

## ELECTRICAL POWER SYSTEMS

### BASES

#### DISTRIBUTION SYSTEMS, SHUTDOWN and REFUELING

##### 3.8.3.2

The OPERABILITY of the required DC sources and electrical distribution system during shutdown is based on the following conditions:

- a. The unit can be maintained in the shutdown or refueling condition for extended periods;
- b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and
- c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

In general, when the unit is shutdown, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required.

The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6. Worst case bounding events are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

Specifications 3.8.2.2 and 3.8.3.2 require DC power sources and specified electric power distribution for equipment required to be operable during shutdown. If the DC sources or distribution system is inoperable, then the Specifications require the affected components to be declared inoperable or that core alterations and positive reactivity changes be stopped. For a required system or component to be operable, the definition of OPERABLE/OPERABILITY requires the availability of necessary support systems, instrumentation, and electrical power for the required system to meet the design basis requirements. In MODES 5 and 6, the design basis does not include single failure coincident with loss of off-site power. Consequently, where two trains or channels of equipment are required by the Technical Specifications during MODES 5 and 6, only one of the trains or channels is required to be backed by an emergency power source or battery. Inoperability of the battery for one channel or train does not affect components that have an operable battery on the other required channel or train. Required electric power distribution systems must be operable under accident conditions that are