

CLASSIFYING AND RECORDING TROUBLE DATA LOCAL MANUAL EQUIPMENT

1. GENERAL

1.01 This section describes a method for classifying, recording and summarizing manual central office troubles on Local Manual Equipment. Form E-2775, Reported and Routine Troubles - Local Manual Equipment, is provided for recording and summarizing these trouble data. This method is for use in those central offices of a size to make it worth while to regularly record trouble data in some detail.

1.02 Since the data for central office troubles associated with reports on subscriber lines may not be recorded by the local test desk forces in sufficient detail for analysis purposes space has been provided on Form E-2775 for these data for use by the central office forces when desired. Local procedures to provide the central office forces with these data may be required.

1.03 This section is reissued to remove references to certain methods and related forms (E-697A, B and C) which are no longer available and to add provisions for recording and summarizing detail trouble data by the central office forces where troubles are associated with reports on subscriber lines.

1.04 Local Manual Equipment is defined as all telephone equipment in local manual central offices. Manually operated switchboard positions and desks in local dial offices are also considered as local manual equipment. Toll equipment is excluded except in those cases where the amount of toll equipment is small. In such cases the troubles on both local and toll equipment may be recorded and summarized together when so desired.

1.05 Local manual equipment is divided into two general classifications, as follows, depending upon the nature of the report of trouble:

(a) Manual central office troubles - associated with reports on subscriber lines.

(b) Manual central office troubles - not associated with reports on subscriber lines.

2. MANUAL CENTRAL OFFICE TROUBLES - ASSOCIATED WITH REPORTS ON SUBSCRIBER LINES

2.01 This covers all troubles found in the central office equipment which were brought to attention by a trouble report on a subscriber line. Such reports are usually received by the repair service desk.

2.02 Complete definitions and interpretations of trouble reports and troubles on manual central office equipment where the troubles are associated with reports on subscriber lines are covered in the Trouble Results Plan for Exchange Plant and associated Bell System Practices.

2.03 This classification includes both troubles found on the subscriber line circuit and in any other part of the equipment, being divided as follows:

(a) Subscriber line circuit equipment covers that part of the central office equipment which is directly associated with a particular subscriber line beginning with the protectors or cable terminal blocks on the main distributing frame and including the wiring and apparatus on the main and intermediate distributing frames.

(b) Other equipment covers all equipment not a part of the subscriber line circuit.

2.04 The term subscriber line normally covers only exchange subscriber lines and P.B.X. trunks which carry regular subscriber line numbers. However, for the purpose of this classification the term "subscriber line" should be considered as including the following:

(a) P.B.X. tie trunks, extension lines, and one-way service trunk lines with no subscriber line numbers.

(b) Private lines.

(c) Foreign exchange service lines.

(d) Teletypewriter lines and telegraph loops.

(e) Toll terminals.

2.05 Detailed description of the various trouble classifications which may be used for recording and summarizing these troubles are given in subsequent paragraphs.

3. MANUAL CENTRAL OFFICE TROUBLES - NOT ASSOCIATED WITH REPORTS ON SUBSCRIBER LINES

3.01 This covers all troubles found in the local manual central office equipment which were brought to attention by a trouble report which was not a report of trouble on a subscriber line. Trouble reports of this nature are usually made by the local traffic forces.

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3.02 This classification covers all the equipment associated with manually operated switchboard positions or desks including those in local dial offices.

3.03 In local dial offices the dividing line between the manual and dial equipment, in general, should be considered as existing at the cable turning section of the manually operated positions and only the equipment in or on the positions or desks should be classified as local manual equipment. An exception is made, however, in that the relays, wiring, etc., associated with cord circuits on switchboard positions or desks should be classified as manual equipment even when these relays, wiring, etc., are located outside of the positions or desks. In the case of call distributing and cordless "B" switchboards there are no exceptions, the cable turning section being the dividing line.

3.04 Form E-2775 provides space for summarizing trouble reports and found troubles for analysis purposes. Provision is also made for recording troubles on this equipment detected as the result of routine tests. Detailed descriptions of the various trouble classifications are given in subsequent paragraphs.

3.05 Data for the Exchange Plant Trouble Summary may be taken from Form E-2775. Total found trouble (code 113) is obtained from line 22 total "T" trouble and trouble reports (code 114) from line 23.

4. DEFINITION OF REPORTS AND TROUBLES

(Switchboard Equipment where the troubles are not associated with reports on subscriber lines)

4.01 The definitions covered in this part describe the nature and type of reports and troubles on manual central office switchboard equipment where they are not associated with reports on subscriber lines.

4.02 A trouble report is any notice, either oral or written, received by the plant maintenance forces, which indicates a defect in, or the failure to function properly of a circuit or other equipment item.

4.03 Only initial trouble reports should be counted. An initial trouble report is defined as a trouble report received by the plant maintenance forces on any circuit or equipment not involved in a previous report which has not been closed. For example, a trouble report is received which, upon investigation, is "found OK." The report, therefore, is closed and notation to that effect made in the records. Shortly after the closing of the report, another report is received pertaining to what appears to be the same case. As a definite disposition was made of the previous report, the second report is counted as an initial report.

4.04 In case of trouble on a number of circuits due to a common cause (such as the operation of a fuse supplying current to a number of circuits or a loose connection on a common ground or battery wire) one report should be counted for each circuit reported out of order.

4.05 If a central office operator reports two or more switchboard cord circuits or other items of equipment at the same time, one trouble report should be counted for each circuit or equipment item reported, if, upon investigation, the troubles are found to be due to separate defects. If, on the other hand, the troubles experienced on all the circuits or equipment items reported at the same time are found to be due to a common cause, such as a blown fuse, failure of generator or battery supply, or broken battery or generator strap, only one report and one trouble should be counted.

4.06 In clearing troubles on such circuits as interoffice trunks, call wire circuits, tie lines, foreign exchange lines, etc., it is frequently found that the fault is located in an office or area other than the one which first received the report. In such cases, the office or area in which no trouble was found should exclude the report from its trouble count. The office or area in which the fault was located should accept the trouble report and count it, the same as if it had first been received by that office.

4.07 When cords, which are capped or otherwise indicated to be in trouble, are found and repaired by plant employees before trouble reports are received, trouble reports and troubles should be counted in the same manner as if the item had been reported.

4.08 Reports of faulty conditions or capped cords (not previously reported) found by the traffic force during patrols of the switchboard should be considered as trouble reports.

4.09 Reports or maintenance memoranda on building items, furniture, lighting fixtures, ventilating systems, pencil sharpeners, fans or other office fittings, not classified as central office telephone equipment, should be excluded from the trouble data.

4.10 Errors and defects reported by traffic employees with respect to multiple marking or subscriber line number plates and lamp caps should be excluded from the trouble data since practices vary as to responsibility for these items between plant or traffic departments. Local data should be kept on these items when desired.

4.11 For the purpose of this analysis, troubles are divided into two classes, reported (T) troubles and routine (R) troubles.

Reported Troubles

4.12 A reported (T) trouble is a faulty condition found on equipment as the result of an investigation brought about by a trouble report. It may be either a condition which impairs service or merely one of defective physical condition or appearance.

4.13 When more than one defect is found during the process of clearing a reported trouble, only one case should be counted and the classification used should be the one representing the most serious impairment to service, or the one most likely to have caused the report.

4.14 In the case of common troubles (such as the operation of a fuse supplying current to a number of circuits or trouble on a common ground or battery wire) one trouble should be counted for each circuit reported out of order regardless of the number of circuits affected except as outlined in Paragraph 4.05.

Routine Troubles

4.15 A routine (R) trouble is a fault discovered as the result of routine tests of the equipment and which has not been previously reported to the maintenance forces or otherwise indicated as faulty by the traffic department. Provision is made on Form E-2775 for showing routine troubles separate from reported troubles, but the inclusion of these routine troubles is optional.

4.16 Where traffic employees perform certain scheduled routine tests or inspections for the plant maintenance forces at the same frequency that such tests or inspections would be performed if made by the maintenance forces, defects found and reported in the process of such routine tests and inspections should be considered as routine (R) troubles.

4.17 Frayed cords which are detected by regular routine inspections generally are not entered as routine (R) troubles on the forms as they usually serve no useful function in the overall analysis of the amount of trouble experienced.

Found OK

4.18 A trouble report is said to be "found OK" when, after an investigation of the equipment by a central office repairman, no trouble can be found.

4.19 Where there is some substantial evidence as to the cause of a report, it should not be closed as "found OK" but should be charged to the plant classification in which the fault is indicated. Such cases as are caused by workmen splicing out switchboard multiple cables, blown fuses, etc., can often be allocated to the plant involved with a high degree of accuracy.

4.20 When a trouble report is one which indicates an impairment in the operating condition of the circuit or equipment, it should be classed as "found OK" only when no trouble can be found which affects the operation of the circuit or equipment. For example, if a trunk circuit is reported as "noisy" and no trouble of this nature can be found, but a test discloses that the supervisory relay is not operating properly, the report should be closed by classifying as "relay" rather than as "found OK." If, however, only troubles not affecting service such as a frayed cord, broken lamp cap, etc., are found, the report should be closed as "found OK."

4.21 If the report is one of defective appearance or physical condition, it should be classed as "found OK" only when an investigation discloses no trouble of the nature reported as well as no other trouble which would affect service.

5. DESCRIPTION OF FORM E-2775 REPORTED AND ROUTINE TROUBLES - LOCAL MANUAL EQUIPMENT

5.01 Form E-2775 is an 8-3/8" x 10-7/8" sheet and is made up in pads of 25.

5.02 It is intended for use either as a stroke record form on which the reported and routine trouble can be tabulated by entering a stroke mark opposite the proper trouble classification using one form for a month or as a summary form on which the monthly totals are taken from the stroke sheet and entered in one of the columns under the particular month.

5.03 This form furnishes a day-by-day accumulative record of the trouble offered by each classification for use of maintenance force in analyzing the performance of the equipment and determining where specific maintenance effort should be applied.

5.04 When a special analyzation of troubles on switchboard equipment by particular circuit groups is desirable, a separate form should be used entering the name of the circuit in the block opposite that designation.

5.05 Samples of Form E-2775 showing its use as (1) a day-by-day accumulative stroke record, (2) a yearly summary, and (3) a circuit group analysis sheet are shown on Pages 7, 8 and 9.

6. DESCRIPTION OF ENTRIES - FORM E-2775General Data

6.01 Company - City - Office - Enter the name of the company, city and office, respectively.

6.02 Period Covered - Enter the period which the particular form covers.

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6.03 Equipment or Circuit - Enter the name of the circuit group which the form is intended to cover. This use applies to the manual central office troubles - not associated with reports on subscriber lines, using such groups as "A" switchboard cord circuit, call indicator equipment, etc.

6.04 Units in Service - Enter the number of units in service for each circuit group where separate forms are used for special analyzation. For example, for the call indicator equipment group the unit should be on a position basis and cord and trunk circuits should be on a cord and trunk basis, respectively.

6.05 Expectancy - Enter the expected number of found troubles for each trouble classification based upon trouble units, previous trouble performances, or trouble objectives. The expectancy may be entered separately for T and R troubles or combined as a total for the two.

6.06 Month and Year - Enter the month in the upper block and the year in the lower block when this form is used for a yearly summary by months.

6.07 Period Total - Enter the total of the strokes when used as a stroke record form and the total troubles for the year when used as a summary form.

Line Headings

MANUAL CENTRAL OFFICE TROUBLES - ASSOCIATED WITH REPORTS ON SUBSCRIBER LINES

Subscriber Line Circuit

6.08 Line 1 - Main Distributing Frame (Excluding Protectors) - Covers troubles on subscriber lines and P.B.X. battery and generator supply circuits on the main distributing frame due to faults in terminal strips or to opens, crosses, shorts, and grounds in the cross-connection wires.

Includes:

(a) Troubles on working lines due to errors in cross-connection work, cross-connection omissions or cross-connection reversals, and temporary opens, grounds, shorts, and crosses due to distributing frame activity.

(b) Loose connections between cross-connection wires and terminal strips or protectors, and troubles caused by improperly placed shoes and clips.

Does not include:

(a) Wiring troubles on the cabling side of terminal strips or protectors (see Line 6).

(b) Troubles on protectors and fuses (see Line 3).

(c) Troubles on trunks or call wires (see Line 21).

(d) Troubles on special service lines.

(e) Troubles caused on subscriber lines by defective test and service observing shoes and clips, and their associated circuits (see Line 10).

6.09 Line 2 - Intermediate Distributing Frame - Covers troubles on subscriber lines on the intermediate distributing frame due to faults in terminal strips and to opens, crosses, shorts, and grounds in the cross-connection wires.

Includes:

(a) Troubles on working lines due to errors in cross-connection work, cross-connection omissions and cross-connection reversals, and temporary opens, grounds, shorts, and crosses due to distributing frame activity.

(b) Loose connections between cross-connection wires and terminal strips, and troubles caused by improperly placed shoes or clips.

Does not include:

(a) Troubles caused on subscriber lines by defective test or service observing shoes or clips and their associated circuits (see Line 10).

(b) Wiring troubles on the cabling side of terminal strips (see Line 6).

6.10 Line 3 - Protector and Fuse - Covers protector and fuse troubles on subscriber lines and P.B.X. battery and generator supply circuits due to:

(a) The normal operation of protectors or heat coils, defective, missing, or loose protector parts or heat coils and other faults in the protector.

(b) The normal operation of P.B.X. battery or generator supply circuit fuses and loose, defective, or missing fuses.

Note: Where a fuse trouble affects one or more P.B.X. systems, count one trouble for each P.B.X. system reported.

Does not include:

(a) Troubles on special service lines, trunks, and call wire circuits.

6.11 Line 4 - Line and Cutoff Relay - Covers contact, dirt, adjustment, and other troubles on line and cutoff relays.

6.12 Line 5 - Jacks - Covers troubles on answering and subscriber multiple jacks.

Includes:

(a) Foreign objects in jacks, such as pencil points, pins, paper, tin foil, broken plugs in jacks, wire clippings, solder splashes, etc.

Does not include:

(a) Troubles on trunk multiple jacks or loose or broken jack strips (see Line 10).

(b) Troubles on lamps and lamp sockets associated with answering jacks (see Line 7).

6.13 Line 6 - Wiring - Covers all wiring and cabling troubles on subscriber line circuit equipment except cross-connection wires on distributing frames (see Lines 1 and 2).

Includes:

(a) All broken, loose, or otherwise defective connections between the wiring and terminals of jacks, lamp sockets, relays, etc., unless they are caused by defective or broken lugs, terminals, or binding posts, in which case they should be classified under the apparatus of which the lugs, terminals, or binding posts are a part.

(b) Wiring troubles on the cabling side of distributing frame terminal strips.

6.14 Line 7 - Miscellaneous - Covers all troubles on equipment permanently associated with subscriber line circuits not covered in the above classifications.

Includes:

(a) Miscellaneous troubles on such circuits as long line, tie line, private line, and P.B.X. battery and generator supply.

(b) Such troubles as defective line lamps, lamp sockets, etc.

6.15 Line 8 - Total - Enter the total of Lines 1 to 7.

Other

6.16 Line 9 - Plant and Traffic Operation - Covers all cases where a trouble report on a subscriber line is caused by the incorrect operation or use of the equipment by plant or traffic employees.

Includes:

(a) Plugs left in subscriber line circuit jacks when position is uncovered.

(b) Line held by operator regardless of whether or not the line has been held in excess of the normal holding time on toll calls as covered in traffic operating practices.

(c) Failure to remove a subscriber line from a plugging-up cord after trouble has been cleared.

(d) Line or cutoff relay blocked through error.

(e) Failure to remove a subscriber line from a test circuit.

6.17 Line 10 - Miscellaneous - Covers all troubles in the "other central office equipment," not included on Line 9.

Includes:

(a) Troubles caused by defective test and service observing shoes and clips and their associated circuits which resulted in reports on subscriber lines.

(b) Troubles caused by defects in subscriber cord circuits and trunk circuits which resulted in reports on subscriber lines.

(c) Troubles due to calling party holds in dial offices which result in reports on subscriber lines in manual offices.

6.18 Line 11 - Total - Enter the total of Lines 9 and 10.

6.19 Line 12 - Total - Enter the total of Lines 8 and 11.

MANUAL CENTRAL OFFICE TROUBLES - NOT ASSOCIATED WITH REPORTS ON SUBSCRIBER LINES

Switchboard Equipment

6.20 Line 13 - Cord - Covers troubles on cords in switchboards and miscellaneous desks.

Includes:

(a) Troubles on miscellaneous cords such as those associated with plugging-up, make-busy and night patrol circuits.

Does not include:

(a) Cords associated with operators' telephone sets (see Line 19).

6.21 Line 14 - Plug - Covers troubles on plugs in switchboards and miscellaneous desks.

Includes:

(a) Troubles on miscellaneous plugs such as those associated with plugging-up, make-busy and night patrol circuits.

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Does not include:

- (a) Plugs associated with operators' telephone sets (see Line 19).

6.22 Line 15 - Jack - Covers troubles on trunk multiple and miscellaneous switchboard jacks.

Includes:

- (a) Foreign objects in jacks, such as pencil points, pins, paper, tin foil, broken plugs in jacks, wire clip-pings, solder splashes, etc.

Does not include:

- (a) Troubles on subscriber multiple and answering jacks. Does not include loose jack strips (see Line 21).

6.23 Line 16 - Key - Covers troubles on keys in switchboards and miscellaneous desks.

6.24 Line 17 - Relay - Supervisory - Covers troubles on supervisory relays. For the purpose of this analysis supervisory relays are considered as those relays in cord and trunk circuits which are arranged to respond to signals or line conditions on the line to which they are connected. Does not include guard relays in trunk circuits.

6.25 Line 18 - Relay - Other - Covers troubles on all relays, except supervisory relays in cord and trunk circuits and relays associated with subscriber lines.

6.26 Line 19 - Operator's Telephone Set - Covers all troubles on operators' telephone sets, including cord and plug troubles.

6.27 Line 20 - Wiring - Covers all wiring and cabling troubles on cord, trunk and miscellaneous circuits, except cross-connection wires on the distributing frames (see Line 21). Includes all broken, loose, or otherwise defective connections between wiring and terminals of jacks, keys, lamp sockets, relays, etc., unless they are caused by defective or broken lugs, terminals, or binding posts, in which case they should be classified under the apparatus of which these items are a part.

6.28 Line 21 - Miscellaneous - Covers all troubles on central office telephone equipment not coming under the above classifications, except subscriber line circuit troubles and those troubles in "other central office equipment" which are found as a result of trouble reports associated with subscriber lines. Includes such troubles as broken, missing or defective lamps, defective lamp sockets, plug seats, clocks, and all frame and protector troubles on trunks and call wires.

6.29 Line 22 - Total - Enter the total of Lines 13 to 21.

6.30 Line 23 - Trouble Reports - Manual Central Office - Switchboard Equipment - Enter the number of initial "trouble reports" received using the blocks either as a stroke record or as a summary showing the total for the month.

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FORM E-2773
(1-38)

LOCAL MANUAL EQUIPMENT
REPORTED AND ROUTINE TROUBLES

| | |
|----------------|-------------|
| COMPANY | Alpha |
| CITY | Any |
| OFFICE | Main |
| PERIOD COVERED | Year - 1938 |

| | |
|----------------------|------------------|
| EQUIPMENT OR CIRCUIT | UNITS IN SERVICE |
|----------------------|------------------|

| TROUBLE CLASSIFICATION | EXPECT- ANCY | MONTH AND YEAR | | | | | | | | | | | | PERIOD TOTAL |
|------------------------|--------------|----------------|---------|---------|--|--|--|--|--|--|--|--|--|--------------|
| | | Jan. 38 | Feb. 38 | Mar. 38 | | | | | | | | | | |

| MANUAL CENTRAL OFFICE TROUBLES - ASSOCIATED WITH REPORTS ON SUB. LINES | | | | | | | | | | | | | | |
|--|-------|-------------------------|----|----|----|----|--|--|--|--|--|--|--|--|
| OTHER SUBSCRIBER LINE CIRCUIT | 1 | MAIN DIST. FRAME | 2 | 4 | 2 | 5 | | | | | | | | |
| | 2 | INTERMEDIATE DIST. FR. | 4 | 8 | 6 | 12 | | | | | | | | |
| | 3 | PROTECTOR AND FUSE | 3 | 3 | 2 | 4 | | | | | | | | |
| | 4 | LINE AND CUTOFF RELAY | 2 | 2 | 4 | 7 | | | | | | | | |
| | 5 | JACK | 1 | 4 | 1 | 2 | | | | | | | | |
| | 6 | WIRING | 2 | 2 | 1 | 3 | | | | | | | | |
| | 7 | MISCELLANEOUS | 2 | 2 | 1 | 2 | | | | | | | | |
| | 8 | TOTAL | 16 | 25 | 17 | 35 | | | | | | | | |
| | 9 | PLANT AND TRAFFIC OPER. | 1 | - | 1 | 1 | | | | | | | | |
| | 10 | MISCELLANEOUS | 1 | - | 2 | 1 | | | | | | | | |
| | 11 | TOTAL | 2 | - | 3 | 2 | | | | | | | | |
| 12 | TOTAL | 18 | 25 | 20 | 37 | | | | | | | | | |

| MANUAL CENTRAL OFFICE TROUBLES - NOT ASSOCIATED WITH REPORTS ON SUB. LINES | | | | | | | | | | | | | |
|--|---|---|----|----|----|----|--|--|--|--|--|--|--|
| 13 | CORD | T | 10 | 8 | 10 | 13 | | | | | | | |
| | | R | | | | | | | | | | | |
| 14 | PLUG | T | 5 | 4 | 4 | 7 | | | | | | | |
| | | R | | 12 | 6 | 14 | | | | | | | |
| 15 | JACK | T | 2 | 2 | 1 | 3 | | | | | | | |
| | | R | | 9 | 7 | 11 | | | | | | | |
| 16 | KEY | T | 5 | 4 | 2 | 5 | | | | | | | |
| | | R | | 17 | 8 | 13 | | | | | | | |
| 17 | RELAY SUPERVISORY | T | 5 | 1 | 2 | 3 | | | | | | | |
| | | R | | 6 | 13 | 16 | | | | | | | |
| 18 | RELAY OTHER | T | 3 | 1 | 1 | 2 | | | | | | | |
| | | R | | 7 | 7 | 6 | | | | | | | |
| 19 | OPERATOR'S TEL SET | T | 4 | 4 | 3 | 6 | | | | | | | |
| | | R | | 19 | 15 | 18 | | | | | | | |
| 20 | WIRING | T | 2 | 5 | 2 | 3 | | | | | | | |
| | | R | | 2 | 3 | 1 | | | | | | | |
| 21 | MISCELLANEOUS | T | 2 | 1 | - | 2 | | | | | | | |
| | | R | | 7 | 6 | 6 | | | | | | | |
| 22 | TOTAL | T | 38 | 30 | 25 | 44 | | | | | | | |
| | | R | | 79 | 68 | 92 | | | | | | | |
| 23 | TROUBLE REPORTS MANUAL CENTRAL OFFICE SWITCHBOARD EQUIPMENT | | | 72 | 67 | 92 | | | | | | | |

Sample # 2
Yearly Summary

T - REPORTED TROUBLES

R - ROUTINE TROUBLES

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FORM E-2775
(1-39)

LOCAL MANUAL EQUIPMENT
REPORTED AND ROUTINE TROUBLES

| | |
|----------------|------------|
| COMPANY | Alpha |
| CITY | Any |
| OFFICE | Main |
| PERIOD COVERED | March 1938 |

| | | | |
|----------------------|------------------------|------------------|-----|
| EQUIPMENT OR CIRCUIT | "A" Board Cord Circuit | UNITS IN SERVICE | 680 |
|----------------------|------------------------|------------------|-----|

| TROUBLE CLASSIFICATION | EXPECTANCY | MONTH AND YEAR | | | | | | | | | | | | PERIOD TOTAL |
|------------------------|------------|----------------|--|--|--|--|--|--|--|--|--|--|--|--------------|
| | | | | | | | | | | | | | | |

| MANUAL CENTRAL OFFICE TROUBLES - ASSOCIATED WITH REPORTS ON SUB. LINES | | | | | | | | | | | | | | |
|--|-------------------------|-------------------------|--|--|--|--|--|--|--|--|--|--|--|--|
| 1 | SUBSCRIBER LINE CIRCUIT | MAIN DIST. FRAME | | | | | | | | | | | | |
| 2 | | INTERMEDIATE DIST. FR | | | | | | | | | | | | |
| 3 | | PROTECTOR AND FUSE | | | | | | | | | | | | |
| 4 | | LINE AND CUTOFF RELAY | | | | | | | | | | | | |
| 5 | | JACK | | | | | | | | | | | | |
| 6 | | WIRING | | | | | | | | | | | | |
| 7 | | MISCELLANEOUS | | | | | | | | | | | | |
| 8 | | TOTAL | | | | | | | | | | | | |
| 9 | OTHER | PLANT AND TRAFFIC OPER. | | | | | | | | | | | | |
| 10 | | MISCELLANEOUS | | | | | | | | | | | | |
| 11 | | TOTAL | | | | | | | | | | | | |
| 12 | TOTAL | | | | | | | | | | | | | |

| MANUAL CENTRAL OFFICE TROUBLES - NOT ASSOCIATED WITH REPORTS ON SUB. LINES | | | | | | | | | | | | | | | |
|--|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 13 | CORD | T | 5 | ██ | ██ | ██ | ██ | | | | | | | 9 | |
| | | R | | | | | | | | | | | | | |
| 14 | PLUG | T | 3 | ██ | ██ | ██ | ██ | | | | | | | 6 | |
| | | R | | | | | | | | | | | | 8 | |
| 15 | JACK | T | | | | | | | | | | | | | |
| | | R | | | | | | | | | | | | | |
| 16 | KEY | T | 2 | ██ | ██ | ██ | ██ | | | | | | | 4 | |
| | | R | | | | | | | | | | | | 11 | |
| 17 | RELAY | T | 3 | ██ | ██ | ██ | ██ | | | | | | | 4 | |
| | | R | | | | | | | | | | | | 12 | |
| 18 | OTHER | T | 1 | ██ | ██ | ██ | ██ | | | | | | | 1 | |
| | | R | | | | | | | | | | | | 3 | |
| 19 | OPERATOR'S TEL. SET | T | | | | | | | | | | | | | |
| | | R | | | | | | | | | | | | | |
| 20 | WIRING | T | 1 | ██ | ██ | ██ | ██ | | | | | | | 1 | |
| | | R | | | | | | | | | | | | | |
| 21 | MISCELLANEOUS | T | 1 | ██ | ██ | ██ | ██ | | | | | | | 1 | |
| | | R | | | | | | | | | | | | 4 | |
| 22 | TOTAL | | 16 | | | | | | | | | | | 26 | |
| | | | | | | | | | | | | | | 38 | |
| 23 | TROUBLE REPORTS MANUAL CENTRAL OFFICE SWITCHBOARD EQUIPMENT | | | ██ | ██ | ██ | ██ | ██ | ██ | ██ | ██ | ██ | ██ | ██ | 56 |

Sample # 3
Circuit Group Analysis

T REPORTED TROUBLES

R ROUTINE TROUBLES