

BASES

ACTIONS
(continued)

G.1

Condition G corresponds to a level of degradation in which all redundancy in the AC electrical power supplies has been lost. At this severely degraded level, any further losses in the AC electrical power system may cause a loss of function. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

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The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, as discussed in the USAR (Ref. 2). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are in accordance with regulatory guidance as addressed in the USAR. The voltages and frequencies discussed in these SRs are consistent with analysis described in the USAR (Ref. 2).

SR 3.8.1.2, 3.8.1.6 and 3.8.1.9 make reference to DG steady state voltage. When required to start and connect to the bus, the connection of the DG to the safeguards bus is controlled by the automatic load sequencer. The load sequencer is a programmable logic controller (PLC) which performs the following functions for its associated safeguards bus: load rejection; voltage restoration; and load restoration. The voltage restoration portion of the sequence will connect the DG to the bus if no viable offsite source is available. The load restoration is accomplished by a series of start permissives separated by 5 second steps. The 5 second steps allow for the starting of the load and voltage recovery prior to starting the next loads which ensures that voltage does not fall below the degraded voltage setting of the bus. The PLC program has the capability to have up to 9 programed load steps which total 45 seconds. Along with a 15 second allowance for the DG to start and

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come up to rated speed and voltage gives a total transient time of 60 seconds. After 60 seconds the DG is determined to be in a steady state condition.

SR 3.8.1.1

This SR ensures proper circuit continuity for the required offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their offsite power source, and that appropriate independence of offsite circuits is maintained. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because its status is displayed in the control room.

SR 3.8.1.2 and SR 3.8.1.6

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition. The steady state voltage requirement is to allow the DG to accept loads and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note (Note 2 for SR 3.8.1.2) to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period and followed by a warmup period prior to loading.

In order to reduce stress and wear on diesel engines, some manufacturers recommend a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 3, which is only applicable when such modified start procedures are recommended by the manufacturer.

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SR 3.8.1.2 and SR 3.8.1.6 (continued)

SR 3.8.1.6 requires that, at a 184 day Frequency, the DG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the USAR (Ref. 3). Standby conditions for a DG mean that the diesel engine coolant and oil temperatures are being maintained consistent with manufacturer recommendations.

The 10 second start requirement is not applicable to SR 3.8.1.2 (see Note 3) when a modified start procedure as described above is used. If a modified start is not used, the 10 second start requirement of SR 3.8.1.6 applies.

Since SR 3.8.1.6 requires a 10 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This is the intent of Note 1 of SR 3.8.1.2.

The 31 day Frequency for SR 3.8.1.2 and the 184 day Frequency for SR 3.8.1.6 provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

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SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads greater than or equal to 90% of the continuous rating of the DG (Ref. 2). The Unit 1 and Unit 2 diesel generators have different loading requirements since their individual loads are different. As an example, the Unit 2 diesel generators supply emergency power to the cooling water pump whereas the Unit 1 diesel generators do not. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

The 31 day Frequency for this Surveillance is consistent with SR 3.8.1.2.

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing loads or system