ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.1 Metallic Service-(Continued)

C. Channel Interfaces

Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

(AT) D. Optional Features, BSEs and Functions

(AT) 1. Central Office Bridging BSE Capability

a. Three Premises Bridging - Provision of tip-to-tip and ring-to-ring connection in a central office of a metallic pair to a third customer designated premises.

b. Series Bridging of up to 26 customer designated premises.

(AT) The following table shows the technical specifications packages with which the optional features, BSEs and functions are available.

	Available with Technical Specifications Package MT-			
	C	1	2	3
Three Premises Bridging	X	X		X
Series Bridging	X		X	

No supplement to this tariff will be issued except for the purpose of canceling this tariff

Access Services Tariff
Section 7
2nd Revised Sheet 16
Replacing 1st Revised Sheet 16

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.1 Metallic Service-(Continued)

C. Channel Interfaces

(CT) (CT) Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Optional Features and Functions

1. Central Office Bridging Capability

a. Three Premises Bridging - Provision of tip-to-tip and ring-to-ring connection in a central office of a metallic pair to a third customer designated premises.

b. Series Bridging of up to 26 customer designated premises.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package MT-			
	C	1	2	3
Three Premises Bridging	X	X		X
Series Bridging	X		X	

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(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.1 Metallic Service-(Continued)

C. Channel Interfaces

Compatible channel interfaces are set forth in Paragraph 7.3.5, A., following.

D. Optional Features and Functions

1. Central Office Bridging Capability

a. Three Premises Bridging - Provision of tip-to-tip and ring-to-ring connection in a central office of a metallic pair to a third customer designated premises.

b. Series Bridging of up to 26 customer designated premises.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package MT-			
	C	1	2	3
Three Premises Bridging	X	X		X
Series Bridging	X		X	

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Access Services Tariff
Section 7
Original Sheet 16

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

A. Narrowband Services-(Continued)

5. Narrowband 5 (NB5) Special Access Service-(Continued)

a. Description-(Continued)

direct current continuity of this service nor the capability to transport continuously varying alternating currents is assured.

b. Illustrative Applications

Special Access Service NB5 is suitable for use as part of the facilities required to provide intrastate telecommunications services such as:

- Extension Service - Telegraph Grade
- Teletypewriter Service
- Alarm Circuits
- Control/Remote Metering - Telegraph Grade

c. Optional Feature

- Central office bridging capability.

d. Transmission Performance

- Telegraph Distortion

Remedial action will be initiated whenever the telegraph distortion is observed to exceed 12 percent.

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Southwestern Bell Telephone Company
St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.2 Telegraph Grade Service

A. Basic Channel Description

A telegraph grade channel is an unconditioned channel capable of transmitting binary signals at rates of 0-75 baud or 0-150 baud. This channel is furnished for half-duplex or duplex operation.

Telegraph grade channels are provided between customer designated premises or between a customer designated premises and a Telephone Company Hub.

B. Technical Specifications Packages

	Package TG-		
Parameter	C	1	2
Telegraph Distortion	X	X	X

The technical specifications are delineated in Technical Reference PUB 62502.

C. Channel Interfaces

Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

(AT) D. Optional Features, BSEs and Functions

(AT) 1. Telegraph Bridging BSE (two-wire and four-wire)

(AT) The following table shows the technical specifications packages with which the optional features, BSEs and functions are available.

	Available with Technical Specifications Package TG-		
	C	1	2
Telegraph Bridging	X	X	X

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2nd Revised Sheet 17
Replacing 1st Revised Sheet 17

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.2 Telegraph Grade Service

A. Basic Channel Description

A telegraph grade channel is an unconditioned channel capable of transmitting binary signals at rates of 0-75 baud or 0-150 baud. This channel is furnished for half-duplex or duplex operation.

Telegraph grade channels are provided between customer designated premises or between a customer designated premises and a Telephone Company Hub.

B. Technical Specifications Packages

	Package TG-		
Parameter	C	1	2
Telegraph Distortion	X	X	X

The technical specifications are delineated in Technical Reference PUB 62502.

C. Channel Interfaces

(CT) Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Optional Features and Functions

1. Telegraph Bridging (two-wire and four-wire)

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package TG-		
	C	1	2
Telegraph Bridging	X	X	X

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.2 Telegraph Grade Service

A. Basic Channel Description

A telegraph grade channel is an unconditioned channel capable of transmitting binary signals at rates of 0-75 baud or 0-150 baud. This channel is furnished for half-duplex or duplex operation.

Telegraph grade channels are provided between customer designated premises or between a customer designated premises and a Telephone Company Hub.

B. Technical Specifications Packages

	Package TG-		
Parameter	C	1	2
Telegraph Distortion	X	X	X

The technical specifications are delineated in Technical Reference PUB 62502.

C. Channel Interfaces

Compatible channel interfaces are set forth in Paragraph 7.3.5.B., following.

D. Optional Features and Functions

1. Telegraph Bridging (two-wire and four-wire)

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package TG-		
	C	1	2
Telegraph Bridging	X	X	X

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
Original Sheet 17

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

A. Narrowband Services-(Continued)

5. Narrowband 5 (NB5) Special Access Service-(Continued)

e. Available Facility Interface Combinations

IC	End User	IC	End User
2DB2-10	10IA2	4DS9-(2)	10IA2
4DB2-10	10IA2	4AH5-B(3)	10IA2
2DB2-43(1)	10IA2	4AH6-C(3)	10IA2
4DB2-43(1)	10IA2	4AH6-D(3)	10IA2

B. Voice Grade Services

There are nine types of Voice Grade Service, each having a different transmission performance. The transmission performances determine the applications that the various types of Voice Grade Service can be used for. VG1 through VG3 services are intended for voice applications only. VG5 through VG10 are suitable for voiceband data or voice/data applications. The VG 1-3 and 5-10 are provided primarily as end-link designs for inter-exchange carriers and Private Line Services.

1. Voice Grade 1 (VG1) Special Access Service

a. Description

Special Access Service VG1 provides a channel for voice frequency transmission capability. Usable frequencies are nominally 300 to 3000 Hz between an IC terminal location

(1) Supplemental channel assignment information required.
(2) See Paragraph 7.3.3, following, for explanation.
(3) Available only to IC's selecting the four-wire multiplexed High Capacity analog facility interface option at the IC terminal location and providing subsequent system and channel assignment data.

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St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service

A. Basic Channel Description

A voice grade channel is a channel which provides voice frequency transmission capability in the nominal frequency range of 300 to 3000 Hz and may be terminated two-wire or four-wire. Voice grade channels are provided between customer designated premises, between
(AT) a customer designated premises and a Telephone Company Hub, or between
(AT) a customer designated premises and the WATS serving office.

B. Technical Specifications Packages

		Package VG-												
(AT)	Parameter	C(1)	1	2	3	4	5	6	7	8	9	10	11	12	W*
	Attenuation Distortion	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	C-Message Noise	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Echo Control	X	X	X	X		X		X	X			X	X	X+
	Envelope Delay Distortion	X						X	X	X	X	X	X	X	X
	Frequency Shift	X						X	X	X	X	X	X	X	X
	Impulse Noise	X					X	X	X	X	X	X	X	X	X
	Intermodulation Distortion	X						X	X	X	X	X	X		X
	Loss Deviation	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	Phase Hits, Gain Hits, and Dropouts	X													
	Phase Jitter	X						X	X	X	X	X	X	X	
	Signal-to-C Message Noise					X									
	Signal-to-C Notch Noise	X					X	X	X	X	X	X	X	X	X

(AT) * Denotes WATS Access Lines (WALs)
(AT) + When WAL extensions are provided, Echo Control limits are not applicable.
(1) The desired parameters are selected by the customer from the list of available parameters.

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Section 7
1st Revised Sheet 18
Replacing Original Sheet 18

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service

A. Basic Channel Description

A voice grade channel is a channel which provides voice frequency transmission capability in the nominal frequency range of 300 to 3000 Hz and may be terminated two-wire or four-wire. Voice grade channels are provided between customer designated premises or between a customer designated premises and a Telephone Company Hub.

B. Technical Specifications Packages

	Package VG-											
Parameter	C(1)	1	2	3	4	5	6	7	8	9	10	11	12
Attenuation Distortion	X	X	X	X	X	X	X	X	X	X	X	X	X
C-Message Noise	X	X	X	X	X	X	X	X	X	X	X	X	X
Echo Control	X	X	X	X		X		X	X			X	X
Envelope Delay Distortion	X						X	X	X	X	X	X	X
Frequency Shift	X						X	X	X	X	X	X	X
Impulse Noise	X					X	X	X	X	X	X	X	X
Intermodulation Distortion	X						X	X	X	X	X	X	
Loss Deviation	X	X	X	X	X	X	X	X	X	X	X	X	X
Phase Hits, Gain Hits, and Dropouts	X												
Phase Jitter	X						X	X	X	X	X	X	
Signal-to-C Message Noise					X								
Signal-to-C Notch Noise	X					X	X	X	X	X	X	X	X

(1) The desired parameters are selected by the customer from the list of available parameters.

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Southwestern Bell Telephone Company
St. Louis, Missouri

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

1. Voice Grade 1 (VG1) Special Access Service-(Continued)

a. Description-(Continued)

and End User's premises. The transmission interface can be either two-wire or four-wire at both the IC terminal location and the End User's premises. Various interface options are available. This service will support effective two-wire or effective four-wire transmission.

b. Illustrative Applications

Special Access Service VG1 is suitable for use as part of the facilities used to provide intrastate telecommunications services such as:

- Voice Grade Facility
- Alarm Circuits

c. Optional Feature

- Improved return loss at four-wire point of interface, applicable to each two-wire leg of effective four-wire channel.

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By R. D. BARRON, Vice President-Missouri
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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

B. Technical Specifications Packages-(Continued)

The technical specifications for these parameters are delineated in Technical References set forth at the end of Paragraph 7.2.

C. Channel Interfaces

The following channel interfaces for Voice Grade Service do not require signaling capability: AH, DA, DB, DD, DE, DS, NO, PR and TF.

The following channel interfaces for Voice Grade Service require signaling capability: AB, AC, CT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO,
(AT) LR, LS, RV and SF (1).

Combination of channel interfaces DS, GS, and LS for WALs require signaling as defined in Section 6.2.5.

Compatible channel interfaces and available WAL channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Analog Service to Service Through Connect Arrangement

Multiplexed Arrangement

This provides for the interconnection of two subtending analog channels derived from DS1 multiplexed services. The through connect will be provisioned in lieu of a typical voice grade channel termination. The ordering customer must provide channel assignments for both. Voice Grade channel mileage is required if the multiplexed services are terminated in two separate Hubs.

(MT)
|
|
|
(MT)

(AT) (1) This feature is obsolete, and limited to existing installations at
(AT) existing locations for existing customers as of October 6, 1995.

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

B. Technical Specifications Packages-(Continued)

The technical specifications for these parameters are delineated in Technical References set forth at the end of Paragraph 7.2.

C. Channel Interfaces

The following channel interfaces for Voice Grade Service do not require signaling capability: AH, DA, DB, DD, DE, DS, NO, PR and TF.

The following channel interfaces for Voice Grade Service require signaling capability: AB, AC, CT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV and SF.

Combination of channel interfaces DS, GS, and LS for WALs require signaling as defined in Section 6.2.5.

Compatible channel interfaces and available WAL channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Analog Service to Service Through Connect Arrangement

Multiplexed Arrangement

This provides for the interconnection of two subtending analog channels derived from DS1 multiplexed services. The through connect will be provisioned in lieu of a typical voice grade channel termination. The ordering customer must provide channel assignments for both. Voice Grade channel mileage is required if the multiplexed services are terminated in two separate Hubs.

(AT) E. Optional Features, BSEs and Functions

(AT) 1. Central Office Bridging BSE Capability

a. Voice Bridging (two-wire and four-wire)

b. Data Bridging (two-wire and four-wire)

c. DATAPHONE Select-A-Station Bridging with sequential arrangement ports or addressable arrangement ports

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

B. Technical Specifications Packages-(Continued)

(CT) The technical specifications for these parameters are delineated in Technical References set forth at the end of Paragraph 7.2.

C. Channel Interfaces

The following channel interfaces for Voice Grade Service do not require signaling capability: AH, DA, DB, DD, DE, DS, NO, PR and TF.

The following channel interfaces for Voice Grade Service require signaling capability: AB, AC, CT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV and SF.

Combination of channel interfaces DS, GS, and LS for WALs require signaling as defined in Section 6.2.5.

Compatible channel interfaces and available WAL channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

(AT) D. Analog Service to Service Through Connect Arrangement

Multiplexed Arrangement

This provides for the interconnection of two subtending analog channels derived from DS1 multiplexed services. The through connect will be provisioned in lieu of a typical voice grade channel termination. The ordering customer must provide channel assignments for both. Voice Grade channel mileage is required if the multiplexed services are terminated in two
(AT) separate Hubs.

(FC) E. Optional Features and Functions

1. Central Office Bridging Capability

a. Voice Bridging (two-wire and four-wire)

b. Data Bridging (two-wire and four-wire)

c. DATAPHONE Select-A-Station Bridging with sequential arrangement ports or addressable arrangement ports

No supplement to this tariff will be issued except for the purpos of canceling this tariff.

Access Services Tariff
Section 7
3rd Revised Sheet 19
Replacing 2nd Revised Sheet 19

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

B. Technical Specifications Packages-(Continued)

The technical specifications for these parameters (except for drop-outs, gain hits and phase hits) are delineated in Technical Reference PUB 62500 (WALs), PUB 62501 and associated Addendum. The technical specifications for dropouts, phase hits and gain hits are delineated in Technical Reference PUB 41004, Table 4.

C. Channel Interfaces

The following channel interfaces for Voice Grade Service do not require signaling capability: AH, DA, DB, DD, DE, DS, NO, PR and TF.

The following channel interfaces for Voice Grade Service require signaling capability: AB, AC, CT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV and SF.

Combination of channel interfaces DS, GS, and LS for WALs require signaling as defined in Section 6.2.5.

(CT) Compatible channel interfaces and available WAL channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Optional Features and Functions

1. Central Office Bridging Capability

a. Voice Bridging (two-wire and four-wire)

b. Data Bridging (two-wire and four-wire)

c. DATAPHONE Select-A-Station Bridging with sequential arrangement ports or addressable arrangement ports

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
2nd Revised Sheet 19
Replacing 1st Revised Sheet 19

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

B. Technical Specifications Packages-(Continued)

The technical specifications for these parameters (except for dropouts, gain hits and phase hits) are delineated in Technical Reference
(AT) PUB 62500 (WALs), PUB 62501 and associated Addendum. The technical specifications for dropouts, phase hits and gain hits are delineated in Technical Reference PUB 41004, Table 4.

C. Channel Interfaces

The following channel interfaces for Voice Grade Service do not require signaling capability: AH, DA, DB, DD, DE, DS, NO, PR and TF.

The following channel interfaces for Voice Grade Service require signaling capability: AB, AC, CT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV and SF.

(AT) Combination of channel interfaces DS, GS, and LS for WALs require signal-
(AT) ing as defined in Section 6.2.5.

(AT) Compatible channel interfaces and available WAL channel interfaces are
(AT) set forth in Paragraph 7.3.5, C., following.

D. Optional Features and Functions

1. Central Office Bridging Capability

a. Voice Bridging (two-wire and four-wire)

b. Data Bridging (two-wire and four-wire)

c. DATAPHONE Select-A-Station Bridging with sequential arrangement ports or addressable arrangement ports

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
1st Revised Sheet 19
Replacing Original Sheet 19

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

B. Technical Specifications Packages-(Continued)

The technical specifications for these parameters (except for dropouts, gain hits and phase hits) are delineated in Technical Reference PUB 62501 and associated Addendum. The technical specifications for dropouts, phase hits and gain hits are delineated in Technical Reference PUB 41004, Table 4.

C. Channel Interfaces

The following channel interfaces for Voice Grade Service do not require signaling capability: AH, DA, DB, DD, DE, DS, NO, PR and TF.

The following channel interfaces for Voice Grade Service require signaling capability: AB, AC, CT, DX, DY, EA, EB, EC, EX, GO, GS, LA, LB, LC, LO, LR, LS, RV and SF.

Compatible channel interfaces are set forth in Paragraph 7.3.5, C., following.

D. Optional Features and Functions

1. Central Office Bridging Capability

a. Voice Bridging (two-wire and four-wire)

b. Data Bridging (two-wire and four-wire)

c. DATAPHONE Select-A-Station Bridging with sequential arrangement ports or addressable arrangement ports

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Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
Original Sheet 19

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

1. Voice Grade 1 (VG1) Special Access Service-(Continued)

d. Transmission Performance

- C-Message Noise

The C-Message Noise shall be less than:

Channel Mileage (mi)	Limit (dBrnCO)(1) Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

- Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the End User's premises or IC terminal location shall be not less than the following limits:

(1) Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

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By R. D. BARRON, Vice President-Missouri
Southwestern Bell Telephone Company
St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(RT)
(RT)

(MT) E. Optional Features, BSEs and Functions

1. Central Office Bridging BSE Capability

a. Voice Bridging (two-wire and four-wire)

b. Data Bridging (two-wire and four-wire)

(MT) c. DATAPHONE Select-A-Station Bridging with sequential arrangement ports or addressable arrangement ports

d. Telemetry and Alarm Bridging

Split Band, Active Bridging
Passive Bridging
Summation, Active Bridging

2. Central Office Multiplexing BSE

Voice to Telegraph Grade (43-Type Carrier): An arrangement that converts a voice grade channel to telegraph grade channels using frequency division multiplexing.

3. Conditioning BSE

Conditioning provides more specific transmission characteristics for Voice Grade Services. C-type conditioning controls attenuation distortion and envelope delay distortion. Sealing current helps maintain continuity on dry metallic loops.

For two-point services, the parameters apply to each service. For multipoint services, the parameters apply to each mid-link or end link. C-type conditioning and data capability may be combined on the same service.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
3rd Revised Sheet 20
Replacing 2nd Revised Sheet 20

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

(AT) 1. Central Office Bridging BSE Capability-(Continued)

d. Telemetry and Alarm Bridging

Split Band, Active Bridging
Passive Bridging
Summation, Active Bridging

(AT) 2. Central Office Multiplexing BSE

Voice to Telegraph Grade (43-Type Carrier): An arrangement that converts a voice grade channel to telegraph grade channels using frequency division multiplexing.

(AT) 3. Conditioning BSE

Conditioning provides more specific transmission characteristics for Voice Grade Services. C-type conditioning controls attenuation distortion and envelope delay distortion. Sealing current helps maintain continuity on dry metallic loops.

For two-point services, the parameters apply to each service. For multipoint services, the parameters apply to each mid-link or end link. C-type conditioning and data capability may be combined on the same service.

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
2nd Revised Sheet 20
Replacing 1st Revised Sheet 20

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

1. Central Office Bridging Capability-(Continued)

d. Telemetry and Alarm Bridging

Split Band, Active Bridging
Passive Bridging
Summation, Active Bridging

2. Central Office Multiplexing

Voice to Telegraph Grade (43-Type Carrier): An arrangement that converts a voice grade channel to telegraph grade channels using frequency division multiplexing.

3. Conditioning

Conditioning provides more specific transmission characteristics for Voice Grade Services. C-type conditioning controls attenuation distortion and envelope delay distortion. Sealing current helps maintain continuity on dry metallic loops.

For two-point services, the parameters apply to each service. For multipoint services, the parameters apply to each mid-link or end link. C-type conditioning and data capability may be combined on the same service.

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Public Service Commission

By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
1st Revised Sheet 20
Replacing Original Sheet 20

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

1. Central Office Bridging Capability-(Continued)

d. Telemetry and Alarm Bridging

Split Band, Active Bridging
Passive Bridging
Summation, Active Bridging

2. Central Office Multiplexing

Voice to Telegraph Grade (43-Type Carrier): An arrangement that converts a voice grade channel to telegraph grade channels using frequency division multiplexing.

3. Conditioning

Conditioning provides more specific transmission characteristics for Voice Grade Services. C-type conditioning controls attenuation distortion and envelope delay distortion. Sealing current helps maintain continuity on dry metallic loops.

For two-point services, the parameters apply to each service. For multipoint services, the parameters apply to each mid-link or end link. C-type conditioning and data capability may be combined on the same service.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
Original Sheet 20

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

1. Voice Grade 1 (VG1) Special Access Service-(Continued)

d. Transmission Performance-(Continued)

- Echo Control-(Continued)

	Echo Return Loss	Singing Return Loss
Standard Return Loss Interface (Return Loss)	5 dB	2.5 dB
Four-Wire Interface (Equal Level Echo Path Loss)	16 dB	11 dB

Effective Four-Wire Transmission

(Two-wire interface at the End User's premises).

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application 2 dB pad is "in")	20 dB	14 dB

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By R. D. BARRON, Vice President-Missouri
Southwestern Bell Telephone Company
St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

(AT) 3. Conditioning BSE-(Continued)

a. C-Type Conditioning (1)

C-type conditioning is provided for the additional control of attenuation distortion and envelope delay distortion on data services. The attenuation distortion and envelope delay distortion specifications for C-type conditioning are:

Attenuation Distortion
(Frequency Response)
Relative to 1004 Hz

Frequency Range (Hz)	Variation (dB)
400-2800	-1.0 to +2.0
300-3000	-1.0 to +3.0
3000-3200	-2.0 to +6.0

Envelope Delay
Distortion

Frequency Range (Hz)	Variation (micro-seconds)
1000-2600	100
800-2600	200
600-2600	300
500-2800	600
500-3000	3000

(1) This feature is obsolete, and limited to existing installations at existing locations, for existing customers.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
2nd Revised Sheet 21
Replacing 1st Revised Sheet 21

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

3. Conditioning-(Continued)

(AT) a. C-Type Conditioning(1)

C-type conditioning is provided for the additional control of attenuation distortion and envelope delay distortion on data services. The attenuation distortion and envelope delay distortion specifications for C-type conditioning are:

Attenuation Distortion
(Frequency Response)
Relative to 1004 Hz

Frequency Range (Hz)	Variation (dB)
400-2800	-1.0 to +2.0
300-3000	-1.0 to +3.0
3000-3200	-2.0 to +6.0

Envelope Delay Distortion

Frequency Range (Hz)	Variation (micro-seconds)
1000-2600	100
800-2600	200
600-2600	300
500-2800	600
500-3000	3000

(AT) (1) This feature is obsolete, and limited to existing installations at existing
(AT) locations, for existing customers.

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Southwestern Bell Telephone Company
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Access Services Tariff
Section 7
1st Revised Sheet 21
Replacing Original Sheet 21

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

3. Conditioning-(Continued)

a. C-Type Conditioning

C-type conditioning is provided for the additional control of attenuation distortion and envelope delay distortion on data services. The attenuation distortion and envelope delay distortion specifications for C-type conditioning are:

Attenuation Distortion (Frequency Response) Relative to 1004 Hz

Frequency Range (Hz)	Variation (dB)
400-2800	-1.0 to +2.0
300-3000	-1.0 to +3.0
3000-3200	-2.0 to +6.0

Envelope Delay Distortion

Frequency Range (Hz)	Variation (micro-seconds)
1000-2600	100
800-2600	200
600-2600	300
500-2800	600
500-3000	3000

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Southwestern Bell Telephone Company
St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

1. Voice Grade 1 (VG1) Special Access Service-(Continued)

d. Transmission Performance-(Continued)

- Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL		Improved RL	
ERL	5 dB	ERL	20 dB
SRL	2.5 dB	SRL	13.5 dB

- Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ±4.0 dB.

- Attenuation Distortion

The attenuation distortion between 404 Hz and 2804 Hz shall be within -2.0 dB and +10.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The attenuation distortion between 504 Hz and 2504 Hz shall be within -2.0 dB and +8.0 dB and between 304 Hz and 3004 Hz shall be within -3.0 dB and +12.0 db.

e. Available Facility Interface Combinations

VG1 is available only with specific facility interface combinations as set forth in paragraph 7.2.1, B.14., following.

2. Voice Grade 2 (VG2) Special Access Service

a. Description

Special Access Service VG2 provides a channel for voice frequency transmission capability. Usable frequencies are nominally 300 to 3000 Hz between an IC terminal location and an End User's premises.

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

(AT) 3. Conditioning BSE-(Continued)

b. Sealing Current Conditioning

Sealing current conditioning is provided to help maintain continuity on dry metallic loops. It is usually associated with four-wire DA or NO-type channel interfaces.

c. Improved Attenuation Distortion (IAD)

Improved Attenuation Distortion upgrades the frequency versus loss response limits of the channel. The specifications for Improved Attenuation Distortion are delineated in Technical Reference set forth at the end of Paragraph 7.2.

d. C-Conditioning

C-Conditioning upgrades the frequency response and envelope delay distortion limits of the analog data channel. The specifications for C-Conditioning, which are less stringent than C-Type conditioning, are delineated in Technical References set forth at the end of Paragraph 7.2.

e. Improved Envelope Delay Distortion

Improved Envelope Delay Distortion Upgrades the frequency vs. delay response limits of the analog data channel. The specifications for Improved Envelope Delay Distortion are delineated in Technical References set forth at the end of Paragraph 7.2.

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St. Louis, Missouri

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Access Services Tariff
Section 7
4th Revised Sheet 22
Replacing 3rd Revised Sheet 22

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

3. Conditioning-(Continued)

b. Sealing Current Conditioning

Sealing current conditioning is provided to help maintain continuity on dry metallic loops. It is usually associated with four-wire DA or NO-type channel interfaces.

(AT) Improved Attentuation Distortion (IAD)

c. Improved Attenuation Distortion upgrades the frequency versus loss response limits of the channel. The specifications for Improved Attenuation Distortion are delineated in Technical
(AT) References set forth at the end of Paragraph 7.2.

(AT) d. C-Conditioning

C-Conditioning upgrades the frequency response and envelope delay distortion limits of the analog data channel. The specifications for C-Conditioning, which are less stringent than C-Type conditioning, are delineated in Technical References set forth at the end of Paragraph 7.2.

e. Improved Envelope Delay Distortion

Improved Envelope Delay Distortion Upgrades the frequency vs. delay response limits of the analog data channel. The specifications for Improved Envelope Delay Distortion are delineated in Technical
(AT) References set forth at the end of Paragraph 7.2.

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Access Services Tariff
Section 7
3rd Revised Sheet 22
Replacing 2nd Revised Sheet 22

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

3. Conditioning-(Continued)

b. Sealing Current Conditioning

Sealing current conditioning is provided to help maintain continuity on dry metallic loops. It is usually associated with four-wire DA or NO-type channel interfaces.

(AT) c. Improved Attenuation Distortion upgrades the frequency versus loss response limits of the channel. The specifications for Improved Attenuation Distortion are delineated in Technical Reference PUB 62500 for WALs. (AT)

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Access Services Tariff
Section 7
2nd Revised Sheet 22
Replacing 1st Revised Sheet 22

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

3. Conditioning-(Continued)

b. Sealing Current Conditioning

Sealing current conditioning is provided to help maintain continuity on dry metallic loops. It is usually associated with four-wire DA or NO-type channel interfaces.

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Access Services Tariff
Section 7
1st Revised Sheet 22
Replacing Original Sheet 22

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

2. Voice Grade 2 (VG2) Special Access Service-(Continued)

a. Description-(Continued)

The transmission interface at the End User's premises is two-wire or four-wire and the IC terminal location interface is four-wire. This service will support effective two-wire or effective four-wire transmission.

b. Illustrative Applications

Special Access Service VG2 is suitable for use as part of the facilities required to provide intrastate telecommunications services such as:

- Centrex C.O. Line
- Concentrator Identifier Trunk
- Extension Service
- Off-Premises Intercommunications Line
- Private Line Voice Circuit
(AT) - Paging Circuit
- Foreign Exchange Line (Closed End)
- Centrex Station Line - Off-Premises
- Off-Premises Extension
- Off-Premises PBX Station Line

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Access Services Tariff
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Original Sheet 22

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

2. Voice Grade 2 (VG2) Special Access Service-(Continued)

a. Description-(Continued)

The transmission interface at the End User's premises is two-wire or four-wire and the IC terminal location interface is four-wire. This service will support effective two-wire or effective four-wire transmission.

b. Illustrative Applications

Special Access Service VG2 is suitable for use as part of the facilities required to provide intrastate telecommunications services such as:

- Centrex C.O. Line
- Concentrator Identifier Trunk
- Extension Service
- Off-Premises Intercommunications Line
- Private Line Voice Circuit
- Foreign Exchange Line (Closed End)
- Centrex Station Line - Off-Premises
- Off-Premises Extension
- Off-Premises PBX Station Line

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

4. Reserved for future use.

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Access Services Tariff
Section 7
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Replacing 2nd Revised Sheet 23

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

4. Reserved for future use.

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Access Services Tariff
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Replacing 1st Revised Sheet 23

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

4. Reserved for future use.

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

2. Voice Grade 2 (VG2) Special Access Service-(Continued)

c. Optional Features

- Central office bridging capability.
- Improved return loss for effective two-wire transmission at the End User's premises.
- IC specified End User premises receive level within a range acceptable to the Telephone Company. (RT)
- Improved return loss at four-wire point of interface, applicable to each two-wire leg of effective four-wire channel.

d. Transmission Performance

- C-Message Noise

The C-Message Noise shall be less than:

Channel Mileage (mi)	Limit (dBrnCO)(1) Type V1	Type V2
0 - 50	31	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

- Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the End User's premises or IC terminal location shall be not less than the following limits:

(1) Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

2. Voice Grade 2 (VG2) Special Access Service-(Continued)

c. Optional Features

- Central office bridging capability.
- Improved return loss for effective two-wire transmission at the End User's premises.
- IC specified End User premises receive level within a range acceptable to the Telephone Company on effective four-wire transmission.
- Improved return loss at four-wire point of interface, applicable to each two-wire leg of effective four-wire channel.

d. Transmission Performance

- C-Message Noise

The C-Message Noise shall be less than:

Channel Mileage (mi)	Limit (dBrnCO)(1) Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

- Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, and expressed as Echo Return Loss and Singing Return Loss, at either the End User's premises or IC terminal location, shall be not less than the following limits:

(1) Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

5. Improved Termination

Improved termination at a four-wire point of termination, ordered with either an effective two-wire or effective four-wire channel: Provides for a fixed 600 ohm impedance, variable level range and simplex reversal. Telephone Company equipment is required at the customer's premises where this option is ordered. The improved termination parameters are delineated in Technical References set forth at the end of Paragraph 7.2.

6. Improved Return Loss

Improved return loss at a two-wire point of termination ordered only on effective two-wire channels: Provides for more stringent echo control specifications. In order for this option to be applicable, the transmission path must be four-wire at one POT and two-wire at the other POT. Placement of Telephone Company equipment may be required at the customer's premises with the two-wire POT. The improved return loss parameters are delineated in Technical References set forth at the end of Paragraph 7.2.

7. Data Capability

Data capability provides transmission characteristics suitable for data communications. Specifically, data capability provides for the control of signal to C-notched noise ration and intermodulation distortion.

The signal to C-notched noise ratio and intermodulation distortion parameters for data capability are:

- Signal to C-notched noise ratio is equal to or greater than 32 dB

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
2nd Revised Sheet 24
Replacing 1st Revised Sheet 24

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

(CT) 5. Improved Termination

(CT) Improved termination at a four-wire point of termination, ordered with either an effective two-wire or effective four-wire channel: Provides for a fixed 600 ohm impedance, variable level range and simplex reversal. Telephone Company equipment is required at the customer's premises where this option is ordered. The improved termination parameters are
(CT) delineated in Technical References set forth at the end of Paragraph 7.2.

(AT) 6. Improved Return Loss

(FC) Improved return loss at a two-wire point of termination ordered only on effective two-wire channels: Provides for more stringent echo control specifications. In order for this option to be applicable, the transmission path must be four-wire at one POT and two-wire at the other POT. Placement of Telephone Company equipment may be required at the customer's premises with the two-wire POT. The improved return loss
(CT) parameters are delineated in Technical References set forth at the end of Paragraph 7.2.

(FC) 7. Data Capability

Data capability provides transmission characteristics suitable for data communications. Specifically, data capability provides for the control of signal to C-notched noise ration and intermodulation distortion.

(RT) The signal to C-notched noise ratio and intermodulation distortion parameters for data capability are:

- Signal to C-notched noise ratio is equal to or greater than 32 dB

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Access Services Tariff
Section 7
1st Revised Sheet 24
Replacing Original Sheet 24

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

5. Improved Return Loss

a. Improved return loss at a four-wire point of termination, ordered with either an effective two-wire or effective four-wire channel: Provides for a fixed 600 ohm impedance, variable level range and simplex reversal. Telephone Company equipment is required at the customer's premises where this option is ordered. The improved return loss parameters are delineated in Technical Reference PUB 62501.

b. Improved return loss at a two-wire point of termination ordered only on effective two-wire channels: Provides for more stringent echo control specifications. In order for this option to be applicable, the transmission path must be four-wire at one POT and two-wire at the other POT. Placement of Telephone Company equipment may be required at the customer's premises with the two-wire POT. The improved return loss parameters are delineated in Technical Reference PUB 62501.

6. Data Capability

Data capability provides transmission characteristics suitable for data communications. Specifically, data capability provides for the control of signal to C-notched noise ratio and intermodulation distortion. It is available for two-point services or multipoint services.

The signal to C-notched noise ratio and intermodulation distortion parameters for data capability are:

- Signal to C-notched noise ratio is equal to or greater than 32 dB

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

2. Voice Grade 2 (VG2) Special Access Service-(Continued)

d. Transmission Peformance-(Continued)

- Echo Control-(Continued)

Effective Two-Wire Transmission

(Four-wire interface at the IC terminal location and two-wire interface at the End User's premises.)

	Echo Return Loss	Singing Return Loss
Standard Return Loss (at Two-Wire Interface)	5 dB	2.5 dB
Improved Return Loss (at Two-wire Interface)	13 dB	8 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex Application, 2 dB pad is "in")	16 dB	11 dB

Effective Four-Wire Transmission

(Two-wire interface at the End User's premises.)

	Echo Return Loss	Singing Return Loss
Two-wire Interface (Return Loss)	24 dB	18 dB
Four-wire Interface (Equal Level Echo Path Loss)	20 dB	14 dB

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Southwestern Bell Telephone Company
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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

7. Data Capability-(Continued)

- Intermodulation distortion:
- Signal to second order modulation products (R2) is equal to or greater than 38 dB
- Signal to third order modulation products (R3) is equal to or greater than 42 dB

When a service equipped with data capability is used for voice communications, the quality of the voice transmission may not be satisfactory.

8. Improved Echo Control

Improved Echo Control for two-wire WALs provides more stringent control of reflected signals. Placement of Telephone Company equipment may be required at the customer's premises. The Improved Echo Control specifications are delineated in Technical References set forth at the end of Paragraph 7.2.

9. Improved Equal Level Echo Path Loss

Provides improved echo control at four-wire interface for effective two- wire voice grade configurations. Specifications can only be met with limited facility configurations. Improved Equal Level Echo Path Loss specifications are delineated in Technical References set forth at the end of Paragraph 7.2.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
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Replacing 2nd Revised Sheet 25

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

(FC) 7. Data Capability-(Continued)

- Intermodulation distortion:
  - Signal to second order modulation products (R2) is equal to or greater than 38 dB
  - Signal to third order modulation products (R3) is equal to or greater than 42 dB

When a service equipped with data capability is used for voice communications, the quality of the voice transmission may not be satisfactory.

(FC) 8. Improved Echo Control

Improved Echo Control for two-wire WALs provides more stringent control of reflected signals. Placement of Telephone Company equipment may be required at the customer's premises. The Improved Echo
(CT) Control specifications are delineated in Technical References set forth
(CT) at the end of Paragraph 7.2.

(AT) 9. Improved Equal Level Echo Path Loss

Provides improved echo control at four-wire interface for effective two-wire voice grade configurations. Specifications can only be met with limited facility configurations. Improved Equal Level Echo Path Loss specifications are delineated in Technical References set forth at the
(AT) end of Paragraph 7.2.

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Access Services Tariff
Section 7
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Replacing 1st Revised Sheet 25

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

6. Data Capability-(Continued)

- Intermodulation distortion:
  - Signal to second order modulation products (R2) is equal to or greater than 38 dB
  - Signal to third order modulation products (R3) is equal to or greater than 42 dB

When a service equipped with data capability is used for voice communications, the quality of the voice transmission may not be satisfactory.

(AT) 7. Improved Echo Control

Improved Echo Control for two-wire WALs provides more stringent control of reflected signals. Placement of Telephone Company equipment may be required at the customer's premises. The Improved Echo Control specifications are delineated in Technical Reference PUB (AT) 62500 for WALs.

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(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

6. Data Capability-(Continued)

- Intermodulation distortion:
  - Signal to second order modulation products (R2) is equal to or greater than 38 dB
  - Signal to third order modulation products (R3) is equal to or greater than 42 dB

When a service equipped with data capability is used for voice communications, the quality of the voice transmission may not be satisfactory.

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Access Services Tariff
Section 7
Original Sheet 25

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

2. Voice Grade 2 (VG2) Special Access Service-(Continued)

d. Transmission Peformance-(Continued)

- Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL		Improved RL	
ERL	5 dB	ERL	20 dB
SRL	2.5 dB	SRL	13.5 dB

- Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ±1.5 dB.

- Attenuation Distortions

The attenuation distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +4.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The attenuation distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

e. Available Facility Interface Combinations

VG2 is available only with specific facility interface combinations as set forth in Paragraph 7.2.1, B.14, following.

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Southwestern Bell Telephone Company
St. Louis, Missouri

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

10. Signaling Capability

Signaling capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate.

11. Selective Signaling Arrangement

An arrangement that permits code selective ringing for up to ten codes on a multipoint service.

12. Transfer Arrangement

An arrangement that affords the customer an additional measure of flexibility in the use of their access channel(s). The arrangement can be utilized to transfer a leg of a Special Access Service to another channel that terminates in either the same or a different customer premises. A key activated or dial-up control service is required to operate the transfer arrangement. A spare line, if required, is not included as part of the option.

(AT) The following table shows the technical specifications packages with which the optional features, BSEs and functions are available.

	Available with Technical Specifications Package VG-													
	C	1	2	3	4	5	6	7	8	9	10	11	12	W
C-Type Conditioning (1)	X					X	X	X	X	X	X			
Central Office Bridging Capabilit	X		X			X	X				X	X	X	
Central Office Multiplexing	X						X							
C-Conditioning	X					X	X	X	X	X	X			

(1) This feature is obsolete, and limited to existing installations at existing locations, for existing customers.

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

(FC) 10. Signaling Capability

Signaling capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate.

(FC) 11. Selective Signaling Arrangement

An arrangement that permits code selective ringing for up codes on a multipoint service.

(FC) 12. Transfer Arrangement

An arrangement that affords the customer an additional measure of flexibility in the use of their access channel(s). The arrangement can be utilized to transfer a leg of a Special Access Service to another channel that terminates in either the same or a different customer premises. A key activated or dial-up control service is required to operate the transfer arrangement. A spare line, if required, is not included as part of the option.

The following table shows the technical specifications packages with which the optional features and functions are available.

		Available with Technical Specifications Package VG-													
		C	1	2	3	4	5	6	7	8	9	10	11	12	W
(AT)	C-Type Conditioning (1)	X					X	X	X	X	X	X			
	Central Office Bridging Capabilit	X		X			X	X				X	X	X	
	Central Office Multiplexing	X						X							
(AT)	C-Conditioning	X					X	X	X	X	X	X			

(AT) (1) This feature is obsolete, and limited to existing installations at existing
(AT) locations, for existing customers.

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No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
2nd Revised Sheet 26
Replacing 1st Revised Sheet 26

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

8. Signaling Capability

Signaling capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate.

9. Selective Signaling Arrangement

An arrangement that permits code selective ringing for up to ten codes on a multipoint service.

10. Transfer Arrangement

An arrangement that affords the customer an additional measure of flexibility in the use of their access channel(s). The arrangement can be utilized to transfer a leg of a Special Access Service to another channel that terminates in either the same or a different customer premises. A key activated or dial-up control service is required to operate the transfer arrangement. A spare line, if required, is not included as part of the option.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package VG-													
(AT)	C	1	2	3	4	5	6	7	8	9	10	11	12	W
C-Type Conditioning	X					X	X	X	X	X	X			
Central Office Bridging Capability	X		X			X	X				X	X	X	
Central Office Multiplexing	X						X							

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(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

8. Signaling Capability

Signaling capability provides for the process by which one customer premises alerts another customer premises on the same service with which it wishes to communicate.

9. Selective Signaling Arrangement

An arrangement that permits code selective ringing for up to ten codes on a multipoint service.

10. Transfer Arrangement

An arrangement that affords the customer an additional measure of flexibility in the use of their access channel(s). The arrangement can be utilized to transfer a leg of a Special Access Service to another channel that terminates in either the same or a different customer premises. A key activated or dial-up control service is required to operate the transfer arrangement. A spare line, if required, is not included as part of the option.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package VG												
	C	1	2	3	4	5	6	7	8	9	10	11	12
C-Type Conditioning	X					X	X	X	X	X	X		
Central Office Bridging Capability	X		X			X	X				X	X	X
Central Office Multiplexing	X						X						

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Access Services Tariff
Section 7
Original Sheet 26

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

3. Voice Grade 3 (VG3) Special Access Service

a. Description

Special Access Service VG3 provides a channel for voice frequency transmission capability. Usable frequencies are nominally 300 to 3000 Hz between an IC terminal location and an End User's premises. The transmission interface at the End User's premises is two-wire or four-wire, and the IC terminal location interface is four-wire. This service will support effective two-wire or four-wire transmission.

b. Illustrative Applications

Special Access Service VG3 is suitable for use as part of the facilities required to provide intrastate telecommunications services such as:

- Foreign Exchange Trunk (Closed End)
- Alternate Use Service
- PBX/CTX Tie Trunks
- SSN Access Line
- SSN Station Line
- SSN Network Line
- SSN Tie Trunk
- Station and Premises Connecting Facilities

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Access Services Tariff
Section 7
5th Revised Sheet 27
Replacing 4th Revised Sheet 27

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(AT) E. Optional Features, BSEs and Functions-(Continued)

	Available with Technical Specifications Package VG-												
	C	1	2	3	4	5	6	7	8	9	10	11	12	W
Data Capability	X						X				X			
Improved Attenuation Distortion (IAD)	X					X	X	X	X	X	X			X
Improved Echo Control at two-wire WAL point of termination														X+
Improved Termination at four-wire point of termination	X	X	X	X	X	X	X	X	X	X	X	X	X	
Improved Return Loss at two-wire point of termination	X		X	X				X						
Improved ELEPL	X	X	X	X	X			X						
Sealing Current Conditioning	X	X				X	X					X	X	
Selective Signaling Arrangement	X		X											
Signaling Capability	X	X	X	X				X	X	X				*
Improved Envelope Delay Distortion(IEDD)	X						X	X	X	X	X	X		
Transfer Arrangement	X	X	X	X	X	X	X	X	X	X	X	X	X	X

* Signaling is provided in conjunction with Switched Access Service.
+ When WAL extensions are provided, Echo Control limits are not applicable.

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Access Services Tariff
Section 7
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ACCESS SERVICES

SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) E. Optional Features and Functions-(Continued)

		Available with Technical Specifications Package VG-												
		C	1	2	3	4	5	6	7	8	9	10	11	12	V
(RT)	Data Capability	X						X				X			
(AT)	Improved Attenuation Distortion (IAD)	X					X	X	X	X	X	X			X
	Improved Echo Control at two-wire VAL point of termination														X+
(CT)	Improved Termination at four-wire point of termination	X	X	X	X	X	X	X	X	X	X	X	X	X	
(AT)	Improved Return Loss at two-wire point of termination	X		X	X				X						
(AT)	Improved ELEPL	X	X	X	X		X		X						
	Sealing Current Conditioning	X	X				X	X				X		X	
	Selective Signaling Arrangement	X		X											
(AT)	Signaling Capability	X	X	X	X				X	X	X				*
	Improved Envelope Delay Distortion(IEDD)	X					X	X	X	X	X	X			
	Transfer Arrangement	X	X	X	X	X	X	X	X	X	X	X	X	X	

(MT)

* Signaling is provided in conjunction with Switched Access Service.
\+ When VAL extensions are provided, Echo Control limits are not applicable.

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

10. Transfer Arrangement-(Continued)

		Available with Technical Specifications Package VG-												
(AT)		C	1	2	3	4	5	6	7	8	9	10	11	12	W
	Data Capability	X						X				X			
(AT)	Improved Attenuation Distortion														X
(AT)	Improved Echo Control at two-wire WAL point of termination														X+
	Improved Return Loss at four-wire point of termination	X	X	X	X	X	X	X	X	X	X	X	X	X	
	at two-wire point of termination	X		X	X				X						
	Sealing Current Conditioning	X	X				X	X				X		X	
	Selective Signaling Arrangement	X		X											
	Signaling Capability	X	X	X	X				X	X	X				*
(RT)	Transfer Arrangement	X	X	X	X	X	X	X	X	X	X	X	X	X	

E. Four-Wire/Two-Wire Conversion

When a customer requests that an effective four-wire channel be terminated with a two-wire channel interface at the customer-designated premises, a four-wire to two-wire conversion is required. The rate for the conversion is included as part of the basic Channel Termination rate.

(AT) * Signaling is provided in conjunction with Switched Access Service.
(AT) + When WAL extensions are provided, Echo Control limits are not applicable.

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Southwestern Bell Telephone Company
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(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

D. Optional Features and Functions-(Continued)

	Available with Technical Specifications Package VG-												
	C	1	2	3	4	5	6	7	8	9	10	11	12
Data Capability	X						X	X			X		
Improved Return Loss At Four-Wire Point Of Termination	X	X	X	X	X	X	X	X	X	X	X	X	X
At Two-Wire Point Of Termination	X		X	X									
Sealing Current Conditioning	X	X				X	X				X		X
Selective Signaling Arrangement	X		X										
Signaling Capability	X	X	X	X				X	X	X			
Transfer Arrangement	X	X	X	X	X	X	X	X	X	X	X	X	X

E. Four-Wire/Two-Wire Conversion

When a customer requests that an effective four-wire channel be terminated with a two-wire channel interface at the customer-designated premises, a four-wire to two-wire conversion is required. The rate for the conversion is included as part of the basic Channel Termination rate.

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Access Services Tariff
Section 7
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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

3. Voice Grade 3 (VG3) Special Access Service-(Continued)

c. Optional Features

- Improved return loss for effective two-wire transmission at the End User's premises.
- IC specified End User's premises receive level within a range acceptable to the Telephone Company. (RT)
- Improved return loss at four-wire point of interface, applicable to each two-wire leg of effective four-wire channel.

d. Transmission Performance

- C-Message Noise

The C-Message noise shall be less than:

Channel Mileage (mi)	Limit (dBrnCO)(1) Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

- Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, for both Echo Return Loss and Singing Return Loss, at either the End User's premises or IC terminal location shall be not less than the following limits:

(1) Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

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Access Services Tariff
Section 7
Original Sheet 27

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

3. Voice Grade 3 (VG3) Special Access Service-(Continued)

c. Optional Features

- Improved return loss for effective two-wire transmission at the End User's premises.
- IC specified End User's premises receive level within a range acceptable to the Telephone Company on effective four-wire transmission.
- Improved return loss at four-wire point of interface, applicable to each two-wire leg of effective four-wire channel.

d. Transmission Performance

- C-Message Noise

The C-Message noise shall be less than:

Channel Mileage (mi)	Limit (dBrnC0)(1) Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

- Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, for both Echo Return Loss and Singing Return Loss, at either the End User's premises or IC terminal location shall be not less than the following limits:

(1) Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.3 Voice Grade Service-(Continued)

(FC) F. Four-Wire/Two-Wire Conversion

When a customer requests that an effective four-wire channel be terminated with a two-wire channel interface at the customer-designated premises, a four-wire to two-wire conversion is required. The rate for the conversion is included as part of the basic Channel Termination rate.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

(RT)

(RT)

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Access Services Tariff
Section 7
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(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.4 Program Audio Service

A. Basic Channel Description

A Program Audio channel is a channel measured in Hz for the transmission of a complex signal voltage. The actual bandwidth is a function of the channel interface selected by the customer. Only one-way transmission is provided. Program Audio channels are provided between customer designated premises or between a customer designated premises and a Telephone Company Hub.

B. Technical Specifications Packages

	Package AP-				
Parameter	C(1)	1	2	3	4
Actual Measured Loss	X	X	X	X	X
Amplitude Tracking	X				
Crosstalk	X	X	X	X	X
Distortion Tracking	X				
Gain/Frequency Distortion	X	X	X	X	X
Group Delay	X				
Noise	X	X	X	X	X
Phase Tracking	X				
Short-Term Gain Stability	X				
Short-Term Loss	X				
Total Distortion	X	X	X	X	X

The technical specifications are delineated in Technical Reference PUB 62503 and associated Addendum.

C. Channel Interfaces

The following channel interfaces (CI's) define the bandwidths that are available for a Program Audio channel:

(1) The desired parameters are selected by the customer from the list of available parameters.

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Access Services Tariff
Section 7
Original Sheet 28

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

3. Voice Grade 3 (VG3) Special Access Service-(Continued)

d. Transmission Performance-(Continued)

- Echo Control-(Continued)

Effective Two-Wire Transmission

(Four-wire interface at the IC terminal location, two-wire interface at the End User's premises.)

	Echo Return Loss	Singing Return Loss
Standard Return Loss (at Two-Wire Interface)	5 dB	2.5 dB
Improved Return Loss (at Two-Wire Interface)	13 dB	8 dB
Four-Wire Interface (Equal Level Echo Path Loss) (For Centrex application, 2 dB pad is "in")	16 dB	11 dB

Effective Four-Wire Transmission

(Two-wire interface at the End User's premises).

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss)	20 dB	14 dB

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

(RT)

(RT)

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Access Services Tariff
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(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.4 Program Audio Service-(Continued)

C. Channel Interfaces-(Continued)

CI	Bandwidth
PG-1	Nominal frequency from 50 to 15000 Hz
PG-3	Nominal frequency from 200 to 3500 Hz
PG-5	Nominal frequency from 100 to 5000 Hz
PG-8	Nominal frequency from 50 to 8000 Hz

Compatible channel interfaces are set forth in Paragraph 7.3.5, D., following.

D. Optional Features and Functions

1. Central Office Bridging Capability

   Distribution Amplifier

2. Gain Conditioning

   Control of 1004 Hz AML at initiation of service to 0 dB ± .05 dB.

3. Stereo

   Provision of a pair of gain/phase equalized channels for stereo applications. (additional AP channel must be ordered separately.)

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package AP-				
	C	1	2	3	4
Central Office Bridging Capability	X	X	X	X	X
Gain Conditioning	X	X	X	X	X
Stereo	X				X

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Southwestern Bell Telephone Company
St. Louis, Missouri

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

3. Voice Grade 3 (VG3) Special Access Service-(Continued)

d. Transmission Performance-(Continued)

- Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL		Improved RL	
ERL	5 dB	ERL	20 dB
SRL	2.5 dB	SRL	13.5 dB

- Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ±1.5 dB.

- Attentuation Distortions

The attenuation distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +3.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The attenuation distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

e. Available Facility Interface Combinations

VG3 is available only with specific facility interface combinations as set forth in Paragraph 7.2.1, B., 14, following.

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.5 Wideband Analog Service

A. Basic Channel Description

A Wideband Analog channel is a channel with a bandwidth measured in kHz for the transmission of a wideband signal. The actual bandwidth is a function of the channel interface selected by the customer. Wideband Analog channels are provided between customer designated premises or between a customer designated premises and a Telephone Company Hub.

B. Technical Specifications Packages

	Package WA-				
Parameter	1	2	2A	3	4
Amplitude Stability	X	X			
Background Noise	X	X	X	X	X
Frequency Shift	X	X	X		
Gain/Frequency Characteristics of:					
-Group Connections	X			X	X
-Supergroup Connections		X			
-Mastergroup Connections			X		
Impulse Noise	X	X	X		
Net Loss Variations	X	X	X	X	X
Pilot Slot	X	X	X		
Spurious Single Frequency Tone	X	X	X		

(CT) The technical specifications are delineated in Technical References listed in Paragraph 7.2, preceding.

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Access Services Tariff
Section 7
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Replacing Original Sheet 30

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.5 Wideband Analog Service

A. Basic Channel Description

A Wideband Analog channel is a channel with a bandwidth measured in kHz for the transmission of a wideband signal. The actual bandwidth is a function of the channel interface selected by the customer. Wideband Analog channels are provided between customer designated premises or between a customer designated premises and a Telephone Company Hub.

B. Technical Specifications Packages

	Package WA-				
Parameter	1	2	2A	3	4
Amplitude Stability	X	X			
Background Noise	X	X	X	X	X
Frequency Shift	X	X	X		
Gain/Frequency Characteristics of:					
-Group Connections	X			X	X
-Supergroup Connections		X			
-Mastergroup Connections			X		
Impulse Noise	X	X	X		
Net Loss Variations	X	X	X	X	X
Pilot Slot	X	X	X		
Spurious Single Frequency Tone	X	X	X		

The technical specifications are delineated in Technical Reference PUB 62505 and associated Addendum.

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

4. Voice Grade 4 (VG4) Special Access Service

Reserved For Future Use

5. Voice Grade 5 (VG5) Special Access Service

a. Description

Special Access Service VG5 provides a channel for voiceband data transmission capability. Usable frequencies are nominally 300 to 3000 Hz between an IC terminal location and an End User's premises. The transmission interface can be either two-wire or four-wire at the End User's premises and the IC terminal location. This service will support effective two-wire or four-wire transmission.

b. Illustrative Applications

Special Access Service VG5 is suitable for use as part of the facilities required to provide intrastate telecommunications services such as:

- Protective Alarm
- DATAPHONE Select-A-Station

c. Optional Features

- C-Conditioning
- Central office bridging capability.
- Improved return loss at four-wire point of interface, applicable to each two-wire leg of effective four-wire channel.

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.5 Wideband Analog Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CIs) define the bandwidths that are available for a Wideband Analog channel:

CI	Bandwidth
AH-B	60 kHz to 108 kHz (Group)
AH-C	312 kHz to 552 kHz (Supergroup)
AH-D	564 kHz to 3084 kHz (Mastergroup)
WD-1	300 Hz to 18 kHz
WD-2	29 kHz to 44 kHz
WD-3	28 kHz to 44 kHz

Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

(AT) D. Optional Features, BSEs and Functions

(AT) 1. Central Office Multiplexing BSE

a. Mastergroup to Supergroup

An arrangement that converts a Mastergroup channel to ten Supergroup channels using frequency division multiplexing.

b. Supergroup to Group

An arrangement that converts a Supergroup channel to five Group channels using frequency division multiplexing.

c. Group to Voice

An arrangement that converts a Group channel to twelve Voice Grade channels using frequency division multiplexing. A channel(s) of this Group level service to the Hub can also be used for Program Audio service.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
2nd Revised Sheet 31
Replacing 1st Revised Sheet 31

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.5 Wideband Analog Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bandwidths that are available for a Wideband Analog channel:

CI	Bandwidth
AH-B	60 kHz to 108 kHz (Group)
AH-C	312 kHz to 552 kHz (Supergroup)
AH-D	564 kHz to 3084 kHz (Mastergroup)
WD-1	300 Hz to 18 kHz
WD-2	29 kHz to 44 kHz
WD-3	28 kHz to 44 kHz

(CT) Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Optional Features and Functions

1. Central Office Multiplexing

a. Mastergroup to Supergroup

An arrangement that converts a Mastergroup channel to ten Supergroup channels using frequency division multiplexing.

b. Supergroup to Group

An arrangement that converts a Supergroup channel to five Group channels using frequency division multiplexing.

c. Group to Voice

An arrangement that converts a Group channel to twelve Voice Grade channels using frequency division multiplexing. A channel(s) of this Group level service to the Hub can also be used for Program Audio service.

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
1st Revised Sheet 31
Replacing Original Sheet 31

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.5 Wideband Analog Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bandwidths that are available for a Wideband Analog channel:

CI	Bandwidth
AH-B	60 kHz to 108 kHz (Group)
AH-C	312 kHz to 552 kHz (Supergroup)
AH-D	564 kHz to 3084 kHz (Mastergroup)
WD-1	300 Hz to 18 kHz
WD-2	29 kHz to 44 kHz
WD-3	28 kHz to 44 kHz

Compatible channel interfaces are set forth in Paragraph 7.3.5, E., following.

D. Optional Features and Functions

1. Central Office Multiplexing

a. Mastergroup to Supergroup

An arrangement that converts a Mastergroup channel to ten Supergroup channels using frequency division multiplexing.

b. Supergroup to Group

An arrangement that converts a Supergroup channel to five Group channels using frequency division multiplexing.

c. Group to Voice

An arrangement that converts a Group channel to twelve Voice Grade channels using frequency division multiplexing. [illegible] channel(s) of this Group level service to the Hub can also be used for Program Audio service.

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
Original Sheet 31

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

5. Voice Grade 5 (VG5) Special Access Service-(Continued)

d. Transmission Performance

- C-Message Noise

The C-Message Noise shall be less than:

Channel Mileage (mi)	Limit (dBrnCO)(1) Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

- Echo Control

Echo Control, identified as Equal Level Echo Path Loss at four-wire interfaces or Return Loss at two-wire interfaces, for both Echo Return Loss and Singing Return Loss, at either the End User's premises or IC terminal location shall be not less than the following limits:

(1) Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

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By R. D. BARRON, Vice President-Missouri
Southwestern Bell Telephone Company
St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.5 Wideband Analog Service-(Continued)

(AT) D. Optional Features, BSEs and Functions-(Continued)

(AT) 1. Central Office Multiplexing BSE-(Continued)

d. Group to DS1

An arrangement that converts two Group channels to a DS1 channel using analog to digital conversion.

(AT) The following table shows the technical specifications packages with which the optional features, BSEs and functions are available.

	Available with Technical Specifications Package WA-				
	1	2	2A	3	4
Central Office Multiplexing:					
-Mastergroup to Supergroup			X		
-Supergroup to Group		X			
-Group to Voice	X				
-Group to DS1(1)					

(1) Requires two channels with technical specifications package WA1 to form a WA1T service.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
1st Revised Sheet 32
Replacing Original Sheet 32

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.5 Wideband Analog Service-(Continued)

D. Optional Features and Functions-(Continued)

1. Central Office Multiplexing-(Continued)

d. Group to DS1

An arrangement that converts two Group channels to a DS1 channel using analog to digital conversion.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package WA-				
	1	2	2A	3	4
Central Office Multiplexing:					
-Mastergroup to Supergroup			X		
-Supergroup to Group		X			
-Group to Voice	X				
-Group to DS1(1)					

(1) Requires two channels with technical specifications package WA1 to form a WA1T service.

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Southwestern Bell Telephone Company
St. Louis, Missouri

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
Original Sheet 32

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

5. Voice Grade 5 (VG5) Special Access Service-(Continued)

d. Transmission Performance-(Continued)

- Echo Control-(Continued)

Effective Two Wire Transmission

(Four-wire interface at the IC terminal location and two-wire interface at the End User's premises.)

	Echo Return Loss	Singing Return Loss
Standard Two-Wire Interface (Return Loss)	5 dB	2.5 dB
Four-Wire Interface (Equal Level Echo Path Loss)	16 dB	11 dB

Effective Four-Wire Transmission

(Two-wire interface at the End User's premises.)

	Echo Return Loss	Singing Return Loss
Two-Wire Interface (Return Loss)	24 dB	18 dB
Four-Wire Interface (Equal Level Echo Path Loss)	20 dB	14 dB

(For Centrex application, 2 db pad is "in")

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By R. D. BARRON, Vice President-Missouri
Southwestern Bell Telephone Company
St. Louis, Missouri

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.6 Wideband Data Service

A. Basic Channel Description

A Wideband Data channel is an analog channel for the transmission of synchronous serial data at the rate of 19.2, 50.0 or 230.4 kbps or of asynchronous serial data at rates of up to 19.2, 50.0 or 230.4 kbps. Optional arrangements are available for transmission of synchronous serial data at 18.75 or 40.8 kbps. The actual bit rate is a function of the channel interface selected by the customer. This service requires a 303 Data Station(s). The 303 Data Station provides coupling between the customer's business machine and the wideband data transmission medium. A voiceband coordinating channel is also provided. Wideband data channels are provided between customer designated premises.

B. Technical Specifications Packages

	Package WD-		
	1	2	3
Parameter			
Error-Free Seconds	X	X	X

While in service, the monthly average of error-free seconds will be equal to or greater than 98.75 percent.

C. Channel Interfaces

The following channel interfaces (CI's) define the bit rates that are available for a Wideband Data channel:

CI	Bit Rate
WB-18S	18.75 kbps, synchronous
WB-19A	up to 19.2 kbps, asynchronous
WB-19S	19.2 kbps, synchronous
WB-23A	up to 230.4 kbps, asynchronous
WB-23S	230.4 kbps, synchronous
WB-40S	40.8 kbps, synchronous
WB-50A	up to 50.0 kbps, asynchronous
WB-50S	50.0 kbps, synchronous

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
Original Sheet 33

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

5. Voice Grade 5 (VG5) Special Access Service-(Continued)

d. Transmission Performance-(Continued)

- Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL		Improved RL	
ERL	5 dB	ERL	20 dB
SRL	2.5 dB	SRL	13.5 dB

- Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ±1.5 dB.

- Attenuation Distortion

The attenuation distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +5.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss).

- Signal-to-C Notch Noise

The Signal-to-C Notch noise ratio shall not be less than 26 dB.

- Impulse Noise

The number of impulse noise counts exceeding a threshold of 67 dBrnC0 in 15 minutes shall be less than 15.

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Southwestern Bell Telephone Company
St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.6 Wideband Data Service-(Continued)

Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

(AT) D. Optional Features, BSEs and Functions

1. Key Activated Transfer Arrangement

An arrangement that affords the customer an additional measure of flexibility in the use of their access channel(s). The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. A key activated control service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

(AT) The following table shows the technical specifications packages with which the optional features, BSEs and functions are available.

	Available with Technical Specifications Package WD-		
	1	2	3
Key Activated Transfer Arrangement	X	X	X

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
2nd Revised Sheet 34
Replacing 1st Revised Sheet 34

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.6 Wideband Data Service-(Continued)

(CT) Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Optional Features and Functions

1. Key Activated Transfer Arrangement

An arrangement that affords the customer an additional measure of flexibility in the use of their access channel(s). The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. A key activated control service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package WD-		
	1	2	3
Key Activated Transfer Arrangement	X	X	X

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
1st Revised Sheet 34
Replacing Original Sheet 34

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.6 Wideband Data Service-(Continued)

Compatible channel interfaces are set forth in Paragraph 7.3.5, F., following.

D. Optional Features and Functions

1. Key Activated Transfer Arrangement

An arrangement that affords the customer an additional measure of flexibility in the use of their access channel(s). The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. A key activated control service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package WD-		
	1	2	3
Key Activated Transfer Arrangement	X	X	X

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
Original Sheet 34

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

5. Voice Grade 5 (VG5) Special Access Service-(Continued)

e. Available Facility Interface Combinations

VG5 is available only with specific facility interface combinations as set forth in Paragraph 7.2.1, B., 14, following.

6. Voice Grade 6 (VG6) Special Access Service

a. Description

Special Access Service VG6 provides a channel for voiceband data transmission capability. Usable frequencies are nominally 300 to 3000 Hz between an IC terminal location and an End User's premises. The transmission interface is four-wire at both the IC terminal location and the End User's premises. This service will support effective four-wire transmission.

b. Illustrative Applications

Special Access Service VG6 is suitable for use as part of the facilities required to provide intrastate telecommunications services such as:

- Private Line Data Circuit
- Control/Remote Metering

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Southwestern Bell Telephone Company
St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service

A. Basic Channel Description

A MegaLink Data channel is a channel for duplex four-wire transmission of synchronous serial data at the rate of 2.4, 4.8, 9.6, 19.2, 56.0 kbps or 64 kbps Clear Channel (CC)*. The actual bit rate is a function of the channel interface selected by the customer. The channel provides a synchronous service with timing provided by the Telephone Company through the Telephone Company's facilities to the customer in the received bit stream. MegaLink Data channels are provided between customer-designated premises for two-point service at all speeds or between a customer - designated premises and a Telephone Company digital hub for multipoint or multiplexed service at all speeds except 64 kbps (CC).

It is the responsibility of the customer to provide the Channel Service Unit-type equipment or other Network Channel Terminating Equipment associated with the MegaLink Data Channel at the customer premises.

(CT) This service is classified as competitive.

B. Technical Specifications Packages

	Package DA-					
Parameter	1	2	3	4	5	6
Error-Free Seconds	X	X	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875 percent error-free seconds (if provided through a Digital Data Hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured and maintained to conform with the specifications contained in the appropriate technical reference listed in Paragraph 7.2, preceding.

Voltages which are compatible with MegaLink Data Service are delineated in the appropriate technical reference listed in Paragraph 7.2, preceding.

*64 kbps Clear Channel (CC) is offered only where equipment and facilities are available.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
6th Revised Sheet 35
Replacing 5th Revised Sheet 35

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service

A. Basic Channel Description

(AT) (AT) A MegaLink Data channel is a channel for duplex four-wire transmission of synchronous serial data at the rate of 2.4, 4.8, 9.6, 19.2, 56.0 kbps or 64 kbps Clear Channel (CC)*. The actual bit rate is a function of the channel interface selected by the customer. The channel provides a synchronous service with timing provided by the Telephone Company through the Telephone Company's facilities to the customer in the received bit stream. MegaLink Data channels are provided between customer-designated (AT) premises for two-point service at all speeds or between a customer-designated premises and a Telephone Company digital hub for multipoint or (AT) multiplexed service at all speeds except 64 kbps (CC).

It is the responsibility of the customer to provide the Channel Service Unit-type equipment or other Network Channel Terminating Equipment associated with the MegaLink Data Channel at the customer premises.

This service was classified as transitionally competitive efective January 10, 1993.

B. Technical Specifications Packages

		Package DA-					
(AT)	Parameter	1	2	3	4	5	6
(AT)	Error-Free Seconds	X	X	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875 percent error-free seconds (if provided through a Digital Data Hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured and maintained to conform with the specifications contained in the appropriate technical reference listed in Paragraph 7.2, preceding.

Voltages which are compatible with MegaLink Data Service are delineated in the appropriate technical reference listed in Paragraph 7.2, preceding.

(AT) *64 kbps Clear Channel (CC) is offered only where equipment and facilities are (AT) available.

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By HORACE WILKINS, JR., President-Missouri
Southwestern Bell Telephone
St. Louis, Missouri

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Access Services Tariff
Section 7
5th Revised Sheet 35
Replacing 4th Revised Sheet 35

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service

A. Basic Channel Description

A MegaLink Data channel is a channel for duplex four-wire transmission of synchronous serial data at the rate of 2.4, 4.8, 9.6 or 56.0 kbps. The actual bit rate is a function of the channel interface selected by the customer. The channel provides a synchronous service with timing provided by the Telephone Company through the Telephone Company's facilities to the customer in the received bit stream. MegaLink Data channels are provided between customer-designated premises for two-point service or between a customer-designated premises and a Telephone Company digital hub for multipoint or multiplexed service.

It is the responsibility of the customer to provide the Channel Service Unit-type equipment or other Network Channel Terminating Equipment associated with the MegaLink Data Channel at the customer premises.

(AT) This service was classified as transitionally competitive efective
(AT) January 10, 1993.

B. Technical Specifications Packages

	Package DA-			
Parameter	1	2	3	4
Error-Free Seconds	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875 percent error-free seconds (if provided through a Digital Data Hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured and maintained to conform with the specifications contained in the appropriate technical reference listed in Paragraph 7.2, preceding.

Voltages which are compatible with MegaLink Data Service are delineated in the appropriate technical reference listed in Paragraph 7.2, preceding.

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By A. D. ROBERTSON, Assistant Vice President-External Affairs
Southwestern Bell Telephone Company
St. Louis, Missouri

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Access Services Tariff
Section 7
4th Revised Sheet 35
Replacing 3rd Revised Sheet 35

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service

A. Basic Channel Description

A MegaLink Data channel is a channel for duplex four-wire transmission of synchronous serial data at the rate of 2.4, 4.8, 9.6 or 56.0 kbps. The actual bit rate is a function of the channel interface selected by the customer. The channel provides a synchronous service with timing provided by the Telephone Company through the Telephone Company's facilities to the customer in the received bit stream. MegaLink Data channels are provided between customer-designated premises for two-point service or between a customer-designated premises and a Telephone Company digital hub for multipoint or multiplexed service.

(RT) (RT) It is the responsibility of the customer to provide the Channel Service Unit-type equipment or other Network Channel Terminating Equipment associated with the MegaLink Data Channel at the customer premises.

B. Technical Specifications Packages

	Package DA-			
Parameter	1	2	3	4
Error-Free Seconds	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875 percent error-free seconds (if provided through a Digital Data Hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured and maintained to conform with the (CT) (CT) specifications contained in the appropriate technical reference listed in Paragraph 7.2, preceding.

(CT) Voltages which are compatible with MegaLink Data Service are delineated in the appropriate technical reference listed in Paragraph 7.2, preceding.

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By R. D. BARRON, President-Missouri Division
Southwestern Bell Telephone Company
St. Louis, Missouri

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
3rd Revised Sheet 35
Replacing 2nd Revised Sheet 35

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

(CT) 7.2.7 MegaLink Data Service

A. Basic Channel Description

(CT) A MegaLink Data channel is a channel for duplex four-wire transmission of synchronous serial data at the rate of 2.4, 4.8, 9.6 or 56.0 kbps. The actual bit rate is a function of the channel interface selected by the customer. The channel provides a synchronous service with timing provided by the Telephone Company through the Telephone Company's facilities
(CT) to the customer in the received bit stream. MegaLink Data channels are provided between customer designated premises for two point service or between a customer designated premises and a Telephone Company digital hub for multipoint or multiplexed service.

It is the responsibility of the customer to provide the Channel Service Unit-type equipment or other Network Channel Terminating Equipment
(CT) associated with the MegaLink Data Channel at the customer premises. The interim program for interconnection of such equipment is set forth in Technical Reference PUB AS No. 1.

B. Technical Specifications Packages

	Package			
Parameter	1	2	3	4
Error-Free Seconds	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875 percent error-free seconds (if provided through a Digital Data Hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured and maintained to conform with the specifications contained in Technical Reference PUB 62310.

(CT) Voltages which are compatible with MegaLink Data Service are delineated in Technical Reference PUB 62507.

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Southwestern Bell Telephone Company
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Access Services Tariff
Section 7
2nd Revised Sheet 35
Replacing 1st Revised Sheet 35

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 Digital Data Service

A. Basic Channel Description

A Digital Data channel is a channel for duplex four-wire transmission of synchronous serial data at the rate of 2.4, 4.8, 9.6 or 56.0 kbps. The actual bit rate is a function of the channel interface selected by the customer. The channel provides a synchronous service with timing provided by the Telephone Company through the Telephone Company's facilities to the customer in the received bit stream. Digital Data channels are only available via Telephone Company designated Hubs and are provided between customer-designated premises or between a customer-designated premises and a Telephone Company Hub.

(CP) It is the responsibility of the customer to provide the Channel Service Unit-type equipment or other Network Channel Terminating Equipment associated with the Digital Data Channel at the customer premises. The interim program for interconnection of such equipment is set forth in Technical Reference PUB AS No. 1.

B. Technical Specifications Packages

Parameter	Package DA-1	2	3	4
Error-Free Seconds	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875 percent error-free seconds (if provided through a Digital Data Hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured and maintained to conform with the specifications contained in Technical Reference PUB 62310.

Voltages which are compatible with Digital Data Service are delineated in Technical Reference PUB 62507.

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St. Louis, Missouri

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Access Services Tariff
Section 7
1st Revised Sheet 35
Replacing Original Sheet 35

(CP)ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 Digital Data Service

A. Basic Channel Description

A Digital Data channel is a channel for duplex four-wire transmission of synchronous serial data at the rate of 2.4, 4.8, 9.6 or 56.0 kbps. The actual bit rate is a function of the channel interface selected by the customer. The channel provides a synchronous service with timing provided by the Telephone Company through the Telephone Company's facilities to the customer in the received bit stream. Digital Data channels are only available via Telephone Company designated Hubs and are provided between customer-designated premises or between a customer-designated premises and a Telephone Company Hub.

The customer may provide the Channel Service Unit-type equipment or other Network Channel Terminating Equipment associated with the Digital Data channel at the customer premises. The interim program for interconnection of such equipment is set forth in Technical Reference PUB AS No. 1.

B. Technical Specifications Packages

	Package DA-			
Parameter	1	2	3	4
Error-Free Seconds	X	X	X	X

The Telephone Company will provide a channel capable of meeting a monthly average performance equal to or greater than 99.875 percent error-free seconds (if provided through a Digital Data Hub) while the channel is in service, if it is measured through a CSU equivalent which is designed, manufactured and maintained to conform with the specifications contained in Technical Reference PUB 62310.

Voltages which are compatible with Digital Data Service are delineated in Technical Reference PUB 62507.

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St. Louis, Missouri

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

6. Voice Grade 6 (VG6) Special Access Service-(Continued)

c. Optional Features

- C-Conditioning
- DA-Conditioning.
- Central office bridging capability.
- Improved return loss at four-wire point of interface, applicable to each two-wire leg of effective four-wire channel.
- Central Office Multiplexing

d. Transmission Performance

- C-Message Noise

The C-Message Noise shall be less than:

Channel Mileage (mi)	Limit (dBrnCO)(1) Type V1	Type V2
0 - 50	32	38
51 - 100	33	39
101 - 200	35	41
201 - 400	37	43
401 - 1000	39	45

(1) Where facility network conditions will support the parameters, Type V1 will be provided. Where the Type V1 parameters cannot be supported, Type V2 will be provided.

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bit rates that are available for a Digital Data channel:

	CI	Bit Rate
	DU-24	2.4 kbps
	DU-48	4.8 kbps
	DU-96	9.6 kbps
(AT)	DU-19	19.2 kbps
	DU-56	56.0 kbps
(AT)	DU-64	64.0 kbps (CC)*

Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Service to Service Through Connect Arrangement

(AT) This provides the interconnection of two subtending digital data channels derived from DS1 multiplexed services. The through connect will be provisioned in lieu of a typical MegaLink Data channel termination. The through connect will be provisioned for all MegaLink Data speeds; 2.4, 4.8, 9.6, 19.2, 56 kbps and 64 kbps (CC). The ordering customer must provide channel assignments for both. Channel mileage is required if the multiplexed services are terminated in two separate digital Hubs.

E. Optional Features, BSEs and Functions

l. Central Office Bridging BSE Capability

2. Transfer Arrangement

An arrangement that affords the customer an additional measure of protection and/or flexibility in the use of their access channel(s) on a lxN basis. The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. This arrangement is only available at a Telephone Company-designated Hub. A Key Activated or Dial-Up Control Service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

(AT) *MegaLink Data Service 64 kbps channel interface is offered only with Clear Channel.

No supplement to this tariff will be issued except for the purpose of canceling this tariff.

Access Services Tariff
Section 7
5th Revised Sheet 36
Replacing 4th Revised Sheet 36

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bit rates that are available for a Digital Data channel:

CI	Bit Rate
DU-24	2.4 kbps
DU-48	4.8 kbps
DU-96	9.6 kbps
DU-56	56.0 kbps

Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Service to Service Through Connect Arrangement

This provides the interconnection of two subtending digital data channels derived from DS1 multiplexed services. The through connect will be provisioned in lieu of a typical MegaLink Data channel termination. The through connect will be provisioned for all MegaLink Data speeds; 2.4, 4.8, 9.6 and 56 kbps. The ordering customer must provide channel assignments for both. Channel mileage is required if the multiplexed services are terminated in two separate digital Hubs.

(AT) E. Optional Features, BSEs and Functions

(AT) 1. Central Office Bridging BSE Capability

2. Transfer Arrangement

An arrangement that affords the customer an additional measure of protection and/or flexibility in the use of their access channel(s) on a 1xN basis. The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. This arrangement is only available at a Telephone Company-designated Hub. A Key Activated or Dial-Up Control Service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

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Access Services Tariff
Section 7
4th Revised Sheet 36
Replacing 3rd Revised Sheet 36

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bit rates that are available for a Digital Data channel:

CI	Bit Rate
DU-24	2.4 kbps
DU-48	4.8 kbps
DU-96	9.6 kbps
DU-56	56.0 kbps

Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

(T) D. Service to Service Through Connect Arrangement

This provides the interconnection of two subtending digital data channels derived from DS1 multiplexed services. The through connect will be provisioned in lieu of a typical MegaLink Data channel termination. The through connect will be provisioned for all MegaLink Data speeds; 2.4, 4.8, 9.6 and 56 kbps. The ordering customer must provide channel assignments for both. Channel mileage is required if the multiplexed (AT) services are terminated in two separate digital Hubs.

(FC) E. Optional Features and Functions

1. Central Office Bridging Capability

2. Transfer Arrangement

An arrangement that affords the customer an additional measure of protection and/or flexibility in the use of their access channel(s) on a 1xN basis. The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. This arrangement is only available at a Telephone Company-designated Hub. A Key Activated or Dial-Up Control Service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

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Access Services Tariff
Section 7
3rd Revised Sheet 36
Replacing 2nd Revised Sheet 36

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

(CT) 7.2.7 MegaLink Data Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bit rates that are available for a Digital Data channel:

CI	Bit Rate
DU-24	2.4 kbps
DU-48	4.8 kbps
DU-96	9.6 kbps
DU-56	56.0 kbps

(CT) Compatible channel interfaces are set forth in Technical References at the end of Paragraph 7.2.

D. Optional Features and Functions

1. Central Office Bridging Capability

2. Transfer Arrangement

An arrangement that affords the customer an additional measure of protection and/or flexibility in the use of their access channel(s) on a 1xN basis. The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. This arrangement is only available at a Telephone Company-designated Hub. A Key Activated or Dial-Up Control Service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

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Access Services Tariff
Section 7
2nd Revised Sheet 36
Replacing 1st Revised Sheet 36

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 Digital Data Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bit rates that are available for a Digital Data channel:

CI	Bit Rate
DU-24	2.4 kbps
DU-48	4.8 kbps
DU-96	9.6 kbps
DU-56	56.0 kbps

Compatible channel interfaces are set forth in Paragraph 7.3.5, G., following.

D. Optional Features and Functions

1. Central Office Bridging Capability

2. Transfer Arrangement

An arrangement that affords the customer an additional measure of protection and/or flexibility in the use of their access channel(s) on a 1xN basis. The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. This arrangement is only available at a Telephone Company-designated Hub. A Key Activated or Dial-Up Control Service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

(MT)

(MT)

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7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 Digital Data Service-(Continued)

C. Channel Interfaces

The following channel interfaces (CI's) define the bit rates that are available for a Digital Data channel:

CI	Bit Rate
DU-24	2.4 kbps
DU-48	4.8 kbps
DU-96	9.6 kbps
DU-56	56.0 kbps

Compatible channel interfaces are set forth in Paragraph 7.3.5, G., following.

D. Optional Features and Functions

1. Central Office Bridging Capability

2. Transfer Arrangement

An arrangement that affords the customer an additional measure of protection and/or flexibility in the use of their access channel(s) on a 1xN basis. The arrangement can be utilized to transfer a leg of a Special Access Service to either a spare or working channel that terminates in either the same or a different customer premises. This arrangement is only available at a Telephone Company-designated Hub. A Key Activated or Dial-Up Control Service is required to operate the transfer arrangement. A spare line, if required, is not included as a part of the option.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package DA-			
	1	2	3	4
Central Office Bridging Capability	X	X	X	X
Transfer Arrangement	X	X	X	X

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Technical Service Descriptions for Special Access Service-(Continued)

7.2.1 Analog Services-(Continued)

B. Voice Grade Services-(Continued)

6. Voice Grade 6 (VG6) Special Access Service-(Continued)

d. Transmission Performance-(Continued)

- Improved Return Loss

The Return Loss (RL), expressed as Echo Return Loss (ERL) and Singing Return Loss (SRL), on two-wire ports of a four-wire point of interface shall be equal to or greater than:

Standard RL		Improved RL	
ERL	5 dB	ERL	20 dB
SRL	2.5 dB	SRL	13.5 dB

- Loss Variation

The long term loss variation from the nominal 1004 Hz EML shall not exceed ±1.5 dB.

- Attenuation Distortions

The attenuation distortion between 404 Hz and 2804 Hz shall be within -1.0 dB and +4.0 dB with reference to the loss at 1004 Hz (minus equals less loss, plus equals more loss). The attenuation distortion between 504 Hz and 2504 Hz shall be within -1.0 dB and +3.0 dB with reference to the loss at 1004 Hz. The attenuation distortion between 304 Hz and 3004 Hz shall be within -1.0 dB and +5.0 dB.

- Signal-to-C Notch Noise

The Signal-to-C Notch noise ratio shall not be less than 30 dB.

- Envelope Delay Distortion

The Envelope Delay Distortion (EDD) shall not exceed 700 microseconds between 800 and 2600 Hz.

- Impulse Noise

The number of impulse noise counts exceeding a threshold of 67 dBrnCO in 15 minutes shall be less than 15.

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service-(Continued)

E. Optional Features, BSEs and Functions (Continued)

3. Secondary Channel Capability BSE

(AT) Secondary Channel capability provides for an additional low-speed digital transmission channel within the existing 2.4, 4.8, 9.6, 19.2 and 56.0 kbps primary channels. It is available as a point-to-point or a multipoint service utilizing a nonrepeated channel termination. The Secondary Channel can be used as a communications channel for the controlling and monitoring of a customer's network.

The following table shows the technical specifications packages with which the optional features, BSEs and functions are available.

	Available with Technical Specifications Package DA-					
(AT)	1	2	3	4	5	6
Central Office Bridging Capability	X	X	X	X	X	
Transfer Arrangement	X	X	X	X	X	X
(AT) Secondary Channel Capability	X	X	X	X	X	

No supplement to this tariff will be issued except for the purpose canceling this tariff.

Access Services Tariff
Section 7
3rd Revised Sheet 36.01
Replacing 2nd Revised Sheet 36.01

ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service-(Continued)

(AT) E. Optional Features, BSEs and Functions (Continued)

(AT) 3. Secondary Channel Capability BSE

Secondary Channel capability provides for an additional low-speed digital transmission channel within the existing 2.4, 4.8, 9.6, and 56.0 kbps primary channels. It is available as a point-to-point or a multipoint service utilizing a nonrepeated channel termination. The Secondary Channel can be used as a communications channel for the controlling and monitoring of a customer's network.

(AT) The following table shows the technical specifications packages with which the optional features, BSEs and functions are available.

	Available with Technical Specifications Package DA-			
	1	2	3	4
Central Office Bridging Capability	X	X	X	X
Transfer Arrangement	X	X	X	X
Secondary Channel Capability	X	X	X	X

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 MegaLink Data Service-(Continued)

(FC) E. Optional Features and Functions (Continued)

3. Secondary Channel Capability

Secondary Channel capability provides for an additional low-speed digital transmission channel within the existing 2.4, 4.8, 9.6, and 56.0 kbps primary channels. It is available as a point-to-point or a multipoint service utilizing a nonrepeated channel termination. The Secondary Channel can be used as a communications channel for the controlling and monitoring of a customer's network.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package DA-			
	1	2	3	4
Central Office Bridging Capability	X	X	X	X
Transfer Arrangement	X	X	X	X
Secondary Channel Capability	X	X	X	X

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

(CT) 7.2.7 MegaLink Data Service-(Continued)

D. Optional Features and Functions (Continued)

3. Secondary Channel Capability

Secondary Channel capability provides for an additional low-speed digital transmission channel within the existing 2.4, 4.8, 9.6, and 56.0 kbps primary channels. It is available as a point-to-point or a multipoint service utilizing a nonrepeated channel termination. The Secondary Channel can be used as a communications channel for the controlling and monitoring of a customer's network.

The following table shows the technical specifications packages with which the optional features and functions are available.

	Available with Technical Specifications Package DA-			
	1	2	3	4
Central Office Bridging Capability	X	X	X	X
Transfer Arrangement	X	X	X	X
Secondary Channel Capability	X	X	X	X

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ACCESS SERVICES

7. SPECIAL ACCESS SERVICE-(Continued)

7.2 Service Descriptions-(Continued)

7.2.7 Digital Data Service-(Continued)

D. Optional Features and Functions (Continued)

(NR) 3. Secondary Channel Capability

Secondary Channel capability provides for an additional low-speed digital transmission channel within the existing 2.4, 4.8, 9.6, and 56.0 kbps primary channels. It is available as a point-to-point or a multipoint service utilizing a nonrepeated channel termination. The Secondary Channel can be used as a communications channel for the controlling
(NR) and monitoring of a customer's network.

(MT) The following table shows the technical specifications packages with which the optional features and functions are available.

		Available with Technical Specifications Package DA-			
		1	2	3	4
	Central Office Bridging Capability	X	X	X	X
(MT)	Transfer Arrangement	X	X	X	X
(AT)	Secondary Channel Capability	X	X	X	X

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