Installation Engineering Handbook 59
Western Electric
Columbus Works

Section 115D
2-11-79

Replaces: Section 115D
Dated 5-2-77
Replaces: UIS 115D
Dated 8-9-77

AMARS
ANI B IDENTIFIER
SECONDARY NETWORK VERIFICATION

CONTENTS

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1. GENERAL INFORMATION

1.1 Description

1.11 This section describes the operational test to be performed on the Secondary Network and Bus Connector Circuit, SD-95814-01, using the Line Verification Circuit LVT SD-32246-01.

1.12 Sufficient working numbers are used to test all possible thousand-units and hundreds-tens combination from the equipped number of the office served by the secondary network.

1.13 Ring party, tip party and multiparty tests must be performed on the secondary network. There tests are repeated for each identifier to test identifier access to the secondary network.

1.2 Sequence of Operation

1.21 Sections 115A, 115B, 115C should be performed prior to the tests of this section to simplify trouble locating tests. The above section completely tests identifier functions, so any trouble encountered in the tests of this section should be located in the secondary network.

1.3 General Precautions

1.31 Before removing any identifier circuit pack, refer to Section 115C, Paragraph 4 for the required power down procedures which are required for circuit packs in the A unit. Some packs in the B and C units serve both identifiers and are also listed in the above source.

2. RECORDS AND REQUIREMENTS

2.1 Records

2.11 Results of this section shall be recorded on forms SD-97-1313 and SD-97-1315.

2.2 Requirements

2.21 Ring Party

(a) Ring party numbers must be provided such that the numbers contain all possible thousands-units and hundred-tens combinations available to ring party customers.

(b) The installer shall make check-off tables as shown in the "Secondary Network Test Pattern" figure. The number 2146 is checked off as an example.

2.22 Tip Party

(a) All Tip party numbers should be tested, unless their quantity is sufficient to use a pattern similar to ring party number.

2.23 Multiparty

(a) A single multiparty call for each different thousands digit in multiparty number is sufficient.

2.24 Identifier

(a) The calls of 2.21, 2.22, 2.23 must be repeated for each identifier to fully check identifier access to the secondary network.

<div style="column 1">

SECONDARY NETWORK TEST PATTERN

THOUSANDS

```
        0 1 2 3 4 5 6 7 8 9
      0
      1
      2
      3
U     4
N
I     5
T     6      ✓
T     7
S     8
      9
```

HUNDREDS

```
        0 1 2 3 4 5 6 7 8 9
      0
      1
      2
T     3
E     4    ✓
N     5
N     6
S     7
      8
      9
```

3.   TEST EQUIPMENT

Amt	ITE	Description
1	5632	Digital Voltmeters
1	5221A	Storage Oscilloscope
1	5282	Logic Probe
1	*J1C081G	Identifier Test Set

* Telephone Company Maintenance Equipment.

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4.   PREPARATION

4.1   ANI-B TEST SET

4.11   At the ANI-B identifier under test remove the F1 fuse, insert the Identifier Test Set in the upper right hand corner of the "A" unit test and restore the F1 fuse.

4.12   Set the switches on the ANI-B test set as follows:

(a)   MCB1, MCB, ACLR switches down.

(b)   MCA1, MCD, MCC, MCA switches up.

(c)   Mode switch to the left (MATCH position).

4.13   Verify the set-up by monitoring LVT Test calls as shown below, reset the ANI-B test set after each call by pushing the MDC key.

(a)   OFF and CALLING NUMBER display the office digits and station digits of the calling party.

(b)   Class of Service (COS) displays a "0" digit.

(c)   CLK BTS displays "22".

(d)   ADB CDA displays "8".

(e)   MEM B AND MEM A each display a digit which is one greater than the OFF display.

(f)   OS displays a "7".

4.2   Outpulser

4.21   To steer LVT test calls to the identifier under test install the following straps in each outpulser.

(a)   From 6 to 6B of relay PS

(b)   To select Identifier 0: From 5M of relay PS to upper winding of relay IOT.

(c)   To select Identifier 1: From 5M of relay PS to the upper winding of relay I1T.

4.3   Identifier

4.31   Make busy the Identifier under test by inserting a plug in the identifier make busy I-B jack at the Miscellaneous Circuit for the Trouble Ticketer Frame.

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5.   LVT DIGIT CHECK OF SECONDARY NETWORK

5.1   A digit check of the secondary network for one office requires the performance of 200 test calls, 100 test calls to obtain every thousands/units combination and 100 test calls to obtain every hundreds/ten's combination. This complete test is performed on ring party calls. See Secondary Network Pattern of Para. 2.51.

5.2   Operate key TD1 at the LVT to test the secondary network associated with Office 0.

NOTE: Key TD2 etc., should be used for office 1 etc. respectively.

5.3   Operate key PTNO and ST. The TD1 and ON lamps light.

NOTE: Whenever the call times out (TO lamp) operate key RC to recycle the call.

5.4   Thousands/Units Check-Office 0

5.41   This example uses numbers 0000 to 0009 to test all units digits 0-9 for thousand digits 0 in office 0. Any other hundreds-tens digit may be used.

NOTE: In 5.42 (b) a digit "1" is dialed assuming all digits are present. If 1, 2 etc., digits are missing dial a 2, 3 etc. instead.

5.42   Thousands 0

(a)   Dial digits "0001" and operate key CMT. Observe digits "00001" are displayed on the nixie lamps.

(b)   Dial a "1" digit and operate key RC. Observe digits "00002" are displayed on the nixie lamps.

(c)   Repeat (b) for units digits 3 to 9 and then 0. The last nixie display should be "00000".

5.43   Next Thousands Digit

(a)   Operate key RTT for one second. Dial "X001" and operate key RC. Observe digits "0X001" are displayed on the nixie lamps.

NOTE: Digit "X" is the next thousands digit under test.

(b)   Repeat 5.42(a), 5.42(b). The nixie displays are the same except an "X" digit is displayed for the next (Thousands) digit.

5.44   Repeat 5.43 for other thousands digits provided.

5.5   Hundreds/Tens Check - Office 0

5.51   This example uses thousands and units digits of "0". Any other digits may be used.

5.52   Hundreds 0

(a)   Operate key RTT for one second. Dial "0000" and operate key RC. Observe digits "00000" are displayed on the nixie lamps.

(b)   Operate key RTC for one second. Dial "10" and operate key RC. Observe digits "00010" are displayed on the nixie lamps.

(c)   Repeat (b) dialing "20" to "90" for ten's digit 2 to 9 of hundreds group "0". The last nixie display should be "00090".

5.53   Other Hundreds Digits

(a)   Repeat 5.52(a) to 5.52(c) for hundreds digits 1 to 9. The nixie displays are the same eaxcept digits 1 to 9 respectively are displayed for the third (hundreds) digit.

5.54   Restore all keys and operate key RLS.

5.6   Other Offices

5.61   Operate key TD- at the LVT to test the secondary network associated with other offices.

5.62   Operate key PTNO and ST. The TD- and ON lamp lights.

5.63   Repeat 5.4 to 5.54 for other offices. The nixie displays are the same except the first digit contains the office digit.

5.7   Tip Party Calls

5.71   Usually insufficient tip party numbers are available to make pattern tests as described in 5.4, 5.5, 5.6. Therefore, obtain a complete list of all tip party numbers and dial up each call individually.

5.8   Multiparty Calls

5.81   Obtain one number for each different _
       thousands digits provided in multiparty
       numbers and individually dial those
       numbers.

5.82   A satisfactory multiparty call is
       indicated by the lighting of the MP
       lamp and thousands digit at the LVT.

6.   TROUBLE LOCATING GUIDE

6.1   ANI-B Test Set

6.11   Incomplete data is not displayed at he
       LVT nixies. Therefore whenever a call
       fails a second testman should be ob-
       serving the ANI-B test set to determine
       what data is missing.

6.12   On unassigned digits all F's appear at
       the ANI-B test set, however this could
       also occur where the office identifying
       digits is missing i.e. Thousands digit
       in Office 0, Hundreds in Office 1, etc.

6.2   Complete Failure of LVT Test Call

6.21   New Identifier Frames

(a)   On new identifier frames verify wiring
       options W and T are installed and
       wiring option X removed. Also verify
       apparatus option P, R are installed and
       apparatus Q, S are removed.

6.22   LVT Oscillator

(a)   Check level of LVT Oscillator according
       to circuit note 106 on SD-95827-01.
       (804A tool is required.)

6.23   Gating Pulse to LVT Oscillator

(a)   Using an oscilloscope verify over +24V
       is present at 2A1-10 (B11) during the
       last third of the extended pulse for
       OFA, OFB and the office under test OF-.

(b)   If the gating pulse is present, verify
       the lead is present between the Identi-
       fier and LVT frame terminal strips.

No changes are indicated due
to extensive revision.

6.24   Secondary Network Ground

(a)   Verify 800 ohms to ground (Identifier
       0) or solid ground (Identifier 2) is
       present at 3B relay TST3 of Identifier
       for ring party calls. See FS3 sheet B4
       of SD-1C593-01.

6.3   Thousand/Unit or Hundreds/Tens Failure

6.31   A thousands/units combination or a
       hundreds/tens combination failure
       indicates a defective secondary net-
       work. The networks are mounted on
       separate fields for the TH/U and H/T
       combinations.

6.32   Locate the Suspected Network and Per-
       form the Following

(a)   Verify 1576A inductors are installed.
       1576D inductors must be replaced.

(b)   Using the digital voltmeter take com-
       parative measurements across the 3
       components (2 resistors and 1 inductor)
       and on a network associated with a good
       number.

6.4   Partial Failure of Thousands, Hundreds,
       Tens or Units Digits

6.41   Where some digits fail such as some
       tens digits the identifier connector
       relays may be at fault or the wiring to
       these relays.

6.42   Refer to Table A on sheet B4 of SD-
       95814-01 to determine if the failure
       pattern is associated with a particular
       relay TA, TB, TC, TD.

6.43   It is possible for some of the contacts
       to fail while others are good on the
       same relay. Intermittant problems are
       usually due to faulty contacts.

6.44   The TN, TP leads refer to their combi-
       nations with Hundreds leads (0-4) and
       (5-9) respectively in the number which
       failed. The same is true for hundreds
       lead failures and tens (0-4) and (5-9)
       leads. Also thousands/units N or P
       leads are similarly derived.

Manager, Product Engineering
Control Center

Reason for Reissue:
  To add UIS 115D, to describe LVT Pattern
  tests and to change Trouble Locating tests.

SPECIAL INSTALLER INSTRUCTIONS

SD-25963-01_____ LDI___78G, 80B___ ITEM/S___2___

ITEM 1

1. Have the Telephone Company Representative remove the test frame from service.

2. Short 5 and 6T of relay KA.

3. Operate the INFO relay and verify relay TK operates.

4. If App. Fig. 202 is provided, operate relay AI2 and verify relay TK releases.

5. Release relay INFO and AI2 and remove short from relay KA.

6. Perform tests of Handbook 65, Section 305, Test Nos. 267 and 268, as applicable.

7. Have the Telephone Company Representative return the test frame to service unless Item 2 is to be performed.

ITEM 2

1. Momentarily operate relays GPS6 and 10DR, in turn, and verify relay GPS2 does not operate.

2. Short 1 and 2T of relay GC and verify ground at 1CT of relay BT2.

3. Short 1 and 2T of relay GE.

4. Momentarily operate relays GPS6 and 10DR, in turn, and verify relay GPS2 operates as each relay is operated.

5. Block operated relay ADV.

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SPECIAL INSTALLER INSTRUCTIONS

SD-25963-01 _____   LDI ___78G, 80B___   ITEM/S ___2___

ITEM 2 (Cont'd.)

6. ~~Momentarily~~ operate relay GPS6 or 10DR and verify relay GPS2 operates ~~and locks~~.

7. ~~Remove short from relay GC and verify relay GPS2 remains operated.~~

7. Release relay ADV and verify relay GPS2 releases.

8. Remove shorts from relays GC and ~~GE~~. Lock from relay GPS6 or 10DR.

9. Perform the tests of Handbook 65, Section 305, Test Nos. 218 or 184, as applicable.

10. Have the Telephone Company Representative return the test frame to service.

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