

ANSWERING TIME RECORDER — PORTABLE TYPE, SD-96275-01 EQUIPPED WITH TRAFFIC WEIGHTING APPLIQUE TESTS

1. GENERAL

1.01 This section describes a method of testing the SD-96275-01 answering time recorder (ATR) and SD-96497-01 traffic weighting applique (TWA) circuits used for service observing.

1.02 This section is reissued to expand Test A to include observation of the ability of the TWA circuit to ignore false signals when the variable sensitivity feature is provided; to remove Test B as a check of the full-load sensitivity test feature that has been removed from the TWA circuit, and to add a new Test B for use on circuits arranged for sensitivity adjustment; and to revise Test C to include a check of the constant holding time feature of the ATR circuit, to provide a more positive check on the accuracy of the timing circuit of the ATR, and to make allowance for the decreased sensitivity of the TWA circuit when arranged for sensitivity adjustment. Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The tests covered are:

A. Counting and Storing: This test checks the ability of the TWA to count, store, and register normal originated call signals on lines or trunks in service. When the circuit is arranged for sensitivity adjustment, it also checks the ability of the TWA to ignore false signals resulting from the following conditions. (1) Improper or undesirable subscriber action, such as dialing or switchhook flashing while the line or trunk lamp is lighted. (2) Undesirable trunk action such as momentary preliminary seizure of the trunk on panel office trunk guard test signals. (3) AC interference or inductive "kicks" coupled through the observed lamp leads. The test thus provides a quick and simple observa-

tional check of the accuracy of the results obtained with the ATR-TWA. This test is primarily for verification and is not ordinarily made on a scheduled basis.

B. Sensitivity Test: This test checks the sensitivity setting of TWA circuits arranged for sensitivity adjustment in terms of the response of the counting circuit to repeated signals on the same input.

C. Timing, Counting, and Registration: This test checks the operation of the timing and register control circuits, including the constant holding time feature of the timing circuit, and the operation of the N, D, and S registers. It also checks the count storage and read-out functions of the TWA circuit. Count storage refers to the stepping of the PC selector to store the total calls during timing of one call, and read out refers to the stepping of the RO selector as it transfers the count onto message registers

D. Concentrating: This test checks the following features. (1) That the timing circuit can be seized over each of the inputs to the ATR. (2) That only one line or trunk can be cut through to the timing circuit during a timing interval. (3) That a call cannot be partially timed.

E. Input Paths: This test checks the input circuits between the switchboard answering lamp and the input plug. It thus constitutes a check of the lamp leads from the switchboard multiple through the distributing frame, the 234 plug shoe, the service observing jack panel, and the 300A input plug.

F. Reseizure Prevention: This test checks that the lamp lead supervisory relay is not reoperated, and thus the answer time de-

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termination on the timed call is not interfered with, should a timed call be answered and served and the trunk released and re-seized during the same timing interval. It also checks that this feature is delayed until after the first 2 seconds when the circuit is so arranged (Fig. 22 of ATR provided).

1.04 Test E should not be made when the observed lines or trunks are in toll or in No. 9C or 12 manual switchboards. In these cases, the input signal leads should be tested for continuity by originating incoming test calls on the observed circuits using locally available means, and by verifying that these calls are counted by the TWA circuit.

1.05 Heavy traffic periods will facilitate making Test A, since the verifications required are directly related to the calling rate on the observed group. This test also provides for checking the functioning of the registers in the operating room. For this portion of the test, verifications will be required at the operating room location of the registers.

1.06 The traffic department should be notified before starting and after completing these tests, so that any signals caused by performing these tests can be disregarded.

1.07 The register box should be brought to the ATR location in the terminal room and patched to the jacks provided, when making Tests C, D, and E. This may also be done for convenience for Test B when it is to be performed at the same time. Return the register box to the operating room when all tests are completed.

1.08 The timing interval in use in the office, which is obtained by a connection on the TM selector bank, should be ascertained from office records for use in Tests C and D.

1.09 Test B should be made only on circuits arranged for sensitivity adjustment of the TWA.

1.10 The TST key should be operated if the lines or trunks associated with the ATR-TWA furnish a battery signal (for example, grounded line or trunk lamps), and normal if ground signals are furnished (for example, battery lamps).

1.11 *Lettered Steps:* A letter a, b, c, etc, added to a step number in Part 3 or 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.

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

2. APPARATUS

All Tests

2.01 Two patching cords, P3F cord, 6 feet long, equipped with one 309 plug and one 310 plug (3P12E cord).

Tests A and B

2.02 Blocking tools, as required. Use tools and apply as covered in Section A502.031.

Test B

2.03 Testing cord, 893 cord, 6 feet long, equipped with two 360A tools (1W13B cord), one 411A (test pick) tool, and one KS-6278 connecting clip.

Tests B and C

2.04 KS-3008 stop watch, or equivalent.

Tests B and E

2.05 No. 258C plugs (dummy) or equivalent, as required (maximum 25).

Tests C and D

2.06 Two patching cords, P3F cord, 6 feet long, equipped with one 309 plug and one 310 plug (3P12E cord).

Tests E and F

2.07 Patching cord, P3F cord, 6 feet long, equipped with one 309 plug and one 310 plug (3P12E cord).

3. PREPARATION

| STEP | ACTION | VERIFICATION |
|------|--------|--------------|
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Tests B, C, D, E, and F

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| 1 | Connect A, B jacks of register box to A, B jacks, respectively, of TWA, using two P3F patching cords. | |
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Tests C, D, E, and F

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| 2 | Operate or restore TST key, as required (see 1.10). | |
| 3 | With all selector switches at rest — Remove C plug from C jack of TWA. | |

Caution: Do not allow the plug terminals to become shorted together or grounded.

4. METHOD

| STEP | ACTION | VERIFICATION |
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A. Counting and Storing

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| 1 | With all selector switches at rest — Block nonoperated P relay of ATR. | |
| 2 | Observe lamp panel and PC selector in TWA until sufficient call signals have been received to verify proper operation. | PC selector advances one terminal each time pair of A and B lamps is lighted due to seizure of associated line or trunk; never advances without simultaneous lighting of a pair of lamps; and advances one terminal only should a pair of lamps display pulsing, flashing, or interrupted signal, such as might result from dial pulses, switchhook flashing, TG test pulses, etc. |
| 3 | Remove blocking tool from P relay. | RO selector advances until it reaches terminal numbered same as that on which PC selector is standing. |
| 4 | Block operated SA relay in TWA. | |

| STEP | ACTION | VERIFICATION |
|------|--|---|
| 5 | Observe N, D, S register operations in operating room until sufficient call signals have been received to verify proper operation. | At end of each timing cycle, N, D registers operate once for each call counted on PC selector. S register operates once for each timing cycle. |
| 6 | Remove blocking tool from SA relay. | |

B. Sensitivity Test

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| 2 | Insert dummy plug in any TST jack. | |
| 3 | Block nonoperated P relay of ATR. | |
| 4 | Operate manually SS relay of ATR. | PC selector advances one step. |
| 5 | Apply 24- or 48-volt battery, or ground, whichever is normally connected to lamp leads by observed circuits, through testing cord to L2 lead of TWA circuit associated with input plugged open in Step 2, at repeated intervals of 1.5 seconds on, 1.5 seconds off. | PC selector advances one step for first pulse, does not follow succeeding pulses. |
| | <i>Note:</i> Signals may be conveniently inserted at the terminal of the B lamp in the TWA lamp panel associated with the input selected for test. | |
| 6a | If PC selector follows 1.5-second pulses — Adjust sensitivity of TWA circuit per CD-96497-01. | |
| 7 | Repeat Step 5 with pulse intervals of 5 seconds on, 5 seconds off. | PC selector advances one step for each application of test signal. |
| 8b | If PC selector does not follow 5-second pulses — Adjust sensitivity of TWA circuit per CD-96497-01. | |
| 9 | Remove blocking tool from P relay of ATR. | ATR advances to time-out, restores to normal. TWA reads out, restores to normal. |
| 10 | Remove dummy plug from TST jack. | |

C. Timing, Counting, and Registration

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| 4 | Patch T1 jack to any TST jack, T2 jack to any TOS jack. |
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Note: Steps 5 and 6 must be performed within one timing interval (see 1.08).

| STEP | ACTION | VERIFICATION |
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| 5 | Operate SUB1 key, start timing with stop watch. | BY lamp lights. TM selector starts stepping. |
| 6 | Restore SUB1 key after any elapsed time within timing interval. | TM selector continues stepping until end of timing interval, when N, S registers score once. BY lamp is extinguished. |
| <p><i>Note:</i> Steps 7, 8, and 9 must be performed within one timing interval. The following is a typical procedure, assuming 10-second setting of timing circuit. Operate SUB1 key; operate momentarily OPR2 key at 2 and 8 seconds of timing interval; restore SUB1 key at 9 or 9.5 seconds of timing interval.</p> | | |
| 7 | Operate SUB1 key, start timing with stop watch. | BY lamp lights. TM selector starts stepping. |
| 8 | Operate momentarily OPR2 key one or more times during timing interval resulting from previous step. | |
| <p><i>Note:</i> Allow 5 seconds minimum between operations of OPR2 key.</p> | | |
| 9 | Restore SUB1 key at least 0.5 second before end of timing interval. | N register scores once for each operation of OPR2 key plus once for operation of SUB1 key. D register does not score. S register scores once. BY lamp extinguished. |
| <p><i>Note:</i> Steps 10 and 11 must be performed within one timing interval, and Step 12 shortly thereafter. The following is a typical procedure, assuming 10-second setting of timing circuit. Operate SUB1 key; operate momentarily OPR2 key at 2 and 8 seconds of timing interval; restore SUB1 key 11 or 11.5 seconds after start of timing interval.</p> | | |
| 10 | Operate SUB1 key, start timing with stop watch. | BY lamp lights. TM selector starts stepping. |
| 11 | Operate momentarily OPR2 key one or more times during timing interval resulting from previous step. | |
| <p><i>Note:</i> Allow 5 seconds minimum between operations of OPR2 key.</p> | | |

| STEP | ACTION | VERIFICATION |
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| 12 | Restore SUB1 key no sooner than 1 second after end of timing interval. | N, D registers score once for each operation of OPR2 key plus once for operation of SUB1 key. S register scores once. BY lamp extinguished. |
| <p><i>Note:</i> Steps 13 and 14 must be performed within one timing interval, and Step 15 shortly thereafter. The following is a typical procedure, assuming 10-second setting of timing circuit. Operate SUB1 key; operate momentarily OPR2 key at 1 and 6 seconds of timing interval, and then once again when N and D registers start to score.</p> | | |
| 13 | Operate SUB1 key, start timing with stop watch. | BY lamp lights. TM selector starts stepping. |
| 14 | Operate momentarily OPR2 key one or more times during timing interval resulting from previous step. | |
| <p><i>Note:</i> Allow 5 seconds minimum between operations of OPR2 key.</p> | | |
| 15 | Operate momentarily OPR2 key once again during register scoring activity which follows timing interval, but no sooner than 5 seconds after its last operation in Step 14. | N, D registers score once for each operation of OPR2 key, including once for OPR2 operation during register scoring activity, plus once for operation of SUB1 key. S register scores once. BY lamp extinguished. |
| 16 | Restore SUB1 key. | |
| 17 | Remove patching cords from T1, T2, TST, TOS jacks. | |
| 18 | Replace C plug in C jack of TWA. | |

D. Concentrating

- 4 Patch first TST jack to T1 jack.
- 5 Patch second TST jack to T2 jack.

Note: Steps 6, 7, and 8 must be made within one timing interval (see 1.08).

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| 6 | Operate SUB1 key. | BY lamp lights. TM selector starts stepping. |
| 7 | Operate SUB2 key. | |

| STEP | ACTION | VERIFICATION |
|---|---|--|
| 8 | Restore SUB1 key. | At end of timing interval — N register scores twice. S register scores once. D register does not score. |
| 9 | Restore SUB2 key. | |
| 10 | Remove patching cords from TST jacks. | |
| 11 | Patch second TST jack to T1 jack. | |
| 12 | Patch third TST jack to T2 jack. | |
| 13 | Repeat Steps 6 through 9, continuing in this manner until all TST jacks have been used, making last test using last TST jack and first TST jack. | |
| 14 | Remove patching cords from T1, T2, TST jacks. | |
| 15 | Replace C plug in C jack of TWA. | |
| E. Input Paths | | |
| 4 | Insert dummy plugs into all TST jacks of ATR. | |
| 5 | Remove C1 plug from C jack of ATR. | |
| 6 | Insert C plug into C jack of ATR. | |
| 7 | Patch T1 jack, first TOS jack. | |
| 8 | Operate S1 key. | TST lamp lights if call is in progress on observed circuit. |
| 9a | If TST lamp lights — Release S1 key. | TST lamp extinguished. |
| <i>Note:</i> Repeat Steps 8 and 9a until TST lamp remains dark when S1 key is operated. | | |
| 10 | With TST lamp dark — Operate L1 key. | TST lamp lights when call is answered. |
| 11 | Release L1, S1 keys. | TST lamp extinguished. |
| 12 | Move plug from first TOS jack to second TOS jack, repeat Steps 8 through 11, continuing in this manner on successive TOS jacks until all circuits have been tested. | |

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| STEP | ACTION | VERIFICATION |
|-------------|--|---------------------|
| 13 | Remove C plug from C jack of ATR, insert into C jack of TWA. | |
| 14 | Insert C1 plug of connecting cable into C jack of ATR. | |
| 15 | Remove patching cord from T1, TOS jacks. | |
| 16 | Remove all dummy plugs. | |

F. Reseizure Prevention

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| 4 | Patch any TST jack to T1 jack. | |
| 5 | Operate SUB1 key. | TM selector starts stepping. |
| 6 | When TM selector reaches terminal 4 — Restore SUB1 key. | |
| 7 | When TM selector reaches terminal 8 — Operate SUB1 key. | At end of timing interval — N, S registers score once. D register does not score. |
| 8 | Restore SUB1 key. | |
| 9a | If circuit is arranged for 2-second delay before reseizure prevention becomes effective — Operate SUB1 key. | |
| 10a | When TM selector reaches terminal 4 — Restore SUB1 key. | |
| 11a | When TM selector reaches terminal 6 — Operate SUB1 key. | At end of timing interval — N, D, S registers each score once. |
| 12a | Restore SUB1 key. | |
| 13 | Remove all patching cords. | |
| 14 | Replace C plug in C jack of TWA. | |