

ORIGINATING MARKER ALARM ROUTINE NO. 1 CROSSBAR OFFICES

1. GENERAL

1.01 This section covers the procedure to be followed in response to originating marker alarms.

1.02 When an originating marker fails to perform its functions within its time allowance, it times out and summons the originating trouble indicator in order that a record of the trouble can be obtained.

1.03 After this, the sender is given a trouble release signal either through the marker connector or through the district junctor. The sender releases the marker connector after which the marker is restored to normal.

1.04 When the marker has timed out and it fails in any of the following functions, (1) to summon a trouble indicator, (2) to send a trouble release signal to the sender after successfully summoning the trouble indicator, (3) to restore to normal after sending the trouble release signal to the sender, or if the XX-1 or XX-2 relay is permanently operated, then, after an interval of approximately 1.3 seconds, the marker time alarm operates giving the following indications of the condition:

- (a) The TA lamp lights on the marker frame.
- (b) The DT lamp lights on the trouble indicator frame.
- (c) The aisle pilot green lamp lights to indicate the aisle in which the trouble indicator giving the alarm is located.
- (d) The major alarm is sounded.

1.05 The operation of the marker time alarm places a ground on the trouble release lead to effect the release of the marker in case the failure to release was due to a trouble which prevented the grounding of this lead.

1.06 The short time out interval from the time the marker is seized until the time alarm is operated is approximately 4 to 14 seconds.

1.07 If the short time out feature, mentioned above, fails to function in order to summon the trouble indicator or if DB lead should become permanently grounded, then the long time out relays after an in-

terval of 28 to 58 seconds would operate the marker time alarm. The marker in this case is held out of service until the ground is removed from the DB lead.

1.08 The marker has numerous X relays for detecting false grounds on many of the leads over which connection is made to the associated circuits. These relays are connected when the circuit is normal as well as when busy in service except on the leads that are actually in use. These X relays operate either the XX-1 or XX-2 relay. Each of these relays grounds the TM and DB leads, after a time interval, summons the trouble indicator and makes the marker test busy to all marker connector circuits.

1.09 As a marker time alarm indicates a possibility that a marker is out of service, such alarms should be given prompt attention in order that traffic delays due to a lack of available markers may be avoided.

1.10 The marker connector and the originating trouble indicator may both operate an alarm about the same time as the marker operates its time alarm. Whether they do or not is controlled by the progress of the call through the marker and whether the trouble indicator was successfully summoned.

2. APPARATUS

- 2.01 One No. 508A (relay blocking) tool.
- 2.02 One No. 275A (make-busy) plug.

3. METHOD

3.01 If, in response to a major alarm, a lighted DT lamp on the originating trouble indicator frame is found, then the TA lamp on the marker frame will be lighted. Go to the marker frame with the lighted TA lamp.

3.02 Observe which relays of the TM-1 to TM-9 relays are operated. If only the TM-8 and TM-9 relays are operated and if the TM-1 to TM-7 relays are functioning properly, then the trouble is probably due to a falsely grounded DB lead. This ground must be removed to restore the marker to service. If there is no ground on the TM lead, it can be assumed that the TM-1 to TM-7 relays are functioning properly. Check the No. 2 lower spring on the TMS-1 relay to determine whether or not there is ground on the TM lead.

3.03 If there is a ground on the TM lead and the TM-1 to TM-7 relays are unoperated, the following conditions are probably the cause of the trouble, (1) operating path of the TMS-1 relay open, (2) operating path of the TM-1 relay open, (3) the TM interrupter does not function properly.

3.04 When only the TM-8 and TM-9 relays are operated as mentioned in paragraph 3.02 and the TM lead is grounded, then check for the conditions mentioned in paragraph 3.03.

3.05 If any of the following combinations of TM-1 to TM-9 relays - (1) TM-1 to TM-7, (2) TM-1 to TM-9, (3) TM-4 to TM-7, (4) TM-4 to TM-9 are operated, the trouble may be due to some of the following conditions: (1) an open TRL lead from the TM-7 relay through either the district junctor or the marker connector to the sender; (2) RL or MRL relay not operating; if both relays are operated, then the ST-1 to ST-4 and the SR relays should be released and these in turn should release any other operated relay; (3) the TM lead falsely grounded.

3.06 If the SR, ST-3 and ST-4 relays are operated, the marker was performing its marker function; if these are normal, it may be assumed that it was performing its decoder functions.

3.07 If the above relays are unoperated, the time alarm may have been caused by the trouble release function through the marker connector; the marker involved will remain associated with the marker connector and the latter will usually give a marker connector alarm.

3.08 Locate the sender and marker connector involved. This may be done quickly by means of the trouble indicator lamps if that frame has been seized by the marker, or by the lamps brought in by the marker connector alarm which will usually operate in such cases.

3.09 The trouble release function cannot be checked through the district link and district junctor as they have been released by the operation of the TM-7 relay, but the circuits involved may be ascertained by reading the trouble indicator lamps if that frame has been seized by the marker.

3.10 If the alarm is not due to a trouble release function, it is probably due to one of the other conditions outlined in paragraph 3.05.

3.11 If the trouble is located in the marker and if it is of such a nature that it cannot be cleared immediately and without causing interference, make the marker busy by placing a No. 275A plug in the associated DB jack located at originating trouble indicator frame.

3.12 If the trouble is in a marker connector or sender, make the circuit busy in the approved manner and release the other equipment as soon as possible.

3.13 If, in response to a major alarm, the DT lamp on the trouble indicator frame and the other lamps associated with this alarm light only momentarily and simultaneously the major alarm ceases to operate, it is probably due to the marker having released after sending the trouble release signal to the sender.

3.14 The following are the most common causes of marker time alarms, where the marker has summoned the trouble indicator frame and has operated the major alarm momentarily: (1) TRL lead open at TM-7 relay (normal), TR relay (operated), T1B relay (operated), (2) trouble indicator frame failed to ground the T1B lead to operate the T1B relay, (3) XX-1 or XX-2 relay operated permanently.

3.15 Determine, by observing the trouble indicator lamps, the marker involved.

3.16 This trouble may be located by the use of the trouble indicator frame. Originate a test call on the marker, block with a No. 508A tool the ST-4 relay unoperated, after the TM-6 relay operates and before the TM-7 relay operates, check the conditions mentioned in paragraph 3.14. Remove the blocking tool from the ST-4 relay.

3.17 The marker time alarm may operate momentarily without the trouble indicator frame being summoned.

3.18 Upon any repetition of this condition, determine the marker involved by watching the TA lamps of all the markers for the TA lamp that lights momentarily.

3.19 This trouble may be due to some of the following conditions: (1) open operating path of DL relay to TM-6 relay, (2) open operating path of TR relay to DL relay, (3) an open T1S lead between the marker and the trouble indicator frame, (4) failure of trouble indicator frame to function properly.

3.20 This trouble may be located by the use of the trouble indicator frame. Originate a test call on the marker that had a momentary light on its TA lamp as described in paragraph 3.18.

3.21 Block the ST-4 relay unoperated with a No. 508A tool. When the TM-6 relay operates check the conditions mentioned in paragraph 3.19. Remove the blocking tool from the ST-4 relay.

3.22 Care must be exercised in reading the trouble indicator lamps. Whenever a DL lamp is lighted it means that two markers

have seized the trouble indicator and the first one has left a complete record, whereas the other has only lighted the DL lamp.

3.23 Whenever the conditions, mentioned in paragraph 3.22, exist when reading the trouble indicator lamps to determine the marker that has operated the time alarm, both markers should be routined with test calls originated by the trouble indicator frame in order to locate and clear the trouble that caused the time alarm.

3.24 Whenever an operated fuse on the marker frame is removed an AL lamp is

lighted on this frame. The lighted AL lamp indicates that the marker is held busy and out of service and that the operated fuse has been removed. The AL lamp is under control of the alarm release AR key.

3.25 Check whether or not a new fuse has replaced the operated fuse and if it has, then momentarily operate the AR key located on the marker frame to extinguish the AL lamp and to restore the marker to service.

4. REPORTS

4.01 The required record of these alarms should be entered on the proper form.