CROSSED NUMBER GROUP RF OR TF TERMINAL
NO. 1 CROSSBAR OFFICES

1. GENERAL
1.01 This section covers methods to be followed in connection with troubles due to a crossed RF or TF terminal in the number group.

2. INDICATIONS OF TROUBLE CONDITION
2.01 Terminating trouble indicator records.

3. REACTIONS DUE TO TROUBLE
3.01 This trouble prevents the completion of calls to all numbers in the line choice involved.

4. IMMEDIATE PROCEDURE TO FOLLOW
4.01 Analyze trouble indicator records to locate the leads and number group in trouble.
4.02 Insert make busy plugs into the TR0 (trouble recorder) jacks on the terminating trouble indicator. Open leads in trouble at the common point.

5. ANALYSIS OF TROUBLE
5.01 A cross on RF or TF leads causes a terminating marker XF relay to operate on all calls to numbers cross-connected to the leads involved. The marker will give a trouble release and summon the trouble indicator.

6. SUGGESTED PROCEDURE FOR LOCATING AND CLEARING TROUBLE
6.01 The procedure for handling cross conditions will vary somewhat depending upon the nature and location of the trouble. However, the following procedure will, in general, be advisable to attempt to isolate the trouble and at the same time partially restore service to the numbers associated with the leads involved.

6.02 At the rear of the block relay frame involved, open the common lead to the field crossed.

6.03 Test the field terminal thus opened for the presence of a cross. This will determine whether the trouble is in the field wiring or in the common multiple for the number group connector circuit.

6.04 If the trouble is in the field wiring having multiple appearances, connect the opened leads to the field terminal, by means of a No. 893 cord equipped with No. 360A and No. 365 tools. Then open each multiple appearance in turn. Use additional No. 893 cords to reclose each multiple appearance as rapidly as it is determined to be free of trouble, and thus isolate the appearance in trouble.

6.05 Further isolation to the block of one hundred numbers involved may then be made by opening the straps between hundreds and by the use of No. 893 cords reclose the opens, thus isolating the one hundred numbers involved.

6.06 From the front of the block relay frame, the various lines cross-connected to the appearance in trouble, within the hundred count isolated, may then be checked to determine which particular line or lines are actually involved in the trouble and the other lines may be temporarily bridged to restore other multiple appearances to service.

7. TROUBLE CONDITIONS CAUSING REACTIONS MAY BE LISTED BELOW
7.01 Crossed RF lead on cross-connection field.
**TERMINATING TROUBLE INDICATOR RECORD**

**CROSSBAR OFFICES**

| NO. | Ti | Ct | Df | Ov | Df | Cr | Sn | Th | W | S | T | U | F | Tr | G6 | Hb | Hp | Lr | Jt | Jc | Al | Zt | Lof | Ll5 | Lo9 | Hf | Tt | Ca | Cs | Hf | Lc | M | Cl | Lj | Spn | Jp | Js | Fs | Man | T9l | Dr | Sc | Rv | Rp | Tc |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1   | √  | 1  | 0.3 | 0 | 0 | 0 | 1 | 5 | 9 | 1 | 4 | 1 | 1 | 64 | 0 | 14 | √ | 0.3 | A | √ | 4 | 1 | 0.5 | 0 | √ | A | √ |
| 2   | √  | 1  | 0.1 | 1 | 1 | 0 | 5 | 3 | 0 | 7 | 1 | 1 | 8 | 0 | 7 | √ | 0.3 | D | √ | 2 | 1 | 3 | 2 | √ | A | √ |
| 3   | √  | 0 | 0.1 | 1 | 0 | 2 | 1 | 7 | 1 | 7 | 2 | 1 | 2 | 0 | 17 | √ | 0.5 | C | √ | 8 | 2 | 3 | 8 | 4 | √ | A | √ |
| 4   |    | 5  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

Column A - Trouble indication.
Columns B and C - Any marker and sender.
Column D - Any number cross-connected to F leads 0 and 3 in column F.
Column E - Same number group with 0 and 3 LCF lamps in column F and XF indication in column S indicates a cross on F leads 0 and 3.

**A B C D E F G H I**

| NO. | Lin | Lt1 | Tm1 | Gf | Spl | Mc | Nt1 | Nh | Nh1 | Nn1 | Nnt1 | Cs | Ip | It | Jp | Pr | Tr | Ptn | Dng | K3 | K2 | Ans | Fre | Lc | Fc | Mx | Tm | Le | Ll | Tc | Sc | Cj | Sc | Cfa | Cst | Hl | Pq | Mw0 | Wm1 | Fl | Ml1 | Al | Ml1 | Ltr | Ltr | Dst | Tct | Tbl | Fkc | X | Time |
|-----|-----|-----|-----|----|-----|----|-----|----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1   | √   | √   | √   | √  | √   | √  | √   | √  | √   | √   | √   | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | XF | 9:50 |
| 2   | √   | √   | √   | √  | √   | √  | √   | √  | √   | √   | √   | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | XF | 9:50 |
| 3   | √   | √   | √   | √  | √   | √  | √   | √  | √   | √   | √   | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | XF | 9:50 |
| 4   | √   | √   | √   | √  | √   | √  | √   | √  | √   | √   | √   | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | √  | XF | 9:50 |

**Analysis of Indication:** An XF lamp indication with the same LCF lamps indicates a cross between the two leads.

**Immediate Procedure to Follow:** Plug TRO jacks of all markers. Open the LCF-0 and 3 leads at common points.

**Procedure for Locating Trouble:** Test field terminal for presence of cross to determine whether the trouble is in the field wiring or in the common multiple for the number group. If trouble shows in field wiring having multiple wiring, open in turn each multiple appearance. By use of double ended cords it is possible to close each multiple appearance as it is found to be free of trouble. Isolate cross.