
Oyster Creek Oct. 2 - 9, 2006 Operator Licensing Exam Handouts

Reactor Vessel Level/Pressure/Temperature Instruments Flow Diagram, Drawing No.
GE 148F712, Rev. 45

3.4 EMERGENCY COOLING

Applicability: Applies to the operating status of the emergency cooling systems.

Objective: To assure operability of the emergency cooling systems.

Specifications:

A. Core Spray System

NOTE: LCO 3.0.C.2 is not applicable to the Core Spray System

1. The Core Spray System shall be OPERABLE at all times with irradiated fuel in the reactor vessel with an absorption chamber water volume of at least 82,000 ft³ except as specified in Table 3.4.1, or as noted below.
2. If Specification 3.4.A.1 is not met the reactor shall be PLACED IN the COLD SHUTDOWN CONDITION and no work shall be performed on the reactor or its connected systems which could result in lowering the reactor water level to less than 4'8" above TOP OF ACTIVE FUEL.

Table 3.4.1

Run or Startup Mode (except for low power physics testing)		
Condition	Requirement	Provided:
Any active loop component becomes inoperable. -OR- Two or more active loop components in the same loop (System 1 or System 2) are inoperable provided no two components are redundant.	The Reactor may remain in operation for a period not to exceed 15 Days.	Both Emergency Diesel Generators are OPERABLE. The Redundant active loop components within the same loop as the inoperable components are verified OPERABLE on a daily basis. Specification 3.4.A.3 is met unless only a core spray booster pump is inoperable.
One Emergency Diesel Generator is inoperable.	The Reactor may remain in operation for a period not to exceed 7 Days. (Refer to Section 3.7.C.2)	All core spray equipment connected to the OPERABLE emergency diesel generator is OPERABLE.

Run or Startup Mode (except for low power physics testing)		
Condition	Requirement	Provided:
One core spray loop (System 1 or System 2) or its core spray header delta-P instrumentation becomes inoperable. -OR- Both of the redundant components in a loop (System 1 or System 2) are inoperable.	The Reactor may remain in operation for a period not to exceed 7 Days.	Both Emergency Diesel Generators are OPERABLE. The remaining loop (System 1 or System 2) has no inoperable components and is verified daily to be OPERABLE. Specification 3.4.A.3 is met.
Two of the four redundant active loop components in the core spray system not in the same loop (System 1 or System 2) are inoperable. -OR- Two or more non-redundant active loop components are inoperable in both loops (System 1 and System 2).	The Reactor may remain in operation for a period not to exceed 7 Days.	Both Emergency Diesel Generators are OPERABLE. The Redundant active loop components within the same loop as the inoperable components are verified OPERABLE on a daily basis. Specification 3.4.A.3 is met.
Shutdown or Refuel Mode		
Condition	Requirement	Provided:
Maintenance or modifications of core spray systems, their power supplies, or water supplies.	Maintain reduced core spray system availability as follows: 1. At least one core spray pump, and system components necessary to deliver rated core spray to the reactor vessel, must remain OPERABLE to the extent the pump and any necessary valves can be started or operated from the control room or from local control stations. 2. The Fire protection system is OPERABLE to the extent that one diesel driven fire pump is capable of providing water to the core spray system. 3. Verify the systems in 1 & 2 above are OPERABLE on a weekly basis.	The Reactor is maintained in the COLD SHUTDOWN CONDITION or in the REFUEL MODE with the reactor coolant system maintained at less than 212°F and vented. -AND- No work is performed on the reactor vessel and connected systems that could result in lowering the reactor water level to less than 4'8" above the TOP OF ACTIVE FUEL.

Shutdown or Refuel Mode		
Condition	Requirement	Provided:
<p>Maintenance or modifications of core spray systems, their power supplies, or water supplies while work is in progress having the potential to lower reactor water level below 4'8" TAF.</p> <p>-OR-</p> <p>The Reactor is in the startup mode for low power physics testing.</p>	<p>Maintain reduced core spray system availability as follows:</p> <p>1. At least one core spray pump in each loop, and system components necessary to deliver rated core spray to the reactor vessel, must remain OPERABLE to the extent that the pump and any necessary valves in each loop can be started or operated from the control room or from local control stations.</p> <p>2. Fire protection system is OPERABLE to the extent that one diesel driven fire pump is capable of providing water to the core spray system.</p> <p>3. Verify the systems in 1 & 2 above are OPERABLE every 72 hours.</p>	<p>The Reactor is:</p> <p>In the REFUEL MODE with the reactor coolant system maintained at less than 212°F.</p> <p>-OR-</p> <p>In the STARTUP MODE for the purpose of low power physics testing.</p>
The requirements for maintenance or modification can not be met.	Initiate work to meet the requirements.	Specification 3.4.A.2 is met.

3. In the event of inoperable active loop components the APLHGR of all the rods in any fuel assembly, as a function of average planar exposure, at any axial location shall not exceed 90% of the limits given in Specification 3.10.A. The action to bring the core to 90% of the APLHGR Limits must be completed within two hours after the component has been determined to be inoperable.
4. The core spray system is not required to be operable when the following conditions are met:
 - a. The reactor mode switch is locked in the "Refuel" or "Shutdown" position.
 - b. (1) There is an operable flow path capable of taking suction from the condensate storage tank and transferring water to the reactor vessel, and
 - (2) The fire protection system is OPERABLE to the extent that one diesel driven fire pump is capable of providing water to the core spray system, and
 - (3) These systems are verified to be OPERABLE on a weekly basis.

- c. The reactor coolant system is maintained at less than 212 °F and vented (except during reactor vessel pressure testing).
- d. At least one core spray pump, and system components necessary to deliver rated core spray flow to the reactor vessel, must remain operable to the extent that the pump and any necessary valves can be started or operated from the control room or from local control stations, and the torus is mechanically intact. Verify the pump and components are OPERABLE, as described, on a weekly basis.
- e. (1) No work shall be performed on the reactor or its connected systems which could result in lowering the reactor water level to less than 4'8" above the TOP OF the ACTIVE FUEL and there is a minimum of 360,000 gallons of water available between the torus and condensate storage tank water inventories. At least two redundant core spray systems including core spray pumps and system components must remain operable as defined in d. above. At least one recirculation loop discharge valve and its associated suction valve shall be in the full open position. Verify the pumps and components are OPERABLE, as described, on a weekly basis.

OR

- (2) The reactor vessel head, fuel pool gate, and separator-dryer pool gates are removed and the water level is above elevation 117 feet. When filling or draining the reactor cavity, a sufficient water inventory (between the condensate storage tank and the reactor cavity) to complete the flooding operation shall be maintained. The 360,000 gallons of water minimum requirement in (1) above does not apply during the filling and draining operation provided there is a sufficient amount of water to complete the flooding operation.

B. Automatic Depressurization System

1. Five electromatic relief valves, which provide the automatic depressurization and pressure relief functions, shall be operable when the reactor water temperature is greater than 212°F and pressurized above 110 psig, except as specified in 3.4.B.2 and during Reactor Vessel Pressure Testing consistent with Specifications 1.39 and 3.3.A.(i).
2. If at any time there are only four operable electromatic relief valves, the reactor may remain in operation for a period not to exceed 3 days provided the motor operated isolation and condensate makeup valves in both isolation condensers are verified daily to be operable.
3. If Specifications 3.4.B.1 and 3.4.B.2 are not met; reactor pressure shall be reduced to 110 psig or less, within 24 hours.
4. The time delay set point for initiation after coincidence of low-low-low reactor water level and high drywell pressure shall be set not to exceed two minutes.

C. Containment Spray System and Emergency Service Water System

NOTE: LCO 3.0.C.2 is not applicable to the Containment Spray System and Emergency Service Water System

1. The containment spray system and the emergency service water system shall be operable at all times with irradiated fuel in the reactor vessel, except as specified in Specifications 3.4.C.3, 3.4.C.4, 3.4.C.6 and 3.4.C.8.
2. The absorption chamber water volume shall not be less than 82,000 ft³ in order for the containment spray and emergency service water system to be considered operable.
3. If one emergency service water system loop becomes inoperable, its associated containment spray system loop shall be considered inoperable. If one containment spray system loop and/or its associated emergency service water system loop becomes inoperable during the run mode, the reactor may remain in operation for a period not to exceed 7 days provided the remaining containment spray system loop and its associated emergency service water system loop each have no inoperable components and are verified daily to be operable.
4. If a pump in the containment spray system or emergency service water system becomes inoperable, the reactor may remain in operation for a period not to exceed 15 days provided the other similar pump is verified daily to be operable. A maximum of two pumps may be inoperable provided the two pumps are not in the same loop. If more than two pumps become inoperable, the limits of Specification 3.4.C.3 shall apply.
5. During the period when one diesel is inoperable, the containment spray loop and emergency service water system loop connected to the operable diesel shall have no inoperable components.

6. If primary containment integrity is not required (see Specification 3.5.A), the containment spray system may be made inoperable.
7. If Specifications 3.4.C.3, 3.4.C.4, 3.4.C.5 or 3.4.C.6 are not met, the reactor shall be placed in cold shutdown condition. If the containment spray system or the emergency service water system becomes inoperable, the reactor shall be placed in the cold shutdown condition and no work shall be performed on the reactor or its connected systems which could result in lowering the reactor water level to less than 4'8" above the top of the active fuel.
8. The containment spray system may be made inoperable during the integrated primary containment leakage rate test required by Specification 4.5, provided that the reactor is maintained in the cold shutdown condition and that no work is performed on the reactor or its connected systems which could result in lowering the reactor level to less than 4'8" above the top of the active fuel.

D. Control Rod Drive Hydraulic System

1. The control rod drive (CRD) hydraulic system shall be operable when the reactor water temperature is above 212°F except as specified in 3.4.D.2 and 3.4.D.3 below.
2. If one CRD hydraulic pump becomes inoperable when the reactor water temperature is above 212°F, the reactor may remain in operation for a period not to exceed 7 days provided the second CRD hydraulic pump is operating and is checked at least once every 8 hours. If this condition cannot be met, the reactor water temperature shall be reduced to less than 212°F.
3. During reactor vessel pressure testing, at least one CRD pump shall be operable.

E. Core Spray and Containment Spray Pump Compartments Doors

The core spray and containment spray pump compartments doors shall be closed at all times except during passage in order to consider the core spray system and the containment spray system operable.

F. Fire Protection System

1. The fire protection system shall be operable at all times with fuel in the reactor vessel except as specified in Specification 3.4.F.2.
2. If the fire protection system becomes inoperable during the run mode, the reactor may remain in operation provided both core spray system loops are operable with no inoperable components.

SUPPORT PROCEDURE 28

LEVEL INSTRUMENTATION AVAILABILITY

1.0 PREREQUISITES

The evaluation of RPV Water Level Instruments has been directed by the Emergency Operating Procedures.

2.0 PREPARATION

None

3.0 PROCEDURE

An RPV water level instrument may be used to determine RPV water level only when all the following conditions are satisfied for that instrument.

- 3.1 Record the temperatures of the following instrument reference leg vertical runs as read on recorder TR-IA55 on Panel 8R or the Plant Process Computer.

<u>Level Instrument</u>	<u>Temp Instrument No.</u>	<u>Recorder Point</u>	<u>Temperature</u>
NR GEMAC A (LT-1D13A)	TE-130-450	40	452 ✓
NR GEMAC B (LT-1D13B)	TE-130-451	41	453 ✓
WR GEMAC (LT-1A12)	TE-130-452	42	451 ✓
YARWAY A (LT-RE05/19A)	TE-130-453	43	448 ✓
YARWAY B (LT-RE05/19B)	TE-130-454	44	446 ✓

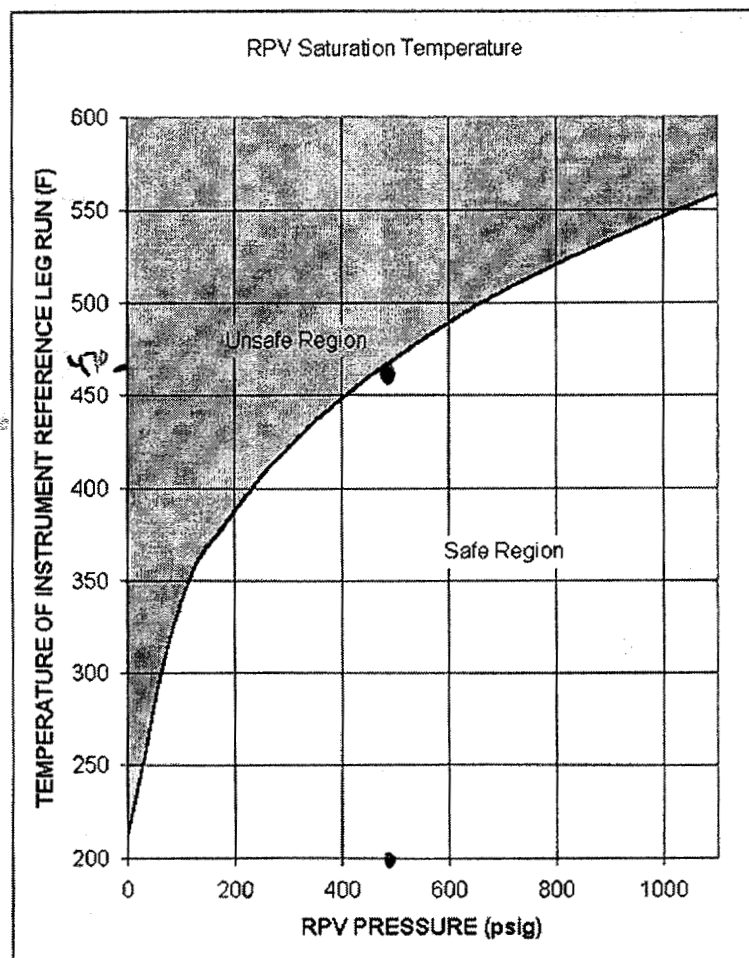
OVER

3.2

NOTE

If reference leg temperatures are in the UNSAFE REGION of the curve, that instrument may not be used until an engineering evaluation of reference leg conditions has been performed.

Verify that the instrument reference leg temperatures are in the SAFE REGION of the RPV Saturation Temperature Curve.

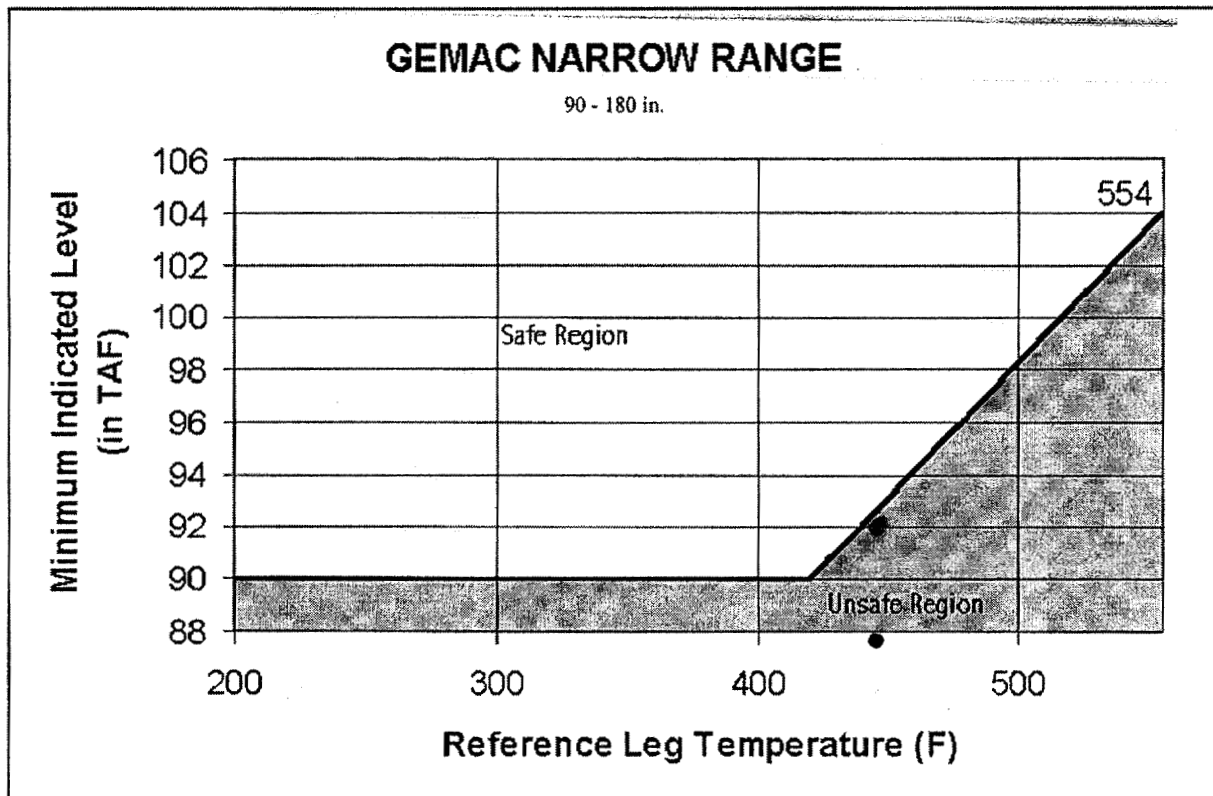


3.3

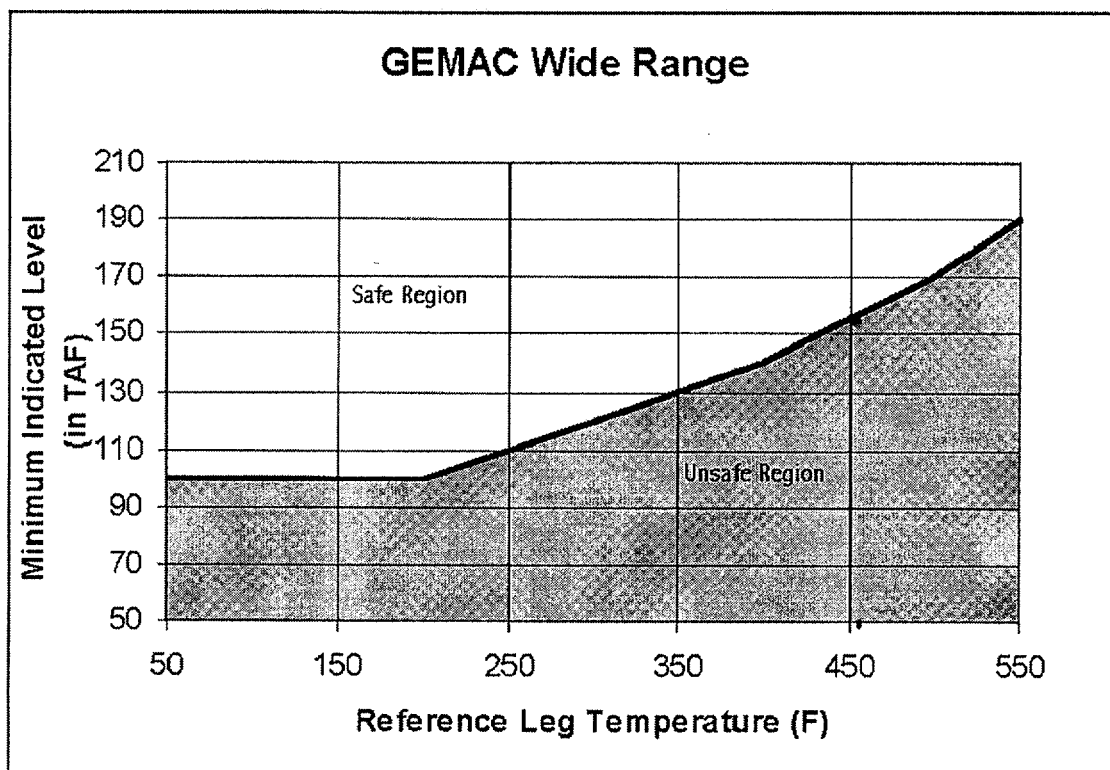
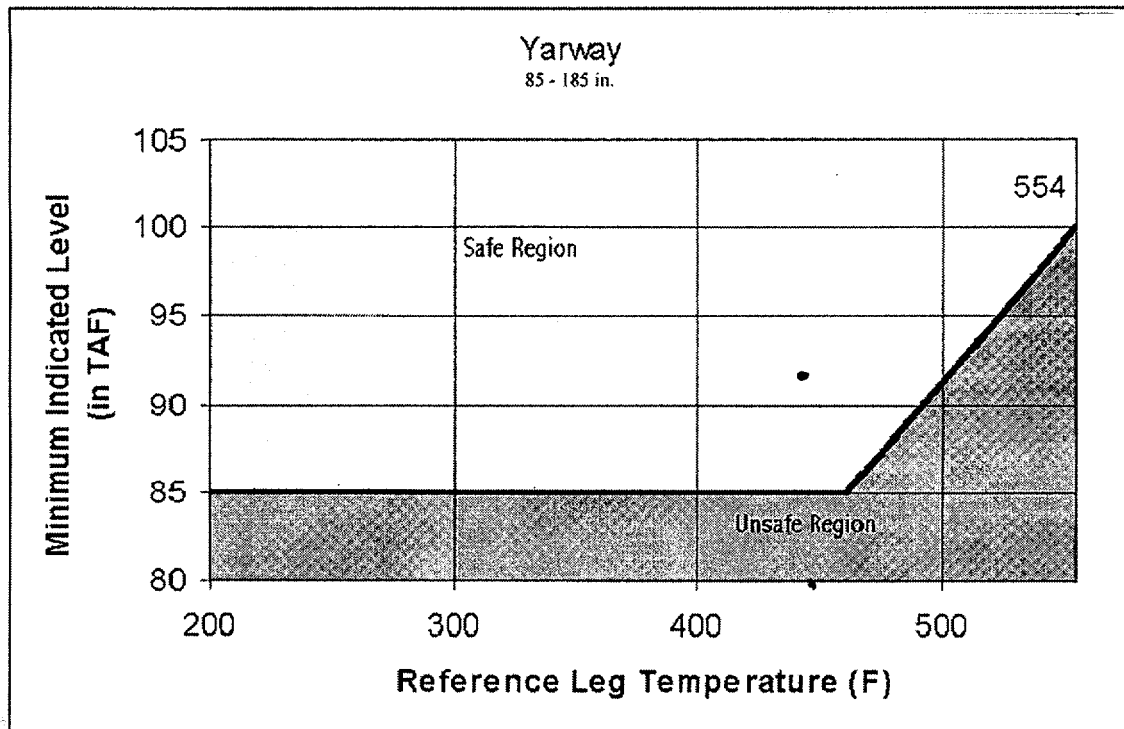
NOTE

Instruments may be used only when in the Safe Region of the curve. If the instrument goes in the Unsafe Region of the curve, it may not be used again until it returns to the Safe Region, at which time it is valid for level indication response.

For each instrument below, the instrument reads in the Safe Region of its respective curve.

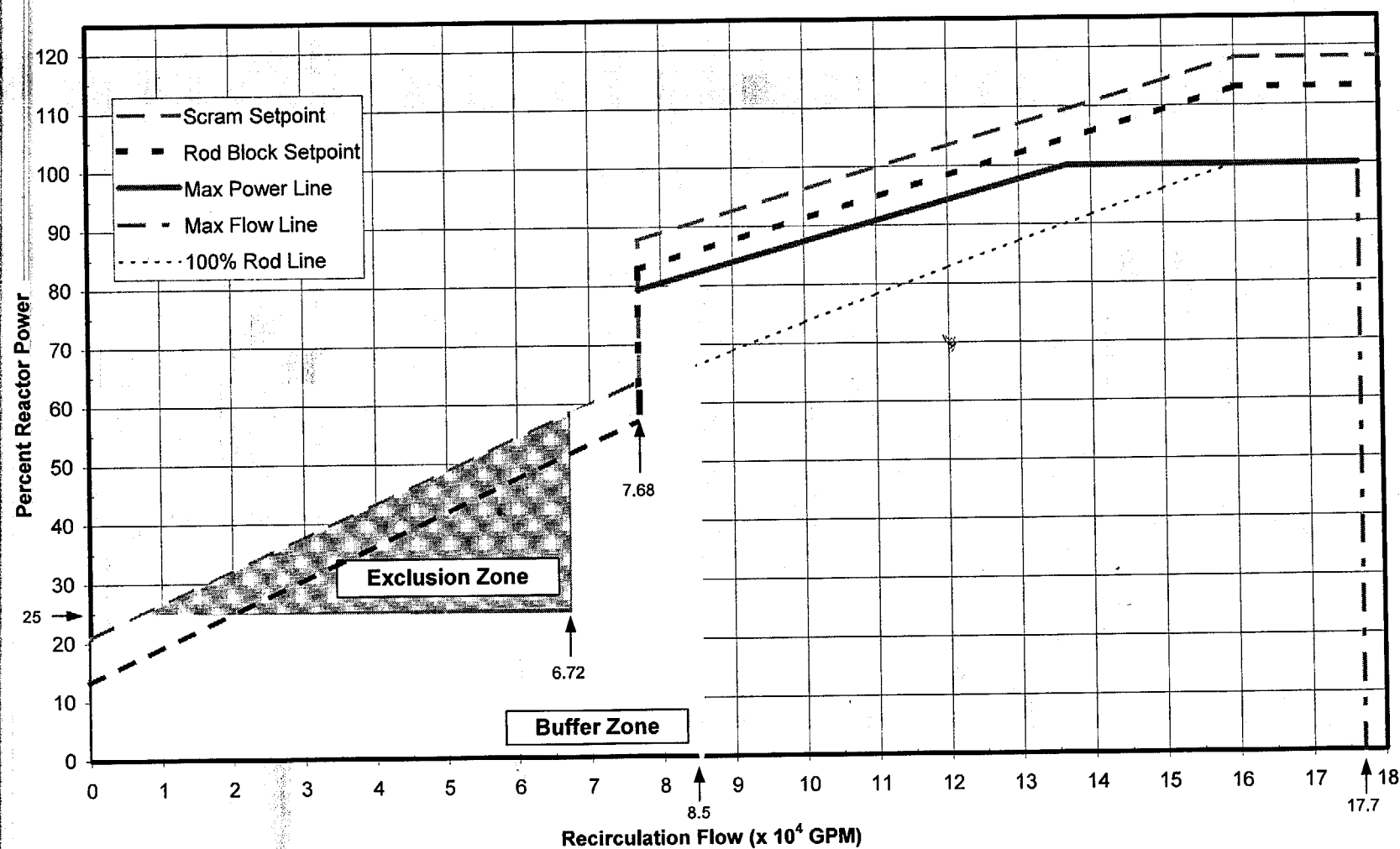


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ATTACHMENT 202.1-2

Oyster Creek Power Operations Curve



E2-1

Title

CONTROL ROOM EVACUATION

Revision No.

5

ATTACHMENT ABN-30-4
SATURATION CONDITIONS

PSIG	°F	PSIG	°F	PSIG	°F	PSIG	°F
0	212	55	302.92	110	344.33	235	400.95
4	225.24	56	303.88	111	344.94	240	402.70
5	227.96	57	304.83	112	345.54	245	404.42
6	230.57	58	305.76	113	346.13	250	406.11
7	233.07	59	306.68	114	346.73	255	407.78
8	235.49	60	307.60	115	347.32	260	409.43
9	237.82	61	308.50	116	347.90	265	411.05
10	240.07	62	309.40	117	348.48	270	412.65
11	242.25	63	310.29	118	349.06	275	414.23
12	244.36	64	311.16	119	349.64	280	415.79
13	246.41	65	312.03	120	350.21	285	417.33
14	248.40	66	312.89	121	350.78	295	420.35
15	250.33	67	313.74	122	351.35	305	423.29
16	252.22	68	314.59	123	351.91	315	426.16
17	254.05	69	315.42	124	352.47	325	428.97
18	255.84	70	316.25	125	353.02	335	431.72
19	257.58	71	317.07	126	353.57	345	434.40
20	259.28	72	317.88	127	354.12	355	437.03
21	260.95	73	318.68	128	354.67	365	439.60
22	262.57	74	319.48	129	355.21	375	442.12
23	264.16	75	320.27	130	355.76	385	444.59
24	265.72	76	321.06	131	356.29	395	447.01
25	267.25	77	321.83	132	356.83	405	449.39
26	268.74	78	322.60	133	357.36	415	451.73
27	270.21	79	323.36	134	357.89	425	454.02
28	271.64	80	324.12	135	358.42	435	456.28
29	273.05	81	324.87	137	359.46	445	458.50
30	274.44	82	325.61	139	360.49	455	460.68
31	275.80	83	326.35	141	361.52	465	462.82
32	277.13	84	327.08	143	362.53	475	464.93
33	278.45	85	327.81	145	363.53	485	467.01
34	279.74	86	328.53	147	364.53	505	471.07
35	281.01	87	329.25	149	365.51	525	475.01
36	282.26	88	329.96	151	366.48	545	478.58
37	283.49	89	330.66	153	367.45	565	482.58
38	284.70	90	331.36	155	368.41	585	486.21
39	285.90	91	332.05	157	369.35	605	489.21
40	287.07	92	332.74	159	370.29	625	493.21
41	288.23	93	333.42	161	371.22	645	496.58
42	289.37	94	334.10	163	372.14	665	499.88
43	290.50	95	334.77	165	373.06	685	506.25
44	291.61	96	335.44	167	373.96	705	506.25
45	292.71	97	336.11	169	374.86	725	509.34
46	293.79	98	336.77	171	375.75	745	512.36
47	294.85	99	337.42	173	376.64	765	515.33
48	295.90	100	338.07	175	377.51	785	518.23
49	296.94	101	338.72	177	378.38	805	521.08
50	297.97	102	339.36	179	379.24	825	523.88
51	298.99	103	339.99	181	380.10	845	526.63
52	299.99	104	340.62	183	380.95	865	529.33
53	300.98	105	341.25	185	381.79	885	531.98
54	301.96	106	341.88	190	383.86	905	534.59
		107	342.50	195	385.90	925	537.16
		108	343.11	200	387.89	945	539.68
		109	343.72	205	389.86	965	542.17
				210	391.79	985	544.61
				215	393.68	1000	546.22
				220	395.54	1025	548.38
				225	397.37	1035	550.57

NOTE

All pressures in PSIG are rounded to the nearest whole number.

Title

Power Operation

Revision No.
100

ATTACHMENT 202.1-1

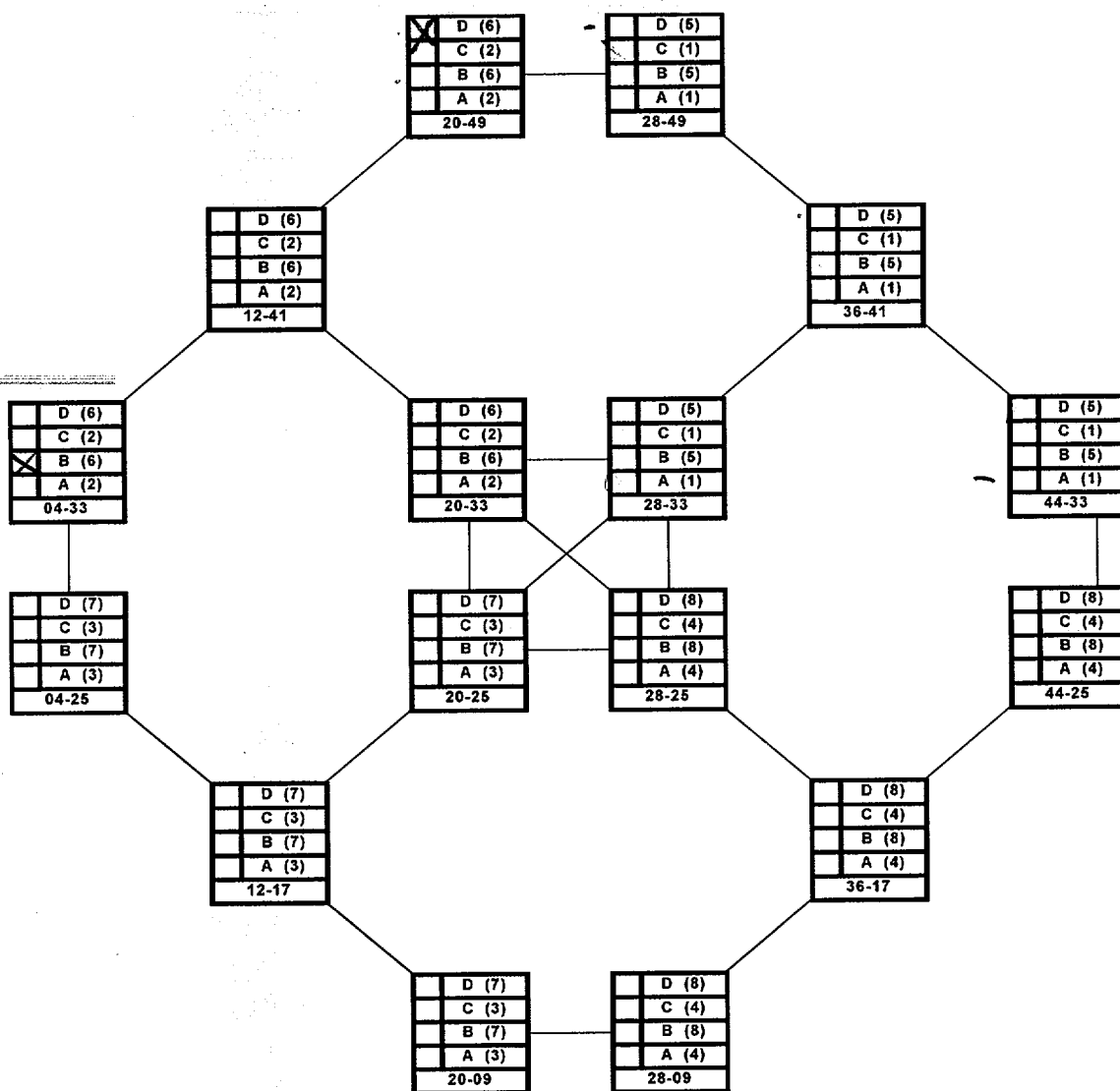
DAILY APRM STATUS CHECK

NOTE: MARK FAILED OR INOP LPRMS WITH AN "X". Complete work sheet per 202.1-4 instructions.

Section 1: Perform nightly

403-3 Verified correct _____ (initial)

403-4 Verified correct _____ (initial)



Title

STATION BLACKOUT

Revision No.

4

Attachment ABN-37-7
Restarting Critical Loads

CAUTION

Maximum allowable SBO transformer load is limited to 8 MWe.

1.0 **MONITOR** SBO transformer load at the SBO Panel or by maintaining contact with the CT Operator **and**

MAINTAIN SBO transformer load less than 8 MWe.

[]

- NOTE: 1. The maximum load added from all possible equipment in this step is 2.1 MWe.
2. If the first pump in each system below is being started, and time permits, consider starting the pump with its discharge valve closed, in order to limit starting current and system perturbations.

2.0 **RESTART** loads in the following order, unless dictated otherwise by the EOPs or plant conditions, and if power is available (through other attachments):

System	Panel	Load	
CRD pump(s) IAW 302.1, Control Rod Drive System	4F	200 Kwe each	[]
Service Water pump(s) IAW 322, Service Water System	5F/6F	204 Kwe each	[]
TBCCW pump(s) IAW 309.1, Turbine Building Closed Cooling Water System	13R	181 Kwe each	[]
Air compressor(s) IAW 334, Instrument and Service Air System	5F/6F	144 Kwe each	[]
RBCCW pump(s) IAW 309.2, Reactor Building Closed Cooling Water System	13R	159 Kwe each	[]
Drywell Cooling fans IAW 312.9, Primary Containment Control	11R	25 Kwe each	[]

Title

STATION BLACKOUT

Revision No.

4**Attachment ABN-37-7**
Restarting Critical Loads

(continued)

System	Panel	Load	
Condensate Transfer pump(s) IAW 316.1, Condensate Transfer System	5F/6F	41 Kwe each	[]
A Battery Charger IAW 340.1, 125 VDC Distribution Systems "A" & "B"	8F/9F	65 Kwe	[]
B Battery Charger IAW 340.1, 125 VDC Distribution Systems "A" & "B"	8F/9F	65 Kwe	[]

End of Attachment ABN-37-7

3.3 REACTOR COOLANT

Applicability: Applies to the operating status of the reactor coolant system.

Objective: To assure the structure integrity of the reactor coolant system.

Specification: A. Pressure Temperature Relationships

- (i) Reactor Vessel Pressure Tests - the minimum reactor vessel temperature at a given pressure shall be in excess of that indicated by the curve A in Figures 3.3.1, 3.3.2 and 3.3.3 for reactor operations to 22, 27 and 32 effective full power years, respectively. The maximum temperature for Reactor Vessel Pressure Testing is 250°F.
- (ii) Heatup and Cooldown Operations: Reactor noncritical -- the minimum reactor vessel temperature for heatup and cooldown operations at a given pressure when the reactor is not critical shall be in excess of that indicated by the curve B in Figures 3.3.1, 3.3.2 and 3.3.3 for reactor operations up to 22, 27 and 32 effective full power years, respectively.
- (iii) Power operations -- the minimum reactor vessel temperature for power operations at a given pressure shall be in excess of that indicated by the curve C in Figures 3.3.1, 3.3.2 and 3.3.3 for reactor operations up to 22, 27 and 32 effective full power years respectively.

Note: Curves A, B and C in Figures 3.3.1, 3.3.2 and 3.3.3 apply when the closure head is on the reactor vessel and studs are fully tensioned.

- (iv) Appropriate new pressure temperature limits must be generated when the reactor system has reached thirty-two (32) effective full power years of reactor operation.

B. Reactor Vessel Closure Head Boltdown: The reactor vessel closure head studs may be elongated .020" (1/3 design preload) with no restrictions on reactor vessel temperature as long as the reactor vessel is at atmospheric pressure. Full tensioning of the studs is not permitted unless the temperature of the reactor vessel flange and closure head flange is in excess of 85°F.

C. Thermal Transients

- 1. The average rate of reactor coolant temperature change during normal heatup and cooldown shall not exceed 100°F in any one hour period.
- 2. The pump in an idle recirculation loop shall not be started unless the temperature of the coolant within the idle recirculation loop is within 50°F of the reactor coolant temperature.

D. Reactor Coolant System Leakage

1. Reactor coolant system leakage shall be limited to:
 - a. 5 gpm unidentified leakage
 - b. 25 gpm total (identified and unidentified)
 - c. 2 gpm increase in unidentified leakage rate within any 24 hour period while operating at steady state power
2. With the reactor coolant system leakage greater than the limits in 3.3.D.1.a or b above, reduce the leakage rate to within the acceptable limits within 8 hours, or place the reactor in the shutdown condition within the next 12 hours and be in the cold shutdown condition within the following 24 hours.
3. With any reactor coolant leakage greater than the limit in 3.3.D.1.c above, identify the source of leakage within 4 hours, or be in the shutdown condition within the next 12 hours and be in the cold shutdown condition within the following 24 hours.
4. For determination of unidentified leakage, the primary containment sump flow monitoring system shall be operable except as specified below:
 - a. With the primary containment sump flow integrator inoperable:
 1. Restore it to operable status within 7 days.
 2. Calculate the unidentified leakage rate utilizing an acceptable alternate means as specified in plant procedures.
 - b. If Specification 3.3.D.4a cannot be met, place the reactor in the shutdown condition within the next 12 hours.
5. For determination of identified leakage, the primary containment equipment drain tank monitoring system shall be operable except as specified below:
 - a. With the primary containment equipment drain tank monitoring system inoperable:
 1. Restore it to operable status within 7 days.
 2. Calculate the identified leakage rate utilizing an acceptable alternate means as specified in plant procedures.
 - b. If Specification 3.3.D.5.a cannot be met, place the reactor in the shutdown condition within the next 12 hours.

E. Reactor Coolant Quality

1. The reactor coolant quality during power operation with steaming rates to the turbine-condenser of less than 100,000 pounds per hour shall be limited to:

conductivity	2 us/cm	[S=mhos at 25°C (77°F)]
chloride ion	0.1 ppm	
2. When the conductivity and chloride concentration limits given in 3.3.E.1 are exceeded, an orderly shutdown shall be initiated immediately, and the reactor coolant temperature shall be reduced to less than 212°F within 24 hours.
3. The reactor coolant quality during power operation with steaming rates to the turbine-condenser of greater than or equal to 100,000 pounds per hour shall be limited to:

conductivity	10 uS/cm	[S=mhos at 25°C (77°F)]
chloride ion	0.5 ppm	
4. When the maximum conductivity or chloride concentration limits given in 3.3.E.3 are exceeded, an orderly shutdown shall be initiated immediately, and the reactor coolant temperature shall be reduced to less than 212°F within 24 hours.
5. During power operation with steaming rates on the turbine-condenser of greater than or equal to 100,000 pounds per hour, the time limit above 1.0 uS/cm at 25°C (77°F) and 0.2 ppm chloride shall not exceed 72 hours for any single incident.
6. When the time limits for 3.3.E.5 are exceeded, an orderly shutdown shall be initiated within 4 hours.

F. Recirculation Loop Operability

1. During POWER OPERATION, all five recirculation loops shall be OPERATING except as specified in Specification 3.3.F.2.
2. POWER OPERATION with a maximum of two IDLE RECIRCULATION LOOPS or one IDLE RECIRCULATION LOOP and one ISOLATED RECIRCULATION LOOP is permitted. The reactor shall not operate with two ISOLATED RECIRCULATION LOOPS.
 - a. With one ISOLATED LOOP the following conditions shall be met:
 1. The AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR) as a function of average planar exposure, at any axial location shall not exceed 98% of the limits specified in 3.10.A. The action to bring the core to 98% of the APLHGR limits shall be completed prior to isolating the recirculation loop.

2. The circuit breaker of the recirculation pump motor generator set associated with an ISOLATED RECIRCULATION LOOP shall be open and defeated from operation.
3. An ISOLATED RECIRCULATION LOOP shall not be returned to service unless the reactor is in the COLD SHUTDOWN condition.
 - b. When there are two inoperable recirculation loops (either two IDLE RECIRCULATION LOOPS or one IDLE RECIRCULATION LOOP and one ISOLATED RECIRCULATION LOOP) the reactor core thermal power shall not exceed 90% of rated power.
3. If Specifications 3.3.F.1 and 3.3.F.2 are not met, an orderly shutdown shall be initiated immediately until all operable control rods are fully inserted and the reactor is in either the REFUEL MODE or SHUTDOWN CONDITION within 12 hours.
4. With reactor coolant temperature greater than 212°F and irradiated fuel in the reactor vessel, at least one recirculation loop discharge valve and its associated suction valve shall be in the full open position.
5. If Specification 3.3.F.4 is not met, immediately open one recirculation loop discharge valve and its associated suction valve.
6. With reactor coolant temperature less than 212°F and irradiated fuel in the reactor vessel, at least one recirculation loop discharge valve and its associated suction valve shall be in the full open position unless the reactor vessel is flooded to a level above 185 inches TAF or unless the steam separator and dryer are removed.

G. Primary Coolant System Pressure Isolation Valves

Applicability:

Operational conditions - Startup and Run Modes; applies to the operational status of the primary coolant system pressure isolation valves.

Objective:

To increase the reliability of primary coolant system pressure isolation valves thereby reducing the potential of an inter-system loss of coolant accident.

Specification:

1. During reactor power operating conditions, the integrity of all pressure isolation valves listed in Table 3.3.1 shall be demonstrated. Valve leakage shall not exceed the amounts indicated.
2. If Specification 1 cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the cold shutdown condition within 24 hours.

H. Required Minimum Recirculation Flow Rate for Operation in IRM Range 10

1. During STARTUP mode operation, a minimum recirculation flow rate is required before operating in IRM range 10 to ensure that technical specification transient MCPR limits for operation are not exceeded. This minimum flow rate is no longer required once the reactor is in the RUN mode.
2. 39.65×10^6 lb/hr is the minimum recirculation flow rate necessary for operation in IRM range 10 at this time. This flow rate leaves sufficient margin between the minimum flow required by the RWE analysis performed and the minimum flow used while operating in IRM range 10.

NRC Order Dated April 20, 1981

Title

Plant Fire Protection SystemRevision No.
83ATTACHMENT 333-15

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #1 (Reactor Building)	AP PE-521 Sh. 1 JC 19635 Sh. 1	1) Actuate one detector from Rx Bldg 23' North side Zone 1 AND 2) Actuate one detector from Rx Bldg 23' North side Zone 2 OR 3) Actuate manual pull station	1) Actuate Deluge System #7
LFAP #1 (Reactor Building)	AP PE-521 Sh. 1 JC 19635 Sh. 1	1) Actuate one detector from Rx Bldg 23' South side Zone 1 AND 2) Actuate one detector from Rx Bldg 23' South side Zone 2 OR 3) Actuate manual pull station	1) Actuate Deluge System #8

Title

Plant Fire Protection SystemRevision No.
83**ATTACHMENT 333-15**
(continued)**EQUIPMENT ACTUATED BY FIRE PANELS**

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #1 (Reactor Building)	AP PE-521 Sh. 1 JC 19635 Sh. 2	1) Actuate one detector from Rx Bldg 51' North side Zone 1 AND 2) Actuate one detector from Rx Bldg 51' North side Zone 2 OR 3) Actuate manual pull station	1) Actuate Deluge System #5
LFAP #1 (Reactor Building)	AP PE-521 Sh. 1 JC 19635 Sh. 2	1) Actuate one detector from Rx Bldg 51' South side Zone 1 AND 2) Actuate one detector from Rx Bldg 51' South side Zone 2 OR 3) Actuate manual pull station	1) Actuate Deluge System #6

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Plant Fire Protection System

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ATTACHMENT 333-15
(continued)

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #2 (4160V Switchgear Area)	AP PE-521 Sh. 2 IC 80-02-071	1) Detector actuated in "C" 4160V Swgr. Room OR 2) Detector actuated in "D" 4160V Swgr. Room	1) Actuate six electric thermal links (ETL) which close dampers and roll-up doors if open. AND 2) Trip "C" Swgr. Room Fan AND 3) Trip "D" Swgr. Room Fan
C & D 4160V CO ₂ System	FS FLR-31817-0	1) Actuation of manual pull station outside of the "C" or "D" 4160V Swgr. Rooms	1) Actuate six electric thermal links (ETL) which close dampers and roll-up doors if open. AND 2) Trip "C" Swgr. Room Fan AND 3) Trip "D" Swgr. Room Fan AND 4) After 15 second time delay, CO ₂ is actuated in "C" and "D" 4160V Switchgear Rooms.

Title

Plant Fire Protection SystemRevision No.
83**ATTACHMENT 333-15**
(continued)**EQUIPMENT ACTUATED BY FIRE PANELS**

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #2 (4160V Switchgear Area)	AP PE-521 Sh.2	1) Any detector actuated in A/B 4160V Swgr. Area OR 2) Actuate manual pull station	1) Actuate Preaction Valve V-9-1089 to fill Sprinkler System #22 piping
LFAP #3 (Diesel Generator Area)	AP PE-521 Sh. 3	N/A	N/A
LFAP #4 (Turbine Basement North End)	AP PE-521 Sh. 4	N/A	N/A
LFAP #5 (Lower Cable Spread Room)	AP PE-521 Sh. 5 & 6	1) One detector from any of the four zones in the LCSR. OR 2) Flow alarm from Deluge System #4A OR 3) Flow alarm from Deluge System #4B	1) "A" Control Room HVAC trips.

ATTACHMENT 333-15
(continued)

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #5 (Lower Cable Spread Room)	AP PE-521 Sh. 5 JC 19635 Sh. 5	1) Actuate one detector from Zone 1 AND 2) Actuate one detector from Zone 2 OR 3) Actuate manual pull station	1) Actuate Deluge System 4A
LFAP #5 (Lower Cable Spread Room)	AP PE-521 Sh. 5 JC 19635 Sh. 5	1) Actuate one detector from Zone 3 AND 2) Actuate one detector from Zone 4 OR 3) Actuate manual pull station	1) Actuate Deluge System 4B

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Plant Fire Protection System

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83**ATTACHMENT 333-15**
(continued)**EQUIPMENT ACTUATED BY FIRE PANELS**

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #6 (Control Room)	AP PE-521 Sh. 6 JC 19635 Sh. 5 SN 15050.68-EE-13 Sh. 1	1) Any one detector in Halon System A, Zone 1 or 2. OR 2) Any one detector in Halon System B, Zone 1 or 2. OR 3) Any one detector in Halon System C, Zone 1 or 2 OR 4) Any one detector in Zone D, ceiling OR 5) "A" Supply Duct Detector	1) "A" Control Room HVAC trips.

Title

Plant Fire Protection SystemRevision No.
83**ATTACHMENT 333-15**
(continued)**EQUIPMENT ACTUATED BY FIRE PANELS**

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #6 (Control Room)	AP PE-521 Sh. 6 JC 19635 Sh. 5 TI OC-12010 Sh. 1	1) Any one detector in Halon System A, Zone 1 or 2. OR 2) Any one detector in Halon System B, Zone 1 or 2. OR 3) Any one detector in Halon System C, Zone 1 or 2 OR 4) Any one detector in Zone D, ceiling OR 5) "B" Supply or Exhaust Duct Detector	1) "B" Control Room HVAC trips.

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EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #6 (Control Room)	AP PE-521 Sh. 6 JC 19635 Sh. 5	1) Any one detector in Halon System A, Zone 1 AND 2) Actuate one detector in Halon System A, Zone 2. OR 3) Actuate Manual Pull Station for Halon System "A".	1) After 15 second delay, Halon System "A" actuates.
LFAP #6 (Control Room)	AP PE-521 Sh. 6 JC 19635 Sh. 5	1) Any one detector in Halon System B, Zone 1 AND 2) Actuate one detector in Halon System B, Zone 2. OR 3) Actuate Manual Pull Station for Halon System "B".	1) After 15 second delay, Halon System "B" actuates.

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(continued)

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #6 (Control Room)	AP PE-521 Sh. 6 JC 19635 Sh. 5	1) Any one detector in Halon System C, Zone 1 AND 2) Actuate one detector in Halon System C, Zone 2. OR 3) Actuate Manual Pull Station for Halon System "C".	1) After 15 second delay, Halon System "C" actuates.
LFAP #7 (480V Switchgear Room)	AP PE-521 Sh.7 BR E1345 GE 157B6350 Sh. 50A & 193B	1) Actuate one detector from Zone 3 AND 2) Actuate one detector from Zone 4 OR 3) Actuate manual pull station in "A" room	1) Trip "A" 480V Swgr. Rm. Supply Fan (FN-56-004) AND 2) Trip "A" 480V Swgr. Rm. Alt. Exhaust Fan (FN-56-008) AND 3) Close "A" room dampers (DM-56-015 & 16) AND 4) After 60 second time delay, "A" 480V Room Halon actuated.

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(continued)

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #7 (480V Switchgear Rooms)	AP PE-521 Sh. 7 BR E1345	1) Actuate one detector from Zone 5.	1) Close fire door DR-814-015
LFAP #7 (480V Switchgear Room)	AP PE-521 sh. 7 BR E1345 GE 157B6350 sh. 72B & 77B	1) Actuate one detector from Zone 1 AND 2) Actuate one detector from Zone 2 OR 3) Actuate manual pull station in "B" room.	1) Trip "B" 480V Swgr. Rm. Supply Fan (SF-1-21) AND 2) Close "B" room dampers (DM-56-013 & 14) AND 3) After 60 second tome delay, "B" 480V Room Halon actuated.

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(continued)

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #8 (AB Battery Room/MG Set Room)	DCX EW95427 GU 3E-665-18-1000 GU 3E-665-14-1000 AP PE-521 Sh. 12 GE 157B6350 Sh. 77A & 83B	1) Actuate one detector from Zone 1 AND actuate one detector from Zone 2 OR 2) Actuate one of the manual pull stations OR 3) MG Set Room flow alarm	1) Actuate electric thermal links (ETL) which close dampers for initiating events 1 or 2 only. AND 2) Trip MG Set Room Spot Coolers for all initiating events (1, 2 or 3). AND 3) Provides flow input (halon or water) to MFAP #A module #8 Flow for all initiating events (1, 2 or 3) which trips EF-1-20 and SF-1-20 AND 4) After 30 second time delay for initiating events 1 or 2 only, AB Battery Room halon system actuates.
LFAP #9 (Main Office Building)	AP PE-521 Sh. 8 JC 19635 Sh. 4	N/A	N/A

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EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
LFAP #10 (Monitor & Change Area)	AP PE-521 Sh. 9 JC 19635 Sh. 4	1) One detector above Monitor & Change ceiling OR 2) One detector below Monitor & Change ceiling OR 3) Sprinkler system #12 flow alarm	1) Close fire doors DR-814-22 & 23.
LFAP #11 (Boiler House, AOG & ORW)	AP PE-521 Sh. 10	N/A	N/A
LFAP #12 (Fire Water Pump House)	AP PE-521 Sh. 11	1) Actuate one thermal detector in Fire Water Pump House or above fuel tanks OR 2) Actuate Manual Pull Station	1) Actuate Deluge System #9

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EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
MFAP #A (Master Fire Alarm Panel A)	AP PE-521 Sh. 12 GE 157B6350 Sh. 77A & 83B	Module #8 Flow Alarm (refer to LFAP #8 for actuating devices)	1) Trip SF-1-20 (AB Battery Rm/MG Set Rm Supply Fan) AND 2) Trip EF-1-20 (AB Battery Rm/MG Set Rm Exhaust Fan)
MFAP #B (Master Fire Alarm Panel B)	AP PE-521 Sh. 12A	N/A	N/A
LFAP ER49 (Upper Cable Spread Room)	BG BFE-2099 Sh. 1 & 3	N/A	N/A
FPP-665-004 (Cable Bridge Tunnels)	BG BFE-2099 Sh. 3	N/A	N/A
Cable Bridge Tunnel	JC 19479 Sh. 2	1) Actuate manual pull station	1) Actuate Deluge Valve V-9-442 to fill Preaction Sprinkler System #16 piping.

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(continued)

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
Exciter CO ₂ System	GU 3E-812-17-1000	1) Actuate one detector in the exciter housing OR 2) Actuate Manual Pull Station	1) Actuate ETL's to close dampers in Exciter AND 2) After time delay, individual CO ₂ bottles will sequentially discharge up to approximately 30 minutes.
Turbine Bearing 10 CO ₂ System	GU 3E-812-17-1000	1) Actuate Bearing 10 detector	1) Bearing 10 CO ₂ bottle discharges
Panel ER-811-817 (Transformer Area & Lube Oil Tank Area)	AGL 8-5832-1 BR 3042 Sh. 1 GU 3D-811-14-001	1) Actuate one thermal detector at M1A OR 2) Actuate one thermal detector at the Auxiliary Transformers OR 3) Actuate manual pull station	1) Actuate Deluge System 1

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(continued)**EQUIPMENT ACTUATED BY FIRE PANELS**

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
Panel ER-811-817 (Transformer Area & Lube Oil Tank Area)	AGL 8-5832-1 BR 3042 Sh. 1 GU 3C-811-15-1001	1) Actuate one thermal detector at M1B OR 2) Actuate one thermal detector at the Startup Transformers OR 3) Actuate manual pull station	1) Actuate Deluge System 2
Panel ER-811-817 (Transformer Area & Lube Oil Tank Area)	AGL 8-5832-1 Br 3042 Sh. 1	1) Actuate one thermal detector at Turbine Lube Oil Tank OR 2) Actuate manual pull station	1) Actuate Deluge System 3
Station Blackout Transformer (SBO)	JC 19479 Sh. 2	1) Actuate one thermal detector at SBO Transformer OR 2) Actuate manual pull station	1) Actuate Deluge System 10

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EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
SEB Fire Panel (corridor)	TO X-2556-6 & BR E0545	1) Actuate one detector in the SEB Battery Room (Zone 5 or 6)	1) Trips exhaust Fan FN-843-7
SEB Fire Panel (corridor)	TO X-2556-6 & BR E0545	1) Actuate one detector in the SEB Battery Room Zone 5 AND 2) Actuate one detector in the SEB Battery Room Zone 6 OR 3) Actuate Battery Room Pressure Switch OR 4) Actuate manual pull station	1) Battery Room door closes AND 2) Closes fire dampers DM-843-4 & 5 AND 3) Trips exhaust Fan FN-843-7 if not already tripped AND 4) After 30 second time delay, Battery Room Halon is actuated
SEB Fire Panel (Corridor)	TO X-2556-6 & BR E0545	1) Actuate one detector in the SEB Electrical Equipment Room (Zone 3 or 4)	1) Trips exhaust Fan FN-843-5 AND 2) Trips supply Fan FN-843-4

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EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
SEB Fire Panel (Corridor)	TO X-2556-6 & BR E0545	1) Actuate one detector in the SEB Electrical Equipment Room Zone 3 AND 2) Actuate one detector in the SEB Electrical Equipment Room Zone 4 OR 3) Actuate Electric Equipment Room Pressure Switch OR 4) Actuate manual pull station	1) Electric Equipment Room door closes AND 2) Closes fire dampers DM- 843-6 & 7 AND 3) Trips unit heater in Electric Equipment Room H-843-1 (UH-2) AND 4) Trips exhaust fan FN-843-5 if not already tripped AND 5) Trips supply fan FN-843-4 if not already tripped AND 6) After 30 second time delay, Electric Equipment Room Halon is actuated.

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EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
SEB Fire Panel (Corridor)	TO X-2556-6 & BR E0545	1) Actuate one detector in the SEB Computer Room Zone 1 AND 2) Actuate one detector in the SEB Computer Room Zone 2 OR 3) Actuate SEB Computer Room Pressure Switch OR 4) Actuate manual pull station	1) Trips Computer Room EDPAC air conditioning units M-834-4 through 9 AND 2) Closes fire dampers DM- 843-3 AND 3) Trips Plant Computer (shunt trip) AND 4) After 30 second time delay, Battery Room Halon is actuated.
SEB Flow Switch (FS-811-5)	GU 3C-737-11-012	1) Sprinkler System 17A Flow Switch (FS-811-5) actuation	1) Trip SEB Telephone Room Battery Charger Distribution Panel SEB TEP

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(continued)

EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
Main Gate Guard House	Pytronics DW NJ 5062	N/A	N/A
OCAB	United Fire Prot Corp 94116	1) Any System Alarm	1) F8 & F9 starters for stair pressurization
OCAB	United Fire Prot Corp 94116	1) Activation of Zone 7	1) Alternate elevator recall
OCAB	United Fire Prot Corp 94116	1) Activation of Zone 8 OR 2) Activation of Zone 12 OR 3) Activation of Zone 16 OR 4) Activation of Zone 17	1) Elevator recall
OCAB	United Fire Prot Corp 94116	1) Activation of Zone 22	1) Elevator shunt trip

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EQUIPMENT ACTUATED BY FIRE PANELS

FIRE PANEL NUMBER	REFERENCE DRAWING	INITIATING EVENT	AFFECTED EQUIPMENT
OCAB	Unite Fire Prot Corp 94116	1) Activation of Zone 18 OR 2) Activation of Zone 19 OR 3) Activation of Zone 20	1) HVAC trip
Building 14 Fire Panel		1) Activation of one detector in Zone 1 of Simulator Room AND 2) Activation of one detector in Zone 2 of Simulator Room OR 3) Activation of manual pull station outside Simulator Room	1) Trip Simulator Room HVAC AND 2) After short time delay, actuate Simulator Room Halon System
NRW	KU F-1069	N/A	N/A
AOG	AP-PE-521 Sh. 10	N/A	N/A
LLRW	JH 85-0036-020	N/A	N/A

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OYSTER CREEK GENERATING
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Title

Emergency Diesel Generator OperationRevision No.
76ATTACHMENT 341-5EDG 1ENGINEERED SAFEGUARD LOADS AND OTHER CRITICAL LOADS

- INDICATES ENGINEERED SAFEGUARD LOAD
- Ø INDICATES PRIORITY PUMP FOR SAFETY SYSTEM
- INDICATES ALTERNATE PUMP FOR SAFETY SYSTEM
- Δ INDICATES VALVE COULD RENDER SYSTEM INOPERABLE

SYSTEM	BUS	EQUIPMENT
-- CORE SPRAY SYSTEM PUMPS	1C 1C 1A2 1A2	Ø CORE SPRAY MAIN PUMP NZ01A (493KW) SYS 1 ● CORE SPRAY MAIN PUMP NZ01D (481KW) SYS 2 Ø CORE SPRAY BOOSTER PUMP NZ03A (247KW) SYS 1 ● CORE SPRAY BOOSTER PUMP NZ03D (255KW) SYS 2-AUTO STARTS ONLY IF BOTH NZ03A AND NZ03B NOT RUNNING
-- CONT. SPRAY SYSTEM PUMPS	1A2 1A2 1C 1C	<u>NOTE:</u> START PREVENTED FOR 200 SECONDS AFTER EDG BREAKER CONTAINMENT SPRAY PUMP 51A (254KW) SYS 1 CONTAINMENT SPRAY PUMP 51B (254KW) SYS 1 ESW PUMP 52A (328KW) SYS 1 ESW PUMP 52B (328KW) SYS 1
LIQUID POISON SYSTEM PUMPS	1A21	LIQUID POISON PUMP NPO2-A AND SQUIB VALVE NPO5-A (25KW)
-- STANDBY GAS TREAT- MENT FANS	1A24	<u>NOTE:</u> PRIORITY SGTS DEPENDS ON SYSTEM SELECTED ON PANEL 11R - ALL ASSOCIATED VALVES ARE AIR OPERATED. EF-1-8 (SGTS I) (9KW)
CRD SYSTEM PUMPS	1A2	CRD SYS. PUMP NC08A (212KW)
SERVICE WATER SYS. PUMP	1A3	SERVICE WATER PUMP 1-1 (187KW)
RBCCW SYS. PUMP	1A2	RBCCW PUMP 1-1 (163KW)
-- CONTROL ROOM HVAC SYSTEM FAN	1A2 (DP-A2)	SUPPLY FAN FN-826-008A (9KW)
POST ACCIDENT INSTRUMENT POWER PANEL (PAIPP)	1A2	PANEL PAIPP-1, PDP-733-057 (1.9KW)

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Emergency Diesel Generator Operation

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ATTACHMENT 341-5
(Continued)

EDG 1

ENGINEERED SAFEGUARD LOADS AND OTHER CRITICAL LOADS

- INDICATES ENGINEERED SAFEGUARD LOAD
- Ø INDICATES PRIORITY PUMP FOR SAFETY SYSTEM
- INDICATES ALTERNATE PUMP FOR SAFETY SYSTEM
- Δ INDICATES VALVE COULD RENDER SYSTEM INOPERABLE

SYSTEM	BUS	EQUIPMENT
CORE SPRAY -- SYSTEM CRITICAL VALVES	1A2	V-20-15 SYSTEM 1 DISCHARGE VALVE (Δ IF V-20-40 IS OOS/1B21A)
	1A21	V-20-21 SYSTEM 2 DISCHARGE VALVE (Δ IF V-20-41 IS OOS/1AB2)
	1A21A	Δ V-20-3 NZ01A (SYS 1) PUMP SUCTION VALVE FROM TORUS Ø
	1A21A	Δ V-20-33 NZ01D (SYS 2) PUMP SUCTION VALVE FROM TORUS □
	1A21A 1A21B	Δ V-20-12 SYSTEM 1 DISCHARGE VALVE V-20-27 SYSTEM 1 RECIR. TEST VALVE TO TORUS
CONT. SPRAY -- SYSTEM CRITICAL VALVES	1A21B	Δ V-21-9 PUMP 51A SUCTION
	1A21B	Δ V-21-7 PUMP 51B SUCTION
	1A21B	Δ V-21-11 DW SPRAY DISCHARGE
	1A21B	V-21-17 TORUS CLG DISCHARGE
	1A21B	Δ V-21-18 TORUS SPRAY 5% DISCHARGE
"C" BATTERY SHALL BE IN SERVICE TO CONSIDER EDG 1 OPERABLE.		

ATTACHMENT 341-6

EDG 2

ENGINEERED SAFEGUARD LOADS AND OTHER CRITICAL LOADS

- INDICATES ENGINEERED SAFEGUARD LOAD
- Ø INDICATES PRIORITY PUMP FOR SAFETY SYSTEM
- INDICATES ALTERNATE PUMP FOR SAFETY SYSTEM
- Δ INDICATES VALVE COULD RENDER SYSTEM INOPERABLE

SYSTEM	BUS	EQUIPMENT
CORE -- SPRAY SYSTEM PUMPS	1D 1D 1B2 1B2	Ø CORE SPRAY MAIN PUMP NZ01B (474KW) SYS 2 ● CORE SPRAY MAIN PUMP NZ01C (474KW) SYS 1 Ø CORE SPRAY BOOSTER PUMP NZ03B (247KW) SYS 2 ● CORE SPRAY BOOSTER PUMP NZ03C (247KW) SYS 1 - AUTO STARTS ONLY IF BOTH NZ03A AND NZ03B NOT RUNNING
CONT. -- SPRAY SYSTEM PUMPS	1B2 1B2 2D 2D	<u>NOTE:</u> MANUAL START ONLY. START PREVENTED FOR 200 SECONDS AFTER EDG BREAKER CLOSURE. ° CONTAINMENT SPRAY PUMP 51C (239KW) SYS 2 ° CONTAINMENT SPRAY PUMP 51D (239KW) SYS 2 ° ESW PUMP 52C (333KW) SYS 2 ° ESW PUMP 52D (333KW) SYS 2
LIQUID POISON SYSTEM (PUMP)	1B21	° LIQUID POISON PUMP NP02-B AND SQUIB VALVE NP05-B (25KW)
STANDBY -- GAS TREATMENT SYSTEM FANS	1B24	<u>NOTE:</u> PRIORITY SGTS DEPENDS ON SYSTEM SELECTED ON PANEL 11R - ALL ASSOCIATED VALVES ARE AIR OPERATED. ° EF-1-9 (SGTS II) (13KW)
CRD SYSTEM PUMP	1B2	° CRD SYS. PUMP NC08B (200KW)
SERVICE WATER SYS. PUMP	1B3	° SERVICE WATER PUMP 1-2 (204KW)
RBCCW SYS. PUMP	1B2	° RBCCW PUMP 1-2 (159KW)
--CONTROL ROOM HVAC SYSTEM FAN	1B3	° SUPPLY FAN, FN-826-008B (14KW)
POST ACCIDENT INSTRUMENT POWER PANEL (PAIPP)	1B2	° PAIPP-2, PDP-733-058 (1.8KW)

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Emergency Diesel Generator Operation

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(Continued)

EDG 2

ENGINEERED SAFEGUARD LOADS AND OTHER CRITICAL LOADS

- INDICATES ENGINEERED SAFEGUARD LOAD
- Ø INDICATES PRIORITY PUMP FOR SAFETY SYSTEM
- INDICATES ALTERNATE PUMP FOR SAFETY SYSTEM
- Δ INDICATES VALVE COULD RENDER SYSTEM INOPERABLE

SYSTEM	BUS	EQUIPMENT
-- CORE SPRAY SYSTEM CRITICAL VALVES	1AB2	◦ V-20-41 SYSTEM 2 DISCHARGE VALVE (Δ IF V-20-21 IS OOS/1A21)
	1B21A	◦ V-20-40 SYSTEM 1 DISCHARGE VALVE (Δ IF V-20-15 IS OOS/1A2)
	1B21A	Δ V-20-4 NZ01B (SYS 2) PUMP SUCTION VALVE FROM TORUS Ø
	1B21A	Δ V-20-32 NZ01C (SYS 1) PUMP SUCTION VALVE FROM TORUS □
	1B21A	Δ V-20-18 SYSTEM 2 DISCHARGE VALVE V-20-26 SYSTEM 2 RECIR. TEST VALVE TO TORUS
-- CONT. SPRAY SYSTEM CRITICAL VALVES	1B21B	Δ V-21-1 PUMP 51C SUCTION
	1B21B	Δ V-21-3 PUMP 51D SUCTION
	1B21B	Δ V-21-5 DW SPRAY DISCHARGE
	1B21B	V-21-13 TORUS CLG DISCHARGE
	1B21B	Δ V-21-15 TORUS SPRAY 5% DISCHARGE
"B" BATTERY SHALL BE IN SERVICE TO CONSIDER EDG 2 OPERABLE.		

3.2 REACTIVITY CONTROL

Applicability: Applies to core reactivity and the operating status of the reactivity control systems for the reactor.

Objective: To assure reactivity control capability of the reactor.

Specification:

A. Core Reactivity

1. The SHUTDOWN MARGIN (SDM) under all operational conditions shall be equal to or greater than:
 - (a) 0.38% delta k/k, with the highest worth control rod analytically determined; or
 - (b) 0.28% delta k/k, with the highest worth control rod determined by test.
2. If one or more control rods are determined to be inoperable as defined in Specification 3.2.B.4 while in the STARTUP MODE or the RUN MODE, then a determination of whether Specification 3.2 A. is met must be made within 6 hours. If a determination cannot be made within the specified time period, then assume Specification 3.2 A.1 is not met.
3. If Specification 3.2.A.1 is not met while in the STARTUP Mode or the RUN MODE, meet Specification 3.2.A.1 within 6 hours or be in the SHUTDOWN CONDITION within the following 12 hours.
4. If Specification 3.2.A.1 is not met while in the SHUTDOWN CONDITION, or the COLD SHUTDOWN CONDITION, then:
 - (a) Fully insert all insertable control rods within 1 hour, AND
 - (b) Comply with the requirements of Specifications 3.2.C and 3.5.B.
5. If Specification 3.2.A.1 is not met while in the REFUEL MODE, then:
 - (a) Immediately suspend CORE ALTERATIONS except for fuel assembly removal, AND
 - (b) Immediately initiate action to fully insert all insertable control rods in control cells containing one or more fuel assemblies, AND
 - (c) Comply with the requirements of Specifications 3.2.C and 3.5.B.

B. Control Rod System

1. The control rod drive housing support shall be in place during power operation and when the reactor coolant system is pressurized above atmospheric pressure with fuel in the reactor vessel, unless all control rods are fully inserted and Specification 3.2.A is met.
2. The Rod Worth Minimizer (RWM) shall be operable during each reactor startup until reactor power reaches 10% of rated power except as follows:
 - (a) Should the RWM become inoperable after the first 12 rods have been withdrawn, the startup may continue provided that a second licensed operator verifies that the licensed operator at the reactor console is following the rod program.
 - (b) Should the RWM be inoperable before a startup is commenced or before the first twelve rods are withdrawn, one startup during each calendar year may be performed without the RWM provided that the second licensed operator verifies that the licensed operator at the reactor console is following the rod program and provided that a reactor engineer from the Core Engineering Group also verifies that the rod program is being followed. A startup without the RWM as described in this subsection shall be reported in a special report to the Nuclear Regulatory Commission (NRC) within 30 days of the startup stating the reason for the failure of the RWM, the action taken to repair it and the schedule for completion of the repairs.

Control rod withdrawal sequences shall be established with a banked position withdrawal sequence so that the rod drop accident design limit of 280 cal/gm is not exceeded. For control rod withdrawal sequences not in strict compliance to BPWS, the maximum in sequence rod worth shall be $\leq 1.0\% \Delta K$.

3. The average of the scram insertion times of all operable control rods shall be no greater than:

<u>Rod Length Inserted (%)</u>	<u>Insertion Time (Seconds)</u>
5	0.375
20	0.900
50	2.00
90	5.00

The average of the scram insertion times for the three fastest control rods of all groups of four control rods in a two-by-two array shall be no greater than:

<u>Rod Length Inserted (%)</u>	<u>Insertion Time (Seconds)</u>
5	0.398
20	0.954
50	2.120
90	5.300

Any four rod group may contain a control rod which is valved out of service provided the above requirements and Specification 3.2.A are met. Time zero shall be taken as the de-energization of the pilot scram valve solenoids.

4. In service control rods which cannot be moved with control rod drive pressure shall be considered inoperable. If a partially or fully withdrawn control rod drive cannot be moved with drive or scram pressure, the reactor shall be brought to a shutdown condition within 48 hours unless investigation demonstrates that the cause of the failure is not due to a failed control rod drive mechanism collet housing. Inoperable control rods shall be valved out of service, in such positions that Specification 3.2.A is met. In no case shall the number of inoperable control rods valved out of service be greater than six during the power operation. If this specification is not met, the reactor shall be placed in the shutdown condition.
5. Control Rods shall not be withdrawn for approach to criticality unless at least two source range channels have an observed count rate equal to or greater than 3 counts per second.

C. Standby Liquid Control System

1. The standby liquid control system shall be operable at all times when the reactor is not shut down by the control rods such that Specification 3.2.A is met and except as provided in Specification 3.2.C.3.
2. The standby liquid control solution shall have a Boron-10 isotopic enrichment equal to or greater than 35 atom %, be maintained within the cross-hatched volume-concentration requirement area in Figure 3.2-1 and at a temperature not less than the temperature presented in Figure 3.2-2 at all times when the standby liquid control system is required to be operable.
3. (a) If one standby liquid control system pumping circuit becomes inoperable during the RUN mode and Specification 3.2.A is met, the reactor may remain in operation for a period not to exceed 7 days, provided the pump in the other circuit is verified daily to be operable, otherwise be in the Shutdown condition within 24 hours.

- (b) If the solution is outside the cross-hatched volume-concentration area but within the shaded volume-concentration area of Figure 3.2-1, return the solution to the cross-hatched area within 7 days. If, after this time period, the requirement is still not met, submit a report to the NRC within 7 days advising them of plans to return the solution to the cross-hatched volume-concentration area.
- (c) If the solution is outside the cross-hatched volume concentration area and outside the shaded volume-concentration area of Figure 3.2-1, return the solution to within the shaded volume-concentration area of Figure 3.2-1 or be in the Shutdown condition within 24 hours.
- (d) If the solution temperature is less than the minimum shown in Figure 3.2-2, increase the temperature to greater than the minimum and verify the solution is within the shaded volume-concentration area of Figure 3.2-1 or be in the Shutdown condition within 24 hours.
- (e) If the enrichment requirement of 3.2.C.2 is not met:
 - (1) Return the Boron-10 isotopic enrichment to greater than or equal to 35 atom % within 7 days of the receipt of the enrichment report. If, after this time period, the enrichment requirement is still not met, submit a report to the NRC within 7 days advising them of the plans to return the solution to greater than or equal to 35 atom % Boron-10 isotopic enrichment.
 - (2) A check shall be made to ensure that the sodium pentaborate solution meets the original design criteria by comparing the enrichment, concentration and volume to established criteria (Boron-10 equal to or greater than 82 pounds). If the sodium pentaborate solution does not meet the original criteria, be in the Shutdown condition within 24 hours.

D. Reactivity Anomalies

The difference between an observed and predicted control rod inventory shall not exceed the equivalent of one percent in reactivity. If this limit is exceeded and the discrepancy cannot be explained, the reactor shall be brought to the cold shutdown condition by normal orderly shutdown procedure. Operation shall not be permitted until the cause has been evaluated and appropriate corrective action has been completed. The NRC shall be notified within 24 hours of this situation in accordance with Specification 6.6.

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 119' ELEV. (RB-FZ-1A)	None	NA	NA	NA	NA
<p><u>References:</u></p> <p>GU 3E-911-41-041 (Hot Shutdown Path #3 for RB-FZ-1A) GU 3E-911-41-042 (Cold Shutdown Path #1 for RB-FZ-1A)</p> <p>Manual Action Required:</p> <p>(1) <u>IF</u> Instrument Air is lost,</p> <p style="padding-left: 100px;"><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 95' ELEV. (RB-FZ-1B)	<u>"A" ISOLATION CONDENSER</u>				
	Stm Vent Vlv (V-14-5)	Local Manual	RB 95' EL, East	307	NA
	Control Ckt				
	Stm Vent Vlv (V-14-20)	Local Manual	RB 95' EL, East	307	NA
	Control Ckt				
	Shell Makeup Valve	Local Manual	RB 95' EL, East	307	NA
	Power and Control Ckt (V-11-36)				
	<u>"B" ISOLATION CONDENSER</u>				
	DC Steam Inlet	Local Manual	RB 75' EL, East	307	NA
	Vlv Ind Ckt (V-14-33)				
	Stm Vent Vlv Control Ckt (V-14-1)	Local Manual	RB 95' EL, East	307	NA
	Stm Vent Vlv Control Ckt (V-14-19)	Local Manual	RB 95' EL, East	307	NA
	Power and Control Ckt	Local Manual	RB 95' EL, East	307	NA
	Shell Makeup Valve (V-11-34)				
<u>References:</u> GU 3E-911-41-041 (Hot Shutdown Path #3 for RB-FZ-1B) GU 3E-911-41-042 (Cold Shutdown Path #1 for RB-FZ-1B) Manual Action Required: 1) <u>IF</u> Instrument Air is lost, <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 75' ELEV. (RB-FZ-1C)	<u>CORE SPRAY SYS II</u> Parallel Vlvs. Power and Control Ckts (V-20-21, 41)	Local Manual	RB 75' EL, South	308	NA
	<u>"A" ISOLATION CONDENSER</u> AC Stm Isolation Vlv Power Ckt (V-14-30)	Local Manual	RB 75' EL, East	307	NA
	DC Stm Isolation Vlv Pwr and Control Ckt (V-14-31)	Local Manual	RB 75' EL, East	307	NA
	DC Cond Return Valve Pwr and Control Ckt (V-14-34)	Local Manual	RB 75' EL, East	307	NA
	Steam Vent Vlv Control Ckt (V-14-5)	Local Manual	RB 95' EL, East	307	NA
	Steam Vent Vlv Control Ckt (V-14-20)	Local Manual	RB 95' EL, East	307	NA
	Shell Makeup Vlv Power and Control Ckt (V-11-36)	Local Manual	RB 95' EL, East	307	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 75' ELEV. (RB-FZ-1C) (cont'd)	<u>"B" ISOLATION CONDENSER</u>				
	AC Stm Isol Vlv Power Ckt (V-14-32)	Local Manual	RB 75' EL, East	307	NA
	DC Stm Isol Vlv Power, Ind and Control Ckt (V-14-33)	Local Manual	RB 75' EL, East	307	NA
	DC Cond Rtn Vlv Power, Ind and Control Ckt (V-14-35)	Local Manual	RB 75' EL, East	307	NA
	AC Cond Rtn Vlv Power, Ind and Control Ckt (V-14-37)	None	Drywell	307	NA
	Stm Vent Vlv Isol Ckt (V-14-1)	Local Manual	RB 95' EL, East	307	NA
	Stm Vent Vlv Isol Ckt (V-14-19)	Local Manual	RB 95' EL, East	307	NA
	Shell Makeup Vlv Power and Control Ckt (V-11-36)	Local Manual	RB 95' EL, East	307	NA
	<u>REACTOR WATER CLEANUP</u>	Local Manual	RB 75' EL, East	307	NA
	RWCU Inlet Isol Vlv Cont Ckt (V-16-1)				
	<u>ELECTRICAL DISTR. SYS.</u>				
	MCC DC-2	None	Drywell	303	NA
	<u>CONTAINMENT SYSTEM</u>				
	Torus Temperature Elements	None	NA	340.1	NA
	TI-664-43B				
		TI-664-43A	1F/2F	NA	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>R.B. 75' ELEV. (RB-FZ-1C) (cont'd)</p> <p><u>References:</u></p> <p>GU 3E-911-41-041 (Hot Shutdown Path #3 for RB-FZ-1C) GU 3E-911-41-042 (Cold Shutdown Path #1 for RB-FZ-1C)</p> <p><u>Manual Action Required:</u></p> <p>1) <u>IF</u> Instrument Air is lost,</p> <p> <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>2) Cable failures may cause DC-1 to trip.</p> <p> <u>IF</u> DC-1 trips</p> <p> <u>THEN</u> Either manually control the SDC valves V-17-1, 2, 3, 55, 56 & 57</p> <p> OR</p> <p> Open all load breakers on MCC DC-1 and re-close DC-B breaker #6 and then re-close MCC DC-1 breakers for SDC valves V-17-1, 2, 3, 55, 56 & 57. Note that the remaining breakers on MCC DC-1 are not needed and should remain open to isolate the cable failures.</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 51' ELEV. (RB-FZ-1D)					
<u>References:</u>					
GU 3E-911-41-044	Hot Shutdown Path #5 – "B" Isolation Condenser, "B" CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, Offsite Pwr available; if spuriously opened EMRV, then Core Spray pumps NZ01D & NZ03D, Containment Spray Pump 1-4, ESW pump 1-4, Torus Level Indicator LI-IP10B & Containment Spray Suction Hdr Temperature TR-IP001.				
GU 3E-911-41-043	Cold Shutdown Path #3 – 2 EMRV's (with repairs), Core Spray Pumps, Containment Spray Pump, ESW pump, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, Rx Wide Range Lvl Ind (with repairs), Torus Water Temperature Ind (with repairs) and Torus Level Indicator LI-IP10B				
NOTE: This 'Cold Shutdown' Path utilizes 'Alternate Decay Heat Removal' per procedure 2000-OPS-3024.27, Section 4.4 to approach the Cold Shutdown condition (Core Spray, Containment Spray in Torus Cooling, and EMRV's). It may be necessary to perform repairs on affected equipment as identified in the list below.					
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.					
1) <u>NOTE:</u>	During a fire condition on the 51' elevation of the Reactor Building (RB-FZ-1D), the possibility exists that hot shorts will develop in the EMRV cabling such that 125 VDC from an external source will be supplied to an EMRV, causing it to fail open. This spuriously opened EMRV may not be reclosable by any means. Therefore, the following actions are required:				
<u>CAUTION:</u>	The following action is required to preclude or terminate a spuriously opened EMRV. This action will disable the ADS, High Pressure and manual controls associated with the EMRV's. If the EOP's require the use of the EMRV's the disable switches can be returned to the normal position.				
<u>IF</u>	One or more EMRV's exhibit abnormal or spurious operation or there are insufficient indications available to determine the status of an EMRV.				
<u>THEN</u>	Ensure the reactor is scrammed in accordance with ABN-1 "Reactor Scram".				
	<u>AND</u>				
	Place the disable switch on the rear of panel 1F/2F to the "DISABLE" position for those EMRV's affected. <u>NOTE:</u> "EMRV DISABLED" annunciator on Panel 1F/2F (B-6-g) will alarm.				

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Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 51' ELEV. (RB-FZ-1D) (cont'd)					
2)	<u>IF</u>	An EMRV is failed open.			
	<u>THEN</u>	Follow the Emergency Operating Procedures.			
3)	<u>CAUTION</u>	1) The Core Spray parallel injection valves may not automatically open when the valve permissive is satisfied and control from the control room may also be lost. If the valves cannot be controlled automatically/remotely, then immediately dispatch an operator to manually open the valve to assure adequate core cooling. Note that there is 66 minutes to perform this manual action from the start of the event but the valve permissive may not be satisfied for approximately 33 minutes leaving only 33 minutes to perform this manual action. 2) SCBA may be required to perform the manual opening of V-20-21 due to the possibility of smoke rising through the open equipment hatch from Rx. Bldg. 51' elevation.			
	<u>IF:</u>	V-20-21 can not be operated from the control room			
	<u>THEN</u>	Dispatch an operator with a radio to MCC 1A21 located in the 480V Room to place the breaker for V-20-21 to the "OFF" position. The operator should then proceed directly to 75' elevation and standby to manually open V-20-21 upon direction from the Control Room.			
	<u>NOTE 1:</u>	Torus cooling must be initiated within 2 hours to prevent losing NPSH requirements for the Core Spray System			
4)	<u>NOTE:</u>	During a fire condition on the 51' elevation (RB-FZ-1D), the possibility exists that hot shorts will occur in the high flow logic circuitry of the "B" Isolation Condenser. This could cause a spurious isolation of valves V-14-32, V-14-33, V-14-35 and V-14-37.			
	<u>IF</u>	no other decay heat removal system is available,			
	<u>THEN</u>	override the isolation signal by placing the individual valve control switches to the position desired.			
5)	<u>IF</u>	Instrument Air is lost,			
	<u>THEN</u>	V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 17.4 ft in the CST may be required for isolation condenser shell makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).			

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 51' ELEV. (RB-FZ-1D) (cont'd)	<u>CORE SPRAY SYSTEM I</u> Parallel Vlvs Power and Control Ckts (V-20-15, 40)	Local Manual	RB 51' EL, NW	308	NA
	Booster Pump Disch. Press. Ind (PT-RV41A) and diff press. sw. (DPS-RV40A&C)	Local Gage (PI-40C)	RB 51' EL, NW	308	NA
	Core Spray Booster Pumps (NZ03A, C)	None	NA	NA	NA
	<u>CORE SPRAY SYSTEM II</u> Parallel Vlvs Power and Control Ckts (V-20-21, 41)	Local Manual	RB 75' EL, South	308	NA
	Pumps NZ01B & NZ03B	NZ01D & NZ03D	CR	308	NA
	<u>Containment Istr.</u> Torus Temp Ind. TI-664-43 A&B	TE 40A Suction Header Temp. for Core & Cont. Spray,	TR IP01 Panel 1F or perform repair procedure	Repair Procedure	2400-APR- 3228.02

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 51' ELEV. (RB-FZ-1D) (cont'd)	<u>"A" ISOLATION CONDENSER</u>				
	AC Stm Isol Vlv Power Ckt (V-14-30)	Local Manual	RB 75' EL, East	307	NA
	DC Stm Isol Vlv Power and Control Ckt (V-14-31)	Local Manual	RB 75' EL, East	307	NA
	DC Cond Rtn Vlv Power and Control Ckt (V-14-34)	Local Manual	RB 75' EL, East	307	NA
	Shell Makeup Vlv Power and Control Ckt (V-11-36)	Local Manual	RB 95' EL, East	307	NA
	LT-IG06A Ind. Circuit	None	NA	307	NA
	<u>"B" Isolation Condenser</u>				
	Hi Flow Protection (IB05-B1 & B2 and IB11-B1 & B2)	Override Isolation Signal	1F/2F (Individual Valve Control Switch)	307	NA
	<u>ELECTROMATIC RELIEF VLVS</u>				
	EMRV "A" Control Ckt.	EMRV "A" Disable Swt	Rear 1F/2F	301	NA
	EMRV "B" Control Ckt.	EMRV "B" Disable Swt	Rear 1F/2F	301	NA
	EMRV "C" Control Ckt.	EMRV "C" Disable Swt	Rear 1F/2F	301	NA
	EMRV "D" Control Ckt.	EMRV "D" Disable Swt	Rear 1F/2F	301	NA
		Temporary Control and Indication for NR108D	NA	Repair Procedure	2400-APR-3411.01 2400-APR-3411.04

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 51' ELEV. (RB-FZ-1D) (cont'd)	<u>ELECTROMATIC RELIEF VLVS</u> (cont'd) EMRV "E" Control Ckt.	EMRV "E" Disable Swt Temporary Control and Indication for NR108E	Rear 1F/2F NA	301 Repair Procedure	NA 2400-APR- 3411.01 2400-APR- 3411.04
	<u>CONTAINMENT SYSTEM</u>				
	Rx Low-Low Wtr Lvl (RE02A) Inst. Circuit	None	NA	NA	NA
	Rx Low-Low Wtr Lvl (RE02B) Inst. Circuit	None	NA	NA	NA
	Rx Low-Low Wtr Lvl (RE02C) Inst. Circuit	None	NA	NA	NA
	Rx Low-Low Wtr Lvl (RE02D) Inst. Circuit	None	NA	NA	NA

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R.B. 51' ELEV. (RB-FZ-1D) (cont'd)	<u>SHUTDOWN COOLING SYSTEM</u>				
	"A" Loop Flow (FI 17-1)	None	NA	305	NA
	"B" Loop Flow (FI 17-2)	None	NA	305	NA
	"C" Loop Flow (FI 17-3)	None	NA	305	NA
	<u>"A" FUEL ZONE LEVEL</u>				
	LI-IA94A	"C" Fuel Zone Lvl. (LI-622-1001) (PI-622-999)	CR PNL 5F/6F	410	NA
	PI-622-849		or RSP ("B" 480V Swgr Rm)	346	NA
	<u>"B" FUEL ZONE LEVEL</u>				
	LI-IA94B	"D" Fuel Zone Lvl. (LI-622-1002) (PI-622-1000)	CR PNL 5F/6F	410	NA
	PI-622-850		or RSP ("B" 480V Swgr Rm)	346	NA
	<u>RX LEVEL/PRESSURE INSTR.</u>				
	GEMAC Wide Range Level Ind. (LI-IA13)	Install Local Gage (LI-626-1007)	RK01 (R.B. 75' EL, East)	Repair Procedure	2400-APR- 3665.01
	<u>RBCCW SYSTEM</u>				
	Pump 1-1	None	NA	NA	NA
	Pump 1-2	None	NA	NA	NA
	S/D Clg Hx Outlet Vlv Power and Control Ckt (V-5-106)	Local Manual	S/D Clg Room	305	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 51' ELEV. (RB-FZ-1D) (cont'd)	<u>CONT. SPRAY SYSTEM I</u> Drywell Spray Isol. Valve (V-21-11) Pwr. and Control Ckt.	Local Manual	R.B. 51' EL. East	310	NA
	Cont Spray System DC Control Power	Local Manual	See Manual Actions Below	NA	NA
	<u>CONT SPRAY SYSTEM II</u> Cont Spray System DC Control Power	Local Manual	See Manual Actions Below	NA	NA
	<u>RX WTR CLEANUP SYSTEM</u> Aux Pump Suction Isol Vlv. Pwr and Control Ckt (V-16-2)	Local Manual	R.B. 51' EL. South	303	NA
	Cleanup Inlet Isol Vlv. Pwr and Control Ckt (V-16-14)	Local Manual	R.B. 51' EL. South	303	NA
	High Press. Isol. Switch (PS-215-1044)	High Press. Isol SW (PS-IJ04A)	R.B. 75' EL. South	303	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE																		
R.B. 51' ELEV. (RB-FZ-1D) (cont'd)																							
Additional Manual Actions Required:																							
<p>1. If an EMRV is stuck open, then Containment Spray System must be started within 2 hours to prevent losing NPSH for the core spray and containment spray pumps:</p> <p>a. Containment Spray System II Containment Spray Pump 1-4 and ESW Pump 1-4 are designated for use during hot shutdown with an EMRV stuck open. System I may still be used if its components are operable and accessible. However, no emergency lighting is provided for System I.</p> <p>b. Operation of the following valves can be performed locally for the Containment Spray System if necessary. However prior to manually operating the valve, open its supply breaker on MCC 1B21B for System II or on MCC 1A21B for System I.</p> <table border="0"> <tr> <td>- <u>Drywell Spray Valve</u></td><td>V-21-5 (Sys II)</td><td>V-21-11 (Sys I)</td></tr> <tr> <td>Location:</td><td>V-21-5 RB 23' East</td><td>V-21-11 RB 51' East</td></tr> <tr> <td>Required Position:</td><td>Closed</td><td></td></tr> <tr> <td>- <u>TORUS CLG Discharge Valve</u></td><td>V-21-13 (Sys II)</td><td>V-21-17 (Sys I)</td></tr> <tr> <td>Location:</td><td>V-21-13 RB 23' South</td><td>V-21-17 RB 23' North</td></tr> <tr> <td>Required Position:</td><td>Open</td><td></td></tr> </table> <p>c. Emergency lighting to operate the System II TORUS CLG Discharge Valve, V-21-13, is located near the drywell wall across from the railroad airlock door. This assembly consists of a portable DC light attached to an emergency lighting battery by 40' of cable. If needed, this cable is unwound and the light is used to gain access to the valve and illuminate the valve for operation. Two operators will be required to operate this valve if emergency lighting is required.</p>						- <u>Drywell Spray Valve</u>	V-21-5 (Sys II)	V-21-11 (Sys I)	Location:	V-21-5 RB 23' East	V-21-11 RB 51' East	Required Position:	Closed		- <u>TORUS CLG Discharge Valve</u>	V-21-13 (Sys II)	V-21-17 (Sys I)	Location:	V-21-13 RB 23' South	V-21-17 RB 23' North	Required Position:	Open	
- <u>Drywell Spray Valve</u>	V-21-5 (Sys II)	V-21-11 (Sys I)																					
Location:	V-21-5 RB 23' East	V-21-11 RB 51' East																					
Required Position:	Closed																						
- <u>TORUS CLG Discharge Valve</u>	V-21-13 (Sys II)	V-21-17 (Sys I)																					
Location:	V-21-13 RB 23' South	V-21-17 RB 23' North																					
Required Position:	Open																						
<p>2. It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:</p> <ul style="list-style-type: none"> • Open V-15-237 • Throttle V-15-30 for desired flow on FI-225-2 • Close V-15-52 																							
<p>3. Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).</p>																							

Attachment ABN-29-1
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R.B. 23' ELEV. (RB-FZ-1E)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #1 – "B" Isolation Condenser, "B" CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-IA94B, Rx. Pressure Ind. PI-622-850, Offsite Pwr available				
GU 3E-911-41-043	Cold Shutdown Path #3 - 2 EMRV's (with repairs), Core Spray Pumps, Containment Spray Pump (with repairs), ESW pump, Fuel Zone Level Ind. LI-IA94B, Rx. Pressure Ind. PI-622-850, Rx Wide Range Lvl Ind LI-IA13, Torus Water Temperature Ind (with repairs) and Torus Level Indicator LI-IP10B				
NOTE: This 'Cold Shutdown' Path utilizes 'Alternate Decay Heat Removal' per procedure 2000-OPS-3024.27, Section 4.4 to approach the Cold Shutdown condition (Core Spray, Containment Spray in Torus Cooling, and EMRV's). It may be necessary to perform repairs on affected equipment as identified in the list below.					
<u>Prompt Manual Actions:</u>					
NOTE: These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.					
1)	During a fire condition on the 23' elevation of the Reactor Building (RB-FZ-1E), the possibility exists that hot shorts will develop in the EMRV cabling such that 125 VDC from an external source will be supplied to an EMRV, causing it to fail open. This spuriously opened EMRV will be reclosable using the normal EMRV control switch on 1F/2F.				
<u>CAUTION:</u>	The following action is required to preclude or terminate a spuriously opened EMRV. This action will disable the ADS, High Pressure and manual controls associated with the EMRV's. If the EOP's require the use of the EMRV's, the disable switches can be returned to the normal position.				
<u>IF</u>	One or more EMRV's exhibit abnormal or spurious operation,				
	<u>OR</u>				
	There are insufficient indications available to determine the status of an EMRV.				
<u>THEN</u>	Ensure the reactor is scrammed in accordance with ABN-1 "Reactor Scram",				
	<u>AND</u>				
	Place the disable switch on the rear of panel 1F/2F to the "DISABLE" position for those EMRV's affected.				

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 23' ELEV.- RB-FZ-1E (Cont'd)					
<u>Prompt Manual Actions (cont'd):</u>					
2) <u>NOTE:</u> The Reactor Recirculation pump control circuits are located in this fire zone and they have to be tripped to utilize the Fuel Zone Level Indicators.					
<u>IF</u> The Reactor Recirculation Pumps won't trip from the control room,					
<u>THEN</u> trip and locked out (69 switch) locally at their respective switchgear provided that these pumps are not required					
3) <u>IF</u> Instrument Air is lost,					
<u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 17.4 ft in the CST may be required for isolation condenser shell makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>CRD HYDRAULIC SYSTEM</u> CRD Flow to Rx Indication (FI-RD36)	Local Gage (FI-225-998)	RB 51' EL, SE	302.1	NA
	<u>CORE SPRAY SYSTEM I</u> Booster Pump "C" (NZ03C)	Booster Pump "A" (NZ03A)	C.R. Panel 1F/2F	308	NA
	"A" Pump Suct Vlv (V-20-3)	Local Manual	RB -19' EL, NW	308	NA
	"C" Pump Suct Vlv (V-20-32)	Local Manual	RB -19' EL, NW	308	NA
	Parallel Vlv (V-20-40)	Local Manual	RB 51' EL, NW	308	NA
	Booster Pmp Diff Press Sw (DPS-RV40A)	PI-RV43A	1F/2F	308	NA
	<u>CORE SPRAY SYSTEM II</u> Booster Pumps "B", "D"	None	NA	308	NA
	Power Ckts (NZ03B,D)	Local Manual	RB -19' EL, SW	308	NA
	Core Spray Pump Suction Vlv Power and Control Ckts (V-20-4,33)	Local Manual	RB 75' EL, South	308	NA
	Parallel Vlv Power and Ckts (V-20-21, 41)	Local Gage (PI-RV40B)	RB 23' EL, South	308	NA
	Booster Pump Disch. Press Ind. (PI-RV43B) and Diff Press Sw (DPS-RV40B & D)				
	<u>"A" ISOLATION CONDENSER</u> AC Stm Isol Vlv Power and Control Ckt (V-14-30)	Local Manual	RB 75' EL, East	307	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>"A" ISOLATION CONDENSER</u> (cont'd)				
	DC Strm Isol Vlv Power & Control Ckt (V-14-31)	Local Manual	RB 75' EL, East	307	NA
	AC Cond Rtn. Vlv Power & Control Ckt (V-14-36)	None	NA	307	NA
	DC Cond Rtn. Vlv Power & Control Ckt (V-14-34)	Local Manual	RB 75' EL, East	307	NA
	<u>"B" ISOLATION CONDENSER</u>				
	AC Cond. Rtr Isol Vlv Power Ckt (V-14-37)	None	Drywell	307	NA
	DC Steam Line Vlv Control & Ind (V-14-33)	Local Manual	RB 75' EL, East	307	NA
	DC Cond. Vlv Control & Ind (V-14-35)	Local Manual	RB 75' EL, East	307	NA
	<u>ELECTROMATIC RELIEF VALVES</u>				
	EMRV "A" Control Ckt	EMRV "A" Disable Swt	Rear CR PNL 1F/2F	301	NA
	EMRV "B" Control Ckt	EMRV "B" Disable Swt	Rear CR PNL 1F/2F	301	NA
	EMRV "C" Control Ckt	EMRV "C" Disable Swt	Rear CR PNL 1F/2F	301	NA
	EMRV "D" Control Ckt	EMRV "D" Disable Swt	Rear CR PNL 1F/2F	301	NA
		Temporary Control & Indication for NR108D	NA	Repair Procedures	2400-APR- 3411.01 2400-APR- 3411.03 2400-APR- 3411.04

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R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>ELECTROMATIC RELIEF VALVES</u> (cont'd) EMRV "E" Control Ckt	EMRV "E" Disable Swt Temporary Control & Indication for NR108E	Rear CR Pnl 1F/2F NA	301 Repair Procedures	NA 2400-APR- 3411.02 2400-APR- 3411.01 2400-APR- 3411.04

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R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>SHUTDOWN COOLING SYS.</u>				
	"A" SDC Pump Pwr and Control Ckt	LSP-1A2	"A" 480V Swg. Room	305, 346	NA
	"B" SDC Pump Pwr and Control Ckt	RSP	"B" 480V Swg. Room	305, 346	NA
	"C" SDC Pump Pwr and Control Ckt	None	NA	305	NA
	"A" Loop Suct Vlv Pwr & Control Ckt (V-17-1)	Local Manual	SDC Room	305	NA
	"B" Loop Suct Vlv Pwr & Control Ckt (V-17-2)	Local Manual	SDC Room	305	NA
	"C" Loop Suct Vlv & Control Ckt (V-17-3)	Local Manual	SDC Room	305	NA
	"A" Loop Disch Vlv Pwr & Control Ckt (V-17-55)	Local Manual	SDC Room	305	NA
	"B" Loop Disch Vlv Pwr & Control Ckt (V-17-56)	Local Manual	SDC Room	305	NA
	"C" Loop Disch Vlv Pwr & Control Ckt (V-17-57)	Local Manual	SDC Room	305	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>SHUTDOWN COOLING SYS.</u> (cont'd)				
	SDC Sys Outlet Isol Vlv Pwr & Control Ckt (V-17-54)	LSP-1AB2	RB 23' EL., NE	305, 346	NA
	SDC Sys Inlet Isol Vlv Pwr & Control Ckt (V-17-19)	LSP-1AB2	RB 23' EL., NE	305, 346	NA
	Loop Disch Press Ind (PI-RV09 A, B, C)	Local Gages (PIT-RV06, A,B,C)	SDC Room	305	NA
	<u>Rx LEVEL/PRESS INSTR.</u>				
	Fuel Zone Lvl "C", "D" (LI-622-1001, 1002)	Fuel Zone Lvl "A", "B" (LI-IA-94A, B)	C.R. Pnl 5F/6F	410	NA
	Fuel Zone Press "C", "D" (PI-622-999, 1000)	Fuel Zone Press "A" "B" (PI-622-849,850)	C.R. Pnl 5F/6F	410	NA
	<u>CONTAINMENT INSTR.</u>				
	Torus Temp Ind. (TI-664-43 A & B)	TE-644-30B or TE-664-33B	Control Room Panel 19R SS1 TI-664-42B	Repair Procedure	2400-APR- 3228.02
	<u>RBCCW SYSTEM</u>				
	1-1 RBCCW Pump Pwr Ckt	None	NA	309.2	NA
	1-2 RBCCW Pump Pwr Ckt	None	NA	309.2	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>RBCCW SYSTEM</u> (Cont'd) RBCCW from DW Isol Vlv (V-5-167) Pwr & Control Ckt	Local Manual	RB 23' EL., East	309.2	NA
	SDC heat Exchangers Outlet Vlv. (V-5-106) Power & Control Ckt	Local Manual	SDC Room	305	NA
	<u>CONTAINMENT SPRAY SYS.</u> Cont Spray Pump 1-1 (51-A)	None	NA	310	NA
	Cont Spray Pump 1-2 (51-B)	None	NA	310	NA
	Cont Spray Pump 1-3 (51-C)	Repair Pwr Feeder Use Local Control At USS 1B2	"B" 480V Swgr Room	310	2400-APR- 3214.01
	Cont Spray Pump 1-4 (51-D)	Repair Pwr Feeder Use Local Control At USS 1B2	"B" 480V Swgr Room	310	2400-APR- 3214.01
	51A Pump Suct Vlv (V-21-9)	Local Manual	RB-19' EL., NE	310	NA
	51B Pump Suct Vlv (V-21-7)	Local Manual	RB-19' EL., NE	310	NA
	51C Pump Suct Vlv (V-21-1)	Local Manual	RB-19' EL., NE	310	NA
	51D Pump Suct Vlv (V-21-3)	Local Manual	RB-19' EL., NE	310	NA
	Sys I DW Spray Isol Vlv (V-21-11)	Local Manual	RB-19' EL., NE	310	NA
	Sys I Torus CLG Discharge Vlv (V-21-17)	Local Manual	RB-23' EL., N	310	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>CONTAINMENT SPRAY SYS.</u> (Cont'd)				
	Sys II DW Spray Isol Vlv (V-21-5)	Local Manual	RB-23' EL., SE	310	NA
	Sys II TORUS CLG Discharge Vlv (V-21-13)	Local Manual	RB-23' EL., South	310	NA
	Sys I, Sys II Flow Ind (FT-IPO3 A, B)	None	NA	310	NA
	<u>EMERG SERV WTR. SYS.</u>				
	ESW Disch Vlv., Sys I (V-3-88)	Local Manual	RB 23' EL., North	310	NA
	ESW Disch Vlv., Sys II (V-3-87)	Local Manual	RB 23' EL., South	310	NA
	<u>ELECTRICAL DISTRIBUTION</u>				
	MCC 1A21A	None	NA	338	NA
	MCC 1A21B	None	NA	338	NA
	MCC 1B21A	None	NA	338	NA
	MCC 1B21B	None	NA	338	NA
	MCC 1AB2	None	NA	339	NA
	MCC DC-1	None	NA	340.1	NA
	<u>RECIRC SYSTEM</u>				
	Recirc Pump Disch Vlv NG03E (V-37-54) Power And Control Ckt	LSP-1AB2	RB 23' EL., NE	301, 305, 346	NA
	<u>REACTOR CLEANUP SYSTEM</u>				
	Inlet Isol Vlv (V-16-1)	RWCU Aux Relay Pnl. (ER-215-087)	A/B Battery Room	303	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. 23' ELEV. (RB-FZ-1E) (cont'd)	<u>MSIV's</u> Inner MSIV (North) (NS03A)	Outer MSIV (North) (NS04A)	C.R. Pnl 11F	301	NA
	Inner MSIV (South) (NS03B)	Outer MSIV (South) (NS04B)	C.R. Pnl 11F	301	NA

Manual Action Required:

- (1) CRD Bypass Valves V-15-30 and V-15-237 can be manually opened and V-15-52 closed after the Fire is extinguished if RPV Makeup is required using the CRD pumps. Note that FI-225-998 can be used for flow indication.
- (2) Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).
- (3) IF V-20-41 has to be manually opened,

THEN It will be necessary to de-energize MCC 1AB2 by opening VMCC 1B2, Unit C01 and VMCC 1A2, Unit B02 to prevent future spurious operations of the valve.
- (4) IF V-20-4, V-21-1 (or V-21-3) and V-21-13 have to be manually opened and V-21-5 has to be manually closed,

THEN It will be necessary to de-energize MCC 1B21A & 1B21B by opening supply breakers B01 and D01 at MCC 1B21 to prevent future spurious operations of the valves.

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R.B. -19' ELEV. NORTHWEST (RB-FZ-1F3)	<u>CRD HYDRAULIC SYSTEM</u>				
	"A" CRD Pump (NCO8B)	None	NA	302.1	NA
	"B" CRD Pump (NCO8B)	None	NA	302.1	NA
	<u>RBCCW SYSTEM</u>				
	Disch Hdr Press (PT-IA18)	Local Gages PI-50, 51	RB 51' EL East on Pump Disch Pipes	309.2	NA
	<u>CORE SPRAY SYSTEM I</u>				
	"A" Core Spray Pump (NZ01A)	None	NA	308	NA
	"C" Core Spray Pump (NZ01C)	None	NA	308	NA
	"A" Pump Suction Vlv. (V-20-3)	Local Manual	RB -19' EL NW	308	NA
	"C" Pump Suction Vlv. (V-20-32)	Local Manual	RB -19' EL NW	308	NA
	Main Pump Disch. Press. Ind. (PI-RV04A)	Local Gages (PIT-RV03A,PI-29A,C)	RB -19' EL NW	308	NA
	<u>Rx LEVEL/PRESS INSTR.</u>				
	Fuel Zone Lvl "C" "D" (LI-622-1001, 1002)	Fuel Zone Lvl "A", "B" (LI-IA94 A, B)	CR Pnl 5F/6F	410	NA
	Fuel Zone Press "C" "D"	Fuel Zone Press "A",	CR Pnl 5F/6F	410	NA
	<u>CONTAINMENT INST.</u>				
	Torus Level Indication (LT-IP-09 A, B)	Wide Range Torus Level (LT-37, 38)	CR Pnl 16R	412.1	NA

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R.B. -19' ELEV. SOUTHWEST (RB-FZ-1F2)	<u>CORE SPRAY SYSTEM II</u>				
	"B" Core Spray Pump (NZ01B)	None	NA	308	NA
	"D" Core Spray Pump (NZ01D)	None	NA	308	NA
	"A" Pump Suction Vlv. (V-20-3)	Local Manual	R.B. -19' EL., NW	308	NA
	"B" Pump Suction Vlv. (V-20-4)	Local Manual	R.B. -19' EL., SW	308	NA
	"C" Pump Suction Vlv. (V-20-32)	Local Manual	R.B. -19' EL., NW	308	NA
	"D" Pump Suction Vlv. (V-20-33)	Local Manual	R.B. -19' EL., SW	308	NA
	Main Pump Disch. Press. Ind. (PI-RV04B)	Local Manual (PIT-RV03B,PI-29B,D)	R.B. -19' EL., SW	308	NA
R.B. -19' ELEV. TORUS ROOM (RB-FZ-1F5)	<u>CORE SPRAY SYSTEM II</u>				
	"B" Core Spray Pump (NZ01B)	None	NA	308	NA
	"D" Core Spray Pump (NZ01D)	None	NA	308	NA
	<u>CONTAINMENT INSTR.</u> Torus Temp Indications (TI-664-43 A & B)	None	NA	NA	NA
R.B. -19' ELEV. NORTHEAST (RB-FZ-1F4)	<u>CONTAINMENT SPRAY SYS I</u>				
	Cont Spray Pump 1-1 (51A)	None	NA	310	NA
	Cont Spray Pump 1-2 (51B)	None	NA	310	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. -19' ELEV. NORTHEAST (cont'd) (RB-FZ-1F4)	<u>CONTAINMENT SPRAY SYS I</u> 51A Pump Suct Vlv. (V-21-9)	Local Manual	RB -19' EL, NE	310	NA
	51B Pump Suct Vlv. (V-21-7)	Local Manual	RB -19' EL, NE	310	NA
R.B. -19' ELEV. SOUTHEAST (RB-FZ-1F1)	<u>CONTAINMENT SPRAY SYS II</u> Cont Spray Pump 1-3 (51C)	None	NA	310	NA
	Cont Spray Pump 1-4 (51D)	None	NA	310	NA
	51C Pump Suct Vlv (V-21-1)	Local Manual	R.B. -19' EL, SE	310	NA
	51D Pump Suct Vlv (V-21-3)	Local Manual	R.B. -19' EL, SE	310	NA

References:

GU 3E-911-41-040 (Hot Shutdown Path #1 for RB-FZ-1F)
GU 3E-911-41-042 (Cold Shutdown Path #1 for RB-FZ-1F)

Manual Action Required:

- (1) For a Fire in RB-FZ-1F3, RPV makeup can be provided from the Condensate Storage Tank (if required) by manually opening Core Spray Supply Valve V-20-1 and Core Spray Condensate Transfer Valve V-20-2 and manually closing Core Spray Torus Suction Valve V-20-4 so that Core Spray System II train B pump suction is aligned to the condensate storage tank. If Core Spray suction valve V-20-4 cannot be positioned using remote control switch on Panel 1F/2F, turn off breaker at MCC 1B21A and position valve manually.
- (2) For a fire in RB-FZ-1F1, -1F2, -1F4 or -1F5, RPV makeup can be provided (if required using the CRD pumps by manually opening CRD bypass valves V-15-30 (throttle) and V-15-237 while closing V-15-52 (if necessary).
- (3) IF Instrument Air is lost,

THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
R.B. SDC ROOM (RB-FZ-1G)	<u>SHUTDOWN COOLING SYSTEM</u>				
	"A" SDC Pump	LSP-1A2	"A" 480V Swgr. Rm.	305, 346	NA
	"B" SDC Pump	RSP	"B" 480V Swgr. Rm.	305, 346	NA
	"C" SDC Pump	None	NA	305	NA
	"A" Loop Suct Vlv (V-17-1)	Local Manual	SDC Room	305	NA
	"B" Loop Suct Vlv (V-17-2)	Local Manual	SDC Room	305	NA
	"C" Loop Suct Vlv (V-17-3)	Local Manual	SDC Room	305	NA
	"A" Loop Disch Vlv (V-17-55)	Local Manual	SDC Room	305	NA
	"B" Loop Disch Vlv (V-17-56)	Local Manual	SDC Room	305	NA
	"C" Loop Disch Vlv (V-17-57)	Local Manual	SDC Room	305	NA
	Loop Disch Press Ind (PI-RV09 A, B, C)	Local Gages (PIT-RV06 A, B, C)	SDC Room	305	NA
	High Suct Temp. Pump Trip Temp Switches (TS-42 A, B, C)	None	SDC Room	305	NA
	Low Suct Press Pump Trip Press Switches (PS-43 A, B, C)	None	SDC Room	305	NA
References: GU 3E-911-41-040 (Hot Shutdown Path #1 for RB-FZ-1G) GU 3E-911-41-043 (Cold Shutdown Path #3 for RB-FZ-1G) NOTE: This 'Cold Shutdown' Path utilizes 'Alternate Decay Heat Removal' per procedure 2000-OPS-3024.27, Section 4.4 to approach the Cold Shutdown condition (Core Spray, Containment Spray in Torus Cooling, and EMRV's). It may be necessary to perform repairs on affected equipment as identified in the matrix. Manual Action Required: (1) <u>IF</u> Instrument Air is lost, <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 17.4 ft in the CST may be required for isolation condenser shell side makeup. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TRUNNION ROOM (RB-FZ-1H)	<u>MSIVs</u> Outer MSIV (North) (NS04A)	Inner MSIV (North) (NS03A)	C.R. Pnl 11F	301	NA
	Outer MSIV (South) (NS04B)	Inner MSIV (South) (NS03B)	C.R. Pnl 11F	301	NA

References:

GU 3E-911-41-040 (Hot Shutdown Path #1 for RB-FZ-1H)
GU 3E-911-41-042 (Cold Shutdown Path #1 for RB-FZ-1H)

Manual Action Required:

(1) IF Instrument Air is lost,

THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
4160 SWGR RM 1C (TB-FA-3A)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #1 – “B” Isolation Condenser, “B” CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, Offsite Pwr available				
GU 3E-911-41-042	Cold Shutdown Path #1 – “B & C” SDC Pumps, “B” CRD, RBCCW, Service Water Pumps, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000 and Reactor Wide range level indicator LI-IA13				
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.					
1) Confirm scram was completed in control room, if a scram was deemed necessary.					
2) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air.					
<u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost,					
<u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 30 minutes) to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST (check local indicator if necessary) may be required for isolation condenser shell and reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					
3) <u>CAUTION:</u> If CO ₂ was discharged, TB-FA-3B (4160V Swgr 1D) is also affected due to a common discharge header. Therefore, Self Contained Breathing Apparatus (SCBA) will be required for actions at the 4160V Swgr. 1D.					
Prior to Reactor Pressure decreasing to 310 psig, perform the following to prevent the core spray pumps from injecting, provided these pumps are not required to assure adequate core cooling:					
a) From the control Room, trip 4160V 1A Switchgear incoming breakers 1A and S1A to de-energize the 1C 4160V Switchgear to stop Core Spray Pumps NZ01A and NZ01D.					
b) At the diesel building, trip EDG-1 output breaker and place EDG-1 mode switch in ‘stop’ to stop Core Spray Pumps NZ01A and NZ01D.					
c) Open the breakers on 4160V Swgr. 1D for Core Spray Pumps NZ01B and NZ01C, and place 69-permissive switches in ‘trip’					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
4160 SWGR RM 1C (TB-FA-3A) (cont'd)	<u>ELEC. SWGR</u> 4160V Bus 1C 125V DC Control Power to 4160V Bus 1C from 125V DC Bus "C"	None None	NA NA	337 340.3	NA NA
	#1 EDG Control Circuits DG-1 Breaker Control Circuits	None None	NA NA	NA NA	NA NA
	<u>CORE SPRAY SYSTEM</u> "B" Core Spray Pump Control Ckt (NZ01B)	Local Breaker Oper. (see man act below)	4160V Swgr. 1D	308	NA
	"C" Core Spray Pump Control Ckt (NZ01C)	Local Breaker Oper. (see man act below)	4160V Swgr. 1D	308	NA
	<u>EMER. SERV WTR SYS</u> "C" ESW Pump Control Ckt (52C)	None	NA	310	NA
	"D" ESW Pump Control Ckt (52D)	None	NA	310	NA
	<u>RBCCW/SERV. WTR SYSTEM</u> RBCCW Disch. Hdr. Press Ind. (PT-1A18)	Local Gages (PI-50, 51)	RB 51' EL, East on Pump Disch. Pipes Intake Structure	309.2	NA
	Serv. Wtr. Disch Hdr. Press. (PT-6)	Local Gages (PI-50, 30)		322	NA
	#2 RBCCW Pump Control Ckt.	Local bkr operation (USS 1B2)	'B' 480V Room	309.2	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
4160 SWGR RM 1C (TB-FA-3A) (cont'd)					
Additional Manual Actions Required:					
(1) It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:					
<ul style="list-style-type: none"> • Open V-15-237 • Throttle V-15-30 for desired flow on FI-225-2 • Close V-15-52 					
(2) Cable failures may cause VACP-1 to trip.					
<u>IF</u> CST level indication (5F-27), RBCCW Pressure Indication (13R-63) and/or Service Water Pressure Indication (5F-60) are lost in the control room.					
<u>THEN</u> Read all indicators locally					
<u>AND</u> (when time permits)					
Open all load breakers on VACP-1 and re-close VMCC 1B2 breaker compartment C2R and then re-close VACP-1 breaker 21 for the required indicators. Note that the breakers 16, 23, 25 & 26 on VACP-1 are not needed and should remain open to isolate the cable failures.					
(3) Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).					
(4) <u>IF</u> the C battery charger is not available					
<u>THEN</u> V-14-35 can be cycled for short-term operation (approximately 8 hours) but V-14-37 will have to be utilized for long-term operation of the Isolation Condenser with V-14-35 left open or manually cycle V-14-35.					
(5) RBCCW Pump 1-2 cable failure may cause a spurious pump trip.					
<u>IF</u> RBCCW Pump 1-2 spuriously trips					
<u>THEN</u> Remove trip fuses from breaker at USS 1B2 and re-close breaker.					
(6) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.					
<u>IF</u> V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F					
<u>THEN</u> Operate test plugs in Panel 3F per procedure 305, section 9.0.					

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Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
4160 SWGR RM 1D (TB-FA-3B)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #2 – “A” Isolation Condenser, “A” CRD Pump, Diesel Fire Pump (IC makeup), Fuel Zone Level Ind. LI-IA94A, Rx. Pressure Ind. PI-622-849, Offsite Pwr available				
GU 3E-911-41-042	Cold Shutdown Path #2 – “A” & (B or C) SDC Pumps, “A” CRD, RBCCW and Service Water Pumps, Fuel Zone Level Ind. LI-IA94A, Rx. Pressure Ind. PI-622-849 and Reactor Wide Range Level Indicator LI-IA13				
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual symptoms.					
1) Confirm scram was completed in control room, if a scram was deemed necessary.					
2) <u>CAUTION:</u> If CO ₂ was discharged, TB-FA-3A (4160V Swgr 1C) is also affected due to a common discharge header. Therefore, Self Contained Breathing Apparatus (SCBA) will be required for any actions at the 4160V Swgr. 1C.					
Prior to Reactor Pressure decreasing to 310 psig, perform the following to prevent the core spray pumps from injecting, provided these pumps are not required to assure adequate core cooling:					
a) From the control Room, trip 4160V 1B Switchgear incoming breakers 1B and S1B to de-energize the 1D 4160V Switchgear to stop Core Spray Pumps NZ01B and NZ01C.					
b) At the diesel building, trip EDG-2 output breaker and place EDG-2 mode switch in 'stop' to stop Core Spray Pumps NZ01B and NZ01C.					
3) Makeup to the Isolation Condensers may have to be provided by a Fire Diesel pump; valve lineup should be performed in accordance with Procedure 307 (close V-11-41 & 63 and open V-9-2099 & V-11-49).					
4) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air.					
<u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost,					
<u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 73 minutes) to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST (check local indicator if necessary) may be required for reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					

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Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
4160V SWGR RM 1D (TB-FA-3B) (cont'd)	<u>ELEC SWGR</u> #2 EDG Control Ckts. 4160V Bus 1D	LSP-DG2 None	#2 EDG Vault NA	341, 346 337	NA NA
	Feeder Breaker to USS 1B2 (1B2P)	LSP-1D	4160 Swgr Rm 1D	346	NA
	Feeder Breaker to USS 1B3 (1B3P)	LSP-1D	4160 Swgr Rm 1D	346	NA
	<u>SHUTDOWN CLG SYS.</u> Loop Inlet Isol Vlvs. (V-17-1, 2, 3)	Local Manual	SDC Room	305	NA
	Loop Outlet Isol. Vlvs. (V-17-55, 56, 57)	Local Manual	SDC Room	305	NA
	<u>RBCCW/SERV. WTR. SYS</u> SDC Hx Outlet Flow Control Vlv (V-5-106)	Local Manual	SDC Room	305, 309.2	NA
	RBCCW Disch. Hdr. Press Indic. (PT-1A18)	Local Gages (PI-50, 51)	RB 51' EI, East on Pump Dish Pipes	309.2	NA
	Serv. Wtr. Disch. Hdr. Press Indic. (PT-6)	Local Gage (PI-30)	Intake Structure	322	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>4160V. SWGR RM 1D (TB-FA-3B) (cont'd)</p> <p>Additional Manual Actions Required:</p> <p>(1) <u>IF</u> B battery charger is not available,</p> <p><u>THEN</u> V-14-34 can be cycled for short-term operation (approximately 3 hours) and then V-14-36 will have to be utilized for long-term operation of the Isolation Condenser with V-14-34 left open or manually cycle V-14-34.</p> <p>(2) It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:</p> <ul style="list-style-type: none"> • Open V-15-237 • Throttle V-15-30 for desired flow on FI-225-2 • Close V-15-52 <p>(3) Cable failures may cause VACP-1 to trip.</p> <p><u>IF</u> CST level indication (5F-27), RBCCW Pressure Indication (13R-63) and/or Service Water Pressure Indication (5F-60) are lost in the control room.</p> <p><u>THEN</u> Read all indicators locally AND (when time permits) Open all load breakers on VACP-1 and re-close VMCC 1B2 breaker compartment C2R and then re-close VACP-1 breaker 21 for the required indicators. Note that the breakers 16, 23, 25 & 26 on VACP-1 are not needed and should remain open to isolate the cable failures.</p> <p>(4). Recharge V-11-36 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).</p> <p>(5) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may be available in the FAN ONLY mode, provided vent dampers are manually opened.</p> <p>(6) <u>IF</u> V-5-106 has to be manually opened,</p> <p><u>THEN</u> Open its supply breaker on MCC 1B21A and then manually operate V-5-106.</p> <p>(7) <u>IF</u> USS 1B2 is not energized,</p> <p><u>THEN</u> Open USS 1B2M breaker and remove close fuses. Crosstie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this crosstie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service (local manual operation if necessary). In addition, ventilation will have to be restored to the B 480V Room by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or provide temporary ventilation IAW Procedure 331.</p>					

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Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURB. OPER. FLOOR (TB-FZ-11A)	NONE	N/A	N/A	N/A	N/A

References:

GU 3E-911-41-040 (Hot Shutdown Path #1 for TB-FZ-11A)
GU 3E-911-41-042 (Cold Shutdown Path #1 for TB-FZ-11A)

Manual Action Required:

(1) IF Instrument Air is lost,

THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>TURBINE BLDG LUBE OIL BAY (TB-FZ-11B)</p> <p><u>References:</u></p> <p>GU 3E-911-41-040 Hot Shutdown Path #1 – "A" Isolation Condenser, "B" CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-IA94B, Rx. Pressure Ind. PI-622-850, EDG-2</p> <p>GU 3E-911-41-042 Cold Shutdown Path #1 "B & C" SDC Pumps, "B" CRD, RBCCW and Service Water Pumps Fuel Zone Level Ind. LI-IA94B, Rx. Wide Range Level Indicator LI-IA13, Rx. Pressure Ind. PI-622-850.</p> <p><u>Prompt Manual Actions:</u></p> <p><u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.</p> <p>1) Confirm scram was completed in control room, if a scram was deemed necessary.</p> <p>2) From the control room, trip the feedwater pumps by taking their control switches to PTL (may not trip) and/or control flow utilizing the Feedwater Regulating Valves V-2-732, 733, 734, 735, and 736 provided that these pumps are not required.</p> <p>3) <u>NOTE:</u> The Reactor Recirculation control circuits are located in this fire zone and they have to be tripped to utilize the Fuel Zone Level Indicators. <u>IF</u> The Reactor Recirculation Pumps won't trip from the control room, <u>THEN</u> trip the pumps from their respective switchgear (4160V Busses 1A & 1B) and place their 69 permissive switches in the 'trip' position.</p> <p>4) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air. <u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost, <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 30 minutes) to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>TURBINE BLDG LUBE OIL BAY (Cont'd) (TB-FZ-11B)</p> <p>Prompt Manual Actions (cont'd):</p> <p>5) Prior to Reactor pressure decreasing to 310 psig, open the following breakers at their respective switchgear (place 69-permissive switches in 'trip' position on 4160V breakers, remove 'close' fuses on top right of associated 480V breaker cubicle), provided these pumps are not required to assure adequate core cooling:</p> <ul style="list-style-type: none"> a. Core Spray Booster Pumps NZ03A & NZ03D at 480V USS 1A2 (fuse puller at RSP padlock). b. Core Spray Booster Pumps NZ03B & NZ03C at 480V USS 1B2 (fuse puller at RSP padlock). c. Core Spray Pumps NZ01A & NZ01D at 4160V Swgr. 1C. d. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D. <p>6) <u>IF</u> power is lost to 4160V 1D Bus, USS 1B3 and/or MCC 1B32 and control from the control room is not available,</p> <p><u>THEN</u> Control them at their respective Local Shutdown Panel IAW Procedure 346</p> <ul style="list-style-type: none"> a. LSP-DG2 b. LSP-1D c. LSP-1B3 and confirm the feeder breaker to MCC 1B32 is closed d. LSP-1B32 <p>7) <u>NOTE:</u> If offsite power is lost at a latter time, then LSP-DG2 will have to be fully initiated using Procedure 346.</p> <p><u>IF</u> 1D 4160V Bus is being supplied by Offsite power,</p> <p><u>THEN</u> TRANSFER only the #1 Normal-Alternate switch to "Alternate" (partial initiation) on LSP-DG2 to isolate control room wiring and prevent spurious starting of EDG-2</p> <p>and</p> <p><u>IF</u> EDG-2 is already running,</p> <p><u>THEN</u> STOP EDG-2 by momentarily taking the mode switch to stop.</p> <p>8) When #2 EDG is supplying power to 4160V swgr. 1D, ensure that the feeder breaker on 4160V 1D unit D1 (from 4160V Bus 1B) is open and locked out (69-permissive switch in the 'trip' position) to prevent inadvertent paralleling of offsite power with the EDG due to a spurious actuation.</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>TURBINE BLDG LUBE OIL BAY (Cont'd) (TB-FZ-11B)</p> <p><u>Prompt Manual Actions</u> (cont'd):</p> <p>9) <u>NOTE:</u> A hot short on the 1D ammeter cable that runs to the control room can cause the 86/1D lockout relay to actuate which will either trip the EDG-2 breaker (if already closed) or will prevent the breaker from closing.</p> <p><u>IF</u> EDG-2 breaker trips or will not close (trips free) and 86/1D is picked up,</p> <p><u>THEN</u> Remove 86/1D fuse pair labeled FU-80 (UB) in switchgear 1D unit D1 and then reset the 86/1D lockout. Now that the trip signal on the EDG-2 breaker has been removed, the breaker can be closed.</p> <p>10) <u>IF</u> Control of USS 1B2M and B CRD pump is required from the RSP (partial initiation of RSP).</p> <p><u>THEN</u> Control USS 1B2M and B CRD pump from the RSP IAW the instructions below.</p> <ol style="list-style-type: none"> 1. Confirm feeder breaker 1B2P to USS 1B2 is closed. 2. Obtain key from the Padlock at the RSP. 3. Rotate keylock CRD and Breaker 1B2M Control Transfer Switch to Alternate. 4. Confirm closed USS main Breaker, 1B2M at RSP 5. Operate B CRD pump at RSP as required. 					

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TURBINE BLDG. LUBE OIL BAY (TB-FZ-11B)	<u>CORE SPRAY SYSTEM</u> "A" Core Spray Pump Control Ckt. (NZ01A)	Local Breaker Oper.	4160V Bus 1C	308	NA
	"C" Core Spray Pump Control Ckt. (NZ01C)	Local Breaker Oper.	4160V Bus 1D	308	NA
	"D" Core Spray Pump Control Ckt. (NZ01D)	Local Breaker Oper.	4160V Bus 1C	308	NA
	<u>CONDENSATE TRANSFER SYS</u> Cond. Trans. Pump 1-1	None	NA	316.1	NA
	Cond. Trans. Pump 1-2	LSP-1B32	Chlor. Bldg.	316.1, 346	NA
	Cond. Storage Tank Level (LT-35)	Local Gage (LI-424-993)	Cond. Stg. Tank	316.1	NA
	<u>EMER. SERV. WATER SYS</u> "A" ESW Pump Control Ckt. (52A)	Local Manual	4160V Swgr. 1C	310	NA
	"B" ESW Pump Control Ckt. (52B)	Local Manual	4160V Swgr. 1C	310	NA
	<u>RBCCW SYSTEM</u> RBCCW Disch. Header Press Indic. (PT-IA18)	Local Gages (PI-50, 51)	RB 51' El. East on Pump Disch. Piping	309.2	NA
	#2 RBCCW Pump Control Ckt.	Local bkr operation (USS 1B2)	'B' 480V Room	309.2	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA
	CONTROL ROD DRIVE 'B' CRD Pump	RSP	'B' 480V Room	302.1, 346	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURBINE BLDG. LUBE OIL BAY (TB-FZ-11B) (cont'd)	<u>ELECTRICAL DIST. SYS.</u>				
	EDG 1 Control Ckts.	None	NA	341	NA
	Brkr. 1C Control Ckt.	Local	1C Swgr.	337	NA
	Brkr. EC Control Ckt.	Local	1C Swgr.	337	NA
	EDG-2 Control Ckts.	LSP-DG2	#2 EDG Vault	341, 346	NA
	Brkr. 1D Control Ckt.	Local	1D Swgr.	337	NA
	Brkr. ED Control Ckt.	Local	1D Swgr.	337	NA
	Brkr. 1A1P Control Ckt.	Local	1C Swgr.	337	NA
	Brkr. 1A2P Control Ckt.	Local	1C Swgr.	337	NA
	Brkr. 1A3P Control Ckt.	Local	1C Swgr.	337	NA
	Brkr. 1A3M Control Ckt.	Local	USS 1A3	338	NA
	Brkr. 1A1M Control Ckt.	Local	USS 1A1	338	NA
	Brkr. 1B2P Control Ckt.	LSP-1D	"D" 4160V Swgr. Room	337, 346	NA
	Brkr. 1B3P Control Ckt.	LSP-1D	"D" 4160V Swgr. Room	337, 346	NA
	Brkr. 1B1P Control Ckt.	Local	1D Swgr	337	NA
	Brkr. 1B1M Control Ckt.	Local	USS 1B1	338	NA
	Brkr. 1B2M Control Ckt.	RSP	'B' 480V Room	346	NA
	Brkr. 1B3M Control Ckt.	LSP-1B3	Intake Structure	338, 346	NA
	Power Feeder and 125 vdc Cntrl Pwr to USS 1A2	None	NA	338, 340.3	NA
	480V Feeder to C1 & C2 Battery Chargers	None	NA	340.3	NA
	125 vdc Pwr Feeder to DC-2	None	NA	340.3	NA
	125 vdc Power Feeder to DC-F	None	NA	340.3	NA
	125 vdc Cntrl Pwr to Swgr 1B	Switch Cntrl pwr to DC-A	"B" 4160 Swgr Room	340.1	340.1
	Power Feeder to MCC 1B12	None	NA	338	NA
	VACP-1	None	NA	339	NA
	<u>SERVICE WATER SYSTEM</u>				
	Service Water Pump 1-1 Control Ckt.	None	Intake Structure	322	NA
	Service Water Pump 1-2 Control Ckt.	LSP-1B3	Intake Structure	322, 346	NA
	Service Water Header Press Indication (PT-6)	Local Gage (PI-30)	Intake Structure	322	NA

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURBINE BLDG. LUBE OIL BAY (TB-FZ-11B) (cont'd)	<u>VENTILATION SYSTEM</u> "A" 480V Swgr. Room HVAC Supply and Exhaust Fans Control	None	NA	328	NA
	"A" 480V Swgr. Room HVAC Dampers Control	None	NA	328	NA
	<u>FUEL ZONE LEVEL</u> "A", "B" Fuel Zone Level and "C", "D" Fuel Zone Level (Control Room Only)	"C", "D" Fuel Zone Level at RSP	"B" 480V Swgr. Room	346	NA

Additional Manual Actions Required:

- 1 It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:
 - Open V-15-237
 - Throttle V-15-30 for desired flow on FI-225-2
 - Close V-15-52
- 2 Trip the feedwater pumps from their respective switchgear, and place their 69-permissive switches in the 'trip' position when time permits to ensure feedwater isolation.
3. Recharge V-11-36 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).
4. If power is lost to "C" Battery Room HVAC fans from MCC 1A2, then ensure that the battery room door is opened within 31 hours to prevent a buildup of hydrogen.
5. RBCCW Pump 1-2 cable failure may cause a spurious pump trip.

If RBCCW Pump 1-2 spuriously trips, then Remove trip fuses from breaker at USS 1B2 and re-close breaker.
6. Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.

IF V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F
THEN Operate test plugs in Panel 3F per procedure 305, section 9.0.

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURB. BLDG.4160 SWGR RM "A" AND "B" SWGR RM (TB-FZ-11C)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #1 – "A" Isolation Condenser, "B" CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, EDG-2				
GU 3E-911-41-042	Cold Shutdown Path #1 – "B & C" SDC Pumps, "B" CRD, RBCCW and Service Water Pumps Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Wide Range Level Indicator LI-IA13, Rx. Pressure Ind. PI-622-999 & 1000.				
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.					
1) Confirm scram was completed in control room, if a scram was deemed necessary.					
2) From the control room, trip the feedwater pumps by taking their control switches to PTL (may not trip) and/or control flow utilizing the Feedwater Regulating Valves V-2-732, 733, 734, 735, and 736 provided that these pumps are not required.					
3) <u>NOTE:</u> The Reactor Recirculation pumps trip circuits are located in this fire zone and they have to be tripped to utilize the Fuel Zone Level Indicators. <u>IF</u> The Reactor Recirculation Pumps won't trip from the control room, <u>THEN</u> trip them manually by opening the field breakers for the MG sets at Pnl RY21 in the MG Set Room					
4) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air. <u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost, <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 30 minutes) to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST (check local indicator if necessary) may be required for isolation condenser shell and reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					
5) <u>CAUTION:</u> SCBA may be required to get to the 1D 4160V switchgear due to smoke. The closest SCBA is located in the Pretreatment Building (east side).					
When #2 EDG is supplying power to 4160V swgr. 1D, ensure that the feeder breaker on 4160V 1D unit D1 (from 4160V Bus 1B) is open and locked out (69-permissive switch in the 'trip' position) to prevent inadvertent paralleling of offsite power with the EDG due to a spurious actuation.					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURB. BLDG.4160 SWGR RM "A" AND "B" SWGR RM (TB-FZ-11C)					
Prompt Manual Actions (cont'd):					
6)	<p>NOTE: A hot short on the 1D ammeter cable that runs to the control room can cause the 86/1D lockout relay to actuate which will either trip the EDG-2 breaker (if already closed) or will prevent the breaker from closing.</p> <p>CAUTION: SCBA may be required to get to the 1D 4160V switchgear due to smoke. The closest SCBA is located in the Pretreatment Building (east side).</p> <p>IF: EDG-2 breaker trips or will not close (trips free) and 86/1D is picked up,</p> <p>THEN: Remove 86/1D fuse pair labeled FU-80 (UB) in switchgear 1D unit D1 and then reset the 86/1D lockout. Now that the trip signal on the EDG-2 breaker has been removed, the breaker can be closed.</p>				
7)	<p>Prior to Reactor pressure decreasing to 310 psig, open the following breakers at their respective switchgear (place their 69-permissive switches in 'trip' position on 4160V breakers, remove 'close' fuses on top right of associated 480V breaker cubicle), provided these pumps are not required to assure adequate core cooling:</p> <ul style="list-style-type: none"> a. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D. b. Core Spray Pumps NZ01A & NZ01D at 4160V Swgr. 1C. c. Core Spray Booster Pumps NZ03A & NZ03D at 480V USS 1A2 (fuse puller located at RSP padlock). 				
8)	<p>IF USS 1B3 is de-energized and cannot be controlled from the control room.</p> <p>THEN Use Local Shutdown Panel LSP-1B3 IAW Procedure 346 to control USS 1B3 and confirm MCC 1B32 feeder breaker is closed after power is restored.</p>				
9)	<p>IF Control of USS 1B2M and B CRD pump is required from the RSP (partial initiation of RSP).</p> <p>THEN Control USS 1B2M and B CRD pump from the RSP IAW the instructions below.</p> <ul style="list-style-type: none"> 1. Confirm feeder breaker 1B2P to USS 1B2 is closed. 2. Obtain key from the Padlock at the RSP. 3. Rotate keylock CRD and Breaker 1B2M Control Transfer Switch to Alternate. 4. Confirm closed USS main Breaker, 1B2M at RSP 5. Operate B CRD pump at RSP as required. 				

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURBINE BLDG. 4160V SWGR. RM. "A" AND "B" SWGR. ROOM (TB-FZ-11C)	<u>CORE SPRAY SYSTEM</u>				
	"A" Core Spray Pump Control Ckt. (NZ01A)	Local Brkr Operation	4160V Bus 1C	308	NA
	"B" Core Spray Pump Control Ckt. (NZ01B)	Local Brkr Operation	4160V Bus 1D	308	NA
	"C" Core Spray Pump Control Ckt. (NZ01C)	Local Brkr Operation	4160V Bus 1D	308	NA
	"D" Core Spray Pump Control Ckt. (NZ01D)	Local Brkr Operation	4160V Bus 1C	308	NA
	<u>EMER SERV WATER SYS</u>				
	"A" ESW Pump Control Ckt (52A)	None	NA	310	NA
	"B" ESW Pump Control Ckt (52B)	None	NA	310	NA
	"C" ESW Pump Control Ckt (52C)	None	NA	310	NA
	"D" ESW Pump Control Ckt (52D)	None	NA	310	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURBINE BLDG. 4160V SWGR. RM. "A" AND "B" SWGR. ROOM (TB-FZ-11C) (cont'd)	<u>SERVICE WATER SYSTEM</u> Service Water Pump 1-1 Control Ckt.	None	N/A	322	NA
	Service Water Pump 1-2 Control Ckt.	LSP-1B3	Intake Structure	322, 346	NA
	Service Water Hdr Press Indication (PT-6)	Local Gage (PI-30)	Intake Structure	322	NA
	<u>ELECTRICAL DIST. SYS.</u> #1 EDG Power and Control Ckt.	None	NA	341	NA
	#2 EDG Power Circuit (3 Hr. Fire Barrier)	None	NA	341, 346	NA (3 hr cable barrier)
	Power Feeder to Bus 1C	EDG #1	Control Room	337	NA
	Brkr 1C Control Ckt.	Local	1C Swgr.	337	NA
	Brkr 1A1P Control Ckt.	Local	1C Swgr.	337	NA
	Brkr 1A2P Control Ckt.	Local	1C Swgr.	337	NA
	Brkr 1A3P Control Ckt.	Local	1C Swgr.	337	NA
	Brkr 1A3M Control Ckt.	Local	USS 1A3	338	NA
	Power Feeder to Bus 1D	#2 EDG	Control Room	341,346	NA
	Brkr 1B1P Control Ckt.	Local	1D Swgr.	337	NA
	Brkr 1B2P Control Ckt.	LSP-1D	"D" 4160V Swgr. Room	337,346	NA
	Brkr 1B3P Control Ckt.	LSP-1D	"D" 4160V Swgr. Room	337,346	NA
	Brkr 1B2M Control Ckt.	RSP	'B' 480V Room	346	NA
	Brkr 1B3M Control Ckt.	LSP-1B3	Intake Structure	338,346	NA
	125V DC Dist Ctr. "C" Charger "C1" & "C2"	None	NA	340.3	NA
	125 vdc Power Feeder to DC-2	None	NA	340.3	NA
	125 vdc Power Feeder to DC-F	None	NA	340.3	NA
	125 vdc Cntrl Pwr to "1C" Swgr	None	NA	340.3	NA
	125 vdc Cntrl Pwr to USS 1A2	None	NA	340.3	NA
	125 vdc Cntrl Pwr to USS 1A3	None	NA	340.3	NA
	125 vdc Cntrl Pwr to "1A" Swgr	None	NA	340.3	NA
	125 vdc Cntrl Pwr to "1B" Swgr	Switch Cntrl Pwr to DC "A"	"B" 4160V Swgr Room	340.1	340.1
	<u>RBCCW SYSTEM</u> RBCCW Disch. Hdr Press Indication (PI-1A1B)	Local Gages (PI-50, 51)	RB 51' El. East on Pump Disch. Piping	309.2	NA
	RBCCW Pump 1-2	Breaker at USS 1B2	'B' 480V Swgr Room	309.2	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURBINE BLDG. 4160V SWGR. RM. "A" AND "B" SWGR. ROOM (TB-FZ-11C) (cont'd)	<u>FUEL ZONE LEVEL</u> "A", "B" Fuel Zone Level Indications	"C", "D" Fuel Zone Level Indications	CR Pnl 5F/6F or RSP ("B" 480V Swgr Rm)	410 346	NA NA
	CONTROL ROD DRIVE 'B' CRD Pump	RSP	'B' 480V Room	346	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Panel 3F	305	N/A

Additional Manual Actions Required:

- 1 It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:
 - Open V-15-237
 - Throttle V-15-30 for desired flow on FI-225-2
 - Close V-15-52
- 2 Cable failures may cause VACP-1 to trip.

IF CST level indication (5F-27), RBCCW Pressure Indication (13R-63) and/or Service Water Pressure Indication (5F-60) are lost in the control room.

THEN Read all indicators locally

AND (when time permits)

Open all load breakers on VACP-1 and re-close VMCC 1B2 breaker compartment C2R and then re-close VACP-1 breaker 21 for the required indicators. Note that the Service Water pressure indicator still may not be available due to potential cable failures on the instrument loop so this indicator may still need to be read locally. In addition, breakers 16, 23, 25 & 26 on VACP-1 are not needed and should remain open to isolate the cable failures.
3. Trip the Feedwater pumps from their respective switchgear if they are not required, and place their 69-permissive switches in the 'trip' position when time permits to ensure feedwater isolation.
4. Recharge V-11-36 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).
5. If power is lost to "C" Battery Room HVAC fans from MCC 1A2, then ensure that the battery room door is opened within 31 hours to prevent a buildup of hydrogen.
- 6 IF: #2 RBCCW Pump spuriously trips (USS 1B2)
 THEN: Remove the trip fuses for this pump at USS 1B2 and manually re-close the breaker.

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>TB-FZ-11C Manual Action Required (cont'd):</p> <p>7. IF: Breaker for #2 Service Water Pump may have to be controlled from LSP-1B3 and if it spuriously trips open (USS 1B3) THEN: Remove the trip fuses for this pump at USS 1B3 and manually re-close the breaker.</p> <p>8. Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.</p> <p>IF: V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F THEN: Operate test plugs in Panel 3F per procedure 305, section 9.0.</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURBINE BLDG. BASEMENT (TB-FZ-11D)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #1 – “A” Isolation Condenser or “B” Isolation Condenser (if DC-C does not trip), “B” CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, EDG-2				
GU 3E-911-41-042	Cold Shutdown Path #1 - “B & C” SDC Pumps, “B” CRD, RBCCW and Service Water Pumps Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Wide Range Level Indicator LI-IA13, Rx. Pressure Ind. PI-622-999 & 1000.				
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.					
1) Confirm scram was completed in control room, if a scram was deemed necessary.					
2) From the control room, trip the feedwater pumps by taking their control switches to PTL (may not trip) and/or control flow utilizing the Feedwater Regulating Valves V-2-732, 733, 734, 735, and 736 provided that these pumps are not required.					
3) <u>NOTE:</u> The Reactor Recirculation pump control and power cables are located in this fire zone and they have to be tripped to utilize the Fuel Zone Level Ind.					
<u>IF</u> The Reactor Recirculation Pumps won't trip from the control room,					
<u>THEN</u> trip the pumps from their respective switchgear (4160V Busses 1A & 1B) and place their 69 permissive switches in the 'trip' position.					
4) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air.					
<u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost,					
<u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 30 minutes) to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>TURBINE BLDG. BASEMENT (cont'd) (TB-FZ-11D)</p> <p><u>Prompt Manual Actions</u> (cont'd):</p> <p>5) <u>CAUTION:</u> SCBA may be required to get to the 1D 4160V switchgear due to smoke. The closest SCBA is located in the Pretreatment Building (east side).</p> <p>Prior to Reactor pressure decreasing to 310 psig, open the following breakers at their respective switchgear and place 69-permissive switches in 'trip' position, provided these pumps are not required to assure adequate core cooling:</p> <ul style="list-style-type: none"> a. Core Spray Pumps NZ01A & NZ01D at 4160V Swgr. 1C. b. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D. <p>6) <u>IF</u> power is lost to 4160V 1D Bus and/or USS 1B3 and control from the control room is not available,</p> <p><u>THEN</u> Control them at their respective Local Shutdown Panel IAW Procedure 346</p> <ul style="list-style-type: none"> a. LSP-DG2 b. LSP-1D c. LSP-1B3 and confirm the feeder breaker to MCC 1B32 is closed <p>7) <u>NOTE:</u> If offsite power is lost at a latter time, then LSP-DG2 will have to be fully initiated using Procedure 346.</p> <p><u>IF</u> 1D 4160V Bus is being supplied by Offsite power,</p> <p><u>THEN</u> TRANSFER only the #1 Normal-Alternate switch to "Alternate" (partial initiation) on LSP-DG2 to isolate control room wiring and prevent spurious starting of EDG-2</p> <p>and</p> <p><u>IF</u> EDG-2 is already running,</p> <p><u>THEN</u> STOP EDG-2 by momentarily taking the mode switch to stop.</p> <p>8) When #2 EDG is supplying power to 4160V swgr. 1D, ensure that the feeder breaker on 4160V 1D unit D1 (from 4160V Bus 1B) is open and locked out (69-permissive switch in the 'trip' position) to prevent inadvertent paralleling of offsite power with the EDG due to a spurious actuation. Confirm breakers D2 (USS 1B1), D4 (B Core Spray Pump), D6 (ESW Pump 52D), D8 (ESW Pump 52C) and D9 (C Core Spray Pump) are tripped and are locked out by placing their 69-permissive switches in the 'trip' position.</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>TURBINE BLDG. BASEMENT (cont'd) (TB-FZ-11D)</p> <p>Prompt Manual Actions (cont'd):</p> <p>9) <u>NOTE:</u> A hot short on the 1D ammeter cable that runs to the control room can cause the 86/1D lockout relay to actuate which will either trip the EDG-2 breaker (if already closed) or will prevent the breaker from closing.</p> <p><u>CAUTION:</u> SCBA may be required to get to the 1D 4160V switchgear room. The closest SCBA is located in the Pretreatment Building (east side).</p> <p><u>IE:</u> EDG-2 breaker trips or will not close (trips free) and 86/1D is picked up,</p> <p><u>THEN:</u> Remove 86/1D fuse pair labeled FU-80 (UB) in switchgear 1D unit D1 and then reset the 86/1D lockout.. Confirm breakers D2 (USS 1B1), D4 (B Core Spray Pump), D6 (ESW Pump 52D), D8 (ESW Pump 52C) and D9 (C Core Spray Pump) are tripped and are locked out by placing their 69-permissive switches in the 'trip' position prior to re-energizing the bus. Now that the trip signal on the EDG-2 breaker has been removed, the breaker can be closed.</p> <p>10) <u>IE</u> Control of USS 1B2M and B CRD pump is required from the RSP (partial initiation of RSP).</p> <p><u>THEN</u> Control USS 1B2M and B CRD pump from the RSP IAW the instructions below.</p> <ol style="list-style-type: none"> 1. Confirm feeder breaker 1B2P to USS 1B2 is closed. 2. Obtain key from the Padlock at the RSP. 3. Rotate keylock CRD and Breaker 1B2M Control Transfer Switch to Alternate. 4. Confirm closed USS main Breaker, 1B2M at RSP 5. Operate B CRD pump at RSP as required. 					

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TURBINE BLDG. BASEMENT (TB-FZ-11D) (cont'd)	<u>CORE SPRAY SYSTEM</u>				
	"A" Core Spray Pump Power and Control Ckt (NZ01A)	Local Brkr Operation	4160V Bus 1C	308	NA
	"B" Core Spray Pump Power and Control Ckt (NZ01B)	Local Brkr Operation	4160V Bus 1D	308	NA
	"C" Core Spray Pump Power and Control Ckt (NZ01C)	Local Brkr Operation	4160V Bus 1D	308	NA
	"D" Core Spray Pump Power and Control Ckt (NZ01D)	Local Brkr Operation	4160V Bus 1C	308	NA
	<u>EMERGENCY SERV WTR SYS</u>				
	"A" ESW Pump Power Feed & Control Ckt (52A)	None	NA	310	NA
	"B" ESW Pump Power Feed & Control Ckt (52B)	None	NA	310	NA
	"C" ESW Pump Power Feed & Control Ckt (52C)	None	NA	310	NA
	"D" ESW Pump Power Feed & Control Ckt (52D)	None	NA	310	NA
	<u>SERVICE WATER SYSTEM</u>				
	Service Water Pump 1-1 Control Ckt	None	NA	322	NA

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TURBINE BLDG. BASEMENT (TB-FZ-11D) (cont'd)	Service Water Pump 1-2 Control Ckt	LSP-1B3	Intake Structure	322, 346	NA
	Service Water Hdr Press Indication (PT-6)	Local Gage (PI-30)	Intake Structure	322	NA
	<u>FUEL ZONE LEVEL</u> "A", "B" Fuel Zone Level Indications	"C", "D" Fuel Zone Level Indications	CR Pnl 5F/6F or RSP("B" 480V Swgr Rm)	410 346	NA NA
	<u>ELECTRICAL DIST SYSTEM</u> EDG 1 Pwr and Control Ckts. EDG 2 Pwr and Control Ckts.	None LSP-DG2	NA #2 EDG Vault	341 341, 346	NA NA (Pwr has 1 hour fire barrier)
	Brkr 1C Control Ckts.	None	NA	337	NA
	Brkr EC Control Ckts.	None	NA	337	NA
	Brkr 1D Control Ckts.	None	NA	337	NA
	Brkr ED Control Ckts.	None	NA	337	NA
	Power Feeder to Bus 1C	None	NA	337	NA
	Power Feeder to USS 1A2	None	NA	337	NA
	Power Feeder to USS 1A3	None	NA	337	NA
	Brkr 1B2P Control Ckt.	LSP-1D	"D" 4160V Swgr Room	337, 346	NA
	Brkr 1B3P Control Ckt.	LSP-1D	"D" 4160V Swgr Room	337, 346	NA
	Brkr 1B3M Control Ckt.	LSP-1B3	Intake Structure	338, 346	NA
	125VDC Con Pwr to USS 1A3 from DC "B"	125VDC Control Power from DC "A"	480V USS 1A3	340.1	NA
	USS 1A1	None	NA	338	NA
	USS 1B1	None	NA	338	NA
	USS 1B2M	RSP	'B' 480 V Swgr Room	346	NA
	<u>RBCCW SYSTEM</u>				
	RBCCW Disch. Header Press Indication (PT-1A18)	Local Gages (PI-50, 51)	RB 51' EI, East on Pump Disch. Piping	309.2	NA
	RBCCW Pump 1-2	Local Bkr operation at USS 1B2	B' 480 V Swgr Room	309.2	NA

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TURBINE BLDG. BASEMENT (TB-FZ-11D) (cont'd)	<u>CONTROL ROD DRIVE</u>				
	'B' CRD Pump	RSP	'B' 480 V Swgr Room	346	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	N/A

Additional Manual Actions Required TB-FZ-11D

1) It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:

- Open V-15-237
- Throttle V-15-30 for desired flow on FI-225-2
- Close V-15-52

2) Cable failures may cause VACP-1 to trip.

IF CST level indication (5F-27), RBCCW Pressure Indication (13R-63) and/or Service Water Pressure Indication (5F-60) are lost in the control room.

THEN read all indicators locally

AND (when time permits)

Open all load breakers on VACP-1 and re-close VMCC 1B2 breaker compartment C2R and then re-close VACP-1 breaker 21 for the required indicators. Note that the breakers 16, 23, 25 & 26 on VACP-1 are not needed and should remain open to isolate the cable failures.

4). Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).

3) IF: the C battery charger is not available

THEN: V-14-35 can be cycled for short term operation (approximately 8 hours) but V-14-37 will have to be utilized for long term operation of the Isolation Condenser with V-14-35 left open or manually cycle V-14-35.

4). The Reactor Feedwater Pump and HP Heater outlet valve control circuits run through this area. Trip the Feedwater pumps at their respective switchgear, and place their 69-permissive switches in the 'trip' position to ensure feedwater isolation.

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>Additional Manual Actions Required TB-FZ-11D (cont'd):</p> <p>4) <u>IF</u>: #2 RBCCW Pump spuriously trips (USS 1B2)</p> <p><u>THEN</u>: Remove the trip fuses for this pump at USS 1B2 and manually re-close the breaker.</p> <p>5). Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.</p> <p><u>IF</u>: V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F</p> <p><u>THEN</u>: Operate test plugs in Panel 3F per procedure 305, section 9.0.</p>					

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
CONDENSER BAY (TB-FZ-11E)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #1 – “A” Isolation Condenser, “B” CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, EDG-2				
GU 3E-911-41-042	Cold Shutdown Path #1 – “B & C” SDC Pumps, “B” CRD, RBCCW and Service Water Pumps Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Wide Range Level Indicator LI-IA13, Rx. Pressure Ind. PI-622-999 & 1000.				
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.					
1) Confirm scram was completed in control room, if a scram was deemed necessary.					
2) From the control room, trip the feedwater pumps by taking their control switches to PTL (may not trip) and/or control flow utilizing the Feedwater Regulating Valves V-2-732, 733, 734, 735, and 736 and/or stop flow by closing V-2-10, V-2-11 and V-2-12 provided that these pumps are not required.					
3) <u>NOTE:</u> The Reactor Recirculation pumps circuits are located in this fire zone and they have to be tripped to utilize the Fuel Zone Level Indicators.					
<u>IF</u> The Reactor Recirculation Pumps won't trip from the control room,					
<u>THEN</u> trip the pumps from their respective switchgear (4160V Busses 1A & 1B) and place their 69 permissive switches in the 'trip' position.					
4) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air.					
<u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost,					
<u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 30 minutes) to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).					
5) Prior to Reactor pressure decreasing to 310 psig, open the following breakers at their respective switchgear (place their 69-permissive switches in 'trip' position on 4160V breakers, remove 'close' fuses on top right of associated 480V breaker cubicle), provided these pumps are not required to assure adequate core cooling:					
a. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D.					
b. Core Spray Pumps NZ01A & NZ01D at 4160V Swgr. 1C.					
c. Core Spray Booster Pumps NZ03A & NZ03D at 480V USS 1A2 (fuse puller located at RSP padlock).					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
CONDENSER BAY (TB-FZ-11E)					
<u>Prompt Manual Actions (Cont'd):</u>					
6) <u>IF</u> power is lost to 4160V 1D Bus, USS 1B3 and/or MCC 1B32 and control from the control room is not available,					
<u>THEN</u> Control them at their respective Local Shutdown Panel IAW Procedure 346					
a. LSP-DG2					
b. LSP-1D					
c. LSP-1B3 and confirm the feeder breaker to MCC 1B32 is closed					
d. LSP-1B32					
7) <u>NOTE:</u> If offsite power is lost at a latter time, then LSP-DG2 will have to be fully initiated using Procedure 346.					
<u>IF</u> 1D 4160V Bus is being supplied by Offsite power,					
<u>THEN</u> TRANSFER only the #1 Normal-Alternate switch to "Alternate" (partial initiation) on LSP-DG2 to isolate control room wiring and prevent spurious starting of EDG-2					
<u>AND</u>					
<u>IF</u> EDG-2 is already running,					
<u>THEN</u> STOP EDG-2 by momentarily taking the mode switch to stop.					
8) When #2 EDG is supplying power to 4160V swgr. 1D, ensure that the feeder breaker on 4160V 1D unit D1 (from 4160V Bus 1B) is open and locked out (69-permissive switch in the 'trip' position) to prevent inadvertent paralleling of offsite power with the EDG due to a spurious actuation.					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
CONDENSER BAY (TB-FZ-11E)					
<u>Prompt Manual Actions (Cont'd):</u>					
9) <u>NOTE:</u> A hot short on the 1D ammeter cable that runs to the control room can cause the 86/1D lockout relay to actuate which will either trip the EDG-2 breaker (if already closed) or will prevent the breaker from closing.					
<u>IF:</u> EDG-2 breaker trips or will not close (trips free) and 86/1D is picked up,					
<u>THEN:</u> Remove 86/1D fuse pair labeled FU-80 (UB) in switchgear 1D unit D1 and then reset the 86/1D lockout. Now that the trip signal on the EDG-2 breaker has been removed, the breaker can be closed.					
10) <u>IF</u> Control of USS 1B2M and B CRD pump is required from the RSP (partial initiation of RSP).					
<u>THEN</u> Control USS 1B2M and B CRD pump from the RSP IAW the instructions below.					
<ol style="list-style-type: none"> 1. Confirm feeder breaker 1B2P to USS 1B2 is closed. 2. Obtain key from the Padlock at the RSP. 3. Rotate keylock CRD and Breaker 1B2M Control Transfer Switch to Alternate. 4. Confirm closed USS main Breaker, 1B2M at RSP 5. Operate B CRD pump at RSP as required. 					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
CONDENSER BAY (TB-FZ-11E) (cont'd)	<u>CORE SPRAY SYSTEM</u>				
	"A" Core Spray Pump Power and Control Ckt (NZ01A)	Local Brkr Operation	4160V Bus 1C	308	NA
	"B" Core Spray Pump Control Ckt (NZ01B)	Local Brkr Operation	4160V Bus 1D	308	NA
	"C" Core Spray Pump Power and Control Ckt (NZ01C)	Local Brkr Operation	4160V Bus 1D	308	NA
	"D" Core Spray Pump Control Ckt (NZ01D)	Local Brkr Operation	4160V Bus 1C	308	NA
	<u>EMERGENCY SERV WTR SYS</u>				
	"A" ESW Pump Control Ckt (52A)	None	NA	310	NA
	"B" ESW Pump Control Ckt (52B)	None	NA	310	NA
	"C" ESW Pump Control Ckt (52C)	None	NA	310	NA
	"D" ESW Pump Control Ckt (52D)	None	NA	310	NA
	<u>CONDENSATE TRANSFER SYS</u>				
	Cond. Transfer Pump 1-1 Control Ckt	None	NA	316.1	NA
	Cond. Transfer Pump 1-2 Control Ckt	LSP-1B32	Chlor. Bldg.	316.1, 346	NA
	Cond. Stg. Tank Level Indication (LT-35)	Local Gage (LI-424-993)	Cond. Stg. Tank	316.1	NA

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
CONDENSER BAY (TB-FZ-11E) (cont'd)	<u>FUEL ZONE LEVEL</u> "A", "B" Fuel Zone Level Instruments	"C", "D" Fuel Zone Level Instruments	CR Pnl 5F/6F or RSP("B" 480V Swgr.Rm)	410 346	NA NA
	<u>SERVICE WATER SYSTEM</u> Service Wtr Pump 1-1 Control Ckt	None	NA	322	NA
	Service Wtr Pump 1-2 Control Ckt	LSP-1B3	Intake Structure	322, 346	NA
	Service Wtr Hdr Press Indication (PT-6)	Local Gage (PI-30)	Intake Structure	322	NA
	<u>MSIV'S</u> Outer MSIV (North) (NS04A)	Inner MSIV (North) (NS03A)	CR Pnl 11F	301	NA
	Outer MSIV (South) (NS04B)	Inner MSIV (South) (NS03B)	CR Pnl 11F	301	NA
	<u>ELECTRICAL DIST. SYS</u> EDG 1 Control Ckts	None	NA	341	NA
	EDG 2 Control Ckts	LSP-DG-2	#2 EDG Vault	341, 346	NA
	Brkr 1C Control Ckts	None	NA	337	NA
	Brkr 1B2P Control Ckts	LSP-1D	"D" 4160 Swgr Room	337, 346	NA
	Brkr 1B2M Control Ckts	RSP	"B" 480V Room	346	NA
	Brkr 1B3P Control Ckts	LSP-1D	"D" 4160 Swgr Room	337, 346	NA
	Brkr 1B3M Control Ckts	LSP-1B3	Intake Structure	338, 346	NA
	Power Feeder to DC-2	None	NA	340.3	NA
	Power Feeder to DC-F	None	NA	340.3	NA
	125 vdc Cntrl Pwr to Swgr 1B	Switch Cntrl to DC-A	"B" 4160V Swgr Room	340.1	340.1
	Brkr 1A1P Control Circuit	None	NA	337	NA
	Brkr 1A2P Control Circuit	None	NA	337	NA
	Brkr 1A3P Control Circuit	None	NA	337	NA
	Brkr 1A1M Control Circuit	None	NA	338	NA
	Brkr 1A3M Control Circuit	None	NA	338	NA
	VACP-1	None	NA	339	NA

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
CONDENSER BAY (TB-FZ-11E) (cont'd)	<u>CONTROL ROD DRIVE</u> "B" CRD Pump Control Circuit	RSP	"B" 480V Room	302.1, 346	NA
	#2 RBCCW Pump Control Ckt. RBCCW Press Ind (13R-63)	Local bkr op (USS 1B2) Local Gauge (PI-50A or 51A)	'B' 480V Room Intake Structure	309.2 309.2	NA NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA

Additional Manual Actions Required:

- It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:
 - Open V-15-237
 - Throttle V-15-30 for desired flow on FI-225-2
 - Close V-15-52
- The Reactor Feedwater Pump/valve control circuits run through this area. Trip the pumps at their respective switchgear, and place their 69-permissive switches in the 'trip' position to ensure feedwater system isolation,
- Recharge V-11-36 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).
- If power is lost to "C" Battery Room HVAC fans from MCC 1A2, then ensure that the battery room door is opened within 31 hours to prevent a buildup of hydrogen.
- Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.

IF: V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F

THEN: Operate test plugs in Panel 3F per procedure 305, section 9.0.

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
TB-FZ-11E Manual Action Required (cont'd):					
6.	<p><u>IF:</u> #2 RBCCW Pump spuriously trips (USS 1B2)</p> <p><u>THEN:</u> Remove the trip fuses for this pump at USS 1B2 and manually re-close the breaker.</p>				
7.	<p><u>IF:</u> Breaker for #2 Service Water Pump spuriously trips open (USS 1B3)</p> <p><u>THEN:</u> Remove the trip fuses for this pump at USS 1B3 and manually reclose the breaker.</p>				

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
FEED PUMP ROOM (TB-FZ-11F)	<u>CORE SPRAY SYS I</u>				
	"A" core spray pump power ckt (NZ01A)	None	NA	308	NA
	"C" core spray pump power ckt (NZ01C)	None	NA	308	NA
	<u>ELECTRICAL DISTR</u>				
	Brkr 1D control ckt	None	NA	337	NA
	125V DC control pwr to 4160V Bus 1D from DC-B	Control pwr from DC-A	4160V Swgr 1D	340.1	NA
	125V DC control pwr to 480V bus USS 1B3 from DC-B	Control pwr from DC-A	480V USS 1B3	340.1	NA
	<u>SHUTDOWN COOLING</u>				
	Loop Inlet Isol Vlvs (V-17-1,2,3)	Local Manual	SDC Room	305	NA
	Loop Outlet Isol Vlvs (V-17-55,56,57)	Local Manual	SDC Room	305	NA
	<u>RBCCW SYSTEM</u>				
	SDC HX Outlet Flow control Vlv (V-5-106)	Local Manual	SDC Room	305, 309.2	NA

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p><u>References:</u> FEED PUMP ROOM (TB-FZ-11F) (cont'd) GU 3E-911-41-040 (Hot Shutdown Path #2 for TB-FZ-11F) GU 3E-911-41-042 (Cold Shutdown Path #2 for TB-FZ-11F)</p> <p>Manual Action Required:</p> <p>(1) <u>IF</u> feedwater injection can not be terminated due to cable failures <u>THEN</u> trip the condensate pumps and if necessary, lower level using the EMRV's.</p> <p>(2) Prior to Reactor Pressure decreasing to 310 psig, open the breakers on 4160V Swgr. 1D and lockout by taking the 69 permissive switch to the "trip" position for Core Spray Pumps NZ01B and NZ01C provided these pumps are not required to assure adequate core cooling.</p> <p>(3) Makeup to the Isolation Condenser may have to be provided by a fire diesel pump and valve line-up should be done in accordance with the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49).</p> <p>(4) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may be available in the FAN ONLY mode, provided vent dampers are manually opened.</p> <p>(5) <u>IF</u> Instrument Air is lost, <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>(6) <u>IF</u> B battery charger is not available, <u>THEN</u> V-14-34 can be cycled for short term operation (approximately 3 hours) and then V-14-36 will have to be utilized for long term operation of the Isolation Condenser with V-14-34 left open or manually cycle V-14-34.</p> <p>(7) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.</p> <p><u>IF:</u> V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F <u>THEN:</u> Operate test plugs in Panel 3F per procedure 305, section 9.0.</p> <p>(8) <u>IF:</u> 'B' Battery Charger trips <u>THEN:</u> Restore Battery Charger to service per procedures 2000-OPS-3024.10C (125VDC Diagnostic & Restoration) and 340.1 (125VDC Distribution Systems A & B).</p> <p>(9) <u>IF</u> USS 1B2 is not energized, <u>THEN</u> Open USS 1B2M breaker and remove close fuses. Cross-tie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this cross-tie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service (local manual operation if necessary). In addition, ventilation will have to be restored to the B 480V Room by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or provide temporary ventilation IAW Procedure 331.</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>TB-FZ-11F</p> <p>Manual Action Required (cont'd):</p> <p>(10) <u>IF</u> V-5-106 has to be manually opened,</p> <p><u>THEN</u> Open its supply breaker on MCC 1B21A and then manually operate V-5-106.</p>					

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TURBINE BLDG. MEZZANINE SOUTH (TB-FZ-11G)	<u>CORE SPRAY SYSTEM</u>				
	"B" core spray pump control ckt (NZ01B)	Local Breaker operation	4160V Bus 1D	308	NA
	"C" core spray pump control ckt (NZ01C)	Local Breaker operation	4160V Bus 1D	308	NA
	<u>EMER SERV WTR SYSTEM</u>				
	"C" ESW pump (52C) control ckt	None	NA	310	NA
	"D" ESW pump (52D) control ckt	None	NA	310	NA
	<u>RBCCW/SERV WTR SYS</u>				
	RBCCW disch hdr press indication (PT-1A18)	Local gages (PI-50, 51) LSP-1B3	RB 51"EI, East on pump disch piping	309.2	NA
	Serv wtr pump 1-2 control ckt		Intake structure	322, 346	NA
	Serv wtr hdr press indication (PT-6)	Local gage (PI-30)	Intake structure	322	NA
	<u>FUEL ZONE LEVEL</u>				
	"A", "B" fuel zone level indications	"C", "D" fuel zone level indications	CR PNL 5F/6F or RSP ("B" 480V Swgr room)	410 346	NA NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p><u>TB-FZ-11G References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #1 for TB-FZ-11G) GU 3E-911-41-042 (Cold Shutdown Path #1 for TB-FZ-11G)</p> <p>Manual Action Required:</p> <p>CAUTION: SCBA may be required to get to the 4160V switchgear rooms. The closest SCBA is located in the Pretreatment Building (east side).</p> <ol style="list-style-type: none"> Confirm Unit Auxiliary breaker is tripped on 1B 4160V switchgear unit B3. Prior to Reactor pressure decreasing to 310 psig, open the following breakers listed below at their respective switchgear (place 69-permissive switches in 'trip' for 4160V breakers), or if the 4160V switchgear rooms are inaccessible and Core Spray System actuating signals are present, THEN override the Core Spray initiation logic by depressing the OVERRIDE switches for all the sensors that are lit and depressing all ACTUATED switches, whether lit or unlit (Panel 1F/2F) and then close the parallel injection valves (V-20-15, 21, 40 & 41). These actions are only to be performed provided these pumps are not required to assure adequate core cooling: <ol style="list-style-type: none"> Core Spray Pump NZ01D at 4160V Swgr. 1C. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D. <p align="center"><u>OR</u></p> Close V-20-15, 21, 40 & 41 and then trip the core spray pumps once the switchgear rooms are accessible (refer to EOP Support Procedure #4 or #10 for guidance) Reactor feedwater HP heater outlet valves power and control circuits are contained in this fire zone and may have to trip the Reactor Feedwater pumps and/or control flow utilizing the Main Feedwater Regulating Valves V-2-732, 733, 734, 735 and 736 valves. <p><u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air.</p> <p><u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost,</p> <p><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 30 minutes) to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>Cable failures may cause VACP-1 to trip.</p> <p><u>IF</u> CST level indication (5F-27), RBCCW Pressure Indication (13R-63) and/or Service Water Pressure Indication (5F-60) are lost in the control room.</p> <p><u>THEN</u> Either read all indicators locally</p> <p align="center"><u>OR</u></p> <p>Open all load breakers on VACP-1 and re-close VMCC 1B2 breaker compartment C2R and then re-close VACP-1 breaker 21 for the required indicators. Note that the breakers 16, 23, 25 & 26 on VACP-1 are not needed and should remain open to isolate the cable failures.</p> 					

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88.0 SJAE ROOM: MECH VAC PUMP ROOM; HI-LOW CONDUCTIVITY RM, CON/DEMIN AREA (TB-FZ-11H)	<u>CORE SPRAY SYSTEM</u>				
	"A" core spray pump power ckt (NZ01A)	None	NA	308	NA
	"B" core spray pump power ckt (NZ01B)	None	NA	308	NA
	"C" core spray pump power ckt (NZ01C)	None	NA	308	NA
	"D" core spray pump power ckt (NZ01D)	None	NA	308	NA
	<u>ELECTRICAL DISTR SYS</u>				
	Brkr 1D control ckt	None	None	337	NA
	Pwr feeder to USS 1B2	None	None	338	NA
	125V DC control pwr to 4160V Swgr 1D	125V DC Control Pwr from DC-A	4160V Swgr 1D	340.1	NA
	124V DC control pwr to 480V Swgr USS 1B3	125V DC Control Pwr from DC-A	480V USS 1B3	340.1	NA
	<u>SHUTDOWN COOLING SYS</u>				
	Loop Inlet Isol Vlvs (V-17-1,2,3)	Local Manual	SDC Room	305	NA
	Loop Outlet Isol Vlvs (V-17-55,56,57)	Local Manual	SDC Room	305	NA
	<u>RBCCW SYSTEM</u>				
	SDC HX Outlet Flow control Vlv (V-5-106)	Local Manual Local Manual	SDC Room	305, 309.2	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA

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<p>SJAE RM MECH VAC PUMP RM; HI-LOW CONDUCTIVITY RM, CON/DEMIN AREA (TB-FZ-11H) (cont'd)</p> <p><u>References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #2 for TB-FZ-11H) GU 3E-911-41-042 (Cold Shutdown Path #2 for TB-FZ-11H)</p> <p>Manual Action Required:</p> <p>(1) Prior to Reactor Pressure decreasing to 310 psig, open the breakers on 4160V Swgr. 1D for Core Spray Pumps NZ01B and NZ01C provided these pumps are not required to assure adequate core cooling.</p> <p>(2) Makeup to the Isolation Condenser may have to be provided by a Fire diesel pump and valve line-up should be done in accordance with the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49).</p> <p>(3) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may be available in the FAN ONLY mode, provided vent dampers are manually opened.</p> <p>(4) <u>IF</u> Instrument Air is lost,</p> <p><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>(5) <u>IF</u> B battery charger is not available,</p> <p><u>THEN</u> V-14-34 can be cycled for short-term operation (approximately 3 hours) and then V-14-36 will have to be utilized for long-term operation of the Isolation Condenser with V-14-34 left open or manually cycle V-14-34.</p> <p>(6) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.</p> <p>IF: V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F</p> <p>THEN: Operate test plugs in Panel 3F per procedure 305, section 9.0.</p> <p>(7) <u>IF</u> USS 1B2 is not energized,</p> <p><u>THEN</u> Open USS 1B2M breaker and remove close fuses. Crosstie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this crosstie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service (local manual operation if necessary). In addition, ventilation will have to be restored to the B 480V Room by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or provide temporary ventilation IAW Procedure 331.</p>					

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<p>TB-FZ-11H</p> <p>Manual Action Required (cont'd):</p> <p>(8) <u>IF</u> V-5-106 has to be manually opened,</p> <p><u>THEN</u> Open its supply breaker on MCC 1B21A and then manually operate V-5-106.</p>					

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"C" BATTERY ROOM (TB-FA-26)	<u>ELECTRICAL DISTR. SYSTEM</u> 125V DC Distribution Center "C"	None	NA	340.3	NA

References:

GU 3E-911-41-040 (Hot Shutdown Path #1 for TB-FA-26)
GU 3E-911-41-042 (Cold Shutdown Path #1 for TB-FA-26)

Manual Action Required:

- (1) IF Instrument Air is lost,

THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).
- (2). If "C" Battery Room HVAC is lost, then ensure that the battery room door is opened within 31 hours to prevent a buildup of hydrogen.
- (3) The Reactor Feedwater Pump control circuits run through this area. Place the Feedwater control switches in PTL (1A pump may not trip) and/or control flow utilizing the Feedwater Regulating Valves V-2-732, 733, 734, 735 and 736 and/or stop flow by closing V-2-10, V-2-11 and V-2-12 provided that the feedwater pumps are not required. Also, trip the pumps at their respective switchgear, and place their 69-permissive switches in the 'trip' position to ensure that the feedwater system remains isolated,

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<p>CONTROL ROOM COMPLEX (OB-FA-5)</p> <p>OLD CABLE SPREADING ROOM (OB-FZ-4)</p> <p>UPPER CABLE SPREADING ROOM (OB-FZ-22A)</p> <p>NORTH CABLE BRIDGE TUNNEL (OB-FZ-22B)</p> <p>SOUTH CABLE BRIDGE TUNNEL (OB-FZ-22C)</p> <p>CONTROL ROOM (OB-FZ-5)</p>	<p>All System/Components in selected hot and cold shutdown paths are potentially affected by a fire in these areas.</p>	<p>Remote Shutdown Panel and Local Shutdown Panels</p>	<p>Various</p>	<p>346 and ABN-30</p>	<p>NA</p>
<p><u>References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #1 for Control Room Complex)</p> <p>GU 3E-911-41-042 (Cold Shutdown Path #1 for Control Room Complex)</p> <p><u>Manual Action Required:</u></p> <p>(1) All manual actions for fires in these areas are covered by Procedure –ABN–30, "Control Room Evacuation".</p>					

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MECHANICAL EQUIPMENT ROOM 74' (OB-FZ-22D)	<u>VENTILATION SYSTEM</u> B control HVAC	A control room HVAC	Control Room	331.1	NA
<p><u>References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #1 for OB-FZ-22D) GU 3E-911-41-042 (Cold Shutdown Path #1 for OB-FZ-22D)</p> <p>Manual Action Required:</p> <p>(1) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available since the 'A' CRHVAC may only be available in the FAN mode.</p>					

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<p>"A" 480V SWGR RM (OB-FZ-6A)</p> <p><u>References:</u></p> <p>GU 3E-911-41-040 Hot Shutdown Path #1 – "B" Isolation Condenser, "B" CRD Pump, Condensate Transfer Pump, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, Offsite Pwr available</p> <p>GU 3E-911-41-043 Cold Shutdown Path #3 - 2 EMRV's (with repairs), Core Spray Pumps, Containment Spray Pump (with repairs), ESW pump (with repairs), Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, Rx Wide Range Lvl Ind (with repairs), Torus Water Temperature Ind Ti-664-43A and Torus Level Indicator (with repairs)</p> <p><u>NOTE:</u> This 'Cold Shutdown' Path utilizes 'Alternate Decay Heat Removal' per procedure 2000-OPS-3024.27, Section 4.4 to approach the Cold Shutdown condition (Core Spray, Containment Spray in Torus Cooling, and EMRV's). It may be necessary to perform repairs on affected equipment as identified in the list below.</p> <p><u>Prompt Manual Actions:</u></p> <p><u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.</p> <p>1) Confirm scram was completed in control room, if a scram was deemed necessary.</p> <p>2) <u>NOTE:</u> USS 1A2 - USS 1B2 cable bus tie is located in OB-FZ-6A and OB-FZ-6B. The USS 1A2 bus tie breaker US2T, is located in OB-FZ-6A and is normally racked out. The cable bus tie is bolted to the main bus at USS 1B2 in OB-FZ-6B. A fire induced electrical fault on the cable bus tie in OB-FZ-6A could trip the main breaker of USS 1B2 in OB-FZ-6B.</p> <p><u>CAUTION:</u> 1) A fire induced short in the "A" 480 volt switchgear room can cause a loss of and the inability to re-energize USS 1B2. This repair has to be completed within 3 hours in order to support RPV makeup.</p> <p style="padding-left: 40px;">2) SCBA may be required for these actions in the B 480V room.</p> <p><u>IF</u> a fire in OB-FZ-6A results in the loss of USS 1B2 due to the tripping of its main breaker,</p> <p><u>THEN</u></p> <p style="padding-left: 20px;">1. Disconnect the cable bus tie at USS 1B2 per Appendix R Repair Procedure 2400-APR-3730.01.</p> <p style="padding-left: 20px;">2. Reenergize USS 1B2 by closing breaker 1B2P and breaker 1B2M.</p>					

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<p>"A" 480V SWGR RM (OB-FZ-6A cont'd)</p> <p><u>Prompt Manual Actions (cont'd)</u></p> <p>3. <u>IF</u> breaker 1B2M and/or B CRD Pump cannot be controlled from the Control Room, <u>THEN</u> control breaker 1B2M and B CRD Pump from the RSP IAW the instructions below (partial initiation).</p> <ol style="list-style-type: none"> 1. Confirm feeder breaker 1B2P to USS 1B2 is closed. 2. Obtain key from the Padlock at the RSP. 3. Rotate keylock CRD and Breaker 1B2M Control Transfer Switch to Alternate. 4. Confirm closed USS main Breaker, 1B2M at RSP 5. Operate B CRD pump at RSP as required. <p>3) Prior to Reactor Pressure decreasing to 310 psig, perform the following provided these pumps are not required to assure adequate core cooling:</p> <ol style="list-style-type: none"> a. Open the breakers and remove close fuses on top right of associated 480V USS 1B2 cubicle for Core Spray Booster Pumps NZ03B and NZ03C (fuse puller at RSP padlock). b. Open breaker 1A2P and place 69-permissive in 'trip' at 4160V Swgr. 1C for Core Spray Booster Pumps NZ03A and NZ03D. c. Open breakers and place 69-permissive in 'trip' at 4160V Swgr. 1C for Core Spray Pumps NZ01A and NZ01D. d. Open breakers and place 69-permissive in 'trip' at 4160V Swgr. 1D for Core Spray Pumps NZ01B and NZ01C. <p>4) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air. <u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost, <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 39 minutes) to prevent the CST from draining to the hotwell. Approximately 17.4 ft in the CST may be required for isolation condenser shell side makeup. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p><u>CAUTION:</u> SCBA may be required for this manual action in the B 480V room.</p> <p>5) <u>IF</u> The B Isolation Condenser level indicator is not available in the control room. <u>THEN</u> Obtain the level indication from the RSP indicator.</p>					

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"A" 480V SWGR RM (OB-FZ-6A cont'd)	<u>CRD HYDRAULIC SYSTEM</u> "A" CRD Pump (NC08A) "B" CRD Pump (NC08B) CRD Flow to Rx Ind. (FI-RD36)	LSP-1A2 RSP Local Gage (FI-225-998) or (FI-225-002)	"A" 480V Swgr Rm "B" 480V Swgr Rm	302.1, 346 302.1, 346	NA NA
	<u>CORE SPRAY SYSTEM</u> All Core Spray Pumps Control Ckts (NZ01A,B,C,D) Core Spray Booster Pumps Power and Control Ckts. NZ03A and NZ03D Core Spray Booster Pumps Power and Control Ckts. NZ03B and NZ03C System I Core Spray Pump Suction Vlvs. Power and Control Ckts (V-20-3, 32) System II Core Spray Pump Suction Vlvs. Power and Control Ckts (V-20-4, 33) System I Parallel Vlvs Control Ckts. (V-20-15, 40) System II Parallel Vlvs Control Ckts. (V-20-21, 41)	Local Manual Operation at Switchgear If necessary to trip pumps - open Feeder Breaker at 1A2P If necessary to trip pumps - open Feeder Breakers at USS 1B2 Local Manual	RB 51', EI SE RB 23' EI, E 4160V Swgr. Rms. 1C or 1D 4160V Swgr. Rm. 1C "B" 480V Swgr. Rm. RB-19'EL, NW	302.1 302.1 308 308 308 308	NA NA NA NA NA NA
		Local Manual	RB-19'EL, SW	308	NA
		Local Manual	RB 51'EL, NW	308	NA
		Local Manual	RB 75'EL, SOUTH	308	NA

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"A" 480V SWGR. ROOM (OB-FZ-6A) (cont'd)	Sys I Core Spray Pump Disch Press Ind (PI-RV04A)	Local Gages PIT-RV03A or PI-19A	RB-19' EI, NW	308	NA
	Sys II Core Spray Pump Disch Press Ind (PI-RV04B) (FI-RD36)	Local Gages (PIT-RV03B or PI-29B)	RB-19' EI, SW	308	NA
	<u>SHUTDOWN COOLING SYS</u>				
	"A" SDC Pump (NU01A)	LSP-1A2	"A" 480V Swgr Rm	305, 346	NA
	"B" SDC Pump (NU01B)	RSP	"B" 480V Swgr Rm	305, 346	NA
	"C" SDC Pump (NU01C)	None	NA	305	NA
	V-17-19 Indication Ckt.	LSP-1AB2	RB 23' EI, NE	305, 346	NA
	V-17-54 Indication Ckt.	LSP-1AB2	RB 23' EI, NE	305, 346	NA
	<u>REACTOR LVL/PRESS INSTR.</u>				
	<u>"A" FUEL ZONE LEVEL</u>	"C" Fuel Zone Lvl. (LI-622-1001) (PI-622-999)	CR PNL 5F/6F or RSP ("B" 480V Swgr Rm)	410	NA
	<u>"B" FUEL ZONE LEVEL</u>	"D" Fuel Zone Lvl. (LI-622-1002) (PI-622-1000)	CR PNL 5F/6F or RSP ("B" 480V Swgr Rm)	346	NA
	<u>RX LEVEL INSTR.</u>	Install Local Gage (LI-626-1007)	CR PNL 5F/6F or RSP ("B" 480V Swgr Rm)	410	NA
	GEMAC Wide Range Level Ind. (LI-IA13)		RK01 (R.B. 75' EL, East)	346 Repair Procedure	NA 2400-APR-3665.01
	<u>CONTAINMENT INSTR SYS</u>	Wide Range Torus Level (LI-37,38) or Install Temporary Ind (LI-626-1122)	CR Pnl 16R or RB-19' EL, NW	412.1 or Repair Procedure	NA or 2400-APR-3228.01
	Torus Temp. Ind. TI-644-43B	TI-644-43A	CR Panel 1F/2F	312	NA

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"A" 480V SWGR RM (OB-FZ-6A) (cont'd)	<u>CONTAINMENT SPRAY SYS.</u> All Cont. Spray Pumps Pwr & Control Ckts (51 A,B,C,D)	Repair Power Feeders to 51C or 51D use local control at USS 1B2 (manually ratchet closing motor)	"B" 480V Swgr Rm	310	2400-APR- 3214.01
	System I Cont. Spray Pumps Suct. Vlvs. Control Ckt (V-21-9,7)	Local Manual	RB-19' EI, NE	310	NA
	System II Cont. Spray Pumps Suct. Vlvs. Control Ckt (V-21-1,3)	Local Manual	RB-19' EI, SE	310	NA
	System I Drywell Spray Isol. Vlv. Control Ckt (V-21-11)	Local Manual	RB 51' EI, East	310	NA
	System I TORUS CLG Discharge Vlv. Control Ckt (V-21-17)	Local Manual	RB 23' EI, North	310	NA
	System II Drywell Spray Isol Vlv. Control Ckt (V-21-5)	Local Manual	RB 23' EI, SE	310	NA
	System II TORUS CLG Discharge Vlv Cont. Ckt (V-21-13)	Local Manual	RB 23' EI, South	310	NA

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"A" 480V SWGR RM (OB-FZ-6A) (cont'd)	Sys I, Sys II, Flow Ind (FT-IP03A,B)	None	NA	310	NA
	<u>EMER SERV WATER SYS</u>	None	NA	310	NA
	ESW Pump Control CKT 52A	None	NA	310	NA
	ESW Pump Control CKT 52B	None	NA	310	NA
	ESW Pump Control CKT 52C	None	NA	310	NA
	ESW Pump Control CKT 52D	Repair Control CKT and Control Pump at breaker	4160V Swgr. Rm ID	Repair Procedure	2400-APR- 3531.01
	ESW Disch Vlv. Sys I (V-3-88)	Local Manual	RB 23' EL, North	310	NA
	ESW Disch Vlv. Sys II (V-3-87)	Local Manual	RB 23' EL, South	310	NA
	<u>CONDENSATE TRANSFER</u>				
	Cond Storage Tank Level (LT-35)	Local Gage (LI-424-993)	Cond Storage Tank	316.1	NA
	<u>"A" ISOLATION COND.</u>				
	AC Steam Isol. Vlv (V-14-30)	Local Manual	RB 75' EL, East	307	NA
	AC Cond. Rtn Isol. Vlv (V-14-36)	None	NA	307	NA
	<u>"B" ISOLATION CONDENSER</u>				
	Shell-side Level Indicator (W-1607B)	RSP	"B" 480V Switchgear Room	307	NA
	<u>RBCCW SYSTEM</u>				
	Discharge Hdr. Pressure Ind. (PT-IA18)	Local Gages (PI-50, 51)	RB 51' EL, East on Pump Disch. Piping	309.2	NA
	RBCCW Pump 1-1 Power and Control Ckt.	LSP-1A2	"A" 480V Swgr Rm	309.2, 346	NA
	RBCCW Pump 1-2 Power and Control Ckt.	RSP	"B" 480V Swgr Rm	309.2, 346	NA
	Shutdown Clg. Flow Control Vlv. (V-5-106) Control Ckt.	Local Manual	RB, SDC Rm	305, 309.2	NA

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"A" 480V SWGR RM (OB-FZ-6A) (cont'd)	<u>RECIRC SYSTEM</u>				
	"B" Recirc Loop Suction Vlv. Control Ckt. (NG02B)	None	NA	301	NA
	"D" Recirc Loop Suction Vlv. Control Ckt. (NG02D)	None	NA	301	NA
	"B" Recirc Loop Discharge Vlv Control Ckt (NG03B)	None	NA	301	NA
	"D" Recirc Loop Discharge Vlv Control Ckt (NG03D)	None	NA	301	NA
	"E" Recirc Loop Discharge Vlv Control Ckt (NG03E)	LSP-1AB2	RB 23' EL, NE	301, 346	NA
	<u>REACTOR CLEANUP SYSTEM</u>				
	Drywell Isol. Vlv (V-16-1) Control Ckt.	None	NA	303	NA
	<u>ADS SYSTEM</u>				
	A,B,C,D,E, EMRV ADS Control Ckts (NR108A,B,C,D,E)	Temporary Control and Ind. for NR108D,E	NA	Repair Procedures	2400-APR- 3411.01 3411.04

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
"A" 480V SWGR RM (OB-FZ-6A) (cont'd)	<u>VENTILATION SYSTEM</u> Control Rm HVAC System "A"	Control Rm HVAC System "B"	Control Room	331.1	NA
	"A" 480V Swgr Room Supply Fan (FN-56-004)	LSP-1A2	"A" 480V Swgr Rm	331, 346	NA
	"A" 480V Swgr Room Exhaust Fan (FN-56-007)	LSP-1A2 or Start Alt Exhaust Fan (FN-56-008) from MCC 1B21	"A" 480V Swgr Rm <u>or</u> "B" 480V Swgr Rm	331, 346	NA
	"A" 480V Swgr Rm HVAC Dampers	Local Manual	"A" 480V Swgr Rm	331	NA
	<u>ELECTRICAL DISTR. SYS.</u> Bus Tie Breaker US-2T	Disconnect Bus-Tie Cable	"B" 480 Swgr Rm	338	2400-APR- 3730.01
	Brkr 1B2M Control Ckt.	RSP	"B" 480V Swgr Rm.	338, 346	NA
	480V USS 1A2	None	NA	338	NA
	480V MCC 1A21	None	NA	338	NA
	480V Vital MCC 1A2	None	NA	338	NA
	Power Feeder to 480V MCC 1A23	None	NA	338	NA
	Power Feeder to 480V MCC 1A21A	None	NA	338	NA
	Power Feeder to 480V MCC 1A21B	None	NA	338	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
"A" 480V SWGR RM (OB-FZ-6A) (cont'd)	Power Feeder to 480V Vital MCC 1B2	None	NA	338	NA
	Power Feeder to 480V MCC 1B23	None	NA	338	NA
	Power Feeder to 480V MCC 1B21A	None	NA	338	NA
	Power Feeder to 480V MCC 1B21B	None	NA	338	NA
	Power Feeder to 480V MCC 1AB2	None	NA	338	NA
	Power Feeder to Pnl A2	None	NA	338	NA
	Power Feeder to RPS MG Set 1-1	None	NA	339	NA
	Power Feeder to RPS MG Set 1-2	None	NA	339	NA
	Power Feeder to PAIPP-1 (PDP-733-057) & RPS XMR PS-1 via SW-733-169	None	NA	339	NA
	Power Feeder to PAIPP-2 (PDP-733-058) & RPS XMR PS-1 via SW-733-170	None	NA	339	NA

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
"A" 480V SWGR RM (OB-FZ-6A) (cont'd)	Vital LTG Pnl VLDP-1	None	N/A	339	NA
	120V Pnl. VACP-1	None	NA	339	NA
	120V Pnl. CIP-3	None	NA	339	NA
	120V Pnl. IP-4	None	NA	339	NA
	EDG#1 ECCS Idle Start Ckt	None	NA	NA	NA
	EDG#2 ECCS Idle Start Ckt	LSP-DG2	#2 EDG Vault	341, 346	NA
	120V DC Pnl DC-F	None	NA	340.3	NA
	Pnl ER18A	None	NA	308	NA
	Pnl ER18B	None	NA	308	NA
	Brkr 1B2M Control Ckt.	RSP	"B" 480V Swgr Rm	338, 346	NA

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>Additional Manual Actions Required OB-FZ-6A (cont'd):</p> <p>(1) The "B" 125 VDC Battery M.G. Set charger is fed by an electrical supply located in this fire zone. Within 3 hours, (expected battery life under load with no charger in service) either confirm the "B" MG Set battery charger is operating properly <u>or</u> place the static charger into service for the "B" Battery in accordance with Procedure 340.1, "125 VDC Distribution Systems "A" & "B".</p> <p>(2) It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:</p> <ul style="list-style-type: none"> • Open V-15-237 • Throttle V-15-30 for desired flow on FI-225-2 • Close V-15-52 <p>(3). Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).</p> <p>(4) <u>IF</u> the C battery charger is not available <u>THEN</u> V-14-35 can be cycled for short term operation (approximately 8 hours) but V-14-37 will have to be utilized for long term operation of the Isolation Condenser with V-14-35 left open or manually cycle V-14-35.</p> <p>(5) <u>IF</u> Core Spray Pump NZ01B will be utilized for core cooling <u>THEN</u> Remove control fuses from breaker (Bus 1D, breaker D4) and manually close the breaker at the 1D Bus.</p> <p>(6). If power is lost to "C" Battery Room HVAC fans from VMCC 1A2, then ensure that the battery room door is opened within 31 hours to prevent a buildup of hydrogen.</p> <p>(7) <u>IF</u> V-20-4 (MCC 1B21A) & 41 (MCC 1AB2) and V-21-13 (MCC 1B21B) have to be manually opened and/or V-21-5 (MCC 1B21B) closed, <u>THEN</u> It will be necessary to de-energize the applicable supply breakers prior to opening the MOV's to prevent future spurious operations of the valves.</p>					

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Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>"B" 480V SWGR RM (OB-FZ-6B)</p> <p><u>References:</u></p> <p>GU 3E-911-41-040 Hot Shutdown Path #2 – "A" Isolation Condenser, "A" CRD Pump, Firewater for IC makeup, Fuel Zone Level Ind. LI-IA94A, Rx. Pressure Ind. PI-622-849, Offsite Pwr available</p> <p>GU 3E-911-41-043 Cold Shutdown Path #3 - 2 EMRV's, Core Spray Pumps, Containment Spray Pump, ESW pump, Fuel Zone Level Ind. LI-IA94A, Rx. Pressure Ind. PI-622-849, Rx Wide Range Lvl Ind LI-IA13, Torus Water Temperature Ind TI-664-43A and Torus Level Indicator (with repairs)</p> <p><u>Prompt Manual Actions:</u></p> <p><u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.</p> <p>1) Confirm scram was completed in control room, if a scram was deemed necessary.</p> <p>2) Prior to Reactor pressure decreasing to 310 psig, open breaker 1B2P and place 69 Permissive Switch in Trip at 4160V Swgr. 1D to prevent Core Spray Booster pumps NZ03B and NZ03C from injecting provided these pumps are not required to assure adequate core cooling.</p> <p>3) <u>IF</u> Instrument Air is lost,</p> <p> <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 17.4 ft in the CST may be required for isolation condenser shell makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>4) Makeup to the Isolation Condenser may have to be provided by a Fire diesel pump and valve line-up should be done in accordance with the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49).</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
"B" 480V SWGR. RM. (OB-FZ-6B)	<u>CRD HYDRAULIC SYS.</u> "B" CRD Pump (NC08B)	RSP	"B" 480V Swgr. Rm.	302.1, 346	NA
	<u>CORE SPRAY SYSTEM</u> "C" Core Spray Pump Control Ckt. (NZ01C)	None	NA	308	NA
	"B" Core Spray Booster Pump Power and Control Ckt. (NZ03B)	None	NA	308	NA
	"C" Core Spray Booster Pump Power and Control Ckt. (NZ03C)	None	NA	308	NA
	System I Core Spray Pump Suction Vlvs. Power and Control Ckts (V-20-3, 32)	Local Manual	RB-19' EL, NW	308	NA
	System I Core Spray Pump Disch. Press. Ind. (PI-RV04A)	Local Gages (PIT-RV03A or PI-RV29A)	RB-19' EL, NW	308	NA
	<u>SHUTDOWN COOLING SYS.</u> "B" SDC Pump (NU01B) "C" SDC Pump (NU01C)	RSP None	"B" 480V Swgr. Rm. NA	305, 346 305	NA NA
	<u>CONTAINMENT INSTR. SYS.</u> Torus Level Indication (LI-IP09A, B)	Wide Range Torus Lvl. (LT-37 and/or LT-38) or install Temporary Ind (LI- 626-1122)	CR Pnl. 16R Or RB -19' EI, NW	412.1 or Repair Procedure	NA Or 2400-APR- 3228.01

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Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
"B" 480V SWGR. RM. (OB-FZ-6B) (cont'd)	<u>RBCCW SYSTEM</u> Disch. Hdr. Press. Ind. (PT-IA1B) RBCCW Pump 1-2 Shutdown Clg. Flow Control Vlv. (V-5-106) Power Supply	Local Gages (PI-50, 51) RSP Local Manual	RB-51' EL, East on Pump Disch. Piping "B" 480V Swgr. Rm. RB, SDC Room	309.2 309.2, 346 305, 309.2	NA NA NA
	<u>CONTAINMENT SPRAY SYS.</u> "C" Cont. Spray Pump Power and Control Ckt. (51C)	None	NA	310	NA
	"D" Cont. Spray Pump Power and Control Ckt. (51D)	None	NA	310	NA
	Sys. II Cont. Spray Pumps Suct. Vlv. Control Ckt. (V-21-1,3)	Local Manual	RB-19' EL, SE	310	NA
	Sys. II Drywell Spray Isol. Vlv. Control Ckt. (V-21-5)	Local Manual	RB-23' EL, SE	310	NA
	Sys. II TORUS CLG Discharge Vlv. Control Ckt. (V-21-13)	Local Manual	RB-23' EL, South	310	NA
	<u>"A" ISOLATION CONDENSER</u> Shell Makeup Valve Power Ckt. (V-11-36)	Local Manual	RB-95' EL, East	307	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
"B" 480V SWGR. RM. (OB-FZ-6B) (cont'd)	<u>"B" ISOLATION CONDENSER</u>				
	AC Steam Isol. Vlv. (V-14-32) Control Ckt.	RSP or Local Manual	"B" 480V Swgr. Rm or RB-75'EL, East	307, 346	NA
	DC Steam Isol. Vlv. (V-14-33) Control Ckt.	RSP or Local Manual	"B" 480V Swgr. Rm or RB-75'EL, East	307, 346	NA
	DC Cond. Return Isolation Vlv. Control Ckt. (V-14-35)	RSP or Local Manual	"B" 480V Swgr. Rm or RB-75'EL, East	307, 346	NA
	AC Cond. Return Isolation Vlv. Control Ckt. (V-14-37)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	Shell Makeup Valve Power Ckt. (V-11-34)	RSP or Local Manual	"B" 480V Swgr. Rm RB-95'EL, East	307, 346	NA
	Shell Level Indication (LI-IG06B)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	<u>SERV. WTR. SYSTEM</u>				
	Service Wtr. Hdr. Pressure Indication (PT-6)	Local Gage (PI-29)	Intake Structure	322	NA
	<u>FUEL ZONE LEVEL</u>				
	"C", "D" Fuel Zone Level Instruments	"A" and/or "B" Zone Lvl. Instruments	CR Pnl. 5F/6F	410	NA
	<u>VENTILATION SYSTEM</u>				
	"A/B" Battery Room Exhaust Fan (EF 1-20)	RSP	"B" 480V Swgr. Rm.	331, 346	NA
	"B" 480V Swgr. Rm. Supply Fan (SF 1-21)	RSP	"B" 480V Swgr. Rm.	334, 346	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
"B" 480V SWGR. RM. (OB-FZ-6B) (cont'd)	"B" 480V Swgr. Rm. Exhaust Fan (EF 1-21)	RSP	"B" 480V Swgr. Rm.	331, 346	NA
	"A/B" Battery Room Dampers	Local Manual	"A/B" Battery Rm.	331	NA
	"B" 480V Swgr. Room Dampers	Local Manual	"B" 480V Swgr. Rm.	331	NA
	"A" 480V Swgr. Room Alternate Exhaust Fan (FN-56-008)	SF 1-21, EF 1-21	CR Pnl. 11R	331	NA
	<u>ELECTRICAL DISTR. SYS</u>				
	480V USS 1B2	None	NA	338	NA
	480V MCC 1B21	None	NA	338	NA
	480V Vital MCC 1B2	None	NA	338	NA
	Power Feeder to 480V MCC 1B23	None	NA	338	NA
	Power Feeder to 480V MCC 1B21A	None	NA	338	NA
	Power Feeder to 480V MCC 1B21B	None	NA	338	NA
	Battery Charger MG Set "A"	None	NA	340.1	NA
	Battery Charger MG Set "B"	None	NA	340.1	NA
	A/B Battery Static Charger	None	NA	340.1	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>"B" 480V SWGR RM (OB-FZ-6B) (cont'd)</p> <p>Additional Manual Actions Required:</p> <p>(1) <u>IF</u> the A 480 Volt Switchgear Room Ventilation has tripped due to the fire in this fire zone (OB-FZ-6B), <u>AND</u> the Licensed Operations Supervisor has directed its restart, <u>THEN</u> confirm dampers DM-56-15 and DM-56-16 are open (manually open by disconnecting linkage if necessary) and DM-56-17 is closed (manually close by disconnecting linkage if necessary) and then restart the ventilation in accordance with Procedure 331 or install portable ventilation in the 'A' 480V Room in accordance with Procedure 331.</p> <p>(2) <u>IF</u> B battery charger is not available, <u>THEN</u> V-14-34 can be cycled for short-term operation (approximately 3 hours) and then V-14-36 will have to be utilized for long term operation of the Isolation Condenser with V-14-34 left open or manually cycle V-14-34.</p> <p>(3) It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:</p> <ul style="list-style-type: none"> • Open V-15-237 • Throttle V-15-30 for desired flow on FI-225-2 • Close V-15-52 <p>(4). Recharge V-11-36 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).</p> <p>(5) Temporary Control Room ventilation may need to installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may be available in the FAN ONLY mode, provided vent dampers are manually opened per 331.1.</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
RECIRC MG SET RM (OB-FZ-8A)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #2 – “B” Isolation Condenser, “A” CRD Pump, Firewater for IC Makeup, Fuel Zone Level Ind. LI-IA94A, Rx. Pressure Ind. PI-622-849, Offsite Power available				
GU 3E-911-41-042	Cold Shutdown Path #2 - “A” & (B or C) SDC Pumps, “A” CRD, RBCCW and Service Water Pumps, Fuel Zone Level Ind. LI-IA94A, Rx. Pressure Ind. PI-622-849 and Reactor Wide Range Level Indicator LI-IA13.				
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u>	These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.				
1) Confirm scram was completed in control room, if a scram was deemed necessary.					
2) <u>NOTE:</u>	During a fire condition in the Recirc MG Set Room (OB-FZ-8A), the possibility exists that hot shorts will develop in the EMRV cabling such that 125 VDC from an external source will be supplied to an EMRV, causing it to fail open. This spuriously opened EMRV will be reclosable using the normal EMRV control switch on 1F/2F.				
<u>CAUTION:</u>	The following action is required to preclude or terminate a spuriously opened EMRV. This action will disable the ADS, High Pressure and manual controls associated with the EMRV's. If the EOP's require the use of the EMRV's the disable switches can be returned to the normal position.				
<u>IF</u>	One or more EMRV's exhibit abnormal or spurious operation.				
	<u>OR</u>				
	There are insufficient indications available to determine the status of an EMRV.				
<u>THEN</u>	Ensure the reactor is scrammed in accordance with ABN-1 "Reactor Scram."				
	<u>AND</u>				
	Place the disable switch on the rear of panel 1F/2F to the "DISABLE" position for those EMRV's affected.				
2) <u>NOTE:</u>	The Reactor Recirculation pump circuits are located in this fire zone and they have to be tripped to utilize the Fuel Zone Level Indicators.				
<u>IF</u>	The Reactor Recirculation Pumps won't trip from the control room,				
<u>THEN</u>	Trip the pumps from their respective switchgear ('A' or 'B' 4160V Busses) and place their 69-permissive switches in the 'trip' position.				

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>RECIRC MG SET RM (OB-FZ-8A)</p> <p><u>Prompt Manual Actions</u> (cont'd):</p> <p>3) Prior to Reactor pressure decreasing to 310 psig, open the following breakers at their respective switchgear (place 69-permissive switches in trip' position on 4160V breakers, remove 'close' fuses on top right of associated 480V breaker cubicle) provided these pumps are not required to assure adequate core cooling:</p> <p style="margin-left: 40px;">a. Core Spray Booster Pumps NZ03B & NZ03C at 480V USS 1B2 (fuse puller at RSP padlock).</p> <p style="margin-left: 40px;">b. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D.</p> <p>4) Make up to the Isolation Condenser may have to be provided by a Fire diesel pump and valve line-up should be done in accordance with the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49).</p> <p>5) <u>IF</u> Instrument Air is lost,</p> <p style="margin-left: 40px;"><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p>					

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RECIRC. MG SET RM. (OB-FZ-8A) (cont'd)	<u>CRD HYDRAULIC SYSTEM</u> CRD Return to Reactor Flow Indication (FI-RD36)	Local Gage (FI-225-0998 or FI-225-0002)	RB-51' EL, SE	302.1	NA
	<u>CORE SPRAY SYSTEM</u> "B", "D" Core Spray Booster Pumps Power Ckt. (NZ03B,D)	None	NA	308	NA
	"A" Core Spray Pump Suction Vlv. Power and Control Ckt. (V-20-3)	Local Manual	RB-19' EL, NW	308	NA
	"B" Core Spray Pump Suction Vlv. Power and Control Ckt. (V-20-4)	Local Manual	RB-19' EL, SW	308	NA
	"D" Core Spray Pump Suction Vlv. (Power and Control CKT. (V-20-33)	Local Manual	RB-19' EL, SW	308	NA
	System II Parallel Vlvs. Control Ckts. (V-20-21, 41)	Local Manual	RB-75' EL, South	308	NA
	System I Pump Disch. Vlv. Power and Control Ckt. (V-20-12)	Local Manual	RB-51' EL, NW	308	NA
	System II Pump Disch. Vlv. Power and Control Ckt. (V-20-18)	Local Manual	RB-75' EL, South	308	NA
	System II Core Spray Pump Disch. Press. Ind. (PI-RV04B)	Local Gages (PI-29B, D)	RB-19' EL, SW	308	NA

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RECIRC. MG SET RM. (OB-FZ-8A) (cont'd)	System II Booster Pump Disch. Press. Ind. (PI-RV43B)	Local Gage (PI-40B)	RB-23'EL, SW	308	NA
	<u>"A" ISOLATION CONDENSER</u>				
	DC Steam Isol. Vlv. Control Ckt. (V-14-31)	Local Manual	RB-75' EL, East	307	NA
	DC Cond. Return Isol. Vlv. Control Ckt. (V-14-34)	Local Manual	RB-75' EL, East	307	NA
	<u>EMRVs</u>				
	Valve Cont. Ckt. (EMRV A, B, C, D, E)	EMRV Disable Swts (EMRV A, B, C, D, E)	Rear CR Pnl 1F/2F	301	NA
		Temporary EMRV Control and Ind. for NR108 D, E	NA	Repair Procedures	2400-APR- 3411.01 2400-APR- 3411.02 2400-APR- 3411.03 2400-APR- 3411.04
	<u>SHUTDOWN COOLING SYS.</u>				
	"A" SDC Pump (NU02A) Cont. Ckt.	LSP-1A2	"A" 480V Swgr. Rm.	305, 346	NA
	"A" Loop Suct. Vlv. Cont. Ckt. (V-17-1)	Local Manual	SDC Room	305	NA
	"B" Loop Suct. Vlv. Cont. Ckt. (V-17-2)	Local Manual	SDC Room	305	NA
	"C" Loop Suct. Vlv. Cont. Ckt. (V-17-3)	Local Manual	SDC Room	305	NA

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RECIRC. MG SET RM. (OB-FZ-8A) (cont'd)	"A" Loop Disch. Vlv Control Ckt (V-17-55)	Local Manual	SDC Room	305	NA
	"B" Loop Disch. Vlv Control Ckt (V-17-56)	Local Manual	SDC Room	305	NA
	"C" Loop Disch. Vlv Control Ckt (V-17-57)	Local Manual	SDC Room	305	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA
	<u>CONTAINMENT INSTR.</u> Drywell Press Ind. (PI-IP12)	Drywell Press. Ind.	CR Pnl 10R	312	NA
	<u>CONTAINMENT SPRAY SYS</u> "C" Containment Spray Pump Power Ckt (51C) "D" Containment Spray Pump Power Ckt (51D)	Repair Pwr Feeders to 51C or 51D, use local control at USS 1B2 (manually ratchet closing motor)	B 480 Swgr Rm	310	2400-APR- 3214.01
	Sys. II Cont Spray Pumps Suction Vlv. Control Ckt (V-21-1, 3)	Local Manual	RB -19' EL, SE	310	NA
	Sys. II Drywell Spray Isol. Vlv Control Ckt (V-21-5)	Local Manual	RB -23' EL, SE	310	NA
	Sys. II TORUS CLG Discharge Vlv. Control Ckt (V-21-13)	Local Manual	RB -23' EL, South	310	NA
	Sys. II Flow Ind. (FI-IP03B)	None	NA	310	NA
	<u>EMER SERV WATER SYS</u> ESW Disch Vlv Sys II (V-3-87)	Local Manual	RB 23' EL, South	310	NA

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
RECIRC. MG SET RM. (OB-FZ-8A) (cont'd)	<u>RECIRC SYSTEM</u> "E" Loop Discharge Vlv. (NG03E) Cont Ckt	LSP-1AB2	RB 23' EL. NE	301, 305, 346	NA
	<u>MSIV's</u> Inner MSIV, North (NS03A)	Outer MSIV, North (NS04A)	CR Pnl 11F	301	NA
	Inner MSIV, South (NS03B)	Outer MSIV, South (NS04B)	CR Pnl 11F	301	NA
	<u>ELECTRICAL DISTR. SYS</u> Power Feeder to 480V MCC 1A21A	None	NA	338	
	Power Feeder to 125VDC MCC DC-1	None	NA	340.1	
	125V DC Control Power to 4160V Swgr 1D from DC-B	125V DC from DC-A	4160V Swgr. 1D	340.1	
	125V DC Cont Power to 480V USS 1B3 from DC-B	125V DC from DC-A	USS 1B3	340.1	

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>Additional Manual Actions Required: RECIRC MG SET RM (OB-FZ-8A) (cont'd)</p> <p>(1) RC makeup can be provided (if required) using the CRD pumps by manually opening the CRD bypass valves V-15-30 & 237 and closing V-15-52.</p> <p>(2) Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes). Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).</p> <p>(3) To restore power to USS 1B3 for 'B' Control Room HVAC, manually open breaker 1B3M and remove 'close' fuses, trip all load breakers on 1B3 and then rack in tie breaker US3T and manually close breaker IAW Procedure 338. Note that temporary Control Room ventilation can be installed per Procedure 331.1 if needed.</p> <p>(4) <u>IF</u> at least one recirculation loop cannot be verified open using Control Room indications, <u>THEN</u> verify at least one loop is open per Attachment ABN-29-2.</p> <p>(5) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room. <u>IF:</u> V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F <u>THEN:</u> Operate test plugs in Panel 3F per procedure 305, section 9.0.</p> <p>(6) Cable failures may prevent operation of Shutdown Cooling Loop Isolation Valves from the Main Control Room. <u>IF:</u> Any SDC valve (V-17-1, 2, 3, 55, 56 & 57) has to be manually opened, <u>THEN:</u> Open their supply breakers at MCC DC-1 on Rx Bldg 23' SE, and manually operate the valves as required.</p>					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
Additional Manual Actions Required: RECIRC MG SET RM (OB-FZ-8A) (cont'd)					
(7) Cable failures may prevent operation of RBCCW Shutdown Cooling Outlet Valve V-5-106 from the main Control Room.					
IF: V-5-106 cannot be operated from the Control Room					
THEN: Manually open breaker B03 at MCC 1B21A on Rx Bldg 23', and manually operate the valve as required.					
(8) <u>IF</u> USS 1B2 is not energized,					
<u>THEN</u> Open USS 1B2M breaker and remove close fuses. Crosstie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this crosstie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service (local manual operation if necessary). In addition, ventilation will have to be restored to the B 480V Room by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or provide temporary ventilation IAW Procedure 331.					
(9) <u>IF</u> HVAC is lost to the "A/B" battery room and the battery chargers are operating,					
<u>THEN</u> ensure that the battery room door is opened within 87 hours to prevent a buildup of hydrogen.					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MECH. EQUIPT. RM (OB-FZ-8B)	<u>VENTILATION SYSTEM</u> Control Room HVAC System "A"	Control Room HVAC System "B"	Control Room	331.1	NA

References:

GU 3E-911-41-040 (Hot Shutdown Path #2 for OB-FZ-8B)
GU 3E-911-41-042 (Cold Shutdown Path #2 for OB-FZ-8B)

Manual Action Required:

- (1) Prior to Reactor pressure decreasing to 310 psig, open the following breakers at their respective switchgear, and place 69-permissive switches in 'trip' for 4160V breakers and remove close fuses for 480V breakers, provided these pumps are not required to assure adequate core cooling:
 - a. Core Spray Booster Pumps NZ03A & NZ03D at 480V USS 1A2.
 - b. Core Spray Booster Pumps NZ03B & NZ03C at 480V USS 1B2.
 - c. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D.
- (2) To restore power to USS 1B3 for 'B' Control Room HVAC, manually open breaker 1B3M and remove 'close' fuses, trip all load breakers on 1B3 and then rack in tie breaker 1A3T and manually close breaker IAW with Procedure 338. Note that temporary Control Room ventilation can be installed per Procedure 331.1 if needed.
- (3) IF Instrument Air is lost,

THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).
- (4) Makeup to the Isolation Condenser may have to be provided by a Fire diesel pump and valve line-up should be done in accordance with the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49).
- (5) The Reactor Recirculation pump control cables run through this area and it may be necessary to trip the pumps from their respective switchgear, and place the 69-permissive switches in the 'trip' position (e.g. for use of isolation condensers or fuel zone level), provided that these pumps are not required.

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>MECH. EQUIPT. RM (OB-FZ-8B) (cont'd)</p> <p>Manual Action Required (cont'd):</p> <p>(6) <u>IF</u> at least one recirculation loop cannot be verified open using Control Room indications, <u>THEN</u> verify at least one loop is open per Attachment ABN-29-2.</p> <p>(7) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room. <u>IF:</u> V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F <u>THEN:</u> Operate test plugs in Panel 3F per procedure 305, section 9.0.</p> <p>(8) Cable failures may prevent operation of Shutdown Cooling Loop Isolation Valves from the Main Control Room. <u>IF:</u> Any SDC valve (V-17-1, 2, 3, 55, 56 & 57) has to be manually opened, <u>THEN:</u> Open their supply breakers at MCC DC-1 on Rx Bldg 23' SE, and manually operate the valves as required.</p> <p>(9) Cable failures may prevent operation of RBCCW Shutdown Cooling Outlet Valve V-5-106 from the main Control Room. <u>IF:</u> V-5-106 cannot be operated from the Control Room <u>THEN:</u> Manually open breaker B03 at MCC 1B21A on Rx Bldg 23', and manually operate the valve as required.</p> <p>(10) <u>IF</u> USS 1B2 is not energized, <u>THEN</u> Open USS 1B2M breaker and remove close fuses. Crosstie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this crosstie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service (local manual operation if necessary). In addition, ventilation will have to be restored to the B 480V Room by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or provide temporary ventilation IAW Procedure 331.</p> <p>(11) If HVAC is lost to the "A/B" battery room and the battery chargers are operating, then ensure that the battery room door is opened within 87 hours to prevent a buildup of hydrogen.</p>					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>A/B BATTERY RM. (OB-FZ-8C)</p> <p>REFERENCES</p> <p>GU 3E-911-41-040 Hot Shutdown Path #2 – "B" Isolation Condenser, "A" CRD Pump, Firewater for IC Makeup, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, Offsite Power available</p> <p>GU 3E-911-41-042 Cold Shutdown Path #2 - "A" & (B or C) SDC Pumps, "A" CRD, RBCCW and Service Water Pumps, LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000 and Reactor Wide Range Level Indicator (with repairs)</p> <p>Prompt Manual Actions:</p> <p>NOTE: These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.</p> <p>1) Confirm scram was completed in control room, if a scram was deemed necessary.</p> <p>2) NOTE: During a fire in the A/B Battery Room (OB-FZ-8C), the possibility exists that 125 vdc control power will be lost to the "B" 4160V Switchgear.</p> <p>CAUTION: The feedwater pumps might have to be secured to prevent an overfill condition.</p> <p>IF the feedwater pumps are required to be secured,</p> <p>THEN From the control room, Place the Feedwater control switches in PTL (1B & 1C pumps may not trip) and/or stop flow by closing V-2-10, V-2-11 and V-2-12.</p> <p>3) NOTE: The Reactor Recirculation pump circuits are located in this fire zone and they have to be tripped to utilize the Fuel Zone Level Indicators.</p> <p>IF The Reactor Recirculation Pumps won't trip from the control room,</p> <p>THEN Trip the pumps from their respective switchgear ('A' or 'B' 4160V Busses) and place their 69-permissive switches in the 'trip' position.</p> <p>4) NOTE: During a fire in the A/B Battery Room (OB-FZ-8C), the possibility exists that the Plant page and alarm system may be lost.</p> <p>IF The Plant page and alarm system is lost,</p> <p>THEN Perform communication using radios.</p>					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>A/B BATTERY RM. (OB-FZ-8C) (cont'd)</p> <p><u>Prompt Manual Actions</u> (cont'd)</p> <p>5) Prior to Reactor pressure decreasing to 310 psig, open the following breakers at their respective switchgear (place 69-permissive switches in trip' position on 4160V breakers, remove 'close' fuses on top right of associated 480V breaker cubicle) provided these pumps are not required to assure adequate core cooling:</p> <ul style="list-style-type: none"> a. Core Spray Booster Pumps NZ03A & NZ03D at 480 USS 1A2 (fuse puller at RSP padlock). b. Core Spray Booster Pumps NZ03B & NZ03C at 480V USS 1B2 (fuse puller at RSP padlock). c. Core Spray Pumps NZ01B & NZ01C at 4160V Swgr. 1D. d. Core Spray Pump NZ01A & NZ01D at 4160V Swgr. 1C <p>6) Makeup to the Isolation Condenser may have to be provided by a Fire diesel pump and valve line-up should be done in accordance with the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49). Note Isolation Condenser Level indication may not be available in the control room so use the indicator at the RSP.</p> <p>7) <u>NOTE:</u> USS 1A2 main breaker may trip</p> <p><u>IF</u> USS 1A2 breaker trips,</p> <p><u>THEN</u> Control USS 1A2 Main breaker at LSP-1A2 IAW with Procedure 346. Note that control of the A CRD, SDC and RBCCW pumps will also be transferred to LSP-1A2.</p> <p>8) <u>NOTE:</u> CST may drain to the Hotwell on Loss of Instrument Air.</p> <p><u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost,</p> <p><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 73 minutes) to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p>					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
A/B BATTERY RM. (OB-FZ-8C) (cont'd)	<u>CRD HYDRAULIC SYSTEM</u> "A" CRD Pump Cont. Ckt.	LSP-1A2	"A" 480V Swgr. Rm.	302.1, 346	NA
	CRD Return to Reactor Flow Ind. (FI-RD36)	Local Gage (FI-225-998 or FI-225-002)	RB 51'EL, SE or RB 23' EL	302.1	NA
	<u>CORE SPRAY SYSTEM</u> All Core Spray Pumps Control Ckts. (NZ01A,B,C,D)	Local Manual at Switchgear	4160V Swgr. Rooms 1C or 1D	308	NA
	All Core Spray Booster Pumps Power and Control Ckts. (NZ03A,B,C,D)	None	NA	308	NA
	System I Core Spray Pump Suction Vlvs. Power and Control Ckts. (V-20-3,32)	Local Manual	RB-19'EL, NW	308	NA
	System II Core Spray Pump Suction Vlvs. Power and Control Ckts. (V-20-4,33)	Local Manual	RB-19'EL, SW	308	NA
	System I Parallel Vlvs. Control Ckts. (V-20-15,40) and V-20-15 Power Ckt.	Local Manual	RB-51'EL, NW	308	NA

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
A/B BATTERY RM. (OB-FZ-8C) (cont'd)	System II Parallel Vlvs. Control Ckts. (V-20-21,41)	Local Manual	RB-75'EL, South	308	NA
	System I Testable Check Vlvs. Control Ckts. (NZ02A,C)	None	NA	308	NA
	System I Core Spray Pump Disch. Press. Ind. (PI-RV04A)	Local Gages (PIT- RV03A or PI-RV29A)	RB-19'EL, NW	308	NA
	System II Core Spray Pump Disch. Press. Ind. (PI-RV04B)	Local Gages (PIT- RV03B or PI-RV29B)	RB-19'EL, SW	308	NA
	System II Core Spray Booster Pump Disch. Press. Ind. (PI-RV43B)	Local Gage (PI-40B)	RB-23'EL, SW	308	NA
	<u>"A" ISOLATION CONDENSER</u> AC Steam Isol. Vlv. Control Ckt. (V-14-30)	Local Manual	RB-75'EL, East	307	NA
	DC Steam Isol. Vlv. Control Ckt. (V-14-31)	Local Manual	RB-75'EL, East	307	NA
	DC Cond. Return Vlv. Control Ckt. (V-14-34)	Local Manual	RB-75'EL, East	307	NA
	<u>"B" ISOLATION CONDENSER</u> Shell-side Level Indicator (LI-IG07B)	RSP	"B" 480V Switchgear Room	307	NA

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A/B BATTERY RM. (OB-FZ-8C) (cont'd)	AC Cond. Return Vlv. Control Ckt. (V-14-36)	Local Manual	RB-75'EL, East	307	NA
	Shell Makeup Vlv. Power and Control Ckt. (V-11-36)	Local Manual	RB-95'EL, East	307	NA
	<u>EMRVs</u> "A" EMRV Ind. Ckt. (NR108A)	None	NA	308	NA
	"B" EMRV Ind. Ckt. (NR108B)	None	NA	308	NA
	"C" EMRV Ind. Ckt. (NR108C)	None	NA	308	NA
	"D" EMRV Ind. Ckt. (NR108D)	None	NA	308	NA
	"E" EMRV Ind. Ckt. (NR108E)	None	NA	308	NA
	<u>SHUTDOWN COOLING SYS.</u> "A" SDC Pump Control Ckt.	LSP-1A2	"A" 480V Swgr. Room	305, 346	NA

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A/B BATTERY RM. (OB-FZ-8C) (cont'd)	"B" SDC Pump Control Ckt.	RSP	"B" 480V Swgr. Room	305, 346	NA
	"C" SDC Pump Control Ckt.	None	NA	305	NA
	"A" Loop Suction Vlv. Control Ckt. (V-17-1)	Local Manual	SDC Room	305	NA
	"B" Loop Suction Vlv. Control Ckt. (V-17-2)	Local Manual	SDC Room	305	NA
	"C" Loop Suction Vlv. Control Ckt. (V-17-3)	Local Manual	SDC Room	305	NA
	"A" Loop Disch. Vlv. Control Ckt. (V-17-55)	Local Manual	SDC Room	305	NA
	"B" Loop Disch. Vlv. Control Ckt. (V-17-56)	Local Manual	SDC Room	305	NA
	"C" Loop Disch. Vlv. Control Ckt. (V-17-57)	Local Manual	SDC Room	305	NA
	SDC System Inlet Isol. Vlv. Ind. Ckt. (V-17-19)	LSP-1AB2	RB-23'EL, NE	305, 346	NA
	SDC System Outlet Isol. Vlv. Ind. Ckt. (V-17-54)	LSP-1AB2	RB-23'EL, NE	305, 346	NA
	<u>RX. LEVEL/PRESS. INSTR.</u>				
	"A", "B" Fuel Zone Level Instr.	"C", "D" Fuel Zone Level Instr.	CR Pnl. 5F/6F or RSP ("B" 480V Swgr. Rm.)	410 346	NA
	GEMAC Wide Range Level Indication (LI-IA13)	Install Local Gage (LI-626-1007)	RK01 (RB-75'EL, East)	Repair Procedure	2400-APR- 3665.01

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
A/B BATTERY RM. (OB-FZ-8C) (cont'd)	<u>CONTAINMENT INSTR.</u> Torus Level Indicator (LT-IP09A,B)	Wide Range Torus Level (LT-37,38)	CR Pnl. 16R	412.1	NA
	Torus Temperature Ind. (TE-644-43 A&B)	None	NA	312	NA
	<u>RBCCW SYSTEM</u> Discharge Header Press Indication (PT-1A18)	Local Gages (PI-50,51)	RB-51'El, East on Pump Disch. Piping	309.2	NA
	RBCCW Pump 1-1 Control Ckt.	LSP-1A2 or manually close breaker at USS 1A2	"A" 480V Swgr. Rm.	309.2, 346	NA
	RBCCW Pump 1-2 Control Ckt.	RSP	"B" 480V Swgr. Rm.	309.2, 346	NA
	SDC Flow Control Vlv. Control Ckt. (V-5-106)	Local Manual	SDC Room	305, 309.2	NA
	<u>RX. CLEANUP SYSTEM</u> Aux. Pump Suct. Vlv. Control Ckt. (V-16-2)	Local Manual	RB-51'EL, South	303	NA

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A/B BATTERY RM. (OB-FZ-8C) (cont'd)	Aux. Pump Bypass Vlv. Control Ckt. (V-16-14)	Local Manual	RB-51'EL, South	303	NA
	<u>CONDENSATE TRANSFER</u> Cond. Storage Tank Level Ind. (LT-35)	Local Gage (LI-424-993)	Cond. Storage Tan	316.1	NA
	<u>CONTAINMENT SPRAY SYS</u> Containment spray pumps power (C,D only) and control ckts (51A,B,C,D)	Repair pwr feeders to 51C or 51D. Use local control at USS 1B2 (manually ratchet closing motor)	"B" 480V swgr Rm	310	2400-APR- 3214.01
	Sys I cont spray pumps suct vlvs control ckt (V-21-9,7)	Local Manual	RB -19' EL, NE	310	NA
	Sys II cont spray pmps suct vlvs control ckt (V-21-1,3)	Local Manual	RB -19' EL, SE	310	NA
	Sys I drywell spray isol vlv control ckt (V-21-11)	Local Manual	RB 51' EL, East	310	NA
	Sys I TORUS CLG Discharge vlv control ckt (V-21-17)	Local Manual	RB 23' EL, North	310	NA
	Sys II drywell spray isol vlv control ckt (V-21-5)	Local Manual	RB 23' EL, SE	310	NA
	Sys II TORUS CLG Discharge vlv control ckt (V-21-13)	Local Manual	RB 23' EL, South	310	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
A/B BATTERY RM. (OB-FZ-8C) (cont'd)	<u>EMER SERV WTR SYS</u> ESW disch vlv, Sys I (V-3-88)	Local Manual	RB 23' EL, North	310	NA
	ESW disch vlv, Sys II (V-3-87)	Local Manual	RB 23' EL, South	310	NA
	<u>VENTILATION SYSTEM</u> Control room HVAC Sys. "A"	Control Room HVAC Sys. "B"	Control Room	331.1	NA
	'A' 480V Rm Supply Fan FN-56-4	LSP-1A2	'A' 480V Room	338, 346	NA
	'A' 480V Rm Exhaust Fan FN-56-7	LSP-1A2	'A' 480V Room	338, 346	NA
	<u>SERVICE WATER SYS</u> Service wtr htr press indication (PT-6)	Local gage (PI-29)	Intake Structure	322	NA
	<u>RECIRC SYSTEM</u> "E" recirc loop disch vlv control ckt (V-37-54)	LSP-1AB2	RB 23' EL, NE	301, 346	NA
	<u>MSIV'S</u> Inner MSIV, north (NS03A)	Outer MSIV, North (NS04A)	CRPNL11F	301	NA
	Inner MSIV, south (NS03B)	Outer MSIV, south (NS04B)	CRPNL11F	301	NA
	<u>ELECTRICAL DISTR SYS</u> 125V DC Battery "A" 125V DC Battery "B"	None None	NA NA	340.1 340.1	NA NA

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A/B BATTERY RM. (OB-FZ-8C) (cont'd)	<u>ELECTRICAL DISTR SYS</u> A/B batteries static charger	None	NA	340.1	NA
	Battery charger MG set "B" power feeder	None	NA	340.1	NA
	480V power to MCC1A21A	None	NA	338	NA
	Static inverter pwr to RSP (ALT)	Power to RSP from Pnl IP-4 (Norm)	"B" 480V swgr rm	346	NA
	Brkr 1A2M control ckt	LSP-1A2	"A" 480V swgr rm	338, 346	NA
	Power feeder to pnl DC-1	None	NA	340.1	NA
	125V DC Pnl "D"	None	NA	340.1	NA
	#2 EDG fast start ckt	LSP-DG2 (will not regain fast start ckt)	#2 EDG Vault	341, 346	NA
	EDG #1 & #2 Idle Ckt.	None	NA	NA	NA
	120V AC power to pnl 9R	None	NA	339	NA
	Power feeder to pnl ER18A	None	NA	340.1	NA
	Power feeder to pnl ER18B	None	NA	340.1	NA

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
OB-FZ-8C					
Additional Manual Actions Required:					
<p>(1) It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:</p> <ul style="list-style-type: none"> • Open V-15-237 • Throttle V-15-30 for desired flow on FI-225-2 • Close V-15-52 					
<p>(2) The Reactor Feedwater Pump/FW Regulating valve control circuits run through this area. Trip the Feedwater pumps at their respective switchgear, and place their 69-permissive switches in the 'trip' position as follow up (Feedwater block valves closed earlier) to ensure that the feedwater system remains isolated,</p>					
<p>(3) Recharge V-11-34 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).</p>					
<p>(4) To restore 'B' Control Room HVAC, it may be necessary to cross-tie USS 1A3 and USS 1B3. To accomplish this, trip and remove close fuses for breaker 1B3M at USS 1B3, trip all load breakers on 1B3, close tie breaker 1A3T at USS 1A3 IAW Procedure 338, and confirm Control Room HVAC breaker (Unit 061C) is closed. Note that temporary control room ventilation can be installed per Procedure 331.1 if needed.</p>					
<p>(5) <u>IF</u> USS 1B2 is not energized,</p> <p><u>THEN</u> Open USS 1B2M breaker and remove close fuses. Crosstie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this crosstie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service. Local manual operation of SDC and RBCCW pump may be required. If local operation is required, remove trip fuses prior to manually closing the breaker. In addition, ventilation will have to be restored to the B 480V Room by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or provide temporary ventilation IAW Procedure 331.</p>					
<p>(6) <u>IF</u> at least one recirculation loop cannot be verified open using Control Room indications,</p> <p><u>THEN</u> verify at least one loop is open per Attachment ABN-29-2.</p>					
<p>(7) <u>IF</u> Breaker for RBCCW Pump 1-1 spuriously trips (USS 1A2)</p> <p><u>THEN</u> Remove the trip fuses from the breaker cubicle and manually re-close the breaker.</p>					
<p>(8) <u>IF</u> Any MOV's for SDC (V-17-1, 2, 3, 55, 56 or 57) or RBCCW (V-5-106) have to be manually opened</p> <p><u>THEN</u> Open the valve's supply breaker at MCC DC-1 for SDC valves and MCC 1B21A for V-5-106 before manually operating the valve.</p>					
<p>(9) May have to use LSP-1AB2 for controlling V-17-19 & 54 and V-37-54</p>					
<p>(10) If HVAC is lost to the "A/B" battery room and the battery chargers are operating, then ensure that the battery room door is opened within 87 hours to prevent a buildup of hydrogen.</p>					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
OFFICE BLDG RMS (OB-FA-9)	<u>CONDENSATE TRANSFER</u> Cond. Storage Tank Level Ind. (LT-35)	Local Gage (LI-424-993)	Cond. Storage Tank	316.1	NA
	<u>EMRVS</u> "A" EMRV control ckt "B" EMRV control ckt	None None	NA NA	308 308	NA NA
	<u>RX. LEVEL/PRESS. INSTR.</u> GEMAC Wide Range Level Indication (LI-IA 13)	Install Local Gage (LI-626-1007)	RK01 (RB-75'EL. East)	Repair Procedure	2400-APR- 3665.01
	<u>RBCCW SYSTEM</u> <u>Discharge Header Press</u> <u>Indication (PT-IA 18)</u>	Local Gages (PI-50, 51)	RB-51' El. East on Pump Disch. Piping	309.2	NA
	<u>SERVICE WATER SYS</u> <u>Service water header press</u> <u>indication (PT-6)</u>	Local gage (PI-30)	Intake Structure	322	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA
	<u>VENTILATION SYSTEM</u> Control Room HVAC System "A" fan power circuit	Control Room HVAC System "B"	Control Room	331.1	NA

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>OFFICE BLDG RMS (OB-FA-9) (cont'd)</p> <p><u>References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #1 for OB-FA-9) GU 3E-911-41-042 (Cold Shutdown Path #1 for OB-FA-9)A</p> <p><u>Manual Action Required:</u></p> <p>(1) CST may drain to the Hotwell on Loss of Instrument Air.</p> <p style="padding-left: 40px;"><u>IF</u> CST Level indicator is not available in the control room or Instrument Air is lost,</p> <p style="padding-left: 40px;"><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly (within approximately 30 minutes) to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>(2) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.</p> <p style="padding-left: 40px;"><u>IF:</u> V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F</p> <p style="padding-left: 40px;"><u>THEN:</u> Operate test plugs in Panel 3F per procedure 305, section 9.0.</p> <p>(3) A/B Battery Room Ventilation may be lost due to cable failures in this fire area.</p> <p style="padding-left: 40px;"><u>IF:</u> A/B Battery Room Ventilation is lost.</p> <p style="padding-left: 40px;"><u>THEN:</u> Repair dampers (block open) if failed closed and EF-1-20 may have to be run with its control switch in the "Bypass" position or install portable ventilation per Procedure 331.</p> <p>(4) B Control Room Ventilation may be lost due to LFAP#6 cable failures in this fire area.</p> <p style="padding-left: 40px;"><u>IF:</u> B Control Room Ventilation is lost.</p> <p style="padding-left: 40px;"><u>THEN:</u> FN-826-8B may have to be run with its control switch in the "Bypass" position</p>					

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MONITOR AND CHANGE AREA (OB-FZ-10A)					
<u>References:</u>					
GU 3E-911-41-040	Hot Shutdown Path #2 - "A" Isolation Condenser, "A" CRD Pump, Firewater for IC Makeup, Fuel Zone Level Ind. LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000, Offsite Power available				
GU 3E-911-41-042	Cold Shutdown Path #2- "A" & (B or C) SDC Pumps, "A" CRD, RBCCW and Service Water Pumps, LI-622-1001 & 1002, Rx. Pressure Ind. PI-622-999 & 1000and Reactor Wide Range Level Indicator (with repairs).				
<u>Prompt Manual Actions:</u>					
<u>NOTE:</u> These steps can be performed concurrently and are listed in the order of priority but are dependent on actual plant symptoms.					
1) Confirm scram was completed in control room, if a scram was deemed necessary.					
2) <u>NOTE</u> During a fire condition in the Monitor and Change Area (OB-FZ-10A), the possibility exists that hot shorts will develop in the EMRV cabling such that 125 VDC from an external source will be supplied to an EMRV, causing it to fail open. This spuriously opened EMRV will be reclosable using the normal EMRV control switch on 1F/2F.					
<u>CAUTION:</u> The following action is required to preclude or terminate a spuriously opened EMRV. This action will disable the ADS, High Pressure and manual controls associated with the EMRV's. If the EOP's require the use of the EMRV's the disable switches can be returned to the normal position.					
<u>IF</u> One or more EMRV's exhibit abnormal or spurious operation.					
<u>OR</u>					
There are insufficient indications available to determine the status of an EMRV.					
<u>THEN</u> Ensure the reactor is scrammed in accordance with ABN-1 "Reactor Scram".					
<u>AND</u>					
Place the disable switch on the rear of Panel 1F/2F to the "DISABLE" position for those EMRV's affected.					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>MONITOR AND CHANGE AREA (OB-FZ-10A) (cont'd)</p> <p>3) During a fire condition in the Monitor and Change Area (OB-FZ-10A), the possibility exist that hot shorts will occur in the high flow logic circuitry of the "A" Isolation Condenser. This could cause a spurious isolation of valves V-14-30, V-14-31, V-14-34 and V-14-36.</p> <p><u>IF</u> No other decay heat removal system is available,</p> <p><u>THEN</u> Override the isolation signal by placing the individual valve control switches to the position desired.</p> <p>4) SF-1-20 may trip and will have to be run with its control switch in the "Bypass" position.</p> <p>5) Makeup to the Isolation Condenser may have to be provided by a Fire diesel pump and valve line-up should be done IAW the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49).</p> <p>6) <u>IF</u> Instrument Air is lost,</p> <p><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p>					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MONITOR AND CHANGE AREA (OB-FZ-10A) (cont'd)	<u>CORE SPRAY SYSTEM I</u>				
	"A" Core Spray Booster Pump Pwr. Ckt (NZ03A)	None	NA	308	NA
	Parallel Valve Power and Control Ckt (V-20-15)	Local Manual	RB 51' El. NW	308	NA
	System I Booster Pump Discharge Press Ind. (PT-RV41A)	Local Gage (PI-40C)	RB 51' El. NW	308	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MONITOR AND CHANGE AREA (OB-FZ-10A) (cont'd)	<u>"B" ISOLATION CONDENSER</u>				
	AC Steam Isol. Valve Control Ckt (V-14-32)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	DC Steam Isol. Valve Control Ckt (V-14-33)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	DC Cond Return Isol. Vlv Control Ckt (V-14-35)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	AC Cond Return Isol. Vlv Control Ckt (V-14-37)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	Shell Makeup Vlv Control Ckt (V- 11-34)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	Shell Level Indication (LI-IG-6B)	RSP	"B" 480V Swgr. Rm	307, 346	NA
	<u>EMRV'S</u>				
	"A" EMRV Control Ckt	EMRV "A" Disable Swt	Rear CR Pnl 1F/2F	301	NA
	"B" EMRV Control Ckt	EMRV "B" Disable Swt	Rear CR Pnl 1F/2F	301	NA
	"C" EMRV Control Ckt	EMRV "C" Disable Swt	Rear CR Pnl 1F/2F	301	NA
	"D" EMRV Control Ckt	EMRV "D" Disable Swt	Rear CR Pnl 1F/2F	301	NA
		Temporary EMRV Control & Indication	NA	Repair Procs.	2400-APR-3411.01 2400-APR-3411.02 2400-APR-3411.04
	"E" EMRV Control Ckt	EMRV "E" Disable Swt	Rear CR Pnl 1F/2F	301	2400-APR-3411.01 2400-APR-3411.03 2400-APR-3411.04
		Temporary EMRV Control & Indication	NA	Repair Procs.	

Attachment ABN-29-1
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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MONITOR AND CHANGE AREA (OB-FZ-10A) (cont'd)	<u>RX VESSEL LVL/PRESSURE</u> ADS Control Ckts	None	NA	308	NA
	Fuel Zone Channel "A"	Fuel Zn. Channel "C"	CR Pnl 5F/6F or RSP ("B" 480V Rm)	410 or 346	NA
	Fuel Zone Channel "B"	Fuel Zn. Channel "D"	CR Pnl 5F/6F or RSP ("B" 480V Rm)	410 or 346	NA
	GEMAC Wide Range Level Indication (LI-IA13)	Install Local Gage (LI-626-1007)	RK01 (RB 75' EL. East)	Repair Procedure	2400-APR- 3665.01

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MONITOR AND CHANGE AREA (OB-FZ-10A) (cont'd)	<u>CONTAINMENT INSTR SYS</u> Drywell Press Ind. (PI-IP07)	Drywell Press Ind (PI-IP12)	CR Pnl 1F/2F	312	NA
	<u>RBCCW/SERV WTR SYSTEM</u> RBCCW Disch Hdr. Press Ind. (PI-IA18)	Local Gages (PI-50, 51)	RB 51' EL. East on Pump Disch. Piping	309.2	NA
	Shutdown Cooling Flow Control Valve (V-5-106)	Local Manual	SDC Room	305, 309.2	NA
	Service Wtr Hdr Press Ind. (PT-6)	Local Gage (PI-29)	Intake Structure	322	NA
	<u>CONTAINMENT SPRAY SYS</u> Sys I Drywell Spray Isolation Valve	Local Manual	RB 51' EL. East	310	NA
	Control Ckt (V-21-11)				
	System I Flow Ind. (FI-IP03A)	None	NA	310	NA
	System II Flow Ind. (FI-IP03B)	None	NA	310	NA
	<u>VENTILATION SYSTEM</u> "A/B" Battery Room Exhaust Fan Power and Control Ckt (EF1-20)	RSP	"B" 480V Swgr. Room	331, 346	NA
	"B" 480V Swgr. Rm Supp. Fan Power and Control Ckt (SF1-21)	RSP	"B" 480V Swgr. Room	331, 346	NA
	"B" 480V Swgr. Rm Exhst Fan Power and Control Ckt (EF1-21)	RSP	"B" 480V Swgr. Room	331, 346	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MONITOR AND CHANGE AREA (OB-FZ-10A) (cont'd)	<u>ELECTRICAL DISTR. SYS.</u>				
	125 VAC DC Control Pwr to USS 1B2 from DC "B"	125V DC Control Pwr from DC "A"	480V USS 1B2	340.1	NA
	Power Feeder to "A/B"	None	NA	340.1	NA
	Batt Static Charger				
	120VAC Power to RSP from Static Inverter (ALT)	120VAC Power to RSP From Pnl IP-4 (NORM)	"B" 480V Swgr. Room	346	NA
	125VDC Power to RSP from DC Pnl "D"	None	NA	346	NA
	Remote Shutdown Pnl				
	RSP Trouble Alarm (9XF-1-F)	Local Indications on RSP	"B" 480V Swgr. Room	346	NA
	<u>SHUTDOWN COOLING SYS</u>				
	A, B, C Loop Suction Valves (V-17-1, 2, 3)	Local Manual	SDC Room	305	NA
	A, B, C Loop Disch. Valves (V-17-55,56, 57)	Local Manua	SDC Room	305	NA
	<u>SHUTDOWN COOLING SYS.</u> V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MONITOR AND CHANGE AREA (OB-FZ-10A) (cont'd)					
Additional Manual Actions Required:					
(1) <u>IF</u> B battery charger is not available,					
<u>THEN</u> V-14-34 can be cycled for short term operation (approximately 3 hours) and then V-14-36 will have to be utilized for long term operation of the Isolation Condenser with V-14-34 left open or manually cycle V-14-34.					
(2) It may be necessary to use the CRD bypass line due to the loss of instrument air by performing the following:					
<ul style="list-style-type: none"> • Open V-15-237 • Throttle V-15-30 for desired flow on FI-225-2 • Close V-15-52 					
(3). Recharge V-11-36 Accumulator per Procedure 307 as required (accumulator is sized for approximately 5 strokes).					
(4) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may only be available in the FAN ONLY mode and may have to position its control switch to the "Bypass" position. In addition, the vent dampers may have to be manually opened per 331.1 Procedure.					
(4) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.					
<u>IF:</u> V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F					
<u>THEN:</u> Operate test plugs in Panel 3F per procedure 305, section 9.0.					
(5) <u>IF</u> USS 1B2 is not energized,					
<u>THEN</u> Open USS 1B2M breaker and remove close fuses. Cross-tie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this cross-tie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service (local manual operation if necessary). If local manual operation of the breaker is necessary, then remove the trip fuses prior to manually closing the breaker.					
(6) <u>IF</u> Ventilation is tripped in the B 480V Room					
<u>THEN</u> It has to be restored to support SDC by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or if EF-1-21 & SF-1-21 won't start due to cable failures, then provide temporary ventilation IAW Procedure 331.					
(7) <u>IF</u> V-5-106 has to be opened manually,					
<u>THEN</u> Open its supply breaker at MCC 1B21A. prior to opening V-5-106.					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
CHEM LAB, PASS ROOM, INSTR. SHOP (OB-FZ-10B)	<u>SHUTDOWN COOLING SYS</u>				
	A, B, C Loop Suct. Isolation Valves (V-17-1, 2, 3)	Local Manual	SDC Room	305	NA
	A, B, C Loop Disch. Isolation Valves (V-17-55, 56, 57)	Local Manual	SDC Room	305	NA
	<u>ELECTRICAL DISTR SYSTEM</u>				
	1B2M Control Circuit	Local Manual	"B" 480V Swgr. Room	338	NA
	120 VAC Power to RSP From Static Inverter (ALT)	120VAC Power to RSP from Pnl IP-4 (NORM)	"B" 480V Swgr. Room	346	NA
	125VDC Power to RSP From DC Panel "D"	None	NA	346	NA
	125VDC Control Power to USS 1B2 from DC "B"	125VDC Control Pwr From DC "A"	480V USS 1B2	340.1	NA
	Power to "A/B"				
	Batt Static Charger	None	NA	340.1	NA

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>CHEM LAB PASS ROOM, INSTR. SHOP (OB-FZ-10B) (cont'd)</p> <p><u>References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #2 for OB-FZ-10B) GU 3E-911-41-042 (Cold Shutdown Path #2 for OB-FZ-10B)</p> <p>Manual Action Required:</p> <p>(1) Prior to Reactor pressure decreasing to 310 psig, open the breakers for Core Spray Booster Pumps NZ03B and NZ03C at 480V USS 1B2, and remove 'close' fuses, provided these pumps are not required to assure adequate core cooling.</p> <p>(2) Makeup to the Isolation Condenser may have to be provided by a Fire diesel pump and valve line-up should be done in accordance with the 307 procedure (close V-11-41 & 63 and open V-9-2099 & V-11-49).</p> <p>(3) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may be available in the FAN ONLY mode, provided vent dampers are manually opened.</p> <p>(4) <u>IF</u> Instrument Air is lost,</p> <p style="padding-left: 40px;"><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>(5) <u>IF</u> USS 1B2 is not energized,</p> <p style="padding-left: 40px;"><u>THEN</u> Close USS 1B2M breaker and restore the following loads by closing their applicable breakers as necessary. Note local manual operation of USS 1B2 breakers may be required due to the potential loss of DC control power.</p> <ul style="list-style-type: none"> • Battery charger to the B battery (static charger from MCC 1B21 or MG Set from VMCC 1B2) • Ventilation to the B 480V Room (EF-1-21 & SF-1-21 from MCC 1B21) and then starting SF-1-21 and EF-1-21 or provide temporary ventilation IAW Procedure 331. • SDC pump (B or C) for cold shutdown. • RBCCW pump (if needed) 					

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FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
MAIN TRANSFORMER AND CONDENSATE TRANSFER PAD (MT-FA-12)	<u>CONDENSATE TRANSFER SYS</u> Condensate Transfer Pmp 1-1 Motor and Control Ckt Condensate Transfer Pmp 1-2 Motor and Control Ckt Condensate Storage Tank Level Indication LT-35	None	NA	316.1	NA
		LSP-1B32 Local Gage (LI-424-993)	Chlor. Bldg.	346	NA
			Cond. Stg. Tank	316.1	NA
	<u>ELECTRICAL DISTR SYS</u> 480V Power to MCC1B32	None	NA	338	NA

References:

GU 3E-911-41-041 (Hot Shutdown Path #3 for MT-FA-12)
GU 3E-911-41-042 (Cold Shutdown Path #1 for MT-FA-12)

Manual Action Required:

(1) IF Instrument Air is lost,

THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell or if V-2-90 is unavailable, then close V-2-54, 55 & 56 (Condenser Bay) and V-2-230, 231 & 232 (Feedpump Room) as depicted in ABN-37-5. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cool down to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
INTAKE AREA (CW-FA-14)	<u>SERVICE WATER SYSTEM</u> Service Water Pump 1-1 Service Water Pump 1-2 Service Water Hdr Press Indication (PT-6)	None LSP-1B3 Local Gage (PI-30)	NA Intake structure Intake Structure	322 322, 346 322	NA NA NA
	<u>EMERGENCY SERV WTR SYS</u> All ESW Pumps Pwr and Control Ckts (52 A, B, C, D)	Temporary Power to An ESW Pump from 4160V Swgr 1D	NA	Repair Procedure	2400-APR- 3531.01
	<u>ELECTRICAL DISTR SYS</u> USS 1A3 USS 1B3 480V MCC 1B32	None None None	NA NA NA	338 338 338	NA NA NA
	<u>VENTILATION SYSTEM</u> Control Room HVAC System "B"	Control Room HVAC System "A"	Control Room	331.1	NA

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>INTAKE AREA (CW-FA-14) (cont'd)</p> <p><u>References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #1 for CW-FA-14) GU 3E-911-41-043 (Cold Shutdown Path #3 for CW-FA-14)</p> <p>NOTE: This 'Cold Shutdown' Path utilizes 'Alternate Decay Heat Removal' per procedure 2000-OPS-3024.27, Section 4.4 to approach the Cold Shutdown condition (Core Spray, Containment Spray in Torus Cooling, and EMRV's). It may be necessary to perform repairs on affected equipment as identified in the matrix.</p> <p>Manual Action Required:</p> <p>(1) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may be available in the FAN ONLY mode, provided vent dampers are manually opened.</p> <p>(2) Makeup to the Isolation Condensers may have to be provided by a Fire Diesel pump; valve lineup should be performed in accordance with Procedure 307.</p> <p>(3) <u>IF</u> Instrument Air is lost,</p> <p> <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 17.4 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>(4) The Circulating Water Pump control and power cables run through this area.</p> <p> <u>IF:</u> The S1A or S1B breakers spuriously trip open,</p> <p> <u>THEN:</u> Manually open the Circ Water Pump breakers on the bus (i.e. breakers A6 and A7 on 4160V bus 1A or B5 and B7 on 4160V bus 1B), then manually reclose incoming breaker S1A or S1B, as applicable.</p>					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
#1 EDG VAULT (DG-FA-15)	All #1 EDG Control Ckts	None	NA	341	NA
	SHUTDOWN COOLING SYS. V-17-19 & V-17-54	Panel 3F Test Plugs	Control Room Panel 3F	305	NA

References:

GU 3E-911-41-040 (Hot Shutdown Path #1 for DG-FA-15)
GU 3E-911-41-042 (Cold Shutdown Path #1 for DG-FA-15)

Manual Action Required:

- (1) IF Instrument Air is lost,
- THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).
- (2) Cable failures may prevent operation of Shutdown Cooling Isolation Valves V-17-19 and V-17-54 from the Main Control Room.
- IF: V-17-19 & V-17-54 cannot be opened from Control Room Panel 11F
- THEN: Operate test plugs in Panel 3F per procedure 305, section 9.0.

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
#2 EDG VAULT (DG-FA-17)	<u>ELECTRICAL DISTRIBUTION</u> #2 EDG Control Ckts.	None	NA	341	NA
	<u>SHUTDOWN COOLING SYS</u> A, B, C Loop Suction Isolation Valves (V-17-1, 2, 3)	Local Manual	SDC Room	305	NA
	A, B, C Loop Disch. Isolation Valves (V-17-55, 56, 57)	Local Manual	SDC Room	305	NA
	<u>RBCCW SYSTEM</u> Shutdown Cooling HX Outlet Flow Control Valve (V-5-106)	Local Manual	SDC Room	305, 309.2	NA

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
<p>#2 EDG VAULT (DG-FA-17) (cont'd)</p> <p><u>References:</u> GU 3E-911-41-041 (Hot Shutdown Path #4 for DG-FA-17) GU 3E-911-41-042 (Cold Shutdown Path #2 for DG-FA-17)</p> <p><u>Manual Action Required:</u></p> <p>1) Temporary Control Room ventilation may need to be installed per Procedure 331.1 if 'B' CRHVAC is not available. 'A' CRHVAC may be available in the FAN ONLY mode, provided vent dampers are manually opened.</p> <p>2) <u>IF</u> Instrument Air is lost,</p> <p> <u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 10.1 ft in the CST may be required for reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p> <p>3) <u>IF</u> USS 1B2 is not energized,</p> <p> <u>THEN</u> Open USS 1B2M breaker and remove close fuses. Crosstie USS 1A2 & 1B2 IAW Procedure 338 by closing the tie-breaker (local manual operation if necessary). Note that this crosstie is required to get another SDC pump (B or C) and RBCCW pump (if needed) in service (local manual operation if necessary). In addition, ventilation will have to be restored to the B 480V Room by confirming MCC 1B21 is energized and then confirm closed EF-1-21 (unit E06) and SF-1-21 (unit D06) MCC 1B21 breakers and start EF-1-21 & SF-1-21 or provide temporary ventilation IAW Procedure 331.</p> <p>4) <u>IF</u> V-5-106 has to be manually opened,</p> <p> <u>THEN</u> Open its supply breaker on MCC 1B21A and then manually operate V-5-106.</p>					

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
EDG FUEL OIL STORAGE TANK (FS-FA-16)	Both EDG Fuel Oil Supplies from 14,000 Gal. Storage Tank	Bypass Line from 75,000 Gal. Storage Tank	Aux Boiler House, EDG Vaults	341	NA

References:

GU 3E-911-41-040 (Hot Shutdown Path #1 for FS-FA-16)
GU 3E-911-41-042 (Cold Shutdown Path #1 for FS-FA-16)

Manual Action Required:

- (1) There are no additional manual actions required for a fire in this area.

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
AUX BOILER HOUSE (AB-FA-13)	None	NA	NA	NA	NA
FIRE DIESEL PUMP HOUSE (FW-FA-18)	<p><u>References:</u></p> <p>GU 3E-911-41-040 (Hot Shutdown Path #1) GU 3E-911-41-042 (Cold Shutdown Path #1)</p> <p><u>Manual Action Required:</u></p> <p>(1) <u>IF</u> Instrument Air is lost,</p> <p><u>THEN</u> V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).</p>				
OLD RAD WASTE BLDG. (OR-FA-19)					
NEW RAD WASTE BLDG. (NR-FA-20)					
AOG BLDG. (OG-FA-21)					
NEW WAREHOUSE (NW-FA-23)					
MAINT. BLDG. (MB-FA-24)					
REDUNDANT FIRE PUMP HOUSE (PH-FA-25)					
SITE EMERGENCY BLDG. (EB-FA-28)					
LOW LEVEL RAD WASTE STGE. FAC (LL-FA-29)					

151.0

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
INDEP. SPENT FUEL STORAGE (LL-FA-30)	None	NA	NA	NA	NA
OLD/NEW RADWASTE YARD AREA (OR-FA-33)					
NEW AUXILIARY BUILDING (AB-FA-34)					
SGTS AND VENTILATION TUNNEL (SGTS-FZ-31)					
LLRW FACILITY YARD AREA (LL-FA-32)					

References:

GU 3E-911-41-040 (Hot Shutdown Path #1)
GU 3E-911-41-042 (Cold Shutdown Path #1)

Manual Action Required:

(1) IF Instrument Air is lost,

THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).

Attachment ABN-29-1
Equipment Availability Matrix for Fires

Procedure ABN-29
Rev. 9

FIRE ZONE	EQUIPMENT POTENTIALLY AFFECTED	ALTERNATE CONTROL/INDICATION	LOCATION OF ALTERNATE CONTROL/INDICATION	APPLICABLE PROCEDURE(S)	REPAIR DOCUMENT REFERENCE
YARD (OB Roof, TB Roof, CST area, Outside)	None	NA	NA	NA	NA

References:

GU 3E-911-41-040 (Hot Shutdown Path #1 or Path #2 depending on which ventilation is affected)
GU 3E-911-41-042 (Cold Shutdown Path #1 or Path #2 depending on which ventilation is affected)

Manual Action Required:

- (1) IF Instrument Air is lost,

 THEN V-2-90 in the Condensate Transfer Building should be closed promptly to prevent the CST from draining to the hotwell. Approximately 19.5 ft in the CST may be required for isolation condenser shell and reactor vessel makeup during cooldown to cold shutdown. Makeup to the CST as necessary from Demineralized Water (procedure 320.1), High Purity (procedure 351.2), or the Fire Protection system (as last resort, close V-9-11, open V-9-9 and open V-11-247).
- (2) IF Control Room ventilation has to be shutdown due to smoke or both trains of ventilation are affected for a fire on OB Roof,
 THEN use portable ventilation per procedure 331.1
- (3) IF B 480v Room ventilation is affected or AB Battery Room ventilation is affected,
 THEN use HSP # 2 and CSP #2
- (4) IF A 480V Room ventilation is affected,
 THEN use HSP #1 and CSP #1
- (5) IF The fire is at the Condensate Storage Tank (CST),
 THEN use HSP #3 (GU 3E-911-41-041) and CSP #3 (GU 3E-911-41-043)
- (6) IF V-5-106 has to be manually opened,

 THEN Open its supply breaker on MCC 1B21A and then manually operate V-5-106.

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PLANT FIRE

Revision No.

9

ATTACHMENT ABN-29-2

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

WHEN one (1) open recirculation loop has been determined by this attachment,

THEN Tag open the breakers for the recirculation loop suction and discharge valves associated with the open recirculation loop

Determine one (1) open recirculation loop (discharge valve and its associated suction valve both open) per the following steps. Recirculation loops may be checked in any order.

1.0 Recirculation Loop A

1.1 V-37-10, A Recirculation Loop Discharge valve in MCC 1A21A, Unit A04
(ref. GE 157B6350 Sh 327)

1.1.1 Open the breaker for the A Recirculation Loop Discharge valve, V-37-10 on MCC 1A21A. _____/_____

1.1.2 Remove the control power fuse for A Recirculation Loop Discharge valve, V-37-10.

Removed By: _____

Verified By: _____

1.1.3 Lift the following leads for the V-37-10 closed limit switch from the terminal strip in Unit A04 (cable 22-376).

• TB-1

Removed By: _____

Verified By: _____

• TB-60

Removed By: _____

Verified By: _____

Title

PLANT FIRE

Revision No.
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ATTACHMENT ABN-29-2 (continued)

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

- 1.1.4 Check that there is no continuity through the V-37-10 closed limit switch lifted leads which indicates V-37-10 is open.
Open _____
Not Open _____
- 1.1.5 IF V-37-10 is open,
THEN check that the A Recirculation Loop Suction valve, V-37-9 is open.
- 1.1.6 IF V-37-10 is not open,
THEN check a different recirculation loop for open suction and discharge valves.

1.2 V-37-9, A Recirculation Loop Suction valve in MCC 1A21A, Unit A01
(ref. GE 157B6350 Sh 326)

- 1.2.1 Open the breaker for the A Recirculation Loop Suction valve, V-37-9 on MCC 1A21A. _____/_____

- 1.2.2 Remove the control power fuse for A Recirculation Loop Suction valve, V-37-9.

Removed By: _____

Verified By: _____

- 1.2.3 Lift the following leads for the V-37-9 closed limit switch from the terminal strip in Unit A01(cable 22-373).

- TB-1

Removed By: _____

Verified By: _____

- TB-60

Removed By: _____

Verified By: _____

AmerGen <small>An Exelon Company</small>	OYSTER CREEK GENERATING STATION PROCEDURE	Number ABN-29
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ATTACHMENT ABN-29-2 (continued)

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

- 1.2.4 Check for no continuity through the V-37-9 closed limit switch lifted leads which indicates V-37-9 is open.
- Open _____
- Not Open _____
- 1.2.5 IF V-37-9 is open,
- THEN no further action is required in this attachment.
- 1.2.6 IF V-37-9 is not open,
- THEN check a different recirculation loop for open suction and discharge valves.

Title

PLANT FIRE

Revision No.

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ATTACHMENT ABN-29-2 (continued)

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

2.0 Recirculation Loop B

2.1 V-37-21, B Recirculation Loop Discharge valve in MCC 1B21A, Unit A03
(ref. GE 157B6350 Sh 347)

2.1.1 Open the breaker for the B Recirculation Loop Discharge Valve, V-37-21 on MCC 1B21A. _____/_____

2.1.2 Remove the control power fuse for B Recirculation Loop Discharge valve, V-37-21.

Removed By: _____

Verified By: _____

2.1.3 Lift the following leads for the V-37-21 closed limit switch from the terminal strip in Unit A03 (cable 22-384).

• TB-1

Removed By: _____

Verified By: _____

• TB-60

Removed By: _____

Verified By: _____

2.1.4 Check for no continuity through the V-37-21 closed limit switch lifted leads which indicates V-37-21 is open.

Open _____

Not Open _____

2.1.5 IF V-37-21 is open,

THEN check that the B Recirculation Loop Suction valve, V-37-20 is open.

2.1.6 IF V-37-21 is not open,

THEN Check a different recirculation loop for open suction and discharge valves.

Title

PLANT FIRE

Revision No.
9

ATTACHMENT ABN-29-2 (continued)

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

2.2 V-37-20, B Recirculation Loop Suction valve in MCC 1B21A, Unit A01
(ref. GE 157B6350 Sh 346)

2.2.1 Open the breaker for the B Recirculation Loop Suction Valve,
V-37-20 on MCC 1B21A. _____ / _____

2.2.2 Remove the control power fuse for B Recirculation Loop
Suction valve, V-37-20.

Removed By: _____

Verified By: _____

2.2.3 Lift the following leads for the V-37-20 closed limit switch from
the terminal strip in Unit A01 (cable 22-382).

• TB-1

Removed By: _____

Verified By: _____

• TB-60

Removed By: _____

Verified By: _____

2.2.4 Check for no continuity through the V-37-20 closed limit
switch lifted leads which indicates V-37-20 is open.

Open _____

Not Open _____

2.2.5 IF V-37-20 is open,

THEN no further action is required in this attachment.

2.2.6 IF V-37-20 is not open,

THEN check a different recirculation loop for open suction
and discharge valves.

Title

PLANT FIRE

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ATTACHMENT ABN-29-2 (continued)

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

3.0 Recirculation Loop C

3.1 V-37-32, C Recirculation Loop Discharge valve in MCC 1A21A, Unit B01
(ref. GE 157B6350 Sh 328)

3.1.1 Open the breaker for the C Recirculation Loop Discharge Valve, V-37-32 on MCC 1A21A. _____/_____

3.1.2 Remove the control power fuse for C Recirculation Loop Discharge valve, V-37-32.

Removed By: _____

Verified By: _____

3.1.3 Lift the following leads for the V-37-32 closed limit switch from the terminal strip in Unit B01 (cable 22-377).

• TB-1

Removed By: _____

Verified By: _____

• TB-60

Removed By: _____

Verified By: _____

3.1.4 Check for no continuity through the V-37-32 closed limit switch lifted leads which indicates V-37-32 is open.

Open _____

Not Open _____

3.1.5 IF V-37-32 is open,

THEN check that the C Recirculation Loop Suction valve, V-37-31 is open.

3.1.6 IF V-37-32 is not open,

THEN check a different recirculation loop for open suction and discharge valves.

Title

PLANT FIRE

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ATTACHMENT ABN-29-2 (continued)

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

3.2 V-37-31, C Recirculation Loop Suction valve in MCC 1A21A, Unit A02
(ref. GE 157B6350 Sh 326)

3.2.1 Open the breaker for the C Recirculation Loop Suction Valve,
V-37-31 on MCC 1A21A. _____/_____

3.2.2 Remove the control power fuse for C Recirculation Loop
Suction valve, V-37-31.

Removed By: _____

Verified By: _____

3.2.3 Lift the following leads for the V-37-31 closed limit switch from
the terminal strip in Unit A02 (cable 22-374).

• TB-1

Removed By: _____

Verified By: _____

• TB-60

Removed By: _____

Verified By: _____

3.2.4 Check for no continuity through the V-37-31 closed limit
switch lifted leads which indicates V-37-31 is open.

Open _____

Not Open _____

3.2.5 IF V-37-31 is open,

THEN no further action is required in this attachment.

3.2.6 IF V-37-31 is not open,

THEN check a different recirculation loop for open suction
and discharge valves.

Title

PLANT FIRE

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ATTACHMENT ABN-29-2 (continued)

DETERMINING OPEN RECIRCULATION LOOP ISOLATION VALVES

4.0 Recirculation Loop D

4.1 V-37-43, D Recirculation Loop Discharge valve in MCC 1B21A, Unit A04
(ref. GE 157B6350 Sh 347)

4.1.1 Open the breaker for the D Recirculation Loop Discharge Valve, V-37-43 on MCC 1B21A. _____/_____

4.1.2 Remove the control power fuse for D Recirculation Loop Discharge valve, V-37-43.

Removed By: _____

Verified By: _____

4.1.3 Lift the following leads for the V-37-43 closed limit switch from the terminal strip in Unit A04 (cable 22-385) .

• TB-1

Removed By: _____

Verified By: _____

• TB-60

Removed By: _____

Verified By: _____

4.1.4 Check for no continuity through the V-37-43 closed limit switch lifted leads which indicates V-37-43 is open.

Open _____

Not Open _____

4.1.5 IF V-37-43 is open,

THEN check that the D Recirculation Loop Suction valve, V-37-42 is open.

4.1.6 IF V-37-43 is not open,

THEN check a different recirculation loop for open suction and discharge valves.

