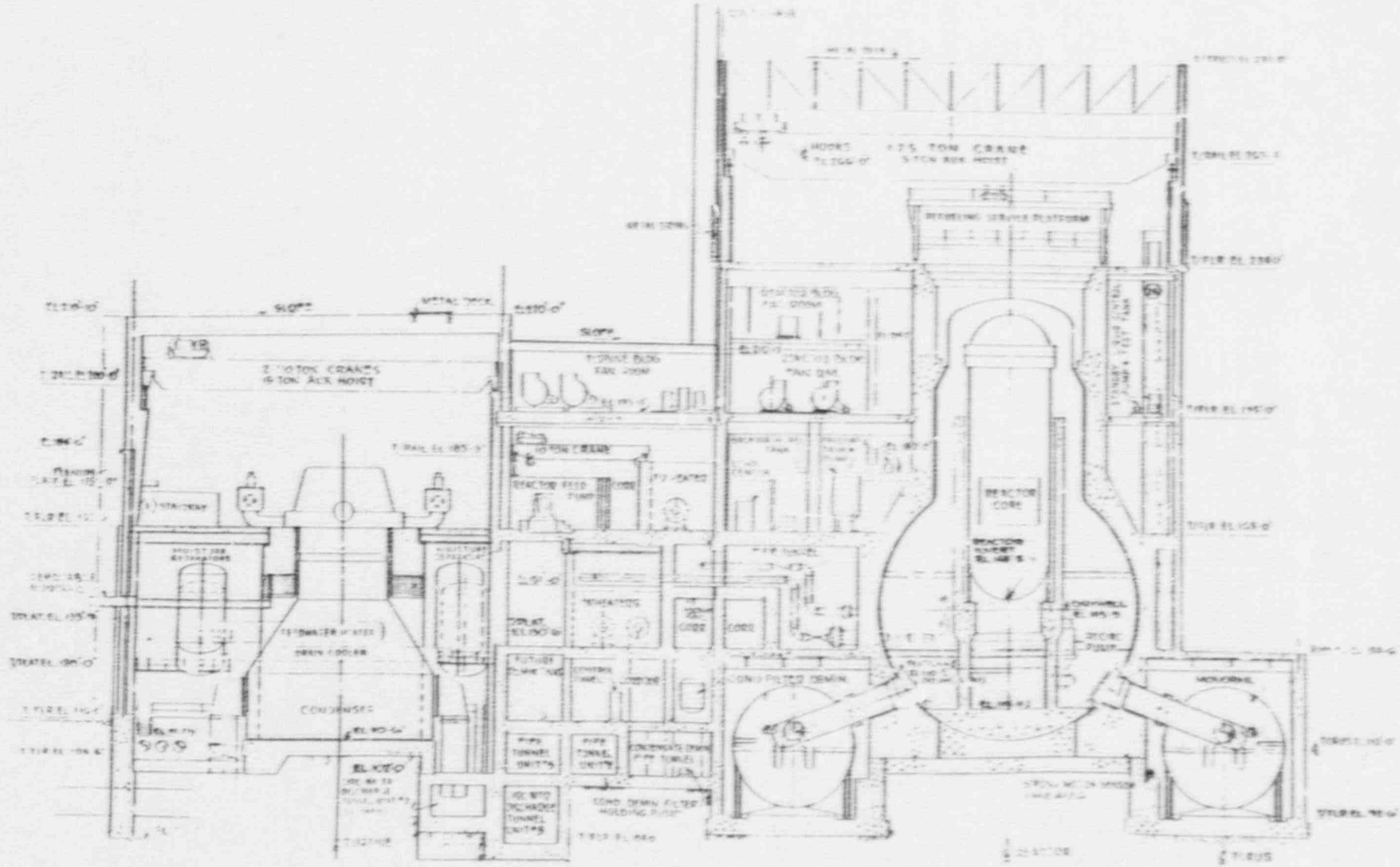


Figure 4-4. Elevation Views of Peach Bottom 2 Reactor and Turbine Buildings (Sheet 1 of 2)

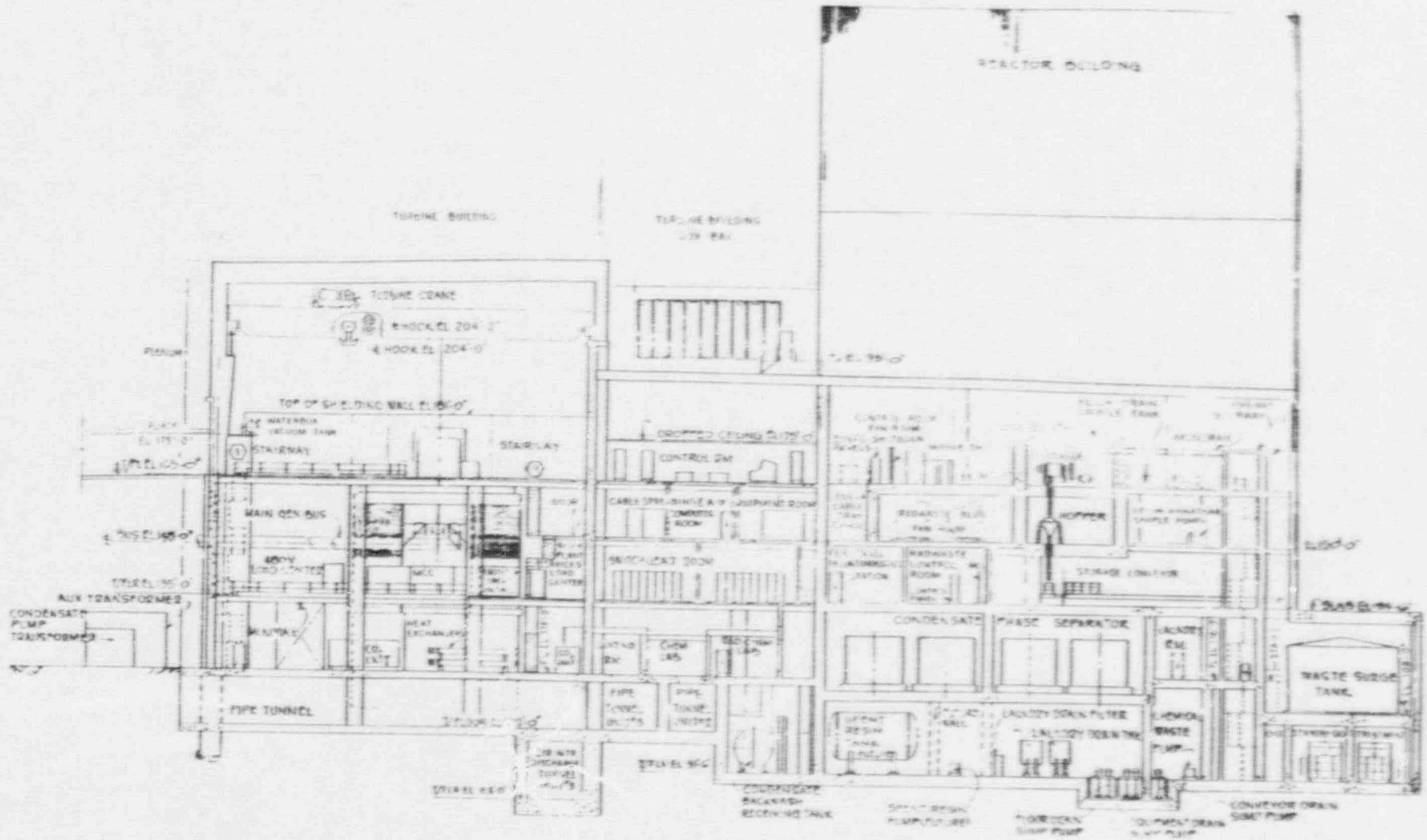


Figure 4-4. Elevation Views of Peach Bottom 2 Reactor and Turbine Buildings (Sheet 2 of 2)

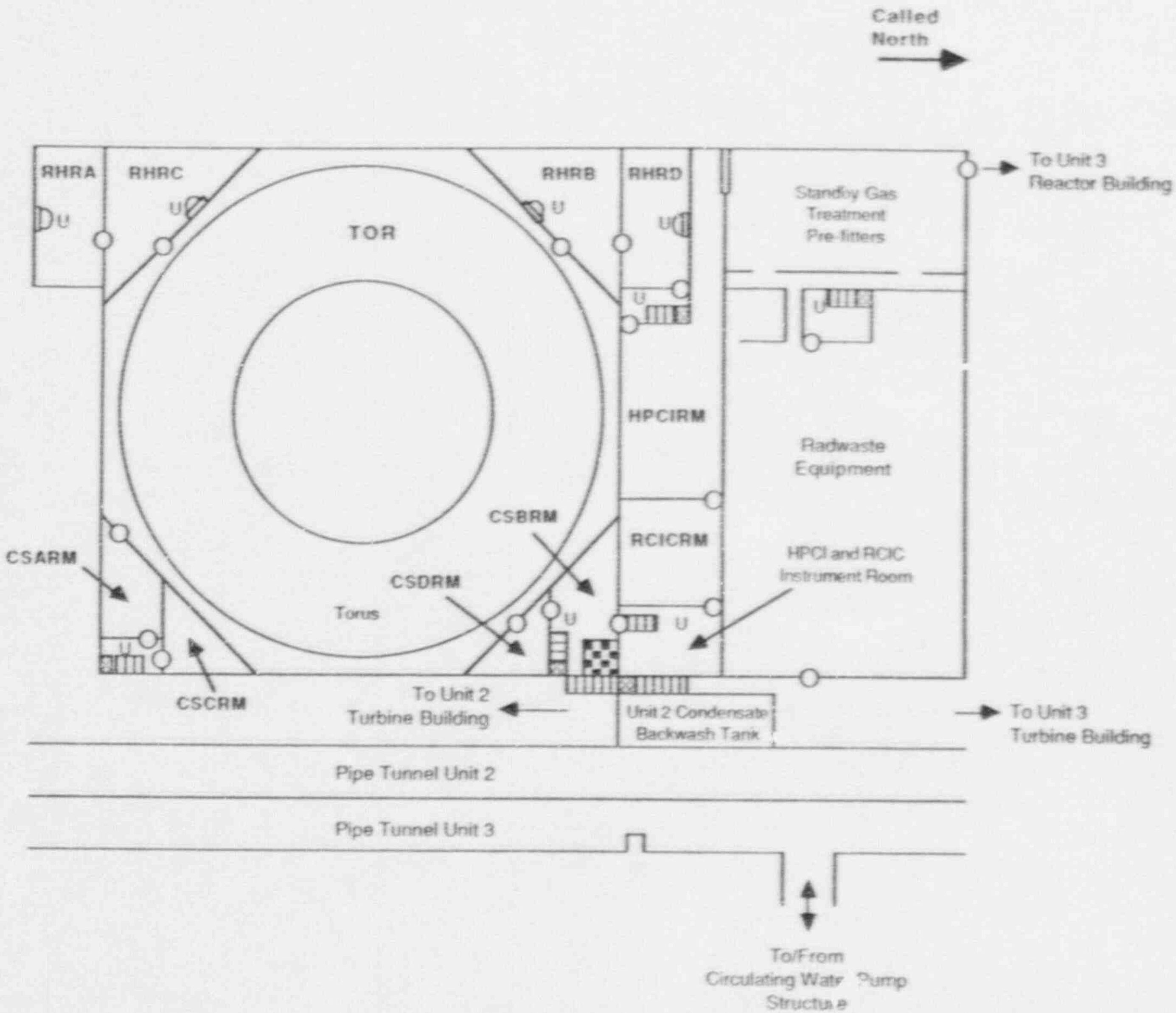


Figure 4-5. Peach Bottom 2 Reactor and Radwaste Building, Elevation 91'6" and Pipe Tunnels, Elevation 102'

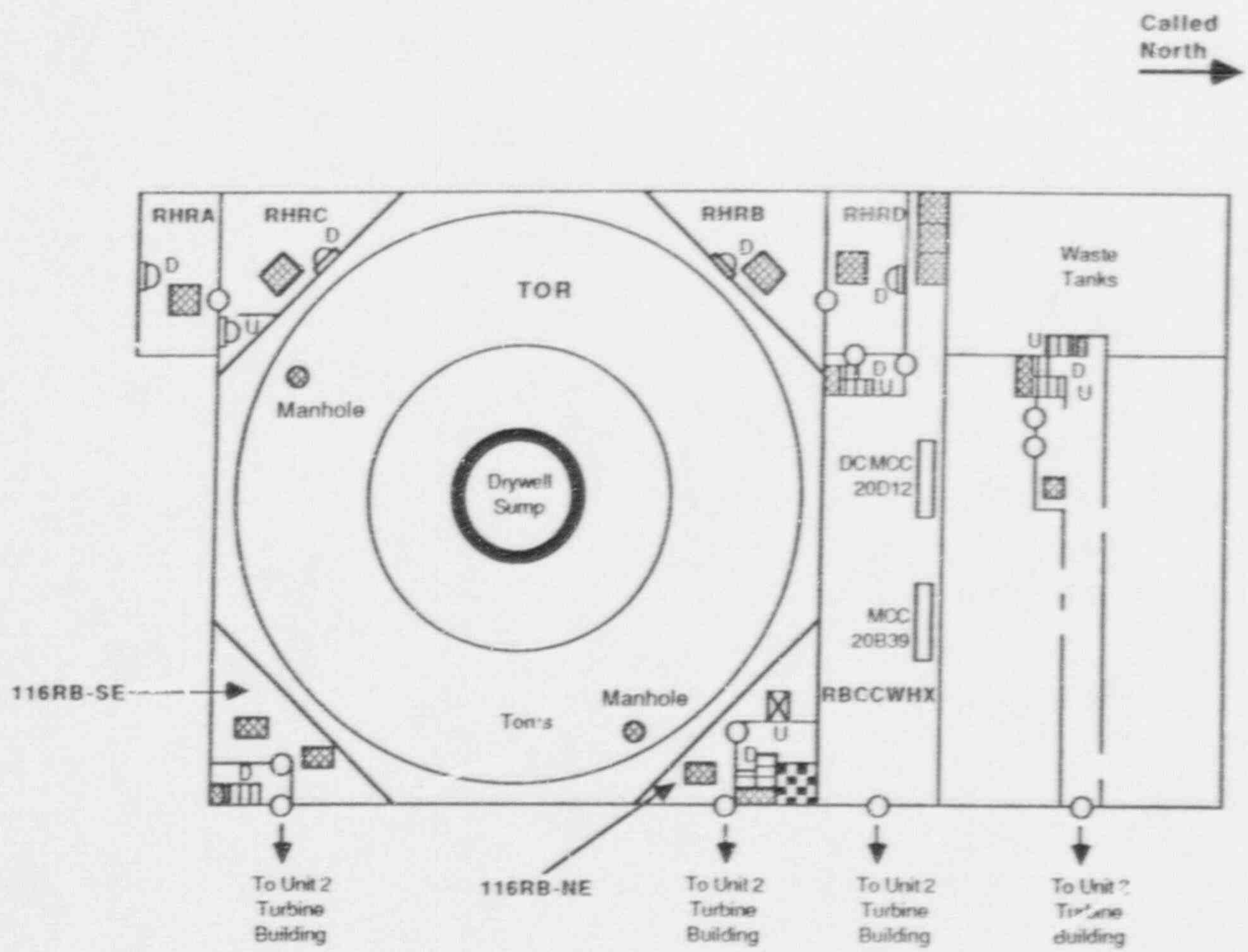


Figure 4-6. Peach Bottom 2 Reactor and Radwaste Building, Elevation 116'-0"

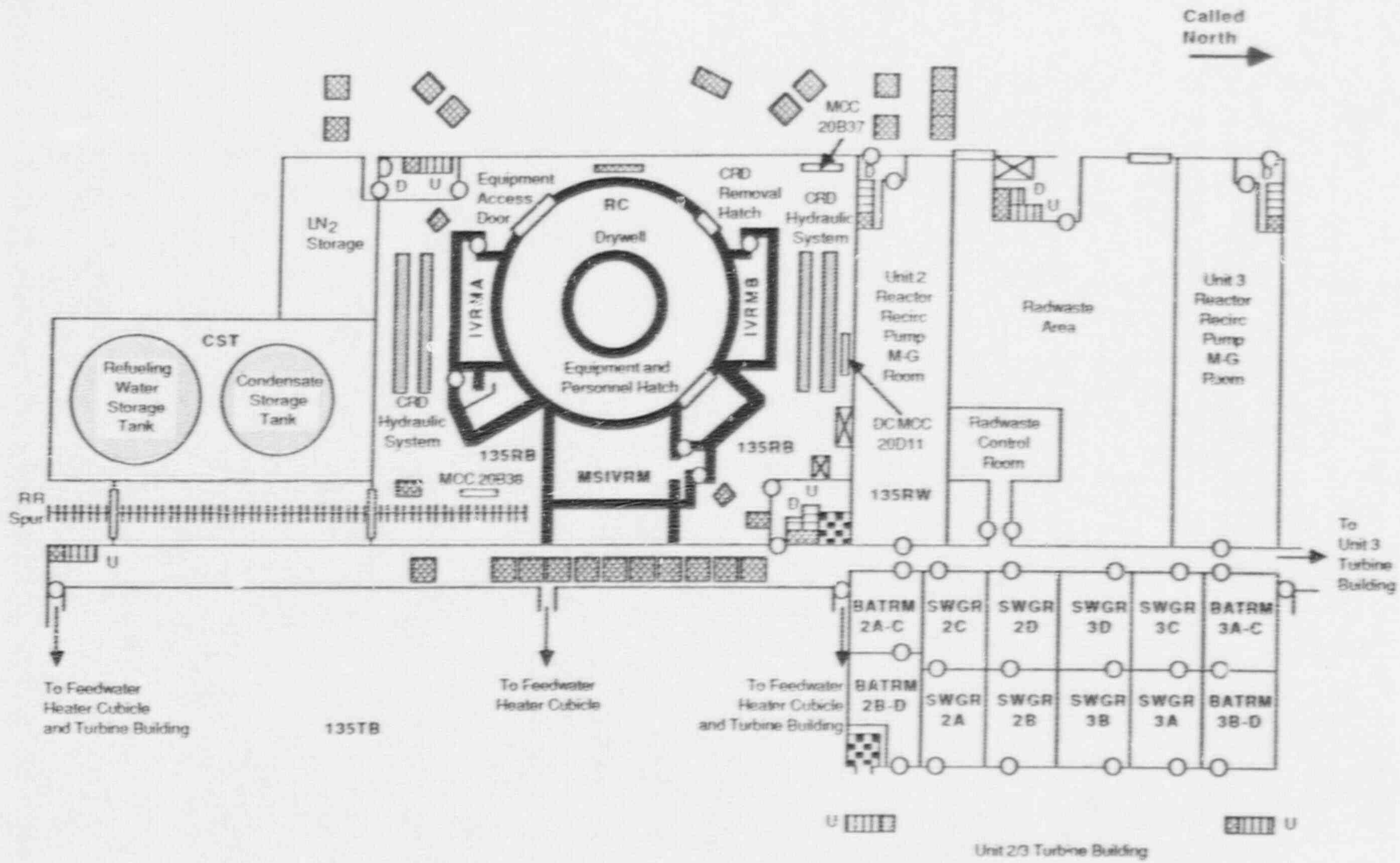


Figure 4-7. Peach Bottom 2 Reactor and Radwaste Building and Unit 2/3 Switchgear Rooms, Elevation 135'0"

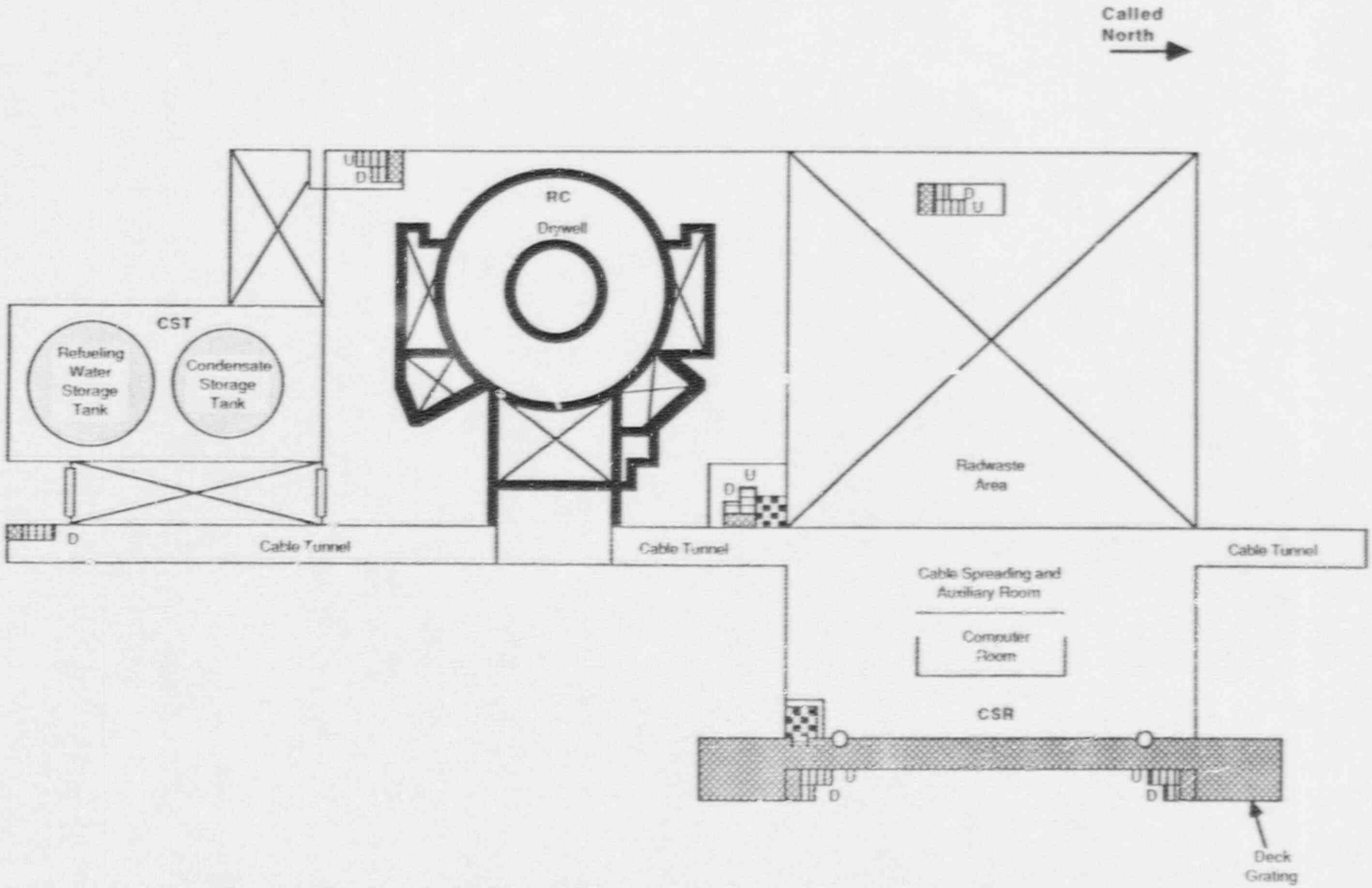


Figure 4-8. Peach Bottom 2 Reactor and Radwaste Building and Unit 2/3 Cable Spreading Room, Elevation 150'0"

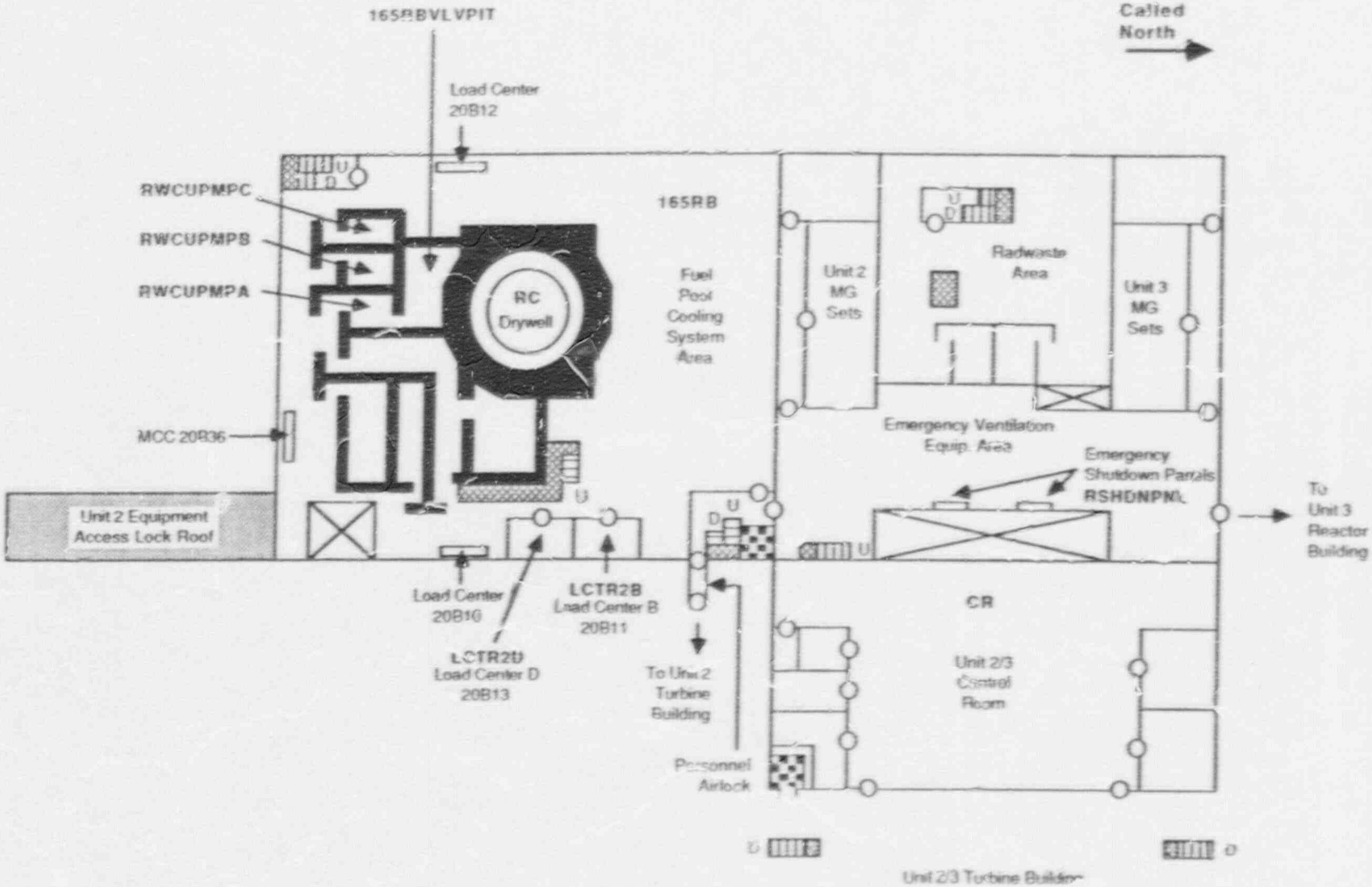


Figure 4-9. Peach Bottom 2 Reactor and Radwaste Building and Unit 2/3 Switchgear Rooms, Elevation 165'0"

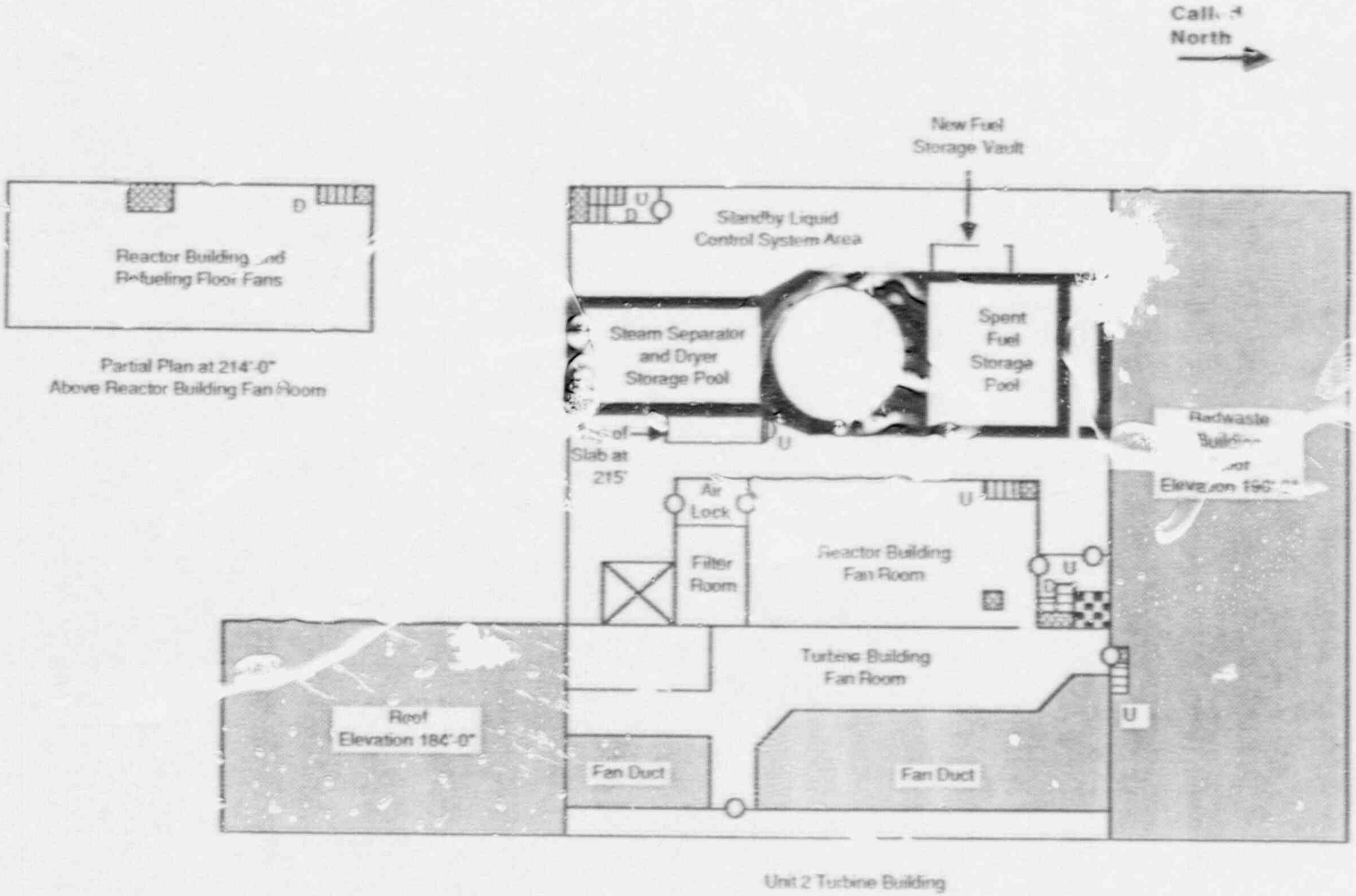


Figure 4-10. Peach Bottom 2 Reactor Building, Elevations 195'-0" and 214'-0"

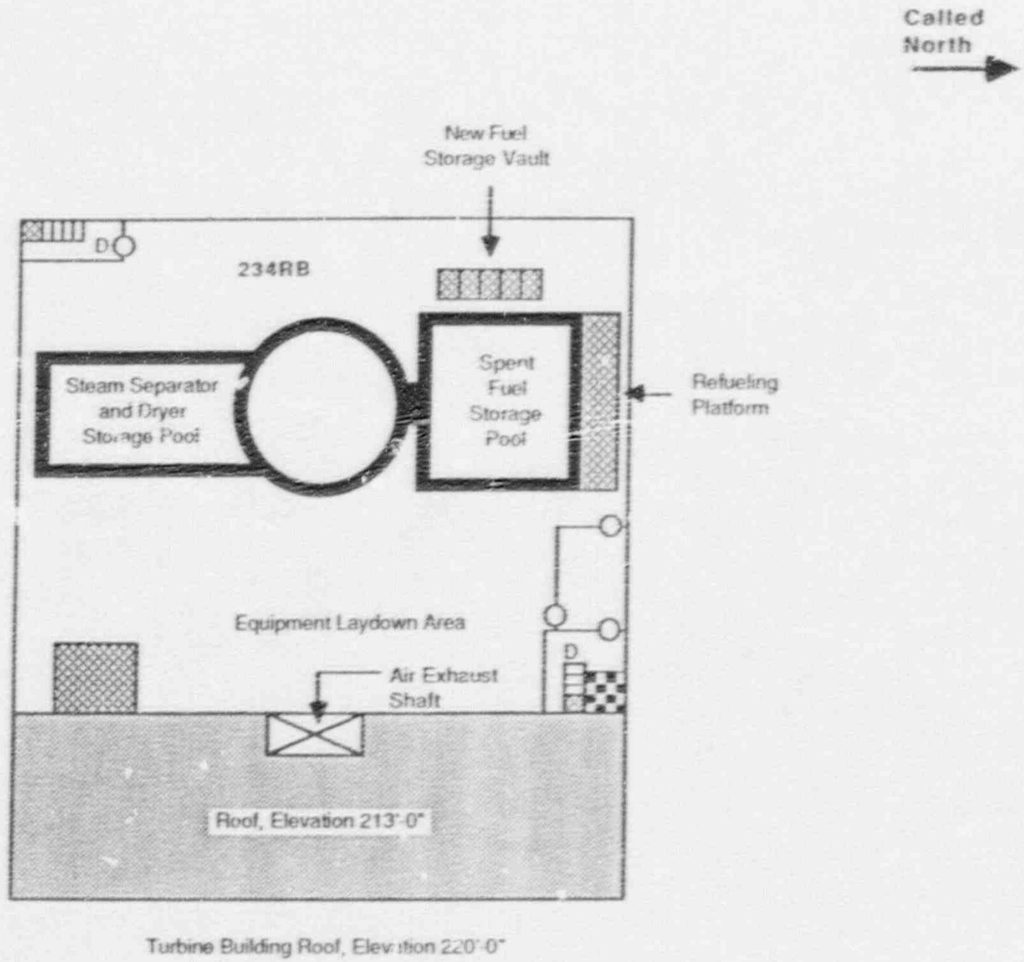


Figure 4-11. Peach Bottom 2 Reactor Building, Elevation 234'-0"

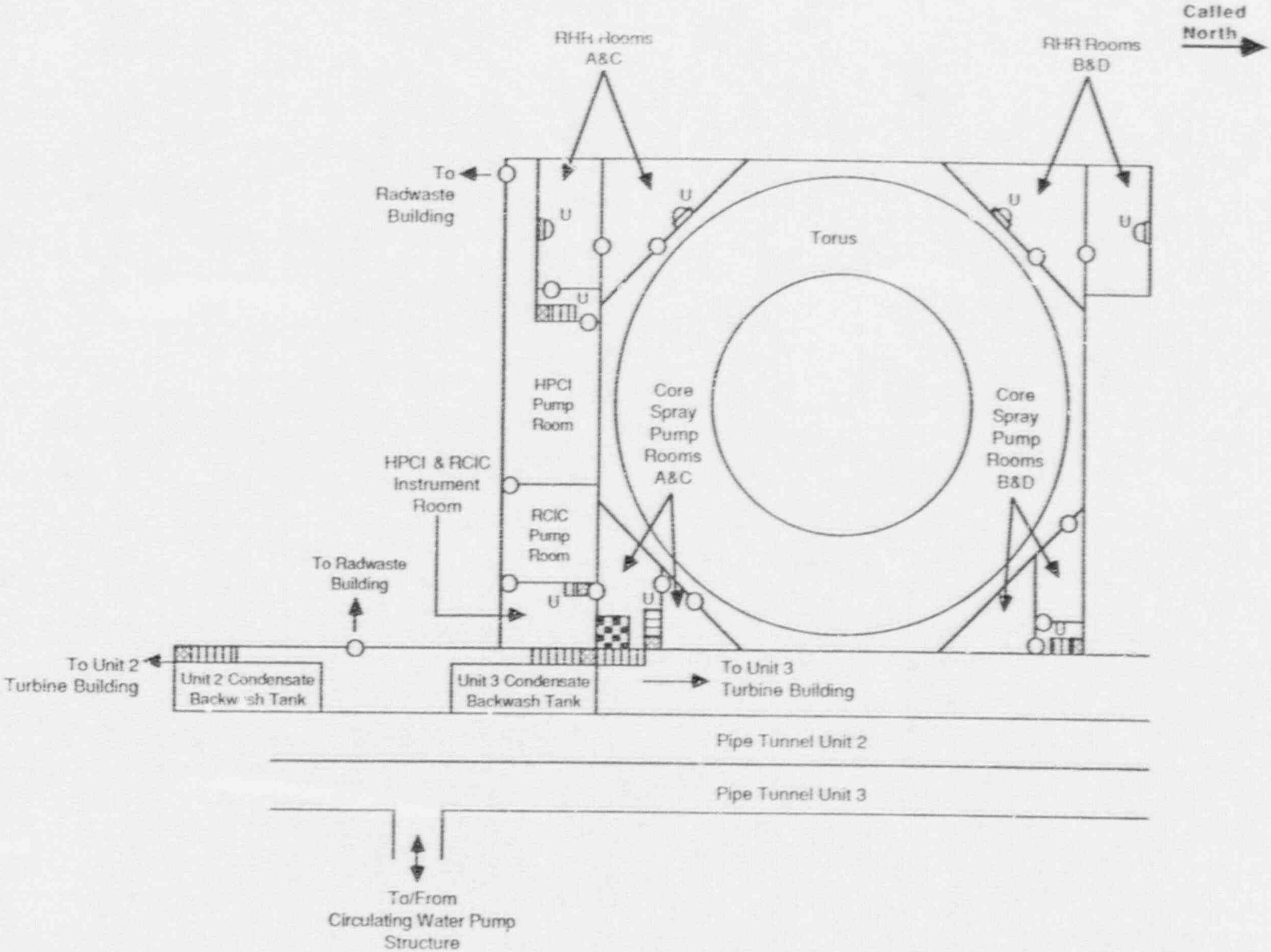


Figure 4-12 Peach Bottom 3 Reactor and Radwaste Building, Elevation 91'6" and Pipe Tunnels, Elevation 102'

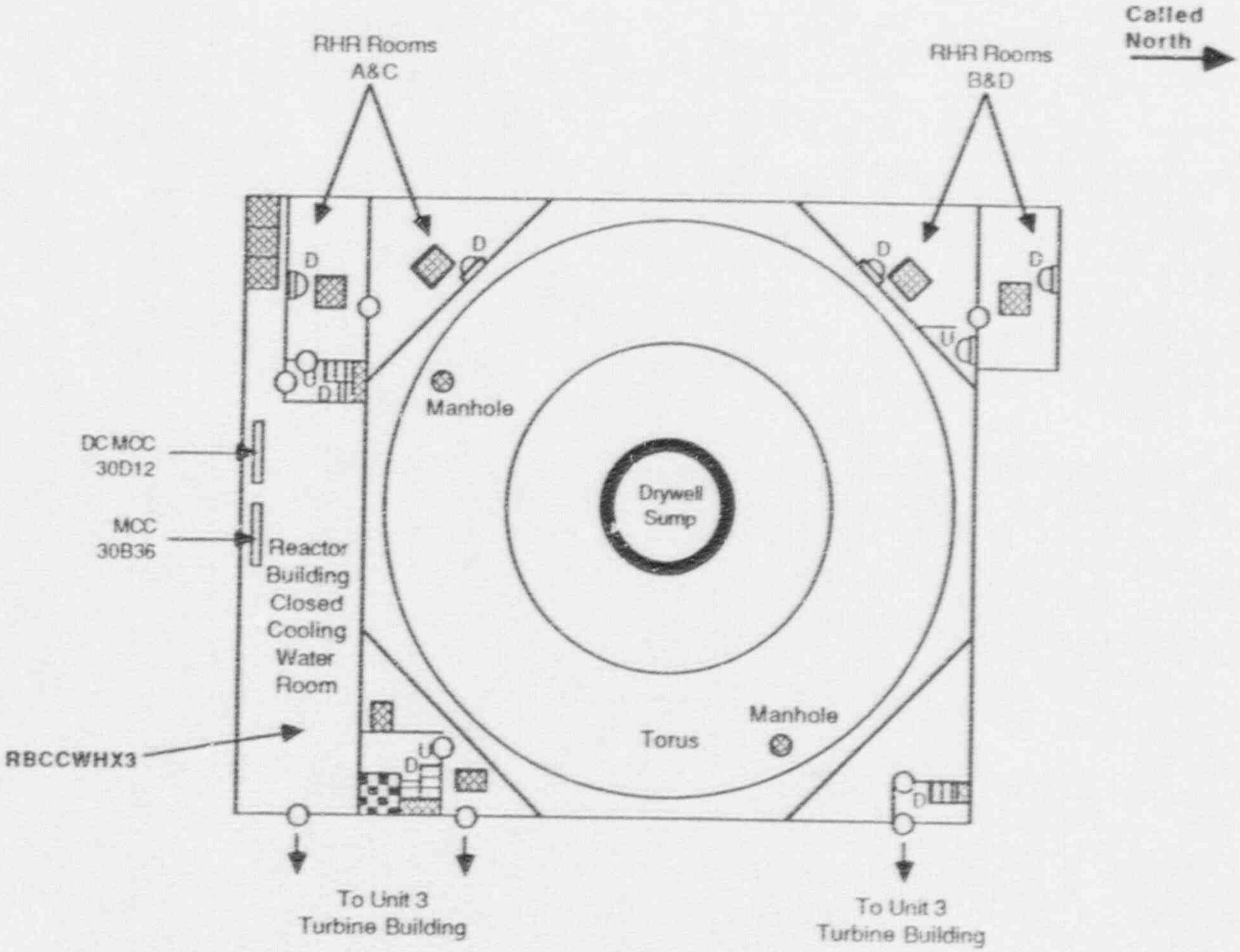


Figure 4-13 Peach Bottom 3 Reactor and Radwaste Building, Elevation 116'-0"

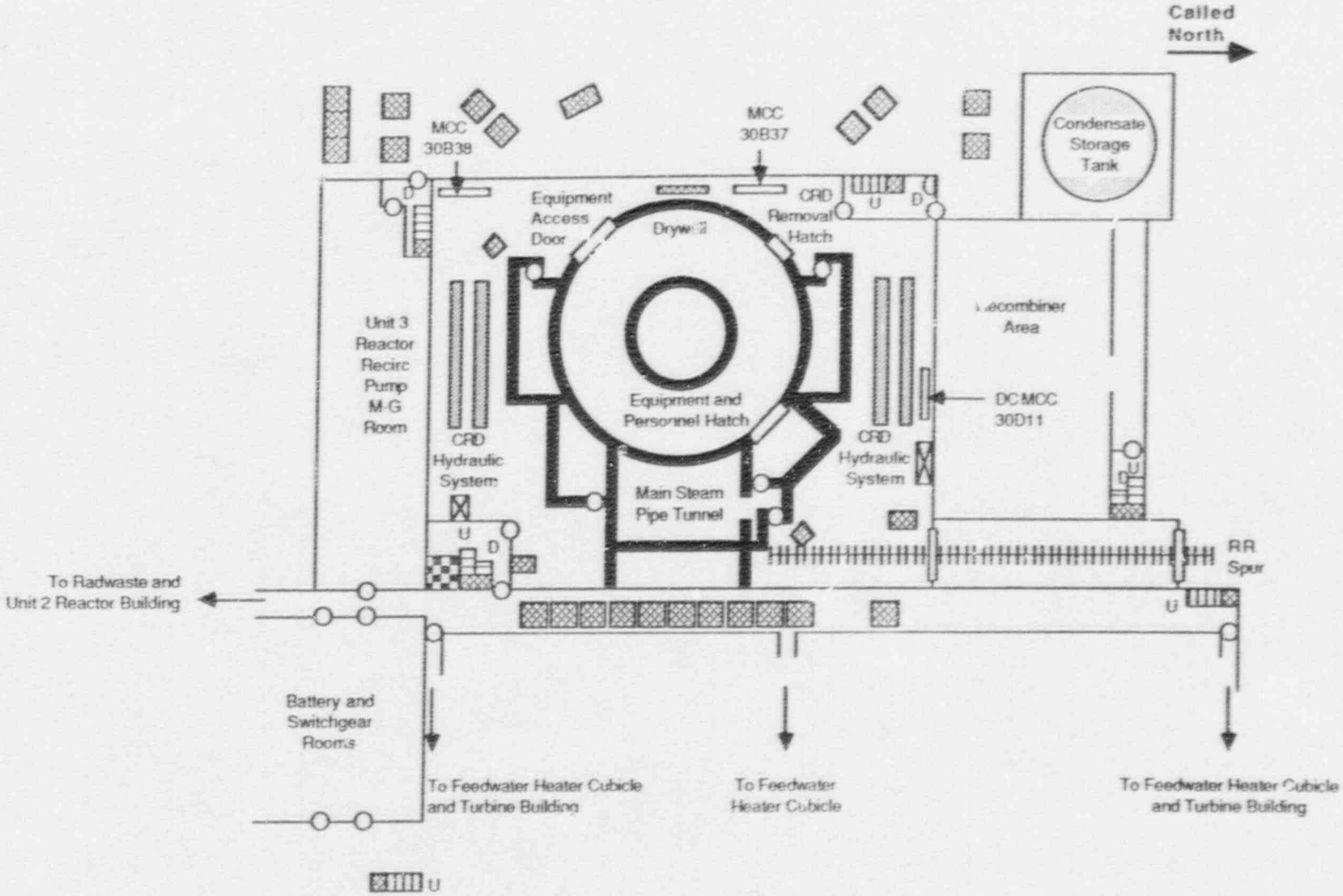


Figure 4-14. Peach Bottom 3 Reactor and Radwaste Building, Elevation 135'0"

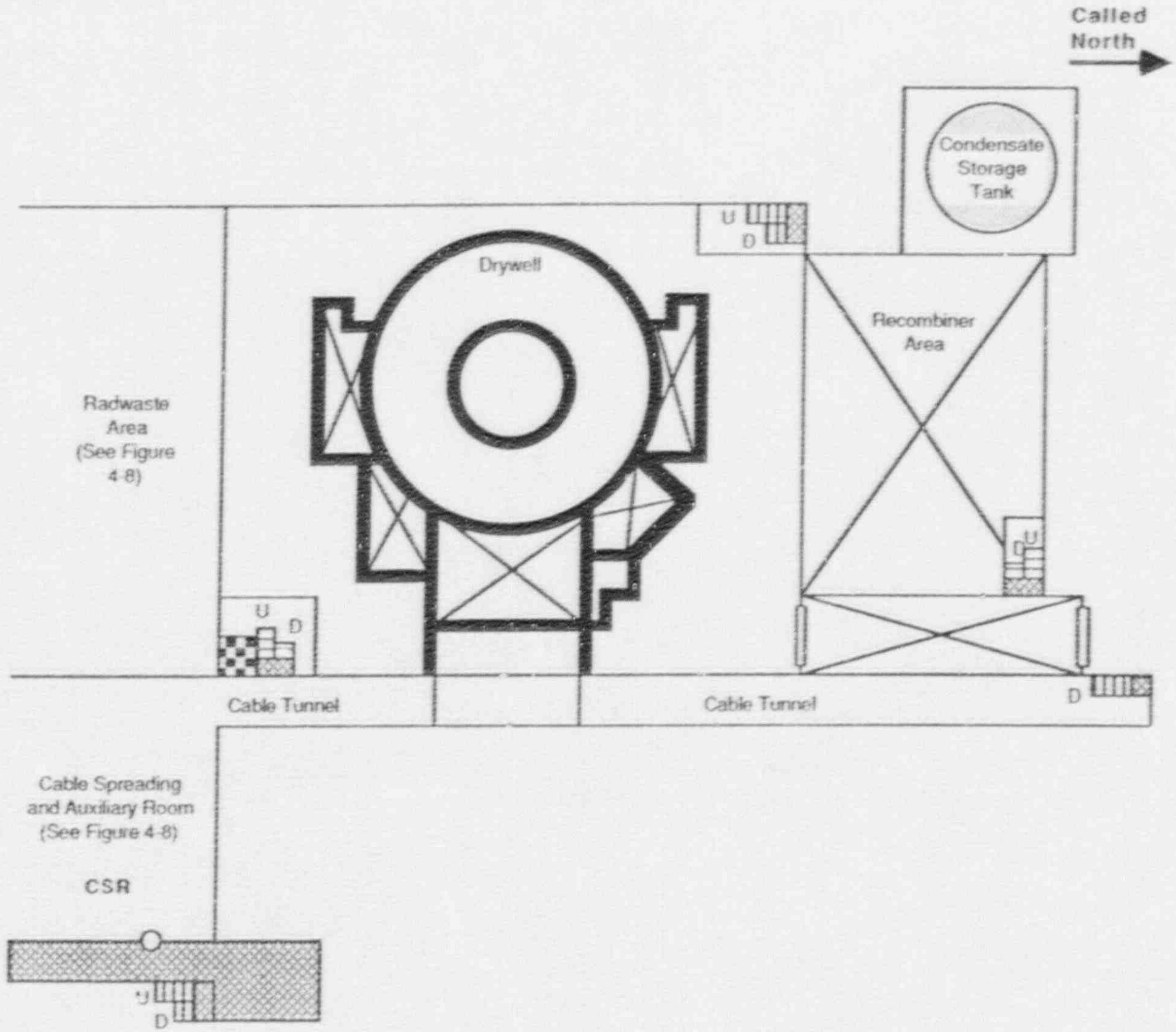


Figure 4-15. Peach Bottom 3 Reactor and Radwaste Building, Elevation 150'0"

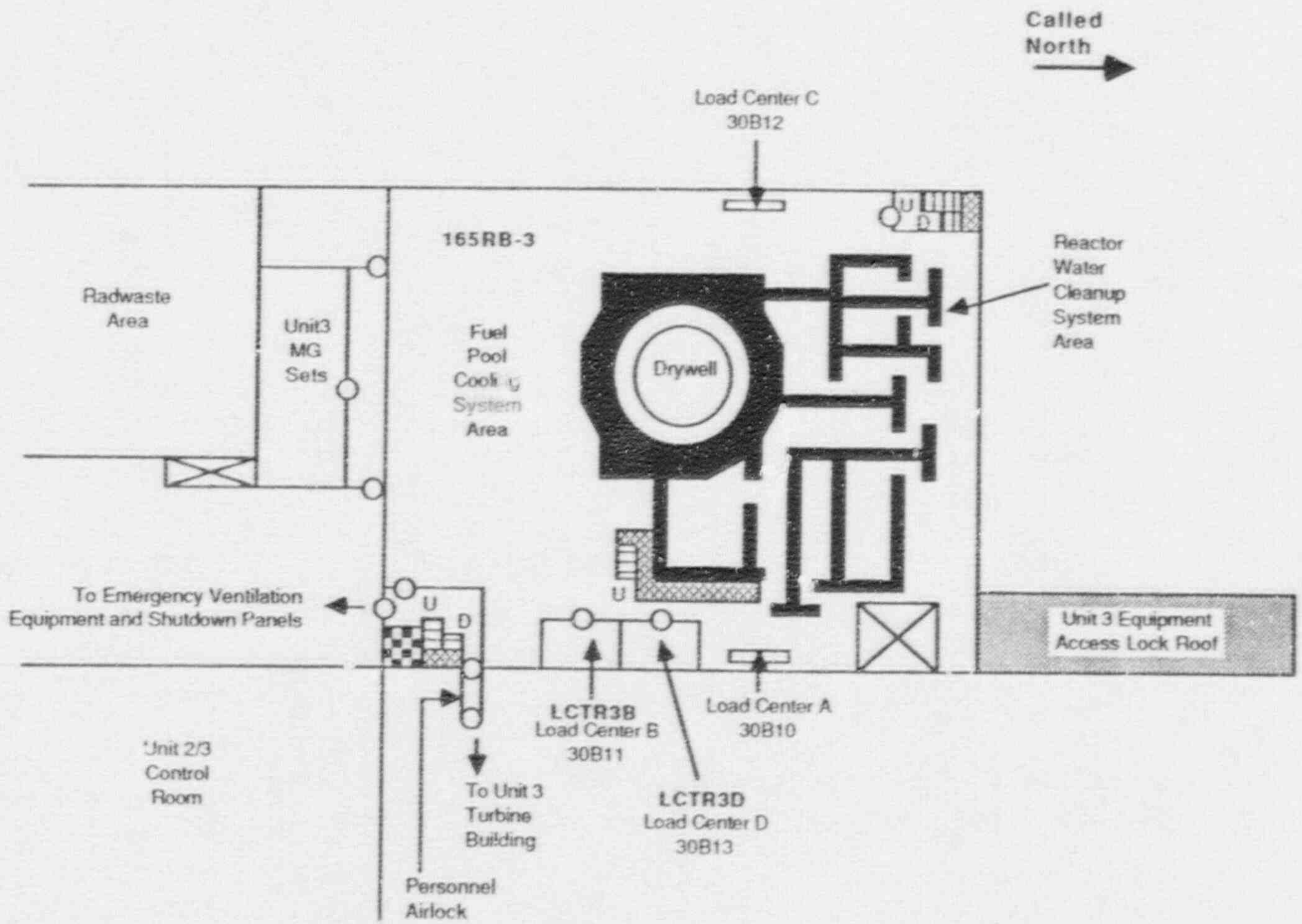


Figure 4-16. Peach Bottom 3 Reactor and Radwaste Building and Unit 2/3 Switchgear Rooms, Elevation 165'0"

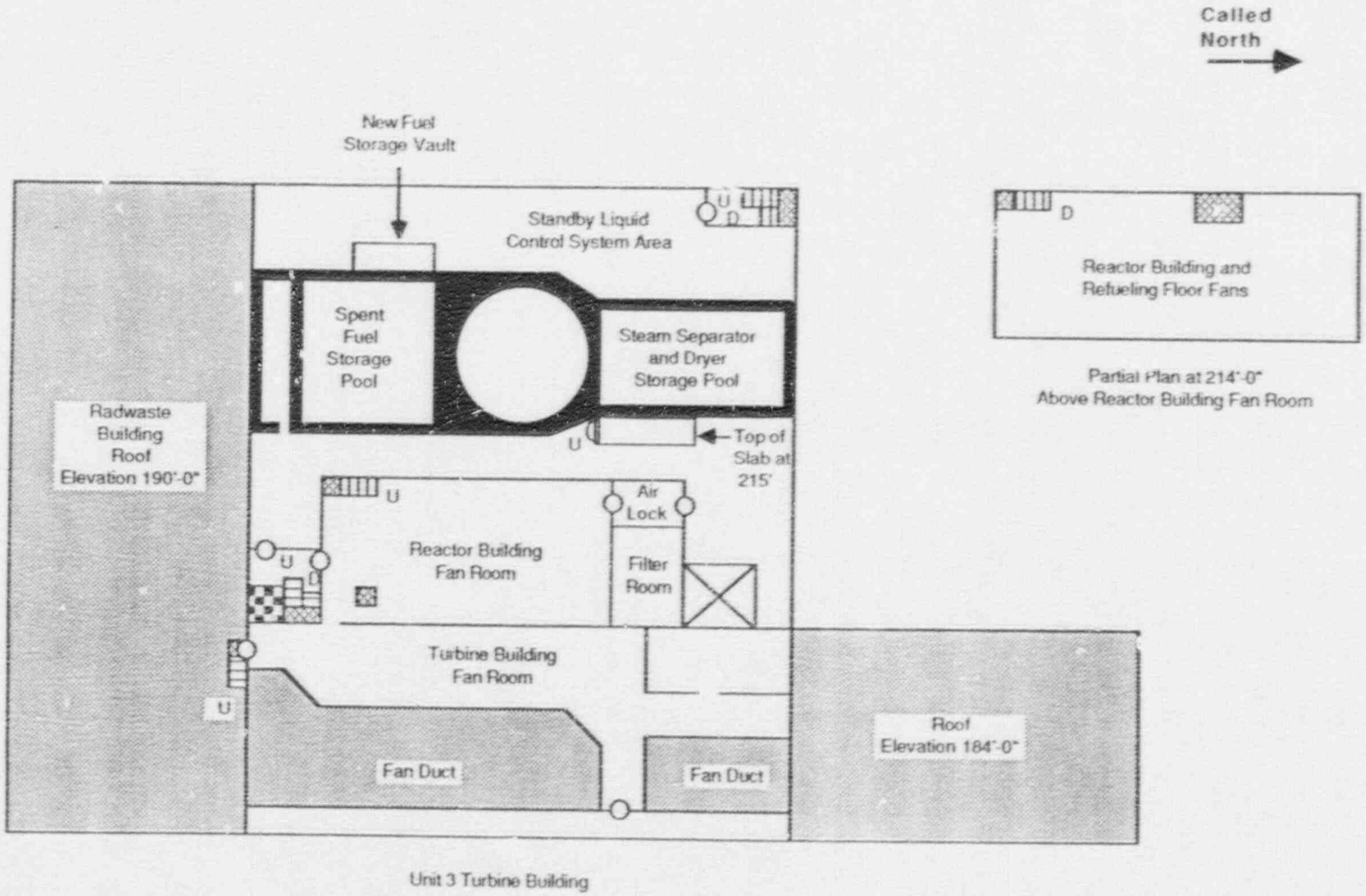


Figure 4-17. Peach Bottom 3 Reactor Building, Elevations 195'-0" and 214'-0"

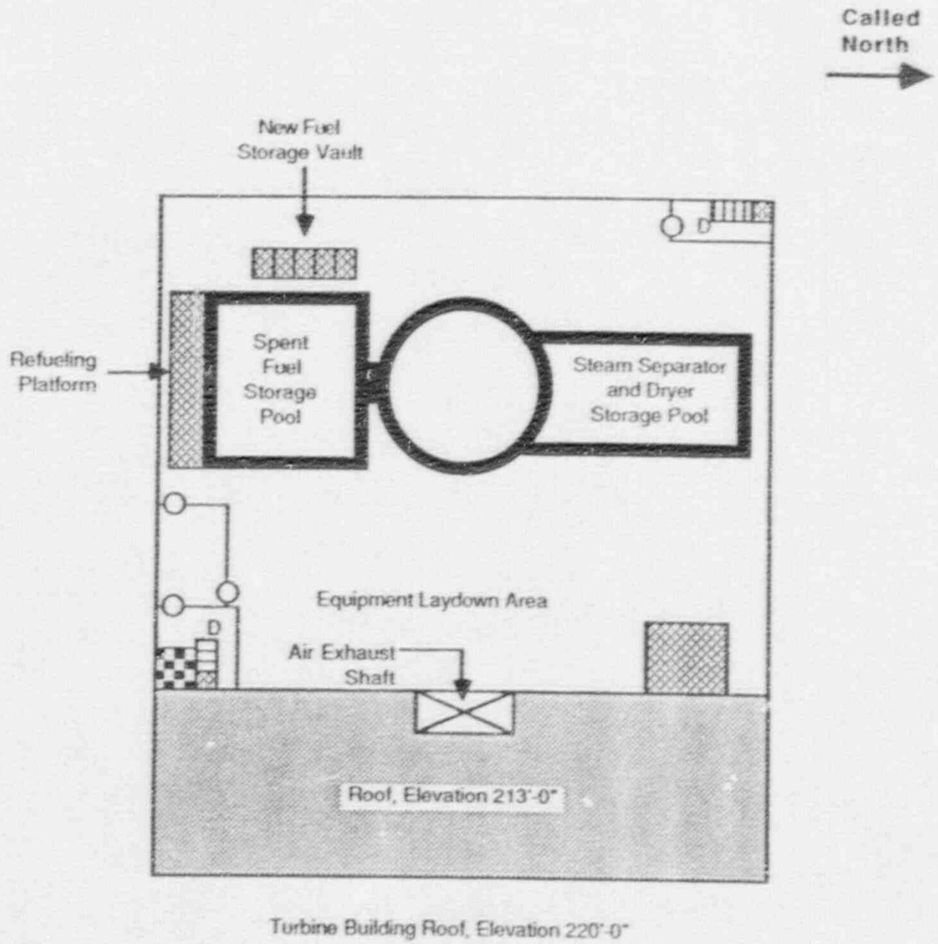


Figure 4-18. Peach Bottom 3 Reactor Building, Elevation 234'-0"

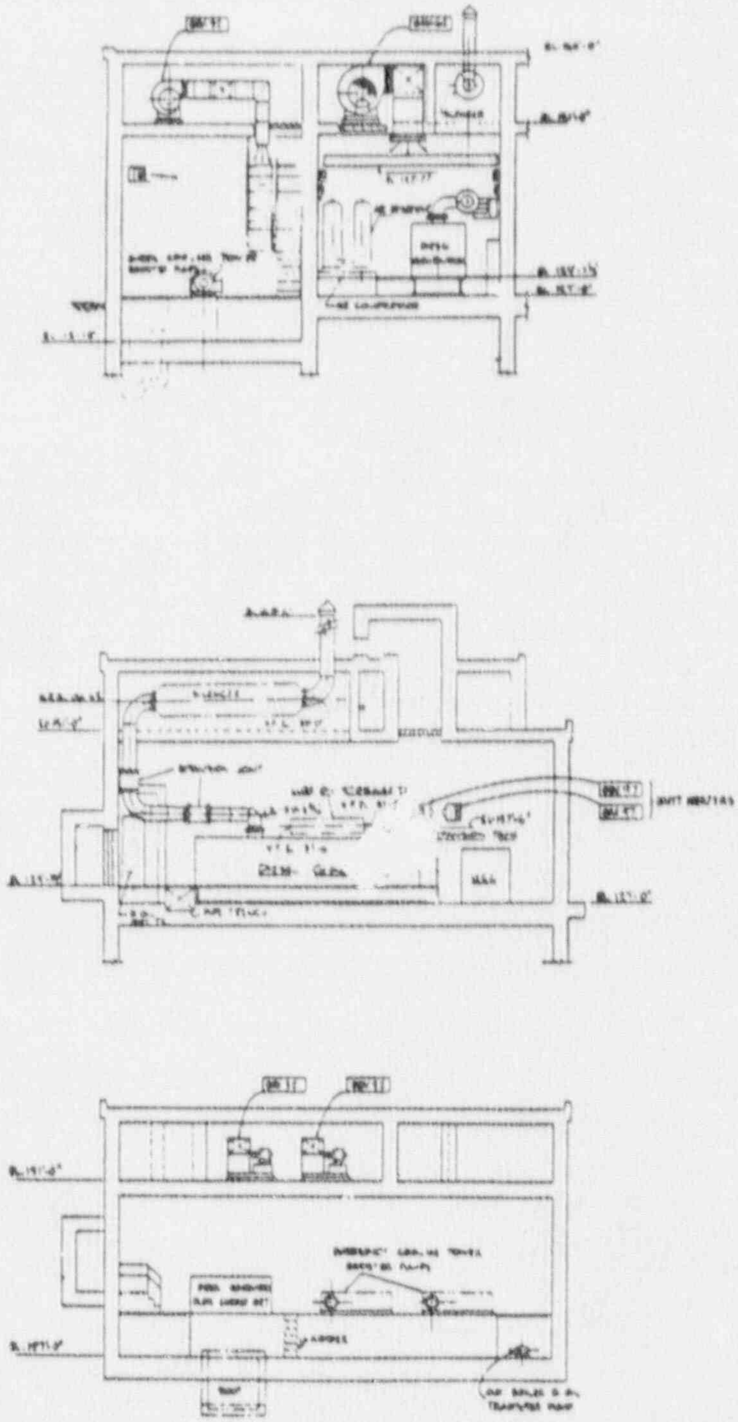


Figure 4-19. Elevation Views of Peach Bottom 2 and 3 Diesel Generator Building

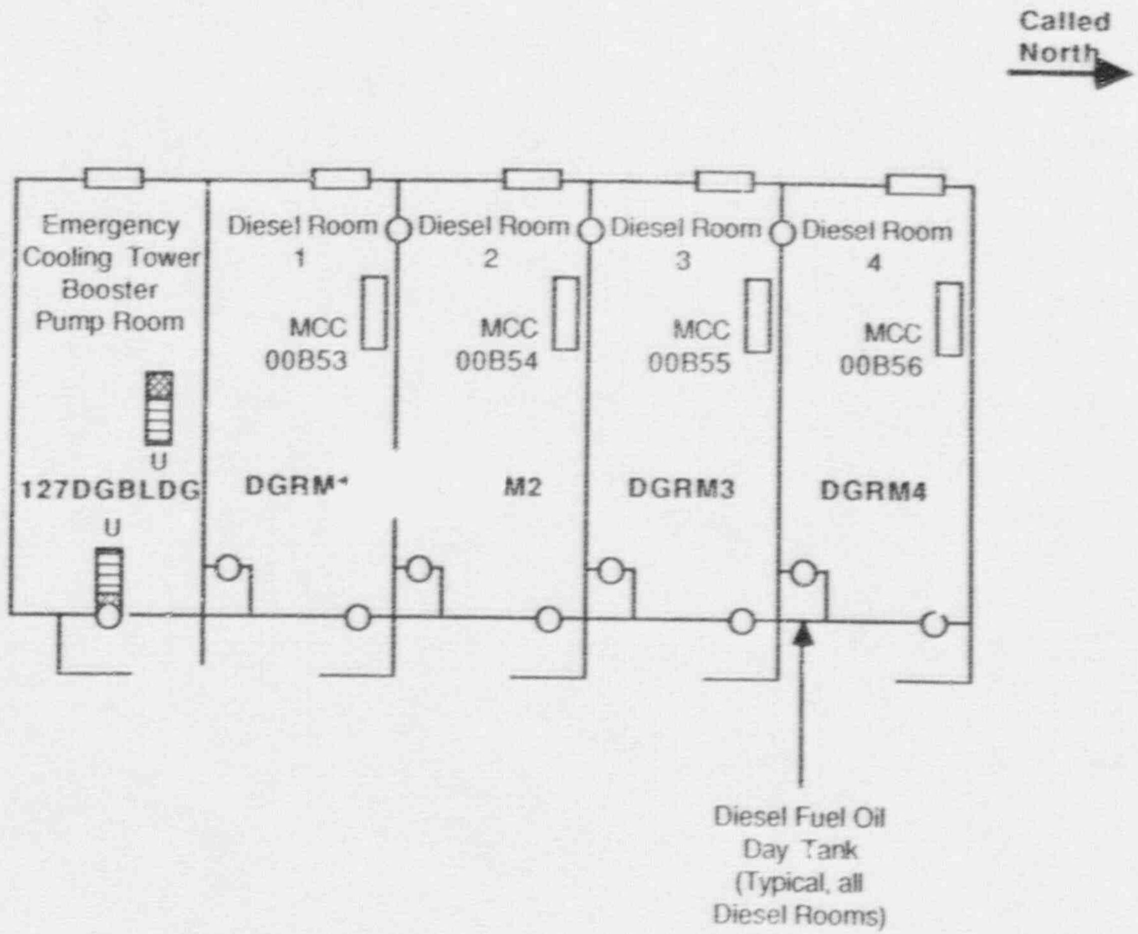


Figure 4-20. Peach Bottom 2 and 3 Diesel Generator Building, Elevation 127'-0"

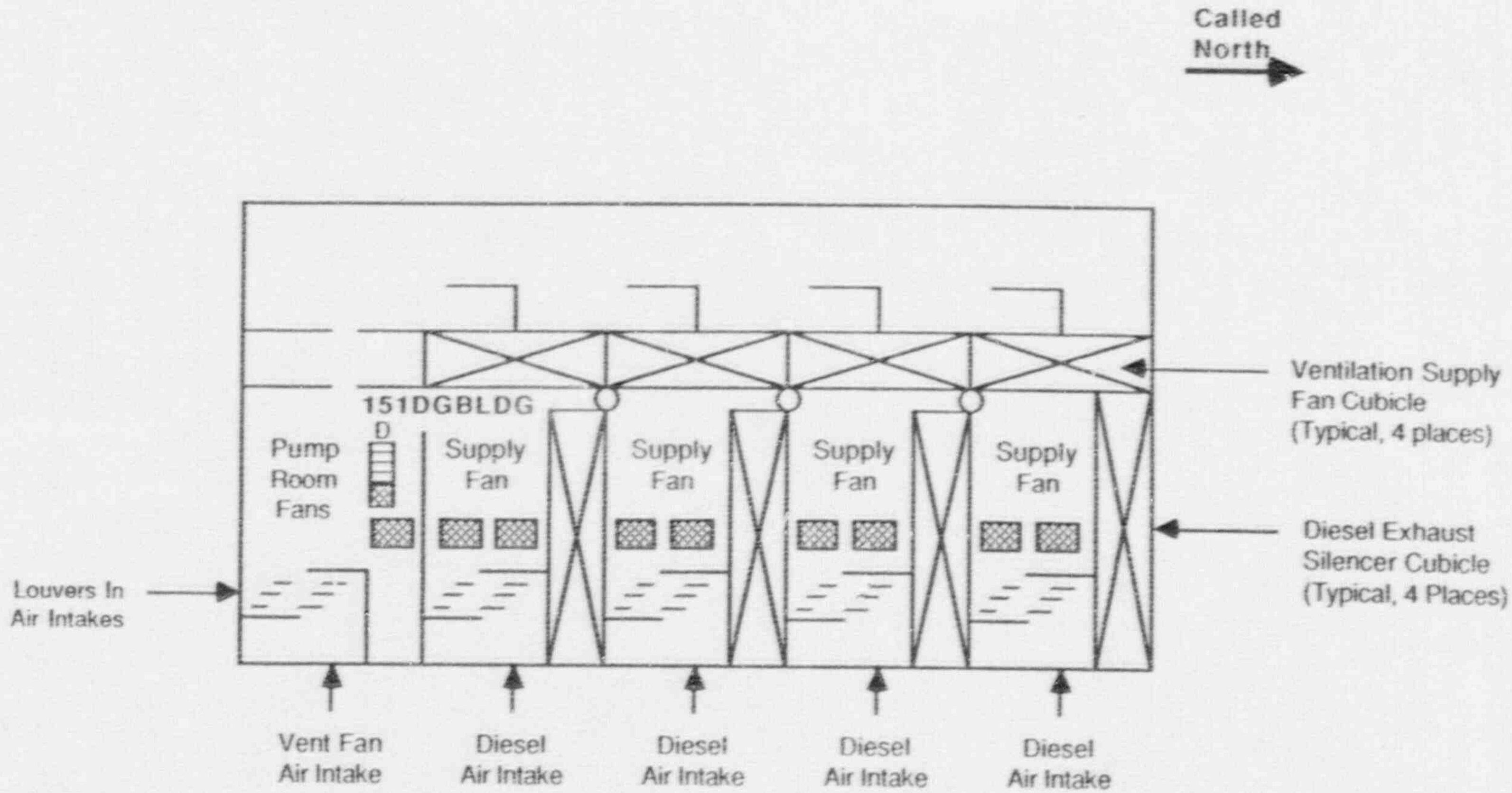


Figure 4-21. Peach Bottom 2 and 3 Diesel Generator Building, Elevation 151'-0"

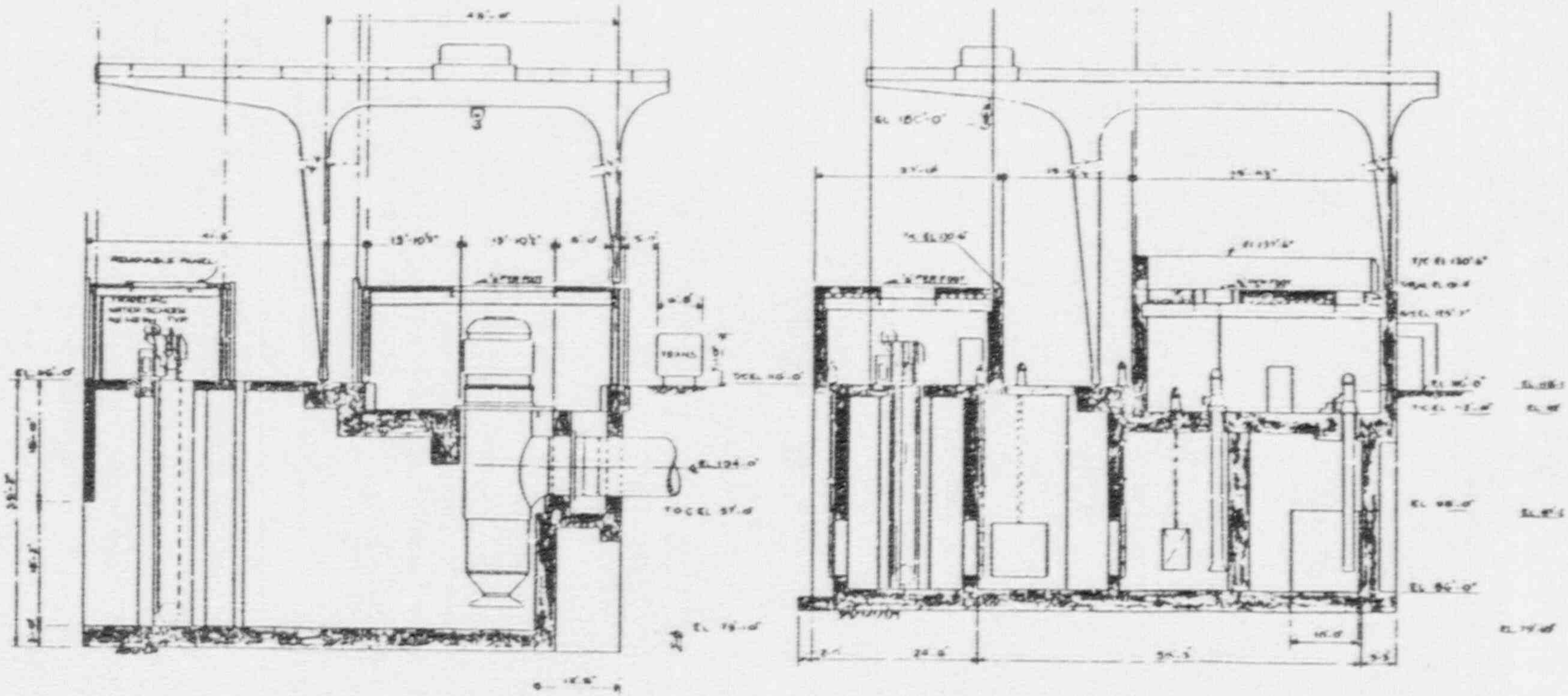
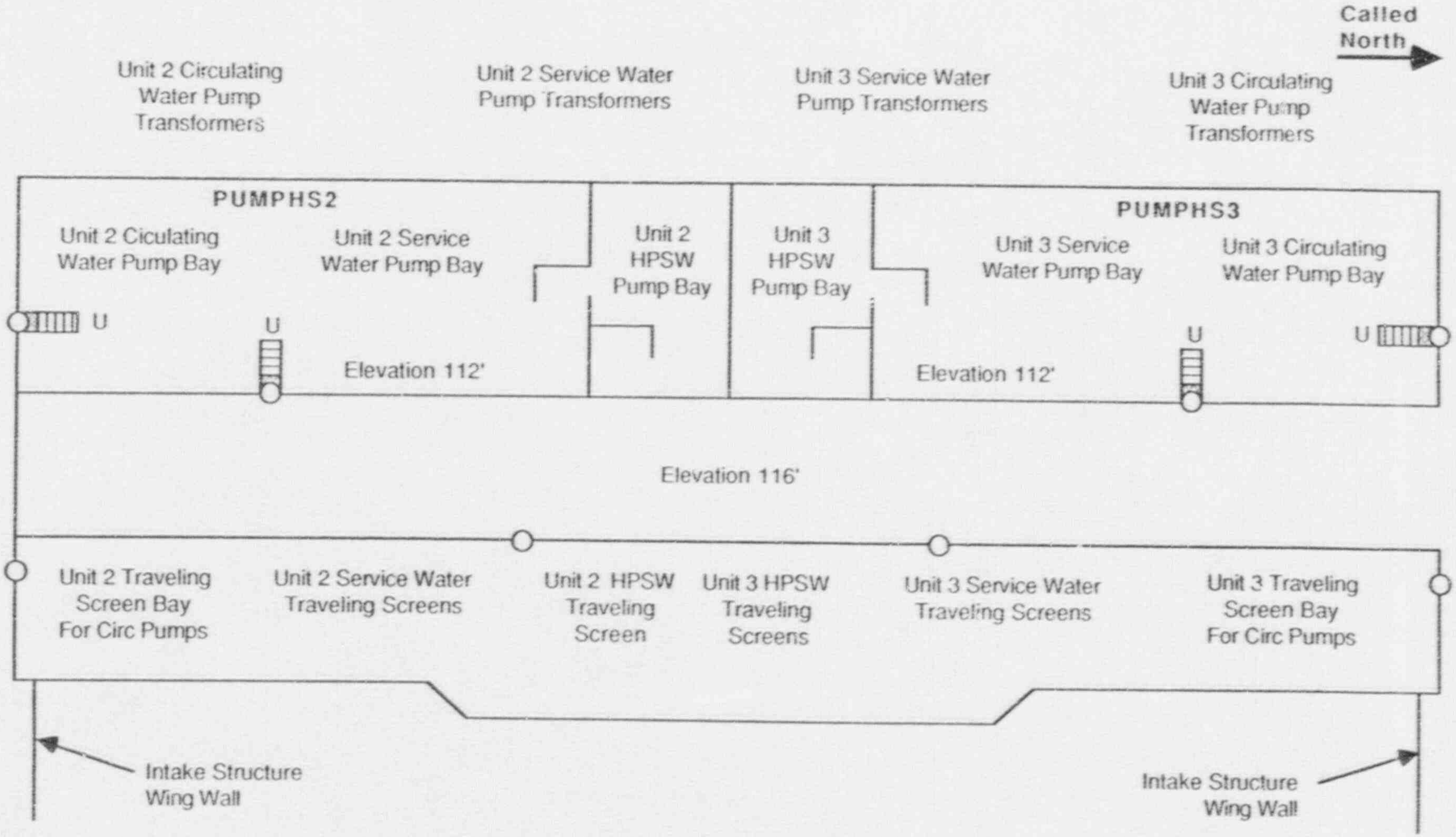


Figure 4-22. Elevation Views of the Peach Bottom 2 and 3 Circulating Water Pump Structure



NOTE: There are removable panels in the roof above every major pump, removable with traveling crane

Figure 4-23. Peach Bottom 2 and 3 Circulating Water Pump Structure, Elevation 112'-0" and 116'-0"

Table 4-1. Definition of Peach Bottom 2 Building and Location Codes

	Codes	Descriptions
1.	116RB-NE	116' elevation of the Reactor Building - northeast corner, above CSBRM
2.	116RB-SE	116' elevation of the Reactor Building - southeast corner, above CSARM
3.	135RB	135' elevation of the Reactor Building
4.	135TB	135' elevation of the Turbine Building
5.	135RW	135' elevation of the Radwaste Building
6.	165RB	165' elevation of the of Reactor Building
7.	165RBVLVPIT	Valve Pit, located on the 165' elevation of Reactor Building
8.	234RB	234' elevation of the Reactor Building
9.	BATRM2A-C	Battery room 2A-C, located on the 135' elevation of the Turbine Building
10.	BATRM2B-D	Battery room 2B-D, located on the 135' elevation of the Turbine Building
11.	BATRM3A-C	Battery room 3A-C, located on the 135' elevation of the Turbine Building
12.	BATRM3B-D	Battery room 3B-D located on the 135' elevation of the Turbine Building
13.	CR	Control Room, located on the 165' elevation of the Turbine Building
14.	CSARM	Core Spray Pump Room A, located on the 91' elevation of the Reactor Building - southeast corner room
15.	CSBRM	Core Spray Pump Room B, located on the 91' elevation of the Reactor Building - northeast corner room
16.	CSCRM	Core Spray Pump Room C, located on the 91' elevation of the Reactor Building - southeast corner room
17.	CSDRM	Core Spray Pump Room D, located on the 91' elevation of the Reactor Building - northeast corner room
18.	CSR	Cable Spreading and Relay Room, located on the 150' elevation of the Turbine Building

Table 4-1. Definition of Peach Bottom 2 Building and Location Codes (Continued)

Codes	Descriptions
19. CST	Condensate Storage Tank, located on south side of Unit 2
20. 127DGBLDG	Pump Room, located on the 127' elevation of the Diesel Generator Room
21. 151DGBLDG	Diesel Building Fan Room, located on the 151' elevation of the Diesel Building
22. DGRM1	Diesel generator room 1
23. DGRM2	Diesel generator room 2
24. DGRM3	Diesel generator room 3
25. DGRM4	Diesel generator room 4
26. ECOOLTWR	Emergency Cooling Tower, north of Unit 3 Turbine Building
27. HPCIRM	High-pressure Coolant Injection Pump Room, located on the 91' elevation of the Reactor Building
28. IVRMA	Isolation Valve Room A, located on the 135' elevation of the Reactor Building
29. IVRMB	Isolation Valve Room B, located on the 135' elevation of the Reactor Building
30. LCTR2B	480V Load Center 2B Room, located on the 165' elevation of the Unit 2 Reactor Building
31. LCTR2D	480V Load Center 2D Room, located on the 165' elevation of the Unit 2 Reactor Building
32. LCTR3B	480V Load Center 3B Room, located on the 165' elevation of the Unit 2 Reactor Building
33. LCTR3D	480V Load Center 3D Room, located on the 165' elevation of the Unit 2 Reactor Building
34. MSIVRM	Main Steam Isolation Valve Room, located on the 135' elevation of the Reactor Building
35. PUMPHS2	Unit 2 side of Pump House - Circulating Water Structure located on river
36. PUMPHS3	Unit 3 side of Pump House - Circulating Water Structure located on river

Table 4-1. Definition of Peach Bottom 2 Building and Location Codes (Continued)

Codes	Descriptions
37. RBCCWHX	Reactor Building Component Cooling Water Heat Exchanger Room, located on the 116' elevation of the Unit 2 Reactor Building
38. RBCCWHX3	Reactor Building Component Cooling Water Heat Exchanger Room, located on the 116' elevation of the Unit 3 Reactor Building
39. RC	Reactor Containment
40. RCICRM	Reactor Core Isolation Cooling Pump Room, located on the 91' elevation of the Reactor Building
41. RHRA	RHR Heat Exchanger and Pump Room A located on the 91' and 116' elevation of the Reactor Building - southwest corner
42. RHRB	RHR Heat Exchanger and Pump Room B, located on the 91' and 116' elevations of the Reactor Building - northwest corner
43. RHRC	RHR Heat Exchanger and Pump Room C, located on the 91' and 116' elevations of Reactor Building - southwest corner
44. RHRD	RHR Heat Exchanger and Pump Room D, located on the 91' and 116' elevations of Reactor Building - northwest corner
45. RSHDNPNL	Remote Shutdown Panels, located on the 165' elevation of the Radwaste Building
46. RWCUPMPA	Reactor Water Cleanup Pump Room A, located on the 165' elevation of the Reactor Building
47. RWCUPMPB	Reactor Water Cleanup Pump Room B, located on the 165' elevation of the Reactor Building
48. RWCUPMPC	Reactor Water Cleanup Pump Room C, located on the 165' elevation of the Reactor Building
49. SWGR2A	4kv Switchgear Room 2A on the 135' elevation of the Turbine Building
50. SWGR2B	4kv Switchgear Room 2B on the 135' elevation of the Turbine Building
51. SWGR2C	4kv Switchgear Room 2C on the 135' elevation of the Turbine Building

Table 4-1. Definition of Peach Bottom 2 Building and Location Codes (Continued)

Codes	Descriptions
52. SWGR2D	4kv Switchgear Room 2D on the 135' elevation of the Turbine Building
53. SWGR3A	4kv Switchgear Room 3A on the 135' elevation of the Turbine Building
54. SWGR3B	4kv Switchgear Room 3B on the 135' elevation of the Turbine Building
55. SWGR3C	4kv Switchgear Room 3C on the 135' elevation of the Turbine Building
56. SWGR3D	4kv Switchgear Room 3D on the 135' elevation of the Turbine Building
57. TB	Turbine Building in vicinity of main steam piping
58. TOR	Torus area on the 91' elevation of the Reactor Building

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
127DGBLDG	ESW	498	MOV
127DGBLDG	ESW	OAP163	MDP
127DGBLDG	ESW	OBP163	MDP
127DGBLDG	HPSW	2803	MOV
127DGBLDG	HPSW	2486	MOV
135RB	EP	MCC-20B37	MCC
135RB	EP	MCC-20B38	MCC
135RB	EP	PNL-20D12	PNL
135RB	EP	TRAN-20X135	TRAN
135RB	EP	PNL-20Y35	PNL
135RW	EP	PNL-00Y03	PNL
135TB	EP	MCC-20B59	MCC
135TB	EP	MCC-20B60	MCC
135TB	EP	MCC-00B49	MCC
135TB	EP	MCC-00B50	MCC
135TB	EP	TRAN-20X133	TRAN
135TB	EP	TRAN-20X134	TRAN
135TB	EP	TRAN-00X103	TRAN
151DGBLDG	HVAC	OAV64	FAN
151DGBLDG	HVAC	OBV64	FAN
151DGBLDG	HVAC	OCV64	FAN
151DGBLDG	HVAC	ODV64	FAN
151DGBLDG	HVAC	OAV91	FAN
151DGBLDG	HVAC	OBV91	FAN
151DGBLDG	HVAC	OCV91	FAN
151DGBLDG	HVAC	ODV91	FAN
165RB	EP	MCC-20B36	MCC
165RB	EP	E124-BUS	BUS
165RB	EP	TRAN-124	TRAN
165RB	EP	E324-BUS	BUS
165RB	EP	TRAN-324	TRAN

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
165RBVLVPIT	RCS	12-18	MOV
195RB	EP	MCC-20B27	MCC
195RB	EP	MCC-20B28	MCC
BATRM2A-C	EP	BATT-2A	BATT
BATRM2A-C	EP	BC-2BCA	BC
BATRM2A-C	EP	BC-2BCC	BC
BATRM2A-C	EP	BATT-2C	BATT
BATRM2A-C	EP	PNL-2DPA	PNL
BATRM2A-C	EP	PNL-2DPA	PNL
BATRM2A-C	EP	PNL-2DPA	PNL
BATRM2A-C	EP	PNL-2DPA	PNL
BATRM2B-D	EP	BATT-2B	BATT
BATRM2B-D	EP	BC-2BCB	BC
BATRM2B-D	EP	DC-2BCD	BC
BATRM2B-D	EP	BATT-2D	BATT
BATRM2B-D	EP	PNL-2DPB	PNL
BATRM2B-D	EP	PNL-2DPB	PNL
BATRM2B-D	EP	PNL-2DPB	PNL
BATRM2B-D	EP	PNL-2DPB	PNL
BATRM3A-C	EP	BATT-3C	BATT
BATRM3A-C	EP	PNL-3DPA	PNL
BATRM3A-C	EP	PNL-3DPA	PNL
BATRM3A-C	EP	PNL-3DPA	PNL
BATRM3A-C	EP	PNL-3DPA	PNL
BATRM3B-D	EP	BATT-3D	BATT
BATRM3B-D	EP	PNL-3DPB	PNL
BATRM3B-D	EP	PNL-3DPB	PNL
BATRM3B-D	EP	PNL-3DPB	PNL
BATRM3B-D	EP	PNL-3DPB	PNL
CSARM	ECCS	2AP37	MDP
CSARM	ECCS	14-7A	MOV

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
CSARM	HVAC	2AV24	FAN
CSARM	HVAC	2BV24	FAN
CSBRM	ECCS	2BP37	MDP
CSBRM	ECCS	14-7B	MOV
CSBRM	HVAC	2EV24	FAN
CSBRM	HVAC	2FV24	FAN
CSCRM	ECCS	2CP37	MDP
CSCRM	ECCS	14-7C	MOV
CSCRM	HVAC	2CV24	FAN
CSCRM	HVAC	2DV24	FAN
CSDRM	ECCS	2DP37	MDP
CSDRM	ECCS	14-7D	MOV
CSDRM	HVAC	2GV24	FAN
CSDRM	HVAC	2HV24	FAN
CSR	EP	PNL-2PPA	PNL
CSR	EP	PNL-2PPC	PNL
CSR	EP	PNL-2PPB	PNL
CSR	EP	PNL-2PPB	PNL
CSR	EP	PNL-3PPC	PNL
CSR	EP	PNL-3PPD	PNL
CSR	EP	PNL-20Y33	PNL
CSR	EP	PNL-20Y34	PNL
CST	ECCS	CST	TK
CST	RCIC	CST	TK
DGRM1	EP	EP-DG1	DG
DGRM1	EP	MCC-00B53	MCC
DGRM2	EP	EP-DG2	DG
DGRM2	EP	MCC-00B54	MCC
DGRM3	EP	EP-DG3	DG
DGRM3	EP	MCC-00B55	MCC
DGRM4	EP	EP-DG4	DG

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
DGRM4	EP	MCC-00B56	MCC
ECOOLTWR	ESW	OAK32	FAN
ECOOLTWR	ESW	OBK32	FAN
ECOOLTWR	ESW	OCK32	FAN
ECOOLTWR	ESW	0501A	MOV
ECOOLTWR	ESW	0501B	MOV
ECOOLTWR	ESW	0501C	MOV
ECOOLTWR	ESW	00P186	MDP
ECOOLTWR	ESW	2804A	MOV
ECOOLTWR	ESW	2804B	MOV
ECOOLTWR	ESW	3804A	MOV
ECOOLTWR	ESW	3804B	MOV
ECOOLTWR	ESW	841	MOV
ECOOLTWR	HPSW	0502A	MOV
ECOOLTWR	HPSW	0502B	MOV
ECOOLTWR	HPSW	0502C	MOV
HPCIRM	ECCS	23-57	MOV
HPCIRM	ECCS	23-17	MOV
HPCIRM	ECCS	23-20	MOV
HPCIRM	ECCS	23-P1	TDP
HPCIRM	ECCS	23-58	MOV
HPCIRM	ECCS	23-14	MOV
HPCIRM	ECCS	HPCI-AUX-LUB	MDP
HPCIRM	ECCS	STOP VALVE	HV
HPCIRM	ECCS	CONTROL VALVE	HV
HPCIRM	HVAC	2AV23	FAN
HPCIRM	HVAC	2BV23	FAN
IVRMA	ECCS	14-26A	MOV
IVRMA	ECCS	14-11A	MOV
IVRMA	ECCS	14-12A	MOV
IVRMA	ECCS	10-25A	MOV

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
IVRMA	ECCS	10-26A	MOV
IVRMA	ECCS	10-31A	MOV
IVRMA	ECCS	10-25A	MOV
IVRMA	ECCS	10-33	MOV
IVRMB	ECCS	14-26B	MOV
IVRMB	ECCS	14-11B	MOV
IVRMB	ECCS	14-12B	MOV
IVRMB	ECCS	10-25B	MOV
IVRMB	ECCS	10-26B	MOV
IVRMB	ECCS	23-16	MOV
IVRMB	ECCS	10-25B	MOV
IVRMB	ECCS	10-31B	MOV
IVRMB	RCS	10-17	MOV
IVRMB	RCS	23-16	MOV
LCTR2B	EP	E224-BUS	BUS
LCTR2B	EP	TRAN-224	TRAN
LCTR2D	EP	E424-BUS	BUS
LCTR2D	EP	TRAN-324	TRAN
MSIVRM	ECCS	23-19	MOV
MSIVRM	RCIC	13-21	MOV
MSIVRM	RCIC	13-16	MOV
MSIVRM	RCS	1-86A	NV
MSIVRM	RCS	1-77	MOV
MSIVRM	RCS	13-16	MOV
PUMPHS2	EP	MCC-00B62	MCC
PUMPHS2	EP	MCC-00B61	MCC
PUMPHS2	ESW	OAP57	MDP
PUMPHS2	ESW	2233A	MOV
PUMPHS2	ESW	2233B	MOV
PUMPHS2	ESW	2213	MOV
PUMPHS2	ESW	2209	MOV

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
PUMPHS2	HPSW	2AP42	MDP
PUMPHS2	HPSW	2BP42	MDP
PUMPHS2	HPSW	2CP42	MDP
PUMPHS2	HPSW	2DP42	MDP
PUMPHS3	ESW	OBP57	MDP
PUMPHS3	ESW	3233A	MOV
PUMPHS3	ESW	3233B	MOV
PUMPHS3	ESW	3213	MOV
RBCCWHX	EP	MCC-20B39	MCC
RBCCWHX	EP	PNL-20D12	PNL
RBCCWHX	ESW	506	XV
RBCCWHX	ESW	2972	MOV
RBCCWHX3	ESW	3972	MOV
RC	ECCS	2-71A	SRV
RC	ECCS	6-29A	MOV
RC	ECCS	23-15	MOV
RC	ECCS	2-71B	SRV
RC	ECCS	2-71C	SRV
RC	ECCS	2-71G	SRV
RC	ECCS	2-71K	SRV
RC	ECCS	10-32	MOV
RC	RCIC	13-15	MOV
RC	RCIC	6-29B	MOV
RC	RCS	2-70A	SV
RC	RCS	2-71A	SRV
RC	RCS	10-18	MOV
RC	RCS	1-80A	NV
RC	RCS	12-15	MOV
RC	RCS	1-74	MOV
RC	RCS	13-15	MOV
RC	RCS	23-15	MOV

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
RC	RCS	1-80B	NV
RC	RCS	1-80C	NV
RC	RCS	1-80D	NV
RC	RCS	1-86B	NV
RC	RCS	1-86C	NV
RC	RCS	1-86D	NV
RC	RCS	2-70B	SV
RC	RCS	2-71B	SRV
RC	RCS	2-71C	SRV
RC	RCS	2-71D	SRV
RC	RCS	2-71E	SRV
RC	RCS	2-71F	SRV
RC	RCS	2-71G	SRV
RC	RCS	2-71H	SRV
RC	RCS	2-71J	SRV
RC	RCS	2-71K	SRV
RC	RCS	2-71L	SRV
RCICRM	HVAC	2AV22	FAN
RCICRM	HVAC	2BV22	FAN
RCICRM	RCIC	13-P36	TDP
RCICRM	RCIC	13-20	MOV
RCICRM	RCIC	13-18	MOV
RCICRM	RCIC	13-39	MOV
RCICRM	RCIC	13-131	MOV
RCICRM	RCIC	13-41	MOV
RHRA	ECCS	2AP35	MDP
RHRA	ECCS	10-13A	MOV
RHRA	ECCS	10-2677A	NV
RHRA	ECCS	10-15A	MOV
RHRA	HPSW	89A	MOV
RHRA	HVAC	2AV25	FAN

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
RHRA	HVAC	2BV25	FAN
RHRB	ECCS	2BP35	MDP
RHRB	ECCS	10-13B	MOV
RHRB	ECCS	10-15B	MOV
RHRB	HPSW	89B	MOV
RHRB	HVAC	2EV25	FAN
RHRB	HVAC	2FV25	FAN
RHRC	ECCS	2CP35	MDP
RHRC	ECCS	10-13C	MOV
RHRC	ECCS	10-15C	MOV
RHRC	HPSW	89C	MOV
RHRC	HVAC	2CV25	FAN
RHRC	HVAC	2DV25	FAN
RHRD	ECCS	2DP35	MDP
RHRD	ECCS	10-13D	MOV
RHRD	ECCS	10-2677D	NV
RHRD	ECCS	10-15D	MOV
RHRD	HPSW	89D	MOV
RHRD	HVAC	2GV25	FAN
RHRD	HVAC	2HV25	FAN
SWGR2A	EP	E12-SWGR	BUS
SWGR2A	EP	EP-1503	CB
SWGR2A	EP	E12-SWGR	BUS
SWGR2B	EP	E22-SWGR	BUS
SWGR2B	EP	EP-1606	CB
SWGR2B	EP	E22-SWGR	BUS
SWGR2C	EP	E32-SWGR	BUS
SWGR2C	EP	EP-1704	CB
SWGR2C	EP	E32-SWGR	BUS
SWGR2D	EP	E42-SWGR	BUS
SWGR2D	EP	EP-1807	CB

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
SWGR2D	EP	E42-SWGR	BUS
SWGR3A	EP	E13-SWGR	BUS
SWGR3A	EP	E13-SWGR	BUS
SWGR3B	EP	E23-SWGR	BUS
SWGR3B	EP	E23-SWGR	BUS
SWGR3C	EP	E33-SWGR	BUS
SWGR3C	EP	E33-SWGR	BUS
SWGR3D	EP	E43-SWGR	BUS
SWGR3D	EP	E43-SWGR	BUS
TOR	ECCS	10-154A	MOV
TOR	ECCS	10-154B	MOV
TOR	ECCS	10-39B	MOV
TOR	ECCS	10-34B	MOV
TOR	ECCS	23-21	MOV
TOR	ECCS	23-24	MOV
TOR	ECCS	23-31	MOV
TOR	ECCS	10-38B	MOV
TOR	ECCS	10-39A	MOV
TOR	ECCS	10-34A	MOV
TOR	ECCS	10-38A	MOV
TOR	ECCS	10-20	MOV
TOR	RCIC	13-30	MOV
UNKNOWN	CRD	2AP39	MDP
UNKNOWN	CRD	2BP39	MDP
UNKNOWN	EP	MCC-00B32	MCC
UNKNOWN	EP	MCC-00B35	MCC
UNKNOWN	EP	MCC-00B84	MCC
UNKNOWN	EP	E13A4-BUS	BUS
UNKNOWN	EP	TRAN-OAX26	TRAN
UNKNOWN	EP	E23A4-BUS	BUS
UNKNOWN	EP	TRAN-OBX26	TRAN

Table 4-2. Partial Listing of Components by Location at Peach Bottom 2 (Continued)

LOCATION	SYSTEM	COMPONENT ID	COMP TYPE
UNKNOWN	EP	E43A4-BUS	BUS
UNKNOWN	EP	TRAN-OCX26	TRAN
UNKNOWN	EP	MCC-00B97	MCC
UNKNOWN	EP	MCC-00B98	MCC
UNKNOWN	EP	MCC-00B99	MCC
UNKNOWN	HVAC	OAV34	FAN
UNKNOWN	HVAC	OAV35	FAN
UNKNOWN	HVAC	OAV36	FAN
UNKNOWN	HVAC	OBV34	FAN
UNKNOWN	HVAC	OBV35	FAN
UNKNOWN	HVAC	OBV36	FAN

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APPENDIX A
DEFINITION OF SYMBOLS USED IN THE SYSTEM AND LAYOUT DRAWINGS

A1. SYSTEM DRAWINGS

A1.1 Fluid System Drawings

The simplified system drawings are accurate representations of the major flow paths in a system and the important interfaces with other fluid systems. As a general rule, small fluid lines that are not essential to the basic operation of the system are not shown in these drawings. Lines of this type include instrumentation lines, vent lines, drain lines, and other lines that are less than 1/3 the diameter of the connecting major flow path. There usually are two versions of each fluid system drawing; a simplified system drawing, and a comparable drawing showing component locations. The drawing conventions used in the fluid system drawings are the following:

- Flow generally is left to right.
  - Water sources are located on the left and water "users" (i.e., heat loads) or discharge paths are located on the right.
  - One exception is the return flow path in closed loop systems which is right to left.
  - Another exception is the Reactor Coolant System (RCS) drawing which is "vessel-centered", with the primary loops on both sides of the vessel.
  - Horizontal lines always dominate and break vertical lines.

- Component symbols used in the fluid system drawings are defined in Figure A-1.
  - Most valve and pump symbols are designed to allow the reader to distinguish among similar components based on their support system requirements (i.e., electric power for a motor or solenoid, steam to drive a turbine, pneumatic or hydraulic source for valve operation, etc.)
  - Valve symbols allow the reader to distinguish among valves that allow flow in either direction, check (non-return) valves, and valves that perform an overpressure protection function. No attempt has been made to define the specific type of valve (i.e., as a globe, gate, butterfly, or other specific type of valve).
  - Pump symbols distinguish between centrifugal and positive displacement pumps and between types of pump drives (i.e., motor, turbine, or engine).

- Locations are identified in terms of plant location codes defined in Section 4 of this Sourcebook.
  - Location is indicated by shaded "zones" that are not intended to represent the actual room geometry.
  - Locations of discrete components represent the actual physical location of the component.
  - Piping locations between discrete components represent the plant areas through which the piping passes (i.e. including pipe tunnels and underground pipe runs).
  - Component locations that are not known are indicated by placing the components in an unshaded (white) zone.
  - The primary flow path in the system is highlighted (i.e., bold white line) in the location version of the fluid system drawings.

A1.2 Electrical System Drawings

The electric power system drawings focus on the Class 1E portions of the plant's electric power system. Separate drawings are provided for the AC and DC portions of the Class 1E system. There often are two versions of each electrical system drawing; a simplified system drawing, and a comparable drawing showing component locations. The drawing conventions used in the electrical system drawings are the following:

- Flow generally is top to bottom
  - In the AC power drawings, the interface with the switchyard and/or offsite grid is shown at the top of the drawing.
  - In the DC power drawings, the batteries and the interface with the AC power system are shown at the top of the drawing.
  - Vertical lines dominate and break horizontal lines.

- Component symbols used in the electrical system drawings are defined in Figure A-2.

- Locations are identified in terms of plant location codes defined in Section 4 of this Sourcebook.
  - Locations are indicated by shaded "zones" that are not intended to represent the actual room geometry.
  - Locations of discrete components represent the actual physical location of the component.
  - The electrical connections (i.e., cable runs) between discrete components, as shown on the electrical system drawings, DO NOT represent the actual cable routing in the plant.
  - Component locations that are not known are indicated by placing the discrete components in an unshaded (white) zone.

A2. SITE AND LAYOUT DRAWINGS

A2.1 Site Drawings

A general view of each reactor site and vicinity is presented along with a simplified site plan showing the arrangement of the major buildings, tanks, and other features of the site. The general view of the reactor site is obtained from ORNL-NSIC-55 (Ref. 1). The site drawings are approximately to scale, but should not be used to estimate distances on the site. As-built scale drawings should be consulted for this purpose.

Labels printed in bold uppercase correspond to the location codes defined in Section 4 and used in the component data listings and system drawings in Section 3. Some additional labels are included for information and are printed in lowercase type.

A2.2 Layout Drawings

Simplified building layout drawings are developed for the portions of the plant that contain components and systems that are described in Section 3 of this Sourcebook. Generally, the following buildings are included: reactor building, auxiliary building, fuel building, diesel building, and the intake structure or pumphouse. Layout drawings generally are not developed for other buildings.

Symbols used in the simplified layout drawings are defined in Figure A-3. Major rooms, stairways, elevators, and doorways are shown in the simplified layout drawings however, many interior walls have been omitted for clarity. The building layout drawings, are approximately to scale, should not be used to estimate room size or distances. As-built scale drawings for should be consulted his purpose.

Labels printed in uppercase bolded also correspond to the location codes defined in Section 4 and used in the component data listings and system drawings in Section 5. Some additional labels are included for information and are printed in lowercase type.

A3. APPENDIX A REFERENCES

1. Heddleson, F.A., "Design Data and Safety Features of Commercial Nuclear Power Plants.", ORNL-NSIC-55, Volumes 1 to 4, Oak Ridge National Laboratory, Nuclear Safety Information Center, December 1973 (Vol.1), January 1972 (Vol. 2), April 1974 (Vol. 3), and March 1975 (Vol. 4)

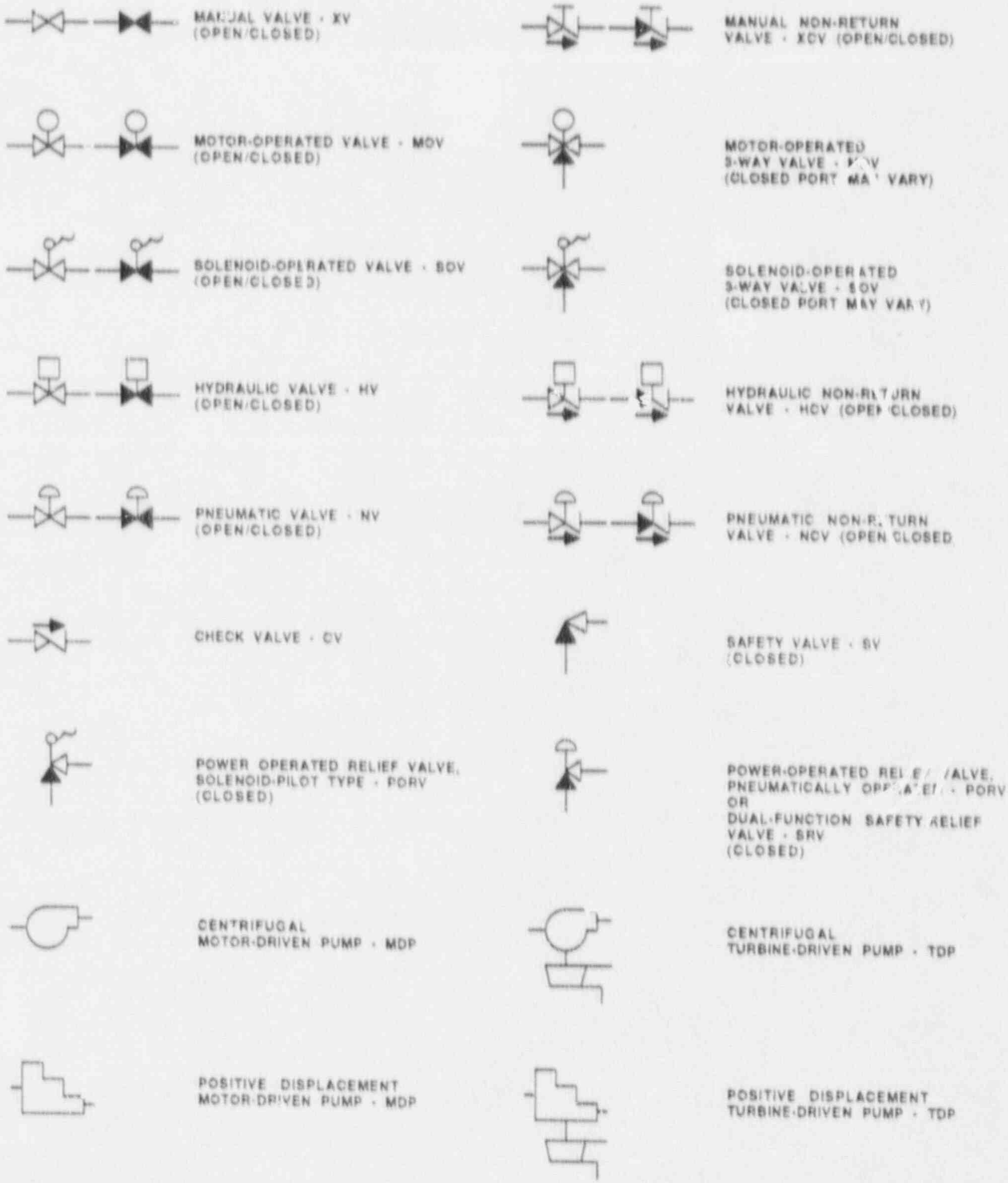

Figure A-1. Key To Symbols In Fluid System Drawings

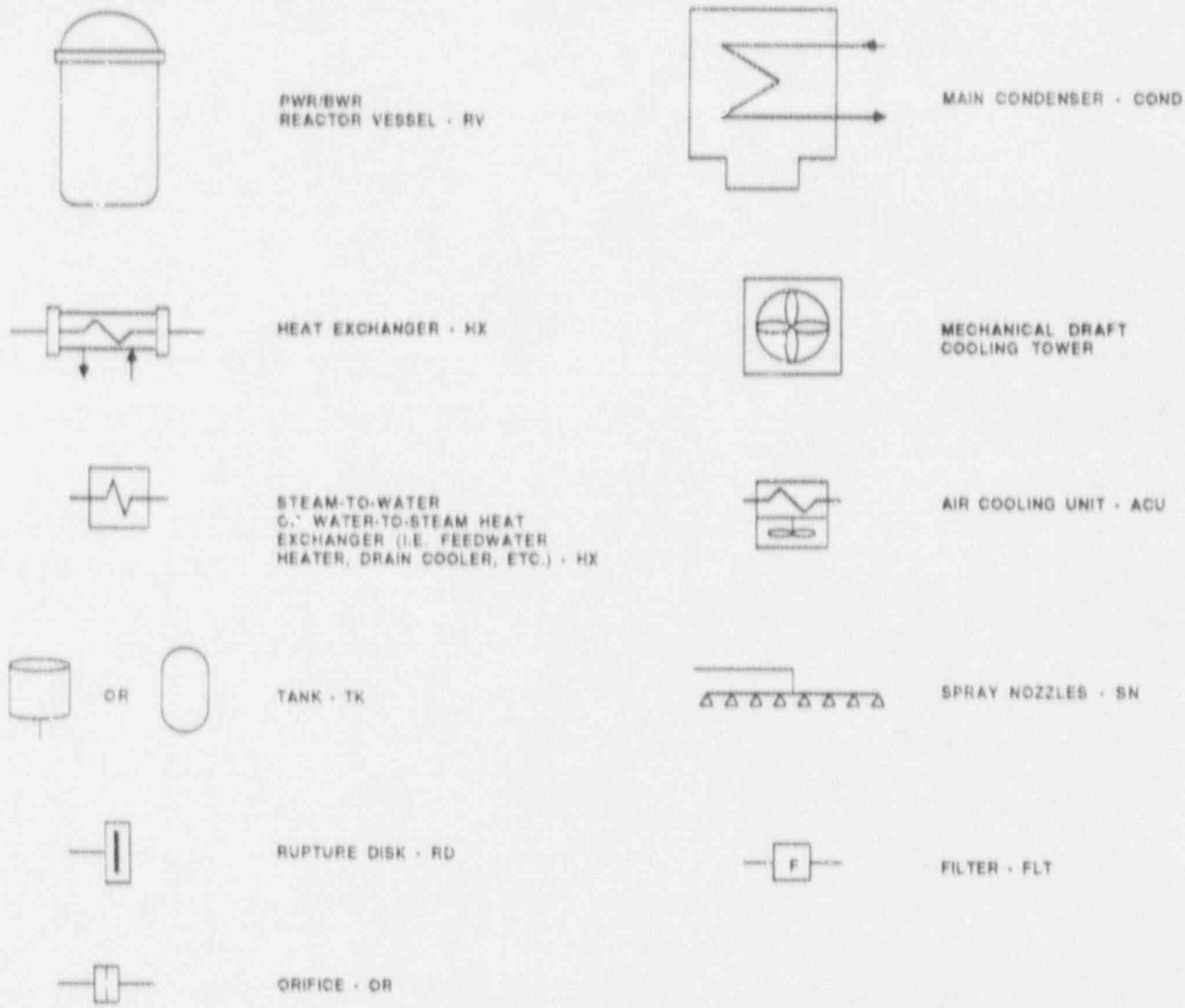

Figure A-1. Key To Symbols In Fluid System Drawings (Continued)

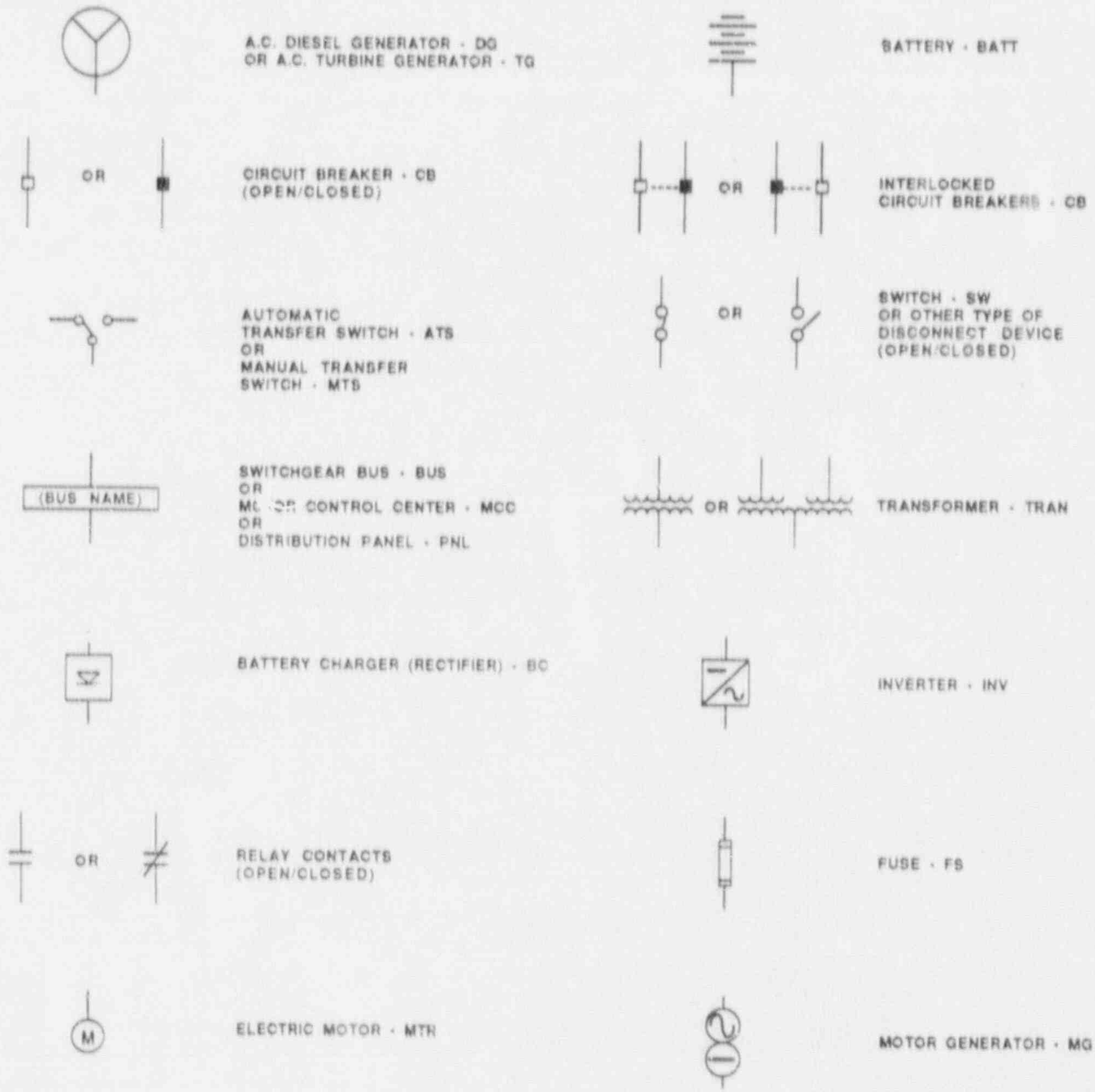

Figure A-2. Key To Symbols In Electrical System Drawings

Figure A-3. Key To Symbols In Facility Layout Drawings

APPENDIX B
DEFINITION OF TERMS USED IN THE DATA TABLES

Terms appearing in the data tables in Sections 3 and 4 of this Sourcebook are defined as follows:

SYSTEM (also LOAD SYSTEM) - All components associated with a particular system description in the Sourcebook have the same system code in the data base. System codes used in this Sourcebook are the following:

Code	Definition
RCS	Reactor Coolant System
RCIC	Reactor Core Isolation Cooling System
ECCS	Emergency Core Cooling Systems (including HPCI, LPCI, LPCS and ADS)
EP	Electric Power System
CRD	Control Rod Drive Hydraulic System
ESW	Emergency Service Water System
HPSW	High Pressure Service Water System
HVAC	Emergency Ventilation System

COMPONENT ID (also LOAD COMPONENT ID) - The component identification (ID) code in a data table matches the component ID that appears in the corresponding system drawing. The component ID generally begins with a system preface followed by a component number. The system preface is not necessarily the same as the system code described above. For component IDs, the system preface corresponds to what the plant calls the component (e.g. HPI, RHR). An example is HPI-730, denoting valve number 730 in the high pressure injection system, which is part of the ECCS. The component number is a contraction of the component number appearing in the plant piping and instrumentation drawings (P&IDs) and electrical one-line system drawings.

LOCATION (also COMPONENT LOCATION and POWER SOURCE LOCATION) - Refer to the location codes defined in Section 4.

COMPONENT TYPE (COMP TYPE) - Refer to Table B-1 for a list of component type codes.

POWER SOURCE - The component ID of the power source is listed in this field (see COMPONENT ID, above). In this data base, a "power source" for a particular component (i.e. a load or a distribution component) is the next higher electrical distribution or generating component in a distribution system. A single component may have more than one power source (i.e. a DC bus powered from a battery and a battery charger).

POWER SOURCE VOLTAGE (also VOLTAGE) - The voltage "seen" by a load of a power source is entered in this field. The downstream (output) voltage of a transformer, inverter, or battery charger is used.

EMERGENCY LOAD GROUP (EMERG LOAD GROUP) - AC and DC load groups (or electrical divisions) are defined as appropriate to the plant. Generally, AC load groups are identified as AC/A, AC/B, etc. The emergency load group for a third-of-a-kind load (i.e. a "swing" load) that can be powered from either of two AC load groups would be identified as AC/AB. DC load group follows similar naming conventions.

TABLE B-1. COMPONENT TYPE CODES

COMPONENT	COMP TYPE
VALVES:	
Motor-operated valve	MOV
Pneumatic (air-operated) valve	NV or AOV
Hydraulic valve	HV
Solenoid-operated valve	SOV
Manual valve	XV
Check valve	CV
Pneumatic non-return valve	NCV
Hydraulic non-return valve	HCV
Safety valve	SV
Dual function safety relief valve	SRV
Power-operated relief valve (pneumatic or solenoid-operated)	PORV
PUMPS:	
Motor-driven pump (centrifugal or PD)	MDP
Turbine-driven pump (centrifugal of PD)	TDP
Diesel-driven pump (centrifugal of PD)	DDP
OTHER FLUID SYSTEM COMPONENTS:	
Reactor vessel	RV
Steam generator (U-tube or once-through)	SG
Heat exchanger (water-to-water HX, or water-to-air HX)	HX
Cooling tower	CT
Tank	TANK or TK
Sump	SUMP
Rupture disk	RD
Orifice	ORIF
Filter or strainer	FLT
Spray nozzle	SN
Heaters (i.e. pressurizer heaters)	HTR
VENTILATION SYSTEM COMPONENTS:	
Fan (motor-driven, any type)	FAN
Air cooling unit (air-to-water HX, usually including a fan)	ACU or FCU
Condensing (air-conditioning) unit	COND
EMERGENCY POWER SOURCES:	
Diesel generator	DG
Gas turbine generator	GT
Battery	BATT

TABLE B-1. COMPONENT TYPE CODES (Continued)

COMPONENT	COMP TYPE
ELECTRIC POWER DISTRIBUTION EQUIPMENT:	
Bus or switchgear	BUS
Motor control center	MCC
Distribution panel or cabinet	PNL or CAB
Transformer	TRAN or XFMR
Battery charger (rectifier)	BC or RECT
Inverter	INV
Uninterruptible power supply (a unit that may include battery, battery charger, and inverter)	UPS
Motor generator	MG
Circuit breaker	CB
Switch	SW
Automatic transfer switch	ATS
Manual transfer switch	MTS