

UNIVERSAL SERVICE ORDER
LINE MESSAGE REGISTER TESTS AND REGISTER ASSIGNMENTS
LINE FINDER EQUIPMENT
STEP-BY-STEP SYSTEMS — USO

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1. GENERAL

1.01 This section:

- (a) Establishes a method of reporting initial and final register readings. This procedure applies to offices where message register records are maintained by Revenue Accounting electronic data processing (EDP) computer operations.
- (b) Shows the particular register tests to make under various conditions.
- (c) Explains how to test message registers in offices where register lead continuity is verified through the test distributor train.
- (d) Explains how to verify the continuity of register leads associated with PBX one-way

trunks, or "sending lines", which do not have connector multiple and cannot be tested through the test distributor train in the usual manner. It also covers the procedure for call-through tests of the register associated with these sending lines.

1.02 In addition, it is issued to:

- (a) Add an optional test set, SS 31171-01, which is equivalent to HS 1711
- (b) Delete the requirement for a 100 operation test on service order work

Note: Marginal arrows used to indicate changes are omitted.

1.03 Care should be exercised in connecting to terminals in order not to operate the register.

1.04 The message register reading on a working subscriber line should be read and recorded on the proper form just before starting and immediately after completing an individual test.

1.05 Reliability of registers associated with subscriber lines so directly concerns the subscriber that its operating features are of unusual importance. Should any register fail to meet the various tests outlined in this section, it must be replaced with one that will meet test requirements.

1.06 Revenue Accounting provides a monthly print-out (two copies) of the vacant message registers, with their readings, for each CO code.

- (a) One copy is for the plant service center (PSC). It serves as their vacant register assignment list.
- (b) The other copy is available for the central office (CO) forces. It may be used to make a physical check of the vacant registers, if desired.

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1.07 Since the Accounting computer maintains records of all working and nonworking message registers, it is no longer necessary to:

- (a) Maintain a message register book in the PSC
- (b) Compile CO register assignment lines
- (c) Paper-out registers when they are disconnected
- (d) Wait until after the next billing round before reusing disconnected registers

2. DEFINITIONS

2.01 The term "regular subscriber lines", as used in various subheadings of this section, includes all lines in line finder groups having message registers associated with them. It does not include lines which do not have connector multiples, which are used for PBX one-way trunks to the CO. These one-way lines are covered under the sub-heading of "sending lines".

2.02 Message register readings, as used in this section, mean:

- **ORIGINAL Readings:** The reading on the register before the register is assigned
- **INITIAL Reading:** The reading when service is established and tested (the original reading plus the test registrations)
- **FINAL Reading:** The register reading when service is disconnected, the register is changed, or service is changed

2.03 Test Registrations: This is a test applied to the register, after CO connections (frame work) are completed, which causes the register to operate and ensures that the register is working properly.

2.04 Register Reading List: Form P 548 is used for listing service orders requiring message register readings. (See Exhibit 1.)

3. MESSAGE REGISTER TESTS

General

3.01 Message Register Tests using Test Sets SD-30490-01, HS-1171 or SS-31171-01, and

Dial Handset: Use these procedures in offices where register lead continuity is verified through the test distributor train. Part 4 of this section describes the test steps and procedures. The tests covered in this section are:

- Checking continuity of cross-connections
- Operate, nonoperate, and hold tests
- Interrupter Tests
- Call-Through Tests

3.02 These tests have the following applications:

- (a) For new service orders, use the test described in Part 4, Call-Through Tests
- (b) For line message register rearrangements, use the tests described in Part 4, Checking Continuity of Cross-Connections and/or Call-Through Tests, to test newly assigned registers.
- (c) For a request for register investigation, Form K-3343, use the tests described in Part 4, Checking Continuity of Cross-Connections, or Operations Tests and Interrupter Tests.
- (d) For a request for register investigation, Form A-1960-E, use the test described in Part 4, Call-Through Tests.

Apparatus

3.03 Apparatus for *regular subscriber lines* includes:

- A message register test set per SD-30490.01 (J34706)
- A message register checking set per drawings HS-1171 or SS 31171-01
- Four No. P3E cords equipped with No. 310 plugs (3P7A)
- One No. W1C cord 12-feet long, equipped with a No. 116 plug and a No. 360-B tool, and one 419-A tool, or equivalent (IW8A cord is equipped with a 419-A tool)
- One operator telephone set or one E2A-3 handset

3.04 Apparatus for *sending lines* includes:

- All apparatus specified in 3.03

- An additional operator telephone set or E2A-3 handset [for use by assistant at the intermediate distributing frame (IDF) when testing sending lines]
- One No. P4L cord equipped with one No. 289A and one No. 234 plug (4P6A)
- One 1011G handset, or equivalent

Test Set Preparation

3.05 For regular subscriber lines, prepare the test set (located at the message register rack) by making the following connections between the test set and the rack.

Note: The DISC-ST key should be in a normal position throughout this test.

STEP	PROCEDURE
1	Connect the 48V jack of test set SD-30409 0-01 to the 48-volt battery and ground jack on the register rack, using the P3E cord
2	Connect the 65V jack to the 65V jack on the register rack, using the P3E cord
3	Connect the Test jack of the checking set to the Test jack on the register rack, using the P3E cord
4	Connect the operator jack of the checking set to the operator jack on the register rack, using the P3E cord
5	Connect the T-1 jack of the test set to the message register under test (clip it directly onto the back of the register, using the W1C cord)
6	Connect the hand test set or operator telephone set to the telephone jack of the checking set

3.06 For sending lines, make the following preparations:

STEP	PROCEDURE
1	Connect cords as specified in 3.05, Steps 1 through 5

STEP	PROCEDURE
2	If there is an assistant at the IDF, connect the operator telephone set or the E2A-3 handset to the TEL jacks at the IDF and at the register rack
3	With the P4C cord, connect jacks T and T1 of the test line located at the VIDF to the tip, ring, sleeve, and meter terminals of the line circuit associated with register under test

Note: The No. 289A plug should be inserted in the jacks so that the plug designation is on top. If using older type plugs, connect the plug nearest the notched portion of the plug shell to jack T.

4 Connect the T and R terminals of the hand test set 240A plug to the top two springs of the HS jack on the register rack

4. TESTS

Checking Continuity of Cross-Connections

4.01 To check cross-connections of message registers for regular subscriber lines, perform the following steps:

STEP	PROCEDURE
<i>Individual Line or Ring Party on Two-Party Lines</i>	
1	Operate the CT key on the test set; the CT lamp should light (if the lamp does not light, test the line for busy as outlined in 4.03 and 4.04)
2	Operate the DIAL key on the checking set
3	Dial the multiple number of the message register under test; when the last digit is dialed, the CT lamp on the test set should be extinguished

Note: This verifies continuity of the message register circuit from the connector multiple to the message register.

4 Recheck by operating the HOLD key: Each time the HOLD key is operated, the CT lamp should light; when the HOLD key is restored, the CT lamp should extinguish

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STEP PROCEDURE

- 5 Restore all keys

Tip Party of Two-Party Lines

- 6 Operate the CT key on the test set; the CT lamp should light (if the lamp does not light, test the line for busy as outlined in 4.03 and 4.04)
- 7 Operate the DIAL key on the checking set
- 8 Dial the multiple number of the message register under test
- 9 Operate the HOLD key
- 10 Operate the TEST TR key; when the TEST TR key is operated, the CT lamp should be extinguished

Note: This verifies the continuity of the message register circuit, from the connector multiple to the message register, and assures the operation of the tip register when the tip party on the line makes a call.

- 11 Recheck by restoring and reoperating the TEST TR key; each time this key is restored, the CT lamp should light and be extinguished when the key is reoperated

Note: Should the CT lamp light when the CT key is operated, but is not extinguished when the multiple number is dialed and the HOLD and TEST TR keys are operated, test for a "connector multiple busy" as outlined in 4.04.

- 4.02** To check the cross-connections of registers for sending lines:

STEP PROCEDURE

- 1 Operate the CT key of the test set; the CT lamp should light (if the CT lamp does not light, test the line for busy as outlined in 4.05)
- 2 Operate the switch of the hand test set to TALK position and momentarily short-circuit the two lower springs of the HS jack on the register rack; when dial tone is received, the CT lamp should be extinguished
- 3 Restore the CT key of the message register test set and the switch of the hand test set

Busy Line Condition — Regular Subscriber Lines

- 4.03** **Individual Line or Ring Party on Two-Party Line:** If the line is busy, CT lamp will not light when CT key is first operated.

STEP PROCEDURE

- 1 Check for actual conversation on the line by operating the DIAL key on the message register checking set
- 2 Dial the multiple number
- 3 Operate the LIST key and listen for conversation
- 4 If the line is actually in use, restore all keys and remove the clip from the register
- 5 Proceed with the test when the line becomes idle

- 4.04** **Tip Party of Two-Party Line:** If the line is busy due to either party making an outgoing call, the CT lamp will not light when the CT key is first operated.

STEP PROCEDURE

- 1 Check for conversation on the line as outlined in 4.03; if the line is busy due to an incoming call, the CT lamp will light when the CT key is first operated, but will remain lit after the number is dialed on the checking set and the HOLD and TEST TR keys are operated
- 2 Check for the condition in Step 1 by operating the DIAL key on the message register checking set
- 3 Dial the multiple number
- 4 Operate the LIST key and listen for conversation on the line
- 5 If the line is actually in use, restore all keys and remove the clip from the register
- 6 Proceed with the test when the line becomes idle

Busy Line Condition — Sending Lines

- 4.05** If the line under test is busy, the CT lamp will not light when the CT key is first operated.

STEP	PROCEDURE
1	Check for actual conversation on the line by listening in the receiver of the hand test set which is connected to the HS jack on the register rack
2	If the line is actually in use, wait until the line becomes idle as indicated by the CT lamp lighting when the CT key is operated
3	Proceed with the test

Operation Tests

4.06 Operation tests of registers associated with PBX sending lines are the same as for registers associated with regular lines.

4.07 When testing registers associated with PBX trunks connected to trunk circuits (per SD-31757-01), open the message register lead at the IDF before proceeding with operation tests of the register.

4.08 When testing the register of an individual line or ring register of a two-party line, the TR key should be normal. When testing the tip party register, operate the TR key and leave it operated during the test.

STEP	PROCEDURE
<i>Operate Test</i>	
1	Operate the OPR key
2	Set the OPR resistance slide for the specified test "operate" value of the register
3	Restore the OPR key, then operate it two or three times to ensure that the register operates once, and only once, for each time the key is operated

Nonoperate Test

4	Operate the NO key
5	Set the NO resistance slide for the specified test "nonoperate" value of the register
6	Restore the NO key, then operate it two or three times to ensure that the register does not operate

Hold Test

7	Operate the HOLD key
8	Set the HOLD resistance slide for the specified test "hold" value of the register
9	With the HOLD key operated, operate the OPR key; observe that the register operates
10	Restore the OPR key to normal
11	With the HOLD key still operated, re-operate the OPR key; observe that the register does not advance

Note: This indicates that the armature remains in an operated position.

12	Restore the HOLD and OPR keys to normal
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Interrupter Tests

4.09 The interrupter tests of registers associated with PBX "sending lines" are the same as for registers associated with regular lines.

STEP	PROCEDURE
1	Operate the OPR key
2	Set the OPR resistance slide for the specified test "operate" value of the register
3	Restore the OPR key to normal
4	Record the register reading
5	Operate the interrupter key lever of the test set to its extreme downward position; then release it and do not interfere with its return movement

Note: Check that the register operates 100 times.

Call-Through Tests

Caution: If the message register lead has been operated at the IDF, it should be closed before proceeding with call-through tests. Call-through tests should be made in all cases following the closing of message register leads to ensure that the circuit is properly restored.

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Regular Subscriber Lines

STEP PROCEDURE

Individual or Ring Party

- 1 With the No. 419 tool of the W1C cord connected to the winding of the register under test, operate the CT key on the test set; the CT lamp should light
- 2 Operate the DIAL key on the checking set
- 3 Dial the multiple number of the register under test; when the last digit is dialed, the CT lamp on the test set should be extinguished
- 4 Operate the HOLD and TEST TR keys; dial tone should be heard in the receiver
- 5 Dial a test number to obtain a reversal of the battery; when buzzer tone is heard in the receiver, restore first the HOLD and then the TEST TR keys — the register should advance one digit

Tip Party

- 6 Proceed as outlined in Steps 1 through 5, except depress the T-GRD key of the checking set while dialing the first two digits of the buzzer number

Sending Lines

STEP PROCEDURE

- 1 Connect the P4C cord to the line under test at the IDF as described in 3.06, Step 3
- 2 Connect the hand set plug to the HS jack on the register rack
- 3 Operate the CT key of the test set; the CT lamp should light
- 4 Operate the C button of the hand test set and momentarily short-circuit the two bottom springs of the HS jack
- 5 Note that when dial tone is received, the CT lamp extinguishes
- 6 Dial a test number in the reverse battery group

STEP

PROCEDURE

- 7 When buzzer tone is heard in the receiver, release the C button; the register should advance one digit

Reports

4.10 Enter the required record of this routine on Form P 548 and forward it according to local instructions.

5. FORM P 548

Description

5.01 The Register Reading List, Form P 548 (Exhibit 1), is a two-part snap-out, 5-1/2 inches by 8-inches. It is printed in color on a white background.

- PR (black) — Service order completion group copy
- F (red) — Frame copy

Preparation

5.02 This form is prepared by the CO forces. The PR copy is sent to the service order completion group. The F copy is retained by the CO.

5.03 It is imperative that Form P 548 be sent to the service order completion group at regular intervals throughout the day. The service order completion group forces *must* have the final and/or initial register readings to enter on the service order before these orders can be put on the service order completion network. If the service order completion group is remote from the CO, these readings will be called to the service order completion group.

5.04 The CO forces will call and/or send register readings to the service order completion group at 10 a.m., 12 noon, 2 p.m., 4 p.m. each business day; all remaining register readings must be to the completion group by 5 p.m. It is the responsibility of the frame supervisor to get the register reading to the completion group by the specified times. If there are no register readings in the CO that are required for completion of service orders, the frames group does not need to make the calls at the prescribed intervals.

5.05 Immediately upon completion of a service order for new service, or any change in CO facilities involving message registers, perform tests to verify cross-connections and register operations.

5.06 Enter initial register readings on Form P 548, as shown in Exhibit 1, after completion of the register test. The CO will also enter the initial register reading in the READING column of the service order. (See Exhibit 2.)

Note: The initial reading includes the original reading plus test registrations.

5.07 Enter the final register readings from disconnect or change of service orders of Form P 548 as shown in Exhibit 1. The CO will also enter the final register reading in the READING column of the service order as shown in Exhibit 2.

Caution: Do not make disconnect entries on Form P 548 or the service order until after the register jumper is removed. This assures that the correct register reading is recorded on these forms.

5.08 If the service order is cancelled or is changed to flat rate service after the register is assigned, the PSC will recover the register assignment for future use. No entry need be made on Form P 548.

5.09 If the register fails to meet the various tests, replace the register with one that will meet the test requirements. If the register cannot be replaced immediately, call the PSC and request another register assignment.

5.10 On all service orders that disconnect and reconnect message rate service within the same CO, such as change or In and Out service orders, make two entries on Form P 548.

- (a) List the first entry as "D" (disconnect), showing the register number and its final reading.
- (b) List the second entry as "C" (connect), showing the register number and its initial reading.

Note: Message rate service orders that involve no message register jumper work on the frame must still have a disconnect and a connect entry on Form P 548, because the bills are prepared by EDP.

5.11 Reporting register readings in connection with register rearrangements and register investigations involving Forms K 3343 or A 1960-E shall be handled as described in:

- Section 680-895-937PT — Register Rearrangements
- Section 002-591-913PT, Appendix 2 — Forms K-3343 and A-1960-A

REGISTER READING LIST P548 (4-66)							
DATE _____		CENTRAL OFFICE _____			PSC _____		
ORDER NO.	CONN. DISC.	TEL. NO.	REG. NO.	READING	POSTED		REMARKS
					FRAME	SOC	
373452	① C	1-6371	2468	② 8226	③ H	④ JD	
T372153	C	2-7373	3121	0018	LM	JH	
F374651	D	583-1242	5612	0531	CD	AB	
451323	D	583-1676	6172	9311	H	JH	

ACTUAL SIZE 5-1/2" x 8"

- ① "C" or "D" is entered when register is connected or disconnected.
- ② Initial or final reading — depending on type of order.
- ③ Initials of originator posting entries. (CO)
- ④ Initials of the individual who transcribed required information to service order. (Service Order Completion Group)

Typical Entries on Register Reading Form
Exhibit 1

LC									
CUS	TD	DD	APPT	ACC	AO	CS	SLS		
295-1234		08204	0824	:					
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	CO 4025-USO (4-74)		
---S&E		LMB		① RGN 14207 RGR 0529		③ 0528		②	

				TYPE ORDER				IOP	BLK	TZ/RZ		
CUSTOMER				REF	FEED DIST	PROT REQ	B BOX/AP/DIST TERM				HOME PAGE PR	
ADDRESS				A								
S.O. NO.		DUE DATE		DATE COMP								
CLASS OF SER		DIAL SYSTEM SWBO (PE RTS)		INSTALLER								
MISC				PREPARED BY								
				B								
				C								
				D								
				E								
				F								
ITEM	LINE	CO EQUIPMENT	REG AUX	READ EQPT	TIE CABLE/PR	CLR	REMARKS	REF	FEED PR	FEED/IN SP/ BOR	DIST SP/ BOR	DIST TERM SP
1	295-1234		14207	3997			3996					
			①	③			②					

- ① Register number may be 4 or 5 digits and is taken from the corrected message register assignment list (printout).
- ② Original reading taken from printout. This is always a 4-digit number.
- ③ Initial reading — register reading when service is established and is the original reading plus the test registration.

Typical Entries on Service Orders
Exhibit 2