

NO. 5 CROSSBAR
TROUBLE REFERENCE GUIDE - PART 3
OFFICE TEST FRAME
BIN LISTINGS-----B, C, D, E, F

1. GENERAL

1.01 This section is one of a series of sections comprising the information necessary to guide the central office maintenance force to an understanding of the nature of troubles reported by either trouble indicator display records or ATA exception reports.

1.02 Whenever this section is reissued, this paragraph will cover the reason for reissue. This issue does not effect Equipment Test Lists.

1.03 Refer to Section 218-404-500 for an explanation of a typical bin listing, along with a complete listing of all bins, and the Trouble Reference Guide part number in which they appear.

1.04 The method of trouble duplication using the office test frame is provided in Part 11, Section 218-404-510.

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

CH

LAMP INFORMATION

Lamp - TK
 No Lamp - CH-

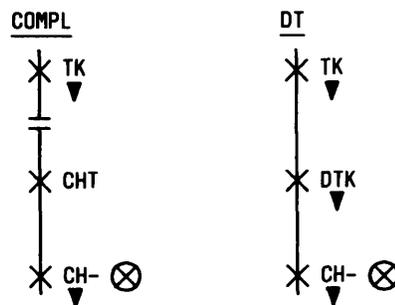
DESCRIPTION OF CIRCUIT OPERATION

The marker is selecting a channel between the trunk link and line link. Operation of the (CHT) relay (channel timing) allows enough time for any busy channels to be detected before the (CH-) relay operates.

DESCRIPTION OF FAILURE

Presence of the (TK) lamp indicates that the marker has seized all the circuits necessary to make channel test. (CH-) not lighted indicates that the marker did not select a channel.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

OGT or INC Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|--------------|
| SD-26001-01 | FS-21 | SC-1 | CD-26000-01 | Para - 4.90 |
| SD-26002-01 | FS-44 | SC-109 | CD-26002-01 | Para - 11.73 |

CH

CM-2TR

LAMP INFORMATION

Lamp - 2TR
No Lamp - (Does not apply)

DESCRIPTION OF CIRCUIT OPERATION

The completing marker attempted to complete the call on a second trial basis following a first trial failure. This second attempt also failed.

DESCRIPTION OF FAILURE

A second trial failure occurred.

NORMAL SEQUENCE OF OPERATION

(Does not apply)

TROUBLE DUPLICATION INFORMATION

(None)

REFERENCE DOCUMENTS

(None)

CM-2TR

CON

PUNCH INFORMATION

Lamp - JXP1-LXP1-SL-GLH
 No Lamp - CON

DESCRIPTION OF CIRCUIT OPERATION

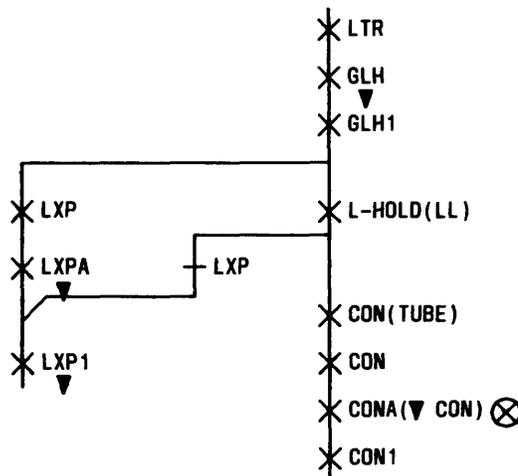
The marker is making continuity test over the tip and ring conductors of the crossbar switches and the customer's line. If the continuity test is valid, the (CON) tube fires, operating the (CON) relay. The (CON) relay operates the (CON1) relay.

DESCRIPTION OF FAILURE

The (JXP1), (LXP1), (SL) and (GLH) lighted indicates that all the crosspoints have operated and the sleeve lead is continuous. (CON) not lighted indicates that the tip and ring conductors do not test continuous thru the crosspoints.

Probably will complete on second trial unless in call back linkage.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

OGT, INC, or IAO class of Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-----------------------|
| SD-26001-01 | FS-24 | SC-2 | CD-26001-01 | Para - 5.81 thru 5.93 |
| SD-26002-01 | FS-48 | SC-109 | CD-26002-01 | Para - 13.3 |

CT

LAMP INFORMATION

Lamp - (not available)
No Lamp - CT-

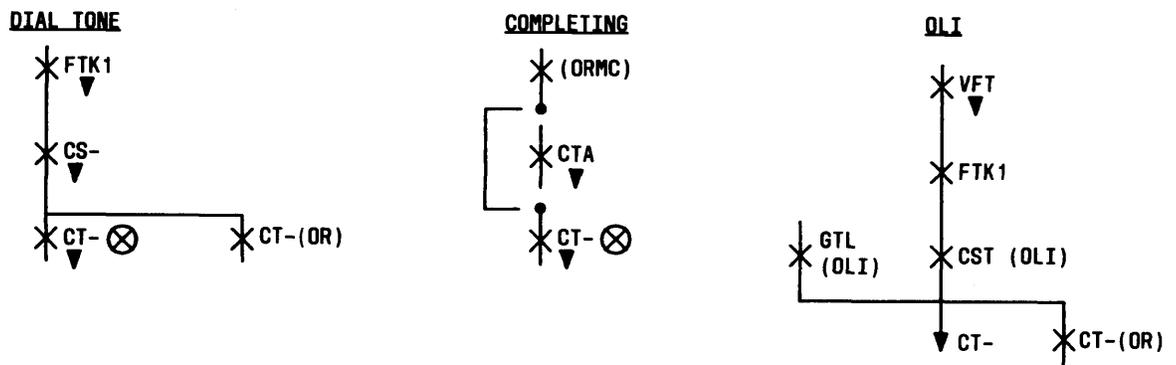
DESCRIPTION OF CIRCUIT OPERATION

The dial tone marker or OLI is operating (CT-) relays in the OR. The dial tone marker stores the (CT-) information in the OR by operating like-designated relays in the OR. The lock path of these relays is then checked on the same path that operated them. On completing marker usage, the (CT-) information is checked in the marker as it is received from the OR for proper registration.

DESCRIPTION OF FAILURE

No (CT) lamp indicates that the (CT-) information was not stored properly in the OR (dial tone usage). No (CT) lamp indicates that the marker did not receive the (CT-) information correctly from the OR (completing usage).

Probably will not complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

Dial Tone Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------|
| SD-26001-01 | FS-12 | SC-1 | CD-26001-01 | Para - 2.75 |
| SD-26002-01 | FS-10 | SC-101 | CD-26002-01 | Para - 3.21 |

CT

CU

LAMP INFORMATION

Lamp - CT-
No Lamp - CU-

DESCRIPTION OF CIRCUIT OPERATION

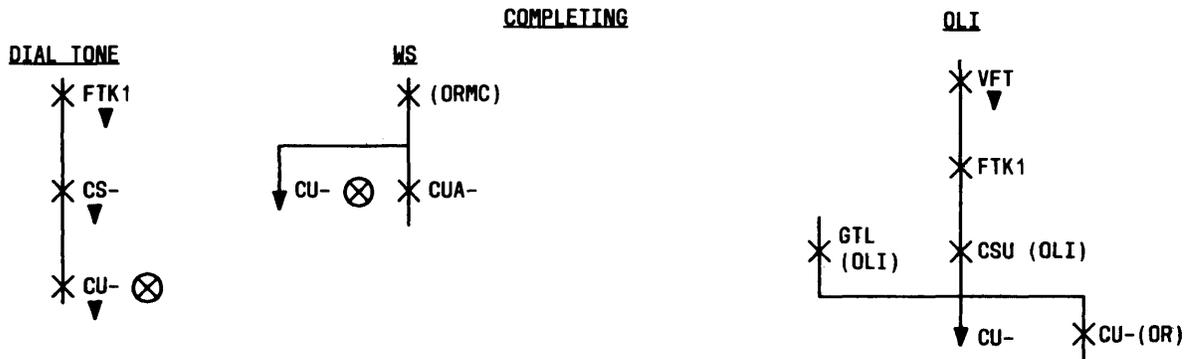
The dial tone marker or OLI is operating (CU-) relays in the OR. The dial tone marker stores the (CU-) information in the OR by operating like-designated relays in the OR. The lock path of these relays is then checked on the same path that operated them. On completing marker usage, the (CU-) information is checked in the marker as it is received from the OR for proper registration.

DESCRIPTION OF FAILURE

Presence of the (CT-) lamp indicates that part of the class-of-service information was received OK. No (CU-) lamp indicates that the (CU-) information was not stored properly in the OR (dial tone usage). No (CU-) lamp indicates that the marker did not receive the (CU-) information correctly from the OR (completing usage).

Probably will not complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone Test - Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------|
| SD-26001-01 | FS-46 | SC-1 | CD-26001-01 | Para - 2.75 |
| SD-26002-01 | FS-10 | SC-101 | CD-26002-01 | Para - 3.2 |

DCT1

LAMP INFORMATION

Lamp - (not available)
 No Lamp - DCT1

DESCRIPTION OF CIRCUIT OPERATION

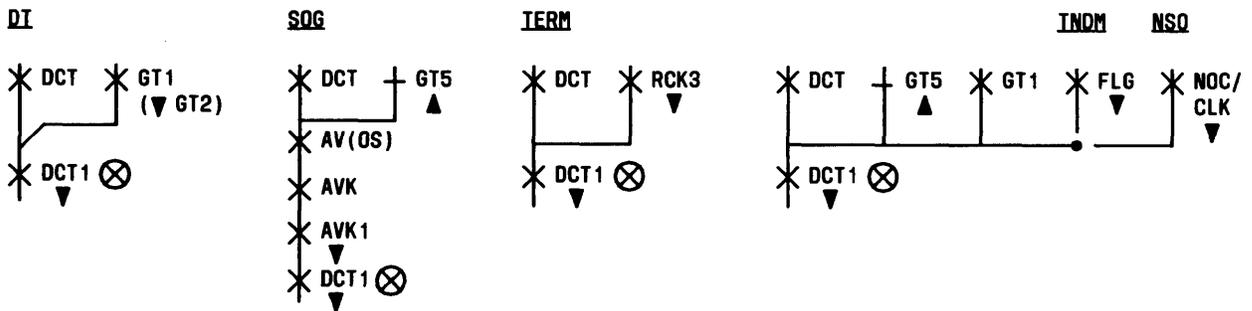
The (DCT1) relay operates to record a successful double connection test ((DCT) operation). On SOG calls, operation of the (DCT1) relay indicates successful sender advance - operation of the (AVK1) relay. On TER calls, operation of the (DCT1) relay indicates ringing has been set - operation of the (RCK3) relay.

DESCRIPTION OF FAILURE

Operation of the (DCT) relay indicates that double connection test is satisfactory, and that there are no false grounds on the sleeve lead. (DCT1) not operated indicates sender advance failure, ringing selection failure, etc., depending on the type of call.

May complete on second trial - unless in call back linkage. (Results in dial tone after dialing.)

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone, OGT or INC Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------------|
| SD-26001-01 | FS-23 | SC-1,2 | CD-26001-01 | Para - 5.104 |
| SD-26002-01 | FS-49 | SC-110 | CD-26002-01 | Para - 13.9, 14.1 |

DIS1

LAMP INFORMATION

Lamp - DCT1
 No Lamp - DIS1

DESCRIPTION OF CIRCUIT OPERATION

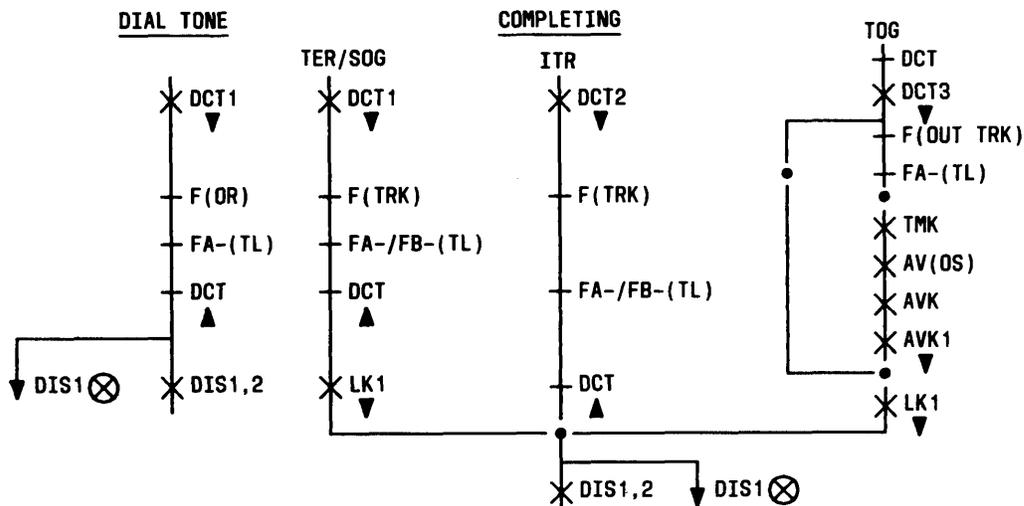
Near the end of establishing a call, the marker checks that trunk or OR can hold up the linkage. If the 10 ohm ground is present on the sleeve lead from the trunk, the (DCT) relay in the marker is shunted down. This is an indication that linkage will remain up and the marker can disconnect from the call, (DIS1-2) operates.

DESCRIPTION OF FAILURE

(DCT) not lighted indicates that the 10 ohm sleeve resistance from the trunk or OR is present to hold up the linkage. (DIS1) not lighted indicates that the marker did not receive a signal to disconnect from the call.

May complete second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

DIAL TONE, OGT, INC or IAO Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------------|
| SD-26001-01 | FS-23 | SC-1 | CD-26001-01 | Para - 6.03 |
| SD-26002-01 | FS-50 | SC-111 | CD-26002-01 | Para - 14.1, 14.2 |

DTM-2TR

LAMP INFORMATION

Lamp - 2TR
No Lamp - (Does not apply)

DESCRIPTION OF CIRCUIT OPERATION

The dial tone marker attempted to complete the call on a second trial basis following a first trial failure. This second attempt also failed.

DESCRIPTION OF FAILURE

A second trial failure occurred.

NORMAL SEQUENCE OF OPERATION

(Does not apply)

TROUBLE DUPLICATION INFORMATION

(None)

REFERENCE DOCUMENTS

(None)

DTM-2TR

EMERG-CALL-TRAP**LAMP INFORMATION**

Lamp - LVM/GT5
 No Lamp - (Does not apply.)

DESCRIPTION OF CIRCUIT OPERATION

The called number is cross-connected to a trap in the number group to force a trouble record on all calls to this line. In addition, a telephone number match occurred indicating an EMERG-CALL-TRAP. The call is allowed to complete but a record is made for later tracing if necessary. If the (XFUT)/(XTV) or (GT5) lamp is present, a number match occurred on this failure that indicates an EMERG-CALL-TRAP.

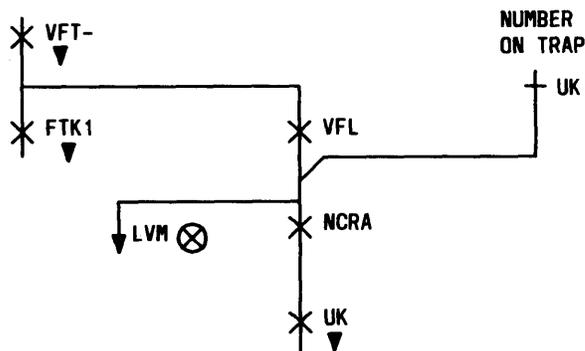
DESCRIPTION OF FAILURE

LVM-
 This is not a failure-type trouble record.
 The call will complete on first trial.

XFUT, XTV, GT5

A failure occurred as indicated by the type of lamp present. However, a telephone number match occurred indicating an EMERG-CALL-TRAP.

Probably will not complete on second trial. (GT5 is a second trial call.)

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

(Not necessary.)

REFERENCE DOCUMENTS

SD-26002-01 FS-32,85 CD-26002-01 App. 2D Para - D.10

EMERG-CALL-TRAP

EX

LAMP INFORMATION

Lamp - EX B/G
No Lamp - TRS, PS, WT

DESCRIPTION OF CIRCUIT OPERATION

The (EX) relay can be cross-connected to various points in the marker to force a trouble record when a certain condition occurs. When the (EX) relay operates, if the (EXR) key on the jack, lamp, and key circuit is operated, a trouble record is forced. Without the (EXR) key operated, only the (EXR) plant register is pegged.

DESCRIPTION OF FAILURE

The (EX) lamp does not necessarily indicate a marker failure. In this case it is merely a trap condition that serves as a maintenance aid.

The trouble record is forced and the call is allowed to complete.

NORMAL SEQUENCE OF OPERATION

(Does not apply.)

TROUBLE DUPLICATION INFORMATION

(Does not apply.)

REFERENCE DOCUMENTS

SD-26002-01 FS-50 CD-26002-01 Para - none

EX

FAK|FBK

LAMP INFORMATION

Lamp - LV-
 No Lamp - FAK/FBK

DESCRIPTION OF CIRCUIT OPERATION

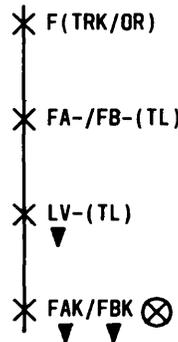
The marker is verifying the operation of the (FA-)/(FB-) relay in the trunk link. Operation of the (FA-) or (FB-) relay in the trunk link operates the (FAK) or (FBK) relay thru an operated (LV-) relay.

DESCRIPTION OF FAILURE

The (LV-) lighted indicates that the trunk has been seized and the trunk level was identified. (FAK)/(FBK) not lighted indicates failure to test the (FA-) or (FB-) relays operated.

Probably will complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone, OGT, or IAO Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------|
| SD-26001-01 | FS-22 | SC-1 | CD-26001-01 | Para - 3.46 |
| SD-26002-01 | FS-45 | SC-104 | CD-26002-01 | Para - 5.3 |

FAK|FBK

FCG

LAMP INFORMATION

Lamp - FCG
No Lamp - (Does not apply.)

DESCRIPTION OF CIRCUIT OPERATION

On light traffic calls, before the customer's line hold magnet is operated, the marker checks the tip and ring conductors for false battery or ground.

DESCRIPTION OF FAILURE

(FCG) relay operated indicates that the marker detected a false ground on the ring, false battery on the tip, or a tip to ring short.

May complete on second trial - unless in call back linkage. (Results in dial tone after dialing.)

NORMAL SEQUENCE OF OPERATION

(Does not apply.)

TROUBLE DUPLICATION INFORMATION

IAO or INC Test - See Section - 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | |
|-------------|-------|-------------|-----------------------|
| SD-26001-01 | FS-24 | CD-26001-01 | Para - 5.72 thru 5.76 |
| SD-26002-01 | FS-48 | CD-26002-01 | Para - 13.2 |

FCG

FLG

LAMP INFORMATION

Lamp - TER/TOG
 No lamp - FLG

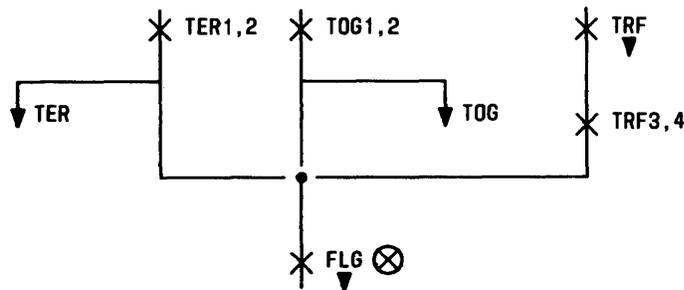
DESCRIPTION OF CIRCUIT OPERATION

On any call that is a terminating or tandem type of call, the linkage is set up the same, using the forward linkage. To handle this type of call, the (FLG) relay must operate in the marker.

DESCRIPTION OF FAILURE

Presence of the (TER) or (TOG) lamp indicates that the type of call was established. (FLG) not lighted indicates that the (FLG) relay did not operate, blocking progress of the call.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

INC Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

SD-26002-01 FS-33 SC-103 CD-26002-01 Para - 6.1

FLG

FLS-FA|FB

LAMP INFORMATION

Lamp - FA/FB-
No Lamp - (not available)

DESCRIPTION OF CIRCUIT OPERATION

Operation of the (F) relay in the trunk or originating register should operate the (FA) or (FB) relay in the trunk link. Then just before the call releases, the marker releases the (F) relay which in turn releases the (FA) or (FB) relay. The marker can now verify that the linkage is locked up.

DESCRIPTION OF FAILURE

False (FA) or (FB) can occur in one of three ways:

1. (FA) or (FB) operates before the (F) relay operates.
2. Both (FA) and (FB) operate when the (F) relay operates.
3. (FA) or (FB) fails to release when the (F) relay releases.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION

(Does not apply.)

TROUBLE DUPLICATION INFORMATION

Dial Tone, OGT, or IAO Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

SD-26032-01 FS-1 SC-1 CD-26032-01 Para - 1.18-1.20

FLS-FA|FB

FLS-FLG

LAMP INFORMATION

Lamp - LK1, FLG
 No Lamp - TER/TOG

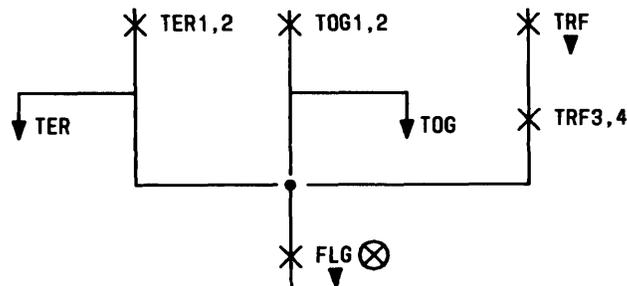
DESCRIPTION OF CIRCUIT OPERATION

Using an intraoffice call as an example, when the forward linkage has been established (LK1 operated) the (FLG) relay should release and the (SCB) relay should operate. The (FLG) relay should be released while the call back linkage is being established.

DESCRIPTION OF FAILURE

Since the (LK1) lamp is present, the forward linkage has been successfully operated. The (FLG) should release to start into the call back linkage. However, (FLG) remained operated falsely.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

IAO Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

SD-26002-01 FS-33 SC-103 CD-26002-01 Para - 6.1

FLS-FLG

FLS-FTCK-W|RA

LAMP INFORMATION

Lamp - RA & FTCK
 No Lamp - (Does not apply.)

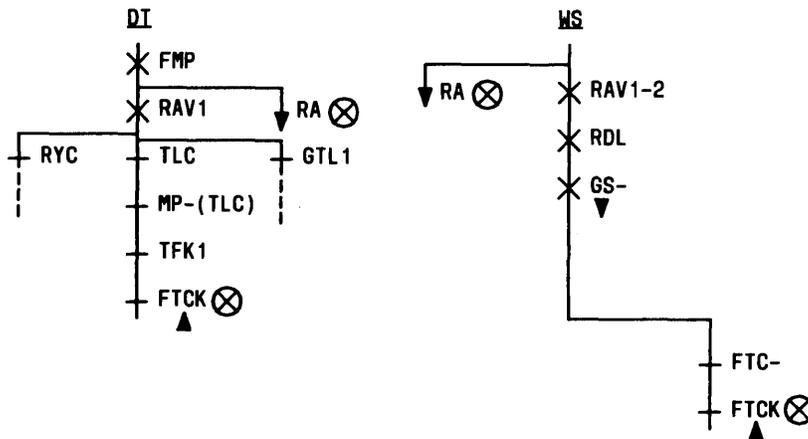
DESCRIPTION OF CIRCUIT OPERATION

If the marker cannot find an idle trunk, sender or channel, it will route advance and then try again. On dial tone call the marker will route advance and disconnect.

DESCRIPTION OF FAILURE

(RA) lighted indicates that the marker is trying to route advance. To route advance, the marker must release the trunk link and line link. (FTCK) lighted indicates that the trunk link has not released.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|----------|--------|-------------|-------------------|
| SD-26001-01 | FS-2,27 | SC-5 | CD-26001-01 | Para - 7.01-704 |
| SD-26002-01 | FS-21,56 | SC-128 | CD-26002-01 | Para - 15.3-15.32 |

FLS-FTCK-W|RA

FLS | GLH

LAMP INFORMATION

Lamp - GLH
 No Lamp - CH-, HMS1

DESCRIPTION OF CIRCUIT OPERATION

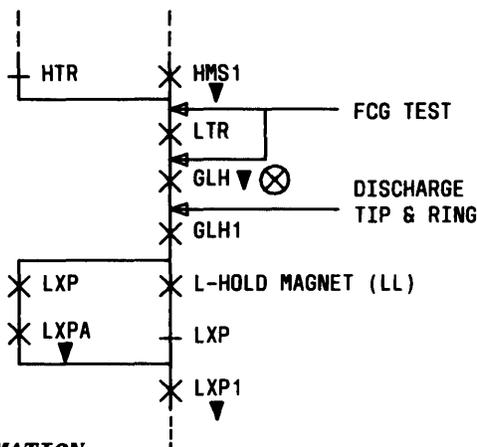
During light traffic, after hold magnet timing, the marker makes a false-cross ground test of the selected channel before operating the line hold magnet. If the (FCG) relay is nonoperated, indicating that no trouble was detected in the channel, the (LTR) relay operates the (GLH) relay. Relay (GLH) operates the (GLH1) relay to operate the line hold magnet. During the (GLH1) operate time, the "T" and "R" conductors are discharged to prevent a false continuity indication.

DESCRIPTION OF FAILURE

The (GLH) lighted with the (CH-) and (HMS1) not lighted indicates the (GLH) relay operated falsely prior to channel selection. This prevents (SLRK) relay operation, which performs a standing check that certain relays remain normal (GLH1 included) until after the (TK) relay has operated, and also checks that (TK) has operated. (SLRK) failing to operate prevents the marker from selecting a channel.

The call may complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

IAO or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|--------------------|
| SD-26001-01 | FS-20 | SC-2 | CD-26001-01 | Para - 5.45 |
| SD-26002-01 | FS-47 | SC-109 | CD-26002-01 | Para - 13.2 & 13.3 |

FLS | GLH

FLS|GT2

LAMP INFORMATION

Lamp - TK,GT2
 No Lamp - CH-,HMS1

DESCRIPTION OF CIRCUIT OPERATION

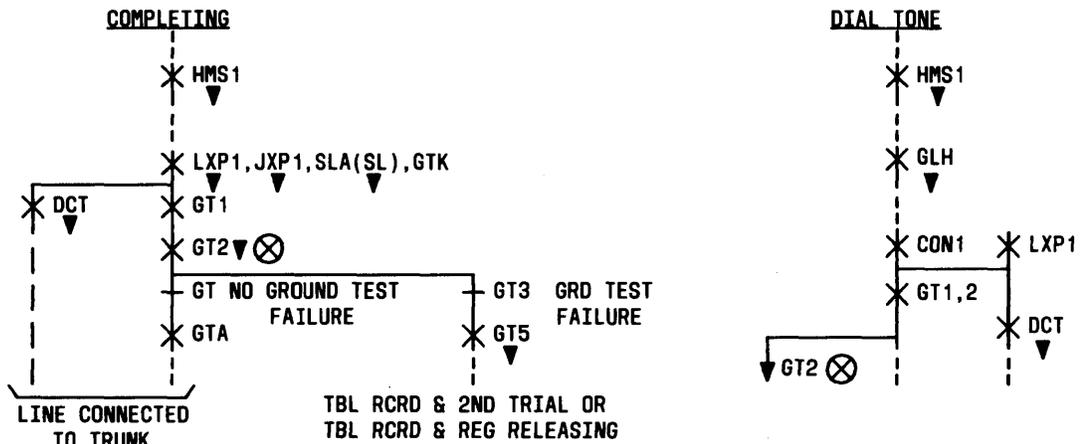
During light traffic conditions, the marker conducts a ground test of some customer lines before the marker is allowed to disconnect. This test checks the customers line for false ground, loop or receiver off-hook conditions before connecting the line to the trunk circuit. The (GTK) relay operates relay (GT) and connects it to the customers line. Relays (GT1) and (GT2) operate removing local (GT) relay operate ground, leaving relay (GT) connected to the customers line. The (GT) relay holds operated if one of the above false conditions exists. A successful ground test is indicated by (GT) relay release.

DESCRIPTION OF FAILURE

The marker has failed to select a channel as indicated by the (CH-) and (HMS1) not lighted. False (GT2) relay operation prevents operation of relay (SLRK), which performs a standing check that certain relays (GT2 included) remain normal until after relay (TK) has operated. Relay (SLRK) failing to operate, prevents the marker from selecting a channel.

The call may complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone or INC Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|------------|
| SD-26001-01 | FS-20 | SC-2 | CD-26001-01 | Para-5.100 |
| SD-26002-01 | FS-47 | SC-109 | CD-26002-01 | Para-13.4 |

FLS|GT2

FLS-JXP1

LAMP INFORMATION

Lamp - JXP1
No Lamp - HMS1

DESCRIPTION OF CIRCUIT OPERATION

Before operating the hold magnets, the marker checks that the (JXP1) relay is released.

DESCRIPTION OF FAILURE

The (JXP1) relay is falsely operated. The (JXP1) relay should operate only after the (HMS1) relay operates.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION

(Does not apply.)

TROUBLE DUPLICATION INFORMATION

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------|
| SD-26001-01 | FS-20 | SC-1 | CD-26001-01 | Para - 5.57 |
| SD-26002-01 | FS-47 | SC-109 | CD-26002-01 | Para - 13.1 |

FLS-JXP1

FLS-LC

LAMP INFORMATION

Lamp - LC-
 No Lamp - LK1, SOG

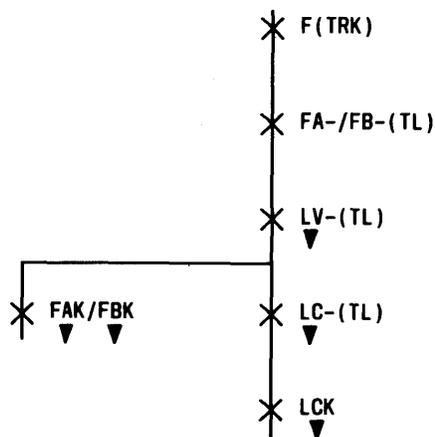
DESCRIPTION OF CIRCUIT OPERATION

The marker must decode the number that was dialed, then it selects the trunk link and line link circuits. The (LC-) lamp indicates that a trunk was seized and the switch has been identified.

DESCRIPTION OF FAILURE

(FLS-LC) indicates that the (LC-) relay operated much too early in the call.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

OGT or INC Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | |
|-------------|------|--------|-------------------------|
| SD-26002-01 | | SC-104 | |
| SD-26032-01 | FS-1 | SC-1 | CD-26032-01 Para - 1.25 |

FLS-LC

FLS-LXP1

LAMP INFORMATION

Lamp - LXP1
No Lamp - HMS1

DESCRIPTION OF CIRCUIT OPERATION

Before operating the hold magnets, the marker checks that the (LXP1) relay is released.

DESCRIPTION OF FAILURE

The (LXP1) relay is falsely operated. The (LXP1) relay should operate only after the (HMS1) relay operates.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION

(Does not apply.)

TROUBLE DUPLICATION INFORMATION

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------|
| SD-26001-01 | FS-20 | SC-1 | CD-26001-01 | Para - 5.54 |
| SD-26002-01 | FS-47 | SC-109 | CD-26002-01 | Para - 13.1 |

FLS-RA-RCY

LAMP INFORMATION

Lamp - RA
 No Lamp - FTCK

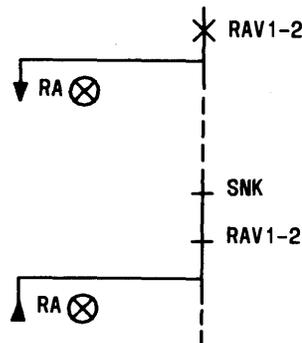
DESCRIPTION OF CIRCUIT OPERATION

When the marker tries to complete a call, it may find all the trunks busy, all the senders busy, or other conditions that may cause the marker to route advance. This is indicated by the presence of the (RA) lamp.

DESCRIPTION OF FAILURE

Presence of the (RA) lamp indicates that the marker started into a route advance. The marker should then release the circuits it seized and resume its operation. Since the (RA) relay did not release, the marker cannot continue resulting in a FLS-RA-RCY condition.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

SD-26002-01 FS-56 SC-128 CD-26002-01 Para - 15.3, 15.32

FLS-RA-RCY

FLS-RK|LK

LAMP INFORMATION

Lamp - RK & LK
 No Lamp - (Does not apply.)

DESCRIPTION OF CIRCUIT OPERATION

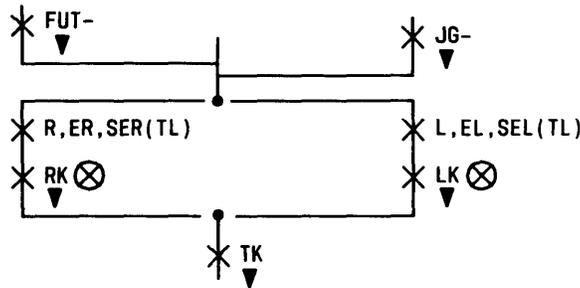
When the trunk link is seized, the marker checks to see if the trunk is on the left half or the right half of the trunk switch. When the (R) or (L) relay operates in the trunk link, the (RK) or (LK) a relay operates in the marker.

DESCRIPTION OF FAILURE

Since the marker checks for either the left or the right half of the trunk link, false (RK)/(LK) indicates that both relays operated.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|--------------|
| SD-26001-01 | FS-17 | SC-1 | CD-26001-01 | Para - 4.62 |
| SD-26002-01 | FS-18 | SC-108 | CD-26002-01 | Para - 11.63 |

FLS-SL

LAMP INFORMATION

Lamp - SL
 No Lamp - HMS1

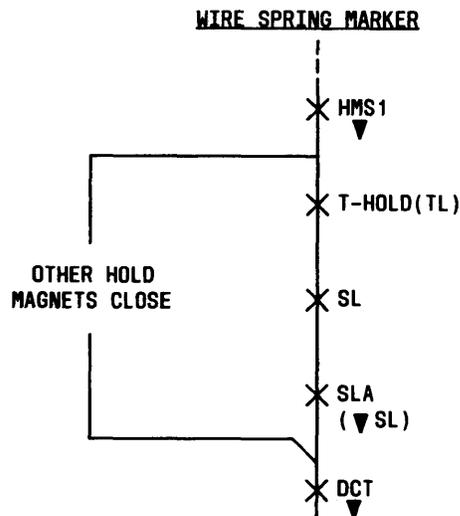
DESCRIPTION OF CIRCUIT OPERATION

Prior to operating the hold magnets, the marker checks that the (SL) relay is nonoperated.

DESCRIPTION OF FAILURE

Presence of the (SL) lamp indicates that the (SL)/(SLA) relay is falsely operated preventing operation of the (HMS1) relay.

May complete on second trial. (No second trial if on call back linkage with (RL) lighted.)

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|--------|-------------|-------------|
| SD-26001-01 | FS-20 | SC-1 | CD-26001-01 | Para - 5.56 |
| SD-26002-01 | FS-36 | SC-121 | CD-26002-01 | Para - 13.1 |

FLS-SL

FS

LAMP INFORMATION

Lamp -

No Lamp - DCT1, FAK, FBK, FS, TK, TER

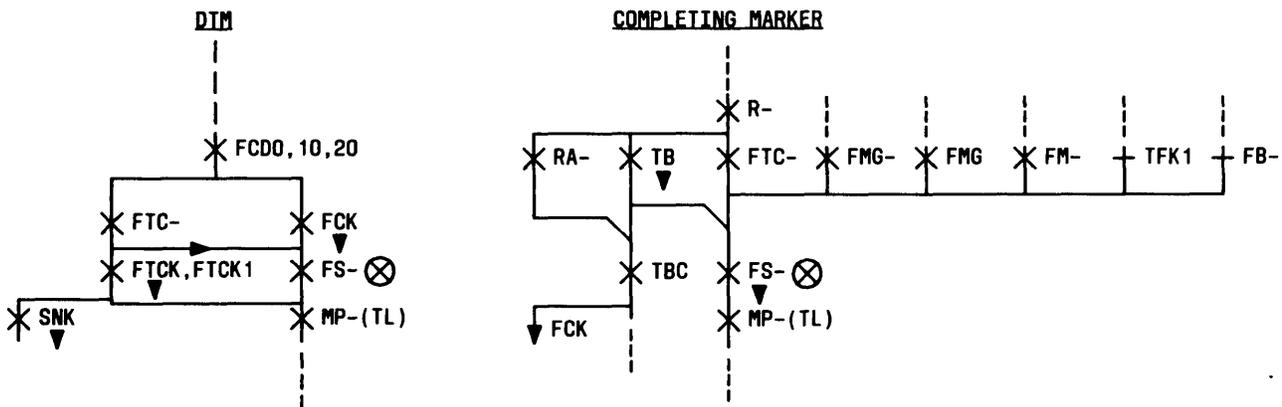
DESCRIPTION OF CIRCUIT OPERATION

The marker is attempting to select an idle trunk link frame.

DESCRIPTION OF FAILURE

The marker (FS-) relay has failed to operate. (FS-) operates under control of the (FTC-), (FM-), (FMG), (FMG-), (TB-) relays operated and the (FB-), (TFK1) relays nonoperated.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION**TROUBLE DUPLICATION INFORMATION**

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|----------|--------|-------------|-------------|
| SD-26001-01 | FS-2, 38 | SC-1 | CD-26001-01 | Para - 3.10 |
| SD-26002-01 | FS-22 | SC-104 | CD-26002-01 | Para - 5.0 |

FS

FTCK

LAMP INFORMATION

Lamp - FS
 No Lamp - FTCK

DESCRIPTION OF CIRCUIT OPERATION

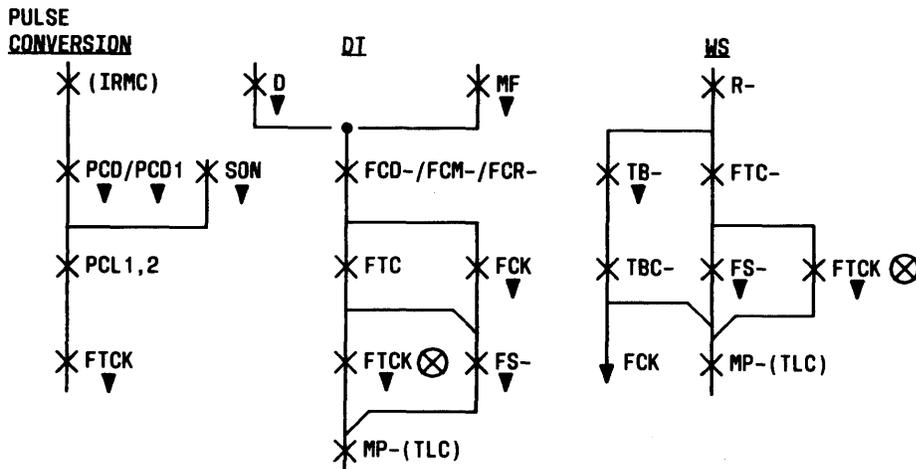
The marker is checking for an idle originating register, outgoing trunk or intraoffice trunk depending upon the type of call. If a trunk or register is idle, an associated (FTC-) relay operates in the marker. The (FTC-) relay operating, operates the (FTCK) relay as a check that there is an idle circuit available. On pulse conversion calls, the (TL) is used to obtain trunk class information and the (FTCK) relay is operated from an operated (PCL1) relay.

DESCRIPTION OF FAILURE

The (FS) lamp present indicates that the type of trunk or register required is known (i.e., route relay operated in completing marker). (FTCK) not lighted indicates that no idle trunk or register was found and the call did not route to overflow.

May complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|----------------|-------------|--------------|
| SD-26001-01 | FS-2 | SC-1 | CD-26001-01 | Para - 3.06 |
| SD-26002-01 | FS-21 | SC-104,115,133 | CD-26002-01 | Para - 5, 17 |

FTCK

FU

LAMP INFORMATION

Lamp - (Does not apply.)
 No Lamp - FU-

DESCRIPTION OF CIRCUIT OPERATION

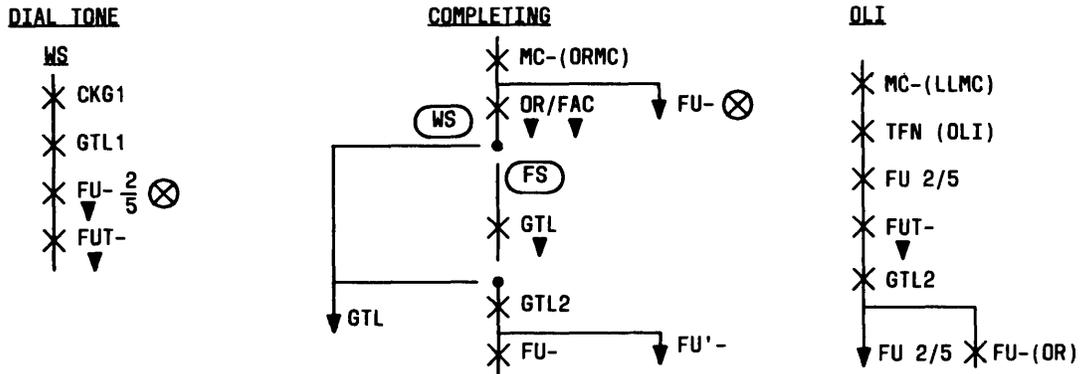
The (FU) information is received by the marker from the (OR) so the marker can establish the call-back linkage. The (FU-) lamp should be present as soon as the (ORMC) establishes a connection to the marker.

DESCRIPTION OF FAILURE

(FU-) not lighted indicates that the marker did not receive any line link units information from the (OR).

Probably will not complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|------------|-------------|-------------|
| SD-26001-01 | FS-10 | SC-1 | CD-26001-01 | Para - 2.09 |
| SD-26002-01 | FS-1 | SC-101,106 | CD-26002-01 | Para - 1.2 |

FU'

LAMP INFORMATION

Lamp - (not available)
 No Lamp - FU -

DESCRIPTION OF CIRCUIT OPERATION

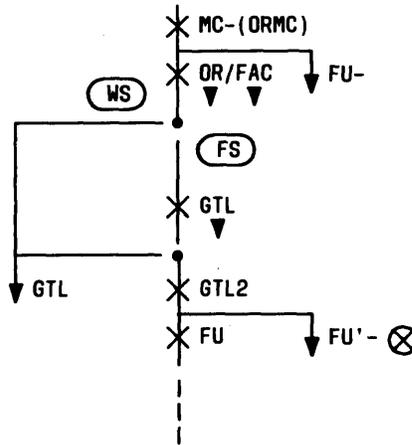
The (FU) lamp is connected directly to the (FU-) relay winding. When the (GTL-) relays operate, the (FU-) lead is connected to the (FU-) relay and the (FU-) lamp. On dial tone calls, the (FU -) lamp indicates that the (FU-) relay locked operated in the (OR).

DESCRIPTION OF FAILURE

With the (GTL) lamp present, no (FU-) lamp indicates an internal marker problem. Without the (GTL) lamp present, no (FU -) lamp indicates that the (FU-) relay did not lock operated in the (OS) or (OR) depending on the type of call.

Probably will not complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

SD-26001-01 FS-10 SC-1 CD-26001-01 Para - 2.95,2.96

FU'

FUT

LAMP INFORMATION

Lamp - (not available)
 No Lamp - FUT-

DESCRIPTION OF CIRCUIT OPERATION

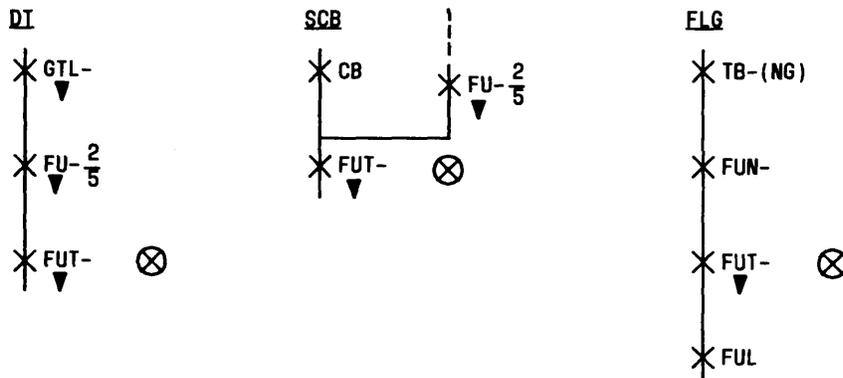
The (FUT-) relay operates to select the correct line link location. The completing marker receives the (FUT-) information from the (FU-) relay on call-back and from the (FUN-) relay on call forward linkage. The (FUN-) relay is operated from number group cross-connections. On dial tone calls the (FUT-) relay is operated from the line link location bidding for dial tone.

DESCRIPTION OF FAILURE

(FUT-) not lighted indicates that the marker cannot select the correct line link location. On dial tone calls, absence of the (FUT-) lamp indicates the marker did not receive the line link location from the line link.

Probably will not complete on second trial.

NORMAL SEQUENCE OF OPERATION



TROUBLE DUPLICATION INFORMATION

Dial Tone or OGT Test - See Section 218-404-510 - Part 11

REFERENCE DOCUMENTS

| | | | | |
|-------------|-------|------------|-------------|-----------------|
| SD-26001-01 | FS-10 | SC-1 | CD-26001-01 | Para - 2.09 |
| SD-26002-01 | FS-3 | SC-106,107 | CD-26002-01 | Para - 6.1, 6.2 |

FUT