

Y.C. FILE

CABLE TROUBLE ANALYSIS PLAN INTRODUCTION AND DEFINITIONS

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1. GENERAL

1.01 This is one of a group of Plant Series Bell System Practices on the Cable Trouble Analysis Plan.

1.02 This section is reissued to revise the definitions of Cable and Routine Trouble, to delete the reference to terminal replacements, and to discuss handling of defective pair tickets.

1.03 *The Cable Trouble Analysis Plan has four parts:*

(a) Section 660-003-010, Introduction and Definitions—discusses the purposes of the Plan and explains terms used to make it easier to handle, to summarize, and to analyze cable troubles.

(b) Section 660-003-011, Cable Trouble Code Card Form E-3628A—defines the codes used to simplify record keeping.

(c) Section 660-003-012, Cable Trouble Ticket Form E-5039, and Cable Trouble Summary Form E-3626A—tells how to use the edge sort ticket and explains the use and preparation of the summary form.

(d) Section 660-003-013, Cable Trouble Analysis, Summary of Trouble Data Form E-5408, Subgroup Codes Form E-5040, and Detail Codes Form E-5119—explains why we analyze and describes the methods, procedures, and forms used to make an analysis.

1.04 Cable trouble analysis can be an effective means of saving maintenance dollars. Preventive and corrective maintenance, when applied with the benefit of thorough analysis, can give better customer service, reduce costs, and allow programmed manpower effort.

2. OBJECTIVES OF THE PLAN

2.01 This plan will provide:

(a) A method to analyze individual troubles in detail.

(b) A simplified results summary.

(c) Additional detailed summary forms.

(d) Information for trend studies.

3. HOW THE PLAN WORKS

3.01 The form used to record cable trouble information is an edge sort ticket, Form E-5039. It is convenient and easy to use for sorting and summarizing, and its use requires only simple and inexpensive tools.

3.02 The ticket must be edge-punched (notched) to code the details of the cable trouble. Summaries and special study data can be easily prepared by needle-sorting the information coded on the tickets.

4. SUMMARIES

4.01 To make use of the trouble ticket data, they must be summarized. However, we need not summarize all the detailed information available all the time. So the Plan provides for summarizing only key items for each report period—on the Cable Trouble Summary, Form E-3626A.

4.02 Form E-3626A furnishes data which can be used for broad analysis of trouble results. Unfavorable trends will indicate a need for further analysis. More detailed summaries of cable troubles can be made when required. But remember—regularly sorting and summarizing detailed information costs money, do not summarize more data than is needed. Nor should the routine gathering of special study data be permitted beyond the special study period.

4.03 A separate Form E-3626A should be prepared for each test center and district for the current month for pressurized cable, nonpressurized cable, and a combined report as described in Section 660-003-012. An annual Form E-3626A should be prepared for the completed year for each of the above-mentioned categories. If cable sheath miles for report units smaller than district are not known, they may be estimated by proportionalizing the total number of stations in the subdistrict and in the district and applying this ratio to known sheath mileage in the district.

5. FORWARDING REPORTS

5.01 Send copies of Form E-3626A for each Company, and Area or State, quarterly and annually to:

American Telephone and Telegraph Company
Plant Statistics Supervisor
195 Broadway
New York, New York 10007

5.02 A separate form is required for pressurized cable, nonpressurized cable, and a combined report as described in Section 660-003-012.

5.03 Send Area or State results as soon as they are available—with Company results following as promptly as possible. Please be sure your reports reach New York as follows:

Quarterly—by the 20th of the month after the close of the quarter.

Annually—by February 15th of the following year.

6. CABLE AND TERMINAL DEFINITIONS

Cable

6.01 Cable includes all underground, submarine, buried, house, block, and aerial cable which is maintained by each entity for which a Cable Trouble Summary Form E-3626A is prepared. Cable extends from the vertical side of a central office main frame, including tip cables or connector stubs, to and including the cable distribution terminal. PBX switchboard cable, cable used in lieu of inside wire, private service cable, and buried wire are not included. Trouble records are maintained separately for aerial, underground, buried, and submarine cables. However, data for buried and submarine cables are combined on Form E-3626A.

Terminals

6.02 Terminals comprise all terminals associated with the categories of cable included in the Plan as defined above.

7. TROUBLE DEFINITIONS

7.01 Trouble terms used throughout this section are defined to ensure uniform interpretation and understanding. These definitions are for the purpose of making entries on the Cable Trouble Summary Form E-3626A.

Trouble Report

7.02 Cable troubles are classified as either Service-Affecting or Routine.

(a) **Service-Affecting Trouble:** Any case of trouble on which a customer report of trouble has been received.

(b) **Routine Trouble:** A cable trouble which has been detected by means of maintenance, installation, or construction effort, or through the activation of alarm circuits such as contactors, permanent signals, LIT, etc. To qualify as a Routine Sheath Break trouble the defect must pass entirely through the sheath or closure as described below. Routine No Sheath Break troubles must involve one or more working circuits, or clearing defective pairs as the result of a work order. Every effort should be made to detect and correct faults by routine methods prior to a customer trouble report. In the event that a cable trouble is initially detected through a routine method and a customer report is received prior to service restoration, the trouble shall be reclassified as Service-Affecting as of the time it was originally detected.

Sheath Break vs No Sheath Break

7.03 The Plan provides for a segregation of cases of cable trouble between Sheath Break and No Sheath Break troubles. They are defined below:

(a) **Sheath Break Troubles:** Comprise breaks, cuts, holes, fatigue cracks, etc, *entirely through* the cable sheath, sleeves, soldered joints, seams, patches, and through the covering of taped trouble openings, insulating joints, and splice closures.

Note: Sheath cuts and other defects *not entirely through* the sheath should be excluded from the count of Routine Sheath Break troubles.

(b) **No Sheath Break Troubles:** Comprise circuit troubles in cable which are not directly associated with sheath breaks, and also circuit troubles in loading and similar types of coils and in other attachments except terminals.

8. COUNTING TROUBLES

8.01 For the purpose of this Plan, one trouble should be counted for each location on a cable at which a fault is corrected, regardless of the number of circuits involved. Only one

trouble should be counted when two or more faults are corrected by placing one lead sleeve or by replacing any continuous length of cable. One trouble should be counted when one slit sheath opening is made in repairing two or more adjacent faults.

8.02 Service-Affecting and Routine troubles caused by an employee working on a splice or trouble opening should be counted on the basis of one trouble for each period the sheath is open continuously and one or more circuit troubles are traced thereto during the period.

Note: Wrapping the splice, as at the end of the day, shall be considered as ending the continuous period. Service-Affecting and Routine troubles which are traced to a splice or trouble opening after it has been temporarily closed by wrapping should be counted as one trouble each time the temporary wrapping is removed to clear trouble or to renew splicing operations, or both.

8.03 Circuit troubles which are not associated with or are remote from sheath damage should be counted as one trouble for each location where they are found and cleared. On multiple troubles stemming from a common cause, one trouble should be counted when either a sleeve or a slit sheath opening is used in repairing two or more faults, or a continuous length of cable is used for the same purpose.

8.04 Circuit troubles caused by opens, crosses, shorts, and grounds should be counted as cleared only when they are cleared at the point where the circuit(s) is in trouble. Do not count as cleared when the circuit(s) is made good to another point by rearrangement and change elsewhere, as it is not possible in all cases to determine the cause of the trouble until it is cleared. PIC troubles cleared by changing pairs are in this category.

8.05 One trouble should be counted for each loading coil or similar type case replaced, for each auxiliary loading coil or similar type of case, and for each individual type of coil placed in a sleeve to clear Service-Affecting or Routine troubles.

8.06 In clearing a Routine trouble, it is sometimes necessary to remove the circuit from service temporarily in order to complete a fault location. This temporary removal from service does not serve to reclassify it as a Service-Affecting trouble. However, if a customer report is received at any time during the procedure, the Routine trouble should immediately be reclassified as Service-Affecting.

8.07 One trouble should be counted for each pressure fitting replaced and each pressure plug replaced or remade to clear trouble. This includes plugs in terminal stub cables.

8.08 Every effort should be made to permanently repair cable sheath breaks on the *first* visit. However, cable troubles should be counted and classified in the period in which the trouble is *cleared*. Service-Affecting troubles cleared by making temporary repairs are considered cleared under this Plan when service is restored or when the circuits are made good for reuse. Routine sheath break troubles should be considered cleared when the sheath is temporarily repaired.

8.09 If both a Service-Affecting trouble and a Routine trouble are caused by the same fault, the trouble shall be classified as Service-Affecting.

9. DEFECTIVE PAIR TICKET

9.01 A Cable Trouble Ticket Form E-5039 should be prepared for every defective pair which is left in plant as a result of service restoration through pair transfer. Normally the ticket will have been prepared when the trouble was originally undertaken. It should be notched Pair Trouble Not Cleared as well as Service-Affecting or Routine as the case may be and placed in the current file. After scoring at the end of the period it should be placed in the defective pair file. In addition, a Cable Trouble Ticket should be prepared for each defective pair found in plant during routine operations, provided that a ticket has not previously been filed. All Cable Trouble Tickets for defective pairs should be filed as described in Section L, 660-003-012.