

## ASSIGNMENT PROCEDURES FOR PICTUREPHONE® SERVICE

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### 1. GENERAL

**1.01** This section describes the equipment, facilities, and procedures required for administering PICTUREPHONE service. These procedures are applicable to initial service (Phase 0). It does not include procedures for making entries in dedicated plant records. These will be included in later revisions.

**1.02** PICTUREPHONE service will be a vertical extension of telephone service, incorporating the ability to see as well as to talk.

**1.03** In offering these services, it is planned to make as much use of existing facilities as possible, together with some new equipment to accommodate the wideband signal. The major basic components will be station sets, customer location switching equipment, loop and trunk plant, central office equipment, and maintenance and test equipment.

**1.04** The PICTUREPHONE loop is a 6-wire loop. One pair is used for voice only calls and for the voice portion of the PICTUREPHONE call. Signaling and control functions also use this pair. The other two pairs carry the video portion of the call, one pair for transmission in each direction.

**1.05** All central office switching will be performed by No. 5 crossbar or ESS central offices modified for wideband operations. Customers not served directly from these offices may be served with foreign exchange-type

service. This is done through the use of remote service units located in local central offices tied to a nearby office equipped for PICTUREPHONE switching.

**1.06** PICTUREPHONE service is available only on a TOUCH-TONE® calling basis. The # sign (lower right-hand button on a 12-button TOUCH-TONE dial) is the means for signaling the switching equipment that a PICTUREPHONE call is to be made. When the prefix, #, is dialed, a relay is operated in the central office. This switches the call from normal 2-wire switching facilities to the special 6-wire switching facilities for PICTUREPHONE service. See Exhibit 1.

### 2. LOOP DESIGN AND PAIR SELECTION

#### DEFINITIONS

**2.01** The following terms are defined to aid in the understanding of PICTUREPHONE service:

**Subscriber Loop** includes the facility from the wideband distribution frame in the PICTUREPHONE switching office to, and including, the station set equalizer. See Exhibit 2, Fig. A.

**Remote Exchange Loop** includes the facilities from the wideband distribution frame in a remote PICTUREPHONE switching office through the local telephone serving office to, and including, the station set equalizer. It includes both a trunk facility and a loop facility. See Exhibit 2, Fig. B.

**Trunk Facility** includes the facilities between two central offices and may be part of a Remote Exchange (RX) Loop Facility (Exhibit 2, Fig. B). The trunk facility portion of an RX loop differs from the loop facility portion in that it must meet PICTUREPHONE trunk design limits.

**PICTUREPHONE Trunk** includes all equipment and facilities between the outgoing switch appearance at the original PICTUREPHONE switching office and the outgoing switch appearance to which the trunk would be connected at the terminating switching office.

**Remote Switching Arrangement** includes a wideband remote switch located at some point within the subscriber loop. The switch may be located on the customer premises or at some intermediate location. See Exhibit 2, Fig. C.

**Complement** normally means a group of consecutive pairs but, for the purposes of this section, it refers to the largest binder group that must be kept free of interfering circuits. This is generally determined by the size of the binder groups closest to the central office. In general, these are 100 pairs per binder group.

**Equalizers** are required on the video pairs. These are located at the central office and at the station end and, depending on facility length, gauge, etc, may be located at intermediate points such as manholes or building terminals.

**DESIGN RESTRICTIONS**

**2.02** The video pairs must be conditioned to meet certain requirements. Some of them are listed below. For a complete list of requirements, see Section 860-200-105/AG90.300.

- No single bridge tap longer than 100 feet.
- Cumulative bridge tap less than 200 feet.
- No loading or building-out capacitors.
- Binder group separation from certain circuits such as T1, T2, N, or subscriber carrier, wideband data, and unbalanced private lines.
- Limited use of paraffin splices or layer cable.

- Loop lengths will vary, depending on gauge of cable and amount of aerial cable on the loop.
- Splicing integrity should be maintained in PICTUREPHONE cables.

**2.03** The engineer responsible for outside plant will select loop pairs, preferably in a complement with no bad pairs, to be used for PICTUREPHONE service. Outside plant and assignment records will be easier to maintain if consecutive counts are available.

**2.04** Due to design restrictions of PICTUREPHONE loops, it will be a designed facility. Selection and treatment of pairs will be handled in the same manner as other designed facilities, such as TWX or private lines.

**2.05** If required, an order-wire pair should be selected from a non-PICTUREPHONE complement. The order-wire arrangement is similar to that provided in T carrier, and it is used by the workman for alignment and maintenance of cable equalizers.

**3. SERVICE ORDER PROCEDURES**

**3.01** The following Uniform Service Order Codes (USOC) have been assigned for PICTUREPHONE services.

ITEM	USOC
Individual Message PICTUREPHONE line, including an allowance of 150 PICTUREPHONE message units . . .	PUN
PICTUREPHONE Station, main or additional . . . . .	PUO
<b>Multiple Station Arrangements</b>	
Each PICTUREPHONE Station terminated in multiple station arrangements or key equipment . . . . .	PUX
<b>Station Key Equipment</b>	
Type I Common Equipment for pick-up, hold, lamp, and audible signals arranged for access priority . . .	PUQ

ITEM	USOC
Type II Common Equipment for pick-up, hold, lamp, and audible signals arranged for nonaccess priority . . . . .	PUS
Type III Intercom arrangement common equipment two to ten Stations, one-digit dialing . . . . .	PUT
Each PICTUREPHONE line appearance in Station Key Equipment (video and/or voice) . . . . .	PVA
Add-on conference arrangement, initial station equipped, additional station on the same line . . . . .	PVE
PICTUREPHONE connecting arrangement . . . . .	PVF
TOUCH-TONE Pad (no charge) . . . . .	PVP

**3.02** The charges for the USOC codes listed above are in addition to other normal charges for equipment which the customer may have. USOC codes for other exchange services will be shown on service orders as shown in Exhibit 6.

**Service Orders**

**3.03** Typical entries that will appear on service orders are shown in Exhibit 6.

**Service Order Flow**

**3.04** Service order flow and procedures vary greatly throughout the Bell System. Exhibit 3 shows a general flowchart of various functions that may be present in a typical service order flow.

**3.05** Local service order procedures as they apply to designed services, such as foreign exchange service or local private line services, may be used for PICTUREPHONE orders.

**4. ASSIGNMENT RECORDS AND PROCEDURES**

**4.01** The USOC code, PUN, is the USOC for a PICTUREPHONE line. Each line will require *three* pair assignments.

**Cable Records**

**4.02** The circuit number for PICTUREPHONE service will be the telephone number associated with the service. The audio pair that is used for both voice only calls and the audio portion of the PICTUREPHONE call will carry the telephone number and central office line equipment in the cable record. The audio pair is not considered a designed circuit unless it is part of an RX loop facility. The pair must have Special Service Protection.

**4.03** The remaining two pairs carry the video signal. The pair that carries the signal from the central office to the subscriber location is called the *control pair*. The pair that returns the signal to the office is called the *common pair*. Exhibit 4 gives examples of how these pairs are posted in the cable records. The pairs are designed circuits, and they require Special Service Protection.

**4.04** Records for central office equalizers will be established on Form E-4052, "Miscellaneous Central Office Facility Record," and maintained by the group which maintains miscellaneous central office equipment records. Records must be set up for equalizers located in the central offices and for intermediate equalizers that may be located in apparatus cases in manholes. If more pairs are terminated in apparatus cases than are used for the initial PICTUREPHONE installation, it will be necessary to reserve these terminated pairs as shown in Exhibit 4. These pairs should be last choice for exchange assignment. If facility shortages exist, they may be used for exchange services but it will be necessary to place through-connection cards in the apparatus cases. If such a pair is used, the notation "reserved for P<sup>2</sup>" and the equalizer associated with the pair must be retained on the record to identify it for future PICTUREPHONE use.

**Pair Conditioning Routine**

**4.05** Three types of Engineering Work Orders may be issued to make a loop acceptable:

- (1) Order to eliminate network impairments and remove interfering circuits.

- (2) Order to make cable suitability tests.
- (3) Order to provide intermediate equalizers.

**4.06** The order to remove bridge tap, loading, etc, will be handled as any order of this type. Records will be posted according to existing practices. The interfering circuits will be listed on the work order. These circuits are generally designed circuits, and they will be transferred under existing practices for designed services. At the time this order is received, it should be noted so that no additional interfering circuits are assigned in the complements involved.

**4.07** Form E-6036, "PICTUREPHONE LOOPS," is provided to mark those complements that must be kept clear of interfering circuits. At the time the complement is found to be suitable, the PICTUREPHONE LOOPS sticker is placed on the cable records as indicated in Exhibit 4. During the interim conditioning period, place Form E-4675 (the cable transfer sticker) with a PICTUREPHONE LOOPS sticker on it as shown in Exhibit 5. This will advise those who work on the records that work is pending in the complement and that interfering circuits should not be placed there.

**4.08** Under certain conditions, the engineer may deem it unnecessary to issue the work order mentioned in 4.06; ie, new cable with no bridge tap, loading, etc. He will in all cases issue a work order to authorize cable suitability tests. Attached to this order will be Form E-6097, "PICTUREPHONE Pair Suitability Record," Exhibit 7. When this is received, verify that the cable complements are marked as indicated in 4.07. If they are not, they should be marked at this time.

**4.09** On the completion of pair suitability tests, the completed copy of Form E-6097 will be forwarded to the engineer. Based on the results of the tests, the engineer will forward a complete copy of Form E-6097 to the Assignment Office to advise them whether to remove the temporary sticker or to place the permanent Form E-6036. If the complement meets the tests and is acceptable, it will be marked. If it is not and other complements must be investigated,

the temporary Form E-4675 will be removed and the engineer will begin the process for another cable complement.

**4.10** If a suitable complement requires cable equalizers, a work order will be issued and records set up as outlined in 4.04.

#### Interfering Circuits

**4.11** The following are circuits that are considered as interfering with PICTUREPHONE circuits. This list is not to be considered complete. As more experience is gained with PICTUREPHONE, this list may change:

Unbalanced Private Lines such as:

- Burglar Alarms
- Clock Synchronization
- DC Telegraph
- PBX Battery and Generator Feeds

Wideband Data Circuits

Carrier Circuits such as:

- T1
- T2
- Subscriber

**4.12** When the PICTUREPHONE LOOPS sticker is on a page in the cable record, interfering circuits must not be assigned there.

#### Building Cables

**4.13** *If PICTUREPHONE service is to be installed in a building or house cable, it will be necessary to establish and maintain records of these cables.* This is necessary in order to ensure that no interfering circuits are placed in the cable. These records must be set up and maintained in the same manner as the feeder cable serving the building. If this is not done, local procedures must be established to keep interfering circuits from being placed in PICTUREPHONE complements.

#### DPAC

**4.14** If PICTUREPHONE service is the primary service for a particular address, the audio pair will be posted as the pair serving

the address. If PICTUREPHONE service is additional service, the DPAC will carry no entries.

**Central Office Equipment Assignments**

**4.15** Central office equipment will be assigned to service orders in the normal manner. The Traffic Department will prepare equipment lists for PICTUREPHONE service. The central office equipment will be posted to the audio pair in the cable records.

**Trunk Cables**

**4.16** Pair assignments for trunk cable pairs of remote exchange loops will be posted according to existing practices for trunk cables, using the designations in Exhibit 4.

**5. ORDERING INFORMATION**

**5.01** Forms E-6036, "PICTUREPHONE LOOPS," are available 50 forms per package. The forms are adhesive-backed, 10 per sheet, and are packaged in envelopes, five sheets per package. The forms may be ordered as follows:

Information Distribution Center, Room 208  
195 Broadway  
New York, New York 10007

Or telephone:  
212 393-2116

Order per package.

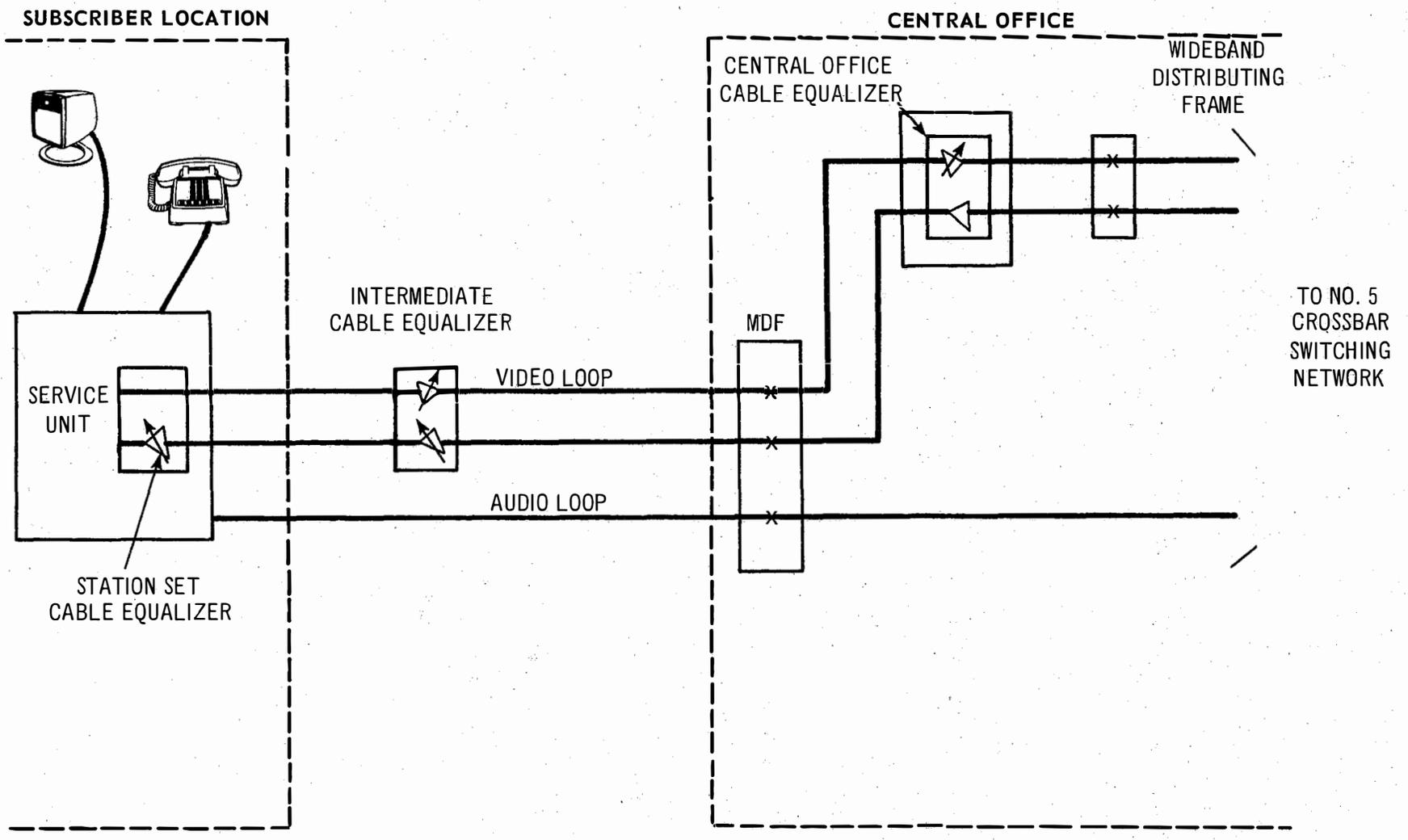


Exhibit 2  
Picturephone® Transmission Facilities

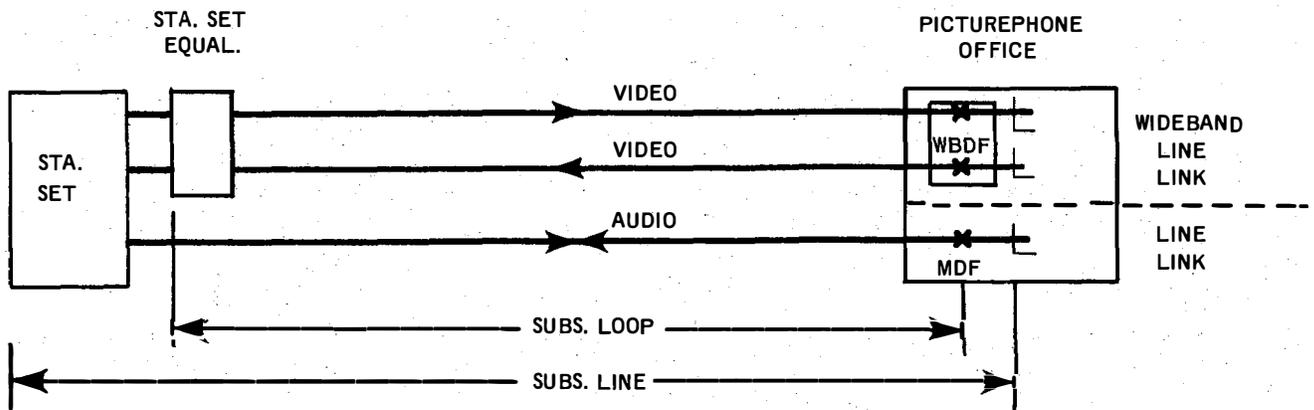


FIG. A. - SUBSCRIBER LINE

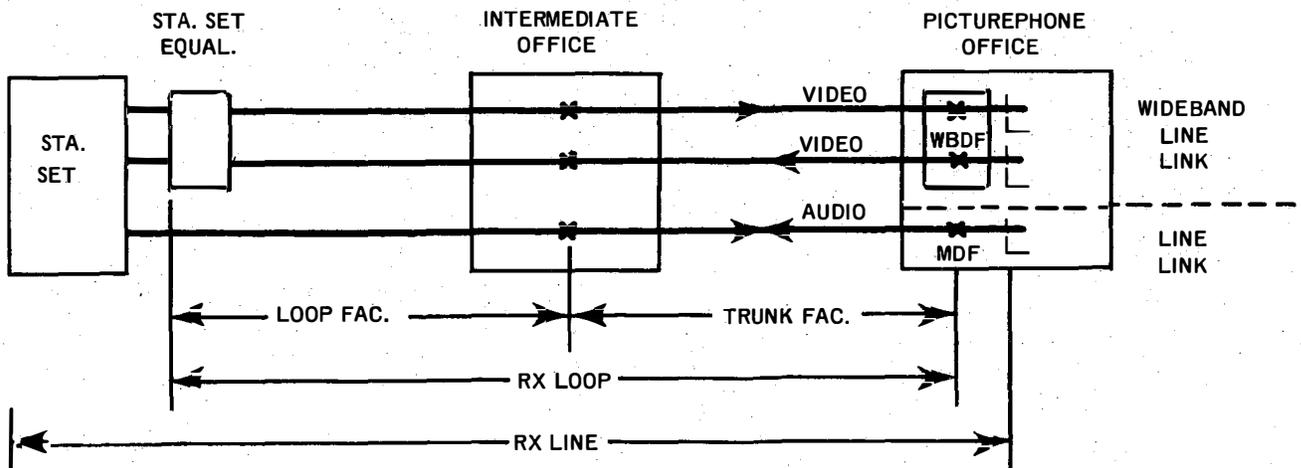


FIG. B. - REMOTE EXCHANGE LINE

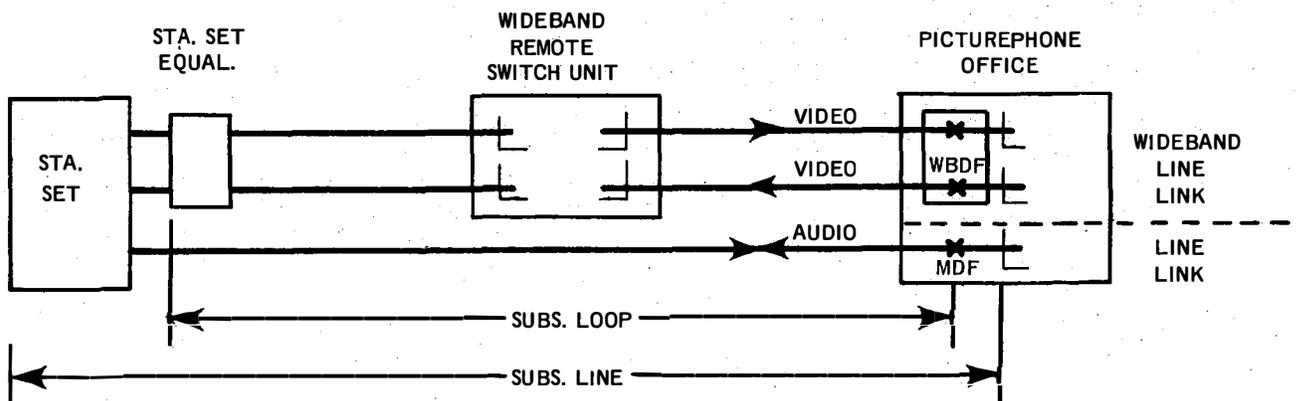


FIG. C. - REMOTE SWITCH ARRANGEMENT

Exhibit 3  
Service Order Flow for Picturephone® Service

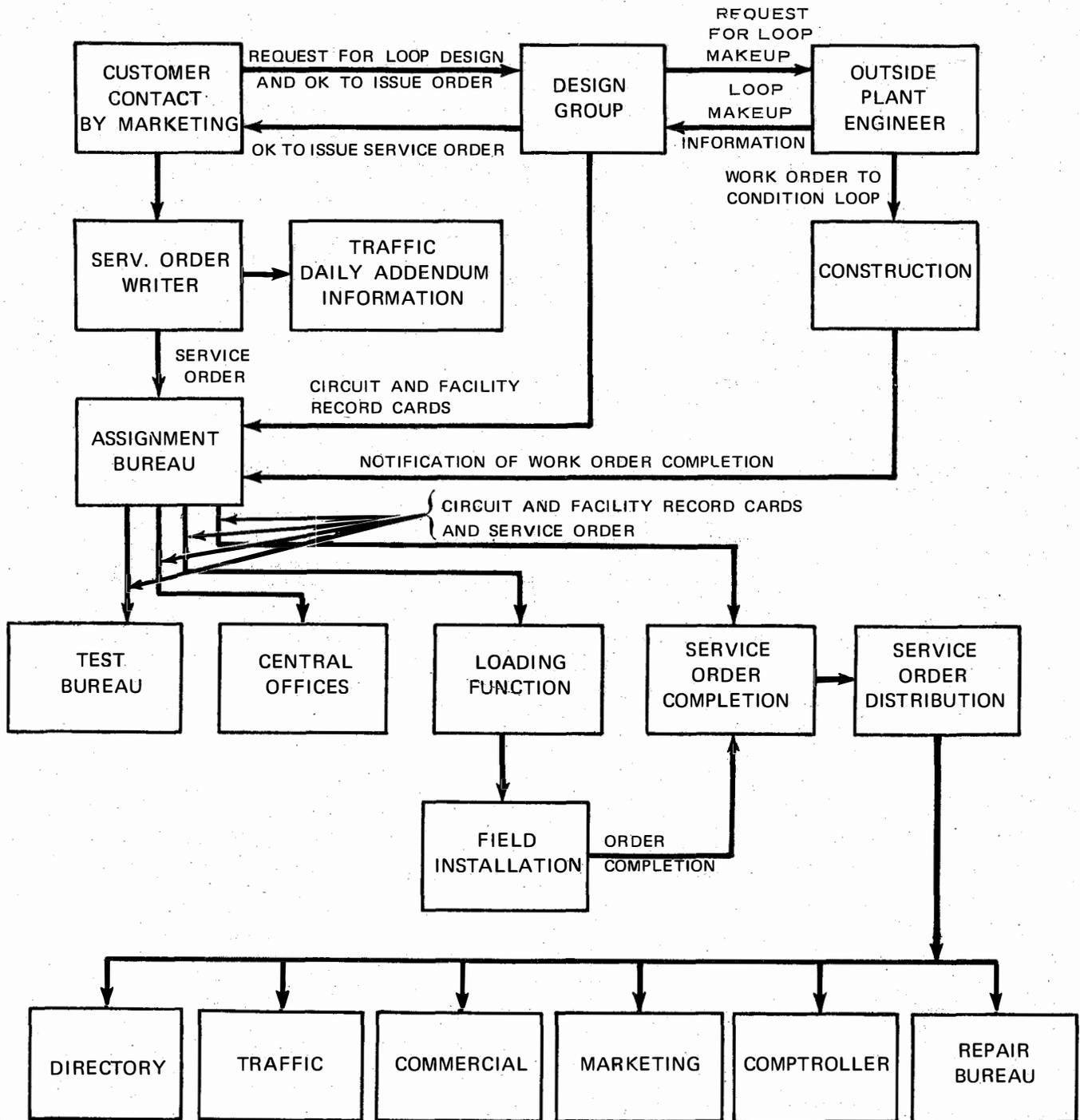


Exhibit 4  
Entries on Cable Record

PAIRS <b>1 - 50</b> CABLE <b>7</b>																
DATE VERIFIED					OFFICE <b>SHERWOOD</b>											
CONN. TO CA.		COUNT		TER. LOC.												
CONN. TO CA.		COUNT		TER. LOC.												
HELD ORDERS & REGRADES				PIC CABLE COUNTS				BNDR. GROUP								
ORDER NO.	CAT.	DATE	SERV.	TER.	<b>A 1 - 200</b>				CONNECT TO COLUMN AND SHEET							
						1ST 25 PR.										
						2ND 25 PR.										
WIRED OUT OF LIMITS	PRESENT CA. NO.	PAIR	SHOULD BE CA. NO.	1ST PR.	TER.	PRESENT CA. NO.	PAIR	SHOULD BE CA. NO.	1ST PR.	TER.						
			(3.)													
SERV BB	TEL. NO.		<b>PICTUREPHONE LOOPS</b>			CONN. TO PAIR	PAIR	PIC COLOR CODE	1	2	3	4	5	6	7	8
(1.)	PUN	743	1040		SSP	10-09 01	(2.)	1 W BL					1	1		
								2 W O					2	<del>X</del>		
								3 W G					3	3		
	PUN	743	1040	CTL	SSP	(D) EQL 6		4 W BR					4	<del>*</del>		
								5 W S			5	5	5			
	PUN	743	1040	COM	SSP	(D) EQL 7		6 R BL					6	<del>X</del>		
								7 R O					7	7		
		RESERVED		FOR	P2	EQL 8		8 R G					8	8		
								9 R BR					9	9		
		RESERVED		FOR	P2	EQL 9	(4.)	10 R S			10	10	10			

Note: Above example for illustration only. Normally, common and control pairs are in different binder groups.

1. Instead of class of service associated with PICTUREPHONE line, enter USOC code for PICTUREPHONE line.
2. This is the audio pair. This need not be in the conditioned complement.
3. Form E-6036 is used to mark the complement that has been conditioned for PICTUREPHONE.
4. Pairs terminated in apparatus case that will be used for future service.

**Exhibit 5  
Illustrated Method for Marking Cable  
Record During Interim Conditioning Period**

PAIRS		<b>1 - 50</b>		CABLE		<b>7</b>	
DATE VERIFIED				OFFICE <b>SHERWOOD</b>			
CONN. TO CA.	COUNT	TER. LOC.					
CONN. TO CA.	COUNT	TER. LOC.					
HELD ORDERS & REGRADES		PIC CABLE COUNTS		BNDR. GROUP			
BSP M27.22.2 PRINTED IN U.S.A.		COPY		CABLE TRANSFER		E-4675 (4-59)	
WORK ORDER	<b>60217</b>	PRINT	<b>1</b>	SPLICE NO.		TRANS. NO.	<b>217.1</b>
LOCATION OR DESCRIPTION OF WORK				<b>PICTUREPHONE CONDITIONING</b>			
DATE FIELD	<b>7-15-70</b>	COMPLETE AFTER		SHEET		OF	
WORK TO START	<b>7-15-70</b>	FOR ASSG'T		NO.		OF	
DATE	<b>7-8-70</b>	BY	<b>RA</b>	CALL	<b>747-2186</b>	FOR TEST	
PREPARED	<b>7-8-70</b>	BY	<b>RA</b>	CALL	<b>747-2186</b>	FOR TEST	
TRANSFER FROM		TRANSFER TO					
FRAMEWORK	MDF	IDF-LDF	BRF	TF	O.K. NUMBER	TIME	
PRELIMINARY BY					DATE COMPLETED	BY	
FINAL BY					TEST CENTER REC. POSTED BY	DATE	
<b>PICTUREPHONE LOOPS</b>		ASSIGNMENT REC. POSTED BY		DATE			
SSM SPECIAL SAFEGUARDING MEASURES.		DX DO NOT REMOVE CROSS CONN.					
UP							
LIMITS							
SERV	TEL. NO.	TEL. NO.	C.O. EQUIP.	CONN. TO	PAIR	PIC	
BB	← ADDRESS →			PAIR		COLOR	
					<b>01</b>	CODE	
						1	2 3 4 5 6 7 8
						W	
						BL	

**Exhibit 6  
Typical Service Order Entries**

PICTUREPHONE SERVICE INVOLVING RESIDENCE SERVICE

CASE A

CONDITIONS: Customer resides in offering exchange. Currently has 1FR and two Trimline sets adding PICTUREPHONE line and one PICTUREPHONE station. Same number to be assigned and inside move required.

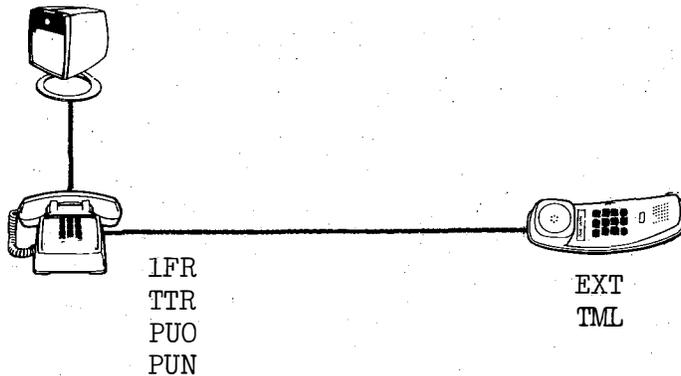
PICTUREPHONE SE&R

1FREC  
TTR  
PUN  
PUOEX  
EXT  
TMLEC

PRESENT SE&R

1FR  
TMLWC  
EXT  
TMLEC

RMKS: INS MV MAIN



CASE B

CONDITIONS: Customer with same service residing in a different central office area, will retain same exchange number with new PICTUREPHONE number to be assigned. (Non-key service.)

Note: No service order will be required on present service. New connect order will be required for PICTUREPHONE service.

Exhibit 6  
(Cont'd)

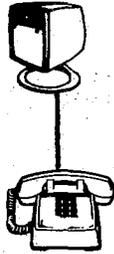
PICTUREPHONE NEW CONNECT SE&R

PRESENT SE&R

1MRGC (883-4512)  
TTR (883-4512)  
PUN (883-4512)  
PUOGX

1FR (882-1234)  
TMLWC  
EXT  
TMLEC

RMKS: BILL TO 882-1234



1MR  
TTR  
PUO  
PUN

CASE C

CONDITIONS: Customer resides outside offering exchange, will retain same exchange number with new PICTUREPHONE number to be assigned. Key telephone set and separate TOUCH-TONE pad to be provided for use with exchange service and PICTUREPHONE line on main station.

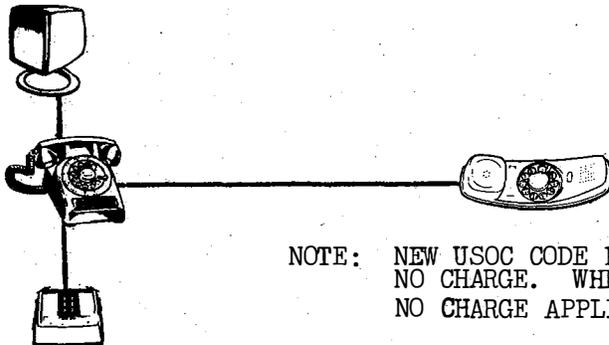
PICTUREPHONE SE&R

PRESENT SE&R

1FRSX (882-1234)  
TMLEC  
1MR (883-4512)  
TTR (883-4512)  
PUN (883-4512)  
PUOEX  
PUQ  
PUX  
IN202  
KVXEX  
PVA  
PVP

1FREC (882-1234)  
EXT  
TMLEC

1MR  
TTR  
PUN  
PUO  
PUQ  
PUX  
IN202  
KVX  
PVA  
PVP



1FR  
TML

NOTE: NEW USOC CODE PVP IS FOR TOUCH-TONE PAD - NO CHARGE. WHEN USED WITH PICTUREPHONE NO CHARGE APPLIES.

**Exhibit 6  
(Cont'd)**

BUSINESS CUSTOMER - CURRENTLY HAS 2 LINES, 3 STATIONS,  
PACKAGE COMMON EQUIPMENT AND INDIVIDUAL STATION USOC CODES -  
ADDING INDIVIDUAL PICTUREPHONE SERVICE ON ONE LINE ONLY-TYPE II

PICTUREPHONE SE&R ENTRIES

1MB (6971)  
1MB (6972)  
2TTB (6971-6972)  
PUN (6971)  
PUS (6971)  
PUOEX (6971)  
3 PVA  
(RECAP IN NORMAL  
MANNER)

PRESENT SE&R

1MB (6971)  
1MB (6972)  
IN202 (6971-6972)  
KVXEK (6971-MGR)  
HLD  
2 PKU (6971-6972)  
KIM  
KVXEK (6972-ASS'T MGR)  
HLD  
2 PKU (6971-6972)  
KIM  
EXT  
KVXEK (SEC'T)  
HLD  
2 PKU (6971-6972)  
KIM

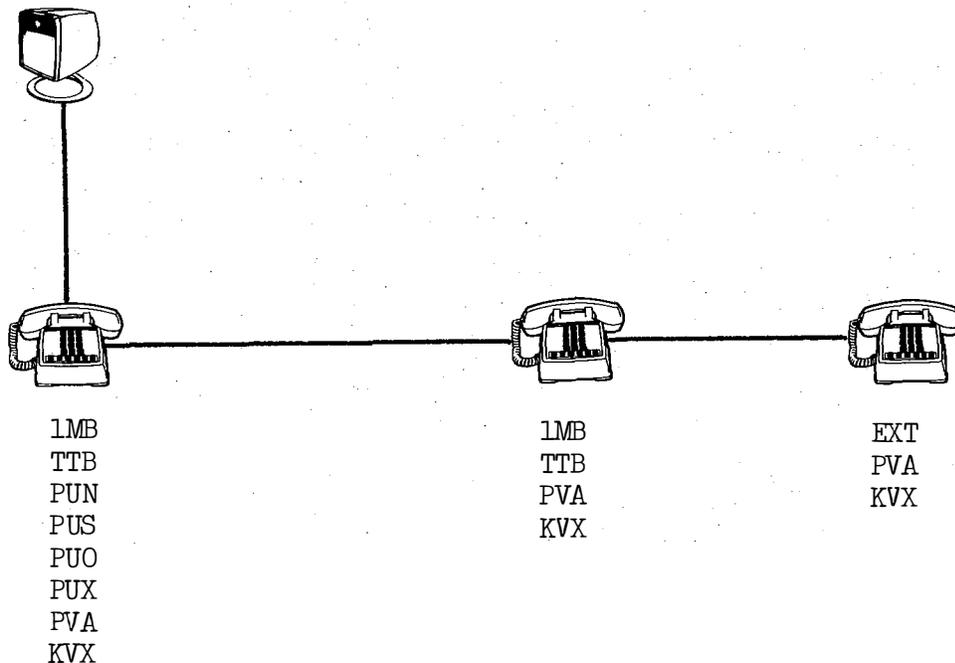


Exhibit 6  
(Cont'd)

BUSINESS CUSTOMER - CURRENTLY HAS 2 LINES, 4 STATIONS, PACKAGE  
COMMON EQUIPMENT AND INDIVIDUAL STATION USOC CODES - ADDING INDIVIDUAL  
PICTUREPHONE SERVICE ON ONE LINE WITH THREE PICTUREPHONE STATION SETS - TYPE I

## PICTUREPHONE SE&amp;R ENTRIES

1MB (4000)  
1MB (4001)  
2 TTB  
2 EXT  
IN302 (4000-4001)  
PUN (4000)  
PUX  
PUQ (PRIORITY - MGR(1) ASS'T MGR(2) SECT(3))  
PUOWX (MGR)  
PVA  
KVXGK (MGR)  
HLD  
KIM  
2 PKU (4000-4001)  
PUOEX (ASS'T MGR)  
PVA  
KVXEK (ASS'T MGR)  
PUX  
HLD  
KIM  
2 PKU (4000-4001)  
PUOWX (SEC'T)  
PVA (SEC'T)  
KVXWK (SEC'T)  
PUX  
HLD  
KIM  
2 PKU (4000-4001)  
KVXEK (CLERK)  
HLD  
KIM  
2 PKU (4000-4001)  
PVA

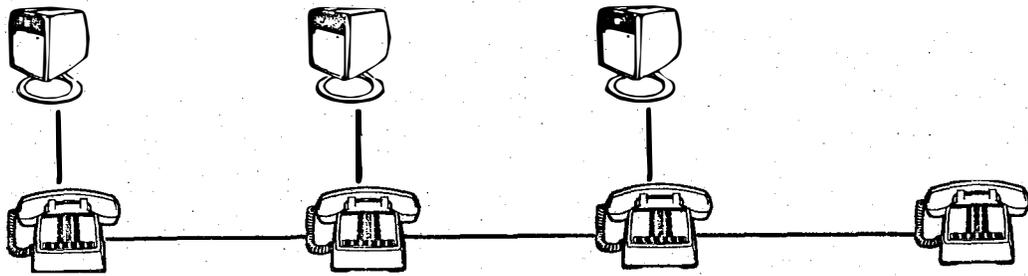
## PRESENT SE&amp;R

1MB (4000)  
1MB (4001)  
IN302 (4000-4001)  
KVXGK (4000-MGR)  
HLD  
2 PKU (4000-4001)  
KIM  
KVXGK (4001-ASS'T MGR)  
HLD  
2 PKU (4000-4001)  
KIM  
EXT  
KVXEK (SEC'T)  
HLD  
2 PKU (4000-4001)  
KIM  
EXT  
KVXEK (CLERK)  
HLD  
2 PKU (4000-4001)  
KIM

NOTE: IF DESIRED RMKS MAY BE USED TO INDICATE PRIORITY ACCESS - FOR EXAMPLE -

RMKS: ACCESS PRIORITY MANAGER (1) ASS'T MGR (2) SEC'T (3)

Exhibit 6  
(Cont'd)



LMB  
TTB  
PUN  
PUQ  
PUX  
PVA  
PUO  
KVX

LMB  
TTB  
PUO  
PVA  
KVX  
PUX

EXT  
KVX  
PUO  
PVA  
PUX

EXT  
KVX  
PVA

NOTE: FOR EVERY KEY SYSTEM OR MULTIPLE STATION ARRANGEMENT (I.E., USOC, PUQ, PUS OR PUT) THERE MUST BE A STATION LINE TERMINATION (PUX) ASSOCIATED WITH EACH PICTUREPHONE STATION (PUO).

**Exhibit 7  
Picturephone Pair  
Suitability Record**

FORM NO. E-6097 (1-1-71)

<u>PICTUREPHONE PAIR SUITABILITY RECORD</u>		Serial No. _____	Issue No. _____
Wire Center: _____		Route: _____	
From: _____		To: _____	
Comments: _____			
<b>CABLE COMPLEMENT DATA.</b>			
COMPLEMENTS:	AUDIO	Cable _____	Pairs _____
	CONTROL	Cable _____	Pairs _____
	COMMON	Cable _____	Pairs _____
<b>CABLE MAKE-UP DETAILS</b>			
CONTROL (Direction 2 -- CO to Customer)			
COMMON (Direction 1 -- Customer to CO)			
<b>SPECIAL TESTING INSTRUCTIONS</b>			
(a) Number of Consecutive pairs Per Complement to be Tested _____			
(b) AC Testing Required? YES _____ NO _____			
(c) DC Fault Locating Required? YES _____ NO _____			
(d) Test Criteria: DC _____ %; AC _____ % of those that passed DC Tests.			
<b>TESTING WORK ORDER</b>			
Prepared By: _____		Date Released _____	
<b>INTERMEDIATE CABLE EQUALIZER APPARATUS CASE DETAILS</b>			
Pairs Terminated - CONTROL	Cable _____	Pairs _____	
- COMMON	Cable _____	Pairs _____	
- ORDER WIRE	Cable _____	Pairs _____	
<b>APPARATUS CASE INSTALLATION WORK ORDER</b>			
Prepared By: _____		Date Released _____	
<b>ASSIGNING INSTRUCTIONS</b>			
- Place Permanent Sticker (E-6036)		- Remove Temporary Sticker (E-4675)	