

NRC

REV.     

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EMERGENCY PROCEDURE EP-25

TITLE: <sup>one</sup> Loss of Auxiliary Transformers / Substation Bus

APPROVALS: PORC (Vice-Chairman) RP Warren DATE 4/8/79

UNIT SUPT.: J. L. [unclear] DATE 4/17/79

B&W W. A. Spang DATE 4/16/79 NRC M. [unclear] DATE 4/17/79

ALARA W. R. [unclear] DATE 4/16/79

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## LOSS OF ONE AUX TRANSFORMER/SUBSTATION BUS

## 1.0 Symptoms

1.1 If loss of aux transformer 2A, one or more of the following alarms occur

1.1.1 18.F11 bus 4/8 differential

1.1.2 18.B6 2A aux transformer sudden pressure

1.1.3 18.C6 2A aux transformer voltage loss

1.1.4 18.E5 Generator/Transformer Protective Lockout Relay Trip

1.2 If loss of aux transformer 2B, one or more of the following alarms

may occur.

1.2.1 18.F11 bus 4/8 differential

1.2.2 18.E6 2B aux transformer sudden pressure

1.2.3 18.F5 2B aux transformer voltage loss

1.2.4 18.E5 Generator/Transformer Protective Lockout Relay Trip

1.3 The 230KV bus 4 or bus 8 voltmeters on panel 6 may indicate zero volts.

1.4 The 4.160 and 6.9 KV bus voltmeters indicate zero volts.

## 2.0 Immediate Action

## 2.1 Automatic Action

2.1.1 The following pumps will trip if automatic bus transfer does not occur.

- a.) Reactor coolant pump on the affected bus
- b.) Circ water pump(s) on the affected bus
- c.) Condensate pump on the affected bus

2.1.2 If automatic bus transfer does occur, pumps should continue

2.1.3 Diesel Gen associated with 4.16 KV bus will start and feed bus if auto-transfer does not function.

2.2 Manual Action

2.2.1 If the running reactor coolant pump is on the affected bus and automatic transfer does not occur, follow emergency procedure

EP-52

2.2.2 If the running circulating pumps are on the affected bus and automatic transfer does not occur, start an additional circ

water pump on the energized bus to maintain maximum cooling capability.

2.2.3 If the running condensate pump is on the affected bus and automatic transfer does not occur, start one condensate pump on the energized bus as per standard operating procedures.

2.2.4 Verify that the diesel generator associated with the lost

bus starts. Assumes ESF loads and has voltage  $\geq 3700$  volts.

2.7.5 If auto transfer did not function, attempt to manually transfer buses.

3.0 Follow Up Action

3.1 Attempt to restore the inoperative aux transformer as soon as possible by performing section 4.0 in conjunction with Relay Personnel in the 230K Substation House.

3.2 Start the idle vacuum pump in the energized bus.

3.3 Start the instrument air compressors

3.4 Maintain primary conditions as required in accordance with emergency procedure EP-7, "Loss of Offsite Power."

3.5 Secure any unnecessary loads automatically started on the diesel sequence.

3.6 After power is restored, start equipment necessary to bring plant to stable condition.

4.0 230KV Bus/Aux Transformer Restoration

4.1 Line relay operations are followed by reclosing

a.) For line operations where reclosing is blocked, both buses are fed from multiple sources. Lines should be shot from remote ends.

If hot line is indicated, close locally if breaker does not close.

b.) If auto transformer line clears, do not shoot unless you are reduced to one source and others fail attempts to close.

4.2 For loss of one bus contact both control rooms. Have all lockouts reset and ask which ones were up. While waiting for report, check for bus diff targets respond as follows:

a.) Diff targets found - do not wait for control room response, shoot bus with 1091 line breaker. If trip again 154:089.

## b.) No diff targets:

1. Unit #1 reports transformer lockouts up (should have reset per above) and bus lockouts. Isolate transformer by opening 1A-08 or 1B-04. While isolating have Unit #2 reset lockouts. When isolated, shoot bus with 1091 breaker and close rest of sub.
2. Unit #2 reports transformer lockouts and bus lockouts (should have reset). Shoot bus from 1091 breaker. If it trips again - transformer is failed. Notify control room (#2) that only feed they have is one remaining. Isolate bank and reestablish bus. (This will not aid plant but will provide system betterment.)
3. For loss of both buses. Shoot one 1091 breaker. If this fails, shoot other 1091 breaker. If one holds, notify Unit #2 that appropriate low side breakers may be closed after they reset lockouts. Same applies to Unit #1 after Unit #2 established.

TMI #2 Low Side Feeders#4 Bus - 2A Aux Bank

2A-12  
2A-22  
2A-62  
2A-32  
2A-42  
2A-1E2  
2A-2E1

#8 Bus - 2B Aux Bank

2B-12  
2B-22  
2B-52  
2B-32  
2B-42  
2B-1E2  
2B-2E2

## #4 Bus Trip Indication

BC3 Panel - Three white lights out  
BC4 Panel - 105102 Trip - Green light  
AC4 Panel - 109112 Trip - Green light  
AC8 Panel - 1B-12 Trip - Green light

## #8 Bus Trip Indication

AC5 Panel - Three white lights out  
AC4 Panel - 109102 Trip - Green light  
AC7 Panel - 109202 Trip - Green light  
AC9 Panel - 1B-02 Trip - Green light

NOTE: Sync switch must be used to close all breakers

S1B-04 and S1A-08 are out back door. S1B-04 is near plant. S1A-08  
is near river.

S2A-04 and S2B-08 are out front door and to left. S2A-04 is near plant.

S2B-08 is near river.

To reset Unit #1 fault pressure lockout (control room) you must first  
push reset button on PR panel in Control Room. (208-016)