J1P005 AUTOMATIC DATA TEST SYSTEM (ADTS)— OPERATION FROM FIELD LOCATIONS

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1. GENERAL

1.01 This section provides instructions for operation of the ADTS from field locations such as work centers, distributing houses, manufacturing plants, and customer premises.

1.02 This section is reissued to include information on operation with Digital Input Voice Answer (DIVA) and dynamic testing features. Since this reissue constitutes a general revision, arrows ordinarily used to denote changes, have been omitted.

1.03 The ADTS (Fig. 1) is a computer-controlled system designed to facilitate the remote testing of remote Bell System data sets and terminals on switched network or private lines. The system features the following:

- Static and dynamic data set tests on switched network lines
- Control by local and remote terminals, teletypewriter (TTY), TTY-compatible CRT terminals, and DIVA
- Line card, test history, recent results, and benchmark files
- Maintenance and receive-only (RO) TTYs
- Additional testing functions including dynamic testing, test of Dataspeed® terminals, and data access arrangements (DAA).

Later system configurations will include the following additional features:

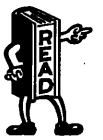
- Testing of data sets and terminals on private line circuits
- Integration into related systems for maintenance of special services, such as the Switched Access, Remote Testing System (SARTS)

1.04 The primary purpose of the ADTS is to perform automatic tests of a data set or data station upon request. The ADTS will report the test results to the requesting telephone company (telco) personnel for analysis and determination of any necessary actions.

1.05 The software provided with the ADTS not only allows the ADTS to accomplish the primary purpose of testing data sets. But also the software provides certain maintenance and recordkeeping functions available to test center and field personnel. These functions include the following:

- Maintenance of an abbreviated line card file (LCF) containing information necessary to perform a test of a data set
- Maintenance of a test history file containing dates of test and pass or fail information
- Maintenance of a detailed benchmark results file (BRF) where results of an installation test may be stored and later retrieved for comparison purposes
- Maintenance of a detailed recent results file (RRF) for retrieving detailed results of recent tests
- Means for processing line card information to provide useful summaries of data set populations
- Means for receiving summaries of recent ADTS tests
- Periodic self-checking and hardware maintenance programs.

1.06 The data set testing programs for ADTS are ordered separately by telco. As new data set testing programs become available, they may be entered into the ADTS. Field personnel should verify that the particular test program is available before requesting a test of a data set.



Tests of data sets behind private branch exchanges (PBXs) without direct in dialing can only be made by personnel at the local location.

1.07 For the purposes of this section, the term user will refer to the telco personnel responsible for interfacing with the ADTS. For more information on the ADTS, refer to the section

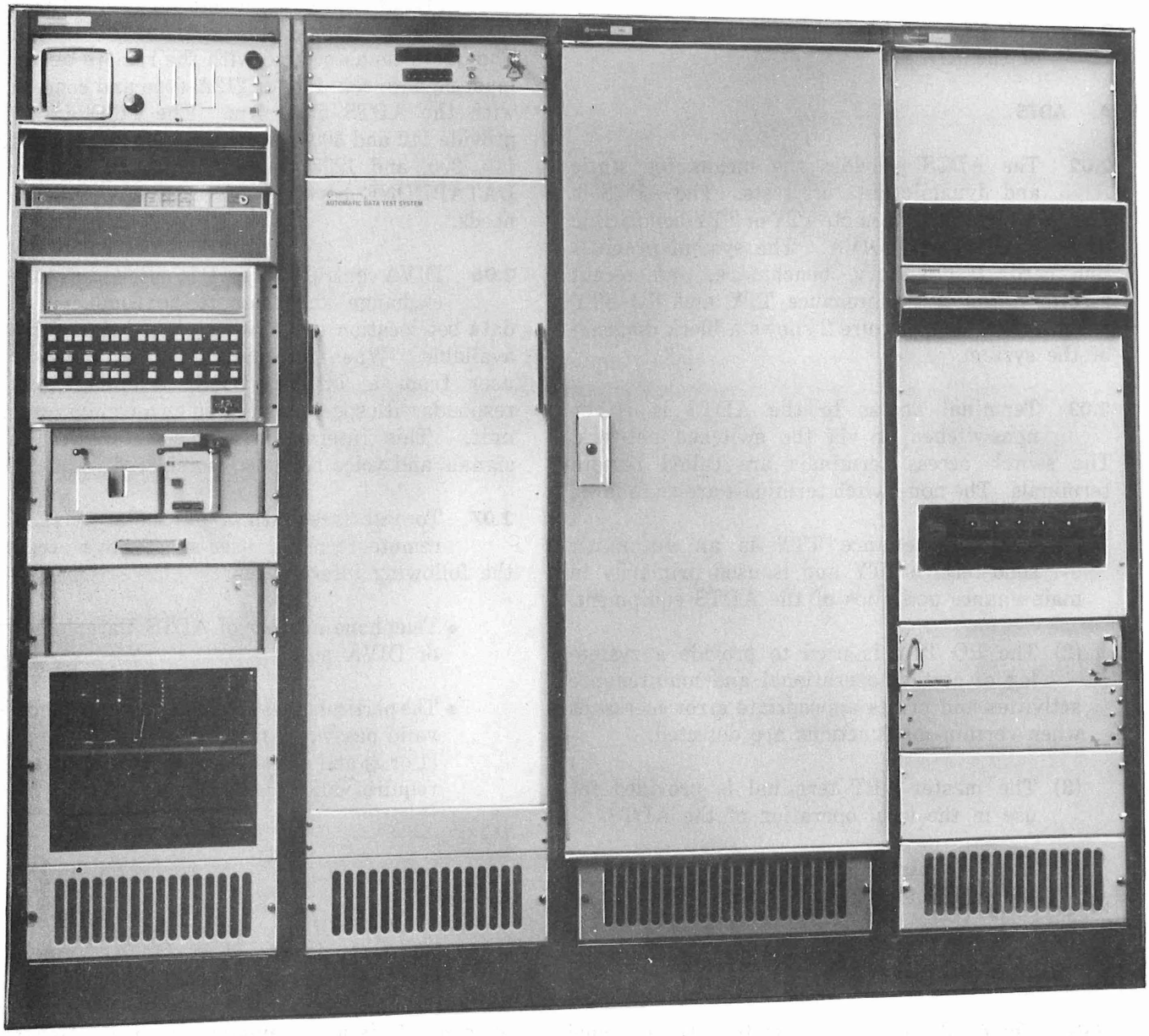


Fig. 1—ADTS Front View—Local Terminals not Shown

entitled J1P005 Automatic Data Test System (ADTS)—Description (668-600-100).

2. SYSTEM DESCRIPTION

2.01 This part provides a brief system description of the ADTS.

A. ADTS

2.02 The ADTS provides the means for static and dynamic data set tests. The ADTS is controlled by local or remote TTY or TTY-compatible CRT terminals and DIVA. The system provides line card, test history, benchmark, and recent results files. A maintenance TTY and RO TTY are also provided. Figure 2 shows a block diagram of the system.

2.03 Terminal access to the ADTS is either nonswitched or via the switched network. The switch access terminals are called remote terminals. The non-switch terminals are as follows:

(1) The maintenance TTY is an automatic send-receive TTY and is used primarily in maintenance activities of the ADTS equipment.

(2) The RO TTY is used to provide a system log of certain operational and maintenance activities and prints appropriate error messages when certain malfunctions are detected.

(3) The master CRT terminal is provided for use in the local operation of the ADTS.

(4) Local terminals provide limited control of the ADTS for data set testing operations.

B. Remote Terminals

2.04 The ADTS may be accessed from the switched network on a time-share basis by terminals or DIVA using TOUCH-TONE® telephone. The terminals are TTYs or TTY-compatible CRTs, located at various field locations. In absence of TOUCH-TONE capability, an acoustically coupled KS-21799 tone coupler or an electrically connected modified TOUCH-TONE pad can be used for DIVA access. Remote terminal and DIVA access are recognized as authorized terminals by the ADTS upon receipt of a password code. The remote terminals must be equipped with EIA interfaces and data sets, and must be able to operate duplex over Dataphone® lines.

2.05 The ADTS is provided with Dataphone ports and associated data sets 113D- or 212A-type to provide communication with remote terminals. The data sets associated with the remote terminals must be data sets 100- or 212A-type and compatible with the ADTS data sets. The 113D data sets provide 110 and 300 bps service. The 212A provides 110, 300, and 1200 bps service. The number of DATAPHONE ports are determined by the telco needs.

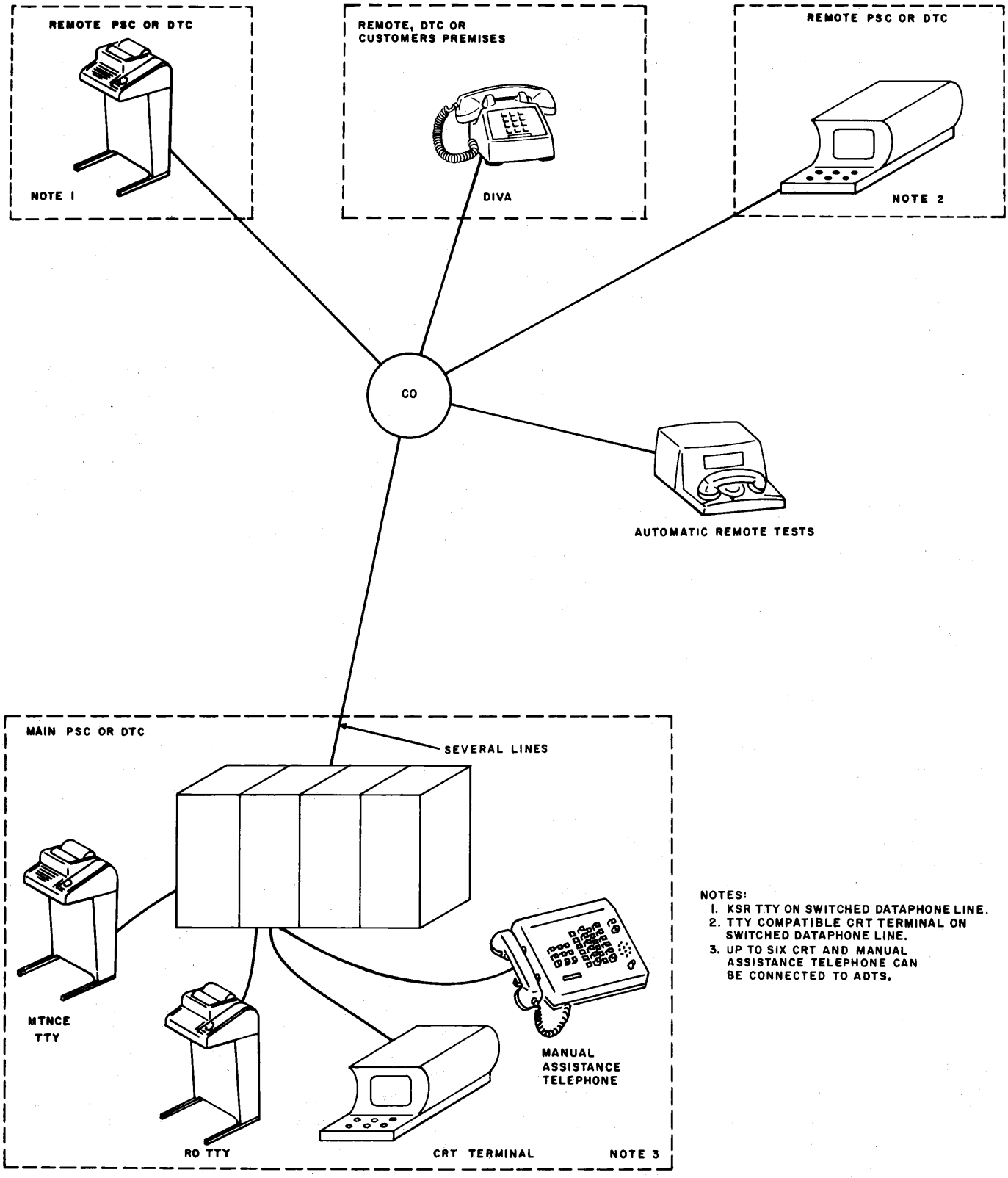
2.06 DIVA control of the ADTS allows information exchange and tests to be conducted from data set location or anywhere telephone service is available. When information is conveyed to the user from a TOUCH-TONE telephone, ADTS responds with speech generated by an audio response unit. This interaction between tone-generated signals and voice response is referred to as DIVA.

2.07 To interface with a particular ADTS, the remote terminal user must have access to the following information:

- Telephone number of ADTS Dataphone port or DIVA port
- The particular system configuration determines valid password, number of line card records (1 or 2) and whether or not remote terminals require valid who-are-you codes.

C. Tests

2.08 The tests conducted by the ADTS on data sets and terminals are static and/or dynamic tests. The static tests involve only the measurement of characteristic parameters such as frequency, level, slice points, and receiver sensitivity. The static test does not require the ADTS to generate or receive modulated data set signals. A dynamic test does require ADTS to generate or receive modulated data set signals. Two types of tests may be initiated: a fast test which does not allow the user to review the line card information or request testing instructions. The second type is a regular test which does allow the user to review the line card information and request testing instructions.



NOTES:
1. KSR TTY ON SWITCHED DATAPHONE LINE.
2. TTY COMPATIBLE CRT TERMINAL ON SWITCHED DATAPHONE LINE.
3. UP TO SIX CRT AND MANUAL ASSISTANCE TELEPHONE CAN BE CONNECTED TO ADTS.

Fig. 2—ADTS—System Block Diagram

2.09 The LCF is not intended to replace permanent paper records or LCFs in other computer systems, but only to serve as a secondary file. The file contains record entries such as telephone number of station, data set code, options, and special access restrictions required to perform a test. If a test is requested of a data station whose records are not on file, the person initiating the request is asked by the ADTS for the line card information. Depending on how the ADTS is configured on initial installation, this information can be used to make either a temporary line card record, which may be made permanent at a later time, or a permanent record.

2.10 Up to 200 test results are kept in the results file. The file is updated each time a test is run on a data set.

3. OPERATION FROM A REMOTE TERMINAL

3.01 This part provides instructions necessary for the proper operation of the ADTS from remote terminals. Included are instructions for entering and leaving the system and for performing various operations. Since the TTY and CRT are compatible terminals, operations using the terminals are the same. The CRT and TTY differences are the outputs: the CRT provides a temporary visual display of information, while the TTY provides a permanent paper record.

3.02 Operations involving the ADTS require man/machine interaction. Information from a terminal is entered into the ADTS by means of the terminal keyboards. The ADTS outputs the information on a display screen or paper. With DIVA, the information is entered by tones from a TOUCH-TONE pad. The system outputs a message by a voice response unit.

Every entry from a terminal keyboard must be followed by a carriage return entry. Every entry from a TOUCH-TONE pad must be followed by an asterisk (*). To avoid repetition, the carriage return or asterisk entry has not been included in the text but should be understood as included whenever an entry is mentioned.

A. System Modes

3.03 The ADTS may be in one of three modes: on-line, off-line, or down. While performing the major function of data set testing, the system will be in an on-line mode. The off-line mode is entered when certain tasks must be performed that can only be executed efficiently if there are no other tasks in progress. While off-line, the capabilities of the system will be severely curtailed and, during this period, the system can perform only one task at a time. The down mode is entered in cases of massive failures such as a computer or disc malfunction.

3.04 DIVA may be in one of two modes: DIVA-UP or DIVA-DOWN. To perform a test from DIVA, DIVA and ADTS must be in the up-mode. DIVA DOWN prevents the use of DIVA ports without affecting the operation of ADTS from other terminals and is entered when checking the operation of the Automatic Voice Answer-Data Testing (AVA-DT) hardware.

B. CRT and TTY Procedures

Accessing the System

3.05 Access to the ADTS is obtained by placing a call to the ADTS Dataphone port number. Depending on the mode of the system and the status of the Dataphone ports, one of four actions occurs.

(1) If the Dataphone ports are busy, a busy signal is encountered. The call should be placed at a later time.

(2) If the system is on-line and the ports are not busy, the system answers the call. After the handshaking operation, the system waits the input of the speed recognition character (L). This character allows the system to recognize the terminal's speed of operation (110, 300, or 1200 bps). After recognizing the terminal's speed, the system outputs the query PASSWORD?. Once the password is entered and recognized, the system outputs FUNCTION?.

(3) If the system is off-line after receipt of the correct password, the system outputs ADTS IS OFF LINE followed by FUNCTION?.

(4) If the system is down, the incoming call is not answered.

Leaving the System
Manual Abort

3.06 Whenever the system is expecting a user input (question on terminal), the user can abort the operation by entering STOP or OFF. The entry of STOP causes the system to abort whatever task is being performed and output the FUNCTION? query. The entry of OFF aborts the task and removes the user from the system by hanging up the terminal.

3.07 Incorrect entries such as entering an incorrect data set code or illogical entries will cause the system to output an appropriate error message such as DATA SET CANNOT BE TESTED REENTER. In most cases, when the system is producing a lengthy printout (table of numbers, list of file entries, etc), the user may abort the printout by depressing the break key on the terminal keyboard.

Automatic Abort

3.08 The system automatically performs the equivalent of a user entry of OFF if the user does not respond to a system request for input within 90 seconds as follows: After 30 seconds without entry, the system will query WHAT?. If no entry is received for another 30 seconds, the system will again query WHAT?. If an entry is not received 30 seconds after the second WHAT?, the system will abort the task and disconnect the user from the system.

C. DIVA Procedures

Accessing the System

3.09 Access to ADTS, by DIVA, is obtained by placing a call to a DIVA port number. Depending on the mode of the system and the mode of DIVA, one of four actions will occur:

(a) Busy signal, all DIVA ports are busy. Try again later.

(b) Call not answered, either ADTS is down or DIVA is in the down mode.

(c) Call answered, the user will hear a one second burst of an answer tone. Following the answer tone, will be the query: THIS IS THE AUTOMATIC DATA TEST SYSTEM, PLEASE ENTER THE PASSWORD. Once the password has been entered, the system responds with PLEASE ENTER THE FUNCTION YOU WISH TO PERFORM.

(d) Call answered, the user will hear the password query and then the following: AUTOMATIC DATA TEST SYSTEM IS OFF-LINE. The function query is then output by the system.

3.10 The user may shorten the password-function request formalities, by inputting both the passwork and the desired function in one entry (no intervening *). If both the password and function are valid, ADTS begins executing the function immediately. If the system responds with a question that the user is familiar with, the question may be aborted by entering the correct answer to the question.

3.11 The information is entered into the ADTS by letters or numbers on the TOUCH-TONE pad. The numbers are entered to the ADTS by depressing the desired digit on the pad of the TOUCH-TONE. Letters are entered into the system by using the following format:

(a) Depress #

(b) Depress button with desired letter on it

(c) Depress a number (1, 2, or 3) corresponding to the letter's position on the button (pressed in b).

3.12 In response to a YES or NO question, the following format is used:

(a) YES, enter one (1)

(b) NO, enter zero (0)

3.13 The user can listen to the last spoken message again, by entering a #*. Refer to Table A.

Leaving the System

Manual Abort

TABLE A

TOUCH-TONE CODES FOR DIVA

FUNCTIONS	DEPRESS BUTTON(S)	DESCRIPTION
1, 2, 3, . . .etc.	Appropriate button(s)	Digits
#	#	Prefix character
*	*	Asterisk. Used at end of all entries as EOL character
A,B,C, . . .etc.	Depress number sign, button on which character appears and digit corresponding to the relative position of the letter (1,2, or 3). Example: For the letter A #21	Alphabetic characters
YES	1*	Answer yes to a question
NO	0*	Answer no to a question
REPEAT	#*	Repeats last message spoken by the system
Telephone Number	Example: 3115552368*	Enter telephone number in sequence followed by EOL
Data Set Code	Example: 202#23* Example: 202#235* Example: 401#515*	202C 202C5 401J5
Data Set Transmit	Example: 12*	—12 dBm. Eliminate sign and units designation. Enter numerical value

3.14 Whenever the system is expecting user input, the operation can be aborted by the user. The user can abort the operation by entering the letter S(#73) or the letter O(#63). The letter S is for STOP; the system immediately aborts the present tasks and returns to the function query. The letter O for OFF, causes ADTS to abort the operation and the DIVA port to hang-up.

Automatic Abort

3.15 The ADTS automatically performs the equivalent of a user OFF if the user does not respond to a system request. Thirty seconds, without a user entry after the original function query, ADTS will repeat the query. Thirty seconds after the second query without a user entry, the system will repeat the query for the third time. Thirty seconds after the third query without an entry the system will abort the task and hang up.

3.16 If incorrect or illogical entries are made three successive times, ADTS will perform the equivalent of an OFF. After each invalid entry, an appropriate error message such as THE NUMBER IS INVALID, PLEASE REENTER THE DATA SET CODE will be spoken. After a third invalid entry, the ADTS will abort the task and hang up.

D. Functions

3.17 The particular function or operation to be performed by the ADTS must be specified by the user in response to the system query FUNCTION?. User responses to this query are referred to as functions and are listed in Table B.

3.18 If a particular function consists of subtasks, the system queries COMMAND? after entry of a function. A valid command entry must then be inputted by the user before the function can be performed. The command entries are explained under their respective function explanations.

3.19 Once a valid function and command, if required, is specified, the system performs the function, querying the user as necessary until the function is completed or aborted.

3.20 The following paragraphs explain the purposes of the various functions, provide the required man/machine interactions, and, in most cases, provide a flowchart showing the actual entries and outputs. The legend shown in Fig. 3 should be used to interpret the flowcharts. In each flowchart, it is assumed that the user has gained access to the system and is responding to a FUNCTION? query.

E. Remote Terminal Operational Functions

BENCHMARK (Fig. 4)

3.21 This function is used to transfer the results of a data set test into or out of the BRF. This file is used for storing results that can be used by telco personnel for comparison purposes at some later time. Results are keyed by telephone or special circuit number and are stored indefinitely or until a new benchmark storage is requested.

3.22 Following entry of BENCHMARK, the system responds with COMMAND?. The user enters LIST for a printout of a previously stored benchmark or ENTER to store a new benchmark. If LIST is entered, the system responds with TELEPHONE OR SPECIAL CIRCUIT NUMBER?. After a valid number (test-functions for valid number entry) is entered, the system prints the benchmark results in the same format as described for the RES function. An appropriate message is given if no benchmark is available for the specified telephone or special circuit number. If the user enters ENTER, the system responds with TELEPHONE OR SPECIAL CIRCUIT NUMBER?. Upon entry of a valid number, the system searches the RRF for the results of the most recent test to the specified telephone or special circuit number. These results are then stored in the BRF. An appropriate message is given if no results are found in the RRF for the specified telephone or special circuit number.

Delete Line Card (DLC) (Fig. 5)

3.23 This function is used to delete a record from the LCF. If the system is configured for two types of line cards (permanent and temporary), both types are deleted if both are present.

3.24 The DLC function may be performed by remote terminals if any of the following conditions are met:

- The system is configured to store one type of line card
- The system is configured to store two types of line cards, to allow remote entry of line cards and the remote terminal has a valid who-are-you code.
- The system is configured to store two types of line cards, to allow remote entry of line cards, and to bypass the checking of remote terminal who-are-you codes.

Note: The deletion of a line card also deletes any associated history and benchmark records.

3.25 Following entry of DLC, the system responds with TELEPHONE OR SPECIAL CIRCUIT NUMBER?. The user then enters the number of the line card to be deleted. Following deletion of the line card and any associated history and benchmark records, the system again prints TELEPHONE OR SPECIAL CIRCUIT NUMBER? and the sequence can be repeated. If a telephone or special circuit number is entered that does not correspond to a line card on file, the system prints NO LINE CARD ON FILE.

Enter Line Card (ELC) (Fig. 5)

3.26 This function is used to enter a line card record into the ADTS LCF. If the system is configured for two types of line cards (permanent

TABLE B

FUNCTIONS AVAILABLE TO REMOTE TERMINALS

TYPE	FUNCTION	OPERATION	TERMINAL CALLING CODE NORMAL	FAST
OPERATIONAL-Functions used in normal Data Set testing activities	Benchmark	Retrieve results of a data set test performed upon initial installation and entered into the benchmark file or store results in benchmark file.	BENCHMARK	
	Delete Line Card*	Delete a line card from the line card file.	DLC	
	Enter Line Card*	Enter a permanent line card into the line card file.	ELC	
	History	Retrieve summary of testing activity (pass or fail) on a specified telephone number.	HISTORY	
	List Line Card	Print the contents of the line card associated with a specific telephone number.	LLC	
	List Results	Print index number, time, and date of recent test of a data set.	LRES	
	Test Function List	List all valid test functions. When F is used a prefix, performs fast test of data set without review of line card information and without receiving instructions	TEST FTEST	F
	Loopback test	Performs a static or loopback test of the data set.	LB	FLB
	Remote test	Performs a dynamic or remote test of a data set.	RT	FRT
	Error Run	Test data set with a data test set connected at station data set.	ER	FER

and temporary), the line card is entered as a permanent record and any temporary record for the same telephone or special circuit number is deleted. Remote terminals may perform the ELC function if the conditions listed in paragraph 3.24 are met.

3.27 Following entry of ELC, the system prints TELEPHONE OR SPECIAL CIRCUIT NUMBER?. The user then enters the number for the line card to be inserted. If a line card is already on file for the specified telephone or special circuit number, the system prints the informational

TABLE B (Contd)

FUNCTIONS AVAILABLE TO REMOTE TERMINALS

TYPE	FUNCTION	OPERATION	TERMINAL CALLING CODE NORMAL	FAST
	Digital Loopback‡	Test data set with data set in digital Loopback mode.	DL	FDL
	Results	Output results of most recent test of a data set.	R	
	Start Up Test‡	Test data set ability to begin transmitting error free.	UT	FUT
	Terminal Test‡	Test through station data set.	TR	FTR
INFORMATIONAL—Functions used to list and/or count records in a particular file	Count Records on File	Print a count or summary of records in the ADTS line card file that meet certain criteria.	CROF	
	List Temporary Line Cards	List all temporary line cards stored in the line card file.	LTLC	
	Partial List Temporary Line Cards	List all temporary line cards stored in the line card file that are older than the purge interval.	PLTC	
	System evaluation File	Dump, on tape, a selected portion of the system evaluation file.	SEFILE	
	Testlog†	Print a summary of all tests performed by the ADTS since file was last purged.	TESTLOG	

* Depending on system configuration.

† Remote terminals cannot purge testlog file.

‡ Not presently available.

message LINE CARD ON FILE and proceeds to the line card input sequence. If no line card is on file, the system goes directly to the line card input sequence. In the input sequence, the system prints a series of questions on the user's terminal. The user's responses to these questions are used to construct the desired line card record. Following entry of the line card information, the system again prints TELEPHONE OR SPECIAL CIRCUIT NUMBER? and the sequence can be repeated with another set of line card information. When the line card input sequence is completed, the new information replaces all previous information in the LCF associated with the entered telephone or special circuit number.

HISTORY (Fig. 6)

3.28 This function is used when the user wishes to display the history record for a particular telephone or special circuit number. A history file entry is keyed by telephone number and contains a date and result codes representing the disposition of the last five (with the most recent entry first) ADTS tests to the telephone or special circuit number on the indicated date. The four most recent history entries of up to five tests each are stored for each telephone or special circuit number represented in the history file.

3.29 Following the entry of HISTORY, the system responds with TELEPHONE OR SPECIAL CIRCUIT NUMBER?. After the user enters a valid telephone or special circuit number, the associated history record, if any, is printed on the operator's terminal. A typical printout is as follows:

5/7/74 P,A,B,P,A,

5/1/74 A,A

2/20/74 P

7/5/73 P

P indicates the data set passed on all tests. A, B, C, etc, represent failure codes. The failure codes are as follows:

- A—Incorrect frequency
- B—Absent frequency
- C—Unassigned
- D—Sensitivity
- E—Unassigned
- F—Miscellaneous.

List Line Card (LLC) (Fig. 7)

3.30 This function is used to print the contents of the line card associated with a specified telephone or special circuit number. If both a permanent and temporary line card are on file for the specified telephone number. The user is given the choice as to which line card will be printed.

3.31 Following entry of LLC, the system responds with TELEPHONE OR SPECIAL CIRCUIT NUMBER?. Following entry of a valid number, the system prints the line card for that number if a line card is available. If none is available, an appropriate message is given. If two line cards are on file (permanent and temporary) for the specified number, the system responds with P or T?. The user then indicates which of the two is to be printed.

List Results (LRES) (Fig. 8)

3.32 This function is used to print a list of the test results available in the RRF for a particular telephone or special circuit number. The RRF contains the results of the 200 (approximately) most recent tests performed by the ADTS. Once the printout is received, the user can request a printout of the results of a selected test.

3.33 Following entry of LRES, the system responds with TELEPHONE OR SPECIAL CIRCUIT NUMBER?. The user then enters the number for which test results are required. Following the entry of the telephone or special circuit number, the system prints an index number followed by a time and date for all tests. Up to a maximum of the ten most recent results are available to the selected number that are stored in the RRF. A typical printout is as follows:

1 13:25 7/12/74

2 8:45 7/12/74

3 11:19 7/10/74

NUMBER?

The user responds to NUMBER? by entering the index number of the test for which results are required. The results printout is the same as described under the RES function. Following the results printout, the system again prints NUMBER? and the user can receive another results printout for the same telephone or special circuit number if required.

Test Function List (F TEST or TEST)

3.34 An F TEST or TEST will list all available test functions of the ADTS, but no test is performed on a data set. When "F" is used as a prefix with a test function, it will perform a fast test function. A fast test function is used where the user does not need to review the line card. If a line card is not available for a telephone number of a data set, the ADTS will ask a question concerning the data set to create a line card. If the line card is on file, the information is not displayed nor is the user given a chance for test instructions. Refer to Table A.

Results (RES) (Fig. 9)

3.35 This function is used to display results of data set tests. The user specifies a telephone or special circuit number and the system prints the results of the most recent test to a data set on that number.

3.36 Following the entry of RES, the ADTS responds with TELEPHONE OR SPECIAL CIRCUIT NUMBER?. The user then enters the number of the data set for which test results are required. (The number format is the same as that described for the test function.) The system then prints the results of the most recent test of that data set. A typical printout begins with the sequence shown below.

TIME: 13:25 5/7/74 (Time test was made)

DATA SET CODE: 402C5

DATA SET TESTS OK

DO YOU WANT DETAILED RESULTS?

If the user enters NO to the detailed results question, the results function is complete. If YES is entered, a listing of the measurements made in the course of testing the data set is printed. If no results are on file for the specified telephone or special circuit number, the system prints NO RESULTS ON FILE. If the test detected one or more data set malfunctions, the DATA SET TESTS OK printout is replaced by a list of the detected malfunctions.

Test-Functions (LB, RT, DL, ER, TR, and UT) (Fig. 10)

3.37 The test functions are the major ADTS function. The ADTS can perform two general types of tests, static and dynamic. Static testing does not require ADTS to generate or receive modulated data. Dynamic testing does require ADTS to generate or receive modulated data. Depending on the test functions, the ADTS will determine if the test is static or dynamic. The following are the tests that ADTS can perform:

(a) ***Loopback (LB):*** A static test of the data set using the built-in test circuits of the data set.

(b) ***Remote Test (RT):*** A dynamic test of the data set using the built-in remote test circuit of the data set.

(c) ***Digital Loopback (DL):*** A dynamic test to a data set in the digital loopback (DL) mode, without any test equipment at the data set.

(d) ***Error Run (ER):*** Test the data set with a data test set at the data set station. "Turnaround", which is the ability of a data set to quickly reverse transmission direction is tested by the ADTS. Turnaround can also be tested using 921A data test set.

(e) ***Terminal Test (TR):*** Tests through a data set to a terminal.

(f) ***Start Up (UT):*** Measure the error performance of a data set during the start time interval after the data set indicates it is ready for transmission. This test is intended primarily for testing data sets on a multipoint polling network where short bursts of data are frequently transmitted.

3.38 Following entry of a test function, the user receives the printout WHAT IS TELEPHONE OR SPECIAL CIRCUIT NUMBER?. The number of the data set to be tested is then entered. If

no area code is supplied with the telephone number, the ADTS assumes the local area code is wanted. The format for the telephone number is NNN MMM PPPP. NNN represents the area code and is optional. MMM represents the office code and PPPP the line number. The blanks following the area and office codes are optional. The special circuit number is a 15 character alpha, and digit number.

Tests of data sets having extension numbers can only be made by local terminals.

3.39 When the telephone or special circuit number entry is completed, the ADTS attempts to find line card information for that telephone number in the LCF. If a record is found, ADTS will use the data set code to check for a test program. A test program is needed by the ADTS to perform a desired test on a data set. If no test program is found ADTS will printout: THE ADTS CAN NOT RUN SELECTED TEST ON THIS DATA SET. The test will then be aborted by the ADTS.

3.40 If both a record and a test program are found, the contents of the record is displayed to the user. The user is then given a chance to make any necessary corrections. In cases where two line cards are on file (temporary and permanent) for a given telephone number, the temporary line card is displayed.

3.41 If no record is found in the LCF, the printout DATA SET IS NOT ON FILE occurs and the user must then answer a series of questions. Responses to these questions allow the ADTS to create a line card. The manner in which this newly created line card is stored in the LCF depends upon how the LCF is organized. When the data set code is entered, the ADTS will then check for a test program. The user must also respond to the series of questions mentioned above if corrections are to be made to an already existing line card.

3.42 At the conclusion of the line card entry process or immediately following the printout of an existing line card, the system prints CORRECTIONS?. A YES response causes the system to output the above mentioned series of questions. A NO response indicates to the system that acceptable line card data is available. The system also makes a note that the LCF must be updated following the test if the line card data for this test represents either a new line card or changes to an existing line card.

3.43 Following a NO response to CORRECTIONS?, the system responds with INSTRUCTIONS?. A YES response to this output causes a printout explaining the proper method for putting the data set under test in the test mode. The user may need to relay this information to the individual (customer or telco employee) at the data set.

3.44 Following disposition of the INSTRUCTIONS? question, the system responds with ENTER "RUN" WHEN READY. The user enters RUN when the data set is properly placed in the test mode. The immediate system response to the entry of RUN is WAIT. The ADTS then attempts to seize the hardware needed to perform the test. If the hardware is busy performing a test for another user (or busy doing a scheduled self test), the user in question is entered into a queue for the hardware and receives a printout of TEST HARDWARE BUSY, WAIT. If there is a malfunction in the hardware, the user is given a message to indicate that the data set test cannot be performed. An alarm and RO TTY printout inform test center personnel of any hardware malfunctions. A printout of TEST STARTED tells the user that the hardware has been seized and the test has started. At the completion of the test, the user receives a printout of the test results. The form of this results printout is described under the RES function. At the end of the results printout, the test function is complete.

3.45 Just before the end of the test function, the system updates the LCF if necessary. The method of updating depends on how the LCF is organized. For systems with a single line card type, any new information directly replaces the current information. Thus, subsequent file accesses retrieve the new line card data and the previous data is lost. This means line card information is subject to change by anyone who gains access to the system.

3.46 For systems with a 2-tier LCF (permanent and temporary records), any new information goes into a temporary record. Any permanent line card record associated with the telephone number is not, and cannot be, changed by means of the test function. If a temporary line card is not on file, the system creates a temporary record. If a

temporary record is on file, the temporary record data is replaced by the new line card data. Any temporary line card can be made permanent by use of the ELC function.

3.47 Data sets having extension numbers cannot be dialed directly and, therefore, tests of these data sets must be made by operators at the ADTS.

F. DIVA Operational Functions

Test Function List (3 or 8)

3.48 With an entry of 3 or 8, DIVA will respond with a message of all available test functions, but no test is performed. When 3 is used as a prefix with a test function, the test is performed on a data set without review of the line card information and with receiving test instructions.

Results (7)

3.49 A result function is used to give the user the latest results of a data set test.

3.50 In response to the results entry, the ADTS gives the query ENTER DATA SET TELEPHONE OR SPECIAL CIRCUIT NUMBER. After receiving a number, the system outputs the results in a similar format:

THE TEST RESULTS ARE:

DATA SET CODE (data set code)

THE F2 TONE DID COME ON

DO YOU WANT DETAILED RESULTS?

3.51 A NO response returns the system to the function query. If YES is entered, the user will only receive the parameters that failed in the data set test.

Test Functions (52, 78, 37, 35, 88, and 87)

3.52 The test functions will perform a static or dynamic test on a data set. The following paragraphs will describe the man/machine interaction using DIVA. Description of the actual testing is covered in test functions from a remote terminal.

3.53 The user places a call to a ADTS DIVA port and the call is answered by the ADTS. The ADTS will ask for the password. After a valid password entry, the system will ask for a valid function. The functions for ADTS operation from DIVA are listed in Table C.

3.54 If the ADTS is off-line, the only functions available to the user are OFF and STOP. Any other function request results in the message: THE ADTS IS OFF-LINE. PLEASE ENTER THE FUNCTION YOU WISH TO PERFORM.

3.55 To start a test, the user enters the desired number code from Table B. The ADTS response is ENTER THE DATA SET TELEPHONE OR SPECIAL CIRCUIT NUMBER. After the number has been entered, the ADTS response is YOU HAVE ENTERED (telephone or special circuit number). IS THAT CORRECT? The user enters a 1 for YES and 0 for NO. If the response is incorrect, the ADTS repeats the original query.

3.56 If the response is correct, ADTS will attempt to find a line card file. If a LCF record is found, ADTS will use the data set code to find a test program. If there is a test program for the data set code and test function, ADTS will continue. If no test program is found, ADTS will abort the test with the following messages: THE ADTS CAN NOT RUN SELECTED TEST ON THIS DATA SET.

3.57 If both a LCF record and test program are found, the LCF information is given to the user. The user is then given a chance to make any necessary changes.

3.58 If no LCF record is found, the ADTS responses is THE DATA SET IS NOT ON FILE, ENTER THE DATA SET CODE. The user must then answer a series of questions to create a LCF. After the entry of the data set code, the ADTS checks for the test program.

3.59 After the LCF record has been given or after a new line card information has been entered. The system instructs the user to CORRECT ERRORS ENTER ONE. IF NO ERRORS, ENTER ZERO. If a 1 is entered the ADTS repeats the line card information query.

3.60 If no corrections are made to the LCF, the ADTS asks ARE YOU CALLING FROM

TABLE C

FUNCTIONS AVAILABLE FROM DIVA

FUNCTION	DESCRIPTION	NORMAL	FAST
Test Listing	List valid testing functions	3* or 8*	
Loopback Test	Static test of a data set.	52*	352*
Remote Test	Dynamic test of a data set.	78*	378*
Error Run Test	Test data set with data test set connected.	37*	337*
Digital Loopback Test	Test with data set in digital lopback mode.	35*	335*
Results	Output results of Most recent test of a data set.	7*	
Start Up Test	Test data set ability to begin transmitting error free.	88*	388*
Terminal Test	Test through station data set.	87*	387*
STOP	Stops present function and requests new function.	#73*	
OFF	Stops present function and disconnects.	#63*	

THE DATA SET? In most cases if the user is calling from a data set, he must hang up. ADTS will then call the data set for testing. After the test has been completed, the ADTS calls the data set to give the user the results of the test. The test instructions direct the user on this procedure.

3.61 The system asks the user DO YOU WANT INSTRUCTIONS? If requested, the ADTS will supply brief test instructions. These instructions are to prompt the user, not to replace the data set BSP instructions.

3.62 After the instructions, the ADTS gives the following message: WHEN READY, ENTER ONE. Upon receipt of a 1, the system responds with a THANK YOU. A pause will follow the thank you message as ADTS attempts to seize the hardware needed for the test. Depending on the test program, either the static or dynamic test hardware will be seized. If the testing hardware is busy performing another test or a self test, the following message is given: THE ADTS TEST EQUIPMENT IS BUSY, PLEASE WAIT. When the test hardware becomes available, the system outputs THE TEST IS READY TO START.

3.63 At the completion of the test, the user receives a short message describing the test results. If the set failed, the user has a chance to receive detailed results. When the set fails, the system responds with DO YOU WANT DETAILED RESULTS? The form of the results response is described under results function. After giving the results of the data set test, the system returns to the function query.

G. Informational Functions

Count Records on File (CROF) (Fig. 11)

3.64 This function allows the user to receive counts of the number of line cards that meet certain prescribed conditions. A printout of the telephone numbers of the line cards that meet these conditions can also be obtained. The conditions that can be prescribed are (1) a range of telephone numbers and (2) a 4-character basic data set code. The line card records that have telephone numbers in the specified range and also have the specified basic data set code are included in the count and, if requested, in the listing.

3.65 Following the entry of CROF, the system responds with BEGINNING TELEPHONE NUMBER?. The user then enters a 10-digit number representing the lower bound of the telephone number range or ALL to consider all telephone numbers in the count. If ALL is not entered, the system responds with TERMINATING TELEPHONE NUMBER?. The user then specifies the upper bound of the telephone number range.

Note: The beginning and terminating numbers must have the same area code.

3.66 Next, the system asks DATA SET CODE? to give the user a chance to include only line cards for a certain type of data set in the count. If ALL is entered, no check of data set code is made. Following entry of the data set code (or ALL), the system responds with LIST?. The user enters NO for a count of the line cards meeting the specified conditions. If YES is entered, not only is a count made, but the telephone number of each line card included in the count is printed on the user's terminal. The telephone number is preceded by either a "P" or a "T," depending on whether the line card is permanent or temporary, and a B if a benchmark record is associated with the line card. Because the list of telephone numbers is not in numerical order, the listing has limited usefulness for large counts.

3.67 At the end of the LCF search, the system prints the count of the number of line cards meeting the conditions. Three counts are printed. One count represents temporary line cards that meet the conditions, another count represents permanent line cards that meet the conditions, and the third count represents the number of line cards meeting the conditions that have an associated benchmark record.

List Temporary Line Cards (LTLC) (Fig. 12)

3.68 This function is valid for systems configured to store two line card types, permanent and temporary. The number of line card types is determined during initial installation of the ADTS. In response to LTLC, the temporary line cards on file are printed on the user's terminal. The order of printing is the order in which the line cards are encountered in a linear search of the LCF. Thus, the order is essentially random.

3.69 Following the entry of LTLC, the system prints the current date and follows with a printout of every temporary line card in the LCF. The user can abort the printout by entering STOP within 7 seconds following the printout of a line card. Following the list of temporary line cards, the system outputs the reminder: MAKE DESIRED LINE CARDS PERMANENT BEFORE "PURGE" IS PERFORMED TO AVOID LOSS OF BENCHMARK AND HISTORY DATA. Benchmark and history data is removed from the benchmark and history files for those telephone numbers not listed in the LCF.

Partial List Temporary Line Cards (PLTLC) (Fig. 13)

3.70 This function is valid for systems configured to store two line card types, permanent and temporary. The number of line card types is determined during initial installation of the ADTS. This function is identical to the LTLC function except that only those temporary line cards that are older than the purge interval are printed. The purge interval is also determined during initial installation of the ADTS.

3.71 Following entry of PLTLC, the system prints the current date followed by a printout of those temporary line cards in the LCF that are older than the purge interval. The user can abort the printing while it is in progress if required (see LTLC function).

3.72 Following the list of temporary line cards, the ADTS prints the reminder: MAKE DESIRED LINE CARDS PERMANENT BEFORE "PURGE" IS PERFORMED TO AVOID LOSS OF BENCHMARK AND HISTORY DATA. History and benchmark data is removed from the history file for those telephone numbers not represented in the LCF. The PLTLC function must be performed to completion by a local terminal before (on the same day) the PURGE function is attempted. Otherwise, PURGE will not delete any temporary line cards.

System Evaluation File (SEFILE) (Fig. 14)

3.73 This function allows the user to either punch or purge data in the system evaluation file (SE file). The file contains data on all the activities performed by the ADTS and is useful in evaluating the effectiveness of the system. The system

evaluation data is primarily of use to BTL rather than the operating company.

3.74 Following entry of SEFILE, the system responds with COMMAND?. The user must enter DUMP to punch a tape or PURGE to purge data from the file.

3.75 If DUMP is entered, the ADTS responds with TURN ON PUNCH and delays for 20 seconds. Following the delay, a block of trial analysis data is dumped. A block consists of 129 computer words. The first word contains the block number, the last word contains a checksum for error control purposes, and the next to last word contains the day of year on which the block was created. Each block is dumped in 33 ASCII records. The first record contains the block number (decimal) and the following 32 records each contain the data from four computer words (octal). At the end of the block, the ADTS delays for 7 seconds before outputting the next block. The oldest block of data is dumped first. If nothing is entered for 7 seconds, the ADTS outputs the next sequential block. During the delay, the user may type STOP to abort the program.

3.76 After all stored data has been dumped, the ADTS prints COMMAND?. If PURGE is entered in response to COMMAND?, the ADTS purges all system evaluation data that was dumped on the last DUMP command. Following the purge, the program aborts. When the DUMP command is entered, the ADTS dumps the trial evaluation data that has accumulated since the last time the file was purged with a PURGE command. The dump is in blocks that are identified by a file sector number (block number) in the range of 0 to 359. If it is necessary to dump only a particular block, the command DUMPSEC is entered. The ADTS asks for the block number and, upon receiving a valid number, dumps just that block.

TESTLOG (Fig. 15)

3.77 This function allows the user to obtain a printout of data in the TESTLOG file. This file contains a summary of each test conducted by the ADTS since the last time the file was purged.

Remote terminals cannot purge the TESTLOG file.

3.78 Following entry of TESTLOG, the ADTS responds with COMMAND?. The user must respond with DUMP. When DUMP is entered, the contents of the TESTLOG file are printed on the user's terminal. If the terminal has a punch and the punch is turned on, a TESTLOG tape is produced. A TESTLOG DUMP may be aborted at any time by entering break from the terminal keyboard. A typical TESTLOG entry is shown below.

DATE	SEQUENCER NUMBER	START TIME	END TIME	PHONE NUMBER
5-7-78	(0001) (0002) (0003)	1635	1641	201 946-3000

DATA SET CODE	RESULTS OF TEST	TYPE OF TEST	TERMINAL
402C12	A	LB	CX

RESULTS

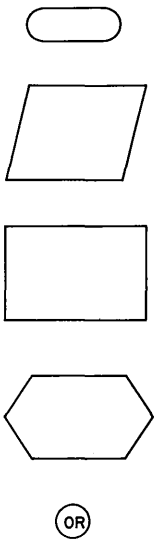
P	—	PASSED
A	—	INCORRECT FREQUENCY
B	—	ABSENT FREQUENCY
C	—	UNASSIGNED
D	—	SENSITIVITY BAD
E	—	UNASSIGNED
F	—	MISCELLANEOUS

TERMINAL

Cx	—	CRT
Dx	—	DIVA
M	—	MTCE TTY
Tx	—	REMOTE TERMINAL
x	—	IDENTIFICATION NUMBER OF CRT, DIVA, OR DATA-PHONE PORT

TEST TYPE

LB	—	LOOPBACK
RT	—	REMOTE
ER	—	ERROR RUN
DL	—	DIGITAL LOOPBACK
UT	—	START UP
TR	—	TERMINAL



= START BLOCK. USER HAS DEPRESSED KEY ON LOCAL TERMINAL OR PASSWORD HAS BEEN ENTERED AND RECOGNIZED FOR REMOTE TERMINALS.

= **SYSTEM INFORMATION.** ACTUAL MESSAGES ARE ENCLOSED **IN QUOTATION MARKS.**

= USER INPUT. ACTUAL INPUTS WHICH ARE REQUIRED ARE ENCLOSED IN QUOTATION MARKS **AND MUST BE FOLLOWED BY A CARRIAGE RETURN ENTRY.**

= DECISION BLOCK. INDICATES A DECISION MUST BE MADE BEFORE USER CAN ENTER INFORMATION.

(OR) = INDICATES MORE THAN ONE POSSIBLE OUTPUT FOR A SPECIFIED INPUT.

Fig. 3—Legend for Function Flowcharts

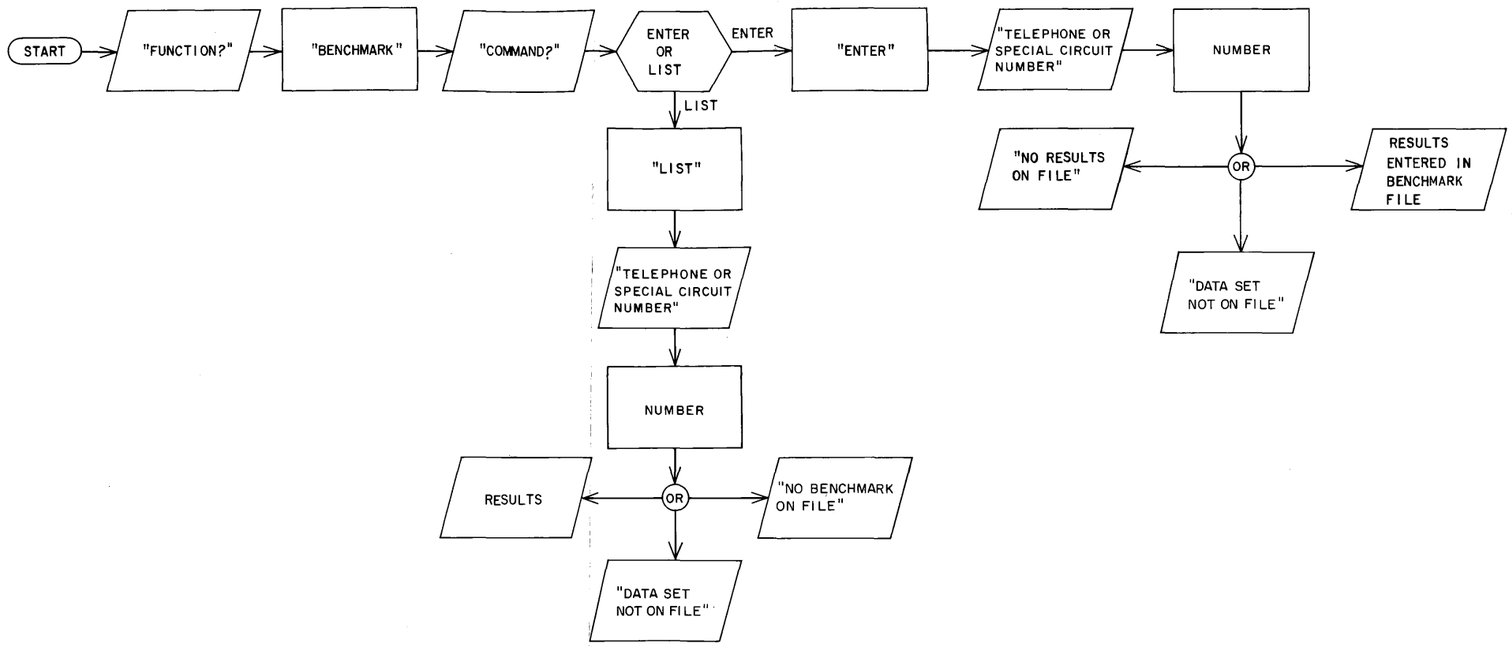


Fig. 4—BENCHMARK Function

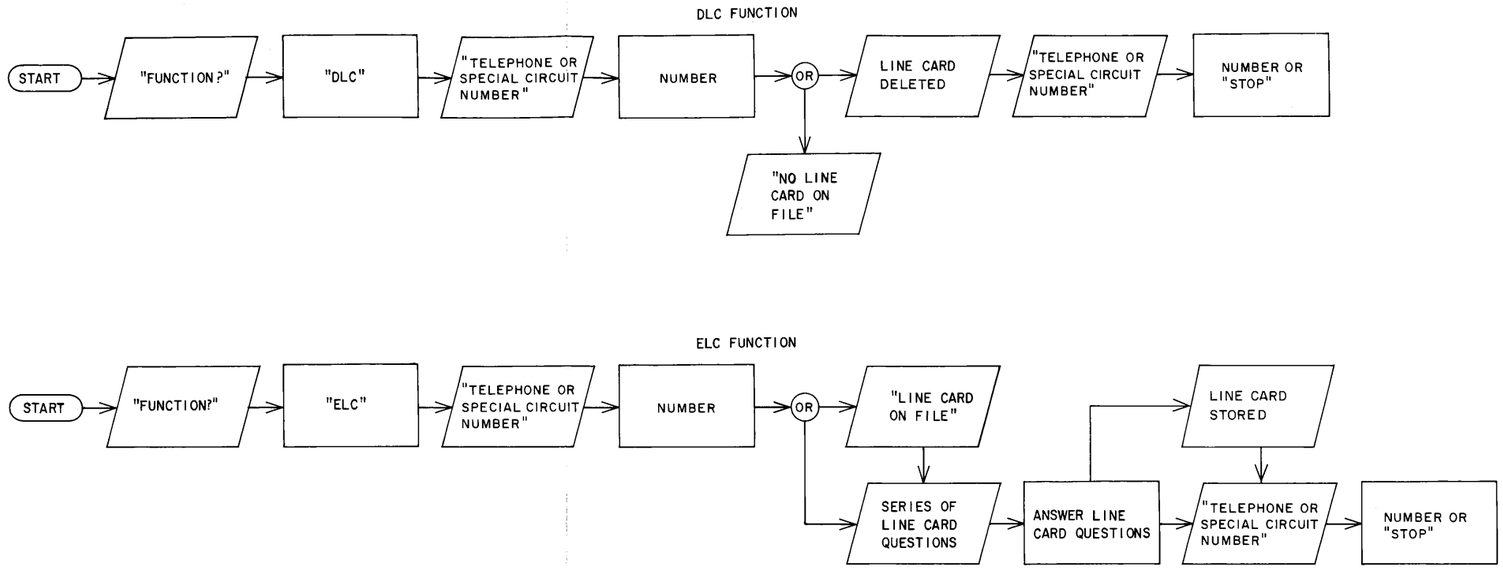


Fig. 5—Delete Line Card (DLC) and Enter Line Card (ELC) Functions

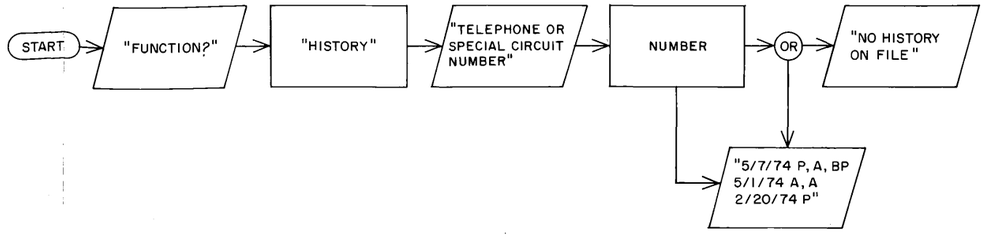


Fig. 6—HISTORY Function

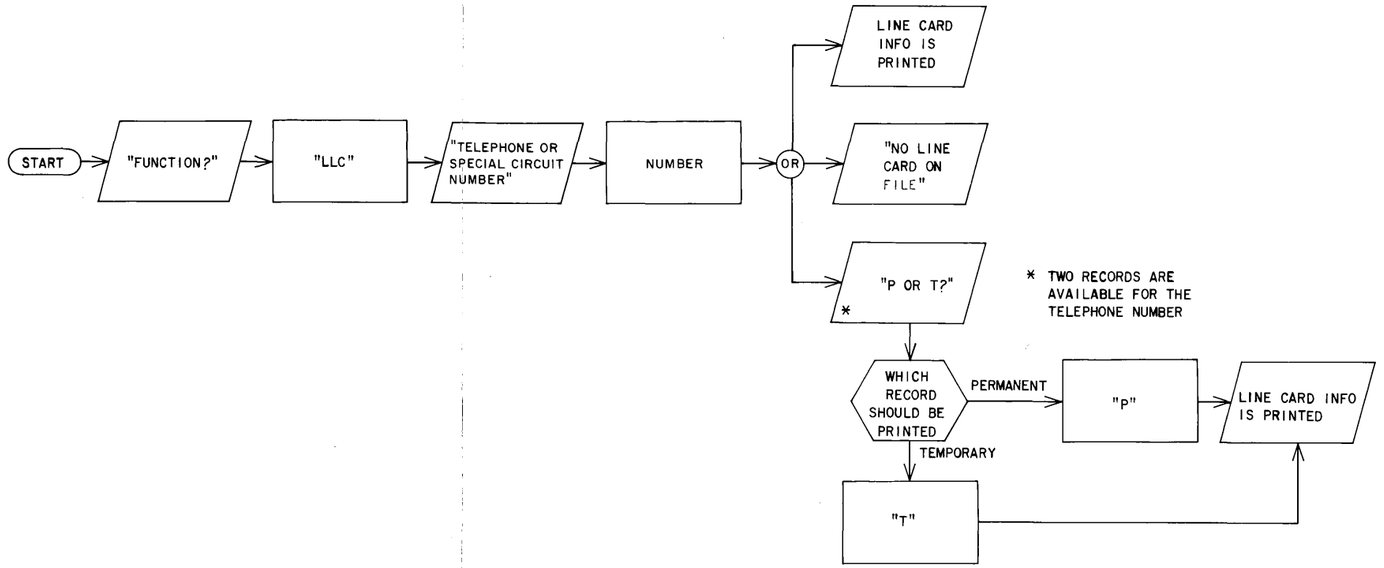


Fig. 7—List Line Card (LLC) Function

Fig. 6 and 7

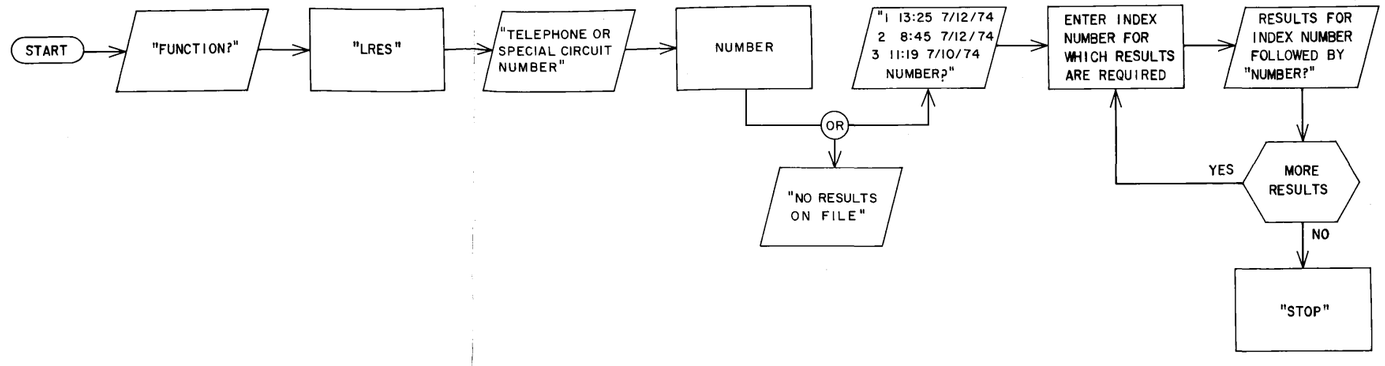


Fig. 8—List Results (LRES) Function

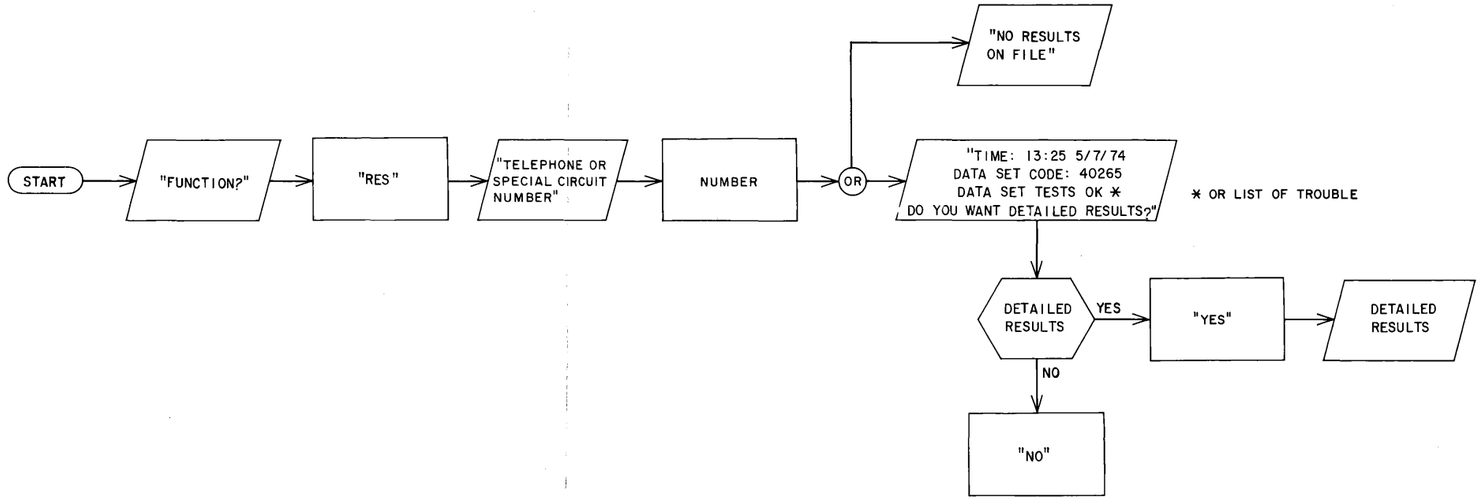


Fig. 9—Results (RES) Function

Fig. 8 and 9

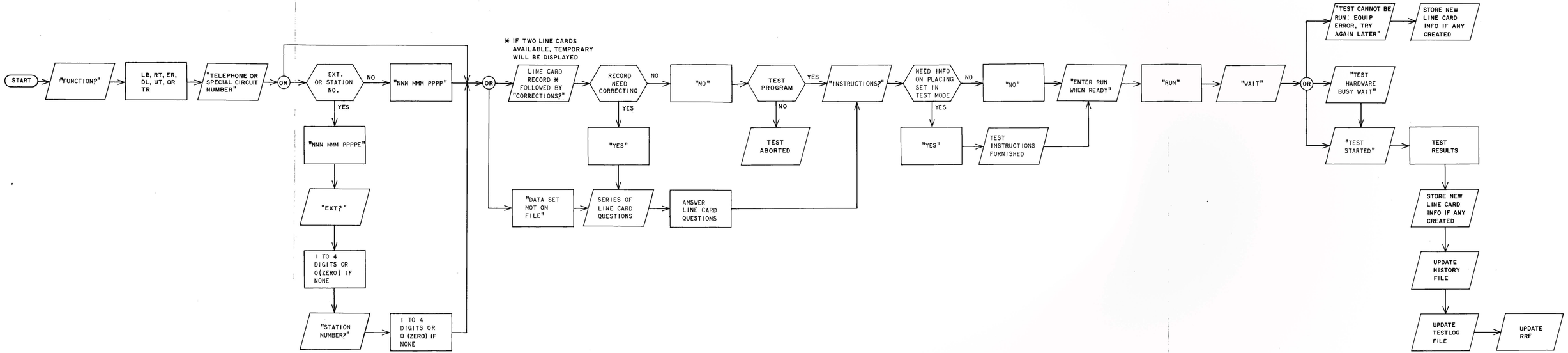


Fig. 10—Test-Functions

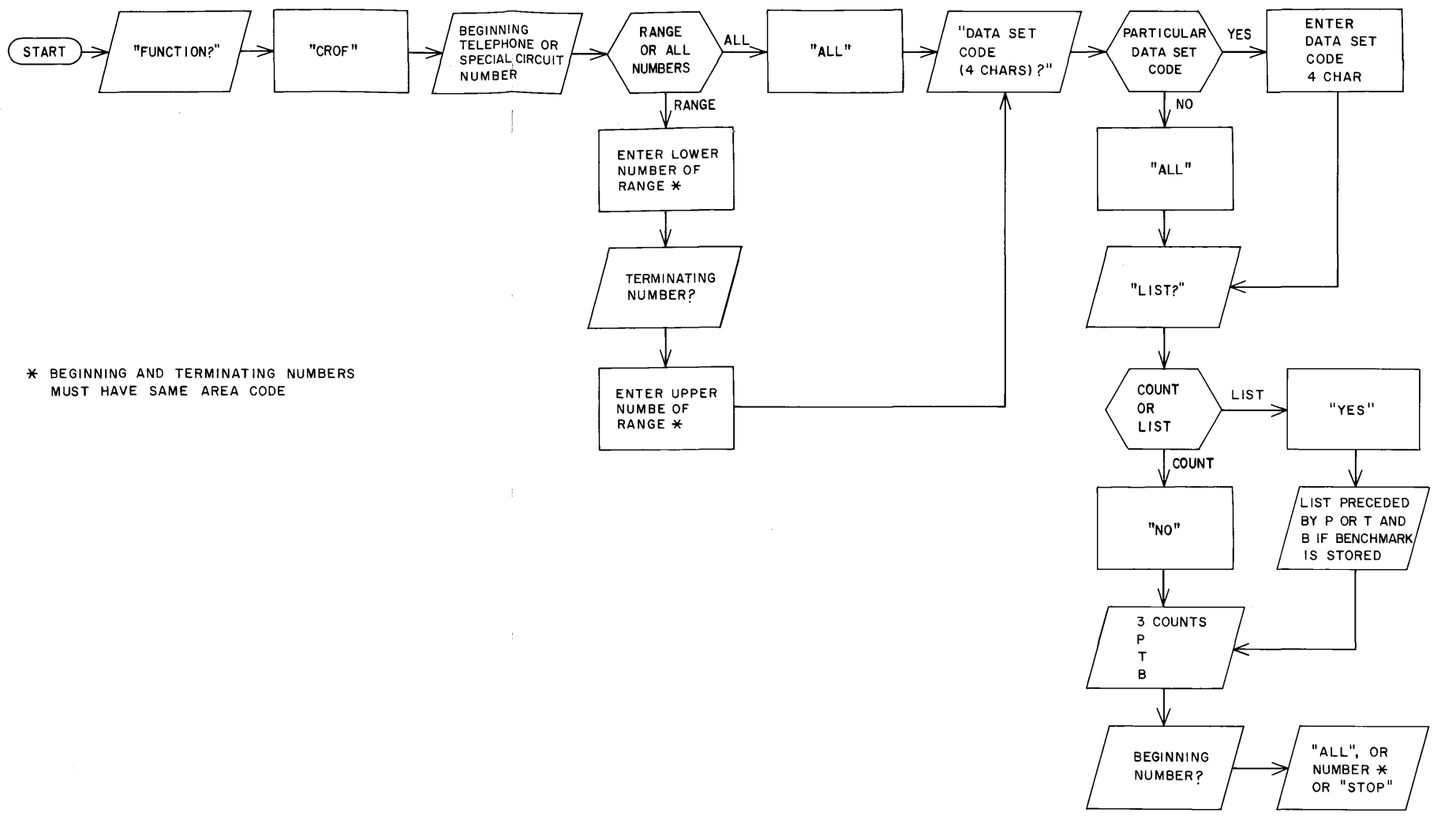


Fig. 11—Count Records on File (CROF) Function

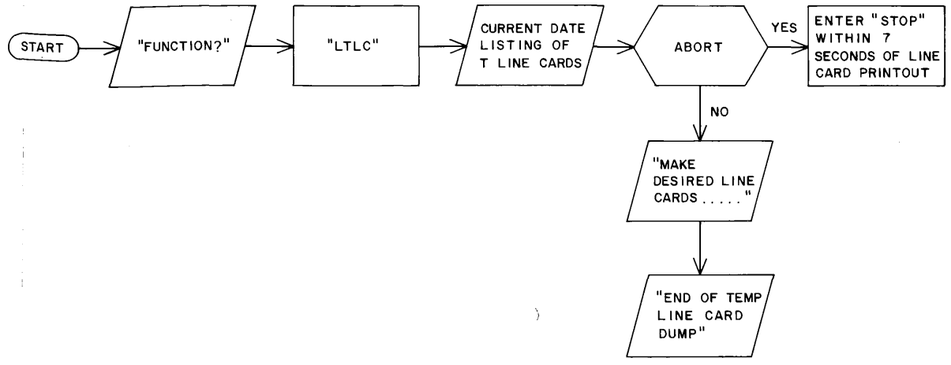


Fig. 12—List Temporary Line Cards (LTLC) Function

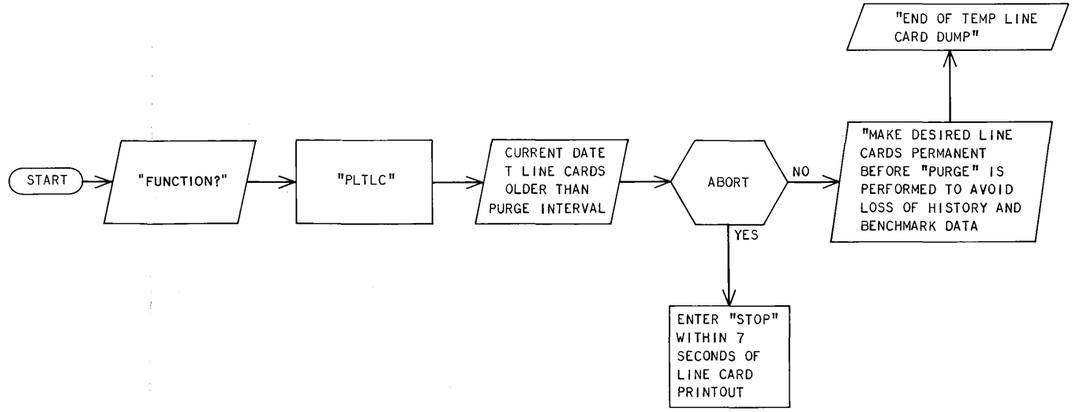


Fig. 13—Partial List Temporary Line Cards (PLTLC) Function

Fig. 12 and 13

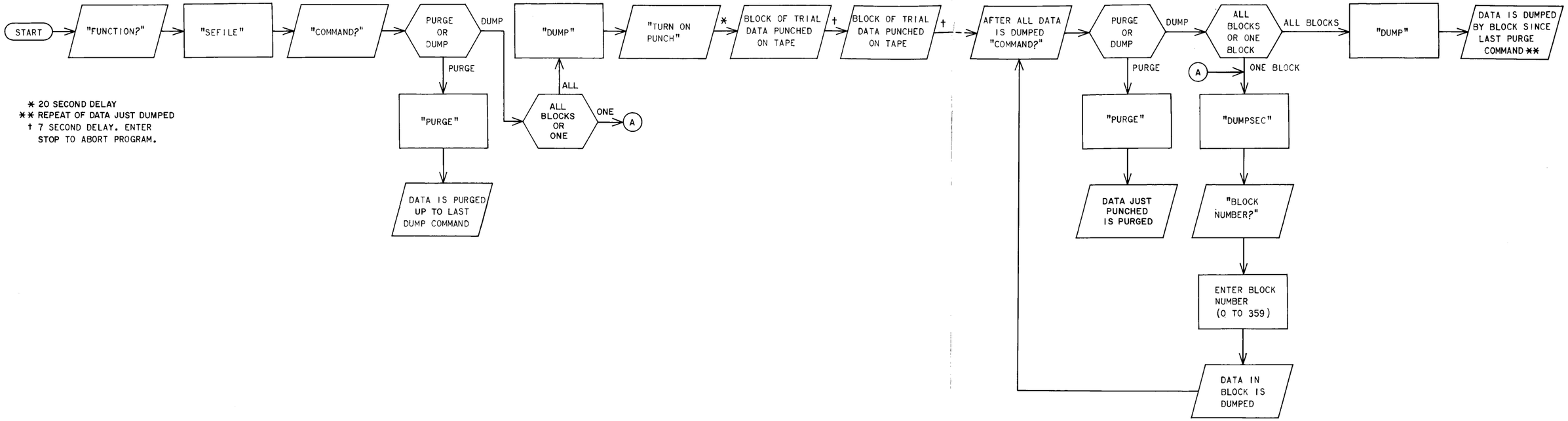


Fig. 14—System Evaluation File (SEFILE) Function

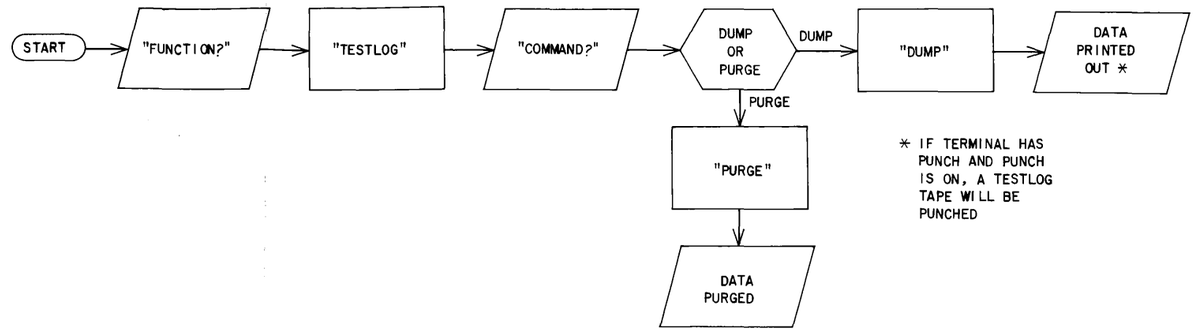


Fig. 15—TESTLOG Function