This letter replaces WT88-26-03 dated February 2, 1988.

Our DMS, #5ESS and Siemens central offices can provide a Centrex service that the rest of our central offices can't offer, called Integrated Information Network or IIN.

This service allows the use of a new type of telephone called a Meridian Business Set (MBS). However, the MBS can only be used in a DMS type office. What's unique about the MBS is a special "line card" (LEN) in the central office associated to the MBS's Primary Directory Number (PDN). The "line card" allows 56 separate telephone numbers to be assigned to a single cable pair.

Other services and features are explained in the following UPDATE letters:

- WT87-26-05 Integrated Information Network (IIN) Service
- WT87-26-05A, B, C... IIN Customer Profiles
- WT87-26-06 IIN Central Office Features - DMS 100
- WT87-26-07 IIN Central Office Features - 5ESS
- WT88-26-01 CRSAB Repair Answer for IIN Service
- WT88-26-02 IIN Business Set Trouble Shooting Procedures

IIN service with Meridian Business Sets are not MLT testable. Predictor is the vehicle that must be used when testing under these conditions.

Attached you'll find flow charts, sign-on and sign-off procedures, testing sequences and explanations to testing IIN MBS lines.

This letter will be revised as new tests and procedures are developed and added as new attachments.

Please refer your questions and concerns regarding this subject to the author.

R. E. Brown
District Staff Manager - Distribution Services

DJA:1mh
Attachments
IN TESTING
USING THE
PREDICTOR SYSTEM
FOR TESTING
MERIDIAN BUSINESS SETS

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Attachment 5 - CKTTST (Circuit Test)
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Attachment 7 - DIAG LC (Diagnostic Line Card)
  Line Card Operation
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  Full Test
BASIC MBS TROUBLE REPORT FLOW

CUSTOMER
Customer has trouble with their MBS. Calls their Communications Representative. Comm. Rep. calls the CRSAB (MBA).

CRSAB (MBA)
Most MBS customers are MBA. RSA must get Primary Directory Number (PDN) on Key #1. Report is taken by asking specific questions (see Attachment 1).

DSOC
DSOC analyzes, tests, verifies, dispatches, refers and/or closes out report. (See Attachments 2-8.)

CUSTOMER
The customer is notified of trouble dispatch, referral and/or closure of trouble report.
DSOC analyzes the customer's trouble report and verifies and tests through Predictor.

Sign-on procedure for Predictor and DHS is on Attachment 2. (Also Sign-Off.)

In Predictor, sign-on to Maintenance Administrative Position Command Interrogator (HAPCI) using Attachment 3.

Perform HAPCI tests using sequence on Attachments 4-8.

Based on results - - dispatch - refer - clear - close

Communicate with the customer.
MAPCI TEST SEQUENCE INTRODUCTION

SUSTATE
   (See Attachment 4)

CKTTST
  CIRCUIT TEST
   (See Attachment 5)

LNTST
  LINE TEST
   (See Attachment 6)

DIAG LC
  DIAGNOSTIC LINE CARD
   (See Attachment 7)

DIAG
  DIAGNOSTIC FULL
   (See Attachment 8)
BASIC MBS TROUBLE REPORT FLOW
MBA/CRSAB

To assist the DSOC in analyzing the customer's trouble report, the Repair Service Attendant (RSA) should ask our customer the following questions:

1. Primary Directory Number on Key 1.
2. Location of the Business Set.
   a. Floor
   b. Room
   c. Desk
   a. Time problem occurred.
   b. What number(s) was the customer talking to and who called who.
   c. Does the problem occur all the time or at times.
   d. Does the problem occur while using a feature.
   e. Etc.
4. Handle Code - MBA.
5. Contact name and number.
6. Time received and commitment.
7. Send to DSOC.

NOTE - When received, make sure that the report is not involved with a cable trouble or service order activity.
SIGN-ON/OFF PROCEDURE
PREDICTOR/DMS

MBS are unique in that you can't test them with LMOS. MBS will test as a short or open depending on the customer's equipment that is associated with the MBS. MBS troubles must be tested using Predictor. The following is the sign-on procedure to be used to verify and test MBS lines.

AT&T 6500 Sign-On -

1. Obtain session that contains Predictor (usually D)
2. Depress Command Key
3. Cursor to CH (Change Host)
4. Depress Enter Key
5. Cursor to ASYNC MODEM
6. Depress Enter Key
7. Check CAPS LOCK (will use lowercase)
8. Depress PF3 for Modem/Dial
9. Depress PF2 for Select
10. Enter Predictor number
11. Depress PF1
12. Enter login: ver (lowercase)
13. Enter Password: VER (uppercase)
14. Enter Terminal VT100
15. Response will be $

At this point, you are now signed on to Predictor.

16. Enter Query
17. Enter Switch I.D. (Wire Center's lowest NXX)
18. Response will be a ?
19. Enter login
20. Enter User Name: LOCTST
21. Enter Password: LOCTST

At this point, you are now signed-on to the DMS switch.

22. Verify Directory Number (QDN) and LEN (QLEN) (Testing is also done at this level - see Attachment 3)

AT&T 6500 Sign-Off -

Any time you are not using Predictor to verify a DMS line, you must sign-off from the switch and also Predictor. This will free up the customer's line and will also free up the ports to Predictor and the switch as there are a limited number of ports.

1. Enter logout
2. Response will be "Bye Bye"
3. Depress shift and the number 6
4. Change Host (CH)
SIGN-ON/OFF AND REQUEST PROCEDURES

MAINTENANCE ADMINISTRATIVE POSITION COMMAND INTERROGATOR (MAPCI)

MBS will only work in a DMS type office. Since MLT cannot be used to properly test MBS, Predictor is your only vehicle for testing. To test MBS with Predictor, you must gain access to the various "maintenance levels" in the DMS switch. The Maintenance Level Flow Chart is on Attachment 3A.

There are various methods of signing on to the Maintenance Levels and they are as follows:

<table>
<thead>
<tr>
<th>Method 1</th>
<th>Method 2</th>
<th>Method 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enter MAPCI</td>
<td>Enter MAPCI; MTC; LNS; LTP;</td>
<td>(Future)</td>
</tr>
<tr>
<td>Response MAPCI:</td>
<td>Response MAPCI; MTC; LNS; LTP;</td>
<td></td>
</tr>
<tr>
<td>Enter MTC</td>
<td>Enter MTC; MTC; LNS; LTP;</td>
<td></td>
</tr>
<tr>
<td>Response MTC:</td>
<td>Response MTC; MTC; LNS; LTP;</td>
<td></td>
</tr>
<tr>
<td>Enter LNS</td>
<td>Enter LNS: MTC; LNS; LTP;</td>
<td></td>
</tr>
<tr>
<td>Response LNS:</td>
<td>Response LNS: MTC; LNS; LTP;</td>
<td></td>
</tr>
<tr>
<td>Enter LTP</td>
<td>Enter LNS: LNS; LTP;</td>
<td></td>
</tr>
<tr>
<td>Response LTP:</td>
<td>Response LNS: LNS; LTP;</td>
<td></td>
</tr>
</tbody>
</table>

Once access is gained to the DMS switch by any of the methods listed above, you now have access to various tests located within the levels you sign-on to. There are 5 tests that must be performed on all trouble reports. These tests are addressed on Attachments 4 through 8.
# MAINTENANCE ADMINISTRATIVE POSITION COMMAND INTERROGATOR

## MAPCI

### Testing Levels:

- **MTC** = Maintenance
- **LNS** = Lines
- **LTP** = Line Test Position
- **LTPMAN** = Line Test Position Manual
- **LTPLTA** = Line Test Position Line Test Access

### Diagram:

```
  MTC
  0. Quit
    2.
    3.
    4.
    5.
    6.
    7.
    8.
    9.
   10.
   11.
   12.
   13.
   14.
   15. LNS*
    16.
    17.
    18.

  LNS
  0. Quit
    2.
    3. LTP*
    4.
    5.
    6.
    7.
    8.
    9.
   10.
   11.
   12.
   13.
   14.
   15.
   16.
   17.
   18.

  LTP
  0. Quit
    2. Post
    3.
    4. LTPMAN*
    5.
    7.
    8.
    9.
   10.
   11.
   12.
   13.
   14.
   15.
   16.
   17.
   18.

  LTPMAN
  0. Quit
    2. Post
    3.
    4.
    5.
    6.
    7.
    8.
   10.
   11.
   12.
   13.
   14.
   15.
   16.
   17.
   18.

  LTPLTA
  0. Quit
    2. Post
    3.
    4.
    5.
    7.
    8.
   10.
   11.
   12.
   13.
   14.
   15.
   16.
   17.
   18.
```

### Notes:

- Capital letters indicate other menus.*
- Regular letters indicate the tests.

Additional tests will be added as procedures are developed.

Additional tests will be added as procedures are developed.

- **Lines in use** will show - line state in-appropriate
- **Line state invalid**
MAPCI TEST SEQUENCE PROCEDURE

To properly analyze and test MBS trouble reports, Attachments 4 through 8 must be followed in proper sequence. Any deviation could result in improper analysis and tests and possibly an irate customer.

To begin the testing sequence, you should have a printed copy of the Primary Directory Number (PDN) by using the Query Directory Number (QDN) command and a copy of the LEN information by using the Query Line Equipment Number (QLEN) command.

Note - When testing, turn on printer just prior to and at completion of testing.

To test a line, you must first "POST" the LEN, i.e., POST L XX X XX XX. If you post the Directory Number, you may get the Primary appearance of the MADN LEN. Now you are ready to perform the following test:

SUSTATE

This test is the 1st of 5 tests to be performed on the customer's line. It will verify that the set and add-ons are responding to each software condition assigned. To begin, select SUSTATE from the LTPMAN menu:

Type in  LTPMAN
Response  LTPMAN:
Type in  SUSTATE

Note - Do not enter the directory number if the line in trouble is a MADN (Multiple Appearance Directory Number) because the switch may enter the incorrect LEN and thus you would have the wrong telephone number. Upon successful entry your response should be:

ADDRESS   0  1  2  3  4  5  6  7
DATA FILLED     _  _  _  _  _  _  _  _
RESPONDING      _  _  _  _  _  _  _  _

_ = What is programmed in the switch for a directory number for an address
_ = Switch doesn't recognize the MBS equipment responding or the switch hasn't been programmed for a directory number for each address.

In other words, this is a comparison between what's programmed in the switch and what's in the field.

EXAMPLE OF IMPROPER RESPONSE

ADDRESS   0  1  2  3  4  5  6  7
DATA FILLED     _  _  _  _  _  _  _  _  = MBS w/Add-on
RESPONDING      _  _  _  _  _  _  _  _  = Add-on not responding
NOTE A - When an address (0-3) has a (.) under it, it would indicate the following:

DATA FILLED Address 0 = Main Station on MBS
DATA FILLED Address 1 = First Add-on module
DATA FILLED Address 2 = Second Add-on module
DATA FILLED Address 3 = Third Add-on module

RESPONDING Address 0 = MBS on line and appears to be working
RESPONDING Address 1 = Module on line and is responding
RESPONDING Address 2 = Module on line and is responding
RESPONDING Address 3 = Module on line and is responding

NOTE B - When an address (4-7) has a (.) under it, it would indicate the following:

DATA FILLED ADDRESS 4 = Extension MBS in software
DATA FILLED ADDRESS 5 = First module on EXT MBS
DATA FILLED ADDRESS 6 = Second module on EXT MBS
DATA FILLED ADDRESS 7 = Third module on EXT MBS

RESPONDING ADDRESS 4 = EXT MBS on line and appears to be working
RESPONDING ADDRESS 5 = First module on EXT responding
RESPONDING ADDRESS 6 = Second module on EXT responding
RESPONDING ADDRESS 7 = Third module on EXT responding

NOTE C - Further action may be required based on SUSTATE results.

Response - No data filled but field responding.

Action - Check station records. Is there suppose to be something in the field or is the software incorrect?

Response - Data filled but no response from MBS.

Action - Perform CKTTST (Circuit Test on Attachment 5).

NOTE D - The SUSTATE test should be performed 5 times in succession to ensure proper responses from the MBS.

Enter Repeat 5(SUSTATE)

NOTE E - At times you may encounter an "ERROR." Be sure to read what the error message is. In most cases, when you go to reenter your request, do not retype the command. The switch already knows what command you entered so just reenter the DN or LEN.

If you make an error for the "command" entry, i.e., QND instead of QDN, you get an error message directed to the command.
MAPCI TEST SEQUENCING PROCEDURE

To properly analyze and test MBS trouble reports, Attachments 4 through 8 must be followed in proper sequence. Any deviation could result in improper analysis and tests and possibly an irate customer.

CKTTST

(CIRCUIT TEST)

This is the 2nd of 5 tests to be performed on the customer's line. It will verify that the components or computer chips of the MBS are working properly. To begin, select CKTTST from the LTPMAN menu:

Type in CKTTST

The switch will respond in the following manner:

Messages Sent = 10
Messages Received = 10

The results are an indicator that the MBS is responding correctly to messaging. The test signals are addresses internal to the MBS and each message sent expects proper responses from each component in the MBS. If the results are not equal (10 and 9), the MBS is defective and should be replaced. Refer the customer to their vendor.

NOTE A - This test must be performed 5 times to ensure proper operation of the internal components of the MBS.

Enter Repeat 5(CKTTST)

NOTE B - Messaging is sent to the MBS at 8 KHz from the line card in the central office. Messages are sent out on the ring side of the facilities and returned on the tip side.
<table>
<thead>
<tr>
<th>RES</th>
<th>CAP</th>
<th>VAC</th>
<th>VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIP</td>
<td>999.K</td>
<td>2.055UF</td>
<td>0</td>
</tr>
<tr>
<td>RING</td>
<td>999.K</td>
<td>1.055UF</td>
<td>0</td>
</tr>
<tr>
<td>TIP to RING</td>
<td>999.K</td>
<td>1.005UF</td>
<td>0</td>
</tr>
</tbody>
</table>

The above results could indicate an open ring side out in the field.

<table>
<thead>
<tr>
<th>RES</th>
<th>CAP</th>
<th>VAC</th>
<th>VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIP</td>
<td>999.K</td>
<td>5.00UF</td>
<td>.5</td>
</tr>
<tr>
<td>RING</td>
<td>999.K</td>
<td>5.00UF</td>
<td>0</td>
</tr>
<tr>
<td>TIP to RING</td>
<td>999.K</td>
<td>5.00UF</td>
<td>0</td>
</tr>
</tbody>
</table>

The above results could indicate a faulty MBS or facility problem. VAC and VDC should be zero.

<table>
<thead>
<tr>
<th>RES</th>
<th>CAP</th>
<th>VAC</th>
<th>VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIP</td>
<td>500.K</td>
<td>0.00UF</td>
<td>0</td>
</tr>
<tr>
<td>RING</td>
<td>500.K</td>
<td>0.00UF</td>
<td>0</td>
</tr>
<tr>
<td>TIP to RING</td>
<td>10.K</td>
<td>0.00UF</td>
<td>0</td>
</tr>
</tbody>
</table>

The above results could indicate a ground on the line.

<table>
<thead>
<tr>
<th>RES</th>
<th>CAP</th>
<th>VAC</th>
<th>VDC</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIP</td>
<td>999.K</td>
<td>2.86UF</td>
<td>0</td>
</tr>
<tr>
<td>RING</td>
<td>999.K</td>
<td>4.79UF</td>
<td>0</td>
</tr>
<tr>
<td>TIP to RING</td>
<td>999.K</td>
<td>5.00UF</td>
<td>0</td>
</tr>
</tbody>
</table>

The above results could indicate a Non-Display MBS.

NOTE B - Perform this test only once. Repeated tests will reduce the capacitance.

NOTE C - Mark down what a good test looks like to various customers.
MAPCI TEST SEQUENCE PROCEDURE

To properly analyze and test MBS trouble reports, Attachments 4 through 8 must be followed in proper sequence. Any deviation could result in improper analysis and tests and possibly an irate customer.

DIAG LC

(DIAGNOSTIC LINE CARD)

This is the 4th of 5 tests to be performed on the customer's line. It is used to test the operation of the line card located in the central office that is assigned to our customer's LEN. To begin, select DIAG from the LTP menu.

Type in DIAG LC

The results may look like the following:

Attempting to Diagnose Line Card only
MILW11050***LINE 100 JAN 25 08:56:49 4700 PASS LN_DIAG
LEN HOST 01 1 17 14 DN 2270077
DIAGNOSTIC RESULT CARD DIAGNOSTIC OK
ACTION REQUIRED NONE
CARD TYPE 6X21AC

If the line card test "fails," you should do the following:

1. Change line card*
2. Check facilities

*First Priority
MAPCI TEST SEQUENCE PROCEDURE

To properly analyze and test MBS trouble reports, Attachments 4 through 8 must be followed in proper sequence. Any deviation could result in improper analysis and tests and possibly an irate customer.

DIAG

(DIAGNOSTIC)

This test is the last test to be performed on the customer's line. It will test the entire line. To begin, select DIAG from the LTP menu.

Type in DIAG

The DIAGNOSTIC test looks at the following items:

Facilities
Line Card
Interaction of Electronics
Micro Processor
Chips
Proper KEY Response
Key Pad Operation
Display

The results may look like the following:

MILW13DSO***+LINE 100 JAN 25 09:04:01 9000 PASS LN_DIAG
LEN HOST 01 1 17 14 DN 2270077
DIAGNOSTIC RESULT CARD DIAGNOSTIC OK
ACTION REQUIRED NONE
CARD TYPE 6X21AC

If the results are as indicated above, verify with customer.