DATA SYSTEMS ON DIRECT DISTANCE DIALING (DDD) NETWORK
DATA-PHONE SYSTEMS USING 130-TYPE SUBSCRIBER SETS
DESCRIPTION — LOW-SPEED, ONE-WAY, DATA-PHONE SERVICE

CONTENTS PAGE

1. GENERAL

1.01 This section describes the principal station equipment, service, and operating features of a low-speed, one-way DATA-PHONE service using 130-type subscriber sets as the DATA-PHONE subset. The service employs Bell System-provided teletypewriter station apparatus for the data generating and data using equipment.

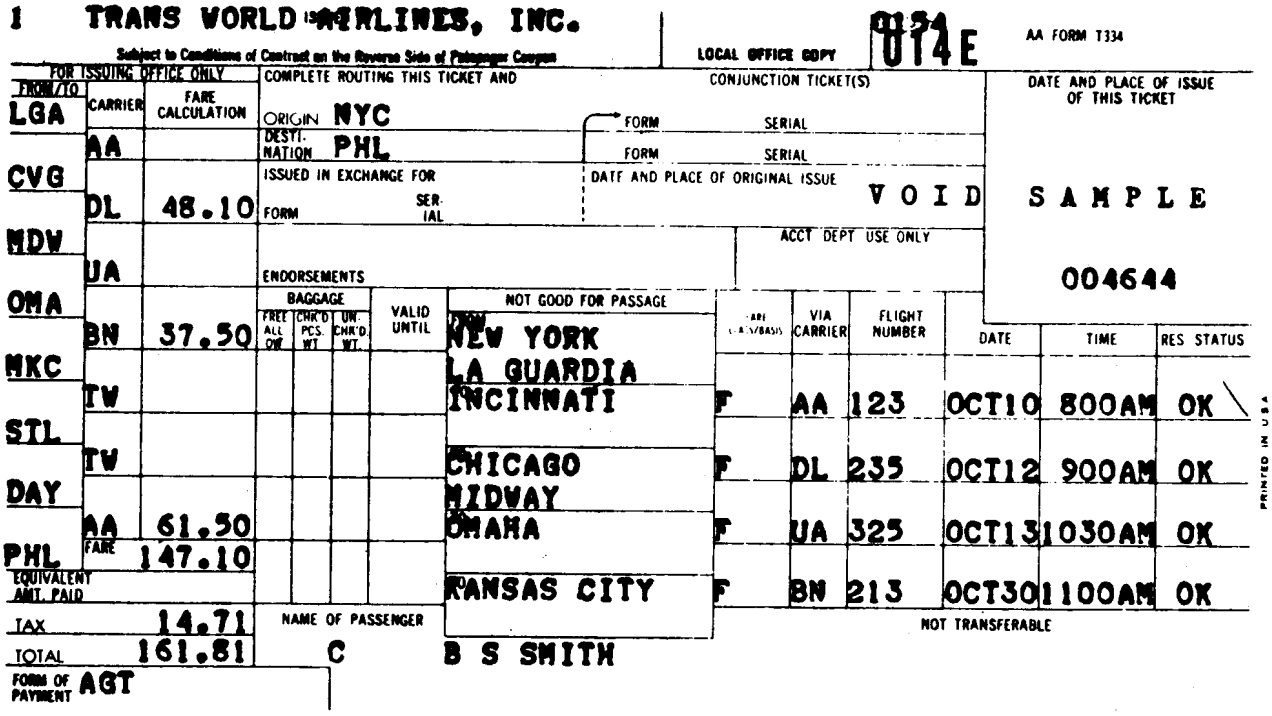
1.02 The initial application of these DATA-PHONE arrangements is expected to be in the provision of Teleticketing service to the airlines and their customers. This service will permit airlines to "send" passenger tickets over regular switched telephone connections from their ticket offices to their large customers or to their "will-call" ticket counters. Although the Teleticketing use will be described in detail, it will be apparent from the description that these DATA-PHONE arrangements may well have other applications.

1.03 To "send" tickets, the ticket office originates a regular telephone call to the receiving station. Each party then "converts" from the telephone to the DATA-PHONE condition by the momentary operation of a push button or key. The ticket office then automatically transmits prepared ticket data which is printed out on blank ticket stock in the receiving teletypewriter. Fig 1 (Page 2) shows a sample ticket.

1.04 In any given metropolitan area, any airline will have access to any receiving station. This requires that all stations within the area be compatible and that there be standard transmission and operating features. However, because of tariff or other considerations, the service may be offered at different operating speeds (i.e., at 75 or at 100 words per minute coresponding, respectively, to bit rates of approximately 55 and 75 binary bits per second) in different metropolitan areas. Stations in areas having different operating speeds will not be compatible, i.e., they will not be able to exchange information under the DATA-PHONE condition.

2. STATION ARRANGEMENTS

2.01 Foldout Fig. 2 gives a block diagram showing the essential features of the station arrangements used for providing this DATA-PHONE service. The outstanding feature of these arrangements is the use of a 130-type subscriber set as the DATA-PHONE subset associated with Bell System teletypewriter apparatus. The 130-type set accepts serialized digital data from the data equipment (teletypewriter transmitter-distributor or keyboard) and converts it into suitable voice-frequency (VF) tones for



1 TRANS WORLD AIRLINES, INC.

Subject to Conditions of Contract on the Reverse Side of Passenger Coupon

LOCAL OFFICE COPY 0174E AA FORM T334

FOR ISSUING OFFICE ONLY

FROM/TO	CARRIER	FARE CALCULATION
LGA		
	AA	
CVG		
	DL	48.10
MDW		
	UA	
OMA		
	BN	37.50
MKC		
	TW	
STL		
	TW	
DAY		
	AA	61.50
PHL	FARE	147.10
EQUIVALENT AMT. PAID		
TAX		14.71
TOTAL		161.81
FORM OF PAYMENT		AGT

COMPLETE ROUTING THIS TICKET AND

ORIGIN NYC

DESTINATION PHL

ISSUED IN EXCHANGE FOR

FORM SERIAL

CONJUNCTION TICKET(S)

FORM SERIAL

FORM SERIAL

DATE AND PLACE OF ORIGINAL ISSUE

VOID

DATE AND PLACE OF ISSUE OF THIS TICKET

SAMPLE

ACCT DEPT USE ONLY

004644

ENDORSEMENTS

BAGGAGE: FREE ALL OWF | CHK'D PCS. WT | UNCHK'D WT

VALID UNTIL

NOT GOOD FOR PASSAGE FROM

NEW YORK
LA GUARDIA
CINCINNATI
CHICAGO
MIDWAY
OMAHA
KANSAS CITY

	VIA CARRIER	FLIGHT NUMBER	DATE	TIME	RES STATUS
F	AA	123	OCT10	800AM	OK
F	DL	235	OCT12	900AM	OK
F	UA	325	OCT13	1030AM	OK
F	BN	213	OCT30	1100AM	OK

NOT TRANSFERABLE

NAME OF PASSENGER

C B S SMITH

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Fig. 1 — Sample Airlines Teleticketing Passenger Ticket

transmission over regular switched telephone connections. At the receiving end, the subset performs the reverse functions, i.e., it converts the incoming VF tones back to serialized digital data which is printed out by the data equipment (#28 receiving only teletypewriter).

2.02 For signal conversion purposes, the 130-type subscriber set includes a 43A1 carrier channel terminal. This terminal is equipped with networks operating at carrier frequencies of 1310 cps for marking signals, and 1240 cps for spacing signals. For operation at these signaling frequencies, the 43A1 channel terminal is confined, by filters, to the use of the band of frequencies from about 1190 to about 1360 cps. A single 43A1 channel terminal operating over this narrow band presents a poor impedance termination to the connected telephone line. An impedance-improving pad is, therefore, connected to the VF input of the 43A1 channel terminal. This minimizes the chances of a singing condition occurring on telephone calls over circuits employing gain.

2.03 Foldout Fig. 2 shows two types of station arrangements designated as NY and STD. Those designated as NY are arrangements developed by the New York Telephone Company and covered by their series of drawings. The arrangements designated as STD are those developed by the TELETYPE Corporation and covered by their drawings. Drawing number information is listed in Fig. 2. The principal difference between the two types is that the NY arrangement makes use of the 28KSR with a 14TD, whereas the STD arrangement uses 28 type equipment throughout including the 28ASR. Fig. 2 illustrates these differences.

2.04 The transfer circuits shown in Fig. 2 are relay-operated circuits under control of a lever-type key (NY arrangement) or a push-

button-type key (STD) arrangement). The transfer from the TEL to the TTY condition is effected by momentarily operating the lever-type key from its normal midposition to its nonlocking TTY position or by momentarily depressing the TTY push button. The relay operation to effect transfer back to the TEL condition at both the sending and receiving stations is normally under the control of the disconnect code at the end of the DATA-PHONE TTY message. However, the transfer back to the TEL condition may be made manually by momentarily operating the lever-type key to its nonlocking TEL position or by momentarily depressing the TEL push button. Normally, this procedure would not be used except to interrupt the DATA-PHONE transmission because of a trouble or emergency condition. Since the service is arranged for one-way transmission, there is no "break" ability. If the manual transfer is made at the receiving station, therefore, no signal is sent to the sending station and the receiving telephone station is disabled until the disconnect code is received from the sending station.

2.05 The transfer circuit, in addition to its principal functions of transferring between TEL and TTY conditions and starting up and shutting down TTY apparatus, also lights a TTY busy lamp when transfer is made to the TTY (DATA-PHONE) condition.

3. STATION OPERATING PROCEDURES

GENERAL

3.01 With circuits normal as shown in Fig. 2, the telephone is on the line and may be used to make or receive telephone calls.

3.02 The TTY sets are normally terminated in a local circuit so that they can be tested or used locally by turning on the TTY power switch.

OFF-LINE PREPARATION OF TAPE

3.03 With both the Group 1 and Group 2 sending station arrangements shown in Fig. 2, the transmission may be from the keyboard or by tape from the transmitter-distributor (TD). It will normally be from the TD. With the Group 2 setup, the tape for TD transmission may be prepared and verified at the station prior to on-line operation. With the Group 1 setup, however, the tape can only be verified when it is sent on the line as it is prepared at some other location. This other location would normally be what amounts to a tape factory which serves several Group 1 type stations.

ON-LINE TRANSMISSION OF DATA

3.04 When the telephone connection has been established between the sending and receiving stations, and both parties agree to TTY (DATA-PHONE) operation (teleticket transmission) the following procedure is normally employed:

(a) The sending station attendant instructs the attendant at the receiving station to momentarily operate the transfer key to the TTY position (or depress the TTY push button) when carrier tone is heard in the telephone receiver.

(b) The sending station attendant then momentarily operates the transfer key to the TTY position (or depresses the TTY push button) and waits three seconds before starting to "send" the ticket.

(c) Under normal operating conditions, both the sending and receiving stations will hang up the telephone after the momentary operation of the transfer key or button.

(d) Upon completion of the ticket(s) transmission, normal disconnection is accomplished by the sending of the disconnect code (Figs. H or Figs. Blank H, as the case may be) from the sending station. This causes the TTY equipment to shut down at both the sending and receiving stations. It also causes at each location, the telephone set to be reconnected to the telephone line for regular use. As the receiver is on the hook a normal disconnect signal will be given to the C.O. dial equipment.

3.05 In the event the attendants at the sending and receiving stations wish to talk to each other upon completion of DATA-PHONE transmission, the following procedure is employed:

(a) The call is established as described in 3.04, 3.04 (a) and 3.04 (b).

(b) The attendants at both the sending and receiving stations ***do not*** hang up the telephone after the momentary operation of the transfer key or button.

(c) Upon completion of the ticket(s) transmission, the sending of the disconnect code (Figs. H or Figs. Blank H, as the case may be) from the sending station will shut down the TTY equipment at both stations and transfer the telephone sets back to the line so that conversation may be resumed.

3.06 In the event of an emergency or trouble condition, the attendant at either the sending or receiving station can turn off his TTY and restore his telephone set to the line by momentarily operating the transfer key to the TEL position or by momentarily depressing the TEL push button.

4. TESTING PROCEDURES

4.01 No special procedures or test equipment will be required to test local telephone service. However, special test equipment must be provided to permit testing the DATA-PHONE stations. Therefore, it will be necessary to establish procedures in test bureaus to handle customers' reports. These reports will usually be received on repair service trunks and tested for trouble existing on exchange telephone service facilities. If there is no apparent trouble from this test, the report would be referred to personnel responsible for testing and maintenance of DATA-PHONE equipment. Because of the DATA-PHONE use, the subscriber line is given the S.S.P. (Special Services Protection) treatment in accordance with usual routines.

4.02 Sections in the E and F series of practices cover the test equipment arrangements and procedures for use at the serving test centers. Equipmentwise, the principal items are a monitoring TTY and a 130C1 subscriber arranged for 2-way operation. These permit tests to be made with either Teleticketing sending or receiving stations. It is not contemplated that the test center be arranged to send test messages using the Teleticketing ticket format. Instead, signals from the test center will be confined to the usual multiple sender transmission signals on either an undistorted or distorted basis. Where a receiving station desires to check actual ticket format reception, it will be necessary to work with an airline's sending station.

NOTES TO ACCOMPANY FIG. 2

1. DRAWING REFERENCES:

1.01 The adjoining functional block diagram covers:

A. Standard Teleticketing station arrangements as developed by the TELETYPE Corporation and shown on their drawings as follows:

(1) Drawing 3752WD covering Group 2 station arrangements.

(2) Drawing 3753WD covering Group 1 station arrangements.

(3) Drawing 3754WD covering Group 3 station arrangements.

B. Interim Teleticketing station arrangements as developed by the New York Telephone Company and shown on their drawing PT-4530, Issue 3, which covers Group 1, 2, and 3 station arrangements.

1.02 Blocks in the adjoining diagram which are designated (NY) apply only to the N.Y. Tel. Co. arrangements. Blocks designated (STD) apply only to the TELETYPE Corporation arrangements. Blocks not designated are common to both arrangements.

1.03 The above drawing references are cited for record purposes. Operating Companies will normally use their own numbering plan to designate their drawings which cover the particular station arrangement used in their area.

2. GENERAL NOTES:

2.01 With the transfer circuit in the TTY position, the 28TTY, the TD and the ROTR are all connected in series with operating current (0.060A) supplied from the 130 C1 subset.

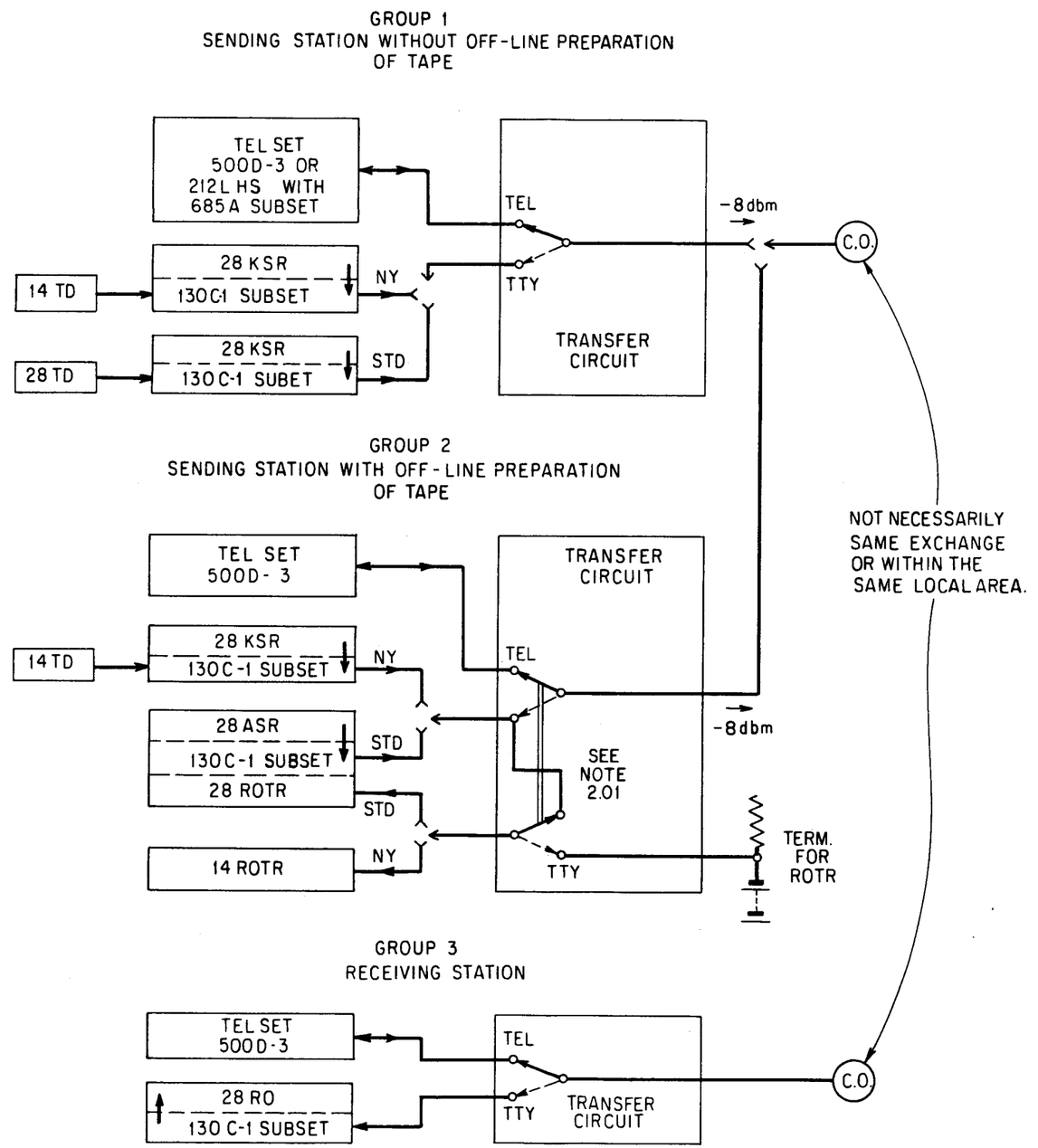

Fig. 2 – Block Diagram Station Arrangements