

REV. 10

DATE 4/19/79

EMERGENCY PROCEDURE EP- 7

NRC

TITLE: LOSS OF OFFSITE POWER

APPROVALS: PORC (Vice-Chairman) AG Funder DATE 4/21/79

UNIT SUPT.: John Logan DATE 4/25/79

B&W Spinaing DATE 4/29/79 NRC Glen Stelly DATE 4/24/79

ALARA Wynhane DATE 4/24/79

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EP-7 LOSP

LOSS OF OFF-SITE POWER

**Purpose:** The purpose of this procedure is to provide an interim method for handling a LOSP until such time as the load sequencing/distribution system modifications have been completed and another appropriate procedure is written.

An alternate power supply is run to the pressurizer vent valve (RC-V137) and block valve (RC-V2), but not connected; no attempt is made to power the pressurizer heaters and if the loss is extended the primary will be allowed to go solid.

1.0 Symptoms

- 1.1 Zero volts on 230 KV bus voltmeters on the Electric Control Panel No. 6A.
- 1.2 2A & 2B Auxiliary Transformer voltage loss alarm
- 1.3 Diesel Generator running indication on Panels 26 & 29.

2.0 Immediate Action

2.1 Automatic Action

- 2.1.1 Reactor Coolant Pump(s) trip
- 2.1.2 Instrument Air Compressors Trip  
**CAUTION:** The atmospheric dump valves and emergency feedwater and seal injection control valves will only function as long as the reserve air in the air receivers is available.
- 2.1.3 Diesel Generators DF-X-1A and 1B start and energize the emergency buses.
- 2.1.4 DH-V5A and 5B open.
- 2.1.5 MU-P-1A and 1C will start if out of "pull-to-lock".
- 2.1.6 NR-P-1A (1B) and 1C (10) will start.
- 2.1.7 Two NSCCW pumps start
- 2.1.3 IC-P-1A and 1B start
- 2.1.9 EF-P-2A and 2B start (if not in pull to lock) taking suction from CST.

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2.1.10 Operating condensate pump trips.

2.1.11 Turbine trip (if not already tripped)

NOTE: Action should be taken to perform each of the steps in section 2.2 in parallel as manpower permits.

2.2 Manual Action

NOTE: If at any time, during the performance of this section, power is restored attempt to return to conditions prior to the loss and to restore prsr level and pressure instead of going solid.

2.2.1 Verify that the automatic actions, as listed in 2.1, occur and start necessary equipment which did not start automatically.

2.2.2 Perform EP-32 "Loss of all RCP's with Natural Circulation", with the following exceptions

NOTE: These changes are a result of the loss of power to the condensate pumps and the transfer of steam flow control to the atmospheric dump valve.

a) Open (or check open) the following valves:

- |             |                 |
|-------------|-----------------|
| MS-V1A      | EF-V4A& B       |
| CO-V98A&B   | EF-V12A         |
| CO-V82A     | EF-V8A , EF-V8B |
| CO-V83A & B | EF-V9           |
| EF-V5B      |                 |

NOTE: The turbine bypass control valve (MS-V25A or MS-V26A) will go closed and the atmospheric dump valve (MS-V3A) may be opened. The operator should take action to ensure this transfer has occurred and position MS-V3A as necessary to maintain RCS temperature. \*

b) Close the following valves:

- |         |         |
|---------|---------|
| FW-V19A | EF-V7A  |
| EF-V12B | EF-V7B  |
| EF-V33A | EF-V7C  |
| EF-V11A | EF-V39  |
| FW-V17A | CO-V87  |
| EF-V5A  | CO-V82B |

EF-V33B

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\* Automatic opening interlock of atmospheric dump valve on loss of vacuum has been defeated. Atmospheric dump valve must be manually opened.

- c) Start EF-P-2A
- d) Open EF-V11A as necessary to restore and maintain level in "A" OTSG.
- e) Open EF-V39 as necessary to increase recirc flow back to CST A and maintain minimum required flow through EF-P-2A.

2.2.3 RESTART Instrument Air Compressors

2.2.4 Complete the following steps:

- 2.2.4.1 Have Electricians connect jumper for RC-V2 and RC-V137 at MCC 2 - 32B Unit 4BR and 6CR to the breaker side of the overload block insuring proper phasing and that the breaker for RC-V2 and RC-V137 are open.

NOTE: If only the "A" Diesel Generator is available, the tie breakers between BUS-2-11E and 2-21E must be closed to energize RC-V2 and RC-V137.

- 2.2.4.2 Close the alternate feed breaker for RC-V2 and RC-V137 (MCC 2-21EA, Unit 2BR).  
Note: HPI relief path will be through RC-V137 (and RC-V2 as necessary).

- 2.2.4.3 Open RC-V137

- 2.2.4.4 As the system approaches going solid, throttle flow through MU-V16A, (B,C,D,) to match flow through RC-V137 (RC-V2) by monitoring RCS pressure.

- 2.2.4.5 Throttle RC-V137, (RC-V2)\* and/or MU-V16A (B,C, or D) to OBTAIN the RCS pressure desired. Maintain RCS pressure between 600 and 1500 psig.

NOTE: Increasing pressure indicates too much HPI flow - THROTTLE the appropriate MU-V16 valve. Maintain minimum flow of 100 gpm/pump by opening MU-V36 and 37 as necessary. If RCS pressure exceeds 1850 psig Safety Injection will "arm". Safety Injection Actuation will occur if pressure drops < 1640 psig and Safety Injection is not bypassed.

\* RC-V2 should be used as the alternate 153 261

- 4.3 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 breaker may be closed after they reset lockouts. Same applies to Unit #1

2.2.5 Control steam generator pressure by manual control of the atmospheric dump valves.

2.2.6 Ensure suction supply to the makeup pumps from the makeup tank, then close DH-V5A and V5B.

3.0 Long Term Action

3.1 ATTEMPT to re-establish off-site power by performing Section 4.0 in conjunction with Relay Personnel in the 230 KV Substation House.

3.2 Establish emergency feedwater flow to the A steam generator if the long term loss of condensate pumps is anticipated.

4.0 Restoration of 230 Bus 1 Aux. Transformer

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 other attempts fail 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 and respond as follows:

- a) Diff targets found - do not wait for control room response. Shoot bus with 1091 line breaker. If trip again, locate fault.
- b) No diff targets:
  - 1. Unit #1 reports transformer lockouts up (should have reset per above) and bus lockouts. Isolate transformer by opening S1A-08 or S1B-04. While isolating, have Unit #2 reset lockouts. When isolated, shoot bus with 1091 breaker and close reset 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 the only feed they have is one remaining. Isolate bank and reestablish bus. (This will not aid plant but will provide system betterment.)

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TR1 #2 Low Side Feeders

04 Bus - 2A Aux Bank

2A-12

2A-22

2A-62

2A-32

2A-42

2A-1E2

2A-2E2

08 Bus - 2B Aux Bank

2B-12

2B-22

2B-52

2B-32

2B-42

2B-1E2

2B-2E2

04 Bus Trip Indication

BC3 Panel - Three white lights out

BC4 Panel - 105102 Trip - Green light

AC4 Panel - 109112 Trip - Green light

ACB Panel - 13-12 Trip - Green light

08 Bus Trip Indication

AC5 Panel - Three white lights out

AC4 Panel - 109102 Trip - Green light

AC7 Panel - 109202 Trip - Green light

AC9 Panel - 13-02 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. (20S-C16)