2-POINT AND MULTIPOINT PRIVATE LINE CIRCUIT
TURN-UP PROCEDURES
DIGITAL DATA SYSTEM

CONTENTS PAGE

1. GENERAL

1.01 This practice contains the procedures for installing 2-point and multipoint private line circuits. The turn-up procedures for an addition to an existing multipoint private line circuit are covered in Part 5.

1.02 This practice is reissued for the following reasons:

- To delete reference to serving test center and serving bureau
- To change Tables A, B, C, D, E, and F
- To delete Tables G, H, and I
- To add a new Part 6 to indicate the glossary of terms.

Revision arrows are used to emphasize the more significant changes.

1.03 ➧The methods given in this practice are intended to be used by an AT&T employee at a hub office. This is in conjunction with a CTC/SSC-D (Centralized Test Center/Special Service Center - Digital) to coordinate the turn-up of a 2-point or multipoint private line circuit. The definitions and responsibilities of the CTC/SSC-D and hub offices (as well as all offices) involved in the installation and maintenance of the DDS (Digital Data System) are found in AT&T Practice 660-230-100.◀

1.04 The hub office may be equipped for remote testing access via the ABATS (Automated Bit Access Test System). This system incorporates the KS-21899 DTS (Data Test System) plus a subsystem called ALATS (Automated Line Access Test System). The ABATS provides access at the DS-1 level (1.544 Mb/s), at the DS-0A level (64 kb/s), or to the customer loops. The BATS (Bit Access Test System) accesses the DS-1 level via a DSAU (DS-1 signal access unit) on inter-LATA (local access and transport area) facilities between DSAs (digital serving areas).

1.05 A customer circuit can be automatically accessed, monitored, and tested from the near-end CSU (Channel Service Unit) to the far-end CSU. This is done by entering an acceptable command, a circuit number, and any of the desired or required parameters at the test terminal. AT&T Practice 314-901-520 gives additional information on the ABATS.

1.06 The activities given in this practice should be performed only after the DS-0 facilities are installed and verified to be operating properly per AT&T Practice 314-902-200.

2. SECONDARY CHANNEL CAPABILITY CONSIDERATIONS

2.01 Secondary channel capability provides a low speed data channel derived from the DDS channel. The secondary channel gives customers the ability to manage and control their 2-point and multipoint DDS networks.

2.02 The secondary channel capability in the loop portion of the network is derived by adding two extra bits to each channel byte of customer data. The first additional bit is a framing bit to identify the secondary channel bit position; and it is removed at the central office. The second added bit carries the network control information and the customer's secondary channel information. In the network, the secondary channel is derived from the excess capacity already in the eighth bit of each network byte. This bit is shared with the customer's secondary channel data. The customer may use up to one-third of the control bits on a 2-point circuit and also in the control to tributary direction on a multipoint circuit. However, in the tributary to control direction on multipoint circuits, every third control bit must be used when the secondary channel is active. The framing circuits in the most recent version of the MJU (Multipoint Junction Unit) depend on this characteristic.

2.03 A byte structure is imposed on the customer data as it enters the loop from the customer equipment. As a result, the customer interface and most DDS network components have been modified and/or redesigned. ▶The customer interface is described in Technical References PUB 62120 and PUB 62310.◀

2.04 The MJU is the only network component that distinquishes between secondary channel data bits and primary channel data bits. Since the primary channel and secondary channel data are combined in a ▶byte-formatted◀ bit stream at the customer interface, it is unlikely that a failure will affect only the primary or secondary channel. Therefore, two conditions can be assumed for secondary channel operation:

(1) Secondary channel does not change the test procedures that are used to test 2-point circuits or the downstream direction of the multipoint circuit.

(2) It is not necessary to test the primary and secondary channels separately.

2.05 Because of the integrated nature of primary and secondary channel data, the secondary channel will have little effect on the current operation of the DDS. The current provisioning and maintenance procedures for DDS will not change. However, several new tests and test codes are required to test certain secondary channel functions that are new to the DDS network. These new tests include the following:

- Circuit pack compatibility test
- Latching loop-back control test
- Loop-back test for the MJU
- Branch select/branch block test for the MJU
- Combining function for the MJU.

A. Circuit Pack Compatibility Test

2.06 ♦The circuit pack compatibility test ensures that the T1DM (T1 Data Multiplexer), SRDM (Subrate Data Multiplexer), and OCU (Office Channel Unit) have been provisioned for secondary channel operation. Secondary channel requires new circuit packs (plug-ins) in various network components. As a consequence, earlier circuit packs will not provide secondary channel. However, the new circuit packs will work on both non-secondary and secondary channel circuits. It is necessary to determine the vintage of the circuit pack when circuits equipped for secondary channel are provisioned or maintained. The equipment, existing circuit pack codes, and new circuit pack codes affected by secondary channel service are given in Table A.♦

2.07 The recently developed test word 10000000 determines the vintage of the T1DM, T1DM-PM (T1DM Performance Monitor), and the T1WB4/5. This test word also checks the vintage of the SRDM if the SRDM is connected to zero suppression equipment, i.e., T1DM, T1WB4/5, or DS0-DP (DS-0 Level Dataport). If the SRDM is connected to any other type of equipment, ♦the vintage cannot be determined using the 10000000 test word. However, customer data will not be overwritten in the absence of zero suppression equipment. Thus, the vintage of the SRDM is not critical with such circuit arrangements.♦

2.08 The D5 channel bank and the SLC® 96 Series 5 circuit packs are compatible with secondary channel but do not require the circuit pack compatibility test. The D3 channel bank dataports are not compatible with secondary channel.

2.09 The presence of an earlier version of the T1DM sync circuit can be detected and/or a more recent one confirmed by sending the test byte 10000000 through the T1DM from the drop side. The earlier version T1DM will overwrite the test byte with the UMC (Unassigned Multiplexer Channel) code 00011000, but the new T1DM will transmit the test byte unchanged. A latching loop-back, described in paragraphs 2.15 through 2.20, should be established and then the ABATS can send the test byte via the DSAU.

2.10 The DS0-DP performs the same zero suppression function as the T1DM. Therefore, the compatibility test that was performed on the T1DM also applies to the DS0-DP. The compatibility test will also confirm the presence of the proper T1WB4/5 data voice multiplexer CP (circuit pack).

2.11 An HL37 SRDM common logic CP places a zero in the first bit position toward the drop (DS0-A) side. When the SRDM is connected to a T1DM or a DS0-DP, the byte is overwritten by the zero suppression circuitry. Therefore, the T1DM test can also detect an HL37 SRDM CP. The most recent SRDM common logic CP (HL37B) places a 1 in the first bit position so the test byte, 10000000, is not changed when it is transmitted.

2.12 If the DS0-A side of an SRDM is connected to anything besides a DS-0 to DS-1 multiplexer, the earlier version of the SRDM will not introduce errors since there is no zero suppression circuitry on the circuit. Therefore, the T1DM test will not detect an earlier version of the SRDM and it also will not affect the customer data. If a secondary channel circuit is reconfigured into a T1DM or DS0-DP, the T1DM CP test must be performed before the circuit is turned up.

2.13 A latching loop-back must be executed to detect the presence of an earlier version of the OCU or OCU-DP. This OCU only responds to the non-latching loop-back codes currently used in the DDS. The most recent versions of the OCU and OCU-DP respond to the non-latching loop-back control sequences. Therefore, if the OCU fails to respond to a latching loop-back control sequence and responds successfully to the non-latching loop-back, the OCU is an earlier version.

2.14 The branch block function, described in paragraphs 4.11 through 4.15, determines the vintage of the MJU since the HL68 CPs do not perform the branch block function. If the blocking function does not work, an earlier version of the MJU (HL68) is present on the circuit.

B. Latching Loop-back Control

2.15 This new DDS loop-back enhances overall DDS testing capability and includes secondary channel requirements. The latching loop-back sequence uses three control codes and one equipment-specific data code. These codes are as follows:

- TIP (transition in progress)

- LBE (loop-back enable)
- FEV (far-end voice)
- LSC (loop-back select code).

2.16 The control codes are made up of the following bit patterns:

- TIP = 00111010
- LBE = 01010110
- FEV = 01011010.

The 0 is a "do not care" symbol.

2.17 The data code is referred to as the LSC. Table B lists the LSC bit patterns that are transmitted as part of the latching loop-back sequence to select the loop-back location. The loop-back processors on each type of equipment are programmed to respond to the unique data codes which must be received in the data stream before the loop-back is enabled.

2.18 There are two code sequences that establish a latching loop-back. They are:

- TIP - LSC - LBE - FEV
- TIP - LSC - LBE - all ones - LBE - FEV.

The first loop-back sequence is used when one specific unit of equipment is on the circuit or when the first of several identical units in tandem must be looped back. The second loop-back sequence is used when the second of two identical units in tandem is looped back. If the loop-back is at a new OCU or OCU-DP (HL220) without the secondary channel option exercised, the FEV code is mapped into 11111010 and returned to the tester. The loop-back is terminated by sending the TIP code until it is no longer returned to the tester. The TIP code will be mapped into 00110010 for subrate channels and 10110010 for 56 kb/s channels.

2.19 To generate the desired loop-back sequences, the circuit is accessed at the DS-1 level and a certain number of byte bursts must be generated.

2.20 If the circuit is accessed at the DS0-A level, a certain number of byte bursts are necessary to allow the same test sequence at all customer data rates. Table C gives the DDS network component (plug-in) and the loop-back locations.

3. TURN-UP PROCEDURES FOR A 2-POINT CIRCUIT

3.01 ♦A customer circuit may involve either one or two hub offices. In either case, the CTC/SSC-D is AT&T's OCO (Overall Control Office), and will coordinate the turn-up procedure for the circuit.

3.02 If a customer circuit involves only one hub, the LEC (Local Exchange Company) will coordinate circuit provisioning for the end link in its DLSA (digital local access transport serving area). Similarly, the LEC serving central office (DDS end office, dataport office, or multiplexing office) will provision the end link residing in its service area. The CTC/SSC-D will coordinate the provisioning for inter-LATA transport, and will perform end-to-end testing of the circuit using ABATS and LEC hub access. This situation is illustrated in Fig. 1.

3.03 When a circuit involves two hub offices in two separate DLSAs, each LEC will coordinate the provisioning of the end link within its jurisdiction. The CTC/SSC-D will again coordinate the end link and inter-LATA transport provisioning, and perform end-to-end testing of the circuit to verify performance of the inter-DLSA facility and the two end links. See Fig. 2 for an illustration of this interaction. Simplified details of the end links are shown in Fig. 3.

3.04 The activities involved in turn-up of a customer circuit are listed in Table D. These activities are shown in the recommended order in which they are to be performed. The table lists responsibilities as they apply to the AT&T CTC/SSC-D, the hub/serving central office, and the customer station.

3.05 To prevent additional maintenance, the DTE (digital terminating equipment) should be installed and tested when the local loop is tested.

3.06 A hub initial test record card (E-6527) should be filled out and provided along with the CLR (circuit layout record) card for each circuit. This card should be located at the hub office to record initial test results. An example of the card and the tests associated with the card are contained in AT&T Practice 314-901-500, Digital Data System — 2-Point and Multipoint Private Line Circuit — Test Procedures.

3.07 Testing a 2-point circuit with secondary channel capability is generally no different from methods and procedures used for 2-point DDS circuits. The DSAU gives access to the 2-point circuit. The maintenance tests are performed by establishing a latching loop-back and sending a 2047 pseudo-random test word that verifies the primary channel is operating properly.

3.08 When a newly-provisioned secondary channel circuit is turned up, the presence of a number of new circuit packs must be verified. This is accomplished by using the procedures described in Part 2.

3.09 Additionally, it is necessary to confirm the proper operation of the secondary channel. The secondary channel is tested by inserting a byte pattern of "all ones" in bits one through seven of the primary channel and specific one and zero transitions of the eighth bit. The one and zero transitions test the performance of the primary channel as well as turn on, test, and turn off the secondary channel. The following sequences verify secondary channel operation.

(1) Training (start-up) sequence - The training sequence consists of at least six consecutive "S" information bits that differ from the two preceding "C" control bits. This produces a sequence of a minimum of six 3-byte patterns.

(2) Test sequence - The test sequence consists of alternate ones and zeros on the "S" bits with the "C" bits set to one. At least 200 transitions, or a minimum of two hundred 3-byte patterns, should be sent for the test sequence. The test sequence is followed by alternate ones and zeros on the "S" bits with the "C" bits set to zero for an additional two hundred 3-byte patterns.

(3) Idle sequence - The idle sequence consists of at least 12 consecutive idle bits or "S" bits that are equal to the two preceding "C" bits. Therefore, the sequence will consist of a minimum of twelve 3-byte patterns.◀

4. TURN-UP PROCEDURE FOR A NEW MULTIPOINT CIRCUIT

4.01 During the initial installation of a multipoint circuit, correct connections must be made so that data can be exchanged between the control location and the remote stations. The activities given in Table E are to be performed so that all necessary connections and tests are made in order to verify proper operation of the entire circuit.

4.02 An example of a multipoint circuit is shown in Fig. 4. A multipoint circuit consists of the end links, the midlinks, and the MJUs. The end links connect between the station location and the hub office and the midlinks connect two different hub offices. Test access is via the ABATS.

4.03 The end links are connected and tested to the station the same way a 2-point circuit is connected and tested as explained in Part 3.

4.04 To permit easier and faster identification and testing of MJUs at the supplemental jack bays, the MJU circuits should be assigned to jack modules which are grouped in a specific section of the jack bay apart from the point-to-point circuit jack modules. All port appearances of a single MJU should also be on jack modules which are adjacent to one another. The MJU port assignment to jack modules in the jack bay should be from left to right in numerical order beginning with port 0. When MJUs are cascaded, jack modules for port 0 of succeeding MJUs are not required. When MJUs are provided, connections must be made according to information provided on the CLR card.

4.05 The following selection rules apply to a digital type test on a multipoint circuit.

(a) The first choice for an access point is the one closest to the MJU from which the station segment originates.

(b) If the SC (serving center) for the first choice access point is unavailable for testing, the SC in the next closest office to the MJU that transmits information toward the station should be selected. This should continue until an available SC is located.

4.06 The test procedures for a multipoint circuit with secondary channel capability do not differ significantly from the existing test procedures for DDS. However, new tests and testing capabilities can be executed because of modifications to the MJU functions. The new MJU includes all the features of the existing MJU plus branch blocking, ▶branch selecting,◀ and channel loop-back features. The new MJU must also recognize transitions in ▶secondary channel activity and combine this data with primary channel data from the different branches.◀ Additional tests and testing capabilities for secondary channel capability include the following:

- MJU loop-back
- Branch select/branch block
- ▶Primary/secondary channel combining function.◀

4.07 Test access to the new MJU does not differ from the process that is currently used. However, the test codes and sequence in which they are transmitted and received to execute the new tests are different.

MJU Loop-back

4.08 The MJU loop-back feature allows the control leg and all of the branch legs to be looped back at the MJU. This loop-back enhances the trouble isolation capabilities of the remote or centralized test centers. ▶The MJU loop-back can only be done by a CTC using the ABATS. This loop-back feature cannot be done manually with BATS or LATS equipment. The byte pattern can be observed at the MJU using bit analyzer type equipment. However, that goes beyond the scope of this practice.◀ The test sequence

TA - TA - MA - LBID - UMC

advances the MJU to the loop-back state (control leg and all branch legs). The new MJU responds to at least two bytes of TA code at the customer rate to prevent the customer from accidentally activating the loop-back. It is possible for the customer to do this since the combined primary and secondary channel data can yield a single byte of TA code. The MJU returns the following answer-back codes to the control leg when it receives the following test sequence.

(a) The MJU returns the MA code to the control when it receives the second TA code.

(b) The MJU returns the HUBID code to the control when it receives the MA code.

(c) The MJU returns the LBID code to the control when it receives the LBID code.

4.09 When the proper code is returned to the control, the MJU has advanced to the proper state. If the expected code is not sent, the MJU will return to the normal transmission state, i.e., it will cancel the loop-back attempt.

4.10 When the MJU is in the loop-back state, it will return whatever it receives from the control leg back to the control leg. The MJU will also return to the normal transmission state if it receives a single byte of RLS or IDLE code.

MJU Branch Select/Branch Block

4.11 The test code sequence

TA - TA - MA - BRn - UMC

will select a particular branch to test through the MJU. The BRn can be any one of the branch identification codes: B1, B2, B3, or B4. The test code sequence will advance the MJU to a state where sending and receiving additional test code data will not be affected, i.e., the MJU is transparent to the circuit. The MJU sends the appropriate answer-back codes to the control leg while it receives the test code sequence. The MJU sends a UMC code to the non-selected branches when it is in the test mode.

4.12 The MJU enters the double test state if the sequence

TA - TA - MA - BRn - UMC

is sent. The double test state prevents the blocking of a branch when a succeeding MJU is being addressed.

4.13 The block state may also be entered from the test state. This is accomplished by the following test code sequence:

TA - TA - MA - BRn - UMC - BLK - IDLE.

The IDLE code will return all previously selected branches to a normal transmission state.

4.14 In the block state, the branch or branches identified by BRn are disconnected from the control leg and looped back on themselves. From the block state, two subsequent states may be entered. The sequence

TA - TA - MA - BRn - UMC

will return the MJU to the test state. This BRn is the same branch identified in the block sequence.

4.15 The sequence

TA - TA - MA - BRn - UMC

will advance the MJU to the block double test state. The BRn for this sequence is different from the branch identified in the block sequence. This state allows further communication with a succeeding MJU without affecting the blocked branches. Two bytes of RLS code will restore the MJU to its normal transmission state from the block state. One byte of IDLE code and one byte of RLS code will restore the MJU to its normal state from the block double test state.

MJU Combining Function

4.16 The network control information is transmitted on the eighth bit (C bit) of each network 8-bit byte. Secondary channel is derived from the basic DDS bitstream by allowing the customer to use every third control bit ➧(this shared bit is referred to as an S bit).➧ The redesigned MJU must recognize active and idle transitions in secondary channel data from all of its branches and combine it with active and idle primary channel data from the same or different branches.

4.17 To determine the state of the secondary channel (active or idle), the MJU must compare the S bits and C bits of three consecutive bytes. If the S bit is different from the two preceding C bits for at least one comparison (one 3-byte sequence out of 12 consecutive bytes), the secondary channel is active. If the S bit is the same as the two preceding C bits for at least 12 consecutive comparisons (twelve 3-byte sequences), the secondary channel is idle.

4.18 To test the combining function of the new MJU, the branch block function (paragraph 4.14) is used to block all but one of the branches. A latching loop-back is then established at the CSU on the unblocked segment. The testing sequence is then the same as that used for a 2-point circuit, as given in paragraph 3.08. After testing, the TIP code is transmitted to release the latched loop-back at the CSU. Transmitting RLS code will return the MJU to its normal transmission state.

4.19 The meaning of designations FAR and NEAR is dependent upon the following rules:

Note: The rules below are keyed to the appropriate situation in Fig. 4 according to the letter designations.

(a) For a station served directly by an MJU, NEAR is toward the station.

(b) For inter-DLSA facilities, FAR is toward the line facility; NEAR is toward the MJU or station.

(c) For cascaded MJUs within the same office, NEAR is toward the MJU connecting to the control station (upstream); FAR is toward the MJU connecting to the remote stations.

5. TURN-UP PROCEDURE FOR ADDITION TO AN EXISTING MULTIPOINT CIRCUIT

5.01 The turn-up procedure for an addition to an existing multipoint circuit is similar to the turn-up procedure for a new multipoint circuit, except care must be exercised when making connections and during testing so that interruption of customer data on existing multipoint lines is avoided.

5.02 A typical addition to an existing multipoint circuit, identified as an additional subcircuit, is shown in Fig. 4. The procedure for connecting and testing the additional subcircuit shown in Fig. 4 is given in Table F.

Note: Obtain customer permission before making connections to any of the existing multipoint circuits or before making tests of any of the existing multipoint circuits.

5.03 The procedure for making additions to an existing multipoint circuit involves:

(a) Installation, connection, and testing of the subcircuit

(b) Connection of the subcircuit to the existing multipoint circuit

(c) Testing part of the existing multipoint circuit and all of the subcircuit to verify that all connections between the existing circuit and the subcircuit were made properly.

5.04 The turn-up procedure for an addition to an existing multipoint circuit with secondary channel capability will not differ significantly from the existing turn-up procedures. However, new tests and testing capabilities can be executed because of modifications to the MJU. The new tests include the latching loop-back, the branch block function for the MJU, and the combining function for the MJU. Table F gives the procedures for connecting and testing the additional subcircuit with secondary channel capability.

6. ♦GLOSSARY

6.01 Most of the acronyms and abbreviations (terms) are explained when they are first used in this practice. However, the following list is provided as a quick reference:

TERM	DEFINITION
ABATS	Automated Bit Access Test System
ALATS	Automated Line Access Test System
BATS	Bit Access Test System
CLR	Circuit Layout Record
CP	Circuit Pack
CSU	Channel Service Unit
CTC/SSC-D	Centralized Test Center/Special Service Center - Digital
DDS	Digital Data System
DLSA	Digital Local Access Transport Serving Area
DSA	Digital Serving Area
DSAU	DS-1 Signal Access Unit
DS0-DP	DS-0 Level Dataport
DTE	Digital Terminating Equipment
DTS	Data Test System
ISMX	Integral Subrate Multiplexer
LATA	Local Access and Transport Area
LEC	Local Exchange Company
LSC	Loop-back Select Code
MJU	Multipoint Junction Unit
OCO	Overall Control Office
OCU	Office Channel Unit
SC	Serving Center
SRDM	Subrate Data Multiplexer
T1DM	T1 Data Multiplexer
T1DM-PM	T1 Data Multiplexer - Performance Monitor
UMC	Unassigned Multiplexer Channel♦

7. ISSUING ORGANIZATION

Published by
the AT&T Documentation Management Organization.

➡TABLE A⬅

CIRCUIT PACKS AFFECTED BY SECONDARY CHANNEL SERVICE

EQUIPMENT	EXISTING CIRCUIT PACK CODES	NEW CIRCUIT PACK CODES
T1DM	HL16, HL16B	HL216
T1DM-PM	HL29	HL29-series 2
D4 DS0-DP	J98726DA, J98726DD	J98726DH
D5 DS0-DP	—	AEK27
T1WB4/5	HL70, HL70B	HL70C
SRDM	HL37	HL37B
OCU	HL1, 2, 3, 4, HL141, 142 HL201, 202, 203, HL201B, HL202B, HL203B	HL220
D4 OCU-DP	J98726DB, J98726DE	J98726DJ
D5 OCU-DP	—	AEK26
MJU	HL68	HL223, HL224
CSU	HR1, 2, 3, 4, HR5, 6, 7, 8	BPT72
ISMX (5-Ch) ISMX (10-Ch)	HL8 HL88	HL8B HL88B

➡TABLE B⬅

LATCHING LOOP-BACK CONTROL CODES

EQUIPMENT	LSC CODES
DS0-DP (drop)	00000101
DS0-DP (line)	00000101
OCU	01010101
CSU (Channel)	00110001
HL96	01000111
Spare	01110111
Spare	01000001
Spare	01110001

➡TABLE C⬅

NETWORK COMPONENTS WITH LATCHING LOOP-BACK CAPABILITY

PLUG-IN	LOOP-BACK LOCATIONS
D4 DS-0 Dataport	line + drop
D4 OCU Dataport	OCU + channel
D5 DS-0 Dataport	line + drop
D5 OCU Dataport	OCU + channel
OCU	OCU + channel
Loopside Interface	drop

➡TABLE D⬅

TURN-UP PROCEDURES FOR A 2-POINT CIRCUIT

OFFICE	STEP	ACTIVITIES	LOCATION INVOLVED: HUB OR SCO	LOCATION INVOLVED: CTC	LOCATION INVOLVED: STA	PRACTICE REFERENCE
HUB	1	a) Service order received	✓	✓	✓	
		b) Station-station CLRC received	✓			
		c) Hub-station CLRC received	✓		✓	
	2	Identify and label jack modules with customer ID at multiplexer or submultiplexer jack and connector panel	✓			314-970-100
	3	Identify the appropriate circuit configuration and flowchart	✓			314-901-300
	4*	Physically connect required equipment at DSX-0A and DSX-0B, if applicable	✓			314-914-100 314-914-400
	5*	Install and record options in the OCU and insert correct speed OCU circuit pack into proper shelf location.	✓			314-910-100
	6*	Perform test of OCU	✓			314-910-500
		Test OK: Record results	✓			
		Test Fails: Check OCU	✓			314-910-300
		Check DS-0	✓			314-902-200
		Hub trouble analysis	✓			314-901-300
	7*	Install main frame jumper from OCU and check to see that correct OCU and loop are connected	✓			
	8	Have AT&T employee at customer location identify local loop pairs		✓	✓	
	9	Perform local channel tests	✓			314-410-510
		Test OK: Record results	✓			
		Test Fails: Check or replace loop	✓			314-410-310
	10	Install and connect CSU/DSU			✓	595-100-200 and
					✓	595-200-200
	11	Perform CSU tests	✓		✓	595-100-500
		Test OK: Record results	✓		✓	
		Test Fails: Check CSU			✓	595-100-300
		or				
		Perform DSU tests	✓		✓	595-200-500
		Test OK: Record results	✓		✓	
		Test Fails: Check DSU			✓	595-200-300

See footnotes at end of table.

➡TABLE D (Contd)⬅

TURN-UP PROCEDURES FOR A 2-POINT CIRCUIT

OFFICE	STEP	ACTIVITIES	LOCATION INVOLVED: HUB OR SCO	LOCATION INVOLVED: CTC	LOCATION INVOLVED: STA	PRACTICE REFERENCE
CONTROL	12	Ensure ABATS database is updated		✓		314-901-532
	13	Perform OCU latching loop-back		✓		314-901-500
	14†	Perform circuit pack compatibility test		✓		314-901-500
	15	Check status of far-end link and verify that necessary installations and connections have been completed at the far-end		✓		
	16	Perform inter-DLSA test		✓		314-901-500
		Test OK: Record results		✓		
		Test Fails: Check inter-DLSA facility		✓		314-901-300
	17	Perform CSU or DSU loop-back test of far station.		✓		314-901-500
		Test OK: Record results		✓		
		Test Fails: Check DS-0 at far-end		✓		314-902-200
		Hub trouble analysis		✓		314-901-300
	18	Release circuit to customer		✓		

* These are LEC activities and will be engineered, installed under LEC procedures and under LEC control. The CTC/SSC-D designated OCO will coordinate with LEC work groups in accordance with local practices.

† Perform these tests if secondary channel capability is available.

➡TABLE E⬅

TURN-UP PROCEDURES FOR A NEW MULTIPOINT CIRCUIT

STEP (NOTE 1)	ACTIVITIES	LOCATION INVOLVED HUB OR SCO	CTC	STA	PRACTICE REFERENCE
1	a) Service order received	✓	✓	✓	
	b) Station-station CLRC received		✓	✓	
	c) Hub-station CLRC received	✓	✓	✓	
2	Make all necessary connections to all facilities (midlinks, end links, and MJUs) per CLRC	✓	✓	✓	314-914-100 314-914-400 314-901-200
3	Enter the customer circuit ID and any necessary parameters at the test terminal		✓		314-901-532
4*	Verify inter-Hub office cross-connections	✓	✓		
	Perform inter-DLSA straightaway test of midlinks		✓		314-901-500
	Test failed: check or repair midlink				314-901-300
5	Insert HL68 (or HL223/224) CPs into appropriate slots in the MJU bay	✓			314-917-100 314-917-300
6	Perform MJU loop-back via ABATS		✓		314-901-531
7	Perform MJU branch select/branch block test via ABATS	✓	✓		314-901-531
8	Perform MJU combining function via ABATS		✓		314-901-531
9	Perform test of end links	✓	✓		314-901-200
10	Perform test of multipoint network from control office to all stations including verification that no incorrect or unwanted stations are connected		✓		314-901-301

Note: 1. Since the activities listed in the table are in a suggested order, not all of them have to be performed in the sequence given. In LEC-owned Hubs, procedures may be different.

* Verify that midlinks are cross-connected at Hub offices before making midlink tests.

➡TABLE F⬅

TURN-UP PROCEDURES FOR ADDITION TO AN EXISTING MULTIPOINT CIRCUIT

STEP (NOTE 1)	ACTIVITIES	PRACTICE REFERENCE
1	The Hub at which the addition is connected assumes control of the addition. Do not provide connection to the main circuit when testing and connecting the segment.	
2	Repeat all steps in Table E for the segment only (in Fig. 4, from port 4 of MJU in Hub office 3 downstream). Upon completion of segment testing, call the control office for the release of the part of the multipoint circuit downstream from and including the MJU to which the segment is being added (in Fig. 4, the MJU in Hub office 3). Plug out port 0 of the MJU, to which the segment is being added, toward the control location.	
3	Connect the segment to the MJU.	314-914-400
4	Perform loop-back test of any station segment from port 0 of the MJU to which the segment is connected via BATS equipment. Test Failed: • Check connections at DSX-0A • Test and replace MJU • Check and replace wires between MJU and DSX-0A Advise control office about completion of segment addition and readiness to return the complete circuit to customer.	 314-917-500 314-917-300 314-901-301
5	Perform MJU loop-back via ABATS.	314-901-531
6	Perform MJU branch select/branch block test via ABATS.	314-901-531
7	Perform MJU combining function via ABATS.	314-901-531
8	Remove dummy plugs on advice from control office.	
9	Control office returns multipoint circuit back to the customer.	

Note 1: Where a LEC-owned Hub is involved, some steps will be performed by LEC personnel and the CTC designated OCO will coordinate with LEC work groups in accordance with local practices.

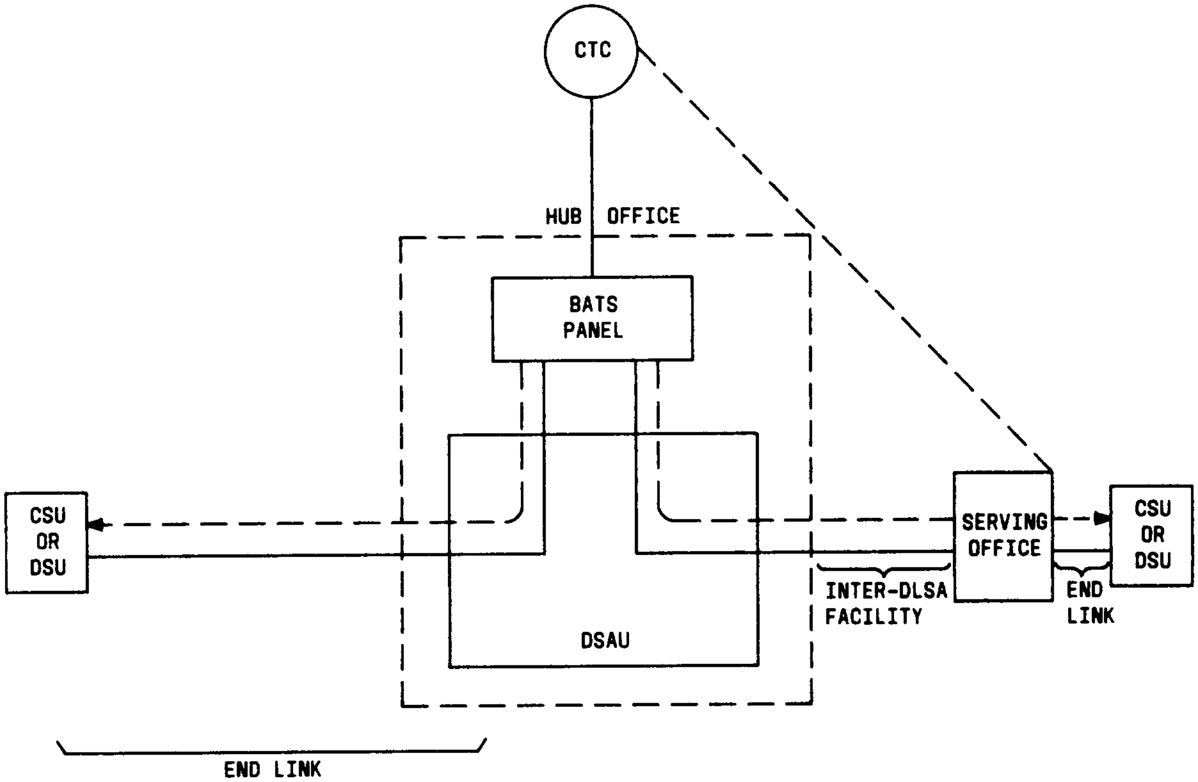


Fig. 1—DDS 2-Point Circuit with One Hub Office

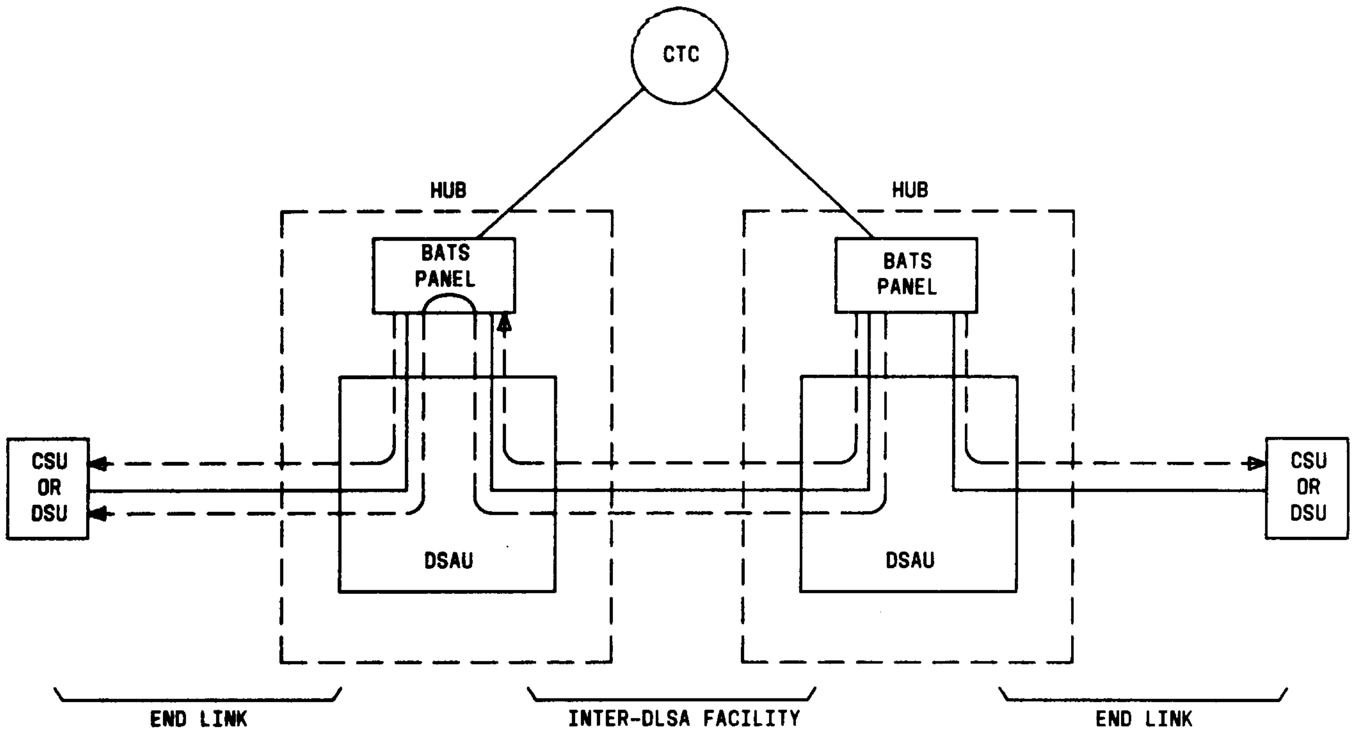
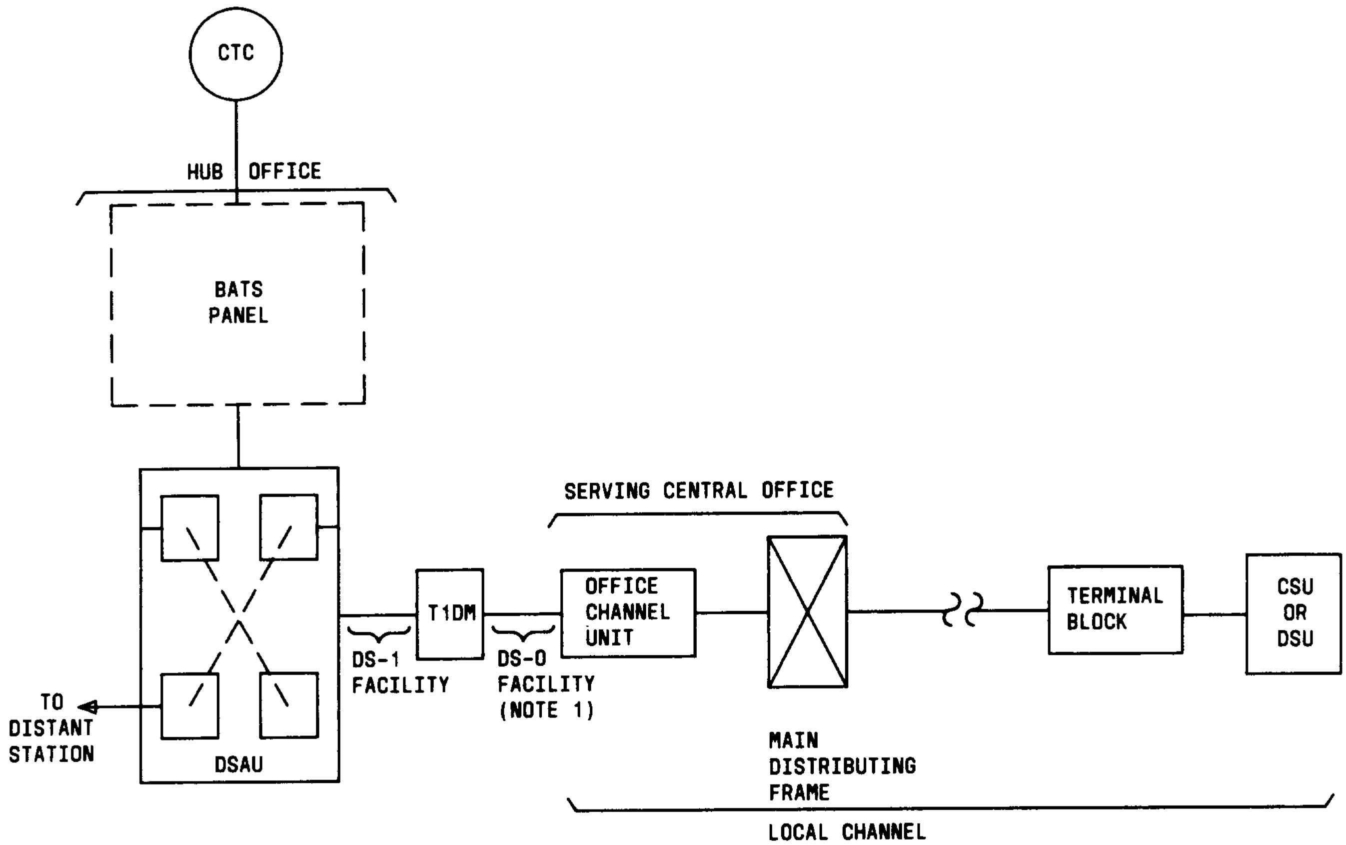


Fig. 2—DDS 2-Point Circuit with Two Hub Offices



NOTE 1: IDENTIFY THE APPROPRIATE CONFIGURATION PER AT&T PRACTICE 314-901-300.

Fig. 3—Customer Circuit End Link

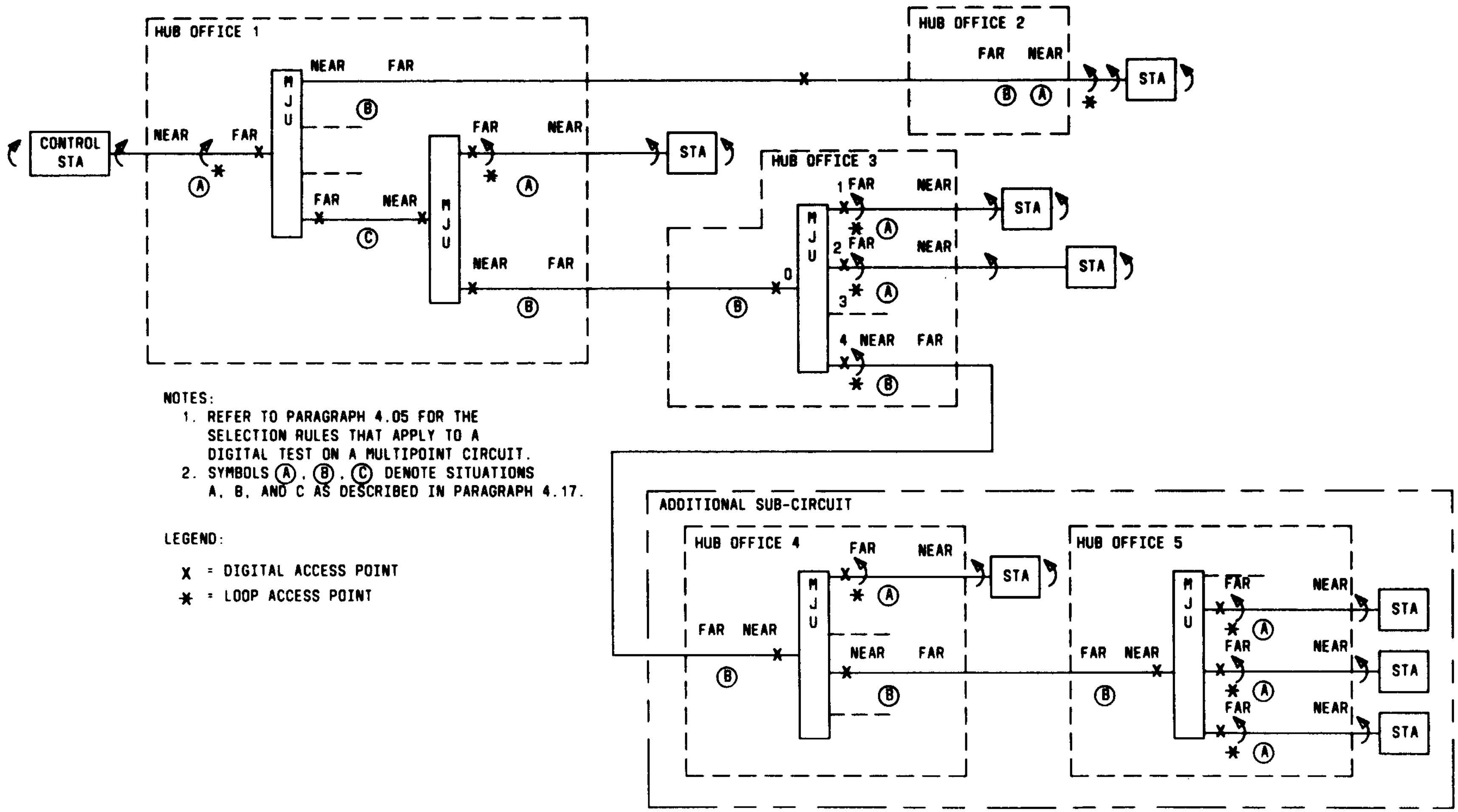


Fig. 4—DDS Multipoint Circuit Arrangement (Notes 1 and 2)