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**City of Myrtle Beach**  
**SOUTH CAROLINA**  
**FIRE DEPARTMENT**

MBFD MEMO -

**GENERATOR SYSTEM - SEQUENCE OF OPERATION – UTILITY OUTAGE**

The Automatic Transfer Switch normally connects an energized utility power source (source 1) to loads and a generator set (source 2) to the loads when utility source fails. The normal position of the transfer switch is connected to source 1 (connected to the utility).

- 1) When the transfer switch senses a power failure on source 1, it shall complete a pre-programmed time delay start sequence, and then send a start signal to the generator set. A power failure can be a total loss of all three phases, loss of one or two phases, low or high voltage, low or high frequency
- 2) The generator set shall immediately start and accelerate to rated voltage and frequency.
- 3) The transfer system shall complete a programmable time delay transfer sequence (2 seconds), and then open the utility source contacts.
- 4) The transfer system shall complete a programmable time delay sequence to allow motor loads to decay (3 seconds), and then close the generator source contacts.
- 5) Generator set starting time and all time delays in the system are to be coordinated to allow the generator set to start and accept emergency loads within 10 seconds for NFPA 110 or legally required emergency systems.
- 6) On return of source 1 to acceptable voltage and frequency levels, the control system shall initiate a time delay retransfer sequence (20 minutes). On completion of the time delay sequence, the control system shall transfer loads back to source 1 in the reverse sequence that which was used to connect loads to source 2.
- 7) The ATS will continue to run the gen set for an engine cool down time delay (10 minutes) before sending a stop signal to the gen set.



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**GENERATOR WEEKLY EXERCISE TEST WITHOUT LOAD**

The control system shall be configurable to test the generator set without transfer switch load connected. In this mode, the transfer switch shall control the generator set in the following sequence:

- 1) Transfer switch shall initiate the exercise sequence at a time indicated in the exercise timer program – every Monday at 10:00 AM.
- 2) The transfer switch shall issue a start command to the generator set.
- 3) When the control systems senses the generator set at rated voltage and frequency, it shall operate the generator set unloaded for the duration of the exercise period (20 minutes).
- 4) At the completion of the exercise period, the transfer switch shall remove the start signal from the generator set. The ATS will continue to run the gen set for an engine cool down time delay (10 minutes) before sending a stop signal to the gen set. If the normal power fails at any time when the generator set is running, the transfer switch shall immediately connect the system loads to the generator set after the Programmed Transition Neutral Time Delay period (3 seconds).