REACTOR BUILDING
CABLE SEPARATION ANALYSIS REPORT

SHOREHAM NUCLEAR POWER STATION - UNIT 1
LONG ISLAND LIGHTING COMPANY

Prepared by
STONE & WEBSTER ENGINEERING CORPORATION

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1 PURPOSE

This analysis is made to demonstrate that sufficient separation exists between redundant systems and components necessary for shutdown such that a postulated event causing the disability of all cables and raceways in an entire designated area will not prevent a plant safe shutdown.

2 GENERAL METHOD OF ANALYSIS

The primary and secondary containments are divided into "Affected Areas." All cables and raceways in each "Affected Area" are assumed to be disabled such as to render them unavailable for use in shutdown. A determination is then made whether shutdown can be achieved using the remaining shutdown equipment of other unaffected areas. The areas are chosen conservatively large and the disabling event is fire. Loss of offsite power is assumed concurrent with the postulated event.

3 ASSUMPTIONS

The following are the assumptions and design bases for the separation analysis:

1. It is assumed that:

   a. The reactor is operating at 100 percent power when the postulated event occurs.

   b. Only onsite power is available in achieving safe shutdown.

   c. The reactor is isolated from the main condenser.

   d. There is an automatic scram (or manual at the direction of the shift supervisor) to bring the plant to hot shutdown.

2. As presented in the NRC review reminder(1), it is assumed that there is a 72 hour period in which to achieve cold shutdown. During this three day period, credit may be taken for manual system operation as well as for reasonable repairs, etc.

(1) Nuclear Regulatory Commission. "Review Reminder" from V. Benaroya to Auxilary System Branch Staff Members, August 8, 1978.

4 SPECIFIC METHODS OF ANALYSIS

4.1 AFFECTED AREAS

In order to separate the primary and secondary containments into conservative affected areas, overlapping segments are defined as described below.

4.1.1 Primary Containment

For the primary containment drywell areas, 60 degree segments are chosen. There is no vertical division within the structure. Cable and raceways in each segment are disabled and a determination made whether shutdown can be accomplished with the remaining equipment. Upon completion of the analysis of each area, the procedure is repeated with new 60 degree segments which are rotated or indexed 30 degrees from the previously analyzed segments. This overlap operation assures that no sensitive interface boundaries exist.

Figure 4.1.1-1 illustrates the arrangement of the primary containment areas, and Table 4.1.1-1 describes the area boundaries.

4.1.2 Secondary Containment

The method used for the secondary containment is the same as for the primary containment except that 45 degree segments are used and are indexed by 22.5 degree increments. Because there are distinct floor levels within the secondary containment, vertical boundaries are established for the secondary containment areas at each floor elevation.

Figure 4.1.2-1 illustrates the arrangement of the secondary containment areas, and Table 4.1.2-1 describes the area boundaries.

4.2 SHUTDOWN MODEL

In order to make a determination that shutdown is achievable with the cable and raceway in a given area disabled, it is necessary to develop a functional model for shutdown. This model is illustrated in Figures 4.2-1A, 4.2-1B, and 4.2-1C.

Paths to successful shutdown are shown in this model. All systems, safety and nonsafety, which can contribute to plant shutdown are identified. All auxiliary systems, such as ventilation, cooling water, control and instrumentation, as well as electrical power sources are included. In the analysis, however, credit is taken only for safety-related systems and equipment.

4.3 SHUTDOWN EQUIPMENT

Based on the shutdown model and use of safety-related systems only, the selection of shutdown components is made as follows:

1. System B21 - Nuclear Boiler

   The eleven ADS and safety-relief valves are required to operate only manually. Automatic initiation is not necessary and will not normally occur since no LOCA and therefore no high drywell pressure is assumed which is required for automatic initiation. The three head vent valves MOV083, 084, and 085 are required to prevent blowdown of the reactor vessel into the primary containment due to opening of two series valves.

   The SRV's may be utilized for a combination hot/cold shutdown operation. With the vessel at high pressure, the valves can provide sufficient pressure relieving capacity to enable the low head systems (LPCI and Core Spray) to provide core inventory. With the vessel at low pressure, the valves can provide extended core and/or suppression pool cooling by holding the valves open, enabling the low head systems to provide a suppression pool/reactor vessel circulation path. Cooling would be provided directly or indirectly via the RHR exchanger. The above modes are designated as the RHR/CS/SRV flow path in the separation analysis.

2. System B31 - Reactor Recirculation System

   The two pressure switches, PS023A and B, for automatic RHR system operation are needed.

3. System C41 - Standby Liquid Control

   The safety-related portions of this system are required in the event control rod insertion is not completed. It is not desirable to have this system operate unless it is actually required.

4. System C61 - Reactor Plant Remote Shutdown

   The eight safety-related indicating transmitter circuits for RHR main flow (FT001), reactor vessel pressure (PT006), service water header pressure (PT011), suppression pool temperature (TT022A and B), and level (LT026), and drywell pressure (PT012) and temperature (TT021) are required.

5. System E11 - Residual Heat Removal

All safety-related components, except the following ten valves, are required: The two flow to suppression pool valves MOV042A and B are not required since the normally closed upstream valves are protected. The two head spray isolation valves MOV053 and 054 are not required for shutdown since cable failure resulting in both valves opening presents no problem since there is a check valve in series with these MOV's to prevent reactor blowdown. The four heat exchanger vent valves MOV055A and B and 056A and B are not required for shutdown even during the steam condensing mode since cable failure resulting in opening of these valves will drain a one inch line from the heat exchanger opening to the suppression pool, an acceptable event. The two hydrogen recombiner subsystem valves MOV057A and B are not required for a non-LOCA condition and failure of valve cabling will cause valves to open, an event which will not result in significant degrading of the RHR cooling system.

6. System E21 - Core Spray

All safety-related components are required, except the two testable check valve bypass valves MOV081A and B, which are not required during shutdown. If these valves were to change state, there would be no adverse effect on system operation. Automatic initiation which is based on reactor water level is also required. Initiation signals based on reactor primary containment pressure are not required since there should be no high pressure condition without LOCA. Also, failure of the high drywell pressure initiation signal will neither prevent injection nor cause the injection valves to open prematurely because a reactor pressure permissive in the control circuit of the injection valves will prevent valve opening on high reactor pressures. This permissive is considered a required component.

7. System E41 - High Pressure Coolant Injection

All safety-related components are required, except the five items identified below. One is the loop level pump P-050 which if lost will not adversely affect the system since the time prior to initiation and between operating cycles short enough to prevent significant draindown of the pump discharge piping. Another item is the inboard isolation valve bypass valve MOV047 which is not required for shutdown and will not affect system operation in either the open or closed position. Also, the turbine exhaust vacuum breaker MOV049 is not required and is used only after a LOCA. Lastly, the condenser exhaust vacuum breaker PCV144 and steamline

trap bypass valve LCV091 are not required for shutdown and will, in fact, fail in the closed position on loss of air due to loss of offsite power. Assuming availability of air, failure of the control circuit resulting in valve opening is not detrimental to system operation. Automatic initiation based on reactor water level is required. Initiation due to high drywell pressure is not required since there should be no such condition without LOCA. Also, failure of drywell pressure initiation signal will not prevent injection, and if premature injection occurs, it will not adversely affect reactor operation. Instrumentation to identify HPCI steamline break which can cause steamline isolation is required.

8. System E51 - Reactor Core Isolation Cooling

All safety-related components are required, except those five corresponding to the E41 System (P-051, MOV047, MOV049, PCV144 and LCV091) and for the same reasons. Automatic initiation is also required.

9. System G33 - Reactor Water Cleanup

The containment isolation valves MOV033 and 034 are required to be closed to isolate the reactor from the remainder of the RWCU System. This isolation is necessary if standby liquid control system initiation is required.

10. System G41 - Fuel Pool Cooling and Cleanup

The two service water inlet valves, MOV032A and B, used for ultimate cooling water connection and the corresponding valves in the service water system, are required to be closed to prevent pumping service water to the spent fuel storage pool, an event which in time could cause flooding in the reactor building.

11. System M43 - Fire Protection

Only the safety-related portion of this system is required to prevent inadvertent shutdown of the ventilation system or nonclosure of CO_2 dampers so that the CO_2 is confined to a fire area.

12. System M50 - RBSVS and Control Room A-C Chilled Water

All safety-related components are required.

13. System P41 - Service Water

All safety-related components are required except the two radiation monitoring system isolation valves MOV102A and B which are not needed during a non-LOCA condition. In addition, a failure causing the valves to open will not result in unacceptable conditions. Automatic initiation is also required.

14 System P42 - Reactor Building Closed Loop Cooling Water System

The three P-005A, B, and C RBLCLW circulating pumps and the two heat exchanger inlet isolation valves MOV042A and B are required to supply cooling to RHR pump seals. Valves separating Category I from Category II piping and Division I from Division II piping are not required. Operation of selected components will be manual and no automatic initiation is required.

15. System P50 - Compressed Air

The MOV's and pressure switches used to supply and/or isolate the air to the SRV accumulators are required. All other components are Category II.

16. Systems R22, 23, 24, 35, 42, 43 - Electrical Distribution

All Class 1E electrical distribution and interconnecting cable is required.

17. System T46 - Standby Ventilation System

Only the fourteen unit coolers in the reactor building are required to maintain the ambient temperature around the components needed for shutdown. Manual operation only is required; automatic initiation is not needed. Ventilation equipment required for maintaining negative pressure in the reactor building secondary containment is not needed. The filtering equipment is not required since there is no LOCA/release of radiation.

18. System X41 - Miscellaneous Room HVAC

All safety-related ventilation components are required in these miscellaneous areas.

19. System X60 - Diesel/Generator Ventilation

All safety-related ventilation components in the D/G rooms are required.

20. System X61 - Control Room A-C

All safety-related components are required, except the two air-operated valves AOV37A and B which isolate the redundant portions of ducts that will remain intact, assuming no seismic condition. These dampers will fail closed on loss of offsite power.

4.4 DEVELOPMENT OF SHUTDOWN EQUIPMENT BY AREA

The development of shutdown equipment by affected area is illustrated in the schematic diagram Figure 4.4-1.

The first step consists of developing a shutdown equipment list. This is accomplished by using the shutdown model developed, as described in Section 4.2, and identifying all systems with safety-related cable (Table 4.4-1). These are then compared to the model requirements as indicated in Section 4.3 to sort out the safety-related equipment for shutdown. The shutdown equipment list is contained in Table 4.4-2.

The second step is to incorporate the elementary diagram (ESK) information on the shutdown equipment list. Since a complete equipment versus ESK list already exists within the computerized Electrical Cable Schedule Information System (ECSIS), the shutdown equipment list is input to the computer, compared against the equipment versus ESK list, and sorted to get the shutdown equipment versus ESK list.

The third step is to identify the cables associated with each piece of shutdown equipment. This is accomplished by comparing the shutdown equipment versus ESK list generated in the previous step with the cable versus ESK list in the ECSIS.

Having identified, at this point, all shutdown equipment and its associated cable, it remains to identify the cable in each area and compare to the shutdown equipment in order to identify the disabled equipment.

The fourth step is to compile lists of cable trays and conduit by area, input to the computer, and compare against the cable versus raceway list in the ECSIS thus creating the shutdown equipment cable versus area lists.

The fifth step is to compare the shutdown equipment versus cable list from step three against the cable versus area lists from step four to identify the shutdown equipment lost for each area.

The final step is to compare the unaffected shutdown equipment versus area lists against the shutdown model to determine the impact on safe shutdown capability.

5 RESULTS AND RECOMMENDATIONS

Appendices A and B present the results of the separation analysis for the primary and secondary containment respectively.

The results are presented for each area investigated in the following format:

a. Systems Impacted (Division I and Division II) - A listing of any system which computer analysis indicated had associated shutdown cable or cables in the area of interest.

b. System Functions Disabled - All safety systems and components previously identified as essential and listed in Tables 4.4-1 and 4.4-2 are evaluated for their importance in achieving a safe shutdown. Those components whose failure would not necessarily cause a system function loss are reviewed and, where no impact upon safe shutdown exists, are so noted under Disabled Function Evaluation below. As an example, in Section 008-07, Paragraphs 1(B) and 1(C) identify unit cooler 1T46*UC002A as a disabled 1T46, Division I, component. However, the loss of that cooler does not affect the remaining Division I, cooler (1T46*UC003A) and Division I, 1T46 RBSVS components which have the capability of providing cooling for the Division I equipment utilized for safe shutdown and identified in Paragraph 4, Shutdown Capability.

   Where an event damages extensive equipment in one train (Division I or II), a statement such as "No credit taken for Division I system functions" is made, and the remaining statements generally refer to disabled functions in other Divisions. In such a case, the analysis has determined that no Division I system functions are required to achieve safe shutdown.

c. Disabled Function Evaluation - Identifies, at the system level, the importance to safe shutdown of any function that may be lost as a result of the event.

d. Shutdown Capability - Identifies whether redundant means of providing necessary safe shutdown functions are available (given the Disabled Functions in 3) and generally describes an available procedure for safe shutdown.

e. Further Action Recommended - Provides recommendations for required modifications which will further improve existing plant shutdown capability. These recommendations are not necessarily requisites to achieving shutdown but rather enhancements which would augment existing capabilities.

f. Action To Be Taken - Indicates specific action to be taken based on the recommendation, if any.

6 CONCLUSIONS

For the postulated event, with concurrent loss of offsite power, hot and cold shutdown can be accomplished in each case using only safety-related systems and equipment. This considers the extreme case where an event is assumed to disable all shutdown cable terminating in or routed through each affected area.

It was not necessary to take credit for separation by distance, covers on cable trays, fire suppression, etc, within the affected area nor for any nonsafety-related systems and equipment.

7 UPDATE OF REPORT

An update of the separation analysis will be made at a later date when "as-built" drawings become available to assure that the final installation does not invalidate the separation analysis.

TABLE 4.1.1-1

PRIMARY CONTAINMENT AREA BOUNDARIES

Primary Segment			Boundary Overlap		
Area	From	To	Area	From	To
N1	0°	60°	01	30°	90°
N2	60°	120°	02	90°	150°
N3	120°	180°	03	150°	210°
N4	180°	240°	04	210°	270°
N5	240°	300°	05	270°	330°
N6	300°	0°	06	330°	30°

TABLE 4.1.2-1

SECONDARY CONTAINMENT AREA BOUNDARIES

Primary Segment			Boundary Overlap		
Area	From	To	Area	From	To
N1	0°	45°	01	22.5°	67.5°
N2	45°	90°	02	67.5°	112.5°
N3	90°	135°	03	112.5°	157.5°
N4	135°	180°	04	157.5°	202.5°
N5	180°	225°	05	202.5°	247.5°
N6	225°	270°	06	247.5°	292.5°
N7	270°	315°	07	292.5°	337.5°
N8	315°	0°	08	337.5°	22.5°

Elevation	From	To
008	008	040
040	040	063
063	063	078
078	078	112
112	112	150
150	150	-

Segments are Numbered Elevation - Area
Example:
063-N6; Elevation 063 to 078, Area 225° to 270°
See Figures 4.1.1-1 and 4.1.2-1

TABLE 4.4-1

ALL SYSTEMS WITH CLASS IE CABLES
SHOREHAM NUCLEAR POWER STATION
LONG ISLAND LIGHTING COMPANY

	System No.	Description
B		
	.B21	Nuclear Boiler
	.B31	Reactor Recirculation
C		
	C11	Control Rod Drive Hydraulic Control
	.C41	Standby Liquid Control
	C51	Neutron Monitoring
	.C61	Reactor Plant Remote Shutdown
	C71	Reactor Protection
D		
	D11	Process Radiation Monitoring
	D21	Area Radiation Monitoring
E		
	.E11	Residual Heat Removal
	.E21	Core Spray
	.E41	High Pressure Coolant Injection
	E32	MSIV Leakage Control System
	.E51	Reactor Core Isolation Cooling
G		
	G11	Radwaste
	G33	Reactor Water Cleanup
	G41	Fuel Pool Cooling and Cleanup
M		
	*M43 (Control Building)	Fire Protection
	.M50	RBSVS and Control Room A-C Chilled Water
N		
	N11	Main Steam
P		
	.P41	Service Water
	.P42	Reactor Building Closed Loop Cooling Water
	.P50	Compressed Air

TABLE 4.4-1 (Cont)

System No.	Description
R	
.R22	Metal Clad Switchgear
.R23	Unit Substations
.R24	Motor Control Centers
.R35	AC Control and Instrument Power
R36	AC Uninterruptible (Vital) Power
R41	DC Instrument Power (48 V dc)
.R42	Battery Power (125 V dc)
.R43	Diesel Emergency Power
T	
T23 (N_2 to drywell floor seal)	Reactor Containment
.T46	Standby Ventilation System
T48	Primary Containment Atmospheric Control System
X	
.X41	Miscellaneous Computer, Screen-well, Relay and Battery Room HVAC
.X60	Diesel Generator Ventilation System
.X61	Control Room Air-Conditioning System
Z	
.Z93	Post-Accident Monitoring

NOTES:

. Safe Shutdown Systems.

* For fire control during shutdown.

SHOREHAM PLANT SHUTDOWN
SAFE SHUTDOWN COMPONET LIST
(EQUIP VS CKT VS ESK)

TABLE 4.4-2

SHUTDOWN EQUIPMENT LIST

REVISION 8
12/29/80

IDENTITY	DESCRIPTION	ESK	CKT NO	PWR SC	PWR SC LOC	EQUIP LOC(1) EL-AZ
	AUTOMATIC DEPRESSURIZATION SYSTEM					
1B21*SV092AX/Y	ADS VLV 1B21*RV-92A SOVA/B	1.61-236/7		1R42*PNLA2/B2	EL 40' RELAY RM	102-218
1B21*SV092BX/Y	ADS VLV 1B21*RV-92B SOVA/B	1.61-236/7		1R42*PNLA2/B2	EL 40' RELAY RM	102-234
1B21*SV092CX	ADS VLV 1B21*RV-92C SOVA	1.61-238		1R42*PNLA2	EL 40' RELAY RM	102-234
1B21*SV092DX	ADS VLV 1B21*RV-92D SOVA	1.61-238		1R42*PNLA2	EL 40' RELAY RM	102-244
1B21*SV092EX/Y	ADS VLV 1B21*RV-92E SOVA/B	1.61-236/7		1R42*PNLA2/B2	EL 40' RELAY RM	102-253
1B21*SV092FX	ADS VLV 1B21*RV-92F SOVA	1.61-238		1R42*PNLA2	EL 40' RELAY RM	102-124
1B21*SV092GX	ADS VLV 1B21*RV-92G SOVA	1.61-238		1R42*PNLA2	EL 40' RELAY RM	102-115
1B21*SV092HX/Y	ADS VLV 1B21*RV-92H SOVA/B	1.61-236/7		1R42*PNLA2/B2	EL 40' RELAY RM	102-142
1B21*SV092JX/Y	ADS VLV 1B21*RV-92J SOVA/B	1.61-236/7		1R42*PNLA2/B2	EL 40' RELAY RM	102-126
1B21*SV092KX/Y	ADS VLV 1B21*RV-92K SOVA/B	1.61-236/7		1R42*PNLA2/B2	EL 40' RELAY RM	102-90
1B21*SV092LX/Y	ADS VLV 1B21*RV-92L SOVA/B	1.61-236/7		1R42*PNLA2/B2	EL 40' RELAY RM	102-270
	CORE SPRAY SYSTEM					
	DIVISION 1					
1E21*P013A	CORE SPRAY PUMP	5E21A01	1E21A01	1R22*SHG101	EMER SWGR RM EL 25'	8-103
1E21*P049A	KEEP FILLED PUMP	6E2101	1E21A02	1R24*MCC117	R.B. EL 40'	8-101
1E21*MOV031A	PUMP SUCTION VV	6E2102	1E21A02	1R24*MCC117	R.B. EL 40'	24-148
1E21*MOV033A	DISCHARGE VV	6E2103	1E21A04	1R24*MCC113	R.B. EL 112'	104-115
1E21*MOV035A	RECIRC VV	6E2105	1E21A06	1R24*MCC111	R.B. EL 40'	53-108
1E21*MOV034A	MIN FLOW VV	6E2106	1E21A07	1R24*MCC117	R.B. EL 40'	14-98
1B21*PS023A	PRES INTLK B21-N021A(H21*P004)	1.61-76				78-79
1B21*PS023C	PRES INTLK B21-N021C(H21*P009)	1.61-76				78-102
1E21*PDS033A	CS D/P INTLK (H21*P001)	6E2103	1E21A04	1R24*MCC113	R.B. EL 112"	8-110
1E21*FIS002A	MIN FLOW (H21*P001)					8-110
	DIVISION 2					
1E21*P013B	CORE SPRAY PUMP	5E2102	1E21B01	1R22*SHG-102	EMER SWGR RM EL 25'	8-257
1E21*P049B	KEEP FILLED PUMP	6E2101	1E21B02	1R24*MCC1127	R.B. EL 40'	8-259
1E21*MOV031B	PUMP SUCTION VV	6E2102	1E21B02	1R24*MCC1127	R.B. EL 40'	24-112
1E21*MOV033B	DISCHARGE VV	6E2103A	1E21B04	1R24*MCC1123	R.B. EL 112'	104-245
1E21*MOV035B	RECIRC VV	6E2105	1E21B06	1R24*MCC1121	R.B. EL 40'	53-253
1E21*MOV034B	MIN FLOW VV	6E2106	1E21B07	1R24*MCC1127	R.B. EL 40'	14-262
1B21*PS023B	PRES INTLK B21-N021B(H21*P005)	1.61-77				78-257
1B21*PS023D	PRES INTLK B21-N021D(H21*P010)	1.61-77				78-280
1E21*PDS033B	CS D/P INTLK (H21*P019)	6E2103	1E21A04	1R24*MCC1123	R.B. EL 112	8-248
1E21*FIS002B	MIN FLOW (H21*P019)					8-248
1E41*P074	VACUUM PUMP	11E4101	1E41N01	1R42*MCC0B1	R.B. EL 40'	8-170
1E41*P075	VACUUM TANK COND PUMP	11E4101A	1E41N02	1R42*MCC0B1	R.B. EL 40'	8-166
1E41*P127	AUX LO PUMP	11E4102	1E41N03	1R42*MCC0B1	R.B. EL 40'	8-160
1E41*MOV031	HPCI PUMP SUCT FM CON ST TK VV	11E4109	1E41N09	1R42*MCC0B1	R.B. EL 40'	20-220
1E41*MOV032	HPCI PUMP SUCT FM SUP POOL VV	11E4110	1E41N10	1R42*MCC0B1	R.B. EL 40'	24-210
1E41*MOV034	HPCI STEAM SUP OUTBRD ISO VV	11E4105	1E41B01	1R42*MCC0B2	R.B. EL 112'	64-161
1E41*MOV035	HPCI PUMP DISCHARGE VV	11E4106	1E41N06	1R42*MCC0B2	R.B. EL 112'	64-168
1E41*MOV036	MIN FLOW VV	11E4112	1E41N12	1R42*MCC0B1	R.B. EL 40'	18-197
1E41*MOV037	HPCI TEST BYPASS VV TO CST VV	11E4107	1E41N07	1R42*MCC0B1	R.B. EL 40'	18-195
1E41*MOV038	HPCI TEST BYPASS VV TO CST VV	11E4108	1E41N08	1R42*MCC0B1	R.B. EL 40'	18-205
1E41*MOV039	LUB OIL COOL VV	11E4114	1E41N13	1R42*MCC0B1	R.B. EL 40'	16-190
1E41*MOV041	STEAM SUPPLY INBRD ISOL VV	1E4102	1E41A01	1R42*MCC1118	R.B. EL 112'	66-188
1E41*MOV042	HPCI STEAM OUT BRD ISOL VV	1E4103	1E41B01	1R42*MCC0B2	R.B. EL 112'	66-192

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1E41*MOV043	HPCI STEAM TO TURBINE SUPPLY VV	11E4104	1E41N04	1R42*MCC0B1	R.B. EL 40'	17-184
1E41*MOV044	HPCI TURBINE EXHAUST VV	11E4114	1E41N19	1R42*MCC0B1	R.B. EL 40'	20-187
1E41*MOV040	WARMUP ISOL VV	11E4117	1E41N22	1R42*MCC0D2	R.B. EL 112'	64-189
1E41*SOV081	STM LN DRN VV (015-190)	1.61-129				15-190
1E41*SOV082	STM LN DRN VV (015-190)	1.61-129				15-190
1E41*SOV083	COND DISCH VV (009-184)	1.61-129				9-184
1E41*SOV095	COND DISCH VV (009-184)	1.61-129				12-185
1E41*FS003	HPCI PP DISCH (H21*P214)	1.61-125				8-167
1B21*LIS027B	HL TRIP B21-N024B(H21*P004)	1.61-25				78-79
1B21*LIS027D	HL TRIP B21-N024D(H21*P005)	1.61-24				78-297
1E41*PS021L	LO PP SUCT E41-N010(H21*P014)	1.61-24				8-167
1E41*PS026A	HI TURD EX E41-N017A(H21*P014)	1.61-24				8-167
1E41*PS026B	HI TURB EX E41-N017B(H21*P014)	1.61-24				8-167
1E41*PS025B	HI TURD EX E41-N012B(H21*P014)	1.61-24				8-167
1E41*PS025D	HI TURD EX E41-N012D(H21*P014)	1.61-24				8-167
1E41*PS023B	STM PRES L E41-N001B(H21*P036)	1.61-24				8-160
1E41*PS023D	STM PRES L E41-N001D(H21*P036)	1.61-24				8-160
1E41*PDS022B	HI STM D/P E41-N005 (H21*D026)	1.61-25				8-160
1E41*TE054B	HI AREA T E41-N601B(034-185)	1.61-88				34-185
1E41*TE055B	HI AREA T E41-N602B(034-210)	1.61-88				66-210
1E41*TE054A	HI AREA T E41-N601A(034-100_	1.61-88				34-180
1E41*TE055A	HI AREA T E41-N602A(034-200)	1.61-88				34-200
1E41*PDS022A	HI STM D/P E41-N004 (H21*P016)	1.61-25				8-157
1B21B-K32A	B21B-K32A(H11*P614)	1.61-125				CB/63-C12
1B21B-K32B	B21B-K32B(H11*P614)	1.61-125				MG/21-N12
1B31B-K31A	B31B-K31A(B31-PNL53A)	1.61-207				MG/21-P12
1B31B-K31B	B31B-K31B(B31-PNL53B)	1.61-208				8-178
1E41*PS025A	HI TURB EX E41-N012A(H21*P034)	1.61-25				8-178
1E41*PS025C	HI TURB EX E41-N012C(H21*P034)	1.61-25				8-157
1E41*PS023A	STM PRES L E41-N001A(H21*P016)	1.61-25				8-157
1E41*PS023C	STM PRES L E41-N001C(H21*P016)	1.61-25				8-157
1E41*LS092A	SUPR POOL LVL	1.61-125				27-135
1E41*LS092B	SUPR POOL LVL	1.61-125				27-325
1E41*LS093A	COND STRG TK-30 LVL	1.61-125				YARD
1E41*LS093B	COND STRG TK-30 LVL	1.61-125				YARD
1E41*TE56A						66-205
1E41*TE56B						66-210
VV	TURB STOP & LVL SH	1.61-264				
1E41*MOV043-LS6		1.61-264				17-184
1E41*MOV032-LS2		1.61-264				24-210
VV	RV LL (H21-P005)	1.61-264				78-257
VV	RV LL (H21-P005)	1.61-264				78-257
CKT	RV HL & TRIP(H21*P004)	1.61-264				78-79
CKT	MAN ISOL (H11*P601)	1.61-264				CB/63-C12
CKT TRIP SOL		1.61-200				63-208
	REACTOR CORE ISOLATION COOLING SYSTEM-RB					
	DIVISION 1					
1E51*P076	COND VCUUM PUMP	11E5101	1E51N11	1R24*MCC10A2	R.B. EL 112'	8-227
1E51*P077	COND. CONDENSATE PUMP	11E5116	1E51N12	1R24*MCC10A2	R.B. EL 112'	8-230
1E51*MOV031	RC PUMP SUCT FROM CON TK VV	11E5108	1E51N01	1R24*MCC10A2	R.B. EL 112'	11-217
1E51*MOV032	RCIC PUMP SUCT SUP POOL VV	11E5106	1E51N02	1R24*MCC10A2	R.B. EL 112'	24-202
1E51*MOV034	RCIC PUMP DISCHARGE VV	11E5105	1E51N04	1R24*MCC10A1	R.B. EL 40'	16-200
1E51*MOV035	RCIC PUMP DISCHARGE VV	11E5104	1E51N05	1R24*MCC10A2	R.B. EL 112'	78-193
1E51*MOV036	MIN FLOW VV	11E5109	1E51N06	1R24*MCC10A2	R.B. EL 112'	20-234
1E51*MOV037	TEST BYPASS VV	11E5107	1E51N07	1R24*MCC10A1	R.B. EL 40'	20-202
1E51*MOV038	LUBE OIL COLL. VV	11E5110	1E51N08	1R24*MCC10A2	R.B. EL 112'	15-220
1E51*MOV041	RCIC STEAM SUP INBRD ISO VV	6E5102	1E51A01	1R24*MCC112B	R.B. EL 112'	87-180
1E51*MOV042	RCIC STEAM SUP TO TUR OI VV	11E5102	1E51B01	1R24*MCC10A2	R.B. EL 112'	88-180

1E51*MOV043	RCIC STEAM SUP TO TUR SUP VV	11E5103	1E51N09	1R24*MCC10A2	R.B. EL 112'	11-224
1E51*MOV044	RCIC TUR TRIP AND THROTTLE VV	11E5111	1E51N10	1R24*MCC10A2	R.B. EL 112'	11-222
1E51*MOV045	RCIC TUR EXH TO SUP POOL VV	11E5113	1E51N14	1R24*MCC10A1	R.B. EL 40'	31-217
1E51*MOV046	VAC PP DISCHVV	11E5114	1E51N15	1R24*MCC10A1	R.B. EL 40'	29-226
1E51*MOV048	BYPASS VV	11E5112	1E51B02	1R24*MCC10A2	R.B. EL 112'	86-180
1E51*AOV081	DRAIN POT DRAIN	1.61-211				09-245
1E51*AOV083	COND E-36 DRAIN	1.61-211				09-245
1E51*LCV095	COND E-38 DRAIN	1.61-211				09-245
1E51*PS023A	REAC PRS L E51-N019A(H21*P035)	1.61-207				40-100
1E51*PS023B	REAC PRS L E51-N019B(H21*P038)	1.61-208				40-170
1E51*PS023C	REAC PRS L E51-N019C(H21*P035)	1.61-207				40-100
1E51*PS023D	REAC PRS L E51-N019D(H21*P038)	1.61-208				40-170
1E51*PS025A	HI TURB EX E51-N012A(H21*P017)	1.61-207				8-205
1E51*PS025B	HI TURB EX E51-N012B(H21*P037)	1.61-208				8-175
1E51*PS025C	HI TURB EX E51-N012C(H21*P017)	1.61-207				8-205
1E51*PS025D	HI TURB EX E51-N012D(H21*P037)	1.61-208				8-175
1E51*PDS022A	HI STM D/P E51-N017 (H21*P035)	1.61-207				40-100
1E51*PDS022B	HI STM D/P E51-N018 (H21*P038)	1.61-208				40-170
1E51*TE053A	HI AREA T E51-N601A	1.61-89				13-200
1E51*TE053B	HI AREA T E51-N601B	1.61-89				77-180
1E51*TE054A	HI AREA T E51-N602A	1.61-89				87-175
1E51*TE054B	HI AREA T E51-N602B	1.61-89				71-185
1B21*LIS027A	HI HTR LBL B21-N024A(H21*P004)	1.61-207				78-79
1B21*LIS027C	HI HTR LVL B21-N024C(H21*P005)	1.61-208				78-257
1E51*PS021L	LO PP SUCT E51-N006 (H21*P017)	1.61-207				8-205
1E51*PS026A	HI TURB EX E51-N009A(H21*P017)	1.61-207				8-205
1E51*PS026B	HI TURB EX E51-N009B(H21*P017)	1.61-207				8-205
1E51*MOV043	INTLKS	1.61-207				11-224
1E51*FS003	MIN FLOW,1E51*MOV36 (H21*P017)	1.61-208				8-205
1E51*MOV032	INTLKS	1.61-208				24-202
1E51*TE55A	HI AREA TEMP E51-N025A	1.61-240				17-190
1E51*TE55B	HI AREA TEMP E51-N025B	1.61-240				22-200
1E51*TE55C	HI AREA TEMP E51-N025C	1.61-240				31-200
1E51*TE55D	HI AREA TEMP E51-N025D	1.61-240				31-222
1E51*TE56A	HI AREA TEMP E51-N026A	1.61-240				63-180
1E51*TE56B	HI AREA TEMP E51-N026B	1.61-240				63-200
1E51*TE56C	HI AREA TEMP E51-N026C	1.61-240				63-180
1E51*TE56D	HI AREA TEMP E51-N026D	1.61-240				63-200
LS	RCIC TRIP CKT,H1/H2(C61*P-RSP)	1.61-208				63-208
LS4	RCIC TRIP CKT,TURB STP VV(P-RSP)	1.61-208				63-208
1E51*LS001	H1/H2 (C61*P-RSP)	1.61-208				63-208
CKT	RCIC INITIATE (H11*P602)	1.61-207				CB/63-C13
CKT	RCIC TRIP	1.61-207				
CKT	RCIC TRIP	1.61-211				63-208
	RHR SHUTDOWN COOLING SYSTEM					
	DIVISION 1					
1E11*P014A	RHR PUMP	5E1101	1E11A01	1R22*SWG-101	EMER SWGR RM EL 25'	8-95
1E11*P014C	RHR PUMP	5E1103	1E11C01	1R22*SWG-103	EMER SWGR RM EL 25'	8-80
1E11*MOV032A	RHR SHUTDOWN COOL INJECTION VV	6E1103	1E11A04	1R24*MCC1112	R.B. EL 112'	15-083
1E11*MOV032C	RHR SHUTDOWN COOL INJECTION VV	6E1134	1E11C04	1R24*MCC1113	R.B. EL 112'	18-064
1E11*MOV033A	RHR HX SHELL SIDE INLET VV	6E1116	1E11A16	1R24*MCC1119	R.B. EL 40'	25-105
1E11*MOV034A	RHR HX SHELL SIDE BYPASS VV	6E1120	1E11A17	1R24*MCC1112	R.B. EL 112'	28-073
1E11*MOV035A	RHR HX SHELL SIDE OUTLET VV	6E1115	1E11A18	1R24*MCC1117	R.B. EL 40'	31-087
1E11*MOV036A	RHR OUTBOARD VV	6E1126	1E11A19	1R24*MCC111X	R.B. EL 112'	73-092
1E11*MOV037A	RHR INBOARD VV	6E1125	1E11A07	1R24*MCC11X	R.B. EL 112'	73-083
1E11*MOV047	RHR SHUT COOL SUCT INB ISOS VV	6E1105	1E11N02	1R24*MCC1118	R.B. EL 112'	84-016
	DIVISION 2					

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1E11*P014B	RHR PUMP	5E1102	1E11B01	1R22*SWG-102	EMER SWGR RM EL 25'	8-265
1E11*P014D	RHR PUMP	5E1104	1E11D01	1R22*SWG-103	EMER SWGR RM EL 25'	8-280
1E11*MOV032B	RHR SHUTDOWN COOL INJECTION VV	6E1104	1E11B04	1R24*1122	R.B. EL 112'	15-277
1E11*MOV032D	RHR SHUTDOWN COOL INJECTION VV	6E1131	1E11D04	1R24*1122	R.B. EL 112'	18-296
1E11*MOV033B	RHR HX SHELL SIDE INLET VV	6E1138	1E11B16	1R24*1129	R.B. EL 40'	25-255
1E11*MOV034B	RHR HX SHELL SIDE BYPASS VV	6E1141	1E11B17	1R24*1122	R.B. EL 112'	28-268
1E11*MOV035B	RHR HX SHELL SIDE OUTLET VV	6E1135	1E11B18	1R24*1127	R.B. EL 40'	31-278
1E11*MOV036B	RHR OUTBOARD VV	6E1142	1E11B19	1R24*112Y	R.B. EL 112'	73-265
1E11*MOV037B	RHR INBOARD VV	6E1143	1E11B07	1R24*112Y	R.B. EL 112'	73-263
1E11*MOV048	RHR SHUT COOL SUCT OUB ISOS VV	11E1101	1E11N05	1R42*MCC0B2	R.B. EL 112'	73-096
1E11*MOV050	RHR CROSS HDR SHUTOFF VV	6E1124	1E11N01	1R24*1128	R.B. EL 112'	66-281
	REACTOR RECICULATION SYS FOR RHR SHUTDOWN COOLING MODE					
	DIVISION 1					
1B31*MOV031A	RECIRC PUMP SUCT VV	6B3102	1B31A06	1R24*MCC1112	R.B. EL 112'	17-085
1B31*MOV032A	RECIRC PUMP DISCH VV	6B3103	1B31A07	1R24*MCC111X	R.B. EL 112'	14-082
	DIVISION 2					
1B31*MOV031B	RECIRC PUMP SUCT VV	6B3107	1B31B06	1R24*MCC1122	R.B. EL 112'	24-275
1B31*MOV032B	RECIRC PUMP DISCH VV	6B3103	1B31B07	1R24*MCC112Y	R.B. EL 112'	15-278
	RHR LOW PRESSURE COOLANT INJECTION MODE-RB					
	DIVISION 1					
1E11*P014A	RHR PUMP	5E1101	1E11A01	1R22*SWG-101	EMER SWGR RM EL 25'	8-95
1E11*P014C	RHR PUMP	5E1103	1E11C01	1R22*SWG-103	EMER SWGR RM EL 25'	8-80
1E11*MOV031A	RHR PUMP SUCTION VV	6E1101	1E11A03	1R24*MCC1113	R.B. EL 112'	24-085
1E11*MOV031C	RHR PUMP SUCTION VV	6E1101	1E11C03	1R24*MCC1113	R.B. EL 112'	24-069
1E11*MOV034A	RHR HX SHELL BYPASS VV	6E1120	1E11A17	1R24*MCC1112	R.B. EL 112'	28-073
1E11*MOV036A	RHR OUTBOARD VV	6E1126	1E11A19	1R24*MCC111X	R.B. EL 112'	73-092
1E11*MOV037A	RHR INBOARD VV	6E1125	1E11A07	1R24*MCC111X	R.B. EL 112'	73-083
	DIVISION 2					
1E11*P014B	RHR PUMP	5E1102	1E11B01	1R22*SWG-102	EMER SWGR RM EL 25'	8-265
1E11*P014D	RHR PUMP	5E1104	1E11D01	1R22*SWG-103	EMER SWGR RM EL 25'	8-280
1E11*MOV031B	RHR PUMP SUCTION VV	6E1129	1E11B03	1R24*MCC1122	R.B. EL 112'	24-275
1E11*MOV031D	RHR PUMP SUCTION VV	6E1102	1E11D03	1R24*MCC1122	R.B. EL 112'	24-291
1E11*MOV034B	RHR HX SHELL VV	6E1141	1E11B17	1R24*MCC1122	R.B. EL 112'	28-288
	RHR SHUTDOWN COOLING MODE					
	DIVISION 1					
1E11*P014A	RHR PUMP	5E1101	1E11A01	1R22*SWG-101	EMER SWGR RM EL 25'	8-95
1E11*P014C	RHR PUMP	5E1103	1E11C01	1R22*SWG-103	EMER SWGR RM EL 25'	8-80
1E11*MOV032A	RHR SHUTDOWN COOL INJECTION VV	6E1103	1E11A04	1R24*MCC1112	R.B. EL 112'	15-083
1E11*MOV032C	RHR SHUTDOWN COOL INJECTION VV	6E1134	1E11C04	1R24*MCC1113	R.B. EL 112'	18-064
1E11*MOV033A	RHR HX SHELL SIDE INLET VV	6E1116	1E11A16	1R24*MCC1119	R.B. EL 40'	25-105
1E11*MOV034A	RHR HX SHELL SIDE BYPASS VV	6E1120	1E11A17	1R24*MCC1112	R.B. EL 112'	28-073
1E11*MOV035A	RHR HX SHELL SIDE OUTLET VV	6E1115	1E11A18	1R24*MCC1117	R.B. EL 40'	31-087
1E11*MOV036A	RHR OUTBOARD VV	6E1126	1E11A19	1R24*MCC111X	R.B. EL 112'	73-092
1E11*MOV037A	RHR INBOARD VV	6E1125	1E11A07	1R24*MCC111X	R.B. EL 112'	73-083
1E11*MOV047	RHR SHUT COOL SUCT INB ISOS VV	6E1105	1E11N02	1R24*MCC1118	R.B. EL 112'	84-016
	DIVISION 2					
1E11*P014B	RHR PUMP	5E1102	1E11B01	1R22*SWG-102	EMER SWGR RM EL 25'	8-265
1E11*P014D	RHR PUMP	5E1104	1E11D01	1R22*SWG-103	EMER SWGR RM EL 25'	8-280
1E11*MOV032B	RHR SHUTDOWN COOL INJECTION VV	6E1104	1E11B04	1R24*MCC1122	R.B. EL 112'	15-277
1E11*MOV032D	RHR SHUTDOWN COOL INJECTION VV	6E1131	1E11D04	1R24*MCC1122	R.B. EL 112'	18-296
1E11*MOV033B	RHR HX SHELL SIDE INLET VV	6E1138	1E11B16	1R24*MCC1129	R.B. EL 40'	25-255

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1E11*MOV034D	RHR HX SHELL SIDE BYPASS VV	6E1141	1E11B17	1R24*MCC1122	R.B. EL 112'	28-288
1E11*MOV035B	RHR HX SHELL SIDE OUTLET VV	6E1135	1E11B16	1R24*MCC1127	R.B. EL 40'	31-278
1E11*MOV036B	RHR OUTBOARD VV	6E1142	1E11D19	1R24*MCC112Y	R.B. EL 112'	73-265
1E11*MOV037B	RHR INBOARD VV	6E1143	1E11B07	1R24*MCC112Y	R.B. EL 112'	73-263
1E11*MOV048	RHR SHUT COOL SUCT OUB ISOS VV	11E1101	1E11N05	1R42*MCC0B2	R.B. EL 112'	73-096
1E11*MOV050	RHR CROSS HDR SHUTOFF VV	6E1124	1E11N01	1R24*MCC1128	R.B. EL 112'	66-281
	REACTOR RECICULATION SYS FOR RHR SHUTDOWN COOLING MODE					
	DIVISION 1					
1B31*MOV031A	RECIRC PUMP SUCT VV	6B3102	1B31A06	1R24*MCC1112	R.B. EL 112'	37-085
1B31*MOV032A	RECIRC PUMP DISCH VV	6B3103	1B31A07	1R24*MCC111X	R.B. EL 112'	14-082
	DIVISION 2					
1B31*MOV031B	RECIRC PUMP SUCT VV	6B3107	1B31B06	1R24*MCC1122	R.B. EL 112'	24-275
1B31*MOV032B	RECIRC PUMP DISCH VV	6B3103	1B31B07	1R24*MCC112Y	R.B. EL 112'	15-278
	RHR LOW PRESSURE COOLANT INJECTION MODE-RB					
	DIVISION 1					
1E11*P014A	RHR PUMP	5E1101	1E11A01	1R22*SWG-101	EMER SWGR RM EL 25'	8-95
1E11*P014C	RHR PUMP	5E1103	1E11C01	1R22*SWG-103	EMER SWGR RM EL 25'	8-80
1E11*MOV031A	RHR PUMP SUCTION VV	6E1101	1E11A03	1R24*MCC1113	R.B. EL 112'	24-085
1E11*MOV031C	RHR PUMP SUCTION VV	6E1101	1E11C03	1R24*MCC1113	R.B. EL 112'	24-069
1E11*MOV034A	RHR HX SHELL BYPASS VV	6E1120	1E11A17	1R24*MCC1112	R.B. EL 112'	28-073
1E11*MOV036A	RHR OUTBOARD VV	6E1126	1E11A19	1R24*MCC111X	R.B. EL 112'	73-092
1E11*MOV037A	RHR INBOARD VV	6E1125	1E11A07	1R24*MCC111X	R.B. EL 112'	73-083
	DIVISION 2					
1E11*P014B	RHR PUMP	5E1102	1E11B01	1R22*SWG-102	EMER SWGR RM EL 25'	8-265
1E11*P014D	RHR PUMP	5E1104	1E11D01	1R22*SWG-103	EMER SWGR RM EL 25'	8-280
1E11*MOV031B	RHR PUMP SUCTION VV	6E1129	1E11B03	1R24*MCC1122	R.B. EL 112'	24-275
1E11*MOV031D	RHR PUMP SUCTION VV	6E1102	1E11D03	1R24*MCC1122	R.B. EL 112'	24-291
1E11*MOV034B	RHR HX SHELL VV	6E1141	1E11B17	1R24*MCC1122	R.B. EL 112'	28-288
1E11*MOV036B	RHR OUTBOARD VV	6E1142	1E11B19	1R24*MCC112Y	R.B. EL 112'	73-265
1E11*MOV037B	RHR INBOARD VV	6E1143	1E11B07	1R24*MCC112Y	R.B. EL 112'	73-263
1E11*MOV050	RHR CROSS HDR SHUTOFF VV	6E1124	1E11N01	1R24*MCC1128	R.B. EL 112'	66-281
	RHR CONDENSING MODE-RB					
1E41*MOV041	STEAM SUPPLY INBOARD ISOL VV	6E4102	1E41A01	1R24*MCC1118	R.B. EL 112'	66-188
	RHR INTERLOCKS & TRIPS					
	DIVISION 1					
1B31*PS023A	LP INTLK B31-N018A(H21*P006)	1.61-196				40-180
1B21*PS023C	PRES INTLK B21-N021C(H21*P009)	1.61-76				78-102
1B21*PS023A	PRES INTLK B21-N021A(H21*P004)	1.61-76				78-79
1B21*LIS027A	LO WTR LVL B21-N024A(H21*P004)	1.61-27				78-79
1B21*LIS027C	LO WTR LEL B21-N024C(H21*P005)	1.61-27				78-257
1B21*K83	B21-K83 (H11*P622)	1.61-219				CB/44-C12
1B21*K6A	B21-K6A (H11*P609)	1.61-196				CB/63-C13
1B21*K6C	B21-K6C (H11*P609)	1.61-196				CB/63-C13
1E11*PNS031A	PNP INTLK	1.61-220				24-85
1E11*PNS031C	PNP INTLK	1.61-220				24-69
1E11*PNS032A	PNP INTLK	1.61-220				14-82
1E11*PNS032C	PNP INTLK	1.61-220				18-64
1E11*PDS001A	MINFLOW (H21*P018)	1.61-219				8-75
1B21*LIS029A	LL/HP (H21*P004)	1.61-076				78-79
1E11*PS139A	LL/HP (H21*P004)	1.61-219				78-79

1B21*LIS029C	LL/HP (H21*P004)	1.61-076				78-79
	DIVISION 2					
1B31*PS023B	LP INTLK B31-N018B(H21*P022)	1.61-196				40-353
1B21*PS023D	PRES INTLK B21-N021D(H21*P0010)	1.61-77				78-260
1B21*PS023B	PRES INTLK B21-N021B(H21*P005)	1.61-77				78-257
1B21*LIS027B	LO WTR LVL B21-N024B(H21*P004)	1.61-29				78-79
1B21*LIS027D	LO WTR LVL B21-N024D(H21*P005)	1.61-29				78-257
1B21*K84	B21-K84 (H11*P623)	1.61-196				CB/44-C12
1B21*K6B	B21-K6B (H11*P611)	1.61-193				CB/63-C13
1B21*K6D	B21-K6D (H11*P611)	1.61-193				CB/63-C13
1E11*PNS031B	PMP INTLK	1.61-223				24-275
1E11*PNS031D	PMP INTLK	1.61-223				24-291
1E11*PNS032B	PMP INTLK	1.61-223				15-278
1E11*PNS032D	PMP INTLK	1.61-223				18-296
1E11*PDS001B	MINFLOW (H21*P021)	1.61-219				8-287
CKT	MAN INTIATE	1.61-219				
1E11*PS139B	LL/HP (H21*P005)	1.61-219				78-257
	STANDBY LIQUID CONTROL SYSTEM					
	DIVISION 1					
1C41*P024A	SLC LIQUID CONT PUMP	6C4101	1C41A01	1R24*MCC113	R.B. EL 112'	112-168
	DIVISION 2					
1C41*P024B	SLC LIQUID CONT PUMP	6C4101A	1C41B01	1R24*MCC1123	R.B. EL 112'	112-166
INTER CKT	CO2 FIRE PROT CKT,DIESEL RM	11M4304		1R42*PNL-A2, B2 & C1		CONTROL BUILDING EL 63'
INTER CKT	CO2 FIRE PROT CKT,BTY RM	11M4303		1R42*PNL-A2, B2 & C1		CONTROL BUILDING EL 63'
INTER CKT	CO2 FIRE PROT CKT,EMER SWG RM	11M4305		1R42*PNL-A2, B2 & C1		CONTROL BUILDING EL 63'
INTER CKT	CO2 FIRE PROT CKT,RELAY RM	11M4306		1R42*PNL-A1	EMER SWGR RM EL 25'	CONTROL BUILDING EL 25'
	SERVICE WATER SYSTEM-PH/RB					
	DIVISION 1					
1P41*P003A	SERVICE WATER PUMP	5P4101	1P41A01	1R22*SWG101	EMER SWGR RM EL 25'	SCREENWELL EL 20'
1P41*MOV031A	SWP DISCH VV	6P4101	1P41A02	1R24*MCC1110	SCRW EL 20'-6'	SCREENWELL EL 20'
1P41*MOV032A	SW HEADER ISOL VV	6P4103	1P41A05	1R24*MCC1110	SCRW EL 20'-6'	SCREENWELL EL 20'
1P41*MOV033A	SW CROSS TIE VV	6P4108	1P41A03	1R24*MCC1119	R.B. EL 40'	30-30
1P41*MOV033C	SW CROSS TIE VV	6P4109	1P41C03	1R24*MCC1119	R.B. EL 40'	31-40
1P41*MOV034A	RHR HX DISCH VV	6P4110	1P41A08	1R24*MCC1112	R.B. EL 112'	27-91
1P41*MOV035A	TBCLCW ISOL VV	6P4104	1P41A06	1R24*MCC1110	SCRW EL 20'-6'	SCREENWELL EL 20'
1P41*MOV036A	VENT CHILL ISOL VV	6P4105	1P41A07	1R24*MCC1116	DIESEL GEN RM EL 22'	12-46
1P41*MOV037A	RBCLCW HX OUTLET VV	6P4107	1P41A09	1R24*MCC1112	R.B. EL 112'	23-290
1P41*MOV039A	ULT COOLING DRN VV	6P4102	1P41A04	1R24*MCC1119	R.B. EL 40'	34-046
1P41*MOV042A	SW TO FUEL POOL VV	6P4113	1P41A12	1R24*MCC1119	R.B. EL 40'	15-040
1P41*AOV016A	EMER DIESEL HX OUTLET VV	6P4123	1P41A24	1R35*PNLR1	RELAY RM EL 44'	CB/27-L13
	DIVISION 2					
1P41*P003B	SERVICE WATER PUMP	5P4102	1P41B01	1R22*SWG102	EMER SWGR RM EL 25'	SCREENWELL EL 20'
1P41*MOV031B	SWP DISCH VV	6P4119	1P41B02	1R24*MCC1120	SCRW EL 20'-6"	SCREENWELL EL 20'
1P41*MOV032B	SW HEADER ISOL VV	6P4121	1P41B05	1R24*MCC1120	SCRW EL 20'-6"	SCREENWELL EL 20'
1P41*MOV033B	SW CROSS TIE VV	6P4108	1P41B03	1R24*MCC1129	R.B. EL 40'	30-030
1P41*MOV033D	SW CROSS TIE VV	6P4109	1P41C03	1R24*MCC1129	R.B. EL 40'	31-040
1P41*MOV034B	RHR HX DISCH VV	6P4118	1P41B08	1R24*MCC1128	R.B. EL 112'	27-268
1P41*MOV035B	TBCLCW ISOL VV	6P4120	1P41B06	1R24*MCC1120	SCRW EL 20'-6"	SCREENWELL EL 20'
1P41*MOV036B	VENT CHILL ISOL VV	6P4105	1P41B07	1R24*MCC1126	DIESEL GEN RM EL 22'	12-046
1P41*MOV037B	RBCLCW HX OUTLET VV	6P4122	1P41B09	1R24*MCC1128	R.B. EL 112'	23-294

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1P41*MOV039B	ULT COOLING DRN VV	6P4102	1P41B04	1R24*MCC1129	R.B. EL 40'	34-046
1P41*MOV042B	SW TO FUEL POOL VV	6P4113	1P41B12	1R24*MCC1129	R.B. EL 40'	15-040
1P41*MOV043	FUEL POOL DRN VV	6P4114	1P41N01	1R24*MCC1127	R.B. EL 40'	12-046
1P41*AOV016B	EMER DIESEL HX OUTLET VV	6P4123	1P41B24	1R35*PNLB1	RELAY RM EL 44'	CB/27-C13
	DIVISION 3					
1P41*P003C	SERVICE WATER PUMP	5P4103	1P41C01	1R22*SWG103	EMER SWGR RM EL 25'	SCREENWELL EL 20'
1P41*P003D	SERVICE WATER PUMP	5P4104	1P41D01	1R22*SWG103	EMER SWGR RM EL 25'	SCREENWELL EL 20'
1P41*MOV031C	SWP DISCH VV	6P4101	1P41C02	1R24*MCC1133	EMER SWGR RM EL 25'	SCREENWELL EL 20'
1P41*MOV031D	SWP DISCH VV	6P4117	1P41D02	1R24*MCC1133	EMER SWGR RM EL 25'	SCREENWELL EL 20'
1P41*MOV036C	VENT CHILL ISOL VV	6P4106	1P41C07	1R24*MCC1134	DIESEL GEN RM EL 22'	12-046
1P41*AOV016C	EMER DIESEL HX OUTLET VV	6P4124	1P41C24	1R35*PNL01	RELAY RM EL 25'	CB/27-C13
	EMERG SW TO FUEL POOL					
	DIVISION 1					
1G33*MOV033	RV DISCH	6G3308	1G33N12	1R24*MCC1113	EMER SWGR RM EL 25'	121-190
	DIVISION 2					
1G33*MOV034	RV DISCH VV	11G3301	1G33N13	1R24*MCC0B2	R.B. EL 112'	121-190
	REACTOR WATER CLEAN-UP SYSTEM					
	DIVISION 1					
1G41*MOV032A	SERVICE WTR INLET VV	6G4103	1G41A04	1R24*MCC1114	EMER SWGR RM EL 25'	162-147
	DIVISION 2					
1G41*MOV032B	SERVICE WTR INLET VV	6G4103	1G41B04	1R24*MCC1124	R.B. EL 150'	162-149
	RBCLCW SYSTEM-RB					
	DIVISION 1					
1P42*P005A	RBCLCW COOLING WATER PUMP	6P4201	1P42A01	1R24*MCC1112	R.B. EL 112'	150-NW
1P42*MOV042A	RBCLCW HX INLET VV	6P4214	1P42A10	1R24*MCC1112	R.B. EL 112'	30-349
	DIVISION 2					
1P42*P005B	RBCLCW COOLING WATER PUMP	6P4202	1P42B01	1R24*MCC1122	R.B. EL 112'	30-352
1P42*MOV042B	RBCLCW HX INLET VV	6P4218	1P42B10	1R24*MCC1128	R.B. EL 112'	150-NW
	DIVISION 3					
1P42*P005C	RBCLCW COOLING WATER PUMP	6P4203	1P42C01	1R24*MCC1131	R.B. EL 63'	150-NE
	EMERGENCY GENERATOR-EGR					
	DIVISION 1					
1R43*G-101	EDG G101 PROT-GEN DIFF CKT	8R4301	1R43A03			DG RM/22-L15
1R43*G-101	VR CT G-101 PROT	8R4301	1R43A24			DG RM/22-L15
1R43*G-101	EMER DG 51/40/32 PROT	8R4301	1R43A05			DG RM/22-L15
1R43*G-101	EMER DG 50N GND PROT	8R4301	1R43A28			DG RM/22-L15
1R43*G-101	CURRENT TEST BCK AND RESIS BOX	8R4301	1R43A27			DG RM/22-L15
1R43*G-101	GOVENOR HYDRAULIC ACTUATOR	11R4302	1R43A23	1R42*PNL-A1	EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-101	EG-A CONT BOX AND MOT OP POT	8R4301	1R43A06		EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-101	VR CT G-101 PROT	8R4301	1R43A25		EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-101	VOLT REGULATOR	8R4305	1R43A26		EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-101	START CIRCUIT	11R4301	1R43A12	1R42*PNL-A1	EMER SWGR RM EL 25'	DG RM/22L-15
1R43*G-101	START CIRCUIT	11R4301	1R43A22	1R42*PNL-A1	EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-101	START CIRCUIT	11R4302	1R43A23	1R42*PNL-A1	EMER SWGR RM EL 25'	DG RM/22-L15
	DIVISION 2					
1R43*G-102	EDG G102 PROT-GEN DIFF CKT	8R4302	1R43B03		EMER SWGR RM EL 25'	DG RM/22-C15

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1R43*G-102	EMER DG 51/40/32 PROT	8R4302	1R43B05		EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	EMER DG 50N GND PROT	8R4302	1R43B28		EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	CURRENT TEST BCK AND RESIS BOX	8R4302	1R43B27		EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	GOVENOR HYDRAULIC ACTUATOR	11R4304	1R43B23	1R42*PNL-B1	EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	EG-A CONT BOX AND MOT OP POT	8R4302	1R43B06		EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	VR CT G-102 PROT	8R4302	1R43B25		EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	VOLT REGULATOR	8R4306	1R43B26		EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	VR CT G-102 PROT	8R4302	1R43B24		EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	START CIRCUIT	11R4303	1R43B12	1R42*PNL-B1	EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	START CIRCUIT	11R4303	1R43B22	1R42*PNL-B1	EMER SWGR RM EL 25'	DG RM/22-C15
1R43*G-102	START CIRCUIT	11R4304	1R43B23	1R42*PNL-B1	EMER SWGR RM EL 25'	DG RM/22-C15
	DIVISION 3					
1R43*G-103	EDG G103 PROT-GEN DIFF CKT	8R4303	1R43C03			DG RM/22-L15
1R43*G-103	EMER DG 51/40/32 PROT	8R4303	1R43C05			DG RM/22-L15
1R43*G-103	EMER DG 50N GND PROT	8R4303	1R43C28			DG RM/22-L15
1R43*G-103	CURRENT TEST BCK AND RESIS BOX	8R4303	1R43C27			DG RM/22-L15
1R43*G-103	GOVENOR HYDRAULIC ACTUATOR	11R4306	1R43C23	1R42*PNL-C1	EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-103	EG-A CONT BOX AND MOT OP POT	8R4303	1R43C06		EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-103	VR CT G-103 PROT	8R4303	1R43C25		EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-103	VOLT REGULATOR	8R4307	1R43C26		EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-103	VR CT G-103 PROT	8R4303	1R43C24		EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-103	START CIRCUIT	11R4305	1R43C12	1R42*PNL-C1	EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-103	START CIRCUIT	11R4305	1R43C22	1R42*PNL-C1	EMER SWGR RM EL 25'	DG RM/22-L15
1R43*G-103	START CIRCUIT	11R4306	1R43C24	1R42*PNL-C1	EMER SWGR RM EL 25'	DG RM/22-L15
	DIESEL FUEL TRANSFER SYS-EGB					
	DIVISION 1					
1R43*P-201A	EG FUEL OIL TRANSFER PUMP	6R4304	1R43A09	1R24*MCC1116	DIESEL GEN RM EL 22'	YARD
1R43*P-202A	EG FUEL OIL TRANSFER PUMP	6R4304	1R43A10	1R24*MCC1116	DIESEL GEN RM EL 22'	YARD
	DIVISION 2					
1R43*P-201B	EG FUEL OIL TRANSFER PUMP	6R4305	1R43B09	1R24*MCC1126	DIESEL GEN RM EL 22'	YARD
1R43*P-202B	EG FUEL OIL TRANSFER PUMP	6R4305	1R43B10	1R24*MCC1126	DIESEL GEN RM EL 22'	YARD
	DIVISION 3					
1R43*P-201C	EG FUEL OIL TRANSFER PUMP	6R4306	1R43C09	1R24*MCC1134	DIESEL GEN RM EL 22'	YARD
1R43*P-202C	EG FUEL OIL TRANSFER PUMP	6R4306	1R43C10	1R24*MCC1134	DIESEL GEN RM EL 22'	YARD
	HVAC SYSTEMS					
	RAC/RBSVS CHILL WATER SYSTEM-CB					
	DIVISION 1					
1M50*P137A	CHILLED WATER PUMP	6M5001	1M50A08	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/63-L12
1M50*P139A	COND WATER PUMP	6M5003	1M50A10	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/63-L12
1M50*P231A	LUBE OIL PUMP	6M5011	1M50A14	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/63-C16
1M50*MC003A	WATER CHILLER	5M5001	1M50A01	1R22*SWG101	EMER SWGR RM EL 25'	CB/63-L12
1M50*MC003A	CHILLER CONTROLS	5M5001A	1M50A03	1R35*PNL-R1	RELAY RM EL 44'	CB/63-L12
1M50*MOV031A	RETURN VV	6M5005	1M50A04	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/71-L13
1M50*MOV032A	SUPPLY VV	6M5006	1M50A05	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/75-L13
1M50*MOV033A	RET XOVER VV	6M5007	1M50A06	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/75-L13
1M50*MOV034A	SUP X-OVER VV	6M5008	1M50A07	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/75-L13
1M50*AOV068A	ISOL BYPASS VV	6M5009	1M50A12	1R35*PNL-R1	RELAY RM EL 44'	CB/71-L12
1M50*AOV069A	ISOL BYPASS VV	6M5010	1M50A13	1R35*PNL-R1	RELAY RM EL 44'	CB/75-L12
	DIVISION 2					
1M50*P137B	CHILLED WATER PUMP	6M5001	1M50B08	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/63-L13
1M50*P139B	COND WATER PUMP	6M5003	1M50B10	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/63-L13

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1M50*P231B	LUBE OIL PUMP	6M5011	1M50B14	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/63-L13
1M50*MC003B	WATER CHILLER	5M5002	1M50B01	1R22*SWG102	EMER SWGR RM EL 25'	CB/63-L13
1M50*MC003B	CHILLER CONTROLS	5M5002A	1M50B03	1R35*PNL-B1	EMER SWGR RM EL 25'	CB/63-L13
1M50*MOV031B	RETURN VV	6M5005	1M50B04	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/71-L13
1M50*MOV032B	SUPPLY VV	6M5006	1M50B05	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/75-L13
1M50*MOV033B	RET X-OVER VV	6M5007	1M50D06	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/75-L13
1M50*MOV034B	SUP X-OVER VV	6M5008	1M50D07	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/71-L13
1M50*AOV068B	ISOL BYPASS VV	6M5009	1M50B12	1R35*PNL-B1	RELAY RM EL 44'	CB/71-L13
1M50*AOV069B	ISOL BYPASS VV	6M5010	1M50B13	1R35*PNL-B1	RELAY RM EL 44'	CB/75-L13
	DIVISION 3					
1M50*P140A	COND WATER PUMP	6M5004	1M50A11	1R24*MCC1134	DIESEL GEN RM EL 22'	CB/63-L12
1M50*P140B	COND WATER PUMP	6M5012	1M50C14	1R24*MCC1134	DIESEL GEN RM EL 22'	CB/63-L13
1M50*P233A	LUBE OIL PUMP	6M5012	1M50C14	1R24*MCC1134	DIESEL GEN RM EL 22'	CB/63-L15
1M50*P233B	LUBE OIL PUMP	6M5012	1M50D14	1R24*MCC1134	DIESEL GEN RM EL 22'	CB/63-L12
1M50*MC004A	WATER CHILLER	5M5003	1M50C01	1R22*SWG103	EMER SWGR RM EL 25'	CB-63-L12
1M50*MC004B	WATER CHILLER	5M5004	1M50D01	1R22*SWG103	EMER SWGR RM EL 25'	CB/63-L13
1M50*MC004A	CHILLER CONTROLS	5M5003A	1M50C03	1R35*PNL-01	RELAY RM EL 44'	CB/63-L12
1M50*MC004B	CHILLER CONTROLS	5M5004A	1M50D03	1R35*PNL-01	RELAY RM EL 44'	CB/63-L13
	RBSVS SYSTEM-RB					
	DIVISION 1					
1T46*UC002A	UNIT COOLER	6T4619	1T46A13	1R24*MCC1118	R.B. EL 112'	8-332
1T46*UC003A	UNIT COOLER	6T4620	1T46A14	1R24*MCC1118	R.B. EL 112'	8-81
1T46*UC004A	REFUEL LVL UC	6T4621	1T46A15	1R24*MCC1112	R.B. EL 112'	218-60
1T46*UC005A	REFUEL LVL UC	6T4622	1T46A16	1R24*MCC1112	R.B. EL 112'	218-323
1T46*UC020A	RB MCC RM UC	6T4625	1T46A23	1R24*MCC1118	R.B. EL 112'	112-80
1T46*UC021A	MG RM 111 112 UC	6T4626	1T46A33	1R24*MCC1114	R.B. EL 150'	150-22
CKT	RBSVS/CRAC ACC SIGNAL	11T4601	1T46A19			CB/48-C14
CKT	RBSVS INITIAT SIGNAL	11T4602				CB/48-C14
	DIVISION 2					
1T46*UC002B	UNIT COOLER	6T4619	1T46B13	1R24*MCC1128	R.B. EL 112'	40-275
1T46*UC003B	UNIT COOLER	6T4620	1T46B14	1R24*MCC1128	R.B. EL 112'	40-85
1T46*UC004B	REFUEL LVL UC	6T4621	1T46B15	1R24*MCC1122	R.B. EL 112'	218-143
1T46*UC005B	REFUEL LVL UC	6T4622	1T46B16	1R24*MCC1122	R.B. EL 112'	218-240
1T46*UC020B	RM MCC RM UC	6T4625	1T46B23	1R24*MCC1128	R.B. EL 112'	112-227
1T46*UC021B	MG RM 111 112 UC	6T4626	1T46B33	1R24*MCC1127	R.B. EL 40'	150-340
CKT	RBSVS/CRAC ACC SIGNAL	11T4601	1T46B19			CB/48-C14
CKT	RBSVS INITIAT SIGNAL	11T4603				CB/48-C14
	DIVISION 3					
1T46*UC022B	MG RM 113 UC	6T4627	1T46B34	1R24*MCC1131	R.B. EL 63'	161-340
1T46*UC022A	MG RM 113 UC	6T4627	1T46A34	1R24*MCC1131	R.B. EL 63'	161-22
CKT	RBSVS INITIAT SIGNAL	11T4604				ESWG ROOM/25-K13
	RELAY/SWGR ROOM VENT SYSTEM-CB					
	DIVISION 1					
1X41*ACU014A	CHILL WT COOL	6X4125	1X41A01	1R24*MCC1116	DIESEL GEN RM EL 22'	HVAC/44-C14
1X41*MOD035A	CHILL WT COOL	6X4125	1X41A01	1R24*MCC1116	DIESEL GEN RM EL 22'	HVAC/53-C12
1X41*FN029A	RELAY RM EXHAUST FAN	6X4121	1X41A02	1R24*MCC1116	DIESEL GEN RM EL 22'	HVAC/44-C13
	DIVISION 2					
1X41*ACU014B	CHILL WT COOL	6X4125	1X41B01	1R24*MCC1126	DIESEL GEN RM EL 22'	HVAC/44-C13
1X41*MOD035B	CHILL WT COOL	6X4125	1X41B01	1R24*MCC1126	DIESEL GEN RM EL 22'	HVAC/55-C12
1X41*FN029B	RELAY RM EXHAUST FAN	6X4121	1X41B02	1R24*MCC1126	DIESEL GEN RM EL 22'	HVAC/44-C13
	CHILLER EQUIP RM VENT SYSTEM-CB					

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

	DIVISION 1					
1X41*FN039A	RBSV CHILL EQUIP RM FAN	6X4126	1X41A19	1R24*MCC1116	DIESEL GEN RM EL 22'	HVAC/63-C39
1X41*MOD031A	RBSV INTAKE DAMPER	6X4126	1X41A19	1R24*MCC1116	DIESEL GEN RM EL 22'	HVAC/63-L16
1X41*MOD032A	RBSV EXHAUST DAMPER	6X4126	1X41A19	1R24*MCC1116	DIESEL GEN RM EL 22'	HVAC/63-L16
	DIVISION 2					
1X41*FN039B	RBSV CHILL EQUIP RM FAN	6X4127	1X41B19	[illegible]CC1126	DIESEL GEN RM EL 22'	HVAC/63-C15
1X41*MOD031B	RBSV INTAKE DAMPER	6X4127	1X41B19	1R24*MCC1126	DIESEL GEN RM EL 22'	HVAC/63-L16
1X41*MOD032B	RBSV EXHAUST DAMPER	6X4127	1X41B19	1R24*MCC1126	DIESEL GEN RM EL 22'	HVAC/63-L16
	BATTERY ROOM VENT SYSTEM-CB					
	DIVISION 1					
1X41*FN072A	BTY RM VENT FAN	6X4128	1X41A03	1R24*MCC1115	EMER SWGR RM EL 25'	CB/30-K16
1X41*MOD039A	BTY RM DISCHARGE DAMPER	6X4128	1X41A03	1R24*MCC1115	EMER SWGR RM EL 25'	CB/27-K16
1X41*MOD040A	BTY RM EXHAUST DAMPER	6X4128	1X41A03	1R24*MCC1115	EMER SWGR RM EL 25'	CB/30-K16
1X41*MOD041A	BTY RM EXHAUST DAMPER	6X4128	1X41A03	1R24*MCC1115	EMER SWGR RM EL 25'	CB/26-K16
	DIVISION 2					
1X41*FN072B	BTY RM VENT FAN	6X4129	1X41B03	1R24*MCC1125	EMER SWGR RM EL 25'	CB/30-C16
1X41*MOD039B	BTY RM DISCHARGE DAMPER	6X4129	1X41B03	1R24*MCC1125	EMER SWGR RM EL 25'	CB/29-C16
1X41*MOD040B	BTY RM EXHAUST DAMPER	6X4129	1X41B03	1R24*MCC1125	EMER SWGR RM EL 25'	CB/30-C16
1X41*MOD041B	BTY RM EXHAUST DAMPER	6X4129	1X41B03	1R24*MCC1125	EMER SWGR RM EL 25'	CB/26-C16
	DIVISION 3					
1X41*FN072C	BTY RM VENT FAN	6X4130	1X41C03	1R24*MCC1133	EMER SWGR RM EL 25'	CB/39-K16
1X41*MOD039C	BTY RM DISCHARGE DAMPER	6X4130	1X41C03	1R24*MCC1133	EMER SWGR RM EL 25'	CB/37-K16
1X41*MOD040C	BTY RM EXHAUST DAMPER	6X4130	1X41C03	1R24*MCC1133	EMER SWGR RM EL 25'	CB/41-C16
1X41*MOD041C	BTY RM EXHAUST DAMPER	6X4130	1X41C03	1R24*MCC1133	EMER SWGR RM EL 25'	CB/35-K16
	EMERGENCY GEN ROOM VENT SYSTEM-EGB					
	DIVISION 1					
1X61*FN025A	FILTER BOAST FAN	6X6102	1X61A02	1R24*MCC1116	DIESEL GEN RM EL 22'	EGB/63-C12
1X60*FN028A	EMER VENT FAN	6X6002	1X60A02	1R24*MCC1116	DIESEL GEN RM EL 22'	EGB/22-L15
1X60*MOD31A	DAMPER	6X6002	1X60A02	1R24*MCC1116	DIESEL GEN RM EL 22'	EGB/38-L16
1X60*MOD32A	DAMPER	6X6002	1X60A02	1R24*MCC1116	DIESEL GEN RM EL 22'	EGB/34-L12
	DIVISION 2					
1X61*FN025B	FILTER BOAST FAN	6X6102	1X61B02	1R24*MCC1126	DIESEL GEN RM EL 22'	EGB/63-C12
1X60*FN028B	EMER VENT FAN	6X6003	1X60B02	1R24*MCC1126	DIESEL GEN RM EL 22'	EGB/22-L15
1X60*MOD31B	DAMPER	6X6003	1X60B02	1R24*MCC1126	DIESEL GEN RM EL 22'	EDG/38-L16
1X60*MOD32B	DAMPER	6X6003	1X60B02	1R24*MCC1126	DIESEL GEN RM EL 22'	EDG/CA12
	DIVISION 3					
1X60*FN028C	EMER VENT FAN	6X6004	1X60C02	1R24*MCC1134	DIESEL GEN RM EL 22'	EDG/22-L15
1X60*MOD31C	DAMPER	6X6004	1X60C02	1R24*MCC1134	DIESEL GEN RM EL 22'	EDG/38-CA16
1X60*MOD32C	DAMPER	6X6004	1X60C02	1R24*MCC1134	DIESEL GEN RM EL 22'	EDG/34-CA12
	SCREEN WELL PUMP HOUSE VENT					
	DIVISION 1					
1X41*FN068A	PP HS FAN	6X4118	1X41A15	1R24*MCC1110		SCREENWELL EL 20'
	DIVISION 2					
1X41*FN068B	PP HS FAN	6X4119	1X41B15	1R24*MCC1120		SCREENWELL EL 20'
	CONTROL ROOM AIR CONDITIONING SYSTEM-CB					

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

	DIVISION 1					
1X61*MOV031A	CRAC ISOL VV	6X6104	1X61A05	1R24*MCC1115	EMER SWGR RM EL 25'	CB/78-C12
1X61*MOV31A	CRAC ISOL VV	6X6110	1X61A09	1R24*MCC1115	EMER SWGR RM EL 25'	CB/67-C16
1X61*AOV36A	CRAC NORM AIR INTAKE VV	6X6106	1X61A06	1R35*PNL-R1	RELAY ROOM EL 44'	CB/66-C16
1X61*AOV30A	CRAC ISOS VV	6X6108	1X61A03	1R35*PNL-P1	RELAY ROOM EL 44'	CB/73-C16
1X61*ACU70A	CRAC UNIT	6X6101	1X61A01	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/71-C13
1X61*MOD34A	CRAC UNIT DAMPER	6X6101	1X61A01	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/77-C16
1X61*TCV021A	CRAC-COOLING COIL VV	13X6101	1X61A10			CB/71-C13
CKT	CRAC EMER INIT SIGN (PNL VX1)	11X6101	1X61A07	1R42*PNL-A2		CB/44-C12
1X61*TIC021A	CRAC ACU07A COOLING CONTROL	13X6101	1X61A10			CB/63-K12
1X61*TE021A	CRAC TEMP ELEMENT	13X6101	1X61A10			CB/67-12K
1X61*AOV039A	ISOL DAMPERS	6X6109	1X61A04	1R35*PNL-R1	RELAY RM EL 44'	CB/77-C16
1X61*FN025A	FILTER BOASTER FAN	6X6102	1X61A02	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/63-C12
1X61*MOD033A	FILTER BOASTER FAN DAMPER	6X6102	1X61A02	1R24*MCC1116	DIESEL GEN RM EL 22'	CB/77-C12
	DIVISION 2					
1X61*MOV031B	CRAC ISOL VV	6X6105	1X61B05	1R24*MCC1125	EMER SWGR RM EL 25'	CB/78-C12
1X61*MOC032B	CRAC ISOL VV	6X6111	1X61B09	1R24*MCC1125	EMER SWGR RM EL 25'	CB/70-C16
1X61*AOV36B	CRAC NORM AIR INTAKE VV	6X6106	1X61B06	1R35*PNL-B1	RELAY RM EL 44'	CB/70-C16
1X61*AOV30B	CRAC ISOL VV	6X6108	1X61B03	1R35*PNL-B1	RELAY RM EL 44'	CB/73-C16
1X61*AUC70B	CRAC UNIT	6X6101	1X61B01	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/71-C13
1X61*MOD34B	CRAC UNIT DAMPER	6X6101	1X61B01	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/77-C16
1X61*TCV021B	CRAC-COOLING COIL VV	13X6102	1X61B10			CB/71-C13
CKT	CRAC EMERG INIT SIGN (PNL VX1)	11X6102	1X61B07	1R42*PNL-B2		CB/44-C12
1X61*TIC021B	CRAC ACU70B COOLING CONTROL	13X6102	1X61B10			CB/63 C12
1X61*TE021B	CRAC TEMP ELEMENT	13X6101	1X61B10			CB/ /-K12
1X61*APV039B	ISOL DAMPERS	6X6109	1X61B04	1R35*PNL-B1	RELAY RM EL 44'	
1X61*FN025B	FILTER BOASTER FAN	6X6102	1X61B02	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/63-C1
1X61*MOD033B	FILTER BOASTER FAN DAMPER	6X6102	1X61B02	1R24*MCC1126	DIESEL GEN RM EL 22'	CB/74-C12
	COMPRESSED AIR SYSTEM					
	DIVISION 1					
1P50*MOV104	INSIR AIR TO SUPPR CHAMBER VV	6P5012	1P50N05	1R24*MCC1112	R.B. EL 78'	30-250
1P50*MOV103A	COMPRESS AIR SRV OUTBRD ISOL VV	6P5014	1P50A12	1R24*MCC1112	R.B. EL 112'	90-250
1P50*MOV105A	COMPRESS AIR SRV INBRD ISOL VV	6P5016	1P50A13	1R24*MCC1113	R.B. EL 112'	75-220
1P50*MOV113A	COMPRESS AIR SRV NORMAL SUP VV	6P5018	1P50A14	1R24*MCC1112	R.B. EL 112'	90-250
1P50*MOV114A	COMPRESS AIR SRV EMERG SUP VV	6P5020	1P50A15	1R24*MCC1118	R.B. EL 112'	90-250
1P50*PS113A	SERVICE AIR HEADER NORMAL SUP	1.61-273				151-170
1P50*PS105A	SERVICE AIR HEADER PRESSURE	1.61-272				151-155
	DIVISION 2					
1P50*MOV106	INSTR AIR TO SUPPR CHAMBER VV	6P5013	1P50N07	1R24*MCC1129	R.B. EL 40'	30-250
1P50*MOV103B	COMPRESS AIR SRV OUTBRD ISOL VV	6P5015	1P50B12	1R24*MCC1122	R.B. EL 40'	90-070
1P50*MOV105B	COMPRESS AIR SRV INBRD ISOL VV	6P5017	1P50B13	1R24*MCC1122	R.B. EL 112'	89-255
1P50*MOV113B	COMPRESS AIR SRV NORMAL SUP VV	6P5019	1P50B14	1R24*MCC1123	R.B. EL 112'	151-220
1P50*MOV114B	COMPRESS AIR SRV EMERG SUP VV	6P5015	1P50B15	1R24*MCC1123	R.B. EL 112'	89-070
1P50*PS113B	SERVICE AIR HEADER NORMAL SUP	1.61-273				151-220
1P50*PS105B	SERVICE AIR HEADER PRESSURE	1.61-272				151-220
	SWGR MCC PNLS-CR/RB/PH					
	DIVISION 1					
1R22*SWG101	4160V-HVN RHR SH CS SWG111	FE-1B				EL 25'
ACB 101-1	EMERG BUS NORM SUPPLY	5R2209	1R22A01	1R22*SWG101	EMER SWGR RM EL 25'	EL-25'
ACB 101-2	EMER BUS RES SUPPLY	5R2210	1R22A02	1R22*SWG101	EMER SWGR RM EL 25'	EL-25'
BUS 101 SEQ	PROGRAM CKT SH RHR CS HVN	5R2217	1R22A03		EMER SWGR RM EL 25'	EL-25'
BUS	4160 REL & MET CKT	8R1205	1R22A04	1R22*SWG101	EMER SWGR RM EL 25'	EL-25'
	DIVISION 2					

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1R22*SHG102	4160V-HVN RHR SH CS SHG112				EMER SHGR RM EL 25'	EL-25'
ACB 102-1	EMERG BUS NORM SUPPLY	5R2211	1R22B01	1R22*SHG102	EMER SHGR RM EL 25'	EL-25'
ACB 102-2	EMERG BUS RES SUPPLY	5R2212	1R22B02	1R22*SHG102	EMER SHGR RM EL 25'	EL-25'
BUS 102 SEQ	PROGRAM CKT SH RHR CS	5R2218	1R22B03		EMER SHGR RM EL 25'	EL-25'
BUS	4160 REL & MET CKT	8R2206	1R22B04	1R22*SHG102	EMER SHGR RM EL 25'	EL-25'
	DIVISION 3					
1R22*SHG103	4160V-HVN RHR SH SHG113	FE-1AV		1R42*PNL-C1	EMER SHGR RM EL 25'	EL-25'
ACB 103-1	EMERG BUS NORM SUPPLY	5R2213	1R22C01	1R22*SHG103	EMER SHGR RM EL 25'	EL-25'
ACB 103-2	EMERG BUS RES SUPPLY	5R2214	1R22C02	1R22*SHG103	EMER SHGR RM EL 25'	EL-25'
BUS 103 SEQ	PROGRAM CKT SH HVN	5R2219	1R22C03		EMER SHGR RM EL 25'	EL-25'
BUS	4160 REL 7 MET CKT	8R2207	1R22C04	1R22*SHG103	EMER SHGR RM EL 25'	EL-25'
	DIVISION 1					
ACB 101-4	FEEDER TO EMERG BUSS 111	5R2303	1R23A01	1R22*SHG101	EMER SHGR RM EL 25'	EL-25'
1R23*T-101	TRANSFORMER	FE-1B		1R22*SHG101	EMER SHGR RM EL 25'	EL-25'
1R23*SHG111	480V -1R24*MCC1110-9&PNLR1				EMER SHGR RM EL 25'	EL-25'
1JB*701	1R24*MCC1111/9	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL-25'
1JB*703	1R24*MCC1117/4/Y/Z/A/C	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL-25'
1JB*300	1JB*701/3	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL-25'
1JB*702	1R24*MCC1113/8	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL-25'
	DIVISION 2					
ACB 102-4	FEEDER TO EMERG BUS 112	5R2304	1R23B01	1R22*SHG102	EMER SHGR RM EL 25'	EL-25'
1R23*T-102	TRANSFORMER	FE-1B		1R22*SHG102	EMER SHGR RM EL 25'	EL-25'
1R23*SHG112	480V -1R24*MCC1120-9&PNLB1				EMER SHGR RM EL 25'	EL-25'
1JB*706	1R24*MCC1127/4/X/A/C	FE-1E		1R23*SHG-112	EMER SHGR RM EL 25'	EL-25'
1JB*704	1R24*MCC1121/9	FE-1E		1R23*SHG-112	EMER SHGR RM EL 25'	EL-25'
1JB*301	1JB*704/6	FE-1E		1R23*SHG-112	EMER SHGR RM EL 25'	EL-25'
1JB*705	1R24*MCC1123/8	FE-1E		1R23*SHG-112	EMER SHGR RM EL 25'	EL-25'
	DIVISION 3					
ACB 103-5	FEEDER TO EMERG BUS 113	5R2305	1R23C01	1R22*SHG103	EMER SHGR RM EL 25'	EL-25'
1R23*SHG113	480V -1R24*MCC1131-4&PNL01				EMER SHGR RM EL 25'	EL-25'
1R23*T-103	TRANSFORMER	FE-1B		1R22*SHG103	EMER SHGR RM EL 25'	EL-25'
	DIVISION 1					
1R35*PNLR1	120V -HVN SH		1R35A02	1R24*MCC1115	EMER SHGR RM EL 25'	EL-25'
1R24*MCC1110	480V -X41,P41				EMER SHGR RM EL 25'	EL-25'
1R24*MCC1111	480V -E11,E21				EMER SHGR RM EL 25'	EL-25'
1R24*MCC1112	480V -B31,P42,T46,E11	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL-25'
1R24*MCC1113	480V -E21,G33,C41,E11				EMER SHGR RM EL 25'	EL-25'
1R24*MCC1114	480V -G41	FE-1H		1R24*SHG111	EMER SHGR RM EL 25'	EL-25'
1R24*MCC1115	480V -R42,R35,X41,X61,	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL-25'
1R24*MCC1116	480V -M50,P41,R43,X41,X60,X61	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL-25'
1R24*MCC1117	480V -E11,E21				EMER SHGR RM EL 25'	EL-25'
1R24*MCC1118	480V -E41,E11,T46	FE-1K/H		1R23*SHG111	EMER SHGR RM EL 25'	EL-25'
1R24*MCC1119	480V -E11,P41	FE-1K		1R23*SHG111	EMER SHGR RM EL 25'	R.B. EL 40'
1R24*MCC111X	480V -E11,B31	FE-1K		1R24*TRS111X	R.B. EL 112'	R.B. EL 112'-6'
1R24*MCC111Z		FE-1K		1R24*MCC111Y	R.B. EL 78'	R.B. EL 112'-6'
1R24*TRS111Y	TRANSFER SWITCH	FE-1E				R.B. EL 150'
1R24*TRS111X	TRANSFER SWITCH	FE-1E		1R24*MG113A/111		R.B. EL 150'
1R24*MG-111	MOTOR GENERATOR	FE-1E		1R23*SHG-111	EMER SHGR RM EL 25'	EL 8'
1JB*703	1R24*MCC111Y/7/4/Z	FE-1H		1R24*SHG111	EMER SHGR RM EL 25'	
	DIVISION 2					
1R24*MCC1120	480V -P41,X41				EMER SHGR RM EL 25'	SCREENWELL
1R24*MCC1121	480V -E11				EMER SHGR RM EL 25'	R.B. EL 40'
1R24*MCC1122	480V -E11,B31,P42,T46	FE-1E		1R23*SHG-112	EMER SHGR RM EL 25'	R.B. EL 112'
1R24*MCC1123	480V -E21,C41				EMER SHGR RM EL 25'	R.B. EL 112'

TABLE 4.4-2 SHUTDOWN EQUIPMENT LIST

1R24*MCC1124	480V -G41				EMER SWGR RM EL 25'	R.B. EL 150'
1R24*MCC1125	480V -R42,R35,X41,X61	FE-1E		1R23*SWG-112	EMER SWGR RM EL 25'	EMER SWGR ROOM
1R24*MCC1126	480V -M50,P41,R43,X41,X60,X61	FE-1E		1R23*SWG-112	EMER SWGR RM EL 25'	DIESEL GEN ROOM
1R24*MCC1127	480V -E11,E21,P41				EMER SWGR RM EL 25'	R.B. EL 40'
1R24*MCC1128	480V -E11,E51,P41,P42,T46	FE-1J		1R23*SWG112	EMER SWGR RM EL 25'	R.B. EL 112'
1R24*MCC1129	480V -E11,P41	FE-1M		1R23*SWG112	EMER SWGR RM EL 25'	R.B. EL 40'
1R24*TRS112Y	TRANSFER SWITCH	FE-1E		1R24*MG113B/112		R.B. EL 150'
1R24-MCC112A		FE-1J		1R24*MCC112X	R.B. EL 78'	R.B. EL 78
1R24-MCC112C		FE-1M		1R24*MCC112X	R.B. EL 78'	R.B. EL 78
1R24*MCC112X		FE-1M		1R23*SWG112	EMER SWGR RM EL 25'	R.B. EL 78'
1R24*MCC112Y	480V -B31	FE-1M		1R24*TRS112Y	R.B. EL 112'	R.B. EL 112'
1R24*MG112	MOTOR GENERATOR	FE-1E		1R23*SWG-112	EMER SWGR RM EL 25'	R.B. EL 150'
1R24*PNL-01		FE-9NY		1R23*MCC112Y	R.B. EL 112'	R.B. EL 112'
	DIVISION 3					
1R24*MCC1131	480V -P42,T46	FE-1E		1R23*SWG-113	EMER SWGR RM EL 25'	R.B. EL 63'
1R24*MCC1134	480V -M50,P41,R43,X60,	FE-1E		1R23*SWG-113	EMER SWGR RM EL 25'	DIESEL GEN ROOM
1R24*MG113A	MOTOR GENERATOR	FE-1E		1R24*SWG113	EMER SWGR RM EL 25'	R.B. EL 150'
1R24*MG113B	MOTOR GENERAOTR	FE-1E		1R24*SWG113	EMER SWGR RM EL 25'	R.B. EL 150'
	DIVISION 1					
1R35*PNLR1	120V -M50,R43		1R35A02	1R24*MCC1115	EMER SWGR RM EL 25'	EMER SWGR ROOM EL 25
1R35*TR1	480V/120V XFMR PNLR1	FE-1H		1R24*MCC1115	EMER SWGR RM EL 25'	EMER SWGR ROOM EL 25
1R35*T-R2	TRANSFORMER	FE-1H		1R24*MCC1112	R.B. EL 112'	R.B. EL 112
1R35*T-R3	TRANSFORMER	FE-1X		1R24*MCC116	DIESEL GEN RM EL 22'	DIESEL GEN ROOM EL 20
	DIVISION 2					
1R35*PNLB1	120V -M50,R43		1R35B02	1R24*MCC1125	EMER SWGR RM EL 25'	R.B. EL 44'
1R35*TB1	480V/120V XFMR PNLB1			1R24*MCC1125	EMER SWGR RM EL 25'	EMER SWGR ROOM EL 25
1R35*T-B2	TRANSFORMER	FE-1J		1R24*MCC1122	R.B. EL 112'	R.B. EL 112'
1R35*T-B3	TRANSFORMER	FE-1X		1R24*MCC1126	DIESEL GEN RM EL 25'	DIESEL GEN ROOM
	DIVISION 3					
1R35*T01	480V/120V XFMR PNL01	FE-1H		1R24*MCC1133	EMER SWGR RM EL 25'	EMER SWGR ROOM EL 25
1R35*PNL-01		FE-1H		1R35*T-01	EMER SWGR RM EL 25'	R.B. EL 25'
1R35*T-02	TRANSFORMER	FE-1X		1R24*MCC1134	DIESEL GEN RM EL 22'	DIESEL GEN ROOM
	DIVISION 1					
1R42*DCA1	125DC- 1R42*SWGA1 BAT CH	FE-1H		1R24*MCC1115	EMER SWGR RM EL 25'	EMER SWGR ROOM
1R42*PNL-A1	125DC- SWG101&111 DG	FE-1AT		1R42*SWG101	EMER SWGR RM EL 25'	EMER SWGR ROOM
1R42*BAA1	125DC- 1R42*SWGA1 BAT					BATT ROOM
1R42*SWGA1	125DC- PNLA1&A2					EMER SWGR ROOM
1R42*PNLA2	125DC- ADS &GE LOGIC					EMER SWGR ROOM
1H11*PNL-VC1	125 VDC PNL FEED	11R4202		1R42*PNL-A	RELAY RM EL 44'	CONTROL ROOM EL-63
1H11*PNL-VC2	125 VDC PNL FEED	11R4201		1R42*PNL-A2	RELAY RM EL 44'	CONTROL ROOM EL-63

(1) THE EQUIPMENT IN THE REACTOR BUILDING IS LOCATED BY ELEVATION(FT.) AND AZIMUTH(DEGREES): EXAMPLE- 112-230 I.E. REACTOR BUILDING, ELEVATION 112FT.AND 230 DEGREES. THE EQUIPMENT OUTSIDE THE REACTOR BUILDING IS LOCATED BY AREA, ELEVATION, LINE AND COLUMN: EXAMPLE- CB/63-C13 I.E. CONTROL BUILDING, ELEVATION 63FT., LINE C AND COLUMN 13.

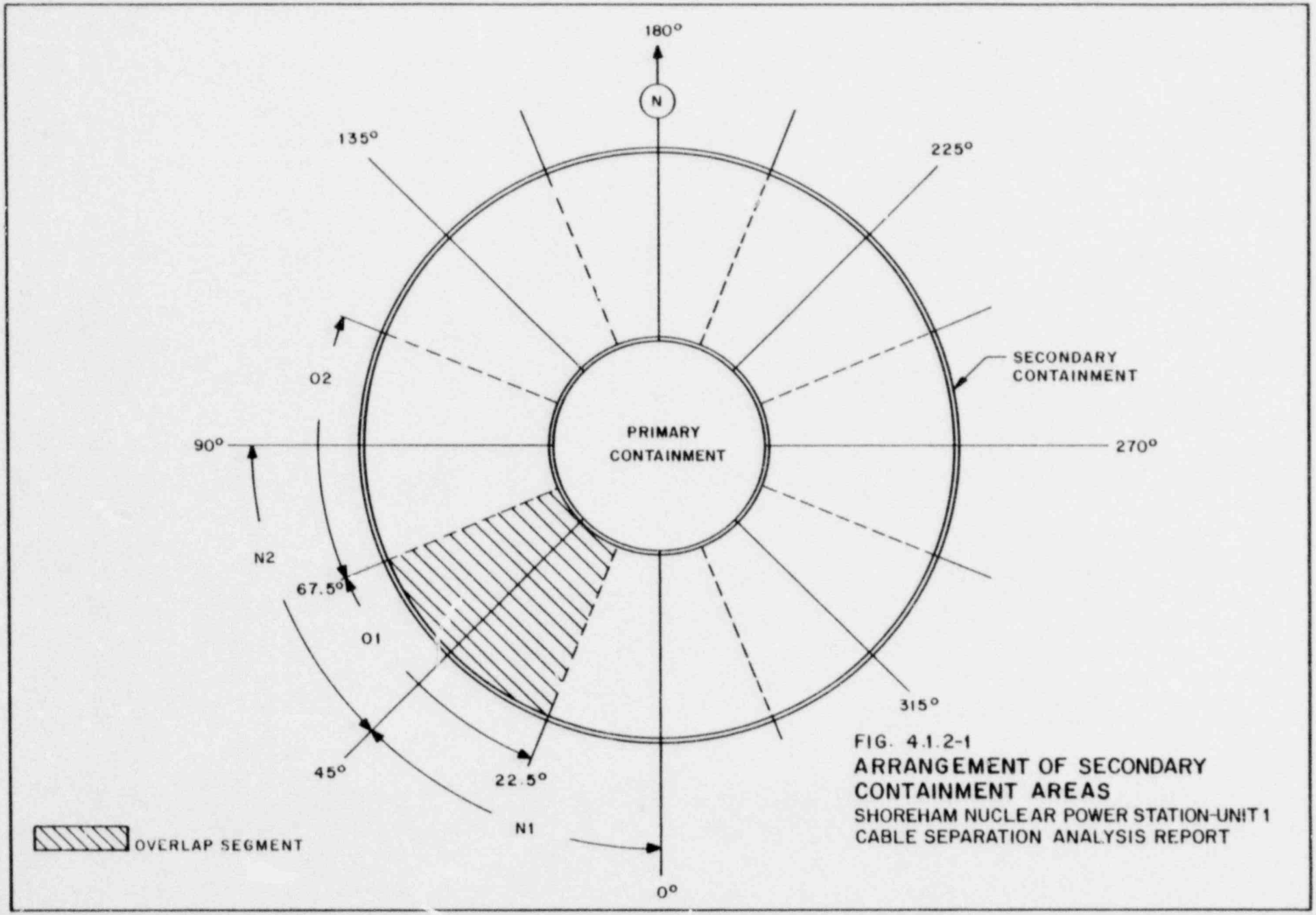


FIG. 4.1.2-1
ARRANGEMENT OF SECONDARY CONTAINMENT AREAS
SHOREHAM NUCLEAR POWER STATION-UNIT 1
CABLE SEPARATION ANALYSIS REPORT

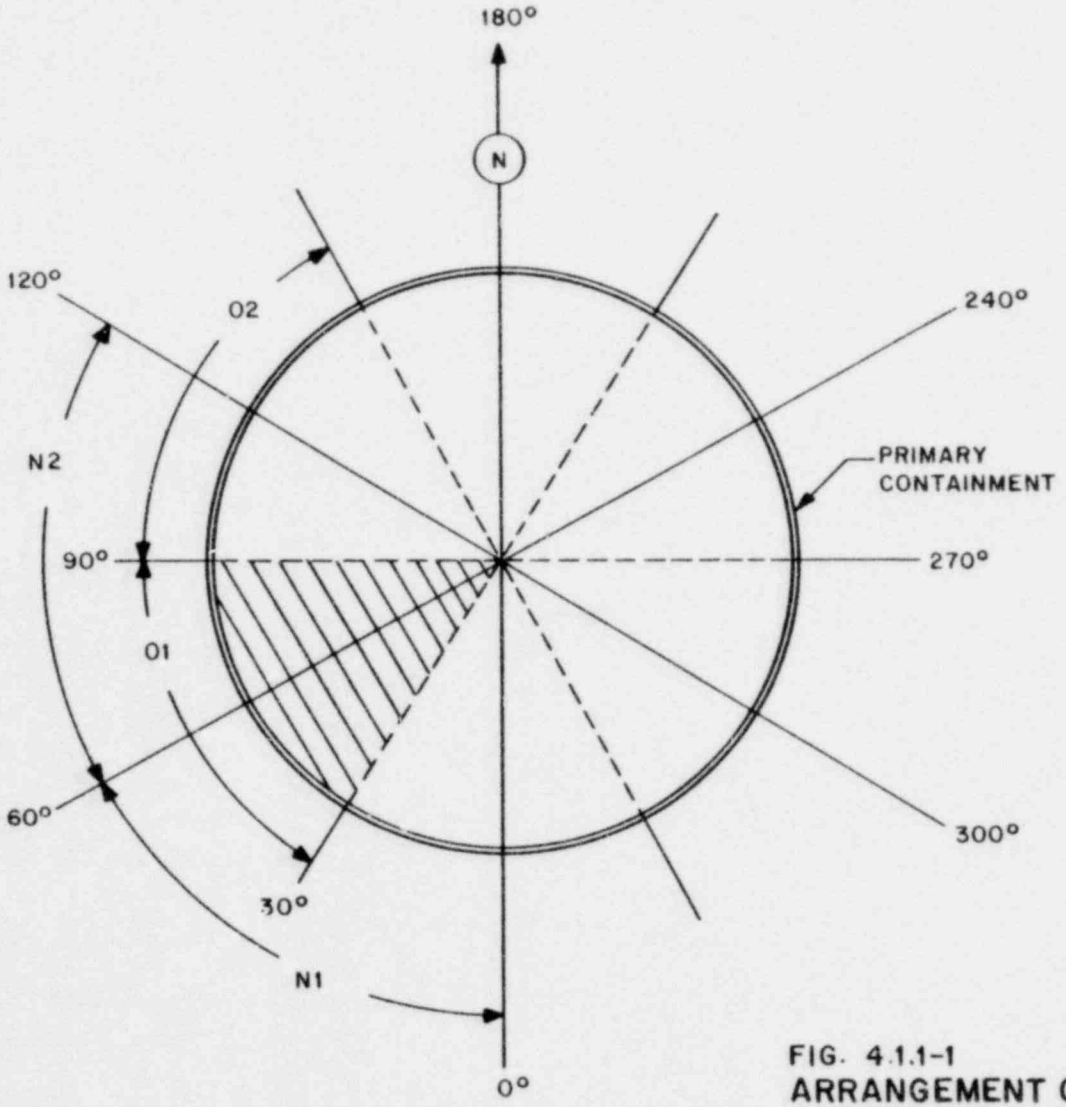
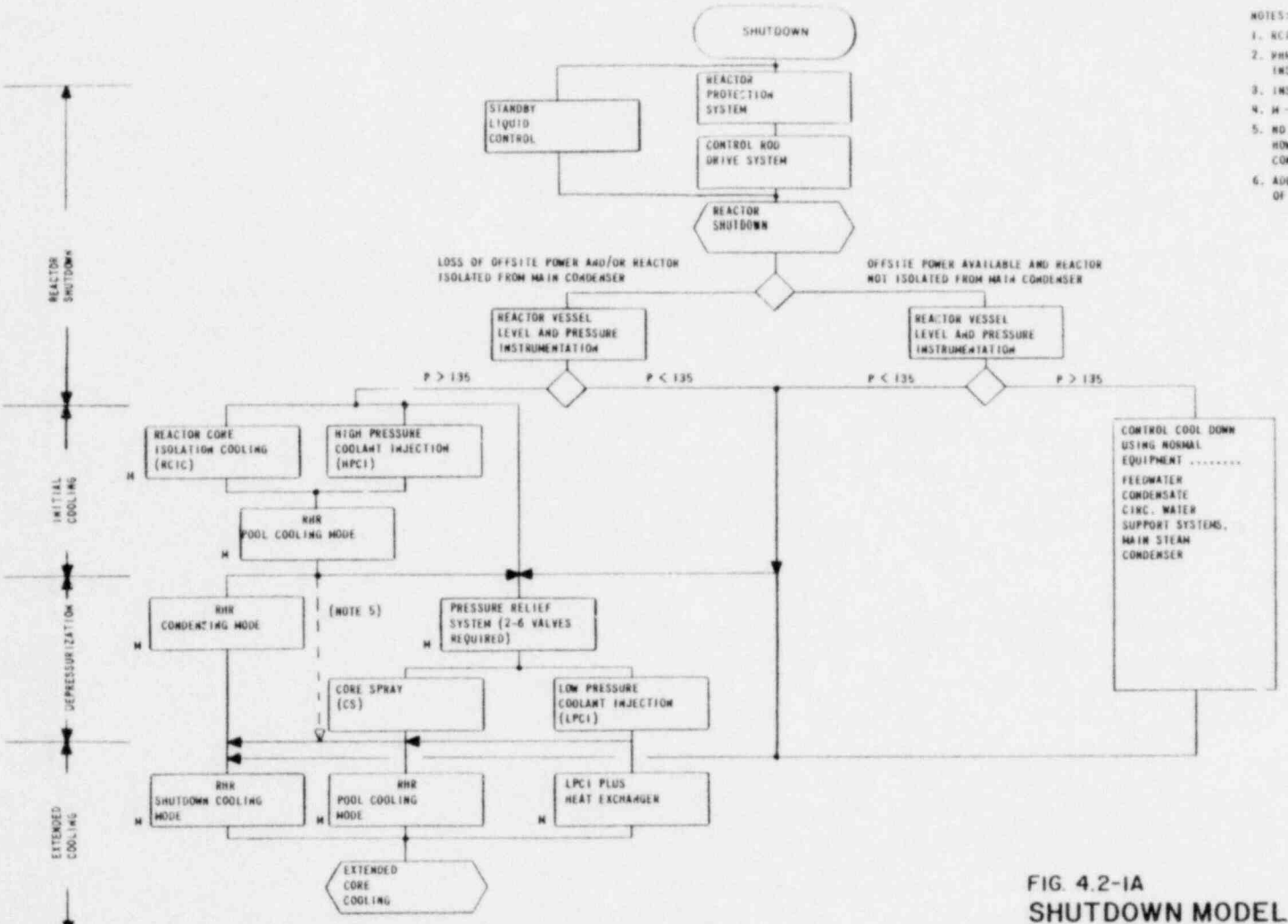


FIG. 4.1.1-1
ARRANGEMENT OF PRIMARY CONTAINMENT AREAS
SHOREHAM NUCLEAR POWER STATION-UNIT 1
CABLE SEPARATION ANALYSIS REPORT

OVERLAP SEGMENT



NOTES:

1. RCIC IS AUTO START, MANUAL RESET.
2. RHR CONDENSING MODE REQUIRES NON-SAFETY INSTRUMENT AIR.
3. INSTRUMENTATION NOT SHOWN.
4. H - MANUAL.
5. NO FORCED COOLDOWN CAPABILITY THIS PATH HOWEVER PLANT REMAINS SAFE IN HOT SHUTDOWN CONDITION AND WILL EVENTUALLY DEPRESSURIZE.
6. ADDITIONAL FLEXIBILITY EXISTS IN THAT PATHS OF MANY OPERATIONS MAY BE RETRACED.

FIG. 4.2-1A

SHUTDOWN MODEL
PROTECTION SEQUENCE FOR SHUTDOWN
SHOREHAM NUCLEAR POWER STATION-UNIT 1
CABLE SEPARATION ANALYSIS REPORT

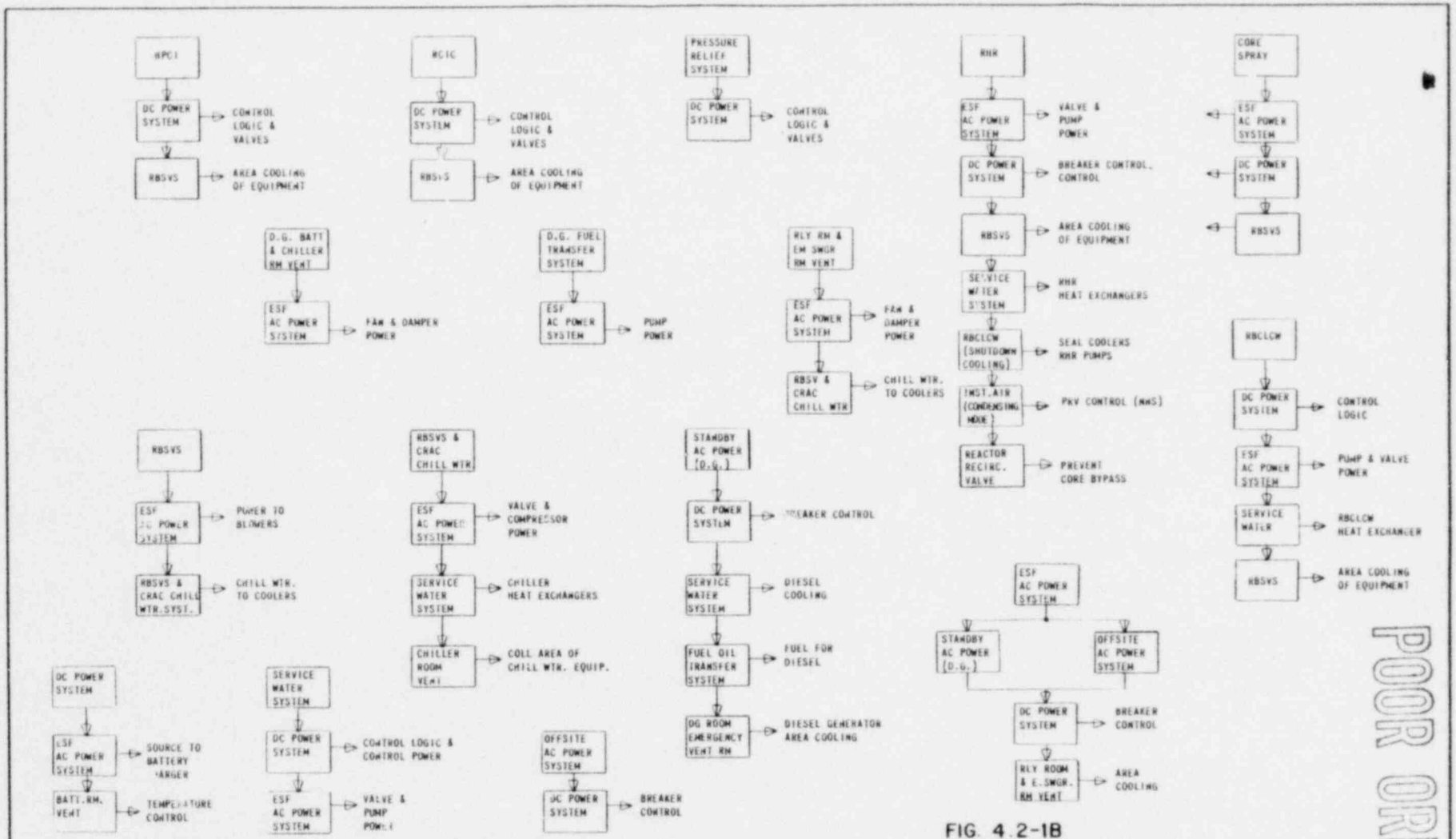


FIG. 4.2-1B

SHUTDOWN MODEL
SHUTDOWN SYSTEMS (1E)

SHOREHAM NUCLEAR POWER STATION-UNIT 1
CABLE SEPARATION ANALYSIS REPORT

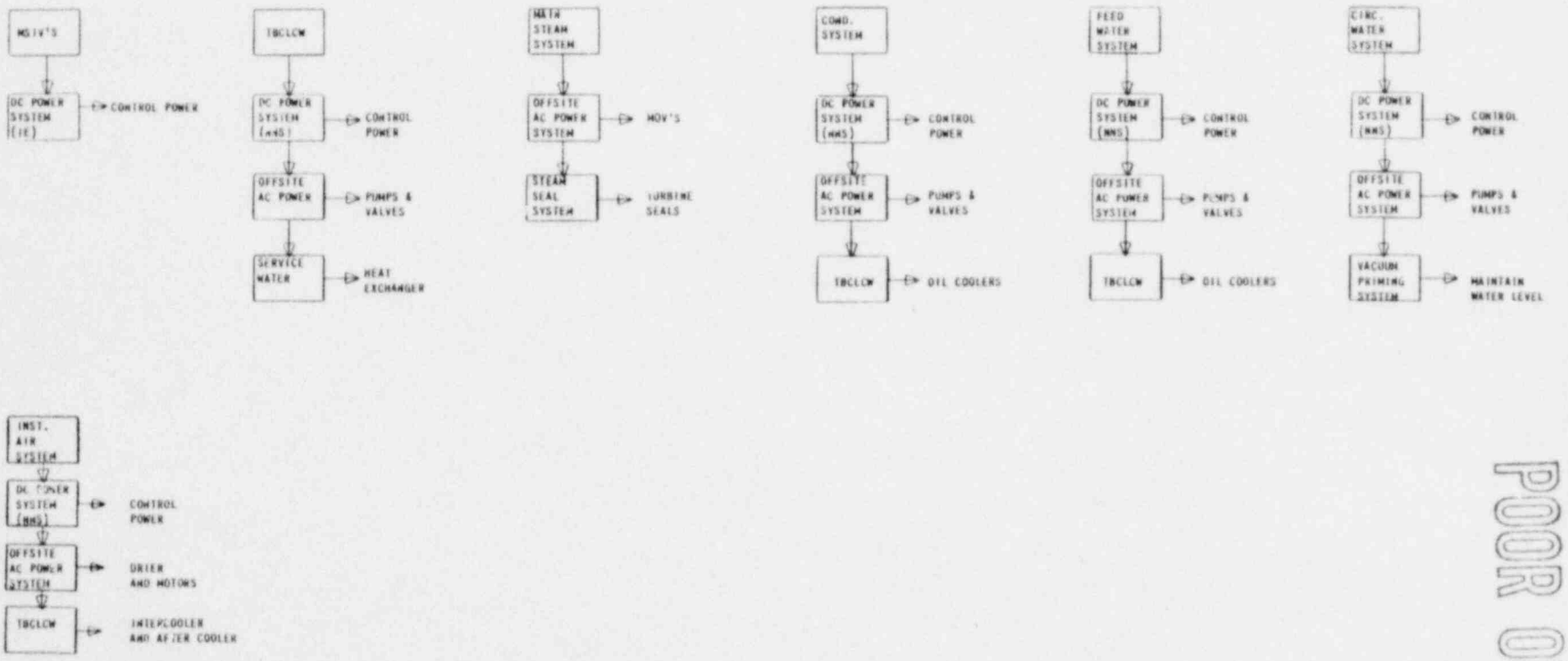


FIG. 4.2-1C
SHUTDOWN MODEL
SHUTDOWN SYSTEMS (NNS)
SHOREHAM NUCLEAR POWER STATION-UNIT 1
CABLE SEPARATION ANALYSIS REPORT

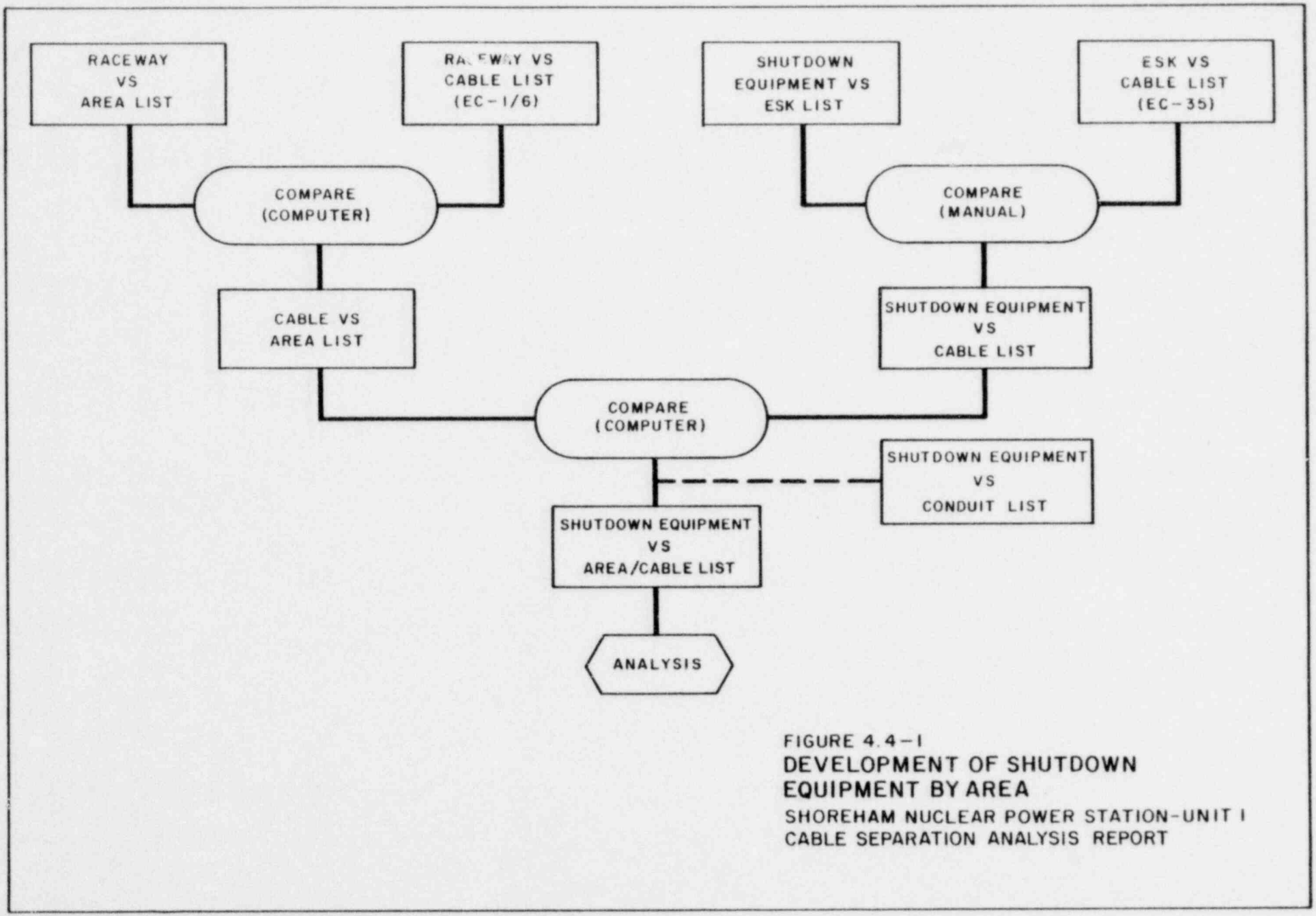


FIGURE 4.4-1
DEVELOPMENT OF SHUTDOWN EQUIPMENT BY AREA
SHOREHAM NUCLEAR POWER STATION-UNIT 1
CABLE SEPARATION ANALYSIS REPORT

APPENDIX A

CABLE SEPARATION ANALYSIS RESULTS

PRIMARY CONTAINMENT

SEGMENT N1

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C61, E11, G33

(B) Division II Systems: B21, E41 (Div. I)

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions, other than the RCIC (E51) system.

(B) Division I RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(C) No credit taken for Division II ADS (B21) system.

(D) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III systems, and Division I RCIC system are available.

(B) Division I RHR system valve 1E11*MOV047 may be manually operated, or Division II RHR/CS/SRV flow path is available.

(C) Division II ADS system is not required since the Division I RCIC system is available.

(D) Division II HPCI system is not required since the Division I RCIC system is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RCIC system.

Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047 or the Division II RHR/CS/SRV ciculation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT N2

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, B31, C61

   (B) Division II Systems: B21, E41 (Div. I)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the RHR (E11) and the RCIC (E51) systems.

   (B) No credit taken for Division II ADS (B21) system.

   (C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division II systems, Division III systems, and Division I RHR and RCIC systems are available.

   (B) Division II ADS system is not needed since Division I RCIC system is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division II RHR system.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT N3

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, B31, C61

   (B) Division II Systems: B21, E41 (Div. I)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems, other than RHR (E11), RCIC (E51), and remaining ADS (B21) systems.

   (B) Division II ADS (B21) system valves SOV092J and H.

   (C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division II systems, Division III systems, and Division I RHR, RCIC, and remaining ADS systems are available.

   (B) Division II remaining ADS system valves are available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC System.

   Cold shutdown is achievable using the Division I or II RHR systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT N4

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, C61, E11, E51 (Div. II)

   (B) Division II Systems: B21, E41 (Div. I)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the RHR (E11) system shutdown cooling inboard isolation valve 1E*MOV047 and remaining ADS (B21) system.

   (B) Division I ADS (B21) system valves 1B21*SOV092AX, BX, CX.

   (C) Division II ADS (B21) system valves 1B21*SOV092AY, BY, EY, LY.

   (D) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division I and II systems and Division III systems are available.

   (B) Division I ADS valves 1B21*SOV092AX, BX, CX are not needed since the remaining ADS valves are adequate for depressurization.

   (C) Division II ADS valves 1B21*SOV092AY, BY, EY, LY are not needed since the remaining ADS valves are adequate for depressurization.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using the Division II RHR/CS/SRV flow path.

   Cold shutdown is achievable using Division II RHR system.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT N5

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, C61, G33, E11, E51 (Div. II)

   (B) Division II Systems: B21, C61

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

   (B) No credit taken for Division II ADS (B21) system.

   (C) Division II Reactor Plant Remote Shutdown (C61) system temperature element 1C61*TE022B.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available.

   (B) Division II ADS system is not needed since Division II HPCI (E41) system is available.

   (C) Division II Reactor Plant Remote Shutdown Temperature Element 1C61*TE022B is not required for shutdown.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division II HPCI systems.

   Cold shutdown is achievable using Division II RHR system.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT N6

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, C61, G33, E11, E51 (Div. II)

   (B) Division II Systems: B21, B31

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems, other than RHR (E11) system shutdown cooling inboard isolation valve 1E41*MOV047 and ADS (B21) system valves SOV092H, J, and K.

   (B) No credit taken for Division II ADS (B21) system, other than valves SOV092C and D.

   (C) Division II Reactor Recirculation (B31) system valve 1B31*MOV031B.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division I and II systems and Division III systems are available.

   (B) Division II ADS system valves SOV092C and D are available.

   (C) Division II Reactor Recirculation system valve 1B31*MOV031B is not required for shutdown.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division II HPCI system.

   Cold shutdown is achievable using Division II RHR System.

5. FURTHER ACTIONS RECOMMENDED:

   None

SEGMENT 01

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, B31, E11, C61

   (B) Division II Systems: B21, E41 (Div. I)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the RCIC (E51) system.

   (B) Division I RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047, and bypass valves 1E11*MOV081A and B.

   (C) No credit taken for Division II ADS (B21) system.

   (D) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division I and II systems and Division III systems are available.

   (B) Division I RHR system valve 1E11*MOV047 may be manually operated, or Division II RHR/CS/SRV flow path is available. RHR valves 1E11*MOV081A and B are not required for shutdown.

   (C) Division II ADS system is not needed since Division I RCIC and Division II HPCI systems are available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047, or the Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 02

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, B31, C61

   (B) Division II Systems: B21, E41 (Div. I)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the RHR (E11) and the RCIC (E51) systems.

   (B) No credit taken for Division II ADS (B21) system.

   (C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division I and II systems and Division III systems are available.

   (B) Division II ADS system is not required since Division I RCIC and Division II HPCI systems are available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division I or II RHR systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 03

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B31, C61, E51 (Div. II)

   (B) Division II Systems: E41 (Div. I)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the ADS (B21) and RHR (E11) systems.

   (B) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division II systems, Division III systems, and Division I ADS and RHR systems are available.

   (B) Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using the Division II RHR/CS/SRV flow path.

   Cold shutdown is achievable using Division I or II RHR systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 04

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, C61, G33, E11, E51 (Div. II)

   (B) Division II Systems: B21, C61

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the RHR (E11) system shutdown cooling valve 1E11*MOV047.

   (B) No credit taken for Division II ADS (B21) system.

   (C) Division II Reactor Plant Remote Shutdown (C61) system temperature element 1C61*TE022B.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division II and III systems are available.

   (B) Division II ADS system is not required since the Division II HPCI (E41) system is available.

   (C) Division II Reactor Plant Remote Shutdown Temperature Element 1C61*TE022B is not required for shutdown.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division II HPCI system.

   Cold shutdown is achievable using Division II RHR system.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 05

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, C61, E11, G33, E51 (Div II)

   (B) Division II Systems: B21, B31, C61

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047, and ADS (B21) system valves SOV092C and D.

   (B) No credit taken for Division II ADS (B21) system other than valves SOV092H, J, and K.

   (C) Division II Reactor Recirculation (B31) system valve 1B31*MOV031B.

   (D) Division II Reactor Plant Remote Shutdown (C61) system temperature element 1C61*TE022B.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division I and II systems and Division III systems are available.

   (B) Division II ADS system valves SOV092H, J, and K are available.

   (C) Division II Reactor Recirculation system valve 1B31*MOV031B is not required for shutdown.

   (D) Division II Reactor Plant Remote Shutdown temperature element 1C61*TE022B is not required for shutdown.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division II HPCI system.

   Cold shutdown is achievable using Division II RHR system.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 06

CABLE SEPARATION ANALYSIS
PRIMARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, C61, E11, G32

   (B) Division II Systems: B21, B31

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than remaining ADS (B21) valves, and RCIC (E51) system.

   (B) No credit taken for Division II ADS (B21) system.

   (C) Division II Reactor Recirculation (B31) system valve 1B31*MOV031B.

   (D) Division I RHR (E11) system valves 1E11*MOV047 and 1E11*MOV081B.

3. DISABLED FUNCTION EVALUATION:

   (A) Remaining Division I and II systems and Division III systems are available.

   (B) Division II ADS system is not required since Division II HPCI and Division I RCIC systems are available. Remaining Division I ADS is available for the Division II RHR/CS/SRV flow path.

   (C) Division II Reactor Recirculation system valve 1B31*MOV031B is not required for shutdown.

   (D) Division I RHR system valve 1E11*MOV047 may be manually operated, and valve 1E11*MOV081B is not required for shutdown.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RCIC or Division II HPCI systems.

Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047, or Division I ADS valves and Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

APPENDIX B

CABLE SEPARATION ANALYSIS RESULTS

SECONDARY CONTAINMENT

SEGMENT 008-N1
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I System: E11, P41, P42, T46

(B) Division II Systems: P41

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions, other than the RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(B) Division II SW (P41) system fuel pool supply valve 1P41*MOV042B, drain valves 1P41*MOV039B and 43, and ultimate cooling valves 1P41*MOV033B and D.

3. DISABLED FUNCTION EVALUATIONS:

(A) Division II and III systems are available.

(B) Division II SW system supply, drain, and ultimate cooling valves are not necessary since Division II RHR system is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II HPCI system.

Cold shutdown is achievable using Division II and III RHR systems.

5. FUPTHER ACTION RECOMMENDED:

None

SEGMENT 008-N2
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems : E11, E21, P41, P42, T46

(B) Division II Systems : None

(C) Division III Systems: E11(C)

2. SYSTEMS' FUNCTIONS DISABLED:

No credit taken for Division I and III(C) systems' functions, other than the RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

Division II and III (D) systems are available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II HPCI system.

Cold shutdown is achievable using Division II and III (D) systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 008-N3
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components only)

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions.

(B) Division II HPCI (E41) system pressure switches 1E41*PS025A&C, 1E41*PS023A&C, and 1E41*PDS022A.

(C) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III systems are available, except Division II HPCI system.

(B) RHR system valve 1E11*MOV047 can be manually operated or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

In some instances the Division II HPCI System could be used for hot shutdown if the following cables are protected:

1E41ARC404
1E41ARC405
1E41ARC408

Cold shutdown is achievable using Division II RHR with manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI pressure switches 1E41*PS022A&C, 1E41*P5023A and 1E41*PDS025A&C, from the RCIC "red" cables so that HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 008-N4
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, C61, E11, E21, E51, Z93

(B) Division II Systems: E41

(C) Division III Systems: E11(C), P42(C), T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I or III systems' functions, other than than the RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(B) No credit taken for Division II HPCI (E41) systems' functions.

3. DISABLED FUNCTION EVALUATION:

Division II systems are available, except HPCI system.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

In some instances the Division II HPCI system could be used for hot shutdown if the following cables are protected.

1E41ARX449
1E41ARX450
1E41ARX451
1E41ARX452

Cold shutdown is achievable using Division II RHR system.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI temperature elements 1E41*TE054 and 1E41*TE055 from the RCIC "red" cables so that HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

Also the reduction of fire hazard in the vicinity of the HPCI and RCIC pumps and surrounding raceways may make available the HPCI system as alternative to using the RHR/CS/SRV flow path.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

To reduce the fire hazard in the HPCI/RCIC area, the following will be provided:

(A) Additional water spray, cable tray bottoms on selected horizontal "Red" trays, and thermal barriers (Kaowool blankets) on selected "Red" conduits.

(B) Curbs around the HPCI and RCIC turbines.

(C) Additional local smoke detection.

(D) A partial fire barrier between vertical cable trays and the adjacent RCIC turbine.

SEGMENT 008-N5
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: C61, P41, P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I RCIC (E51) system.

(B) No credit taken for Division II and III systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) Division II reactor low water level switch 1B21*L1SO27C.

3. DISABLED FUNCTION EVALUATION:

(A) Division I systems are available, except RCIC system.

(B) Division I RHR/CS/SRV flow path is available.

(C) Division II reactor low water level switch 1B21*L1SO27C is one out of two Division II sensors, and the redundant Division I sensors remain functional.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances the Division II HPCI or Division I RCIC systems could be used for hot shutdown if the following cables are protected:

(a)	1E41ARC405	(b)	1E51BBC310
	1E41ARX449		1E51BBX431
	1E41ARX450		1E51BBX432
	1E41ARX451		1E51BBX433
	1E41ARX452		1E51BBX434

Cold shutdown is achievable using Division I RHR system.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables under 4 (a) above associated with the HPCI pressure switches 1E41*PS025A and C and temperature elements 1E41*TE054A and 1E41*TE055A from the RCIC "red" cables so that HPCI may be available for hot shutdown.

Also, separate the "blue" cables under item 4 (b) above associated with the RCIC pressure switches 1E51*PS025B and D and temperature elements 1E51*TE053B and 1E51*TE054B from the HPIC "blue" cables so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

In addition the reduction of fire hazard in the vicinity of the HPCI and RCIC pumps and surrounding raceways may make available the RCIC or HPCI systems as alternative to using the RHR/CS/SRV flow path.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

To reduce the fire hazard in the HPCI/RCIC area, the following will be provided:

(A) Additional water spray, cable tray bottoms on selected horizontal "Red" trays, and thermal barrier (Kaowool blankets) on selected "Red" conduits.

(B) Curbs around the HPCI and RCIC turbines.

(C) Additional local smoke detection.

(D) A partial fire barrier between vertical cable trays and the adjacent RCIC turbine.

SEGMENT 008-N6
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: E11(D)

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I RCIC (E51) system.

(B) No credit taken for Division II and III systems' functions.

(C) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

(A) Division I systems are available, except RCIC system.

(B) RHR system valve 1E11*MOV047 can by manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances the Division I RCIC system could be used for hot shutdown if the following cables are protected:

1E51BBC310
1E51BBC320
1E51BBC322

Cold shutdown is achievable using Division I RHR system with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "blue" cables associated with the RCIC pressure switches 1E51*PS022B, 1E51*PS023B and D, and 1E51*P5025B and D from the "blue" HPCI cables, so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 008-N7
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: B21, C61, E11, E21, E41, P41, P42, Z93

   (C) Division III Systems: E11(D)

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

   (B) No credit taken for Division III(D) systems' functions.

3. DISABLED FUNCTION EVALUATION:

   Division I and III(C) systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III(C) systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 008-N8
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: P41, P42, T46

(B) Division II Systems: B21, C61, E11, E21, E41, P41, P42, Z93

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(B) Division I SW (P41) and RBCLCW (P42) system affected components result in the loss of Division I RBCLCW system.

(C) Division I RBSVS (T46) system unit cooler 1T46*UC002A.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available.

(B) Division I RHR system shutdown cooling mode using the Division II RBCLCW system is unavailable; however, the Division I RHR/CS/SRV flow path is available.

(C) Division I RBSVS unit cooler 1T46*UC002A impacts Division II equipment.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RCIC system.

Cold shutdown is achievable using Division I RHR/CS/SRV flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 040-N1
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: E11, P41

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

   Division II and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 040-N2
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, E11, P42

   (B) Division II Systems: T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

   (B) Division II RBSVS (T46) system unit cooler 1T46*UC003B.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available.

   (B) Division II RBSVS system unit cooler 1T46*UC003B impacts Division I equipment.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 040-N3
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, C61, E11, E21, E51, G41, P41, P42, T46

(B) Division II Systems: T46

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(B) Division II RBSVS (T46) system unit cooler 1T46*UC003B.

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III systems are available.

(B) Division II RBSVS system unit cooler 1T46*UC003B impacts Division I equipment.

4. SHUTDOWN CAPABILITY:

Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 040-N4
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C61, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components), T46

(C) Division III Systems: P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I and III systems' functions.

(B) Division II RBSVS (T46) system unit cooler 1T46*UC003B.

(C) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(D) Division II HPCI (E41) steam line break isolation temperature elements 1E41*TE054A and 1E41*TE055A and pressure switches 1E41*PS025A&C.

3. DISABLED FUNCTION EVALUATION:

(A) Division II systems are available, except the HPCI system.

(B) Division II RBSVS unit cooler 1T46*UC003B impacts Division I equipment.

(C) RHR system valve 1E11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

In some instances, the HPCI system could be used for hot shutdown if the following cables are protected:

1E41ARC405
1E41ARX449
1E41ARX450
1E41ARX45[illegible]
1E41AR[illegible]

Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI temperature elements 1E41*TE054A, 1E41*TE055A, and pressure switches 1E41*PS025A&C from the RCIC "red" cables so that HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barries such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 040-N5
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, C61, E11, E51

(B) Division II Systems: B31, C41, E11, E21, E41, G33, P41, P42, T46

(C) Division III Systems: C61, P41, P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II or III systems' functions.

(B) No credit taken for Division I RCIC (E51) system functions.

(C) RHR (E11) system shutdown cooling pump suction valves 1E11*MOV032A,B,C,D and inboard isolation valve 1E11*MOV047.

(D) Division II HPCI (E41) system isolation temperature elements 1E41*TE054A and 1E41*TE055A, pressure switches 1E41*PS025A&C, and suppression pool suction valve 1E41*MOV032.

3. DISABLED FUNCTION EVALUATION:

(A) RHR system can be manually operated, or Division II RHR/CS/SRV flow path is available.

(B) Division II HPCI suppression pool suction valve 1E41*MOV032 does not have to operate during shutdown, and therefore valve cables are deenergized. Field inspection indicated that valve cable raceways carry no other cable, and therefore spurious operation of the valves during fire is not achievable if the valve deenergized cables are shorted out.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances the HPCI system could also be used for hot shutdown if the following cables are protected:

1E41ARC405
1E41ARX449
1E41ARX450
1E41ARX451
1E41ARX452

Cold shutdown is achievable using Division I RHR with manual operation of required valves, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI temperature elements 1E41*TE054A, 1E41*TE055A, and pressure switches 1E41*PS025A&C from the RCIC "red" cables so that the HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 040-N6
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51 (Div. II components)

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) Division I RCIC (E51) system pressure switches 1E51*PS022B, 1E51*PS023B&D, and temperature elements 1E51*TE053B and 1E51*TE54B.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system.

(B) RHR system can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances the RCIC system could be used for hot shutdown if the following cables are protected:

1E51BBC320
1E51BBC322
1E51BBX431
1E51BBX432
1E51BBX433
1E51BBX434

Cold shutdown is achievable using Division I RHR with manual operation of valve 1E11*MOV048 or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "blue" cables associated with the RCIC temperature elements 1E51*TE053B and 1E51*TE054B, and pressure switches 1E51*PS022B and 1E51*PS023B&D from the HPCI "blue" cables so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal blankets (Kaowool blankets).

SEGMENT 040-N7
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: B21, B31, C61, E11, P41

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II systems' functions.

3. DISABLED FUNCTION EVALUATION:

   Division I and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 040-N8
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: B31, E11, P41

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II systems' functions, other than HPCI (E41) system.

   (B) Pressure switch 1B31*PS023B is a low pressure interlock for the Division II RHR (E11) system

3. DISABLED FUNCTION EVALUATION:

   (A) Division I and III systems and Division II HPCI system are available.

   (B) Low pressure interlock 1B31*PS023B may prevent operation of RHR shutdown cooling outboard isolation valve 1E11*MOV048.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC (E51) or Division II HPCI (E41) systems.

   Cold shutdown is achievable using the Division I RHR system with manual operation of valve 1E11*MOV048, or the Division I or III RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-N1
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I System: E11

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   Division I RHR (E11) system drain valve 1E11*MOV051.

3. DISABLED FUNCTION EVALUATION:

   Division I RHR drain valve 1E11*MOV051 is in series with Division II drain valve 1E11*MOV052, and therefore Division I RHR system remains available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-N2
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, E11, P42

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I systems' functions, other than the RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

   Division II and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-N3
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B31, C41, E11, E21, E51, G33, P42, T46

(B) Division II System: E11, E41 (Div. I component)

(C) Division III Systems: P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I and III systems' functions.

(B) RHR (E11) system shutdown cooling inboard and outboard isolation valves 1E11*MOV047 and 1E11*MOV048.

(C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division II systems are available, except the HPCI system.

(B) RHR system valves 1E11*MOV047 and 1E11*MOV048 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

Cold shutdown is achievable using Division II RHR system with manual operation of valves 1E11*MOV047 and 1E11*MOV048, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 063-N4
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, C61, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: B21, B31, E11, E41

(C) Division III Systems: P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I and III systems' functions.

(B) RHR (E11) system shutdown cooling inboard and outboard isolation valves 1E11*MOV047 and 1E11*MOV048.

(C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Remaining Divison II systems are available.

(B) RHR system valves 1E11*MOV047 and 1E11*MOV048 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using the Division II RHR/CS/SRV flow path with a manual pressure reduction and Division II CS system providing makeup.

Cold shutdown is achievable using Division II RHR system with manual operation of valves 1E11*MOV047 and 1E11*MOV048, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 063-N5
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51 (Div. II components)

(B) Division II Systems: B31, E11, E21, E41, C41, C61, G33, P41, P42, T46

(C) Division III Systems: C61, P41

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II and III systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) Division I RCIC (E51) system temperature elements 1E51*TE053B and 1E51*TE054B.

3. DISABLED FUNCTION EVALUATION:

(A) Division I systems are available, except the RCIC system.

(B) RHR system valve 1E11*MOV48 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances, the RCIC system could be used for hot shutdown if the following cables are protected:

1E51BBX431
1E51BBX432
1E51BBX433
1E51BBX434

Cold shutdown is achievable using Division I RHR system and manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "blue" cables associated with the RCIC temperature elements 1E51*TE053B and 1E51*TE054B from the HPCI "blue" cables so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

Note on the Remote Shutdown Panel

A separate analysis was performed to consider a fire in or near the Remote Shutdown Panel IC61*PNL-RSP which is located in this segment. A fire occurring in or near the remote shutdown panel, of the severity necessary to cause destruction of the remote shutdown panel and transfer switches, is an extremely unlikely event. The panel, including transfer switches, is located in the reactor building at el 63 ft-0 in. It is located in its own separate cubicle which provides a fully enclosed space protected by a 3 hour rated fire barrier. The cubicle contains both area and panel mounted early warning smoke detectors which sound early warning alarms in the control room. An independent halon fire suppression system is provided for the remote shutdown panel cubicle. It is automatically actuated by ionization detectors with actuation alarmed in the main control room. In addition, portable extinguishers are located just outside the cubicle and two water hose racks are located within 50 ft of the cubicle affording 100 percent coverage with 100 percent overlap. The remote shutdown panel itself contains only low energy control circuits. The panel is designed such that its circuits are deenergized when it is not in use.

If a fire is postulated in the remote shutdown panel, but the transfer switches are not involved, there would be no effect on controls in the main control room. The operator would retain the capability to utilize all shutdown equipment from the main control room. A fire involving the remote shutdown panel controls and the transfer switches would not preclude a safe shutdown from the main control room. Sufficient redundant or diverse equipment, not having controls at the remote shutdown panel, are available in the main control room to accomplish safe shutdown should the operator not be able to use any or all equipment having controls located at the remote shutdown panel.

SEGMENT 063-N6
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I System: E51 (Div. II components)

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) Division I RCIC (E51) system level switch 1B21*LIS027C and temperature elements 1E51*TE053B and 1E51*TE054B.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances, the RCIC system could be used for hot shutdown if the following cables are protected:

1E51BBX431
1E51BBX432
1E51BBX433
1E51BBX434

Cold shutdown is achievable using Division I RHR system with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "blue" cables associated with the RCIC temperature elements 1E51*TE053B and 1E51*TE054B from the HPCI "blue" cables so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 063-N7
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I System: E11

   (B) Division II Systems: B21, E11, C61

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

   (B) Division I RHR (E11) system drain valve 1E11*MOV051.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I and III systems are available.

   (B) Division I RHR system drain valve 1E11*MOV051 is in series with unaffected Division II RHR system drain valve 1E11*MOV052, therefore Division I RHR system remains available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-N8
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I System: E11

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   Division I RHR (E11) system drain valve 1E11*MOV051.

3. DISABLED FUNCTION EVALUATION:

   (A) Divisions I, II, and III are available.

   (B) Division I RHR system drain valve 1E11*MOV051 is in series with unaffected Division II RHR system drain valve 1E11*MOV052, therefore Division I RHR system is available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 078-N1
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B31, C61, E11, G33

   (B) Division II Systems: E41 (Div. I components)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than RCIC(E51) system.

   (B) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

   (C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I RCIC system is available.

   (B) Division II and III systems are available, except Division II HPCI system.

   (C) RHR system valve 1E11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division II and III systems and with manual operation of RHR system valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 078-N2
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, C61, E11, E21, E51, G33, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components)

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions.

(B) RHR (E11) system shutdown cooling inboard valve 1E11*MOV047.

(C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III systems are available, except the Division II HPCI system.

(B) RHR system valve 1E11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II and III RHR/CS/SRV flow path.

Cold shutdown is achievable using Division II and III systems with manual operation of RHR valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-N3
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, C61, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components)

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions.

(B) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III systems are available, except Division II HPCI system.

(B) RHR system valve 1E11*MOV047 can be manually operated or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-N4
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, C61, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: C41, E41 (Div. I components)

(C) Division III Systems: P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I and III systems' functions.

(B) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(C) Division II standby liquid control system (C41) pump 1C41*P024B.

(D) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division II systems are available, except the HPCI system.

(B) RHR system valve 1E11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

(C) Division II standby liquid control system is not required for normal shutdown.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-N5
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: C41, E51

(B) Division II Systems: B31, C41, C61, E11, E21, E41, G33, P41, P42, T46

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) No credit taken for Division I RCIC (E51) system.

(D) Division I SLC (C41) system pump 1C41*P024A.

3. DISABLED FUNCTION EVALUATION:

(A) Division I systems are available, except RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

(C) Division I standby liquid control system is not required for normal shutdown.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

Cold shutdown is achievable using Division I RHR with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-N6
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51 (Div. II components)

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46 Z93

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) No credit taken for Division I RCIC (E51) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

Cold shutdown is achievable using Division I RHR with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-N7
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: E51 (Div. II components)

   (B) Division II Systems: B21, B31, C61, G33, E11, E21, P41, P42, T46, Z93

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I RCIC (E51) system.

   (B) No credit taken for Division II systems' functions, other than HPCI (E41) system and RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I and III systems are available, except Division I RCIC system.

   (B) Division II HPCI system is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division II HPCI system.

   Cold shutdown is achievable using Division I RHR system.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 078-N8
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: B31, C61, E11, Z93

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II systems' functions.

3. DISABLED FUNCTION EVALUATION:

   Division I and II systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and II systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-N1
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: T46

   (B) Division II Systems: T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I RBSVS (T46) system functions.

   (B) Division II RBSVS (T46) automatic isolation logic.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I, II, and III systems are available, except Division I RBSVS system.

   (B) Division II RBSVS system automatic isolation is not needed for shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 1?2-N2
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B31, C41, E11, P42, T46

   (B) Division II Systems: E41 (Div. I components)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than the RCIC (E51) system.

   (B) RHR (E11) system shutdown cooling inboard isolation valve IE11*MOV047.

   (C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available, except Division II HPCI system.

   (B) RHR system valve IE11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

   (B) Division I RCIC (E51) system is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division II RHR system with manual operation of valve IE11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-N3
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A)	Division I Systems:	C41, C61, E11, E21, E51, G33, T46
(B)	Division II Systems:	None
(C)	Division III Systems:	None

2. SYSTEMS' FUNCTIONS DISABLED:

No credit taken for Division I systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

Division II and III systems are available.

4. SHUTDOWN CAPABILITY:

Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 112-N4
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: C41, C61, G41, P42, T46

   (B) Division II Systems: C41, G41

   (C) Division III Systems: P42

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I and III systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047

   (B) Division II SLC (C41) system pump 1C41*P024B.

   (C) Division II fuel pool cooling (G41) system valve 1G41*MOV032B.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II systems are available.

   (B) Division II SLC (C41) system is not required for normal shutdown.

   (C) Division II emergency fuel pool cooling (G41) system is not required for normal shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-N5
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A)	Division I Systems:	None
(B)	Division II Systems:	C41, C61, G41, G33, P42, T46
(C)	Division III Systems:	None

2. SYSTEMS' FUNCTIONS DISABLED:

No credit taken for Division II systems' functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

Division I and III systems are available.

4. SHUTDOWN CAPABILITY:

Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 112-N6
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: C41, C61, E11, E21, E41, G33, G41, P42, T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II systems' functions.

   (B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I and III systems are available.

   (B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division I RHR system with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-N7
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51 (Div. II components)

(B) Division II Systems: B31, C61, E11, G33, P41 P42, T46

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I RCIC (E51) system.

(B) No credit taken for Division II systems' functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048 and the HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system.

(B) Division II HPCI system is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using the Division II HPCI (E41) system.

Cold shutdown is achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 112-N8
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: T46

   (B) Division II Systems: T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I RBSVS (T46) system functions.

   (B) Division II RBSVS (T46) system automatic isolation circuit.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I, II, and III systems are available, except Division I RBSVS system.

   (B) Division II RBSVS automatic isolation is not needed for shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N1
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N2
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N3
CABLE SEPARATION ANALYSIS
SECONDARY CONTAIN

1. SYSTEMS IMPACTED:

   (A) Division I Systems: G41

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   Division I fuel pool cooling and cleanup (G41) system valve IG41*MOV032A.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I fuel pool cooling and cleanup system valve IP41*MOV032A is in series with valve IP41*MOV042A, therefore there is no impact on either system.

   (B) Division I, II, and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N4
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I System: C61, G41, P42, T46

   (B) Division II Systems: G41

   (C) Division III Systems: P42

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I and III systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

   (B) Division II fuel pool cooling (G41) system valve 1G41*MOV032B.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II systems are available.

   (B) Division II fuel pool cooling system valve 1G41*MOV032B is in series with valve IP41*MOV042B, therefore there is no impact on either system.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N5
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: G41, P42, T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II systems' functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   Division I and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N6
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N7
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-N8
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: T46

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I RBSVS (T46) system functions.

3. DISABLED FUNCTION EVALUATION:

   Division I, II, and III systems are available, except Division I RBSVS system.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 008-01
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: E11, P41, P42, T46

   (B) Division II System: P41

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I system functions, other than the RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047, and the RCIC (E51) system.

   (B) Division II SW (P41) system fuel pool supply valve 1P41*MOV042B, drain valves 1P41*MOV03B and 43, and ultimate cooling valves 1P41*MOV033B and D.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available.

   (B) Divisions II SW system supply and drain valves not necessary and ultimate cooling valves are not necessary since Division II RHR system is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division II and III RHR systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 008-02
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E11, E21, P41, P42, T46

(B) Division II Systems: E41 (Div. I components only)

(C) Division III System: E11(C)

2. SYSTEMS' FUNCTIONS DISABLED:

No credit taken to Division I and III(C) systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047, and RCIC (E51) system.

3. DISABLED FUNCTION EVALUATION:

Division II and III (D) system are available, except Division II HPCI system.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RCIC system.

Cold shutdown is achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 008-03
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components only)

(C) Division III System: E11(C)

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I and III (C) systems' functions.

(B) Division II HPCI (E41) system valve 1E41*MOV041 and pressure switches 1E41*DSS022A, 1E41*PS023A and C, and 025A and C.

(C) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III (D) systems are available except, Division II HPCI system.

(B) RHR system valve 1E11*MOV047 can be manually operated or Division II and III (D) RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II and III (D) RHR/CS/SRV flow path.

In some instances the Division II HPCI system could be used for hot shutdown, if valve 1E41*MOV041 can be manually operated and the following cables are protected:

1E41ARC404
1E41ARC405
1E41ARC408

Cold shutdown is achievable using Division II RHR with manual operation of valve 1E11*MOV048, or Division II and III (D) RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI pressure switches 1E41*PS023A and C, 1E41*PS025A and C, and 1E41*PDS022A from the "red" RCIC cables, so that HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN:

Affected conduits will be protected by thermal barriers (Kaowool Blankets).

SEGMENT 00H-04
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED

(A) Division I System: E51

(B) Division II System: E41

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I RCIC (E51) system.

(B) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division I systems are available, except RCIC system.

(B) Division II systems are available, except HPCI system.

(C) Division III systems are available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using the Divisions I and II RHR/CS/SRV flow path with a manual pressure reduction and Division I or II CS systems (E21) providing makeup.

In some instances the Division II HPCI system could be used for hot shutdown if the following cables are protected:

1E41ARC405
1E41ARX449
1E41ARX450
1R41ARX451
1E41ARX452

Cold shutdown is achievable using Division I or II RHR system.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI pressure switches 1E41*PS025A and C and temperature elements 1E41-TE054A and 1E41-TE055A from the "red" RCIC cables, so that HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

In addition, the reduction of fire hazard in the vicinity of the HPCI and RCIC pumps and surrounding raceways may make available the HPCI system as alternative to using the RHR/CS/SRV flow path.

6. ACTION TO BE TAKEN:

Affected conduits will be protected by thermal barriers (Kaowool Blankets).

To reduce the fire hazard in the HPCI/RCIC area, the following will be provided:

(A) Additional water spray, cable tray bottoms on selected horizontal "Red" trays, and thermal barrier (Kaowool Blankets) on selected "Red" conduits.

(B) Curbs around the HPCI and RCIC turbines.

(C) Additional local smoke detection.

(D) A partial fire barrier between vertical cable trays and the adjacent RCIC turbine.

SEGMENT 008-05
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I System: E51

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: E11(D), C61(D), P41(D), P42(C), T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I RCIC (E51) system.

(B) No credit taken for Division II and III system functions.

(C) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

(A) Division I systems are available, except RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using the Division I RHR/CS/SRV flow path with a manual pressure reduction and Division I CS (E21) system providing makeup.

In some instances the Division II HPCI or Division I RCIC systems could be used for hot shutdown if the following cables are protected:

(a)
1E41ARX449
1E41ARX450
1E41ARX451
1E41ARX452

(b)
1E51BBC310
1E51BBC320
1E51BBC422
1E51BBX431
1E51BBX432
1E51BBX433
1E51BBX434

Cold shutdown is achievable using the Division I RHR system with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" HPCI cables under Item 4 (a) above associated with temperature elements 1E41*TE054A and 1E41*TE055A from the RCIC "red" cables so that HPCI may be available for hot shutdown.

Also, separate the "blue" RCIC cables under Item 4 (b) above associated with pressure switches 1E51*PS022B, 1E41*PS023B and D, and 1E51*PS025B and D, and temperature elements 1E51*TE053B and 1E51*TE054B from the HPCI "blue" cables so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool Blankets).

SEGMENT 008-06
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I System: None

   (B) Division II Systems: B21, C61, E11, E21, E41
   G41, P41, P42, Z93

   (C) Division III System: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II system functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   Divisions I and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Divisions I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 008-07
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: P41, T46

(B) Division II Systems: E11, E41, P41, P42, Z93

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II system functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(B) Division I SW(P41) system affected components result in the loss of Division I RBCLCW (P42) system.

(C) Division I RBSVS (T46) system unit cooler 1T46*UC002A.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available.

(B) Division I RHR (E11) system shutdown cooling mode using the Division II RBCLCW system is unavailable; however, the RHR/CS/SRV flow path is available.

(C) Division I RBSVS system unit cooler 1T46*UC002A impacts Division II equipment.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RCIC system.

Cold shutdown is achievable using Division I RHR/CS/SRV flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 008-08
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: E11, P41, P42, T46

   (B) Division II Systems: E11, P41, P42

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) Divisions I and II RHR (E11) system heat exchanger inlet valves 1E11*MOV033A and B.

   (B) Direct cooling of fuel pool by both Division I and II of SW (P41) systems.

   (C) RHR (E11) system emergency cooling backup from SW (P41) system for both Divisions I and II.

   (D) Ultimate cooling supply valves 1P41*MOV033A,B,C, and D of Divisions I and II SW (P41) systems.

   (E) SW (P41) and RBCLCW (P42) systems' sides of the RBCLCW system heat exchangers for both Divisions I and II.

   (F) Division I RBSVS (T46) system unit cooler 1T46*UC002A.

3. DISABLED FUNCTION EVALUATION:

   (A) Divisions I and II RHR system heat exchanger inlet valves 1E11*MOV033A and B are physically located outside this segment and could be manually operated in order to use the RHR system heat exchangers.

   (B) Fuel pool cooling can be affected by intermittent use of Division I RHR system.

   (C) SW ultimate cooling not required for shutdown.

   (D) Cross-connection of Divisions I and II of SW systems is not necessary since both the SW divisions are separately available.

   (E) Division I RHR shutdown cooling modes are unavailable however, Division I and II RHR/CS/SKV flow paths are available.

   (F) Division I RBSVS system unit cooler 1T46*VC002A impacts Division II equipment.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using the Division I RCIC or Division II HPCI systems.

Cold shutdown is achievable using Divisions I and II RHR/CS/SRV flow paths with the RHR system used in suppression pool cooling, and manual operation of valves 1E11*MOV33A and B.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 040-01
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, E11, P41, P42

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

   Division II and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 040-02
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, E11, E21, E51, P42

   (B) Division II System: T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS:

   (A) No credit taken for Division I system functions, other than RHR (E11) systems' shutdown cooling inboard isolation valve 1E11*MOV047.

   (B) Division II RBSVS (T46) system unit cooler 1T46*UC003B.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available.

   (B) Division II RBSVS system unit cooler 1T46*UC003B impacts Division I equipment.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 040-03
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, C61, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components), T46

(C) Division III Systems: P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I and III systems' functions.

(B) Division II RBSVS (T46) system unit cooler 1T46*UC003B.

(C) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(D) Division II HPCI (E41) system isolation temperature elements 1E41*TE054A and 1E41*TE055A and pressure switches 1E41*PS025A&C.

3. DISABLED FUNCTION EVALUATION:

(A) Division II systems are available, except the HPCI system.

(B) Division II RPSVS system unit cooler 1T46*UC003B impacts Division I equipment.

(C) RHR system valve IE11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

In some instances the HPCI system could be used for hot shutdown if the following cables are protected:

1E41ARX449
1E41ARX450
1E41ARX451
1E41ARX452
1E41ARC405

Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI temperature elements 1E41*TE054A, 1E41*TE055A, and pressure switches 1E41*PS025A&C from the "red" RCIC cables so that HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 040-04
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C61, E11, E51

(B) Division II Systems: E41 (Div. I components), T46

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions.

(B) Division II HPCI (E41) system isolation temperature elements 1E41*TE054A and 1E41*TE055A and pressure switches 1E41*PS025A&C.

(C) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(D) Division II RBSVS (T46) system unit cooler 1T46*UC003B.

3. DISABLED FUNCTION EVALUATION:

(A) Division II systems are available, except the HPCI system.

(B) RHR system valve 1E11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

(C) Division II RBSVS system unit cooler 1T46*UC003C impacts Division I equipment.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

In some instances the HPCI system could be used for hot shutdown if the following cables are protected:

1E41ARX449
1E41ARX450
1E41ARX451
1E41ARX452
1E41ARC405

Cold shutdown is achievable using Division II RHR system and manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables associated with the HPCI temperature elements 1E41*TE054A, 1E41*TE055A, and pressure switches 1E41*PS025A&C from the "red" RCIC cables so that HPCI may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 040-05
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I System: E51

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: C61, P41, P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II and III systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) Division I RCIC (E51) system pressure switches 1E51*PS023B&D, 1E51*PS022B, and temperature elements 1E51*TE053A&B and 1E51*TE54B.

3. DISABLED FUNCTION EVALUATION:

(A) Division I systems are available, except the RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances the HPCI or RCIC systems could be used if the following cables are protected:

(A)
1E41ARX449
1E41ARX450
1E41ARX451
1E41ARX452

(B)
1E51BBC320
1E51BBC322
1E51BBX431
1E51BBX432
1E51BBX433
1E51BBX434

Cold shutdown is achievable using Division I RHR system and manual operation of valve 1E11*MOV048, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "red" cables under 4(A) above that are associated with the HPCI temperature elements 1E41*TE054A and 1E41*TE055A from the "red" RCIC cables so that HPCI may be available for hot shutdown.

Also separate the "blue" cables under 4(B) above that are associated with the RCIC temperature elements 1E51*TE053A and B, 1E51*TE054B, and pressure switches 1E51*PS022B and 1E51*PS023B&D from the "blue" HPCI cables so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 040-06
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: B21, B31, C61, E11, E21, P41

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II systems' functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   Division I and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 040-07
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: B21, B31, C61, E11, P41

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   Division I and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 040-08
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E11, P41

(B) Division II System: B31, E11, P41

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II system functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048, and the HPCI (E41) system.

(B) Division I RHR (E11) system heat exchanger inlet valve 1E11*MOV033A and suction valve 1E11*MOV043A.

(C) Division I service water (P41) system ultimate cooling valves 1P41*MOV033A and 033C, drain valve 1P41*MOV039A and valve to fuel pool 1P41*MOV042A.

3. DISABLED FUNCTION EVALUATION

(A) Division I and III systems are available.

(B) Division I RHR system valve 1E11*MOV033A can be manually operated and valve 1E11*MOV043A is not required for shutdown.

(C) Division I service water system valves 1P41*MOV033A, 033C, 039A, and 042A are not required for shutdown.

4. SHUTDOWN CAPABILITY

Hot shutdown is achievable using Division I RCIC (E51) or Division II HPCI (E41) systems.

Cold shutdown is achievable using Division I or III RHR systems with manual operation of valves 1E11*MOV033A.

5. FURTHER ACTION RECOMMENDED

None.

SEGMENT 063-01
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, E11, P42

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

   Division II and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-02
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B31, E11

   (B) Division II System: E11

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

   (B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available.

   (B) RHR system valve 1E11*MOV048 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division II HPCI system.

   Cold shutdown is achievable using Division II RHR with manual operation of valve 1E11*MOV048, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-03
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, C41, C61, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II System: B21, E11

(C) Division III Systems: P42, T46

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I and III systems' functions.

(B) Division II Nuclear Boiler (B21) level switch 1B21*LIS027B.

(C) RHR (E11) system shutdown cooling isolation valves 1E11*MOV048 and 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

(A) Division II systems are available, except the HPCI system.

(B) Loss of level switch 1B21*LIS027B makes Division II HPCI (E41) system unavailable.

(C) RHR system valves 1E11*MOV047 and 1E11*MOV048 can be manually operated, or Division II RHR/CS/SRV flow path is available

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using the Division II RHR/CS/SRV flow path.

Cold shutdown is achievable using the Division II RHR system with manual operation of valves 1E11*MOV047 and 1E11*MOV048, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 063-04
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I System: E51 (Div. II components)

(B) Division II Systems: B31, C61, E11, E41, P41, P42

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) Division I RCIC (51) system temperature elements 1E51*TE053B and 1E51*TE054B and steam supply inboard isolation valve 1E51*MOV041.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances the RCIC system could be used for hot shutdown if the following cables are protected:

1E51BBX431
1E51BBX432
1E51BBX433
1E51BBX434

Cold shutdown is achievable using the Division I RHR system with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

Separate the "blue" cables associated with the RCIC temperature elements 1E51*TE053B and 1E51*TE054B, from the

"blue" HPCI cables so that RCIC may be available for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

SEGMENT 063-05
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I System: E51 (Div. II components)

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: C61, P41

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

(C) Division I RCIC (E51) system level switch 1B21*LIS027C, temperature elements 1E51*TE053B and 1E51*TE054B, and steam supply inboard isolation valve 1E51*MOV041.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I RHR/CS/SRV flow path.

In some instances, the RCIC system could also be used for hot shutdown if the following cables are protected:

1E51BBX431
1E51BBX432
1E51BBX433
1E51BBX434

Cold shutdown is achievable using Division I RHR system with manual operation of valve 1E11*MOV048, or the Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

"blue" HPCI cables so that RCIC may be avaiable for hot shutdown.

Alternatively, protect the affected raceways using thermal barriers such as Kaowool blankets.

6. ACTION TO BE TAKEN

Affected conduits will be protected by thermal barriers (Kaowool blankets).

Note on the Remote Shutdown Panel

A separate analysis was performed to consider a fire in or near the Remote Shutdown Panel 1C61*PNL-RSP which is located in this segment. A fire occurring in or near the remote shutdown panel, of the severity necessary to cause destruction of the remote shutdown panel and transfer switches, is an extremely unlikely event. The panel, including transfer switches, is located in the reactor building at el 63 ft-0 in. It is located in its own separate cubicle which provides a fully enclosed space protected by a 3 hour rated fire barrier. The cubicle contains both area and panel mounted early warning smoke detectors which sound early warning alarms in the control room. An independent halon fire suppression system is provided for the remote shutdown panel cubicle. It is automatically actuated by ionization detectors with actuation alarmed in the main control room. In addition, portable extinguishers are located just outside the cubicle and two water hose racks are located within 50 ft of the cubicle affording 100 percent coverage with 100 percent overlap. The remote shutdown panel itself contains only low energy control circuits. The panel is designed such that its circuits are deenergized when it is not in use.

If a fire is postulated in the remote shutdown panel, but the transfer switches are not involved, there would be no effect on controls in the main control room. The operator would retain the capability to utilize all shutdown equipment from the main control room. A fire involving the remote shutdown panel controls and the transfer switches would not preclude a safe shutdown from the main control room. Sufficient redundant or diverse equipment, not having controls at the remote shutdown panel, are available in the main control room to accomplish safe shutdown should the operator not be able to use any or all equipment having controls located at the remote shutdown panel.

SEGMENT 063-06
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I System: E11

   (B) Division II System: E11

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II systems' functions, other than RHR (E11) system shutdown cooling isolation valve 1E11*MOV048.

   (B) Division I RHR (E11) system drain valve 1E11*MOV051.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I and III systems are available.

   (B) Division I RHR system valve 1E11*MOV051 is in series with Division II RHR system drain valve which is not affected, therefore Division I RHR system remains available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-07
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:
   (A) Division I System: E11
   (B) Division II Systems: B21, C61, E11
   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:
   (A) No credit taken for Division II systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.
   (B) Division I RHR (E11) system drain valve 1E11*MOV051.

3. DISABLED FUNCTION EVALUATION:
   (A) Division I and III systems are available.
   (B) Division I RHR system drain valve 1E11*MOV051 is in series with Division II RHR system drain valve which is not affected, therefore Division I RHR system remains available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 063-08
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I System: E11

(B) Division II Systems: None

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

Division I RHR (E11) system drain valve 1E11*MOV051.

3. DISABLED FUNCTION EVALUATION:

Division I RHR system drain valve 1E11*MOV051 is in series with unaffected Division II RHR system drain valve 1E11*MOV052, therefore Division I RHR system remains available.

4. SHUTDOWN CAPABILITY:

Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-01
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: B21, B31, C61, E11, G33, P42, Z93

   (B) Division II Systems: E41 (Div. I components)

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I systems' functions, other than RCIC (E51) system.

   (B) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

   (C) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available, except Division II HPCI system.

   (B) RHR system valve 1E11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

   (C) Division I RCIC system is available.

4. SHUTDOWN CAPABILITY.

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Divisions II and III systems with manual operation of RHR valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 078-02
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, C61, E11, E21, E51, G33, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components)

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions.

(B) No credit taken for Division II HPCI (E41) system.

(C) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III systems are available, except Division II HPCI system.

(B) RHR system valve IE11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II, RHR/CS/SRV flow path.

Cold shutdown is achievable using Division II RHR with manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-03
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B21, B31, C41, C61, E11, E21, E51, G33, G41, P41, P42, T46, Z93

(B) Division II Systems: E41 (Div. I components)

(C) Division III Systems: P42

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions.

(B) No credit taken for Division II HPCI (E41) system.

(C) RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047.

(D) Division III RBCLCW (P42) system pump 1P42*P-005C

3. DISABLED FUNCTION EVALUATION:

(A) Division II and III systems are available, except Division II HPCI system.

(B) RHR system valve 1E11*MOV047 can be manually operated, or Division II RHR/CS/SRV flow path is available.

(C) Division III RBCLCW system not available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

Cold shutdown is achievable using Division II RHR system with manual operation of valve 1E11*MOV047, or Division II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-04
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: C41, E51

   (B) Division II Systems: C41

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I RCIC (E51) system.

   (B) Division I and II standby liquid control (C41) system pumps 1C41*P024A&B.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II and III systems are available.

   (B) Division II standby liquid control system is not required for normal shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 078-05
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51 (Div. II components)

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46, Z93

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) No credit taken for Division I RCIC (E51) system.

(C) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I and III RHR/CS/SRV flow path.

Cold shutdown is achievable using Division I RHR system with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-06
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: E51 (Div. II components)

(B) Division II Systems: B21, B31, C41, C61, E11, E21, E41, G33, P41, P42, T46,

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division II systems' functions.

(B) No credit taken for Division I RCIC (E51) system.

(C) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available, except Division I RCIC system.

(B) RHR system valve 1E11*MOV048 can be manually operated, or Division I RHR/CS/SRV flow path is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division I and III RHR/CS/SRV flow path.

Cold shutdown is achievable using Division I RHR system with manual operation of valve 1E11*MOV048, or Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 078-07
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: E51 (Div. II components)

   (B) Division II Systems: B21, B31, C61, E11, G33

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II systems' functions, other than HPCI (E41) system, and RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

   (B) No credit taken for Division I RCIC (E51) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I and III systems are available, except Division I RCIC system.

   (B) Division II HPCI system is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division II HPCI system.

   Cold shutdown is achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 078-08
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   Divisions I, II, and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Divisions I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-01
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: T46

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I RBSVS (T46) system functions.

3. DISABLED FUNCTION EVALUATION:

   Division I, II, and III systems are available, except Division I RBSVS system.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-02
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: B31, C41, C61, E11, E21, E51, G33, P42, T46,

(B) Division II Systems: E41 (Div. I components)

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

(A) No credit taken for Division I systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV047.

(B) No credit taken for Division II HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

Division II and III systems are available, except Division II HPCI system.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II RHR/CS/SRV flow path.

Cold Shutdown is achievable using Division II RHR system.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 112-03
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: C41, C61, G41, P42, T46

   (B) Division II Systems: None

   (C) Division III Systems: P42

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I and III systems' functions, other than the RHR (E11) system shutdown cooling inboard isolation valve 1E11*MOV047 and the RCIC (E51) system.

3. DISABLED FUNCTION EVALUATION:

   (A) Division II systems are available.

   (B) Division I RCIC system is available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division II systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-04
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: C41, P42

   (B) Division II Systems: C41, G41, P42, T46

   (C) Division III Systems: P42

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II and III systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

   (B) Division I SLC (C41) system pump 1C41*P024A

   (C) Division I, II, and III RBCLCW (P42) system pump 1P42*P005A, B, and C.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I systems are available.

   (B) Division I SLC system is not required for normal shutdown.

   (C) Loss of all three RBCLCW system pumps for the RHR pump seal coolers is acceptable, because the Division I RHR/CS/SRV flow path is available. However, the exposure of these pump motor cables is minimal and the risk is slight.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I RCIC system.

   Cold shutdown is achievable using Division I RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-05
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: None

(B) Division II Systems: C41, C61, G33, G41, P42, T46

(C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

No credit taken for Division II systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048, and the HPCI (E41) system.

3. DISABLED FUNCTION EVALUATION:

(A) Division I and III systems are available.

(B) Division II HPCI system is available.

4. SHUTDOWN CAPABILITY:

Hot shutdown is achievable using Division II HPCI system.

Cold shutdown is achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 112-06
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: E51 (Div. II component)

   (B) Division II Systems: B31, C41, C61, E11, E21, E41, G33, G41, P41, P42, T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division II systems' functions.

   (B) No credit taken for Division I RCIC (E51) system.

   (C) RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   (A) Divisions I and III systems are available, except Division I RCIC system.

   (B) RHR system valve 1E11*MOV048 can be manually operated, or Division I and III RHR/CS/SRV flow paths are available.

4. SHUTDOWN CAPABILITY:

   Hot shutdown is achievable using Division I and III RHR/CS/SRV flowpath.

   Cold shutdown is achievable using Division I and III RHR system with manual operation of valve 1E11*MOV048, or Division I and III RHR/CS/SRV circulation/suppression pool cooling flowpath.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-07
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: C61, G33, T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II systems' functions, other than RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   Division I and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 112-08
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: T46

   (B) Division II Systems: T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) No credit taken for Division I RBSVS (T46) system functions.

   (B) Division II RBSVS (T46) automatic isolation circuit.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I, ,II and III systems are available, except Division I RBSVS system.

   (B) Division II RBSVS automatic isolation is not needed for shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-01
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-02
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-03
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: G41, T46

   (B) Division II Systems: G41

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   (A) Division I and II fuel pool cooling system (G41) valves 1G41*MOV032A&B.

   (B) Division I standby ventilation (T46) system unit cooler 1T46*UC021A.

3. DISABLED FUNCTION EVALUATION:

   (A) Division I and II fuel pool cooling systems are not required for normal shutdown.

   (B) Division II standby ventilation system unit cooler 1T46*UC021B is available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division II and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-04
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

(A) Division I Systems: P42

(B) Division II Systems: P42

(C) Division III Systems: P42

2. SYSTEMS' FUNCTIONS DISABLED:

Division I, II, and III RBCLCW (P42) system pumps 1P42*P005A, B, and C.

3. DISABLED FUNCTION EVALUATION:

Loss of all three RBCLCW system pumps for the RHR pump seal coolers is acceptable, because the Division I or II RHR/CS/SRV flow path is available. However, the exposure of these pump motor cables is minimal and the risk of common damage is slight.

4. SHUTDOWN CAPABILITY:

Hot and cold shutdown are achievable using the Division I or II RHR/CS/SRV circulation/suppression pool cooling flow path.

5. FURTHER ACTION RECOMMENDED:

None

SEGMENT 150-05
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: G41, T46

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division II systems' functions, other than the RHR (E11) system shutdown cooling outboard isolation valve 1E11*MOV048.

3. DISABLED FUNCTION EVALUATION:

   Division I and III systems are available.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-06
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-07
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: None

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   None

3. DISABLED FUNCTION EVALUATION:

   No effect on shutdown.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEGMENT 150-08
CABLE SEPARATION ANALYSIS
SECONDARY CONTAINMENT

1. SYSTEMS IMPACTED:

   (A) Division I Systems: T46

   (B) Division II Systems: None

   (C) Division III Systems: None

2. SYSTEMS' FUNCTIONS DISABLED:

   No credit taken for Division I RBSVS (T46) system functions.

3. DISABLED FUNCTION EVALUATION:

   Division I, II, and III systems are available, except Division I RBSVS system.

4. SHUTDOWN CAPABILITY:

   Hot and cold shutdown are achievable using Division I, II, and III systems.

5. FURTHER ACTION RECOMMENDED:

   None

SEPARATION ANALYSIS NOTE ON TEMPERATURE ELEMENTS OF Z93 SYSTEM

The routing of the suppression pool temperature element cables for the Post Accident Monitoring System (Z93) and the effect of their disability in the affected areas was manually evaluated. It was concluded that sufficient redundancy exists to provide suppression pool temperature indication to the control room operator in all cases.