POWER FAILURE ROUTINE

1. GENERAL

1.01 This section describes in a general way the procedure to be followed in case of a failure of the commercial power service. Because of the great differences in plants and in conditions, this section may often be used most advantageously as a reference or guide when preparing information for the individual office.

1.02 It is assumed that:

(a) A local routine is established for each office and employees trained thoroughly in each step of power plant operation during power failure. Presumably this routine will also set forth the proper sequence of action to incur the least service reaction, e.g. the starting of the reserve ringing set should be among the first acts because service is interrupted (except for calls in progress) until ringing is restored.

(b) An up-to-date list of all persons and phone numbers required during power failure is available.

(c) Where no permanent engine set is installed, a list of portable reserve engine-driven sets is available and the steps outlined in detail for obtaining those required during emergencies. If portable batteries are to be used for prolonging service, the method of obtaining these batteries should be covered.

1.03 This section has been reissued to make several changes in arrangement and in particular to add paragraphs 2.11, 2.12, 2.13, and 2.16.

2. OPERATION DURING POWER FAILURE

(A) Operations Common to All Types of Power Plants Not Switched Automatically to Reserve Power Supply

2.01 Emergency Lights: Light those required if they were not lighted automatically.

2.02 Ringing Supply:

(a) Start the battery-driven set if it does not start automatically, and transfer the load to it.

(b) Operate the alarm guard key, if furnished, to stop alarm.

2.03 Motor Starters: Open all line motor starting switches or boxes that do not open automatically, except those such as duplex drive motors and 2 motor ringing machines which are intended to remain closed regardless of whether the power is on or off.

2.04 Generator Switches: Operate the alarm guard keys, if furnished, or open switches as required to stop alarms such as circuit breakers, etc.

2.05 Cause of Service Interruption:

(a) If possible, the person designated beforehand should find out from the Power Company the cause of the interruption and how soon service will be restored.

(b) Notify the proper plant supervisor as soon as practicable giving all known facts pertaining to the power failure.

2.06 Emergency Cells: If emergency cells are provided to maintain voltage during power failure and these cells are not switched automatically, they should be cut in manually as needed to maintain minimum required voltage limits.

2.07 Emergency Power Plant Operation:

(a) To insure against undesirable reaction, check fire pumps, house pumps, ice machines or refrigerators, kitchen equipment, elevators, telephone typewriters, fans, ventilators, dehumidifying equipment, etc., at the time of interruption and following restoration of power service.

(b) If the Power Company does not promise power restoration after interruption within the time locally agreed on (30 minutes unless otherwise specified) or if, although promised, power has not actually been restored on either regular or reserve circuits, proceed as in sections 2.08 to 2.16, inclusive.

(B) Offices With Two Outside Sources of Power

2.08 If the reserve power is uninterrupted and the power plant is not transferred automatically to this source, make the transfer manually.

Note: If transfer involves entry into a high tension vault, two men, if practicable, should be present when the transfer is made.

2.09 Operation on the reserve source is usually the same as on the regular source.

(C) Offices With Engine-Driven Reserve Sets

2.10 If the Power Company does not promise power restoration of either the regular or second (if provided) power supply circuit after interruption within the time locally agreed on (30 minutes unless otherwise specified) or if, although promised, power has not actually been restored on either circuit, start as soon as practicable the emergency engine set or sets in the usual manner.

2.11 In plants with automatic start control of the generator sets, it is sometimes possible for a load exceeding the capacity of the engine set to be automatically started and connected. In such cases the starting should be controlled manually.

2.12 When connecting motor loads to an engine-driven alternator or generator, start all motors or sets required in the sequence of the largest to the smallest; then apply the load in the same sequence. (With generators of the same rating start first the one with the motor having the highest current rating.) This is done so that the large starting current inrush will occur at a time when the machine is not already loaded sufficiently for the starting load to pull the voltage down to a point where low voltage trips will operate. For this reason it may be necessary to stop some machines if subsequent load conditions make it necessary to start another of the large machines. Such loads as busy signal lamp transformers, sump pumps, building equipment, power, etc. (if arranged to operate from the alternator without overloading during power failure) can often be connected after the larger generator sets; however, if the equipment has large starting inrushes it may have to be started in the sequence of size as are the large generator sets.

2.13 In rare cases, ringing machines operating from an engine-driven alternator running at the upper end of the speed range, may automatically transfer to the battery-driven set because of high ringing voltage. This happens because the speed of the ringing set (which depends on the frequency of the alternator current) is so high that the ringing voltage regulator cannot keep the voltage below the upper limit. The condition may be tolerated for the small length of time that the engine speed is high, or a transfer may be made to the battery set.

(D) Offices With Duplicate Batteries

2.14 If the office has batteries that can be thrown in parallel, and is not operating on a second source of power or on an engine-driven set, the switches paralleling the batteries should be operated.

(E) Offices With No Reserve Power of Any Kind

2.15 If no reserve power is available, telephone service may be prolonged by procuring portable engine sets, welding sets, etc. from some other location. Portable batteries, such as automobile batteries, may also be connected in parallel with the office batteries if the load is not too large.

2.16 Portable reserve engine-driven alternators should be connected so that they have the same phase rotation as the regular service, i.e., so that the motors rotate in the proper direction.

3. OPERATION AFTER POWER RESTORATION

3.01 By power restoration is meant the return of the commercial power to normal and remaining normal for approximately 15 minutes.

3.02 If the plant is not automatically transferred back to regular power service, make the transfer manually. Shut down in the usual manner any engine-driven set unless it is a d-c generator that is to be used to recharge batteries.

Note: If transfer involves entry into a high tension vault, two men should be present when the transfer is made.

3.03 Ringing Supply: If transfer back to the regular power is not done automatically, make this transfer manually in the usual manner.

3.04 Master Switch: In some dial offices the master switch must be reset manually after power restoration.

3.05 Alarms: Restore to normal any alarm guard keys that have been operated.

3.06 Batteries: Give the batteries an equalizing charge in the regular manner if they have been discharged 10 per cent or more.

3.07 Reports: Make any reports required by local supervision.