CHECKING CABLE PAIR RECORDS

CONTENTS

1. SCOPE

1.01 This section describes methods for checking the plant assignment cable pair records, particularly by checks against the central office main frames and switchboards.

2. NEED FOR CHECKING

2.01 The primary means for maintaining the accuracy of these records is through a well designed and administered service order practice, and through proper provision for posting the records when the status of pairs changes in connection with maintenance and construction work. However, in spite of all the precautions which may be taken, some errors will occur in an active plant, and experience has indicated that some systematic checks and correction of the records are needed at intervals in most territories. Also such checks are commonly desirable preliminary to central office cutovers or large area transfers, because of the importance of accurate records as the basis for these activities.

3. SUMMARY OF CHECKING METHODS

3.01 Following is a brief summary of the checking methods which are covered in more detail later herein.

3.02 **For Underground Cables:** The Methods are:

(a) **Spare Pair Check:** This comprises (1) test of each spare pair at the central office main frame, (2) check of pairs found spare at the frame against record indications of what pairs are in use and spare respectively, and (3) investigation of any discrepancies and posting of records to correct any errors found, including indication of whether spare pairs are clear or defective. For detailed description see the paragraphs in the 5 series, i.e. 5.01, 5.02, etc.

(b) **Complete Physical Check:** This comprises a complete check of working and spare pairs. It includes the spare pair check outlined in paragraph 3.02 (a) and, in addition, a check as to what subscriber line or circuit is on each working pair, with investigation and correction of any discrepancies in the records. For detailed description see the paragraphs in the 6 series, i.e. 6.01, 6.02, etc.

(c) **Check Against Wire Chief's Line Cards:** This comprises (1) the spare pair check outlined in paragraph 3.02 (a), and (2) a record check between the cable pair chart and the Wire Chief's line card records as to the pair occupancy of each working line or circuit, with an investigation of any disagreements between the two records. For detailed description see the paragraphs in the 7 series, i.e. 7.01, 7.02, etc.

3.03 **For Cross-connected Distribution Cables:** The methods are essentially the same as those outlined for underground cables in paragraph 3.02, with the cross-connecting box substituting for the main frame. For detailed description see the paragraphs in the 8 series, i.e. 8.01, 8.02, etc.

4. METHOD TO BE CHOSEN, AND FREQUENCY OF APPLICATION

4.01 The matter of which of the methods outlined should be used depends upon the circumstances, including the condition of the records as indicated by the number of errors in service order or other assignment work or as indicated by representative spot checks of the cable pairs.

4.02 With respect to the checks of the underground cable records, a periodic spare pair check, paragraph 3.02 (a), appears generally advisable. A frequency commonly found satisfactory is once a year, but longer or shorter intervals may be indicated in some cases.

4.03 The complete line-by-line check, paragraph 3.02 (b) or (c), is not such a general requirement, but appears desirable when there is a high percentage of error. For instance, where the records have gotten into bad shape over a period of years, the first check of the underground cable pair records may well be of this type, after which careful supervision of current record postings and periodic spare pair checks may be found adequate. In some cases a need will develop for a complete check for certain particular offices, as for instance where the records for a particular office are found to be inaccurate, or where the check is desirable

because of special circumstances such as preparation for a central office cut-over.

4.04 Where the complete line-by-line check for underground cables is decided to be desirable, the method which actually tests the subscriber lines, that is the method outlined in paragraph 3.02 (b), should in general be used. As an exception, in small exchanges where it is desired to use a method which can be conducted by one employee working alone, or which can be done as filler-in work during short slack periods scattered throughout the day, the check against the Wire Chief's line cards, paragraph 3.02 (c), plus the spare pair check, paragraph 3.02 (a), may be employed. This will eliminate the majority of the errors.

4.05 With respect to the cross-connected distribution cable pair records, some of the errors therein will be brought to light and corrected incident to the check of the underground cable records. If separate checks of the cross-connected cables are found desirable, it will generally be sufficient to have this consist of a check against the Wire Chief's line cards. There may be cases, however, where the errors in the record of a distribution cable may be such as to warrant either a spare pair check or a physical check at the cross-connection box for that particular cable.

4.06 Following is a detailed description of the checking methods which were briefly outlined in the paragraphs in the 3 series.

5. SPARE PAIR CHECK—UNDERGROUND CABLE

General

5.01 Following is a description of the spare pair check method of verifying and correcting underground cable pair assignment records, which was briefly outlined in paragraph 3.02 (a).

Apparatus

5.02 Cable splicer's 43-A or 45-A test set.
No. 528 receiver.

Checking Method

5.03 A list of the indicated spare pairs on the cable record may be prepared in advance and used as a check list by the tester, or, as an alternative, a list of the pairs which he finds spare may be compiled by the tester at the time the pairs are tested.

5.04 If the first method be used i.e. if a check list be prepared in advance from the cable record, the procedure is as follows:

(1) The testman tests all pairs on which he finds no jumpers, regardless of what the check list shows, and enters results on check list. See paragraph 5.06 for detail of test for pair defects.

(2) Testman determines and enters on check list what is on each pair which the check list indicated as spare, but on which he finds jumper. This is done by raising the operator (in manual offices), calling out on the pair (in dial offices), or tracing the jumper if this is found necessary.

(3) Testman forwards check list to assignment office.

(4) The assignment office (a) adds to or removes from the cable pair charts, indications of pair defects as necessary to conform to the testman's indications on the check list, (b) through comparison of the check lists with the cable pair records, determines any discrepancies as to pair occupancy, (c) enters these discrepancies in the proper column or columns A to E of Adjustment Sheet A, (d) investigates to a final conclusion these discrepancies by means of the appropriate steps indicated on the back of the Adjustment Sheet, and (e) corrects all assignment records as necessary to conform to the facts thus determined.

5.05 If a list of the spare pairs indicated on the record is not prepared in advance as outlined in paragraph 5.04, the procedure is as follows:

(1) The testman tests all pairs on which he finds no jumpers and compiles list of pairs tested, with indication of those found defective. See paragraph 5.06 for detail of test for pair defects.

(2) Testman forwards list to assignment office.

(3) The assignment office (a) adds to or removes from the cable pair charts, indications of pair defects, as necessary to conform to the testman's indication on his list of pairs tested, (b) through comparison of the testman's lists with the cable pair records, determines any discrepancies as to the pair occupancy, (c) enters these discrepancies in the proper column or columns A to C inclusive of Adjustment Sheet A.

(4) Assignment Office forwards Adjustment Sheet A to testman.

(5) Testman determines and enters in Columns D and E of Adjustment Sheet A, what is on each pair shown as spare in Column B. This is done by raising the operator (in manual offices), calling out on the pair (in dial offices), or tracing the jumper if this is found necessary.

(6) Testman forwards Adjustment Sheet A to assignment office.

(7) Assignment office (a) investigates to a final conclusion the discrepancies entered on Adjustment Sheet A, and (b) corrects all

assignment records as necessary to conform to the facts thus determined.

Detail of Test for Pair Defects

5.06 The checking method, as described in the preceding paragraphs 5.04 and 5.05, is inclusive of a test to determine defects as related to spare pairs. This test is made by means of the "tone comparison" or "split receiver" test using either a Cable Splicer's 43-A Test Set or 45-A Test Set. The test will normally detect such defects as shorts, crosses and grounds, and under certain conditions it will also indicate opens and split pairs. A description of the 43-A test set is given on page 38 of A. T. & T. Specification 4860, entitled "Cable Splicing," and the method of detecting defective pairs using the 43-A test set is covered under "Balance Test" on pages 44 to 47 inclusive. Corresponding information with respect to the 45-A test set and its use is given in Supplement A to "Cable Fault Locating, Preliminary Specifications for Field Trial."

6. COMPLETE PHYSICAL CHECK—UNDERGROUND CABLE

General

6.01 Following is a description of the physical check method of verifying and correcting underground cable pair assignment records, which was briefly outlined in paragraph 3.02 (b). The method includes:

(a) A test between the subscriber multiple and the main frame to check the accuracy of the record indications as to the particular subscriber line on a given pair.

(b) A check at the main frame as to whether or not the pairs indicated as being in use for battery or generator leads are in fact so used.

(c) A record check between the cable pair charts and the Wire Chief's line card records with respect to cable pair chart entries of miscellaneous circuits such as private lines, leased lines, P.B.X. extensions, etc.

(d) A check and test of spare pairs.

(e) An investigation and correction of all discrepancies.

6.02 Following are the methods applicable for making the check of the record indications of multiple lines referred to in paragraph 6.01 (a):

(a) **Manual Offices:** A test, by two checkers, from the switchboard multiple to the main frame.

(b) **Dial Offices with Number Checking Multiple:** A test, by two checkers, from the dial "A" board to the main frame.

(c) **Dial Offices Without Number Checking Multiple:** One of the two following methods:

(1) Test Desk Method—A test, by two checkers, from the test desk, through the subscriber multiple to the main frame.

(2) Reverting Call Method—A reverting call test, by one man, from the cable pairs at the main frame.

Note: As to a choice between the two methods outlined for dial offices without number checking multiple, the Test Desk Method provides a more positive check, and generally can be completed in less man-hours, particularly if the test desk is arranged (as is usually the case), so that connection can be made to busy lines. However, in small offices where a checking method is desired which can be performed by one man, the reverting call method is satisfactory except for P.B.X. trunk groups. For P.B.X. trunk groups, it is necessary to use some other method, e.g. the test desk method.

6.03 The cable pair charts themselves should be used, whenever possible, directly on the job in making the check.

6.04 Where this is not practicable, as for instance where this would require the books to be away from the assignment office during a time they are needed for assigning purposes, it will be necessary either to make a draw-off list of the cable record entries or to make a copy of the records by photographic process, e.g. photostats. Consideration of this latter method will be warranted only under favorable circumstances as to Company photostatic equipment, conveniently located with respect to the assignment office.

6.05 A draw-off will normally be necessary as related to 4-party-lines in jack or terminal-per-station offices, as it is the usual practice in such cases to show only the party line circuit number on the cable pair chart. In such cases one of the line numbers associated with each particular circuit can be obtained from another assignment record, such as the locality record, or from the wire chief's line card records. It will normally be sufficient to check only one of the line numbers on a circuit.

Apparatus

6.06 Manual Offices: A 57-A test set. As part of the equipment included in this set, there are a 56-A test set and a 38-A test set.

6.07 Dial Offices with Number Checking Multiple:

1 Operator's telephone set for use at the dial "A" board.

1 Talking circuit between the dial "A" board and the main frame.

1 Special cord at the dial "A" board. In offices having ground cut-off relays, connect the tip of the cord to battery through a 220 ohm resistance. In offices having battery cut-off relays, connect the tip of the cord to ground through a 112 ohm resistance.

1 Operator's telephone set for use at the main frame. This set should have the transmitter and receiver wired in series and terminate in a cord equipped with Frankel clips, or a No. 110 plug, for making connection to the talking circuit from the main frame to the dial "A" board. Single conductor cords should be attached to the cord of the telephone set. The single conductor cord connected to the ring side should terminate in a test pick which is used for making connection to the cable pairs at the frame. The two single conductor cords should be bridged by an 11,000 ohm resistance and a 1MF condenser should be connected in the ring side between the resistance and the telephone set conductor.

6.08 Dial Offices Without Number Checking Multiple:

(a) Test Desk Method:

A test desk position from which connection is established to each multiple line.

A 38-A test set (described in A. T. & T. Bulletin 261) for placing tone on the pairs at the main frame.

A talking circuit between the main frame and the test desk. (If the office is equipped with a loud speaker circuit, this will usually be found satisfactory for the purpose.)

(b) Reverting Call Method: A dial hand set.

Checking Method—Manual Offices

6.09 Make the following connections at a "B" switchboard position:

(a) Connect jack T-2 of the portable 56-A test set (see paragraph 6.06) by means of a patching cord (furnished with the test set) to a spare multiple jack. This will serve as a talking circuit to the main frame, battery being supplied by two dry cells in the 56-A test set.

(b) Connect jack L-2 of the 56-A test set by means of a patching cord to a second spare multiple jack. This will serve as a permanent test path over which the checking signal is heard.

(c) Connect the head set having the twin plug to jacks T-1 and L-1 of the 56-A test set. When inserting the plug, the knurled edge should be to the left.

(d) Insert the remaining patching cord into the TST jack of the test set. This cord is used for plugging into the multiple jacks of the lines being checked.

Note: The 56-A set is provided with jacks for both No. 109 and No. 110 type plugs, and the patching cords are equipped with No. 109 plugs on one end and No. 110 plugs on the other. This arrangement permits either end of the cords to be inserted in the test set, the selection as to which should be used depending on the type of plugs required for the switchboard multiple jacks.

6.10 Make the following connections at the main frame:

(a) Connect the head set with the two long cords (included as a part of the equipment of the 57-A test set referred to in paragraph 6.06) as follows:

(1) The cord having the white and red No. 360 tools, to the tip and ring respectively of the spare multiple jack which was selected as the talking circuit. (See (a) in paragraph 6.09.)

(2) The cord having the white and black No. 360 tools, to the tip and ring respectively of the second spare multiple jack, which is to be used as the permanent test path. (See (b) in paragraph 6.09.)

(b) Locate the 38-A test set conveniently near to the cable to be checked and operate the switch in the top of the set to start the tone.

6.11 The checker at the "B" switchboard will have the cable pair chart or draw-off list of the cable record entries. For pairs which the record shows occupied by subscriber lines the checker at the switchboard tells the checker at the frame, over the talking circuit, the pair number and inserts the cord associated with the TST jack of the 56-A test set, in a multiple jack of the line shown on the record. The checker at the frame places the test picks of the 38-A test set on the pair indicated and, if the record is in accordance with the facts, this will be indicated by receipt of the tone in the test receivers. If the tone is not heard this indicates a discrepancy, in which case the checker at the switchboard enters the facts in columns A to C inclusive of Adjustment Sheet A, as indicated by the column headings. The check then proceeds to the next pair.

Note: It will not be necessary to skip over busy lines, as the tone of the 38-A test set will not interfere with conversations.

6.12 For pairs which the record shows occupied by battery or generator leads, the checker having the cable record or draw-off list tells the checker at the frame that the record shows "bat-

tery" or "generator" as the case may be. The checker at the frame checks to determine whether the indicated condition obtains on the pair. It will normally be sufficient for the purpose of the check to ascertain only whether the pair is occupied by battery or generator as the case may be. This can be accomplished by noting whether the jumper wire or arrester blocks are of the distinctive type commonly used for such circuits or, in the case of generator leads, by bridging the pair with the fingers. In some cases it may be desirable to go in on the pair with a head set. If the battery or generator condition as indicated by the record is not found on the pair, the checker having the cable record enters the discrepancy on Adjustment Sheet A, in columns A and B for subsequent investigation.

6.13 If the record indicates a pair spare, the checker having the cable record or draw-off list tells the checker at the frame, who checks to determine whether the pair is spare. If the pair is not spare at the frame, the checker having the cable record enters this discrepancy on Adjustment Sheet A in columns A and B for later investigation.

6.14 Entries on the cable record of miscellaneous circuits, such as private lines, leased lines, P.B.X. extensions, etc., should be passed by and later checked as outlined in paragraphs 6.20 and 6.21 after the check of the subscriber lines is completed and the discrepancies indicated thereby investigated.

6.15 The check proceeds in the manner indicated in paragraphs 6.11 to 6.14 inclusive, in pair number sequence, throughout the cable. This method permits the checker at the main frame to work consecutively along the frame without having to skip around. If the cable being checked serves a random area (i.e., an area having more than one central office prefix), all the line numbers in the first prefix, relating to a given cable or set of cables, would be checked before moving to the second prefix.

6.16 In those cases where the facts found agree with the entries on the cable pair chart (or with the entries on the draw-off list) a small check mark should be entered opposite the pair number. In those cases where a discrepancy is found, enter a small "D." These designations on the cable pair charts can later be erased after the check has been completed.

6.17 After all entries of subscriber lines, battery and generator feeders and spare pairs have been checked against the frame, investigation should be made to determine what is on those pairs which have jumpers but for which the pair occupancy did not agree with the entry on the cable pair chart. This can be accomplished either by raising the operator (in manual offices), calling out on the pair (in dial offices), or by tracing the jumper, if this is found necessary. The results should be entered in Columns D and E of Adjustment Sheet A.

6.18 Investigation should then be made of the entries in Column B of Adjustment Sheet A, representing lines, battery feeders, or generator leads which were not found on the particular pairs on which they were shown by the cable pair chart. The detailed procedure to be followed in making this investigation is indicated on the back of the Adjustment Sheet. The facts established should be entered on the front of the form in Columns F to I as appropriate.

6.19 After the location of the lines indicated in paragraph 6.18 has been determined, investigation should be made of the entries in Column D on the Adjustment Sheet. The entries in this column indicate what was actually found on pairs, when other than that indicated by the cable pair chart. The procedure to be followed in making this investigation is also indicated on the back of Adjustment Sheet A. The facts established should be entered on the front of the form in columns J to M as appropriate.

6.20 The entries remaining unchecked on the cable pair charts, following completion of the check detailed in paragraphs 6.11 to 6.19, inclusive, consist of miscellaneous circuits such as private lines, leased lines, P.B.X. extensions, etc. The method for verifying the accuracy of these entries consists of a check between the cable pair charts and the Wire Chief's line cards. If these records are in agreement as to the pair occupancy of a particular circuit, it constitutes a satisfactory check. If the records disagree, or if the Wire Chief has no record of a particular circuit entry, a record of the discrepancy should be entered on Adjustment Sheet B in columns A to C, inclusive.

6.21 After all entries of miscellaneous circuits on the cable pair chart have been checked against the Wire Chief's line cards, investigation should be made of the discrepancies entered on Adjustment Sheet B. In making this investigation the procedure indicated on the back of the Adjustment Sheet should be followed. The facts established by the investigation should be entered on the front of the form in columns D to K as appropriate.

6.22 Following the completion of the check of the subscriber lines, battery and generator leads and miscellaneous circuits, as covered in paragraphs 6.11 to 6.21 inclusive, the spare pairs should be tested for defects as described in paragraph 5.06, and the cable pair charts posted to reflect the results of this test.

Checking Method—Dial Offices With Number Checking Multiple

6.23 Terminate the talking circuit to the dial "A" board in a spare answering jack and insert an answering cord in this jack to supply battery and ground. Connect the operator's set to the position and operate the listening key associated with the answering cord being used.

6.24 Connect the second operator's telephone set (see paragraph 6.07), which has the transmitter and receiver wired in series, to the talking circuit at the main frame.

6.25 The checker at the dial "A" board will have the cable record or draw-off list of the cable record entries. For pairs which the record shows occupied by subscriber lines, the checker at the dial "A" board tells the checker at the main frame, over the talking circuit, the pair number. The checker at the frame places the test pick on the "ring" protector spring of the indicated pair, and if the line is not busy, the checker at the dial "A" board touches the tip of the special cord, a few times in quick succession, to the terminal of the checking multiple associated with the line indicated on the cable pair chart. If the record is in accordance with the facts, both checkers will receive a "click" each time the tip of the special cord is touched to the checking multiple. If the test "clicks" are not heard, it indicates a discrepancy in the record. The checker at the dial "A" board should enter this discrepancy on Adjustment Sheet A, in columns A to C inclusive, for subsequent investigation. The check then proceeds to the next pair.

Note: In case the line is busy, the conversation on the line will be audible to both checkers, and the one at the main frame should immediately disconnect from the pair. The checker at the dial "A" board should make a notation that the pair was busy, and proceed to the next pair. Pairs found busy should be returned to later and checked.

6.26 See paragraphs 6.12 to 6.22, inclusive, for remaining detail of check. All of these paragraphs apply fully to dial offices as well as to manual.

Checking Method—Dial Offices Without Number Checking Multiple

Test Desk Method

6.27 Locate the 38-A test set conveniently near to the cable to be checked, and operate the switch in the top of the set to start the tone.

6.28 The checker at the test desk will have the cable record or draw-off list of the cable record entries. For pairs which the record shows occupied by subscriber lines, the checker at the test desk tells the checker at the frame, over the talking circuit, the pair number, and establishes a test connection to the line number indicated on the record. The checker at the frame places the test picks of the 38-A test set on the indicated pair, and, if the record is in accordance with the facts, the checker at the test desk will hear the tone. He then disconnects and proceeds to the next pair. If the tone is not heard, it indicates a discrepancy, in which case the facts are entered, by the checker at the test desk, in columns A to C inclusive of Adjustment Sheet A as indicated by the column headings.

Note: It will not be necessary to skip over busy lines, as the tone of the 38-A set will not interfere with conversation.

6.29 See paragraphs 6.12 to 6.22, inclusive, for remaining detail of check. All of these paragraphs apply fully to dial offices as well as to manual.

Reverting Call Method

6.30 For pairs which the record shows occupied by subscriber lines, the checker connects a dial hand set to the pair and, if the line is not found busy, dials the line number indicated on the cable pair chart. If the record is in accordance with the facts, the busy tone will be heard by the checker, who should then disconnect the hand set and proceed to the next pair. If the busy tone is not heard, it indicates a discrepancy, in which case the checker should enter the facts in columns A to C inclusive, of Adjustment Sheet A, as indicated by the column headings, for subsequent investigation.

6.31 If, due to a discrepancy in the record, the ringing tone is heard in place of the busy tone, the checker should stay on the pair to answer the subscriber and explain the call.

6.32 If the checker upon making connection to a pair finds the line busy, he should immediately disconnect. Lines found busy should be noted and later checked.

Note: It is desirable that the reverting call check be made during light load traffic periods for the two following reasons:

(a) In order to minimize the number of pairs found busy which have to be skipped and tested later.

(b) In cases where the cable pair chart shows a certain line number on a given pair in error, if that number happens to be busy at the time the check is made, the error will not be detected. By confining the check to comparative light load traffic periods, however, the chances of this occurring are so small that practically all errors will be detected.

6.33 Due to the hunting feature, P.B.X. trunk groups cannot be tested by the reverting call method. Such entries on the cable pair chart should be passed by and later checked by the Test Desk Method outlined in paragraph 6.28.

6.34 See paragraphs 6.12 to 6.22, inclusive, for remaining detail of check. All of these paragraphs apply fully except that the check is made by one man at the main frame who has the cable record or draw-off list of the cable record entries.

7. CHECK AGAINST WIRE CHIEF'S LINE CARDS—UNDERGROUND CABLE

General

7.01 Following is a description of the method of verifying and correcting the underground cable pair assignment records by checking these records against the Wire Chief's line cards, which was briefly outlined in paragraph 3.02 (c). This method comprises a complete check of the working and spare pairs, including an investigation of discrepancies and a test of the spare pairs for defects. The following description applies when the underground cable records only are checked against the Wire Chief's line cards. In those cases where the aerial records are also to be checked by this method, it is modified somewhat, as outlined in paragraph 8.05, to include those records.

7.02 The cable pair charts themselves should be used whenever possible, directly on the job in making the check.

7.03 Where this is not practicable, as for instance where this would require the books to be away from the assignment office during a time they are needed for assigning purposes, it will be necessary either to make a draw-off list of the cable record entries or to make a copy of the records by photographic process, e.g. photostats. Consideration of this latter method will be warranted only under favorable circumstances as to company photostatic equipment, conveniently located with respect to the assignment office.

7.04 Where a draw-off list is made, it will be sufficient in the case of 4-party lines, to enter only the circuit number on the draw-off list, without referring to some other record to obtain one of the line numbers working on the circuit.

Checking Method

7.05 The working lines and circuits indicated on the cable pair chart or draw-off list are checked in pair number sequence against the Wire Chief's line card records. If the records agree as to the pair occupancy, it constitutes a satisfactory check. If the records disagree, an indication of the discrepancy should be entered on Adjustment Sheet B, in Columns A to C inclusive, for investigation.

7.06 In those cases where the records are in agreement, a small check mark should be entered on the cable pair chart or draw-off list opposite the cable pair number. If the records do not agree, enter a small "D" opposite the cable pair number to indicate a discrepancy. These designations on the cable pair chart can later be erased after the check has been completed.

7.07 After all entries on the cable pair charts have been checked against the Wire Chief's records, investigation should be made of the discrepancies entered on Adjustment Sheet B. In making this investigation, the procedure indicated on the back of the Adjustment Sheet should be followed. The facts established by the investigation should be entered on the front of the form in Columns D to K as appropriate.

7.08 Following the completion of the check of the entries on the cable pair charts against the Wire Chief's line card records in the manner indicated in the preceding paragraphs 7.05 to 7.06, inclusive, the spare pairs should be checked and tested at the main frame, as described in paragraphs 5.01 to 5.06, inclusive, and the cable pair charts posted to reflect the results of this check.

8. CHECK OF CROSS-CONNECTED DISTRIBUTION CABLES

General

8.01 Following is a description of the methods for verifying and correcting the assignment pair records of cross-connected distribution cables, which were briefly referred to in paragraph 3.03.

8.02 The method employed may consist of either:

(a) A check of the cable records against the Wire Chief's line cards. This method comprises (1) a complete check of the entries on the distribution cable pair records for all pairs shown thereon as being in use, and (2) a spare pair check at the cross-connection box or boxes, in case they are visited for purpose of investigating discrepancies between the assignment records and Wire Chief's line cards.

or

(b) A spare pair check. This method consists of a check and test of the pairs found spare at cross-connection boxes, and an investigation and correction of any record discrepancies thereby indicated.

or

(c) A complete physical check. This method comprises a complete check of working and spare pairs, including a check as to what line or circuit is on each working pair. The methods for checking the multiple lines are:

A calling test, by one man, from the cross-connection box. Applicable to manual offices.

A test, made by two checkers, from the test desk through the subscriber multiple to the cross-connection box. Applicable to both manual and dial offices.

Check of Cable Records Against Wire Chief's Line Card Records

8.03 The method for checking the entries of working lines and circuits on the distribution cable pair records is the same as that described in paragraphs 7.02 to 7.07, inclusive, for checking the underground cable pair records against the Wire Chief's line cards. Investigation of disagree-

ments between the assignment records and the Wire Chief's line cards may require a visit to the cross-connection box.

8.04 Where a visit is made to a cross-connection box for the purpose indicated in the preceding paragraph, it will usually be found desirable to take advantage of this visit to check, and in some cases test, the spare pairs. The method of making the spare pair check in such cases is the same as that covered in paragraphs 8.06 to 8.09, inclusive.

8.05 The foregoing paragraphs 8.03 and 8.04, apply when the check against the Wire Chief's line cards is limited to the cable pair record for the cross-connected distribution cable. In those cases where both this record and the underground cable pair records are to be checked against the Wire Chief's line cards, the check of the working lines and circuits is made as follows:

1. Check the entries on the cross-connected distribution cable records against the Wire Chief's line cards. The entries on these distribution cable records generally include the underground pair numbers to which the distribution pairs are cross-connected, and these should be included in the check against the line cards.

2. Check the entries of cross-connected underground pairs on the distribution cable records against these pairs on the underground record, to determine if the line or circuit entered on the underground record agrees with the distribution cable record.

3. Check the entries on the underground records, which remain unchecked following step 2, against the Wire Chief's line cards. These entries consist of lines or circuits feed-in direct from the underground cable.

4. Make the spare pair check outlined in paragraphs 5.01 to 5.06 for underground cables, and paragraph 8.04 for aerial cables.

Spare Pair Check

8.06 The checker should be furnished a list of the pairs indicated as spare on the cable pair chart for the cross-connected distribution cable, including any defect notations appearing opposite those pairs. He should also be furnished a list of those pairs in the underground cable complement, terminating at the cross-connection box, which the underground cable pair chart indicates as either spare or not working in that particular cross-connection box.

8.07 The checker visits the cross-connection box and checks the list against the actual spare distribution cable pairs at the cross-box. In doing this he—

(1) Adds to the check list any pairs found spare but which were not so shown on the list.

(2) Determines and enters on the check list what is on each pair which the check list indicates as spare, but on which he finds a jumper. This can be done by raising the operator (in manual offices) or, by calling the assignment clerk (in dial offices) to determine what the cable record shows for the cross-connected underground pair. If, however, the cross-connection is to an underground pair which is also shown as spare on the check list, the checker should call the frameman to see if there is a jumper on the underground pair at the central office main frame. If there is no jumper on the underground pair at the main frame, the jumper at the cross-box should be removed. If the underground pair also has a jumper at the main frame, the checker should indicate this fact on his check list.

8.08 After the actual spare pairs in the cross-box have been established, as described in the preceding paragraph, they should be tested for defects, using the method outlined in paragraph 5.06. The results of this test should also be entered on the check list. Following completion of the check and test at the cross-box, the check list should be forwarded to the assignment office for posting the cable pair record and investigating the discrepancies.

8.09 Upon receipt of the check list, the assignment office (1) adds to or removes from the cable pair charts, indications of pair defects, as necessary to conform to the testman's indications on the check list, (2) through comparison of the check lists with the cable pair records determines any discrepancies as to pair occupancy, (3) enters these discrepancies in the proper column or columns A to E of Adjustment Sheet A, (4) investigates to a final conlusion these discrepancies, and (5) corrects all assignment records as necessary to conform to the facts thus determined.

Note: While Adjustment Sheets A and B were designed primarily for use in checking the underground cable pair records, the face of the forms is also suited to use for recording the information in connection with the check of distribution cable pair records, and the procedure outlined on the back of these forms is broadly indicative of the steps required in investigating discrepancies found by this checking.

Physical Check—Calling Method
(Applicable to Manual Offices Only)

8.10 A draw-off list of the distribution cable record entries will be necessary in making the check at the cross-box. This list should include the line or circuit entry for each pair which the distribution cable record shows as working, and also the feeder pair number to which the record indicates the distribution cable pair is cross-connected. In the case of 4-party lines in jack-per-

station offices, one of the line numbers associated with each circuit can be obtained from some other assignment record, such as the locality record, or from the Wire Chief's line card record. It will normally be sufficient to check only one of the multiple numbers on a circuit.

8.11 The checker visits the cross-connection box, and proceeds as follows:

(a) For distribution cable pairs which the draw-off list indicates as being occupied by subscriber lines, the checker connects a hand set to the underground pair to which his list indicates the distribution cable pair is cross-connected. He questions the operator as to the line number and, while doing this, places a momentary short on the distribution cable pair. If the record is in accordance with the facts, a click will be heard when the distribution cable pair is short-circuited, and the line number given by the operator will agree with the entry for that pair on the draw-off list. If the click is not heard, or if the line number given by the operator does not agree with the entry on the draw-off list, the checker should enter an indication of the discrepancy on the draw-off list, including any facts he is able to establish as to what line or circuit is on the pairs.

(b) For pairs which the draw-off list indicates as being occupied by battery or generator, the checker should determine whether or not the indicated condition obtains on the distribution cable pair, and whether it is cross-connected to the underground pair indicated on the draw-off list. Any discrepancy should be indicated on the check list.

(c) Pairs indicated as spare on the draw-off list should also be checked. If such a pair has a jumper, the checker should determine whether it is a working line (and if so, what line), or if it is a dead cross-connection which should be removed. The facts may, in some cases, be determined by raising the operator. In other cases, it may be necessary to call the frameman to see if there is a jumper on the underground pair at the frame.

(d) See paragraph 8.13 for check of miscellaneous circuit entries on the draw-off list.

8.12 After the subscriber lines and spare pairs have been checked as detailed in paragraph 8.11, the spare pairs should be tested using the method outlined in paragraph 5.06. The results of this test should be entered on the check list.

8.13 Following the check of the multiple lines and spare pairs at the cross-connection box, the entries of miscellaneous circuits on the draw-off list should be checked against the Wire Chief's line cards. Any disagreements between the two records as to the pair occupancy of a circuit should be entered on the check list. The list should then be forwarded to the assignment office for posting the cable record and investigating the discrepancies.

8.14 Upon receipt of the check list, the assignment office (1) adds to or removes from the cable pair charts, indications of pair defects, as necessary to conform to the testman's indications on the check list, (2) enters the discrepancies relating to subscriber lines, spare pairs or battery and generator leads in the proper column or columns A to E of Adjustment Sheet A, and those relating to miscellaneous circuits in the proper columns A to C of Adjustment Sheet B, (3) investigates to a final conclusion these discrepancies, and (4) corrects all assignment records as necessary to conform to the facts thus determined. (See note following paragraph 8.09.)

Physical Check—Test Desk Method
(Applicable to Manual or Dial Offices)

8.15 The checker at the test desk will have the cable record or draw-off list of the distribution cable record entries, including occupancy of each pair and indication of the underground pair to which cross-connected. (See paragraphs 6.03 to 6.05 inclusive, regarding use of records in making the check.) The checker at the cross-box will have a 38-A test set (described in A. T. & T. Bulletin No. 261), and a head set which should be connected to a talking circuit to the test desk.

8.16 For pairs which the record shows occupied by subscriber lines, the checker at the test desk tells the checker at the cross-box the distribution cable pair number, and establishes a test connection to the line. The checker at the cross-box places the test picks of the 38-A test set on the indicated pair and, if the record is in accordance with the facts, the checker at the test desk will hear the tone. He then tells the checker at the cross-box the cross-connected underground cable pair number. The checker at the cross-box places the test picks of the 38-A test set on that pair, and if the record is in accordance with the facts, the checker at the test desk will again hear the tone. He then disconnects from the line and proceeds to the next pair. If the tone is not heard, it indicates a discrepancy, in which case the facts are entered, by the checker at the test desk, in columns A to C inclusive of Adjustment Sheet A for later investigation.

8.17 Pairs indicated as occupied by battery or generator leads should be checked by the man at the cross-box to determine whether the indicated condition obtains on the pair. Any discrepancies should be entered on the Adjustment Sheet by the checker at the test desk.

8.18 Distribution cable pairs which have jumpers but for which the pair occupancy did not agree with or was shown as spare on the cable record, should be investigated by the checker at the cross-box to determine either what is on the

pair or the number of the cross-connected underground pair. If the record indicates the underground pair as also being spare, a check of the pair at the main frame will verify whether the jumper in the cross-box is a dead cross-connection which should be removed. The checker at the test desk should enter in columns D and E of Adjustment Sheet A what is found on such pairs by the checker at the cross-box.

8.19 Entries on the cable pair chart (or draw-off list if used), of miscellaneous circuits should be checked by the checker at the test desk against the Wire Chief's line cards. If these two records are in agreement as to the pair occupancy of a circuit, it constitutes a satisfactory check. If the records do not agree, an indication of the discrepancy should be entered in columns A to C inclusive of Adjustment Sheet B.

8.20 After completion of the check at the cross-box, as detailed in the preceding paragraphs, the checker at the cross-box should test the spare pairs for defects. The method of testing the spare pairs is the same as that outlined in paragraph 5.06. The results of this test should be entered on a list for later posting the cable pair charts.

8.21 Following completion of the check, as covered in paragraphs 8.15 to 8.20 inclusive, any discrepancies entered on Adjustment Sheets A or B should be investigated to a final conclusion. (See note following paragraph 8.09.) The assignment records should then be corrected as necessary to conform to the facts thus determined.

9. CORRECTING OTHER RECORDS

9.01 In all cases where the check discloses an error in the assignment cable pair chart record, the correction should include any necessary correction (with respect to the pair or line in question) on all other assignment office records, such as the Locality Record (or the Numerical Record where one is maintained).

9.02 Where the checking method employed consists of a check of the assignment cable pair records against the Wire Chief's line cards, as described in paragraphs 7.01 to 7.08, and paragraphs 8.03 to 8.05, the Wire Chief's line cards as well as the assignment records are corrected. Where one of the other described methods is used to check the assignment cable pair records, the check may also be used, if so desired, as the basis for correcting the Wire Chief's line cards. This may be limited to scrutinizing the line cards for those particular lines in connection with which the assignment records had been found in error, and making the corresponding correction of those line cards if they are also found to have been in error. Or, in those cases where the assignment records have been given a complete line-by-line physical check, all of the line cards may then be checked against the corrected assignment records, if this be desired as a measure to verify or correct the line cards.

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ASSIGNMENT CABLE RECORD ADJUSTMENT SHEET

TIGATING DISCREPANCIES FOUND BY CHECKING THE CABLE PAIR RECORDS AGAINST THE FIELD

(See Back of Form for Detailed Procedure to be Followed in Making Investigation)

FORM E-1149

Central Office | Cable No. | Check Started | Completed | Sheet No. | No. of Sheets

INDICATION OF DISCREPANCY					FACTS ESTABLISHED BY INVESTIGATION							
	What Cable Pair Chart Shows		What is Found on Pair at Frame		FOR LINE SHOWN IN COLUMN B				FOR LINE SHOWN IN COLUMN D			
Pair No.	Enter Line or Circuit No. or "SP" for Spare	Class of Service	Enter Line or Circuit No. or "SP" for Spare	Class of Service	Line Found Working on a Pair Other than the One Shown in Col. A Enter Pair No.	Line is Assigned on Pending "In" Order to Pair in Col. A Enter Order No.	Line Discontinued Enter "Out" Order No.	NOTES Also Enter a Check Mark (✓) in this Column After Records have been Corrected as Necessary	Other Records Show Line Working on Col. A Pair. Ind. by ✓	Line Found Working on a Pair Other than the One Shown in Col. A Enter Pair No.	Line Discontinued Dead Jumper Removed. Enter "Out" Order No.	NOTES Also Enter a Check Mark (✓) in this Column After Records have been Corrected as Necessary
A	B	C	D	E	F	G	H	I	J	K	L	M

ASSIGNMENT CABLE RECORD ADJUSTMENT SHEET 1

FOR USE IN INVESTIGATING DISCREPANCIES FOUND BY CHECKING THE CABLE PAIR CHART AGAINST THE WIRE CHIEF'S RECORDS

FORM E-1150

(See Back of Form for Detailed Procedure to be Followed in Making Investigation)

Central Office | Cable No. | Check Started | Completed | Sheet No. | No. of Sheets

INDICATION OF DISCREPANCY			FACTS ESTABLISHED BY INVESTIGATION							
			FOR LINE SHOWN IN COLUMN B						FOR PAIR SHOWN IN COLUMN A*	
Pair No.	What Cable Pair Chart Shows for Pair in Col. A Enter Line No.	What Wire Chief's Line Card Shows for Line in Col. B Enter Pair No. or "No Card" if Line is not Working	Main Frame Check Found Line on Pair in Col. A. Ind. by ✓	Main Frame Check Found Line on Pair in Col. C. Ind. by ✓	Line Found Working on a Pair Other than those Shown in Columns A or C Enter Pair No.	Line is Assigned on Pending "In" Order to Pair in Col. A Enter Order No.	Line Discontinued Enter "Out" Order No.	NOTES Also Enter a Check Mark (✓) in this Column After Records have been Corrected as Necessary	A Line Other than the One Shown in Col. B was found on the Col. A Pair or this Pair was Found Spare Enter Line No. or "SP" for Spare	NOTES Also Enter a Check Mark (✓) in this Column After Records have been Corrected as Necessary
A	B	C	D	E	F	G	H	I	J	K

* Columns J and K Need not be Treated for Pairs Checked in Column D.