

NO. 5 CROSSBAR  
TROUBLE REFERENCE GUIDE - PART 5  
OFFICE TEST FRAME  
BIN LISTINGS ----M

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 affect 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

## MAK1

**LAMP INFORMATION**

Lamp - FS, FTCK  
No Lamp - MAK1

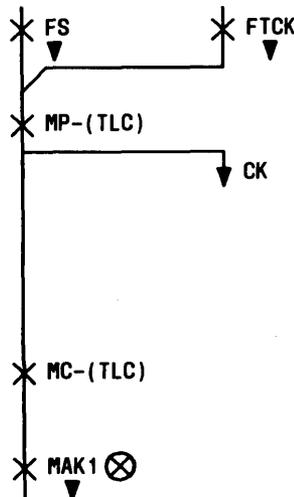
**DESCRIPTION OF CIRCUIT OPERATION**

The (MAK1) lamp indicates that the trunk link connector relays have operated. The marker (FS-) relay operates to select a particular trunk link. When the (MC-) relays of the selected trunk link are operated, the (MAK1) relay in the marker operates to indicate the trunk link is seized.

**DESCRIPTION OF FAILURE**

Presence of the (FS and FTCK) lamps indicates that the preference control relays (MP-) for the selected trunk link should have operated. (MAK1) not lighted indicates that the multicontact relays (MC-) have not operated in the trunk link connector.

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-3	SC-1	CD-26001-01	Para - 3.20
SD-26002-01	FS-24	SC-104	CD-26002-01	Para - 5.11

MAK1

MB

**LAMP INFORMATION**

Lamp - AMA  
No Lamp - MB

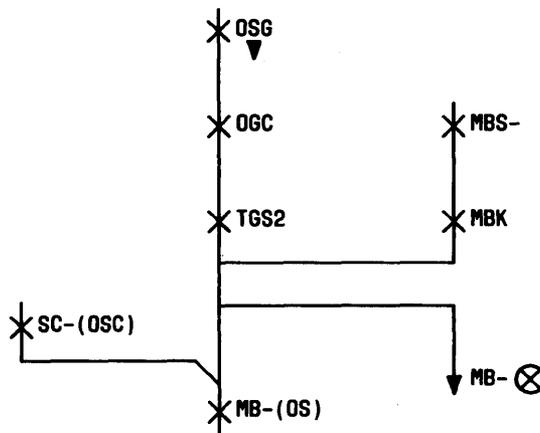
**DESCRIPTION OF CIRCUIT OPERATION**

The marker is monitoring the (MB-) leads to the outgoing sender. Message billing information is given to the sender and the marker verifies that the information is locked in the sender.

**DESCRIPTION OF FAILURE**

(MB) not lighted indicates that the sender did not lock in this information.

May complete on second trials.

**NORMAL SEQUENCE OF OPERATION****TROUBLE DUPLICATION INFORMATION**

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

**REFERENCE DOCUMENTS**

SD-26002-01      FS-41,68      SC-112      CD-26002-01      Para - 10.36

MB



**MKR-DIS1**

**LAMP INFORMATION**

Lamp - DIS1  
 No Lamp - MRL

**DESCRIPTION OF CIRCUIT OPERATION**

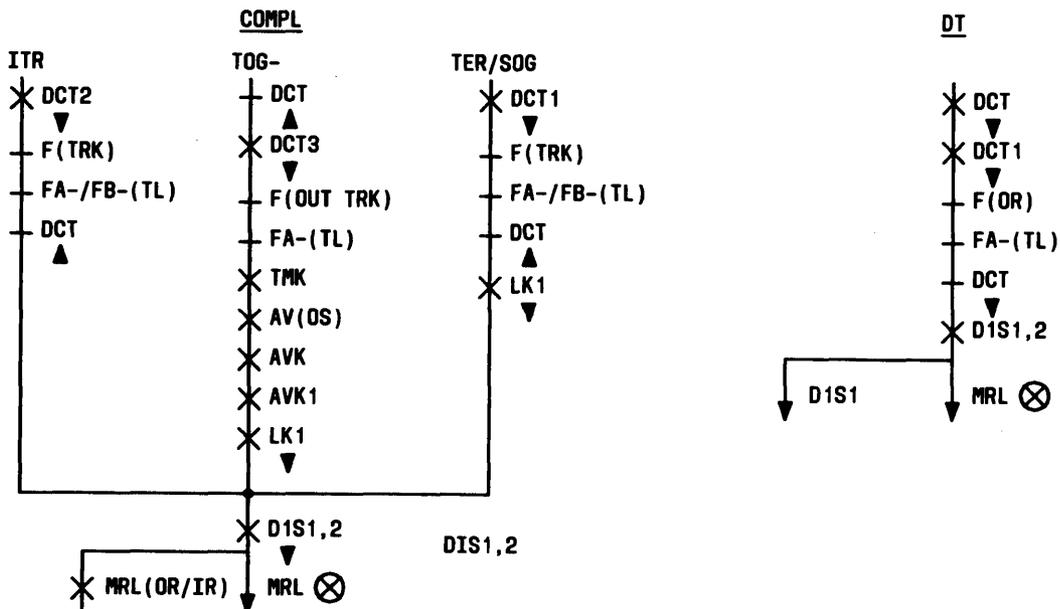
Near the end of establishing a call, the marker checks that trunk or OR can hold up the linkage. If the 10 ohm ground is present on the sleeve lead from the trunk, the (DCT) relay in the marker is shunted down. This is an indication that linkage will remain up and the marker can disconnect from the call,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

**DESCRIPTION OF FAILURE**

(DIS1) lighted indicates that the marker is ready to release.

May complete on second trial.

**NORMAL SEQUENCE OF OPERATION**



**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

**MKR-DIS1**

MKR/PRT-TEST

**LAMP INFORMATION**

Lamp - PRT/MKR,DR  
No Lamp - (Does not apply.)

**DESCRIPTION OF CIRCUIT OPERATION**

The marker or pretranslator was engaged in a test call that resulted in a trouble, or a trouble record was forced.

**DESCRIPTION OF FAILURE**

(Does not apply.)

**NORMAL SEQUENCE OF OPERATION**

(Does not apply.)

**TROUBLE DUPLICATION INFORMATION**

(None)

**REFERENCE DOCUMENTS**

(None)

MKR/PRT-TEST

**MUT-CH****LAMP INFORMATION**

Lamp - CH- (at least two lamps lighted)

No Lamp - CH- (not lighted in 1 out of 10 or 2 out of 5 format)

**DESCRIPTION OF CIRCUIT OPERATION**

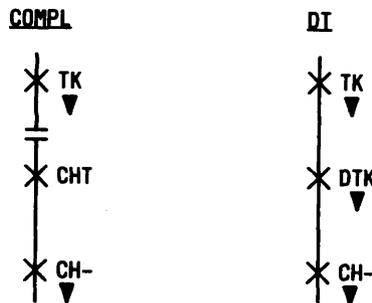
The marker is selecting a channel between the trunk link and the line link. Operation of the (CHT) relay (Channel Timing) should operate one of the (CH-) relays.

**DESCRIPTION OF FAILURE**

(MUT-CH) indicates that two or more (CH-) relays operated. Only one should operate to select the channel.

(CH-) should be registered in one-out-of-ten or two-out-of-five depending upon the type of office.

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-21	SC-1	CD-26001-01	Para - 4.9
SD-26002-01	FS-44	SC-109	CD-26002-01	Para - 11.73

**MUT-CH**

## MUT-CT

**LAMP INFORMATION**

Lamp - (at least one lamp lighted)

No Lamp - CT- (not lighted in 2 out of 5 format)

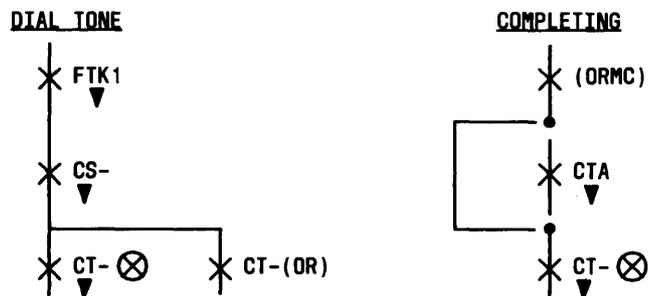
**DESCRIPTION OF CIRCUIT OPERATION**

The dial tone marker 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**

(MUT-CT) indicates that the (CT-) information was not stored properly in the OR (dial tone usage). (MUT-CT) 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 or OGT 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

MUT-CT

MUT-CU

**LAMP INFORMATION**

Lamp - CU- (at least one lamp is lighted)  
 No Lamp - CU- (not lighted in two-out-of-five format)

**DESCRIPTION OF CIRCUIT OPERATION**

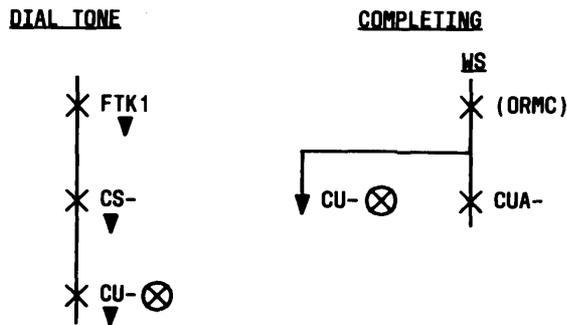
The dial tone marker is operating (CU-) relays in the OR. The dial tone marker stores the (CU-) information in the OR by operating like-designated relays in the OR. The lock path of these relays is then checked on the same path that operated them. On completing marker usage, the (CU-) information is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

**DESCRIPTION OF FAILURE**

Presence of a (CU-) lamp indicates that some of the class-of-service units information was recorded. (CU-) not lighted in two-out-of-five indicates mutilated class of service and the call cannot complete.

Probably will not complete on second trial.

**NORMAL SEQUENCE OF OPERATION**



**TROUBLE DUPLICATION INFORMATION**

**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

MUT-CU

MUT-FS

**LAMP INFORMATION**

Lamp - FS- (at least two lamps lighted)  
 No Lamp - FS- (not lighted in 1 out of 5 format)

**DESCRIPTION OF CIRCUIT OPERATION**

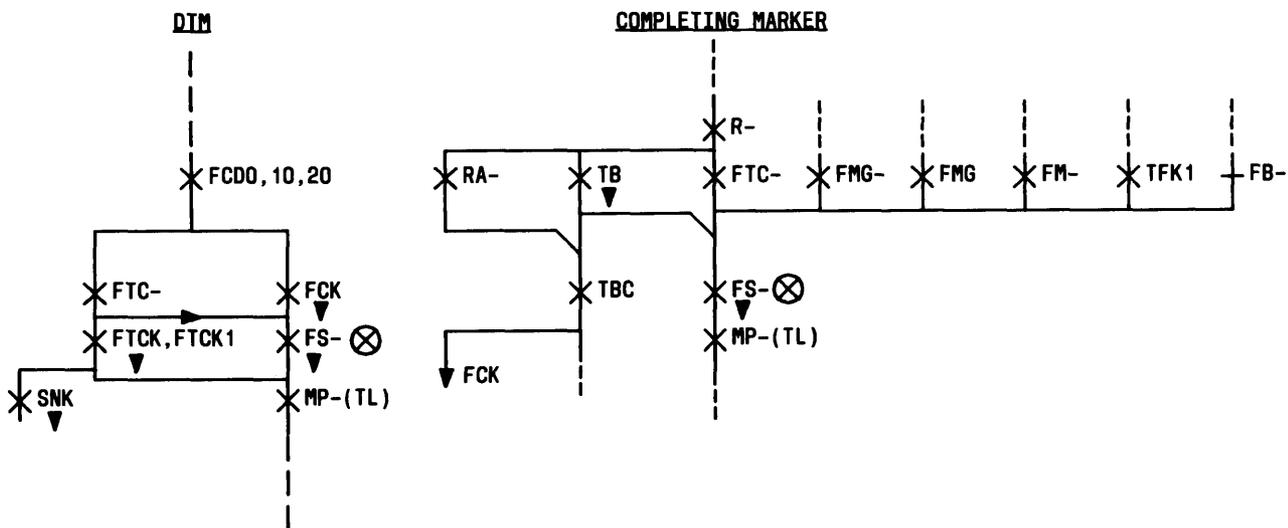
The marker is attempting to select an idle trunk link frame.

**DESCRIPTION OF FAILURE**

Multiple marker (FS-) relays have operated. (FS-) operates under control of the (FTC-), (FM-), (FMG), (FMG-), (TB-) relays operated and the (FB-), (TFK1) relays nonoperated. With more than one (FS-) relay operated, a trunk cannot be selected.

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

MUT-FU

**LAMP INFORMATION**

Lamp - FU- (at least one lamp lighted)  
 No lamp - FU- (not lighted in 2 out of 5 format)

**DESCRIPTION OF CIRCUIT OPERATION**

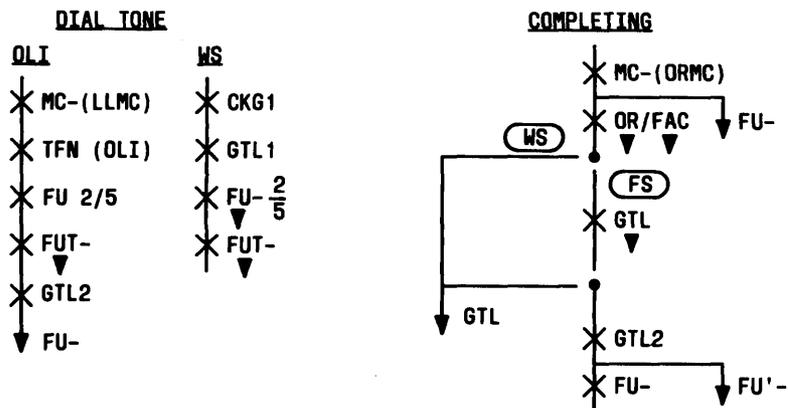
The (FU-) information is received by the marker from the (OR), so the marker can establish the call back linkage. The (FU-) information should be received in two-out-of-five format.

**DESCRIPTION OF FAILURE**

(FU-) lighted indicates that the marker received (FU-) information from the (OR).  
 (FU-) not lighted in two-out-of-five indicates that the (FU-) information received is in the wrong format.

Probably will not complete on second trial.

**NORMAL SEQUENCE OF OPERATION**



**TRUBLE 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

## MUT-FU'

**LAMP INFORMATION**

Lamp - FU- (at least one lamp lighted)  
 No Lamp - FU- (not lighted in 2 out of 5 format)

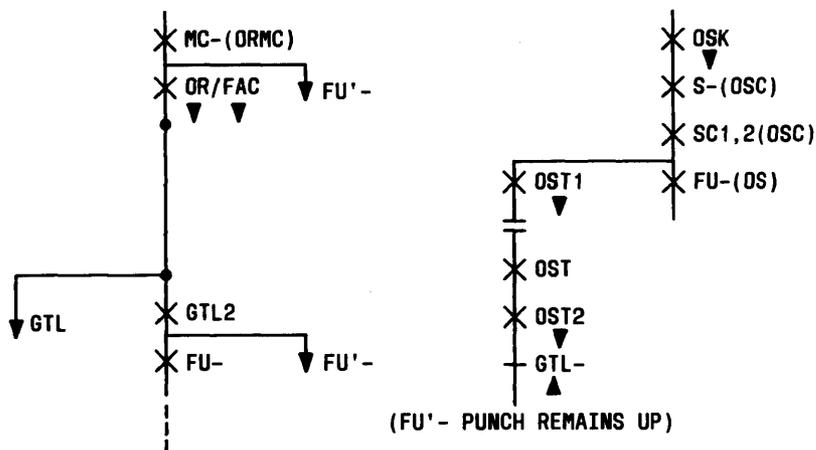
**DESCRIPTION OF CIRCUIT OPERATION**

With the (GTL) relay operated, the (FU-) and the (FU-) lamps are connected together in the marker. With no (GTL) lamp, the marker is testing that the (FU-) relays locked operated in the (OR).

**DESCRIPTION OF FAILURE**

Other than two-out-of-five (FU-) lamps present indicates that the wrong information was stored in the (OR). Also, a (FU-) lead could be falsely grounded.

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-10	SC-1	CD-26001-01	Para - 2.95, 2.96
SD-26002-01	FS-1	SC-101, 12, 106	CD-26002-01	Para - 10.51

MUT-FU'

MUT-FUT

**LAMP INFORMATION**

Lamp - FUT- (at least two lamps lighted)  
 No Lamp - FUT- (not in 1 out of 10 format)

**DESCRIPTION OF CIRCUIT OPERATION**

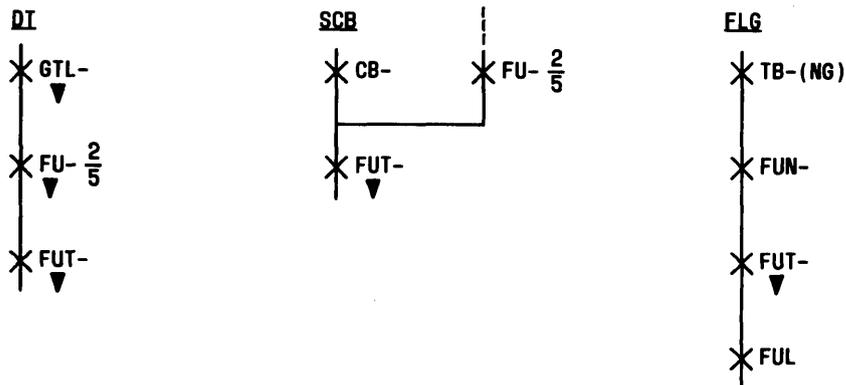
The (FUT-) relay operates to select the correct line link. The completing marker receives the (FUT-) information from the (FU-) relay on call back and from the (FUN-) relay on call forward linkage. The (FUN-) relay is operated from number group cross-connections. On dial tone calls, the (FUT-) relay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

**DESCRIPTION OF FAILURE**

(FUT-) not lighted in one-out-of-ten indicates that the marker received wrong information from the (OR), (NG) or (LL) depending on the type of call. (The (FUT-) relays are always operated in one-out-of-ten.

Probably will not 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-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

MUT-FUT

## MUT-HG

**LAMP INFORMATION**

Lamp - HG- (at least one lamp lighted)  
 No Lamp - HG- (not lighted in 2 out of 5 format)

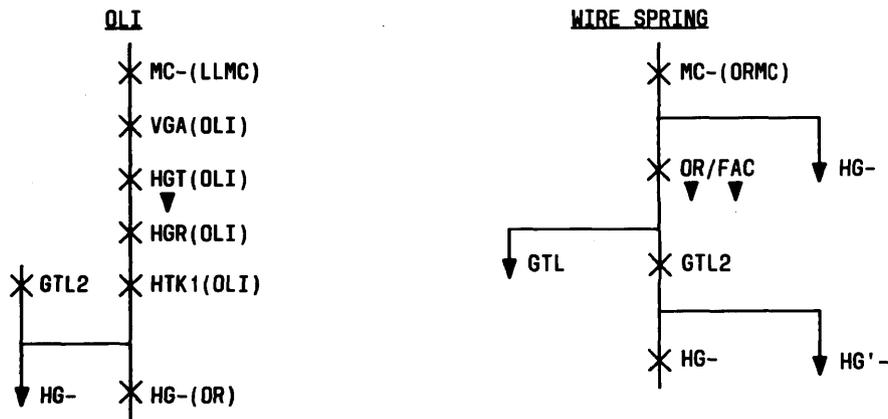
**DESCRIPTION OF CIRCUIT OPERATION**

The (HG-) information is received by the marker from the (OR) so the marker can establish the call back linkage. The (HG-) information should be received in two-out-of-five format.

**DESCRIPTION OF FAILURE**

(HG-) lighted indicates that the marker received (HG-) information from the (OR). (HG-) not lighted in two-out-of-five indicates that the (HG-) information received is in the wrong format.

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-26002-01    FS-1    SC-101    CD-26002-01    Para - 1.2

MUT-HG

**MUT-HG'****LAMP INFORMATION**

Lamp - HG- (at least one lamp lighted)  
 No Lamp - HG- (not lighted in 2 out of 5 format)

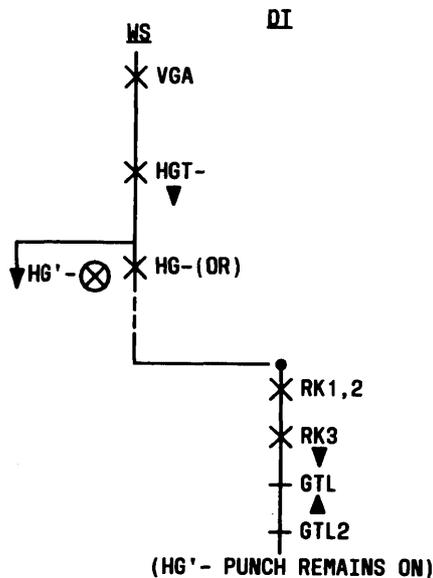
**DESCRIPTION OF CIRCUIT OPERATION**

With the (GTL) relay operated, the (HG-) and the (HG'-) lamps are connected together in the marker. With no (GTL) lamp, the marker is testing that the (HG-) relays locked operated in the (OR).

**DESCRIPTION OF FAILURE**

Other than two-out-of-five (HG'-) lamps present indicates that the wrong information was stored in the (OR). Also a (HG-) lead could be falsely grounded.

May 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-9	SC-1	CD-26001-01	Para - 2.103
SD-26002-01	FS-1	SC-101,112	CD-26002-01	Para - 10.51

**MUT-HG'**

MUT-LC

**LAMP INFORMATION**

Lamp - LC- (at least two lamps lighted)  
 No Lamp - LC- (not lighted in one-out-of-ten format)

**DESCRIPTION OF CIRCUIT OPERATION**

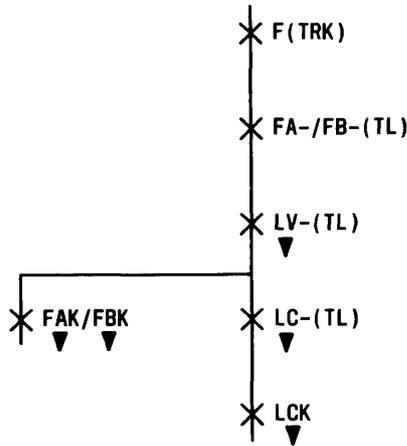
The marker has operated the (F) relay of the selected trunk or register circuit. The trunk can then be identified by switch and level by operation of the (LC-) and (LV-) relays in the trunk link.

**DESCRIPTION OF FAILURE**

The marker received part of the switch number (LC-) information, however, it was not registered in one-out-of-ten format so the call cannot complete.

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	NONE	SC-1	CD-26001-01	Para - 3.45
SD-26002-01	NONE	SC-104	CD-26002-01	NONE
SD-26032-01	FS-1	SC-1	CD-26032-01	Para - 1.25

MUT-LC

## MUT-LV

**LAMP INFORMATION**

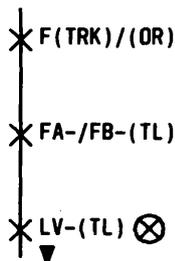
Lamp - LV- (at least two lamps lighted)  
 No Lamp - LV- (not in one-out-of-ten format)

**DESCRIPTION OF CIRCUIT OPERATION**

Seizure of the trunk causes operation of the (LV-) relay in the trunk link to identify the trunk by switch level. Operation of the trunk (F) relay operates the (FA-)/(FB-) relays in the trunk link. The (FA-)/(FB-) in turn operate the (LV-) relay, also in the trunk link.

**DESCRIPTION OF FAILURE**

The marker received part of the switch level information (LV-); however, it was mutilated and cannot be recorded in one-out-of-ten format and the call cannot complete.

**NORMAL SEQUENCE OF OPERATION****TROUBLE DUPLICATION INFORMATION**

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

**REFERENCE DOCUMENTS**

SD-26032-01	FS-1	SC-1	CD-26032-01	Para - 1.19
SD-27879-01	FS-1	SC-1	CD-27879-01	Para - 1.13

MUT-LV

## MUT-MB

**LAMP INFORMATION**

Lamp - MB- (at least one lamp lighted)  
 No Lamp - MB- (not lighted in two-out-of-five format)

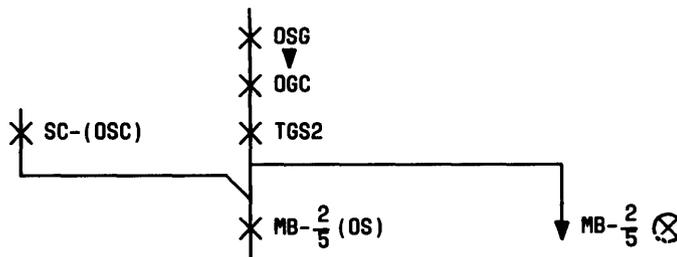
**DESCRIPTION OF CIRCUIT OPERATION**

The marker is monitoring the (MB-) leads to the outgoing sender. Message billing information is given to the sender and the marker verifies that the information is locked into the sender. This information must always be recorded in two-out-of-five.

**DESCRIPTION OF FAILURE**

At least one (MB-) lamp lighted indicates that the marker transferred some of the information or the sender locked in some of the information. The (MB-) not in two-out-of-five indicates that some of the information was lost or one of the leads is falsely grounded.

May complete on second trial.

**NORMAL SEQUENCE OF OPERATION****TROUBLE DUPLICATION INFORMATION**

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

**REFERENCE DOCUMENTS**

SD-26002-01      FS-41,68      SC-112      CD-26002-01      Para - 10.36

MUT-MB

## MUT-OS

**LAMP INFORMATION**

Lamp - OS- (at least two lamps lighted)  
 No lamp - OS- (not in 1 out of 5 format)

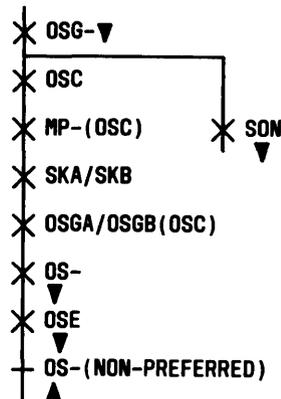
**DESCRIPTION OF CIRCUIT OPERATION**

An (OS-) relay operates for each idle sender in the selected subgroup. Operation of the (OSGA)/(OSGB) relay in the sender connector extends ground from an idle sender to operate an associated (OS-) relay in the marker. Operation of the (OSE) relay in the marker causes the release of all the (OS-) relays except the one most preferred.

**DESCRIPTION OF FAILURE**

Presence of an (OS-) lamp indicates the marker detected an idle sender in the selected subgroup. (OS-) not lighted in one-out-of-five indicates the marker could not select one sender to seize on this call.

May complete on second trial.

**NORMAL SEQUENCE OF OPERATION****TROUBLE DUPLICATION INFORMATION**

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

**REFERENCE DOCUMENTS**

SD-26002-01    FS-60    SC-112    CD-26002-01    Para - 10.21

MUT-OS

**MUT-OSG****LAMP INFORMATION**

Lamp - OSG- (at least two (OSG-) lamps lighted)  
 No Lamp - OSG- (not in 1 out of X format)

**DESCRIPTION OF CIRCUIT OPERATION**

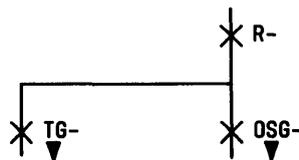
The (OSG-) lamp indicates which sender group must be seized to complete the call. The (OSG-) relay is operated from a route relay (R-) cross-connection.

**DESCRIPTION OF FAILURE**

(OSG-) lighted indicates that the marker received some outgoing sender group information from the route relay. (OSG-) not lighted in one-out-of-X (X is equal 3) indicates that two or more (OSG-) relays operated and the call cannot complete.

The (OSG-) relays are operated in one-out-of-X.

May complete on second trial.

**NORMAL SEQUENCE OF OPERATION****TROUBLE DUPLICATION INFORMATION**

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

**REFERENCE DOCUMENTS**

SD-26002-01      FS-57      SC-112      CD-26002-01      Para - 10.1

**MUT-OSG**

MUT-RN

**LAMP INFORMATION**

Lamp - RN- (at least one lamp lighted)  
 No Lamp - RN- (RN- not lighted in two-out-of-five format)

**DESCRIPTION OF CIRCUIT OPERATION**

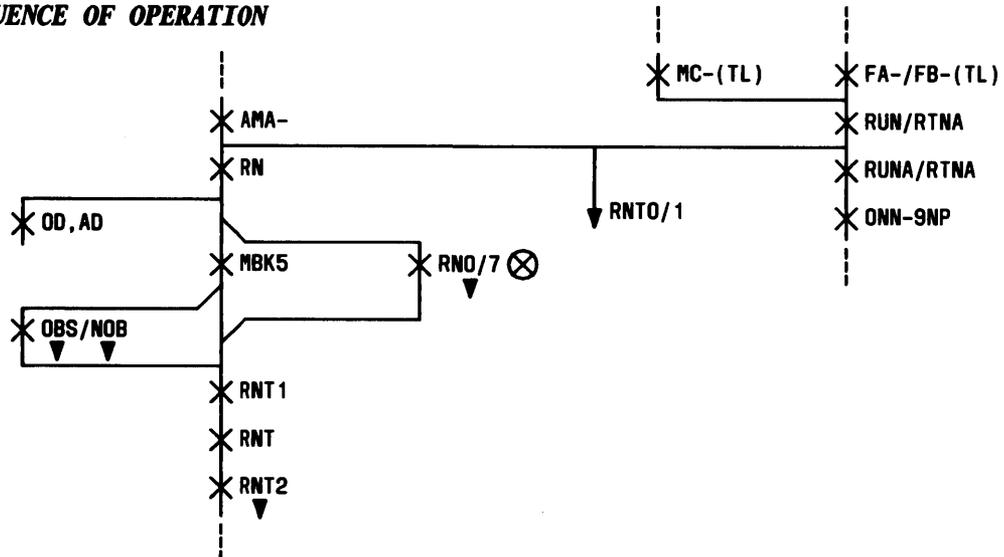
The marker has received a recorder number from the trunk link circuit and is attempting to pass this information to the sender. The marker (RN) relay operates to pass the recorder number to the sender. The marker checks that two and only two (RNO/7) relays operated, causing the (RNK2) to be operated if a valid recorder number is transmitted. If (RNK2) is operated, the marker releases the (RN) relay and tests for locking ground in the associated sender. (RNK) operated indicates the recorder number was successfully locked in the sender.

**DESCRIPTION OF FAILURE**

Presence of a RN- lamp indicates that part of the recorder number is present. (MUT-RN) indicates that the recorder number cannot be identified due to mutilated information.

Probably will not complete on second trial.

**NORMAL SEQUENCE OF OPERATION**



**TROUBLE DUPLICATION INFORMATION**

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

**REFERENCE DOCUMENTS**

SD-26002-01 FS-78 SC-115 CD-26002-01 Para - 10.53

## MUT - SSA, SSB

**LAMP INFORMATION**

Lamp - SSA and SSB  
 No Lamp - (Does not apply.)

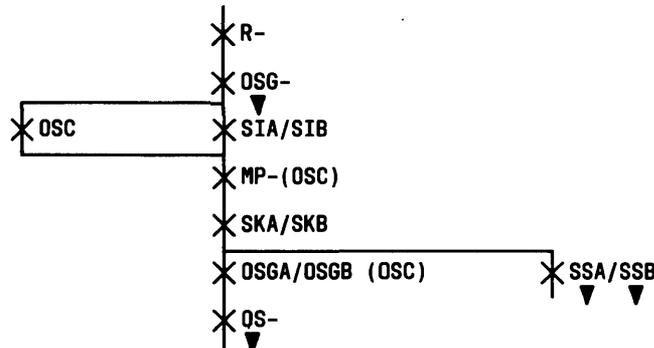
**DESCRIPTION OF CIRCUIT OPERATION**

Operation of the (SSA) or (SSB) relay indicates to the marker, the sender subgroup seized on this call. The (MP-) relay in the outgoing sender connector operates the (SKA) or (SKB) relay. The (SKA) or (SKB) relays should operate the (SSA) or (SSB) relays respectively, but not both.

**DESCRIPTION OF FAILURE**

Presence of both the (SSA) and (SSB) lamps indicates that the marker cannot determine which sender subgroup was seized.

May complete on second trial.

**NORMAL SEQUENCE OF OPERATION****TROUBLE DUPLICATION INFORMATION**

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

**REFERENCE DOCUMENTS**

SD-26002-01    FS-61    SC-112    CD-26002-01    Para - 10.21

MUT - SSA, SSB

**MUT-TF****LAMP INFORMATION**

Lamp - TF- (at least one lamp lighted)  
 No Lamp - TF- (not in 2 out of 5 format)

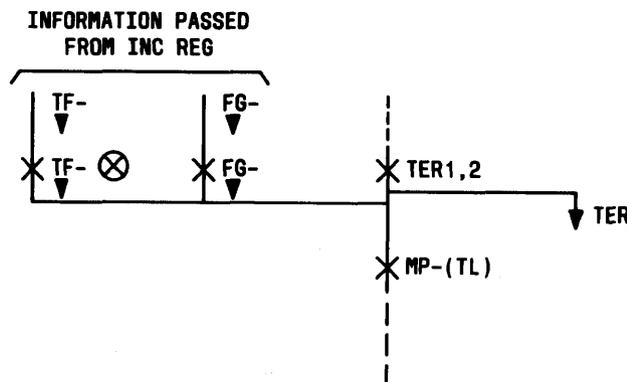
**DESCRIPTION OF CIRCUIT OPERATION**

On terminating calls, the marker must identify the trunk link frame associated with the incoming trunk. When the incoming trunk is connected to the incoming register, the trunk link number is transmitted from the incoming register link and recorded in the register on the (FG-) and (TF-) relays. When the register is connected to the marker, the trunk link number is passed to the marker and stored on the marker (FG-) and (TF-) relays. A valid trunk number and a terminating mark allows the marker to seize a trunk link frame.

**DESCRIPTION OF FAILURE**

The marker received some of the (TF-) information since at least one (TF-) lamp was lighted; however, since the (TF-) lamps are not in two-out-of-five, it results in mutilated information.

Probably will not 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-24    SC-101,104    CD-26002-01    Para - 5.41

**MUT-TF**

## MUT-TP,RP

**LAMP INFORMATION**

Lamp - TP &amp; RP

No Lamp - (Does not apply.)

**DESCRIPTION OF CIRCUIT OPERATION**

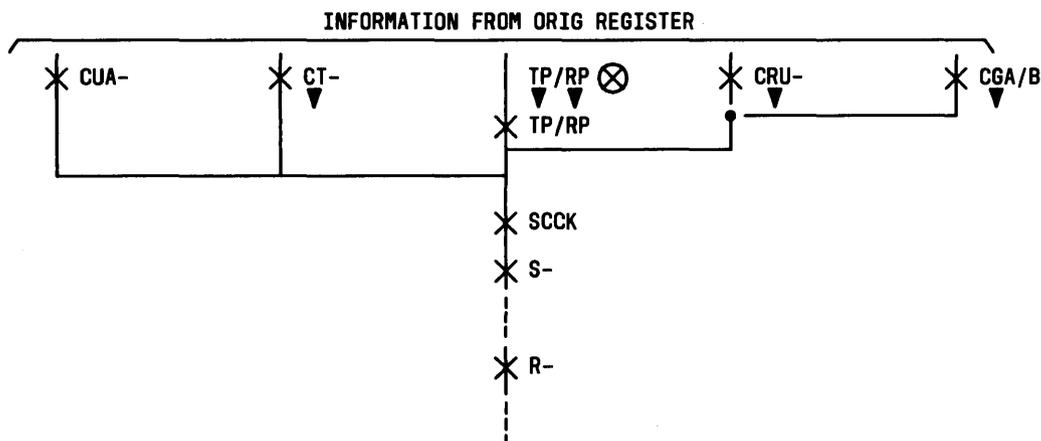
The (TP) or (RP) relay is operated via the "TP" or "RP" lead by the originating register. In certain offices there may be two-party lines having parties that require different class-of-service treatment. Since both parties have the same line link frame class-of-service mark, the (TP) or (RP) information is used to control special marker cross-connections that allow individual treatment for each customer.

The (TP) or (RP) information is also passed from the marker to an outgoing sender (on AMA calls) for transmittal to the AMA equipment, to insure the right party is charged for the call.

**DESCRIPTION OF FAILURE**

The (TP) and (RP) lighted indicates the originating register passed both the tip and ring party identification signal to the marker.

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-26002-01 FS-10,42,43 SC-101,102,114,135 CD-26002-01 Para - 5.51, 5.52

MUT-TP,RP

## MUT-TS

**LAMP INFORMATION**

Lamp - TS- (at least two lamps lighted)  
 No Lamp - TS- (TS- is not in 1 out of 20 format)

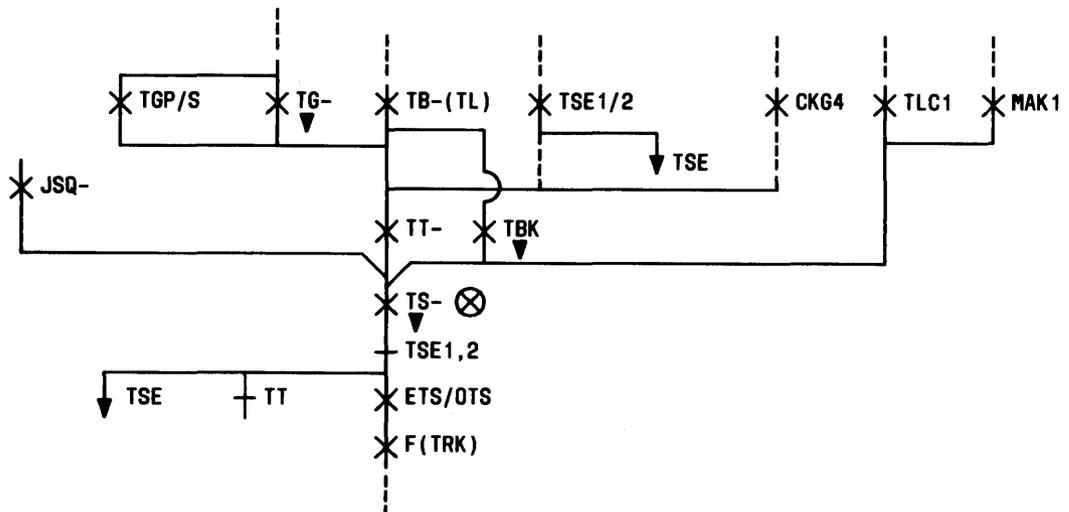
**DESCRIPTION OF CIRCUIT OPERATION**

The marker has seized a trunk link frame and is in the process of selecting an idle trunk or register. The marker (TT0-9) relays are connected to the "BT-" leads to test ten trunks in either the primary or secondary group of twenty trunks for an idle trunk. One (TT-) relay operates for each idle trunk. The operation of one or more (TT-) relays and one of the (JSQ0-5) relays, operates a (TS0-9) relay. The (TS-) relay operated is associated with two trunks; therefore, the marker makes an odd or even test to determine if one or both trunks are idle before making a final selection and operating a trunk (F) relay.

**DESCRIPTION OF FAILURE**

Presence of a "TS" lamp indicates that the marker started to select a trunk or register circuit. (MUT-TS) indicates that the marker could not select a particular trunk or register because of multiple operation of the (TS-) relays.

Call 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-4	SC-1	CD-26001-01	Para - 3.37 & 3.38
SD-26002-01	FS-27&28	SC-104	CD-26002-01	Para - 5.2

MUT-TS

## MUT-TT

**LAMP INFORMATION**

Lamp - TT- (at least one lamp lighted)  
 No Lamp - TT- (not in 2 out of 5 format)

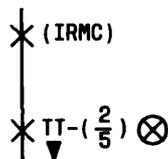
**DESCRIPTION OF CIRCUIT OPERATION**

On tandem thru calls, the tandem or incoming trunk must be connected to the linkage by its line link location. The line link location is translated by the number group just like any other call. The number that the number group translates is transferred from the incoming register to the marker and is unique to the given incoming tandem trunk.

**DESCRIPTION OF FAILURE**

Presence of one or more (TT-) lamps indicates that part of the (TT-) information is present. If the (TT-) information is not in two-out-of-five, the call cannot complete and a (MUT-TT) exception report is generated.

Probably will not 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-71-75      SC-101      CD-26002-01      Para - 1.2

MUT-TT

## MUT-UT

**LAMP INFORMATION**

Lamp - UT- (at least one lamp lighted)  
 No Lamp - UT- (not lighted in two-out-of-five format)

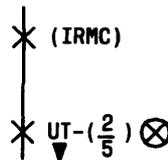
**DESCRIPTION OF CIRCUIT OPERATION**

On tandem thru calls, the tandem or incoming trunk must be connected to the linkage by its line link location. The line link location is translated by the number group just like any other call. The number that the number group translates is transferred from the incoming register to the marker and is unique to the given incoming tandem trunk.

**DESCRIPTION OF FAILURE**

Presence of one or more (UT-) lamps indicates that part of the (UT-) information is present. If the (UT-) information is not in two-out-of-five, the call cannot complete and a (MUT-UT) exception report is generated.

Probably will not 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-71-75      SC-101      CD-26002-01      Para - 1.2

MUT-UT

MUT - VF

**LAMP INFORMATION**

Lamp - VF- (at least two lamps lighted)  
 No Lamp - VF- (not in 1 out of 5 format)

**DESCRIPTION OF CIRCUIT OPERATION**

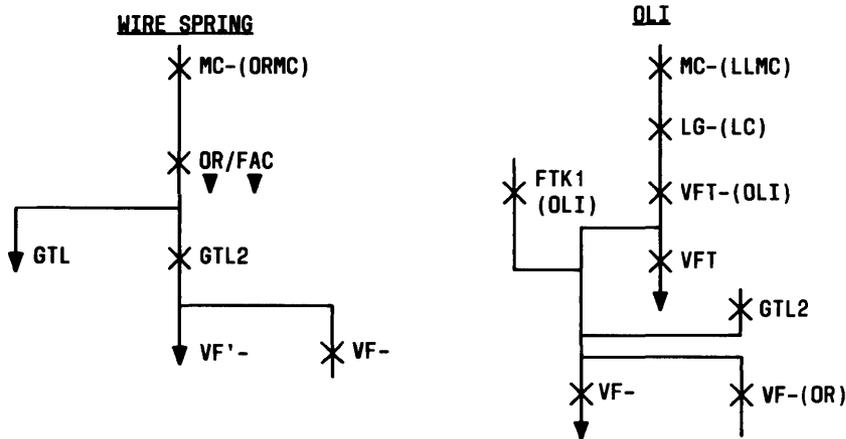
The (VF-) information is received by the marker from the (OR), so the marker can establish the call back linkage. The (VF-) information should be received in one-out-of-five format.

**DESCRIPTION OF FAILURE**

(VF-) lighted indicates that the marker received (VF-) information from the (OR). (VF-) not lighted in one-out-of-five indicates that the (VF-) information received is in the wrong format.

Probably will not 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-26002-01      FS-1      SC-101      CD-26002-01      Para - 1.2

MUT - VF

MUT VF'

**LAMP INFORMATION**

Lamp - VF' - (at least two lamps lighted)  
 No Lamp - VF' - (not in 1 out of 5 format)

**DESCRIPTION OF CIRCUIT OPERATION**

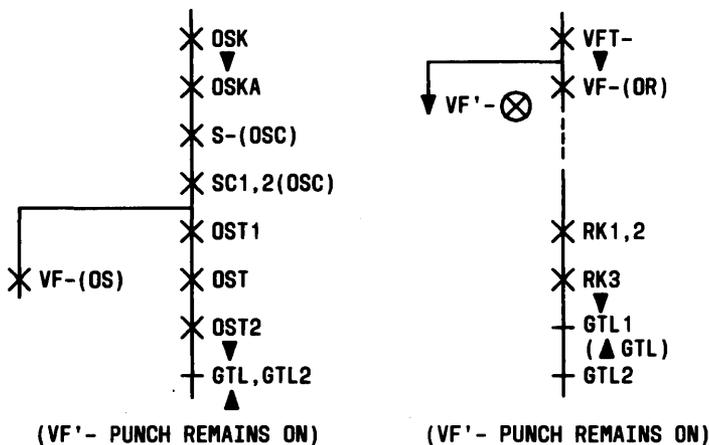
With the (GTL) relay operated, the (VF-) and the (VF'-) lamps are connected together in the marker. With no (GTL) operated, the marker is testing that the (VF-) relays locked operated in the (OR). The (VF'-) lamp should match the (VF-) lamp.

**DESCRIPTION OF FAILURE**

Two or more (VF'-) lamps present indicate that the wrong information was stored in the (OR). Also a (VF-) lead could be falsely grounded.

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-9	SC-1	CD-26001-01	Para - 2.107
SD-26002-01	FS-1	SC-101,112	CD-26002-01	Para - 10.51

MUT VF'

MUT-VG

**LAMP INFORMATION**

Lamp - VG- (at least one lamp lighted)  
 No Lamp - VG- (not in 2 out of 6 format)

**DESCRIPTION OF CIRCUIT OPERATION**

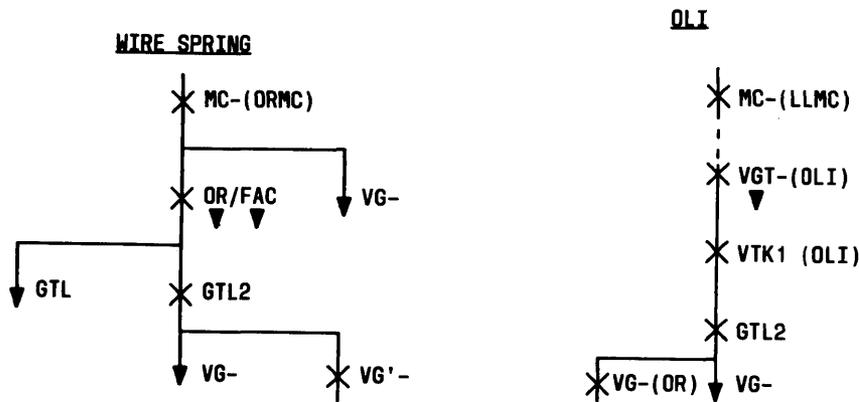
The (VG-) information is received by the marker from the (OR) so the marker can establish the call back linkage. The (VG-) information should be received in two-out-of-six format.

**DESCRIPTION OF FAILURE**

(VG-) lighted indicates that the marker received (VG-) information from the (OR). (VG-) not lighted in two-out-of-six indicates that the (VG-) information received is in the wrong format.

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-26002-01 FS-1 SC-101 CD-26002-01 Para - 1.2

MUT-VG'

**LAMP INFORMATION**

Lamp - VG' - (at least one lamp lighted)  
 No Lamp - VG' - (not lighted in 2 out of 6 format)

**DESCRIPTION OF CIRCUIT OPERATION**

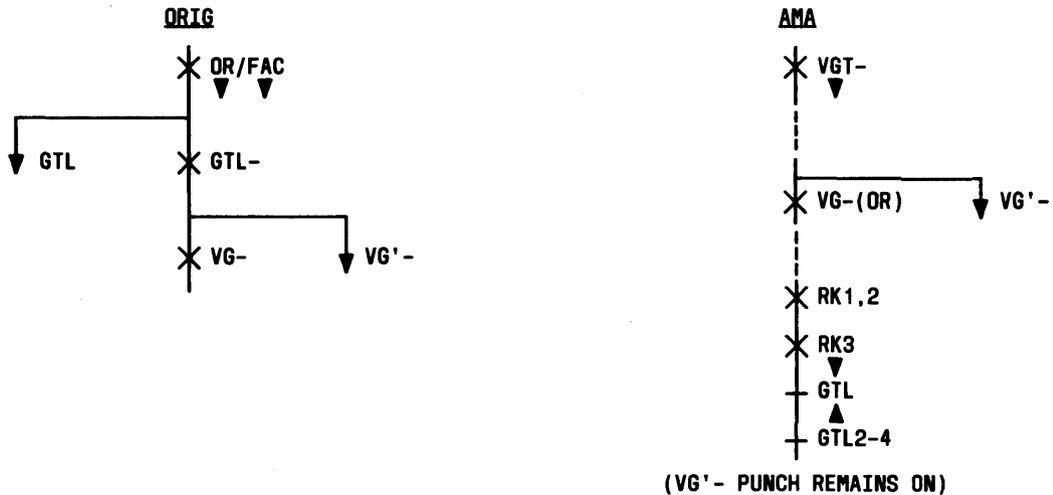
With the (GTL) relay operated, the (VG-) and the (VG'-) lamps are connected together in the marker. With no (GTL) operated, the marker is testing that the (VG) relays locked operated in the (OR) depending upon the type of call. The (VG'-) lamp should match the (VG-) lamp.

**DESCRIPTION OF FAILURE**

Other than two-out-of-six (VG'-) lamps present indicates that the wrong information was stored in the (OR). Also a (VG-) lead could be falsely grounded.

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-9      SC-1                      CD-26001-01      Para - 2.99 thru 2.10

