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SP Number 29.015.01

Revision 9

Date Eff.: 1-25-85

LOSS OF OFF-SITE POWER

EMERGENCY PROCEDURE

MC-1

1.0 SYMPTOMS:

1.1 Loss of both normal and reserve station power.

1.2 Included in the number of station annunciators that would occur, the following annunciators actuate:

1.2.1 4 KV EMERGENCY BUSES 101, 102, 103 UV

1.2.2 4 KV BUS 1A, 1B, 11, 12, UV

1.2.3 480 V NSS SPLY BUS UV

1.3 All AC bus voltmeters and ammeters indicate zero until the Emergency Diesel Generators re-energize the emergency buses.

2.0 AUTOMATIC ACTIONS:

2.1 Reactor Scram

2.2 NSSSS Isolation

2.3 Emergency Diesel Generators 101, 102, and 103 start and energize the emergency buses.

2.4 Service Water pumps start; one pump on each 4 KV emergency bus.

2.5 RBSVS Initiates

2.6 RBSVS/CRAC Chillers start.

3.0 IMMEDIATE ACTION:

INITIALS

3.1 Verify automatic actions and manually initiate any which failed to occur. _____

3.2 Enter the Emergency Shutdown Procedure, SP 29.010.01. _____

3.3 Notify the System Operator that a loss of offsite power has occurred. Determine from the System Operator if the Holtsville or the onsite 20 MW black start gas turbines have started. _____

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4.0 SUBSEQUENT ACTION:

CAUTION: Do not exceed a load of 3300 KW on any Emergency Diesel Generator.

4.1 Ensure that each Emergency Diesel Generator is maintaining its associated bus at or close to 4160 V and 60 Hz. _____

4.2 If the Loss of Offsite Power continues for greater than 15 minutes, then notify the Watch Engineer to classify the event per EPIP 1-0 and initiate the emergency plan as required. _____

4.3 If the 3300 KW load limit is or will be exceeded by addition of other loads, refer to Table 1 for a listing of loads which may be removed. _____

CAUTION: Emergency Diesel Generator load shall not exceed 3250 KW prior to energizing a Reactor Protection System bus from that generator.

4.4 Re-energize Reactor Protection System buses A and B from either their normal or alternate supply. _____

CAUTION: Continue in this procedure only when adequate core cooling is assured and Primary Containment pressure and temperature are under control.

CAUTION: Emergency Diesel Generator load shall not exceed 3200 KW prior to starting the associated RBCLCW pump.

4.5 Start one RBCLCW pump in each loop. _____

CAUTION: Emergency Diesel Generator load shall not exceed 3050 KW prior to starting the associated Control Rod Drive pump.

4.6 Start one Control Rod Drive pump. (With a LOCA signal present, the CRD pump is locked out for 60 seconds. In addition, RBCLCW cooling water to the pump will be isolated by a LOCA signal.) _____

4.7 Verify that the following equipment has adequate lubrication by ensuring that one lubricating oil pump is operating for each major piece of equipment:

NOTE: While a LOCA signal is present the following AC powered turbine auxilliary loads are locked out.

4.7.1 Main Turbine

4.7.1.1 AC powered Main Turbine Turning Gear Oil Pump, N34-P-115. (Starts when Shaft Driven Pump discharge is < 190 psig or bearing header is < 15 psig)

OR

DC powered Main Turbine Emergency Bearing Oil Pump N34-P-116. (Starts if Turning Gear Oil Pump fails.) _____

4.7.3 Reactor Feedpump Turbine

4.7.3.1 AC powered Feedpump Turbine Turning Gear Oil Pump, N34-P-164A & B. (Starts when Reactor Feedpump Turbine bearing header < 44 psig)

OR

4.7.3.2 DC powered Feedpump Turbine Turning Gear Emergency Oil Pump, N34-P-165A & B (Start when Reactor Feedpump Turbine bearing header < 36 psig). _____

4.7.4 Reactor Recirculation MG Set

4.7.4.1 DC powered Reactor Recirculation MG Set Emergency Lube Oil pumps (B31-P-130A/B). _____

CAUTION: Emergency Diesel Generator load shall not exceed the following prior to energizing the associated MCC:

3250 KW for Emergency Diesel Generator 101	MCC111B
3250 KW for Emergency Diesel Generator 102	MCC112B
3150 KW for Emergency Diesel Generator 103	MCC113A

4.8 If a LOCA signal is present, then reset the Shunt Trip Override switches for MCC 111B, MCC 112B, and MCC 113A in the corresponding Emergency Switchgear Rooms. Then reset the supply breaker for each MCC. (These actions energize the AC powered loads in step 4.7 as well as the Main Turbine and Reactor Feedpump Turbine Turning Gears and the Main Turbine Bearing Lift Pumps.)

4.9 Evaluate plant conditions at this time. Verify that plant status is consistant with Technical Specifications; if not, then initiate corrective actions to restore plant status to within the Technical Specifications. _____

4.10 When NSST and/or RSST power is restored perform the following:

NOTE: Monitoring by control room personnel of power restoration to the NSST or the RSST by system operations may be accomplished by closing Bkrs. 1A-3 or 1B-2 (NSST) or Bkrs. 1A-4 or 1B-1 (RSST) and monitoring bus indicating lights on MCB-1.

4.10.1 Verify that the 4KV normal busses are energized. If only the NSST or RSST is restored, lineup all normal buses to that transformer. (If a LOCA signal is present, bus 11 and 12 cannot both be connected to one transformer.) _____

4.10.2 Restore the TBCLCW system to service.

4.10.2.1 Place the TBCLCW Pump control switches in PULL-TO-LOCK. _____

4.10.2.2 Verify that the discharge valve for each TBCLCW pump is CLOSED. _____

4.10.2.3 Start one TBCLCW pump and verify that the pump starts and that the associated discharge MOV opens. _____

4.10.2.4 Place the control switch for the standby TBCLCW pump to AUTO-AFTER-STOP. _____

4.10.3 Restore the Instrument and Service Air System to service.

4.10.3.1 Place the RUN, PRI and SEC air compressor control switches (in that order) to OFF and then back to the original position. _____

4.10.3.2 Verify that the RUN compressor starts. _____

4.10.4 Transfer the emergency buses to their normal supplies and place the Diesel Generators in Standby. _____

4.11 Evaluate plant conditions and restart or shutdown the following equipment as required per the appropriate operating procedures:

4.11.1 Restart the RBNVS and shutdown the RBSVS. _____

4.11.2 Restart Turbine Building HVAC _____

4.11.3 Restart Radwaste Building HVAC _____

4.11.4 Restart Reactor Water Cleanup System _____

4.11.5 Restart one Condensate Pump _____

4.11.6 Restart the Vacuum Priming System and at least one Circulating Water Pump per condenser half. _____

4.11.7 Restart one Fuel Pool Cooling Pump _____

4.11.8 Shutdown the third RBCLCW pump if all three are operating. _____

4.12 Re-evaluate plant conditions at this time to determine if the plant is to be restarted or remain shutdown. _____

4.13 Restart other systems and equipment as required. _____

5.0 FINAL CONDITIONS:

5.1 Electrical power has been restored to NSST and RSST. _____

5.2 Emergency Diesel Generators have been restored to Standby. _____

5.3 SP 29.010.01, Emergency Shutdown procedure has been completed. _____

5.4 Appropriate information logged in the Control Room Log Book. _____

6.0 DISCUSSION:

6.1 This procedure provides information and instructions to place the plant in a safe condition following a simultaneous loss of both normal and reserve station power. For this procedure, it is assumed that the plant is operating at full power when the incident occurs.

6.2 The qualified load is defined as the load level at which the Emergency Diesel Generator has been demonstrated to be capable of functioning for a sustained period of time. The Shoreham EDGs have been qualified by test to 3300 KW.

The Shoreham TDI emergency diesel generators and emergency loads have been evaluated to assure that the "maximum emergency service load" (MESL) on each diesel will not exceed 3,300 KW. The MESL is determined for each EDG by summing the individual loads which will be simultaneously connected to that EDG following any event. The evaluation concluded that the LOOP/LOCA is the limiting event and that the MESL is 3253.3 KW for EDG-101, 3208.7 KW for EDG-102 and 3225.5 KW for EDG-103. These MESL values are based on the initial continuous load that is automatically applied to the EDGs during a LOOP/LOCA prior to any operator action. In the early phases of operator action affecting the EDG loads, the RHR and Core Spray pumps will first be throttled back to their rated flow conditions (7,700 gpm for each RHR pump in a loop and 4725 gpm for each Core Spray Pump) thereby reducing EDG load sufficiently to allow for the addition of MSIV-LCS, RPS MG Sets if re-settable and Primary Containment Atmospheric Control System (recombiners) if necessary. Those operator actions which add load to the

diesel must be done in accordance with the EDG load management precautions and guidance provided in this procedure to ensure that the qualified load (3,300 KW) is not exceeded. The actual loads on the the EDGs are expected to be significantly lower than the calculated MESL values. This is based upon the Intergrated Electrical Test (IET) which was performed at Shoreham with the TDI diesel generators. The peak loads measured for each EDG were 2833.6 KW, 2806.9 KW and 3072.0 KW for EDG-101, 102 and 103, respectively.

6.3 Special consideration should be given to those systems and equipment in Radwaste which were in operation when power was lost. Valve lineups, etc., should be checked carefully before continuing an operation which had been interrupted.

6.4 This load management program has been implemented to confrom with SNRC-1092 dated Oct 29, 1984, Qualified Load - TDI Diesel Generators.

TABLE 1

The following loads, controlled from the Main Control Room, trip on a loss of power with a LOCA-Signal when the EDG output breakers close:

	MAX LOAD (KW)		
	EDG-101	EDG-102	EDG-103
Main Turbine Turning Gear Oil Pump (N34-P-115)	-	-	32
Main Turbine Bearing Lift Pump (N34-P-093 A-G)	8	8	12
Feedpump Turbine Turning Gear (N39-TG-002 A&B)	1.2	1.2	-
Feedpump Turbine Turning Gear Oil Pump (N34-P-164 A&B)	8	8	-
Control Rod Drive pump (C11-P-017 A&B)	206.1	206.1	-
RBCLCW pump (P42*P-005C)			80
Drywell Cooling System Fan (T47-UC-17 A&B)	80	80	-
Reactor Water Cleanup Recirc. Pump (G33-P-019 A&B)	-	48	48
Main Turbine Turning Gear (N39-TG-001)	-	-	48
Main Turbine Piggyback Turning Gear Drive (N39-PBM-001)	-	-	0.4

The following loads, controlled from their respective Emergency Switchgear Rooms, Trip on a loss of Power with a LOCA signal when EDG output breakers close:

Lighting (Equivalent KW) (X40-PNL-AC1&2 & T51-PNL-AC2)	180	-	227.2
RFP EHC Control Transformer (N32-PNL-EHX)	1.2	1.2	-
Reactor Protection System Backup Transformer (C71-T-001)	-	-	20
Battery Charger +24V (R41-BC-A2-1&2&B2-1&2)	2.4	2.4	-
120 V Nonemergency Feeds (R35-T-N20)	-	-	12

The following loads powered from (RB 78'), trip on a loss of Power with a LOCA:

	LOAD (KW)		
	EDG 101	EDG 102	EDG 103
Refueling Jib Crane (T31-CRN-008A & B)	2.5	2.5	-
Standby Liquid Control Main Heater (C41-H-009A)	-	10	-
Standby Liquid Control Mixing Heater (C41-H-009B)	45	-	-
Standby Liquid Control Heat Tracing (R81-T-002A & B)	3	3	-
Primary Containment Air Cooler Subfeed (H11*PNL-VC2)	1.6	1.6	-

The following loads controlled locally, Relay Room (CB-44' el), Trip following a loss of Power or a loss of Power with a LOCA Signal, when the EDG ouput breaker closes:

Reactor Protection System M/G Sets-(1C71-MG-002A&B)	20	20	-

The following loads, controlled locally, from their respective Emergency Diesel Generator Rooms, Shutdown following A loss of power or A loss of power with a LOCA signal when their respective diesel starts:

Diesel Generator Jacket Water Heater (R43*H-014A-C)	72	72	72
Diesel Generator Jacket Water Keep Warm Pump (R43*P-238 A-C)	2.5	2.5	2.5
Diesel Generator Lube Oil Heater (R43*H-015 A-C)	20	20	20
Diesel Generator Before & after Lube Oil Pump (R43*P-226 A-C)	4	4	4
Diesel Generator Heater (R43*H-012 A-C)	4.2	4.2	4.2