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TRAFFIC REGISTERS—PART 15
TESTS USING MASTER TEST FRAME
NO. 5 CROSSBAR OFFICES

1. GENERAL

1.01 This section is Part 15 of a series of sections that describe methods for testing traffic registers.

1.02 The reasons for reissuing this section are listed below. Revision arrows are used to emphasize the more significant changes. Equipment Test Lists are affected.

(a) To add Test O.

(b) To make minor changes, as required.

1.03 The tests covered are:

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1.04 Table A lists the tests that require action and verification at more than one location.

1.05 ***Lettered Steps:*** A letter a, b, c, etc, added to a step number in Parts 3 and 4 of this section indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

1.06 Before starting any test on paper tape recorder which will cause the perforation of transfer, make-busy, or window splice patterns or trouble entries on the associated tape, using a red china marking pencil, draw a line across the unperforated tape at the point where it enters the tape chute. On completion of testing, proceed as follows at the associated perforator:

(a) Raise the slack tape arm and hook it over catch provided.

→TABLE A←

ACTION AND/OR VERIFICATION REQUIRED AT:	TESTS										
	B	C, E	F	G	H, I	J	K	L	M	N	O
Traffic Register Cabinet	√	√	√	√	√	√	√	√	√	√	√
Master Test Frame (MTF)	√	√		√	√	√	√	√			√
LAMA Transverter Circuit	√	—	—	—	—	—	—				
ANI Transverter Circuit			√								
CAMA Transverter Circuit		√									
LAMA Magnetic Tape Transverter Circuit						√					
Trunk Control Circuit							√				
AIOD Translator Circuit								√	√		
BDT Display and Control Panel										√	
Translator Access Circuit											√

(b) Pull back some slack in tape and disengage tape from tape guides.

(c) Using a red china marking pencil, place two large crosses on smooth side of tape over lower of the two diamond patterns (the diamond pattern farthest from the perforator drum).

(d) Locate the red mark placed on tape at start of testing. Then mark two large crosses on smooth side of tape so that the center of the crosses is 4-1/2 inches from the red mark in a direction away from perforator drum.

(e) Replace tape in tape guides and remove slack tape arm from catch.

(f) Record on accounting center notification form recorder number, date, time, and a note that the tape was marked with red crosses to indicate that all entries between these crosses should be skipped.

1.07 Local instructions should be followed for recording and reporting any register operations caused by performing these tests.

1.08 The manner of selecting some circuits and test conditions at the MTF and its associated circuits varies depending on the apparatus options furnished with these circuits. Therefore, where variable means of selection are provided, precise instructions for the selection of circuits and test conditions are not given. Precise instructions for the use of these variable means are given in Section 218-106-301.

1.09 The location statement. At MTF—, is used to refer to all apparatus located on the four basic bays of the MTF.

2. APPARATUS

2.01 The apparatus required for each test is listed in Table B. The details of each item are covered in the paragraph indicated by the number in parentheses. In addition, the following apparatus may also be required.

(a) Apparatus covered in paragraphs 2.06 and 2.07 is required when a portable lamp is used to determine register operation.

(b) Two head telephone sets are required when a portable lamp is not used.

(c) A 32A test set is required when the MTF is controlled from a remote point.

(d) Two 26 cords are required in offices where it is necessary to patch the traffic register to the circuit under test and to patch the traffic register to a battery supply.

2.02 Master test control circuit, SD-25800-01.

2.03 Testing cord, 893 cord, 6 feet long, equippped with two 360A tools (1W13B cord) and two 419A (test connector) tools (for connecting to relay springs of nonwire-spring-type relays) or one KS-6278 connecting clip, one 639A (relay contact connector) tool, and one 651D (relay contact connector holder) tool (for connecting to relay springs of wire-spring-type relays).

→TABLE B←

APPARATUS	TESTS											
	B	C	E	F	G	H	I	J	K	L	N	O
Test Circuit (2.02)	√	—	—	—	—	√	√	√	√	√		√
Cord (2.03)	—	√	—	—	—	√				√		
Cord (2.04)	√	—	√	—	—							√
322A (make-busy) Plug	√	√	√	—	√					√	√	√
Tool (2.05)	—	—	—	√	—			√	√			

2.04 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord) and two 419A (test connector) tools (for use in strapping together springs of nonwire-spring-type relays) or two 639A (relay contact connector) tools and one 651D (relay contact connector holder) tool (for connecting to relay springs of wire-spring-type relays).

2.05 Blocking and insulating tools as required. Use tools and apply as covered in Section 069-020-801.

2.06 Two W2W cords, 10 feet long, each equipped with a 310 plug and two 360-type tools (2W17C cords), two KS-6278 connecting clips, and two 108 cord tips (required when a portable test lamp is used).

2.07 38B lamp socket, equipped with a 2Y lamp (required when a portable test lamp is used).

3. PREPARATION

STEP	ACTION	VERIFICATION
All Tests		
	Note: Refer to paragraphs 1.08 and 1.09.	
1a	If traffic registers are arranged for patching— At traffic register cabinet— Insert cord tip of 26 patching cord into P_ jack for circuit associated with register to be tested.	
2a	Insert cord tip on other end of 26 patching cord into black jack associated with register to be tested (black jack is located on mounting plate with register).	
3a	Insert cord tip of 26 cord into red jack on mounting plate with register to be tested.	
4a	Insert cord tip on other end of 26 cord into any S_ jack located at bottom of jack field.	
5b	If traffic registers are arranged for patching and if battery supply for register to be tested is controlled by C toggle switch and if in OFF position— At traffic register cabinet— Set C toggle switch to ON.	
6c	If traffic registers are ***not*** arranged for patching— Determine from local office records, functional designation of peg count BAT key associated with register to be tested.	
7c	At traffic register cabinet— Operate BAT key associated with register to be tested.	

STEP	ACTION	VERIFICATION
8d	If tests are to be performed without portable lamp— Establish talking circuit between frames where test is to be performed and where observations are to be made.	
9e	If tests are to be performed with portable lamp— At frame where action is to be taken— Insert plug of 2W17C cord, equipped with two KS-6278 connecting clips, into SP jack of miscellaneous circuit.	
10e	Determine from circuit drawing of circuit associated with register to be tested, location of terminal on terminal strip at which common lead to traffic register circuit is connected.	
11e	Connect one lead of 2W17C cord to terminal on terminal strip determined in Step 10e.	
12e	Connect other lead of 2W17C cord to battery.	
13e	Connect leads of 38B lamp socket to leads of another 2W17C cord equipped with two KS-6278 connecting clips.	
14e	Insert plug of this 2W17C cord into any appearance of selected SP jack of miscellaneous circuit close to position where test is to be performed.	
15e	Place lamp so that it can be easily observed.	
16f	If tests are performed with portable lamp and if circuit associated with register to be tested removes ground from common lead to traffic register circuit to operate register— Observe lamp when register operates.	Lamp extinguished.
17g	If tests are performed with portable lamp and if circuit associated with register to be tested applies ground to common lead to traffic register circuit to operate register— Observe lamp when register operates.	Lamp lighted.
18e	If tests are to be performed with portable lamp— To observe scoring of register when using test lamp, proceed as follows: (a) For first observation of scoring of register, observe that test lamp indicates proper condition	

STEP	ACTION	VERIFICATION
	on common lead and that register scores as required. (b) For subsequent observations of scoring of same register, observe lamp indications only. ***Note:*** When the register to be tested scores at timed intervals, the test lamp will not flash with the scoring of the register.	
Tests B, C, E Through L, N, and ▶ O ◀		
19	At MTF— Restore all keys and switches.	
20	Momentarily operate RL key.	All lamps extinguished.

4. METHOD

STEP	ACTION	VERIFICATION
A. Deleted		
B. Peg Count for LAMA, ANI, or Combined LAMA and ANI Transverter Service Call (PC or APC Leads)		
21	Insert make-busy plug into TVMB jack of transverter associated with register being tested.	
22	At transverter frame— Strap 1B, 2B of SC relay.	
23	At MTF— Select transverter.	
24	Select originating line location.	
25	Select code pattern as required for called number.	
26	Select recorder number.	
27	Operate 4DG key.	
28h	If office index selection is required— Select office index.	
29i	If testing traffic registers in a 4-wire office— Operate 4W key.	

STEP	ACTION	VERIFICATION
30j	If multilevel preemption route is selected— Select control digits for acess to route.	
31k	If line selected is AIOD line— Select office designation.	

Testing Traffic Register for LAMA TV (No ANI)

32	Select A through K digits as required for access to LAMA route.	
33	Select TVT (AMA) class of test.	
34	Momentarily operate ST key.	At traffic register cabinet— Register scored once.
35	At MTF— Momentarily operate RL key.	All lamps extinguished.
36	At LAMA TV— Remove strap from SC relay.	
37	At MTF— Remove make-busy plug from TVMB jack.	
38	Restore all keys and switches not required in next test.	
39	Remove all patching cords.	

Testing Traffic Registers for LAMA (Combined LAMA, ANI TV)

40	Select A through K digits as required for access to LAMA route.	
41	Select TVT (AMA) class of test.	
42	Repeat Steps 34 through 39.	

Testing Traffic Registers for ANI (Combined LAMA, ANI TV)

43	Select A through K digits as required for access to ANI route.	
44	Operate ANI key.	
45	Repeat Steps 34 through 39.	

STEP	ACTION	VERIFICATION
C.	**Peg Count Register for CAMA Transverter—Reorder Position Signal Peg Count (ROP Lead)**	
21	Insert make-busy plug into TVMB jack of CAMA transverter associated with register being tested.	
22	At CAMA transverter frame— Connect ground to 1 of ROP relay of CAMA transverter made busy.	
23	At MTF— Select A through G digits that contain a working office code.	
24	Select CNA through CNG calling number digits to match A through G digits selected.	
25	Operate OD, ROP, ORC_ keys.	
26	Operate TVTC or CAMA key to select CAMA class of test.	
27	Select recorder.	
28	Select CAMA transverter made busy.	
29	Momentarily operate ST key.	MRL lamp lighted. At traffic register cabinet— Register scored once.
30	At MTF— Momentarily operate RL key.	All lamps extinguished.
31	At CAMA transverter frame— Remove ground from ROP relay.	
32	At MTF— Remove make-busy plug from TVMB jack.	
33	Repeat Steps 21 through 32 for each CAMA transverter associated with register being tested.	
34	Restore all keys and switches not required in next test.	
35	Remove all patching cords.	

D. Deleted.

STEP	ACTION	VERIFICATION
	E. Peg Count Register for CAMA Transverter Service Call (PC Lead)	
21	Insert make-busy plug into TVMB jack of CAMA transverter associated with register being tested.	
22	At CAMA transverter frame— Strap 8M, 8 of SC relay of transverter made busy.	
23	At MTF— Select A through K digits that contain a working office code.	
24	Select any CNA through CNG digits.	
25	Operate LCD1/2 or ACD key as required.	
26	Operate AD/OD key as required.	
27	Operate ORC_ key.	
28	Operate TVTC or CAMA key to select CAMA class of test.	
29	Select recorder.	
30	Select CAMA transverter made busy.	
31	Momentarily operate ST key.	MRL lamp lighted. At traffic register cabinet— Register scored once.
32	At MTF— Momentarily operate RL key.	All lamps extinguished.
33	At CAMA transverter frame— Remove strap from SC relay.	
34	At MTF— Remove make-busy plug from TVMB jack.	
35	Restore all keys and switches not required in next test.	
36	Remove all patching cords.	
	F. Peg Count Register for ANI Transverter Service Call (PC Lead)	
21	Select transverter.	

STEP	ACTION	VERIFICATION
22	Operate ANI key.	
23	Select line location.	
24h	If line selected is AIOD line— Select office designation.	
25	Insert make-busy plug into TVMB_ jack for transverter selected for test.	
26	At ANI TV— Strap 2F and 2M of SC relay.	
27	At MTF— Momentarily operate ST key.	At traffic register cabinet— Register scored once.
28	At MTF— Momentarily operate RL key.	All lamps extinguished.
29	At ANI TV— Remove strap from 2F and 2M of SC relay.	
30	At MTF— Remove make-busy plug from TVMB_ jack.	
31	Restore all keys and switches not required in next test.	
32	Remove all patching cords.	

G. Peg Count Register for AMA Recorder Seizure (TPC Lead)

Note: Do not hold recorder busy longer than necessary as this may interfere with service.

21	At jack, lamp, and key circuit— Insert make-busy plug into R_MB jack of recorder used in test.	R lamp lighted. At traffic register cabinet— Register scored once.
22	At jack, lamp, and key circuit— Remove make-busy plug from R_MB jack of recorder used in test.	R lamp extinguished. At traffic register cabinet— Register scored once.
23	Repeat Steps 21 and 22 for each recorder.	
24	Restore all keys and switches.	
25	Remove all patching cords.	

STEP	ACTION	VERIFICATION
H. Peg Count of Total Seizures (PC and APC Leads)		
Testing Traffic Register for AMA Call (PC Lead)		
21	Select transverter.	
22	Select TVT (AMA) class of test.	
23	Operate TVT1, DR, RST, 4DG keys.	
24	Select code pattern 3.	
25	Select A through L digits as required.	
26	Select message billing index.	
27	Set TCU switch to select trunk control.	
28h	If trunk control 10 through 19 is selected for test— Operate TCNT key.	
29	Set RN switch to select any trunk control units digit.	
30	Operate OD/AD(0/1) key to select trunk control tens digit.	
31	Select line location.	
32	Insert TVMB plug into transverter selected for test.	
33	At transverter— Strap 8M and 8F of SC relay.	
34	At MTF— Momentarily operate ST key.	At traffic register cabinet— Register scored once.
35	At MTF— Momentarily operate RL key.	All lamps extinguished
36	At transverter— Remove strap from SC relay.	
37	Remove make-busy plug from TVMB_ jack.	
38	Restore all keys and switches; remove all patching cords.	

STEP	ACTION	VERIFICATION
Testing Traffic Registers for ANI Call (APC Lead)		
39	Select transverter.	
40	Operate ANI key.	
41	Select A through K digits as required for access to ANI route.	
42	Repeat Steps 31 through 38.	
I. Peg Count of Total Timing Entry Attempts (TPC Lead)		
21	Verify that emergency trunk control is not in use or made busy.	
22	Operate DR, RST, ANSE keys.	
23	Set TNT, TNU switches to OFF.	
24	Set TCU switch to select trunk control for test.	
25h	If trunk control 10 through 19 is selected for test— Operate TCNT key.	
26	Momentarily operate ST key.	At traffic register cabinet— Register scored once.
27	At MTF— Momentarily operate RL key.	All lamps extinguished.
28	Restore all keys and switches; remove all patching cords.	
J. Peg Count of Total Transverter Timeouts Awaiting Magnetic Tape Recorder (TVTO Lead)		
21	Select transverter.	
22	Select TVT (AMA) class of test.	
23	Operate TVT1 key.	
24	Select line location.	
25	Select A through L digits as required.	
26	Operate OD key.	

STEP	ACTION	VERIFICATION
27	Select recorder number 0.	
28	Set TCU switch to select trunk control.	
29	Select trunk number.	
30	Select message billing index.	
31	Select code pattern as required for called number.	
32	Operate 4DG key.	
33	Operate RST, CHS keys.	
34	Insert make-busy plug into TVMB_ jack.	
35	At transverter— Block AR1A normal.	
36	At MTF— Momentarily operate ST key.	After 2 seconds— At traffic register cabinet— Register scored once.
37	At MTF— Momentarily operate RL key.	All lamps extinguished
38	At transverter— Remove blocking tool from AR1A relay.	
39	At MTF— Remove make-busy plug from TVMB_ jack.	
40	Restore all keys and switches; remove all patching cords	

K. Peg Count of Total Trunk Control Timeouts Awaiting Magnetic Tape Recorder (TCTO Lead)

21	At MTF— Verify that emergency trunk control is not in use or made busy.	
22h	If regular trunk control used in test— Insert make-busy plug into TCTR_ jack for trunk control used in test.	
23	Operate DR, RST, ANSE keys.	
24	Set TNT, TNU switches to OFF.	

STEP	ACTION	VERIFICATION
25	Set TCU switch to select regular trunk control transferred in Step 22.	
26i	If trunk control 10 through 19 is selected for test— Operate TCNT key.	
27j	If emergency trunk control is used for test— Insert make-busy plug into emergency trunk control MB jack.	
28j	Set TCU switch to select emergency trunk control for test.	
29	At trunk control used in test— Block nonoperated STE relay.	
30	At MTF— Momentarily operate ST key.	After 2 seconds— At traffic register cabinet— Register scored once.
31	At MTF— Momentarily operate RL key.	All lamps extinguished.
32	At trunk control used in test— Remove blocking tool from STE relay.	
33h	If using regular trunk control for test— Remove make-busy plug from TCTR_ jack.	
34j	If using emergency trunk control for test— Remove make-busy plug from emergency trunk MB jack.	
35	Restore all keys and switches; remove all patching cords.	

L. Peg Count Register for PBX Number Identification Request and Number Identification Request Failure (NIRT and NIRTF Leads)

21	If testing 4-wire switching systems— Operate 4W key.	
22	Select control digits.	
23	Select transverter.	
24h	If office is arranged for LAMA— Select TVT (AMA) class of test.	
25h	Operate 4DG, TLV keys.	

STEP	ACTION	VERIFICATION
26h	Select message unit billing index.	
27h	Select code pattern 3.	
28h	Select recorder units digit.	
29h	Operate AD/OD key to select recorder tens digit.	
30i	If office is arranged for ANI— Select TVT (ANI) class of test.	
31i	Operate ATLV key.	
32	Select a line location for any PBX station served by translator under test.	
33	Select office designation of selected PBX.	
34	Select A- through D- digits to correspond with numericals of station number expected by translation.	
35	Operate TP, TSLT keys.	
36	Select office index corresponding with translated office number.	
37	Operate CTMB key.	
38	Insert make-busy plug into AIODT-MB jack associated with translator under test. ***Caution: Calls made by PBX stations will be completed by billing to the listed PBX directory number. This test should therefore be made as rapidly as possible to reduce to a minimum the number of calls billed in this manner.***	
39	At AIOD translator frame— Interconnect 11 of TST, 9 of TNTO relays.	
40	At MTF— Momentarily operate ST key.	At traffic register circuit— NIRT, NIRFT traffic registers scored once.
41	At MTF— Momentarily operate RL key.	All lamps extinguished.

STEP	ACTION	VERIFICATION
42	At AIOD translator frame— Remove test connection from TST, TNTO relays.	
43	At MTF— Remove make-busy plug from AIODT-MB jack.	
44	Restore all keys and switches not required in next test.	
M. Peg Count Register for PBX Identification Request and Failure-to-Store (PBXT and FST Leads)		
19	At translator circuit— Momentarily operate PBX relay.	At traffic register circuit— Traffic register scored once.
20	At translator circuit— Momentarily operate FS relay.	At traffic register circuit— Traffic register scored once.
N. Peg Count Register for Lines of AMA Data (LPC Lead)		
21h	If emergency recorder is provided— At master test frame check that emergency recorder is not in service.	No make-busy plug in any recorder transfer jacks.
22i	If emergency recorder is not provided— At master test frame observe that recorder under test is in service.	R_ lamp associated with recorder under test extinguished.
23	At display and control panel— Set POWER switches on display boards to ON. Set DISPLAY switches on ENCODER control boards to ON.	
24	Insert make-busy plug into recorder transfer jack associated with recorder under test.	If emergency recorder is provided— At recorder frame— EW lamp lighted. At display and control panel— TN_ LED lighted for associated recorder control port. If emergency recorder is not provided— At jack, lamp, and key circuit— R_ lamp associated with recorder under test lighted. ***Note:*** If emergency recorder is not provided, the DL lamp is lighted and a minor alarm sounds. Alarm can be silenced by operating the TRR_ AR key at the jack, lamp, and key circuit.

STEP	ACTION	VERIFICATION
25	At display and control panel— Set DISPLAY switches of ENCODER control boards to OFF.	
26	At master test frame— Insert make-busy plug into recorder test jack associated with recorder under test.	
27	At the recorder control board for the recorder under test— Set the DISPLAY switch to the A position. ***Note:*** DISPLAY switch on all other recorder control and ENCODER control boards must be in the OFF position.	
28	At display and control panel— Depress and hold STP (S) pushbutton on right-hand display board.	
29	Depress and release white (S) pushbutton on left-hand board.	
30	Momentarily release the STP (S) pushbutton on right-hand display board.	L LED (RUT) on left display board is lighted. A digit (1/3 format) and B through F digits (2/5 format) displayed on the three display boards for the line of data (001010) sent by the master timer selector step 1.
31	At the traffic register frame— Verify that register scored.	Register scored once.
32	At display and control panel— Set DISPLAY switch of recorder control board for recorder under test to OFF.	
33	At master test frame— Remove plug from recorder test jack.	
34	Remove plug from recorder transfer jack associated with recorder under test.	If emergency recorder is provided— At recorder frame— EW lamp extinguished. If emergency recorder is not provided— At jack, lamp, and key circuit— R_ lamp associated with recorder under test extinguished. ***Note:*** If emergency recorder is not provided, the DL lamp is lighted and a minor alarm sounds. Alarm can be silenced by operating the TRR_ AR key at the jack, key, and lamp panel.

STEP	ACTION	VERIFICATION
	O. Peg Count of Translator Access Circuit (TA) Call Seizures of Translator (PC Lead)	
21	At MTF— Insert make-busy plug into TVMB_jack associated with TA under test.	
22	At TA frame— Strap 2F to 2M of the SC relay.	
23	At MTF— Select A through K digits as required to select AMA route.	
24	Select originating line location.	
25	Select class of service as required for selected route.	
26	Select MISC class of test.	
27	Select completing marker.	
28	Operate CDTT key.	
29h	If office is arranged for dual controllers— Operate CDC0/1 key to select controller associated with TA under test.	
30i	If controller is arranged with shared TA— Operate TAD/TAS key to select dedicated or shared TA under test.	
31	Momentarily operate ST key.	At traffic register cabinet— Register scored once.
32	Momentarily operate RL key.	
33	At TA frame— Remove strap from SC relay.	
34	At MTF— Remove make-busy plug from TVMB_ jack associated with TA under test.	
35	Restore all keys and switches not required in next test.	