

Volume 05

Section 02

05-1-02-I-4

Revision: 13

Date:

# INFORMATION COPY ONLY

OFF-NORMAL EVENT PROCEDURELOSS OF OFFSITE POWERSAFETY RELATEDPrepared: *[Signature]*Reviewed: *[Signature]*

Nuclear Plant Quality Superintendent

Technical Review

Approved: *[Signature]*

Operations Superintendent

List of Effective Pages:

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List of TCN's Incorporated:

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0	None
10	None
11	None
12	None
13	None

Effective Date	Revised By	Reviewed By
( )	( )	( )
( )	( )	( )
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## 1.0 PURPOSE/DISCUSSION

- 1.1 To provide instructions for the operator in the event 500 KV power is lost, or two or more offsite power supplies are lost.
- 1.2 This procedure may interface with ONEP 05-1-02-I-1, Reactor Scram, and with the Emergency Procedure and the Emergency Plan.
- 1.3 Unit service power, when being supplied from the 500 KV Switchyard and the 115 KV Offsite circuit, normally feeds 4 KV ESF Busses 15AA, 16AB and 17AC from ESF Transformer 11, 12 or 21. Each ESF Transformer has been sized to handle the power required to start the ESF loads of one unit due to a LOCA and run the ESF loads of the other unit required for safe shutdown.

Should offsite power become totally unavailable, three (3) emergency diesel generators are provided for each unit. Two of the three diesels in each unit can provide the necessary power for a plant cooldown or for ESF system requirements. A Gas Turbine Generator (GTG) System is available, should both STBY D/G11 and D/G12 diesel generators fail to supply their respective busses.

## 2.0 SYMPTOMS

- 2.1 Loss of AC power to running equipment
- 2.2 Loss of normal lighting
- 2.3 Reactor Scram
- 2.4 Turbine Trip
- 2.5 Division I, II, and III, emergency diesel generators auto-start and energize their respective busses, unless ESF Power is being applied from the 115 KV line (ESF transformer 12).
- 2.6 Load dispatcher or other indications define a degraded offsite power condition.

## 3.0 AUTOMATIC ACTIONS

- 3.1 Main Generator load reject, causing a turbine trip
- 3.2 Reactor Scram
- 3.3 MSIV's trip closed (due to loss of solenoid power)
- 3.4 Condensate Pump, Condensate Booster Pump, and Reactor Feed Pump Turbine Trip
- 3.5 Reactor Recirc Pumps trip

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- 3.6 Circ Water Pumps trip (Turbine Bypass System operation blocked on decreasing Main Condenser vacuum).
- 3.7 Safety/Relief Valves operate to control reactor pressure.
- 3.8 Reactor water level decreases to low-low water level 2, initiating HPCS and RCIC.
- 3.9 LSS system sheds loads from ESF 4 KV buses 15AA and 16AB and Emergency Diesel Generator 11, 12 and 13 auto-start and energize ESF 4 KV Busses 15AA, 16AB and 17AC (unless supplied for ESF Transformer 12).
- 3.10 Group I, II, III, VI, VII, VIII and X Isolations.
- 3.11 Turbine-Generator emergency oil pump, Generator emergency seal oil pump, and RFP Turbine A and B emergency bearing oil pumps auto-start on decreasing oil pressure (250 V DC bus 110F).
- 3.12 Both diesel-driven Fire Pumps A and B auto-start on loss of charger power.
- 3.13 120V AC UPS system remains in service.
- 3.14 Plant DC electrical busses remain in service (powered from their respective batteries or battery chargers), supplying emergency lighting and communications, RCIC system, and critical plant instrumentation.
- 3.15 SSW pump will auto start, along with associated SSW cooling tower fans.

#### 4.0 IMMEDIATE OPERATOR ACTION

- 4.1 Verify emergency diesel generators have started and energized ESF 4KV Busses 15AA, 16AB, and 17AC.
  - 4.1.1 If both STBY D/G11 and STBY D/G12 fail to energize their respective busses, notify the GTG System Crew (Phone 80-2109 or Radio) to start and make ready to load the GTG's. Refer to Station Blackout Proc. #05-1-02-I-6 for energizing busses from the GTG's.
- 4.2 Carry out the actions of EP-1, Level Control.
- 4.3 Carry out the actions of ONEP 05-1-02-III-2, Loss of One of Both EPS Busses.
  - 4.3.1 If a scram should have occurred, but did not, enter EP-10.

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4.4 Recover from Containment, Drywell, and Auxiliary Building isolations in accordance with ONEP 05-1-02-III-5, Automatic Isolations and SOI 04-1-01-M71-1, Containment and Drywell Instrumentation, and Control.

4.4.1 Check containment parameters and enter EP-3, as required.

## 5.0 SUBSEQUENT ACTION

5.1 SEE INSERT

5.1.2 Proceed to implement the Emergency Plan as directed by the Shift Supervisor/Shift Superintendent.

5.2.3 Monitor the emergency diesel generators locally.

5.3.4 Refer to SOI 04-1-01-R21-1, Load Shedding and Sequencing System, to determine the systems which will auto start, and for the systems, which must be started manually.

5.4.5 Attempt to locate and correct the power failure. When corrected, re-energize the plant as follows:

5.4.1 Reset the LSS Panel per SOI 04-1-01-R21-1 as soon as the offsite power is restored.

5.4.2 Re-energize major busses.

5.4.3 Insure all large motors have a stop signal.

5.4.4 Reset the bus undervoltage lockout relays.

5.4.5 Re-start systems per the respective SOI's as needed.

5.4.6 Return ESF busses from the diesel/generators to normal power per SOI 04-1-01-P75-1 and 04-1-01-P81-1.

5.5 Ensure the Main Turbine DC emergency oil pump supplies lubricating oil during the roll-down to zero speed and for at least 15 minutes thereafter.

5.6 Ensure the Reactor Feed Pump Turbine A and B DC emergency bearing oil pumps supply lubricating oil during roll-down to zero speed and for at least 15 minutes thereafter.

5.7 If power outage appears to be of long duration (greater than approximately 1 hour), the following additional actions should be taken:

5.7.1 Place the Reactor in a Cold Shutdown condition in accordance with IOI 03-1-01-3, Plant Shutdown.

# INSERT

5.1 IF TWO OR MORE OFFSITE ~~POWER~~ POWER SUPPLIES  
TO GGNS ARE LOST, NOTIFY THE ~~GEN~~ GAS  
TURBINE GENERATOR CREW TO START AND MAKE  
READY TO LOAD THE GAS TURBINE GENERATOR.

REVISION  
1.0

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- 5.<sup>8</sup><sub>7</sub>.2 Each ESF battery bank 11DA, 11DB, and 11DC is sized to supply the required DC loads for 4 hours, after a loss of AC power to both battery chargers. Return both battery chargers to service for each ESF battery bus 11DA and 11DB and one charger for bus 11DC.
- 5.<sup>8</sup><sub>7</sub>.3 Each BOP battery bank is sized to supply all connected loads (including bus 11DF) for 2 hours after a loss of AC power to both battery chargers. Return both battery chargers to service for each BOP battery bank.
- 5.<sup>8</sup><sub>7</sub>.4 Notify the GTG System crew to start the Gas Turbines and place them in standby.

TO: Dear Houston

FROM: SAM H. HOBBS  
Ext. 458; Loc. 24

DATE: 4-10-84 42

SUBJECT: Reference AC Power / DG Meeting  
April 5, 1984

<input checked="" type="checkbox"/> Information	<input type="checkbox"/> Signature	<input type="checkbox"/> Action
<input type="checkbox"/> Comments	<input type="checkbox"/> File	<input type="checkbox"/> Approval

REMARKS/REPLY: \_\_\_\_\_

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~~J. B. RICHARD~~  
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~~R. A. WITTHAUER~~  
~~S. H. HOBBS~~

Enclosed are copies of procedures which are relevant to the discussion of AC Power which was held at the NRC offices on April 5, 1984. Mr. Tom Mburck requested copies of these procedures during the meeting. Information copies of the following procedures are included:

1. Station Blackout ONEP 05-1-02-I-6
2. Fire Protection Water System SOI 04-01-P64-1
3. Hurricanes, Tornadoes & Severe Weather ONEP 05-1-02-VI
4. Loss of Offsite Power ONEP 05-1-02-I-4
5. Gas Turbine Generator System; Maintenance and Operation Procedure - Bechtel Procedure

Note that for item 2 above only the pertinent section (Section 6) is enclosed.

J. W. Smith