

LINE CONCENTRATOR NO. 1A CUTOVER PROCEDURES AND ADDITION AND DELETION OF INDIVIDUAL LINES

1. GENERAL

1.01 This section covers the general procedures to be followed when cutting a line concentrator into service, when adding lines to an in-service concentrator, or when adding new concentrator facilities to existing systems.

1.02 This section is reissued to make minor corrections in form.

1.03 This section is intended to:

- Outline general cutover procedures.
- Eliminate possible error at time of cutover.

- Establish a definite order of cutover.
- Make use of normal features of the line concentrator as an aid to cutover.

1.04 Prior to cutover, the following assignments must be complete:

- Signal leads.
- Trunk pairs.
- Concentrator line terminal assignments for existing and new lines.
- Distribution pair and central office line equipment assignment for all new lines to be concentrated.

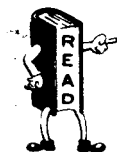
2. CUTOVER PROCEDURE

STEP

CONTROL UNIT

REMOTE UNIT

A. Line at a Time, 100-Line Remote Unit, 22 Cable Pairs Available Initially



Prior to application of this section, the procedures outlined in Section 067-105-501, Line Concentrator No. 1A, Preinstallation Tests and Tests and Inspections at Time of Installation, should have been completed.

1 Establish a nonconcentrated talking path between the remote and control units.

2 Place, but do not terminate, all line cross connections between the concentrator terminal strip on the distributing frame and the line equipment appearances on the distributing frame in accordance with SD-96536-01, CAD 13 or CAD 14, and line assignments.

3 Block all *SL*- relays nonoperated.

At the cross-connect terminal, place, but do not terminate, all stub cable leads at their assigned line appearances in accordance with SD-96537-01, CAD 1, Section 639-060-201, Terminating Concentrator Stub Cable in Cross-Connecting Terminals, and line assignments.

Electrically release all *CO*- relays. Check for absence of ground on terminal 2 of each *CO*- relay. Check for absence of battery on terminal 5 of each *CO*- relay. (Use high-resistance ground if low-resistance telephone test set such as 1011B is used.)

Note: *CO*- relays are to be released by the following method:

- (a) Place the positive terminal of a 4.5-volt battery to ground on the remote unit.
- (b) Place the negative terminal of a 4.5-volt battery on terminal 1 of each *CO*- relay.

STEP	CONTROL UNIT	REMOTE UNIT
4	At the distributing frame, remove the cross connection between the line equipment appearance and the feeder cable pairs for the line being placed on the concentrator, and terminate the cross connection between the concentrator terminal strip on the distributing frame and the line equipment appearance.	At the cross-connect terminal, remove the cross connection between the distribution and feeder cable pairs of the line to be concentrated, and terminate the cross connection between the distribution cable pair and the stub cable pair for this line.
	<i>Note:</i> Ensure that corresponding concentrator line terminals are used at both units.	
5		At the cross-connect terminal, place telephone test set in a monitor condition and connect across line terminals of line just placed on concentrator.
6	Remove blocking tool from the <i>SL</i> - relay and place a terminating call to the line.	
7		When customer answers, verify by conversation that proper directory number has been reached.
8		If customer does not answer, verify at station following standard procedures. <i>Note:</i> Repeated attempts to reach a customer should be made during the cutover procedure and unanswered stations visited at the end of cutover of all lines involved or at some convenient intermediate point.
9		Place telephone test set in a talking condition. When dial tone is received, dial one digit to break dial tone.
10		Return test set to on-hook condition.
11	Repeat Steps 4 through 10 for all remaining lines to be cut over.	
	<i>Note:</i> Do not remove blocking tools from <i>SL</i> - relays or reoperate <i>CO</i> - relays for line terminals not being placed in service.	

B. Line at a Time, 100-Line Remote Unit, 3 Cable Pairs Available Initially

Note: The following tests of Section 067-105-501, Preinstallation Tests and Tests and Inspections at Time of Installation, should have been applied:

- A. Visual Inspection of Equipment
- B. Tests of Line and Cutoff Relays
- C. Power (Steps 1 through 7)
- E. Insulation Resistance of Signaling Leads (Step 4)
- F. Interference on Signaling Leads (Steps 2 and 3)

STEP	CONTROL UNIT	REMOTE UNIT
1	Establish a nonconcentrated talking path between the remote and control units.	
2	Place, but do not terminate, all line cross connections between the concentrator terminal strip on the distributing frame and the line equipment and feeder cable pair appearances in accordance with SD-96536-01, CAD 13 or CAD 14, and line assignments.	At the cross-connect terminal, place, but do not terminate, all stub cable leads at their assigned line appearances in accordance with SD-96537-01, CAD 1, Section 639-060-201, Terminating Concentrator Stub Cable in Cross-Connecting Terminals, and line assignments.
3	Make busy all trunk appearances by blocking all A and C hold magnets operated.	
4	Terminate the cross connection for the four signal leads and for trunk 00 between the distributing frame concentrator terminal strip and the feeder cable appearance on the distributing frame in accordance with SD-96536-01, CADs 11, 12, 13, or 14. Remove blocks for trunk 00 when connection is completed.	At the cross-connection terminal, terminate cross connections for the four signal leads and for trunk 00 in accordance with SD-96537-01, CAD 1, and Section 639-060-201, Terminating Concentrator Stub Cable in Cross-Connecting Terminals, and trunk assignments.
5	Proceed with Test I, Circuit Operation and Line and Trunk Call Through Tests, in accordance with Section 067-105-501, Preinstallation Tests and Tests and Inspections at Time of Installation. <i>Note:</i> For the purpose of this Section, the call through test should be slightly modified. Since only trunk 00 is connected, all line terminals in group 0 should be tested with that trunk. Upon completion of tests in group 0, remove the pair from the terminals for trunk 00 and place it on the terminals for trunk 10. Block operated the A and C hold magnets for trunk 00. Remove the blocking tools from the A and C hold magnets for trunk 10 and test all line terminals in group 1 with that trunk. Upon completion of all tests, remove blocking tools from A and C hold magnets for trunk 00 and return the cable pair to the terminals for trunk 00. Block operated the A and C hold magnets for trunk 10.	
6	Upon completion of call through tests, block all <i>SL</i> - relays nonoperated.	Upon completion of call through tests, electrically release all <i>CO</i> - relays by placing the positive terminal of a 4.5-volt battery to ground on the remote unit and placing the negative terminal of the 4.5-volt battery on terminal 1 of each <i>CO</i> - relay. <i>Note:</i> See Procedure A, Step 3, for verifications.
7	For the first line to be cut over at the distributing frame, remove the cross connection between the customer's line equipment appearance and the feeder cable pair, and terminate the customer's line appearance to the distributing frame concentrator terminal strip.	At the cross-connect terminal, remove the cross connection between the distributing cable pair and the feeder cable pair for the line to be cut over, and cross connect the proper concentrator stub cable pair to the distribution cable pair to be concentrated.
8	Unblock the <i>SL</i> - relay of line being cut over.	

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STEP	CONTROL UNIT	REMOTE UNIT
9	Place terminating call to line.	When customer answers, verify by conversation that proper directory number has been reached.
10		If customer does not answer, verify at station following standard procedures. <i>Note:</i> Repeated attempts to reach a customer should be made during the cutover procedure. Visit unanswered stations at the end of cutover of all lines involved.
11		Originate a call from this line terminal. When dial tone is received, dial one digit to break dial tone.
12		Return test set to on-hook condition.
13	At the concentrator terminal strip on the distributing frame, terminate the cross connection between the appearance for trunk 07 on the terminal strip and the feeder cable pair just made available. Remove blocking tools from A and C hold magnets for trunk 07.	At the cross-connect terminal, cross connect the concentrator stub cable for trunk 07 to the feeder cable pair just made available.
14	Repeat Steps 7 through 13 until all concentrator trunks have been placed in service. After all trunks have been equipped, repeat only Steps 7 through 12 for additional lines to be placed on the concentrator. <i>Note 1:</i> Since trunks 00, 07, 08, and 09 are used for various testing procedures, they should be connected through the concentrator first. <i>Note 2:</i> Do not remove blocks from <i>SL</i> - relays or reoperate the <i>CO</i> - relays for lines not placed in service, nor should blocks be removed from trunks not placed in service.	
15	After all trunks to be connected have been connected, perform the following test procedures from Section 067-105-501, Line Concentrator No. 1A, Preinstallation Tests and Tests and Inspections at Time of Installation. C. Power (Steps 8 and 11) D. Ground Return Resistance H. Alarm Circuits J. Trunk Verification K. Trunk Transmission, Overflow Tone, Trunk Disconnect Sequence, and Trunk Load Control L. Service Denial Call M. Dial Tone Speed Register N. Trunk Group Usage Recorder	

STEP	CONTROL UNIT	REMOTE UNIT
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C. Line at a Time, 50-Line Remote Unit, 3 or 12 Cable Pairs Available Initially

Note: This procedure is identical with that for 100-line remote units. Instead of SD-96536-01, references are to SD-95957-01. Prior to cutover, proper internal strapping should have been completed. When cutting 50-line remote units into operation, it is necessary to determine in which group the remote unit will operate and to ensure that proper connections are made.

D. Cutover of an In-Service 100-Line Remote Unit Being Used as a 50-Line Remote Unit to a New Control Unit and Full 100-Line Operation

Note 1: The following sample procedure outlines the situation where one 50-line remote unit and one 100-line remote unit operating as a 50-line remote unit are operating with the same control unit. Service demands require that the second half of the 100-line remote unit be placed in service.

Note 2: The following assumptions are made:

- (a) A new control unit is available for use, and the working 100-line remote unit (only one group in service) is to be transferred to the new control unit.
- (b) An idle remote unit is available for testing the new control unit. If the idle 50-line remote unit is remotely located, 12 cable pairs are available for use during testing.

- 1 Place the idle remote unit at its proper location in accordance with Sections 639-300-200, Line Concentrator No. 1A, Installation of Outdoor Unit, and 639-060-201, Terminating Concentrator Stub Cable in Cross-Connecting Terminals.
 - 2 Using the idle remote unit with the new control unit, apply the procedures in Section 067-105-501, Line Concentrator No. 1A, Preinstallation Tests and Tests and Inspections at Time of Installation. Both sides of the new control unit should be tested.
 - 3 Upon completion of testing, remove the temporary cross connections for the 50-line remote unit between the feeder cable pairs used as signaling leads and trunks and the concentrator terminal strip on the distributing frame.
- Note:* In the following steps, remote unit refers only to the 100-line remote unit being placed in service on the new control unit.
- 4 At the new control unit terminal strip, remove the cross connections between the control unit and frame terminal strips for the four signaling leads. Replace these cross-connection wires but terminate only one end. Strip and cut to length nonterminated ends. Place them so that they can be rapidly reconnected but not short-circuited to terminals or ground.
 - 5 At the new control unit, remove the A or B fuse for the group in which the in-service lines are to appear.

STEP

CONTROL UNIT

REMOTE UNIT

- 6 At the distributing frame, place and terminate cross connections for trunks and signal leads between the new concentrator terminal strip and the appearances of the feeder cable being used as trunks between the remote unit and the old control unit.



These cross connections are being made on in-service circuits. Do not short or ground leads. Do not remove cross connections at the old control unit.

- 7 At the distributing frame, place and terminate cross connections between the line equipment appearance of the in-service lines and line terminal appearances on the new concentrator terminal strip.

Note: Ensure that lines are terminated on line terminals corresponding to line terminals on which they appear in the remote unit.

- 8 Immediately prior to cutover, ensure that no trunks in the group to be cut over are connected through the old control unit. Release all cut through trunks.

- 9 To cut over at the old control unit, remove the A or B fuse for the group which is to be cut over to the new control unit, and the cross connection between the control unit and frame terminal strips for the four signaling leads.

- 10 At the new control unit, terminate the cross connection between the control unit and frame terminal strip for the four signaling leads.

- 11 At the new control unit, replace the fuse which was removed in Step 5.

- 12 Using a nonconcentrated line, call each concentrator customer to verify concentrator connection.

- 13 When a customer answers, by conversation verify that proper directory number has been reached.


- 14 If customer does not answer, verify at station following standard verification procedures.

- 15 Additional lines may be placed on the concentrator in accordance with Cutover Procedure E, Addition of Lines to an In-Service Concentrator.

STEP	CONTROL UNIT	REMOTE UNIT
E. Addition of Lines to an In-Service Concentrator		
1	At the distributing frame, place and terminate cross connection between the customer's line equipment appearance and the concentrator terminal strip on the distributing frame in accordance with SD-93536-01, CAD 11, 12, 13, or 14, ensuring that the proper terminals are selected. If the added line is a working line, remove existing cross connection at distributing frame before beginning this step.	At the cross-connection terminal, place and terminate the cross connections between the concentrator stub cable and distribution cable corresponding to the customer's line in accordance with SD-96537-01, CAD 1, and Section 639-060-201, Terminating Concentrator Stub Cable in Cross-Connecting Terminals. If the added line is a working line, remove existing cross connecting terminal before beginning this step.
2	Unblock the <i>SL</i> - relay and place a terminating call to the line.	
3		When customer answers, verify by conversation that proper directory number has been reached.
4		If customer does not answer, verify at station following standard procedures. <i>Note:</i> Repeated attempts to reach customer should be made during the cutover procedure and unanswered stations visited at the end of cutover of all lines involved.
5		Originate call from remote unit. When dial tone is received, dial one digit to break dial tone.
6		Return test set to on-hook condition.

F. Deletion of Lines from an In-Service Concentrator

- 1 Check to determine if the customer's line is connected to a trunk.
Note: If the customer's line is connected to a trunk, proceed with Step 2. If the customer's line is not connected to a trunk, proceed with Step 4.
- 2 If the *TB*- relay corresponding to the trunk being used is operated, do one of the following:
 - If the trunk is busy because of normal conversation, wait until customer hangs up.
 - If the trunk is on permanent signal, block the related *TB*- relay nonoperated.
- 3 If trunk does not disconnect after Step 2, operate *DP*- relay for the group in which the line appears. Continue until the trunk disconnects.

STEP	CONTROL UNIT	REMOTE UNIT
4	Insulate proper break contact of <i>DIS-</i> relay appearing on sleeve lead of line being disconnected.	
5	Block <i>SRP0</i> , <i>SRP1</i> , <i>DP0</i> , and <i>DP1</i> relays nonoperated.	
6	Cross connect terminal A69 on the control unit terminal strip to contact 3 of the <i>CO-</i> relay corresponding to the line being disconnected.	
7	Operate, and hold operated, <i>T-</i> key corresponding to the group in which the line to be disconnected appears until <i>COK</i> lamp lights. When this lamp lights, release key.	
	 <p><i>Always ensure that the concentrator is idle prior to operating the T- key. Observe that the SL- relay releases prior to operation of the COK lamp; proper sequence indicates that the line under test has been disconnected. If the SL- relay fails to release before operation of the COK lamp, a line has been denied service falsely due to an operation of an SL- relay of lower preference. This would be caused by a terminating call causing the SL- relay to operate but since ringing is not tripped (no cross-points closed on a service denial call), the release of the T- key will cause the terminating call to complete satisfactorily. The only time a line would be left in a cutoff condition would be if the calling party should abandon the call during the interval between the operation of the COK lamp and release of the T- key. Reoperation of the T- key will cause the service denial to be completed.</i></p>	
8	Block nonoperated the <i>SL-</i> relay for the line disconnected.	
9	Remove blocks from <i>SRP0</i> , <i>SRP1</i> , <i>DP0</i> , and <i>DP1</i> relays.	
10	Remove insulating material placed in Step 4.	
11	Remove cross connection between concentrator terminal strip and line equipment on distributing frame for permanent disconnect.	At cross-connect terminal, remove cross connection between stub cable and distribution pair for line disconnected for permanent disconnect.