

IBM MAINTENANCE DIAGNOSTIC PROGRAM

ON-LINE TERMINAL TEST

USER'S GUIDE

DATE: 12/15/80

Preface A

To determine how to run OLTT's and be selective in your test, read the following sections thoroughly.

- 2.1 - Program Requirements.
- 2.2 - Equipment Requirements.
- 3.0 - Use Procedures.
- 3.1 - Execution Procedures (particularly EXT= options).
- 5.2 - RFT Compatibility.
- 6.0 - Operating Hints.
- Appendix A - CDS Card Format.
- Appendix B - Input/Output Device Field Format and Content for CDS.

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1.0 PURPOSE.

The T3700 family of On-Line Terminal Tests (OLTTS) provides the on-line maintenance support for IBM terminals supported by the 3705 Communication Controller Network Control Program (NCP) as follows:

- IBM 1050 Data Communications System
- IBM 2740 Communications Terminal Model 1
- IBM 2740 Communications Terminal Model 2
- IBM 2741 Communications Terminal
- IBM 2770 Data Communications System
- IBM 2780 Data Transmission Terminal
- IBM 2972 General Banking Terminal System
- IBM 3767 Communications Terminal (supported as a 2740/2741 - refer to Section 6.1.5 of this manual)
- IBM 3770 Data Communications System (supported as a 2770 - refer to Section 6.2.3 of this manual)
- IBM 3780 Data Communications Terminal
- IBM 3781 Card Punch
- IBM 3650 Retail Store System (RPT's only)
- IBM 3660 Supermarket System (RPT's only)
- IBM 3735 Programmable Buffered Terminal (RPT's only)
- IBM 3740 Data Entry System (RPT's only)
- IBM 1130 Computing System (RPT's only)
- IBM 1800 Data Acquisition and Control System (RPT's only)
- IBM System/3 (RPT's only)
- IBM System/7 (RPT's only)
- IBM System/360 Model 20 (RPT's only)
- IBM System/360 Model 25 (RPT's only)
- IBM System/370 Model 135 (RPT's only)
- IBM 3270 Information Display System is not supported by T3700OLT, T3700REQ, or T3700RSP. T3700ACT is used with 3270 lines. (See document D99-3270C for 3270 diagnostic support, including how to punch the remote 3270 CDS cards.)
- The T3700 family of OLTTS will not support numeric only devices ... e.g., 1060, etc.

The T3700 family of OLTTS will also support the above units if they attach to and are supported by a 2701, 2702, 2703, or a 3704/3705 with the Emulator Program.

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2.0 REQUIREMENTS

2.1 PROGRAM REQUIREMENTS

Before On Line Terminal Tests can be run under the Teleprocessing On-line Test Executive Program (TOLTEP), the Teleprocessing On-Line Test Executive (TOTE) or OLT(S)EP, the following program requirements must be met.

2.1.1 TOTE - -

1. TOTE, the Unit Configurator Programs, the Configuration Data Sets (CDS), and the 3700 OLTT family (OLTT programs) must be in the host system OLT libraries. The 3 0 OLTT family must be LINKAGE EDITED as non-reusable.

The following CDS entries are required to run OLTTs to a terminal:

- Control Unit (2701/2702/2703 or 3704/3705. See Configuration Data Set Guide D99-CDSGA.)
- Test Terminal (See Appendix A.)
- NCP (Only for 3704/3705 with NCP. See Appendix A.)
- Test Line (Only for 3704/3705 with NCP. See Appendix A. This CDS is not required for TCAM level 10.
- Others as required by TCAM/TOTE....e.g. Control Terminals, Alternate Printers, other lines, etc.

Note that these CDS's may be configured using the Unit Configurator Program described in Section 3.3.1.

2. TCAM/TOTE (level 5.0 or greater) must be running in the system. See OS/TCAM User's Guide, GC30-2025 (TCAM level 5 to 10) or OS/VS TCAM Systems Programmers Guide, GC30-2051 (TCAM level 10) for information about installing, loading, and using TCAM/TOTE.
3. A Test Request Message (TRM) must be entered. (See Section 3.1 - Execution Procedures for a description of how to enter a TRM.)
4. If running to a 3704/3705 with NCP or EP, the NCP or EP must be loaded and running prior to entering the TRM. To load the NCP, see the IBM 3705 Communications Controller Network Control Program Generation and Utilities Guide and Reference Manual (GC30-3000). To load the EP, see the IBM 3705 Communications Controller Emulation Program Generation and Utilities Guide and Reference Manual (GC30-3002).
5. OLT=YES must be specified in the BUILD macro during NCP generation.

2.1.2 OLT(S)EP - -

1. OLT(S)EP (level 5.0 or greater) must be running and the OLTT sections available for loading. Refer to the OLT(S)EP User's Guide D99-SEPDT for information about loading and/or initiating OLT(S)EP.
2. Configuration Data Set (CDS) information, describing the system and I/O devices to be tested, must have been entered into the test executive (OLTEP/OLTSEP). Refer to the OLT(S)EP and SOSB User's Guides (D99-SEPDT and D99-SOSPB) for information about how to accomplish this.

The following CDS entries are required to run the OLTTs to a Terminal:

- Control Unit (2701/2702/2703 or 3704/3705. See Configuration Data Set Guide D99-CDSGA.)
- Test Terminal (See Appendix A.)
- NCP (Only for 3704/3705 with NCP. See Appendix A.)
- Test Line (Only for 3704/3705 with NCP. See Appendix A.)
- Others as required by OLTSEP e.g. system definition CDS's. (See OLTSEP User's Guide (D99-SEPDT).)

Note that these CDS's may be configured using the Unit Configurator Program described in Section 3.3.2.

3. Statements 3, 4 and 5 above under TOTE apply to OLT(S)EP also.
4. If running with NCP-3 or above, a temporary patch is required in the NCP after it is loaded into the 3704/3705. Obtain PSR or other assistance as required to determine the patch address as follows:
 - Locate the origin address of CSECT CXDCPS2 in the LINKAGE EDITOR Printout of the NCP SYSGEN.
 - Add a displacement value of X'40' to this address if running with NCP-3 through NCP-4.

- Add a displacement value of X'3A' for NCP-4.1 and above to this address.
- Verify that the data at the resultant address is X'2523' for NCP-3 through NCP-4 or X'880A' for NCP-4.1 and above.
- REP the data to X'A824' for NCP-3 through NCP-4 or for X'A80A' for NCP-4.1 and above.
- Resume NCP operating condition and run OLTs.

2.1.3 TOLTEP - -

1. VTAM must be specified as an access method during system generation in order to include TOLTEP in the system.
2. TOLTEP does not support duplicate symbolic names. OLTT test results from terminals with duplicate names may be misleading, especially if such terminals have different characteristics.
3. For OS/VS, the appropriate DD statements must be included in the START VTAM procedure so that TOLTEP can refer to the proper data sets. The OS/VS VTAM System Programmer's Guide GC27-6996 includes this information in the START VTAM procedure.
4. OLT=YES must be specified during NCP generation.
5. In order to invoke TOLTEP by using the LOGON procedure, the telecommunications network must have defined TOLTEP in a table that specifies valid formats for logon requests. (See the VTAM LOGCHAR macro instruction described in the OS/VS VTAM System Programmer's Guide GC27-6996.)
6. Configuration Data Set (CDS) information describing the system test configuration.

The following CDS entries are required to run OLTs to a terminal:

- Test Terminal (See Appendix A.)

The following entries are also required if not testing with SNA-2 release or greater (OLT Release 8.0, NCP Release 3.2, and OS/VS1 release 1.5 or DOS/VS release 32).

- Control Unit (2701/2702/2703 or 3704/3705. See Configuration Data Set Guide D99-CDSGA).
- NCP (Only for 3704/3705 with NCP. See Appendix A).
- Test Line (only for 3704/3705 with NCP. See Appendix A).

7. Statements 3 and 4 above under TOTE apply to TOLTEP also.

2.1.4 PROGRAM SPACE REQUIREMENTS (FOR 3700 MODULES)

• Number of modules	0337				
• Number of 800 byte records	002217				
• Number of characters of text	0325824				
• Total number of characters	00445913				
• OS space required					
• Directory	0068				
• Number of 1024 byte blocks	0683				
• DOS space required -	<u>TCD</u>	<u>BT</u>	<u>TCL</u>	<u>CCL</u>	
	2311	0003	0421	0211	0022
	2314	0002	0426	0107	0006
	3330	0001	0449	0057	0004
	3340	0002	0428	0086	0008

where

TCD - is the number of tracks for core image directory based on 1 module per phase.

BT - is the number of blocks for all phases in core image library.

TCL - is the number of tracks to hold all phases in core image library.

CCL - is the number of cylinders to hold the core image library and core image directory.

2.2 EQUIPMENT REQUIREMENTS

The following equipment requirements must be met:

1. The IBM terminal to be tested must be available for testing. (Customer use of a terminal and OLTT testing of that terminal are mutually exclusive. Be sure to get the customer's O.K. before running OLTTs to test a terminal.) A Control Terminal or System Console must also be available. See Section 3.1 - Execution Procedures. Also, see the requirements and comments listed in Section 7.0 - Terminal Uniquenesses.

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3.0 USE PROCEDURES

Control options vary somewhat depending on the OLT Executive (OLT(S)EP, TOTE, TOLTEP, etc.) being used, but most of the procedure is the same. Major differences are covered in this document, but further information can be obtained from the applicable User's Guide if necessary:

OS/TCAM User's Guide	GC30-2025 (TCAM level 5 to 10)
OS/TCAM Level 5 Component Release Guide	GC30-1007 (TCAM level 5 to 10)
OS/VS TCAM Systems Programmers Guide	GC30-2051 (TCAM level 10)
SOSP User's Guide	D99-SOSP8
OLTSEP Operator Guide	D99-SEPDT
OLTSEP/SOSP Installation Guide	D99-INSTA
OLTSEP SRL	GC28-6650
DOS/VS and OS/VS TOLTEP for VTAM SRL	GC28-0663

3.1 EXECUTION PROCEDURES.

3.1.1 LINE ACTIVATE

Activate the test terminal line if running to an NCP driven 3705.

OLT(S)EP -

Under OLT(S)EP activate the line prior to running an OLTT by entering a Test Request Message from the System Console with "TEST"= T3700ACT to the line ("DEV"= the line symbolic name). See the Test Request Message (TRM) format below to determine how to enter a test request.

TOTE -

Under TOTE the line may already have been activated; but if it has not, activate it prior to running an OLTT by entering the TCAM "vary" command from the operator console. This command has the following format:

'vary (line group name, relative line #),ontp'

NOTE: See TCAM's Message Control Program (MCP) Assembly for a definition of the line group name and relative line group name is the value of the TERMINAL macro GROUP= keyword for the symbolic name of the terminal you want to test. The relative line RLN= keyword in this same macro.

TOLTEP - Under TOLTEP the line should be active.

3.1.2 TEST REQUEST MESSAGE (TRM)

Enter the applicable Test Request Message (TRM) at communications interval time from any device supported by your OLT Executive program as a test request entry device. (See NOTE 1 and 2 below.)

- If OLT(S)EP is the OLT Executive, then;

ENTER	If entry Terminal is:
r id,'DEV/TEST,rtn/OPT/'	System Console

NOTE 1: Under OLT(S)EP the TRM must be entered and the test controlled from the System Console.

- If TCAM/TOTE is the OLT Executive, then;

ENTER	If entry Terminal is:
99999CT/DEV/TEST,rtn/OPT/	Start/Stop, e.g. 1050, 2740, 2741, 3767
soh%/CT/DEV/TEST,rtn/OPT/	Bi-Sync, e.g. 2780, 2972, 2770, 3270, 3770, 3780

```
IEDTOTE/CT/DEV/TEST,rtn/OPT/      SDLC, e.g. 3270,  
                                     3767,  
                                     3770  
  
modifv jobname,olt=CT/DEV/TEST,rtn/OPT/      System Console  
  
opid modify jobname,olt=CT/DEV/TEST,rtn/OPT/  Operator Console  
                                              (refrain from using)
```

NOTE 2: Under TOTE the TPM can be entered from a TCAM station, an operator control terminal, or the System Console. (See OS/TCAM User's Guide # GC30-2025.)

- If VTAM/TOLTEP is the OLT Executive, invoke TOLTEP by one of the following methods:

1. Enter the MODIFY command from the VTAM network operator console.

```
MODIFY NET,TEST      (DOS/VS only)  
MODIFY procname,TEST (OS/VS only)
```

Procname is the name of the VTAM start cataloged procedure.

2. Enter the 'VARY' command from the network operator's console.

```
VARY NET,ID=termname,LOGON=ISTOLTEP
```

Termname is the name of the terminal to be logged on as the TOLTEP control terminal.

3. Enter the LOGON command which allows a user to invoke TOLTEP from a terminal owned by a network solicitor. This requires that the tele-communications network has defined TOLTEP in a table that specifies valid logon requests. (See the VTAM LOGCHAR macro instruction in the VTAM System Programmers Guide BC27-6996.)

```
LOGON termname(ISTOLTEP)
```

If you are not sure whether your terminal is recognized by a network solicitor, ask your PSR. The LOGON procedure may vary from one system to the next. Details concerning your LOGON procedure can be obtained from your system programmer.

Test Device Acquisition

Before a terminal can be tested, it must be removed from applications program use. Any one of the following methods may be used to disconnect the test terminal from the applications program.

1. Enter the "VARY" command from the network operator console.
2. Press the RPT key for remote terminals with this key.
3. Enter SOH*/ from BSC terminals. (TEST MODE required for SOH control character.)
4. Enter 99999 from start/stop terminals.

When devices are requested for testing or other use, the network operator must first grant permission for the use of these devices by the TOLTEP user. If permission is granted, TOLTEP interrupts all other users of these devices for the duration of the TOLTEP session. The network operator may reply with 'Y' or 'N' or 'N,XXXXXXXX' to deny permission. The field XXXXXXXX is a message (up to 59 characters) from the network operator to the control terminal operator. If you cannot invoke TOLTEP, it may be because the network operator denied the request, the device is not supported as a control terminal, or VTAM cannot honor the request.

After you have invoked TOLTEP, you may define and run OLTs and use TOLTEP verb functions.

When TOLTEP is invoked the following messages are written to the control terminal:

```
ITA102I  OLTs RUNNING WITH TOLTEP REL. 1.0  
ITA107I  OPTIONS ARE xx,...,xxx  
ITA105D  ENTER-DEV/TEST/OPT/
```

Reply: DEV/TEST/OPT/ from the control terminal.

Where:

- / - test request operand delimiter.
- r - REPLY command.
- id - the identification of the Test Request Message (TRM). For OLTSEP it is 01.
- 99999 - start/stop terminal TRM entry prefix.
- soh% - is a required 2 character TRM prefix. "soh" is a BI-Sync line control character generated by the entry terminal in different ways depending on the entry device type. Note that the "SOH" line control character is automatically inserted for some terminals (e.g. a 3770 in On Line Test Mode. See Section 6.2.3). "%" is the percent character.
- modify - is the TCAM MODIFY command.
- opid - the identification characters for the operator console. These are defined in the CONTROL= operand of the INTRO macro of MCP assembly listing for TCAM.
- CT - the symbolic name of the terminal you designate as the control terminal (i.e. the terminal from which the test is to be controlled). Note that the test terminal can not be the control terminal when testing through a 3705/3705 with NCP.
- DEV - is the symbolic name of the terminal (or line if T300ACT) to be tested, This name should be available at the terminal site. If it is not, request it from the customer.
- TEST - is the desired test to be run. Valid tests are:
 - T3700ACT - Activate Line test (OLT(S)EP only). When testing a terminal under the OLT(S)EP executive and through a 3704/3705 with NCP, this TEST must be run to the line that the test terminal is connected to, prior to running T3700REQ, T3700RSP, or T3700OLT. The EXT= option is valid for this TEST, and can be used to load or dump the 3704/3705. (See T3700ACT EXT= options in Paragraph 3.1.4.)
 - T3700REQ - Bi-Sync RFT Requester test. The devices supported by this test are: 3660, 3735, 3740, 1130, 1800, System 3, System 7, System 360 MODELS 20 and 25, and System 370 MODEL 135. See Section 5.2 - RFT compatibility for further detail about this test.
 - T3700RSP - Bi-Sync RFT Responder test. The devices supported by this test are the same as for T3700REQ above except that 3650 should replace 3660. See Section 5.2 - RFT compatibility for further detail about this test.
 - T3700OLT - Common OLTT test. The devices supported by this test are: 1050, 2740, 2741, 2770, 2780, 2972, 3767, 3770, 3780, and 3781. EXT= is a valid option for this test. (See T3700OLT EXT= options in Paragraph 3.1.5.)
- rtn - identifies the routines to be run. It is valid only for T3700OLT test section. (See Section 5.1 - OLTT Test Messages.) To
 - Specify routines in ascending order separated by commas (Ex. 1,2,5).
 - Separate inclusive routine numbers by hyphens (Ex. 1-3, 5-6).

*NOTE** If rtn is omitted for "TEST"= T3700OLT the routine to be run will be requested via control messages to the operator. (See the description of messages 002 and 003 under Section 4.3.1 OLTT Messages for TRM "TEST"= T3700OLT.) Routines (rtn) cannot be entered for "TEST"= T3700REQ or T3700RSP.
- jobname - should be the name of the TCAM job.
- OPT - is the test option field. The operating procedure of this program is controlled by the options specified in the OPT field of the TRM. Entries in this field must be separated by commas. If the TRM contains no options, the options are supplied by default. The available options are shown below. The defaults are indicated by a double asterisk. For further details on these options see the appropriate OLT executive users

guide. Note that where a variable integer (n) is part of an option (e.g. EL(n), TL(n), the left and right parenthesis must be entered under OLT(S)EP and TOLTEP, and must be omitted for TOTE.

3.1.3 TEST REQUEST MESSAGE (TRM) OPTIONS

<u>Option</u>		<u>Explanation</u>
TL(n)	Testing Loop	Repeats specified test n times; n is a decimal number between 1 and 9999 (TOTE) or 32,767 (OLT(S)EP and TOLTEP). Leading 0's are not required. If n is omitted, a default of 500 (TOTE and TOLTEP) or 10 (OLT(S)EP) is assigned. It is recommended that a value always be assigned to n when the TL(n) option is selected.
**NTL	No testing Loop	Does not repeat test.
EL(n)	Error Loop	Loops n times on the set of instructions detecting the first error; n is a decimal number between 1 and 9999 (TOTE) or 32,767 (OLT(S)EP and TOLTEP). Leading 0's are not required. If n is omitted, the default value of n will be the value assigned by the on-line test (OLT). If n=i the test loops an infinite number of times (for OLTSEP and TOLTEP only). If no value is defined in the OLT, n=500 is defaulted to. It is recommended that a value always be assigned to n when the EL(n) option is selected.
**NEL	No Error Loop	Does not loop on an error.
**CP	Control Print	Prints control messages, such as section start and termination messages.
NCP	No Control Print	Does not print control messages. This does not stop control messages when a reply is expected.
APterm (applies to TOTE and TOLTEP only)	Alternate Printer	Sends error printouts to the station whose symbolic name is term, instead of the station from which the test is controlled. SYSCON and SYSOUT are also valid names for the alternate printer. Note that the terminal being tested can not be the alternate printer.
**NAP	No Alternate Printer	Sends error printout to control station.
PP(n) (applies to OLT(S)EP and TOLTEP only)	Parallel Print	Print the test section DPRINT output messages on the control terminal (and the alternate printer for TOLTEP). See the EP(n) option description for a definition of n except that n= is the default. Under TOLTEP this option is ignored unless the AP option is specified.
**NPP (applies to OLT(S)EP and TOLTEP only)	No Parallel Print	Do not print test section DPRINT output messages on the control terminal.
**PR (applies to OLT(S)EP and TOLTEP only)	PRINT	Print DPRINT messages from the test section.
NPR (applies to OLT(S)EP and TOLTEP only)	No Print	Inhibits DPRINT messages from the test section from being printed on the output device if the TL and/or EL options are also active. NPR is ignored otherwise.
**FE (applies to OLT(S)EP and TOLTEP only)	First Error	Produces a special first error message and a communications interval when the first error in a test section is found. At this communication interval, you may: <ul style="list-style-type: none"> • change the DEV or TEST fields or both.

- return to the exit point in the test by entering '///' or '//OPT/'.
- cancel the test section by entering 'CANCEL'.
- enter an OLT(S)EP or TOLTEP verb.

The FE option overrides the NEP option when the first error is detected. It also overrides the TL and EL options unless NPR is also active. However, if you enter '///' or '//OPT/' at the first error communications interval, the TL and EL options, if specified, are in effect.

NFE No First Error
(applies to OLT(S)EP and
TOLTEP only)

No first error communications interval is permitted.

**CM Concurrent Mode
(applies to TOTE only)

TOTE will allow the automatic sub-channel sharing normally done (applies only to 2701, 2702, and 2703 multidrop lines. It says that other terminals on the same line as the test terminal can be operating concurrent with test terminal testing).

NCM Non-Concurrent Mode
(applies to TOTE only)

TOTE will not allow the subchannel sharing normally done.

**EP(n) Error Print

Print diagnostic DPRINT error messages from the test section. n is valid only for TOTE and specifies the level of error print. n is a decimal number between 0 and 3. Level 0 specifies the minimum error print. Level 3 specifies the maximum error print. If n is omitted, a default value of 3 will be assigned by TOTE. The following describes each error print level:

- 0 - allows printing of the header line only.
- 1 - allows printing of the header line and any description and message lines.
- 2 - allows printing of the header line, CCWs, CAW, condition code (CC), CSWs, SENSE, expected data (XPTD DATA), received data (RCVD DATA), and written data (WRTN DATA).
- 3 - allows printing of all of the above. An example of the maximum allowable printout would be as follows:

```
*T2400AAA-00 RTN 007 DEV 0283 ECA 123 REFNUM 1122
TEST DESCRIPTION LINES
CCW1 01 004000 60 000010 CAW 004A00
XPTD CC 0
*RCVD CC 1
XPTD CSW1 XX 0078A0 0080 0000 CSW2 XX XXXXXX 0C00 XXXX
*RCVD CSW1 X0 0078A8 0A40 0001 CSW2 X0 0078A8 0480 0000
XPTD SNS 00 08 C3 40
*RCVD SNS 04 88 C1 40
XPTD DATA 121212
*RCVD DATA 131313
WRTN DATA 121212
MESSAGES
```

- (a) Header line.
- (b) Description lines 1 to 15.
- (c) Channel Command Word (CCW) and Channel Address Word (CAW).
- (d) Expected Condition Code.
- (e) Received Condition Code.
- (f) Expected Channel Status Word.
- (g) Received Channel Status Word.
- (h) Expected Sense
- (i) Received Sense
- (j) Expected Data

- (k) Received Data
- (l) Written Data
- (m) Message lines 1 to 15.

Note that this is a general OLT error print example, not a 3700 OLTT error print example. Portions of the above may be omitted in 3700 OLTT error printouts if not pertinent to the error.

NEP	No Error Print	Does not permit test section DPRINT error prints.
NP	No Print	Does not permit control messages or error prints.
MI	Manual Intervention	Executes the routines that require manual intervention. This option is normally selected when terminal tests are run that require operator action. (It is currently not required to run any OLTT tests.)
**NMI	No Manual Intervention	Does not execute routines that require manual intervention.
TR	Trace	Prints all the OLT requested executive services (linkages to the OLT Executive to perform some test function...e.g., EXIO to do SIO, etc.) and their return codes.
**NTR	No Trace	Does <u>not</u> print executive services requested by an OLT.
**SI (applies to OLT(S)EP only)	Spurious Interruptions	Print spurious interrupts on the output device.
NSI (applies to OLT(S)EP only)	No Spurious Interruptions	Do not print spurious interrupts.
RE (applies to OLT(S)EP only)	Remote FE Control	Indicates to OLT(S)EP that the remote FE specialist is in control and will respond to OLT(S)EP messages. When the RE option is active, the remote specialist may reply to '01', '03', and '04' reply code type messages. Data protection messages are answered from on-site. The RE and MI options are mutually exclusive and the RE option only appears when REI is active.
**NRE (applies to OLT(S)EP only)	No Remote FE Control	Only allows the remote FE specialist to reply to '03' reply code type messages.
**TPP (applies to TOTE only)	Test Preliminary Path	If the terminal is switchable, ensure that a switch to primary will be issued to the test device on a 3705.
TAP (applies to TOTE only)	Test Alternate Path	If the terminal is switchable, ensure that a switch to alternate path will be issued to the test device on a 3705.
**BK (applies to TOTE only)	Break	Not applicable to 3700 OLTTs.
NBK (applies to TOTE only)	No Break	Not applicable to 3700 OLTTs.
EXT=	External Data	Allows data to be entered into the OLT. This must be the last option entered and will be delimited by "/". See next page.

External Data, EXT= is a valid option for "TEST"= T3700OLT and T3700ACT only. It must also be the last option if entered. Multiple options entered in this field must be delimited by commas.

3.1.4 EXT OPTIONS - T3700ACT

T3700ACT EXT= options are:

LOAD [,PRINT][,OLLT][,CARD][,ONLY][,REP][(name,label)]

The LOAD option causes a load of the 3704/3705 across the channel address defined in the CDS for the DEV entered at communications interval time (DEV/TEST/OPT). The load may be modified by entering any of the bracketed options delimited by commas (,). An ACTIVATE LINK is performed if OLLT and ONLY options are not specified; an automatic REP to bypass sequence number checking in the NCP occurs if the ONLY option is not specified. See section 2.1.2.4. These options are defined as follows:

PRINT Print progressive status messages as the load proceeds. Not PRINT is the default.

OLLT (For use with NCP-3 and above only) Performs the specified load and causes an ACTIVATE PHYSICAL and START DATA TRAFFIC to be issued to the loaded NCP. No ACTIVATE LINK is performed if this option is specified. Not OLLT is the default.

CARD Load a standard object deck with or without VER/REP cards. Control is passed to the program start address in the END card. VER/REP cards are automatically allowed with this option, if REP is specified the load is from tape with the object deck overlaying the tape load in the 3704/3705. This option can be used to load an unloaded DOS data set into the IBM 3704/3705.

To load an NCP/EP under DOS, punch the load deck by executing a CSERV punch of the NCP/EP load module in the DOS core image library. See Example 2. Remove the 'PHASE' card at the beginning and the /* card at the end of this punched output deck.

The default, not CARD, causes a tape created by an IEHMOVE dump of an OS partitioned data set containing a NCP/EP load module member to be loaded. The standard volume label must be LDHMODS or as specified in the "label" option of the EXT field. The data set name must be OLT.READD.DATASET. The unloaded data set may contain more than 1 load module. See Example 1.

*Note: For card input the format of the first 2 and last card is standard as follows:

Card 1 CC 1-10
VOL1LDCRDS

Card 2 CC 1-21 32-35 54-60
HDR1OLT.READD.DATASET 0001 0000000

Card 3 thru n-1 is the load deck (TXT cards are followed by VER/REP cards if any).

Card n CC 1-5
//PND

ONLY Performs the specified load, bypasses the ACTIVATE link and automatic REP functions, and terminates. No attempt is made to activate the line if this option is specified. It would be specified for an EP or NCP-2 load, or a stand alone 3704/3705 program load. Not ONLY is the default.

REP Performs the specified load but allows REP and VER cards to be included in the input stream. The format of the VER/REP deck is as follows:

Card 1 and 2 are identical to those described under the CARD option above.

VER and REP cards

CC	2-4	7-12	17-80
VER	address	verify data	
REP	address	rep data	

where,

address = a six (6) hexadecimal character absolute address pointing to the IBM 3704/3705 storage location to be verified of rep'd. The address must be on a halfword boundary.

verify/rep data = the data in hexadecimal to be verified on rep'd. This data is specified halfword at a time, each halfword (4 hexadecimal characters) being delimited by a comma. Continuation cards are generated by omitting the VER and address

fields and continuing the VERIFY or REP data in cc 17-80 of the next card.

(name, label) Performs the specified load from an OS labeled tape, labeled with an up to 8 character name ("label"). The name of the load module is an up to 8 character value specified by "name".

name = an up to 8 character alpha-numeric sequence which specifies the name of the load module. In the case of NCP/EP it is the value of the NEWNAME= parameter of the BUILD macro in the Stage 1 Sysgen listing. If omitted, NCP30LT is the default.

label = an up to 6 character alpha-numeric sequence which specifies the value of the standard label of the tape being loaded from. If omitted, LDHMODS is the default.

***** Examples

1. Loading an OS/VS NCP load module with REP's for OLTT testing.

To load and activate an NCP-3 or greater for OLTT testing assuming an NCP-3 or greater with NEWNAME=NCPOLTT has been generated and unloaded from an OS/VS PDS data set named NCP.LOADMODS to a tape labeled NCPTAPE1 and that VER/REP cards are required:

- Create the load tape from PDS NCP.LOADMODS using the IEHMOVE OS utility COPY PDS function. An example of the required JCL follows. This example assumes a partitioned data set named NCP.LOADMODS already exists containing the load module number NCPOLTT. To determine how to create this module, see your IBM 3704 and 3705 Communications Controllers Network Control Program Generation and Utility Guide and Reference Manual.

```
//NCPTAPE JOB MSGLEVEL=1
// EXEC PGM=IEHMOVE
//SYSPRINT DD SYSOUT=A
//SYSUT1 DD UNIT=2314,VOL=SER=WORKDISK,DISP=SHR
//DISKIN DD UNIT=2314,VOL=SER=SOURCE,DISP=OLD
//TAPEOUT DD VOL=SER=NCPTAPE1,UNIT=2400,DISP=(NEW,KEEP),
//          DCB=(RECFM=FB,LRECL=80,BLKSIZE=800),
//          LABEL=(1,SL),DSN=OLT.READD.DATASET
//SYSIN DD *
COPY PDS=NCP.LOADMODS,FROM=2314=SOURCE,TO=2400=(SCRTCH,1),      x
      RENAME=OLT.READD.DATASET
//
```

where,

DISKIN = the data set containing NCP load module, NCP.LOADMODS.
TAPEOUT = the STANDARD LABEL load tape that NCP.LOADMODS will be written on.

- Create a line CDS with a symbolic name OLTTLINE (See Appendix A) for the line that the OLTT's are to use and add it to the CDS library. This CDS must specify the load channel address.
- Mount the load tape on an available tape drive.
- Create the REP deck as described in the previous REP option description and place the deck in the card reader.
- At DEV/TEST/OPT time enter:

OLTTLINE/3700ACT/EXT=LOAD,REP(NCPOLTT,NCPTAPE1)/

where OLTTLINE is the symbolic name of the line the test terminal is on. This entry will start the T3700ACT OLT.
- When T3700ACT is started it will;
 - prompt the operator for the load tape drive address,
 - load the NCP load module NCPOLTT from this tape into the 3704/3705,
 - prompt the operator for the address of the card reader containing the

VER/REP cards for this load module,

- do the requested VER/REP function in the 3704/3705,
- activate the line OLTTLINE.

2. Loading a DOS NCP load module with or without REPs for OLTT Testing.

To load and activate an NCP3 or greater for OLTT testing assuming an NCP load module with NEWNAME=DOSNCP and including VER/REP Cards:

- The load module is punched from the DOS System using the DOS utility CSERV PUNCH.
- The VER/REP cards are added after the last TXT card in the punched deck.
- The required leader and trailer cards are added (see CARD option) and the deck placed in the card reader.
- Create a line CDS with a symbolic name OLTTLINE (See Appendix A) for the line that the OLTT's are to use and add it to the OLT CDS library. This CDS must specify the load channel address.
- At DEV/TEST/OPT/ time enter:

oltline/3700act/ext=load,card

This will start the T3700ACT OLT.
- When T3700ACT is started it will prompt the operator for the card reader address before loading the 3704/3705. After loading the 3704/3705 it will activate the line OLTTLINE.

3. Loading an OS/VS EP load module for OLTT testing.

To load an EP load module with REPs for OLTT testing:

- Create a tape, as explained in example 1 above, containing the load module, except that the tape label and the load module names for this load will be the default values of LDHMODS and NCP30LT.
- Create the REP deck as described under the REP option above, and place the deck in the card reader.
- At DEV/TEST/OPT/ time enter:

00b/3700act/ext=load,rep,only

where 00b is the native subchannel address to be loaded across, and must have a 3704/3705 CDS generated for it. This CDS must be resident in the OLT CDS library. This entry will start the T3700ACT OLT.
- When T3700ACT is started it will execute similar to example 1, but it will not attempt to activate any line. Also the default tape label and load module names of LDHMODS and NCP30LT will be assumed.

DUMP [,PRINT][,SELECT][,CONSOLE][,REG(X-Y)][(start-end)]

The DUMP option causes a dump of the IBM 3704/3705 across the channel address defined in the CDS for the DEV entered at communications interval time (DEV/TEST/OPT/). The dump may be modified by entering any of the bracketed options delimited by commas (,). If no options are entered other than DUMP, the storage size defined by the IBM 3704/3705 CDS will be dumped. IBM 3704/3705 storage locations 0-680 Hex will be destroyed by the dump program. The bracketed options are defined as follows:

PRINT Print progressive status messages as the dump proceeds. Not PRINT is the default.

SELECT Allows the operator to selectively dump ranges of storage, one range at a time. Not SELECT is the default.

CONSOLE Causes the dump to be done to the CE Communications device. Not CONSOLE is the default.

REG(X-Y) Causes the IBM 3704/3705 local store registers X thru Y to be dumped. X and Y are specified in hexadecimal. Care must be taken when using this option because certain registers will cause IBM 3704/3705 check conditions when INPUT. If omitted, IBM 3704/3705 local store registers 0 thru 1F Hex are dumped.

(start-end) Causes the address range "start" thru "end" to be dumped. If omitted the address range defined by the IBM 3704/3705 CDS will be dumped. "Start" and "end" are up to Six (6) hexadecimal digit numbers representing the beginning and ending IBM 3704/3705 locations to be dumped.

3.1.5 EXT OPTIONS - T37000LT

T37000LT EXT= options are:

- RT** This 2 character sequence tells the OLTT to go directly to the test terminal with its control messages. No further control terminal intervention is required unless unrecoverable errors are detected trying to communicate with the test terminal. Control message 002, a test request entry description message, will precede the first OLTT test request message (control message 003) to the test terminal for this option. (See Section 4.3.1 - OLTT Messages for TRM "TEST"= T37000LT for a description of control messages 002 and 003. Also see NOTE 1 and 2 below.)
- RC** This 2 character sequence is like RT except that control message 003 (see Section 4.3.1) is the first message transmitted to the test terminal. Control message 002 is not transmitted when this option is entered. (See NOTE 1 and 2 below.)
- LC** This 2 character sequence tells the OLTT to send all control messages to the control terminal. Control Message 003 (See Section 4.3.1) is the first message sent to the control terminal for this option. Control message 002 is not sent to the control terminal when this option is entered. (See NOTE 2 below.)
- PCn** This option defines the component on a multipoint concentrator type terminal, such as a 1050 or 2770, from which all control message input is to be read. PCn and PTn must both be specified if different components are to transmit the control and test messages. Otherwise, both default to the specified PCn or PTn "n" value. (See NOTE 3 below for an explanation of "n" values.)
- SCn** This option defines the component on a multipoint concentrator type terminal, such as 1050 or 2770, to which all control messages are to be sent. SCn and STn must both be specified if different components are to receive the control and test messages. Otherwise, both default to the specified SCn or STn "n" value. (See NOTE 3 below for an explanation of "n" values.)
- NOTE:** The following options (PTn and STn) are valid only if there is more than one device available for the function to which the option is applied.
- PTn** This option defines the test component on a multipoint concentrator type terminal, such as a 1050 or 2770, from which all test data is to be read. PCn and PTn must both be specified if different components are to transmit the control and test data. Otherwise, both default to the specified PCn or PTn "n" value. (See NOTE 3 below for an explanation of "n" values.)
- STn** This option defines the test component on a multipoint concentrator type terminal, such as a 1050 or 2770, to which all test messages are to be sent. SCn and STn must both be specified if different components are to receive the control and test messages. Otherwise, both default to the specified SCn or STn "n" value. (See NOTE 3 below for an explanation of "n" values.)

NOTE 1: EXT= options RT and RC must not be entered unless the remote test terminal has both output and input capability.

NOTE 2: EXT= options RT, RC, and LC are not valid if routines (rtn) are specified in the TRM. Also, if the EXT= option is omitted and;

if rtn is specified in the TRM, the routines entered in the TRM will be run.

if rtn is omitted from the TRM, the OLTT tests to be run will be dynamically prompted for at the control terminal. Control message 002, a test request entry description message, will precede the first OLTT test request message (control message 003) to the control terminal in this case. (See Section 4.3.1 OLTT Messages for TRM "TEST"= T37000LT for a description of control messages 002 and 003.)

NOTE 3: In the options PCn, SCn, PTn, and STn, the n represents a decimal digit value which defines the device to be used for that option as shown in Figure 1 below. Note that if the PCn and PTn or SCn and STn options are omitted, the devices defaulted to will be the highest configured input and/or output "n" values. An example of the use of these n values is as follows:

Assume the user is running under TCAM/TOTE and has a 1050 terminal and he wishes to run test 12 - 17 to printer 1 using the keyboard for manual entry data. He wishes to use a nearby 2741 as the control terminal. The test request message format would then be:

99999PP2741/MP1050/37000LT,12-17/EXT=ST1,PT1/

where:

PP2741 = symbolic name of a 2741 control terminal.
MP1050 = symbolic name of a 1050 terminal to be tested.
T37000LT= common OLTT test module.
12-17 = test numbers to be run.
EXT = external data.
ST1 = definition of the test device to which the test messages are to be sent.
PT1 = definition of the test device from which test manual entry input is to be received.

FIGURE 1 "n" values for PCn, SCn, PTn, STn (See note 3 above for an example.)

1050 DEVICES n VALUE

General Poll	0
Keyboard	1
Reader 1	2
Reader 2	3
General Select	0
Printer 1	1
Printer 2	2
Punch 1	3
Punch 2	4

2780 DEVICES n VALUE

Reader	1
Printer	1
Punch	2

2972 DEVICES n VALUE
Station Address

0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8
8	9
9	10
ALT. 0	11
ALT. 1	12
ALT. 2	13
ALT. 3	14
ALT. 4	15
ALT. 5	16
ALT. 6	17
ALT. 7	18
ALT. 8	19
ALT. 9	20
COMMON BUFFER	21

2770 DEVICES n VALUES
INPUT OUTPUT

General Poll	N/A	0
Keyboard	Printer	1
2	2	2
3	3	3
4	4	4

<u>3700 DEVICES</u>		<u>D VALUES</u>
<u>with component selection</u>		
<u>INPUT</u>	<u>OUTPUT</u>	
General Poll	N/A	0
N/A	Printer	1
2	2	2
3	3	3

3.2 PROGRAM TERMINATION

3.2.1 PROGRAM TERMINATION TOTE

OLTT's can be canceled prior to normal completion by entering a 'CANCEL' message. A 'CANCEL' message can be entered from any terminal other than test terminal, unless the NCM option has been specified. If the NCM option is specified, the request must be made from either the system console or another terminal on a different line than the test device. The exact format of the 'CANCEL' message entered must be:

99999CANCEL/CntrlTerm/	from Start-Stop terminals
soh%/cancel/CntrlTerm/	from Bi-Sync terminals
modify jobname,olt=CANCEL/CntrlTerm/	from system console
opid modify jobname,olt=cancel/CntrlTerm/	from operator console

where CntrlTerm is the symbolic name of the Control Terminal and the other terms are defined as in Section 3.1.

NOTE: - A 'CANCEL' command cannot be entered from the tested terminal; and,
- A Cancellation Message is issued only when a CANCEL request is successful. If the message--

IED223I ON-LINE TESTING CANCELED

is not received at the control terminal within a few moments, check the syntax, spelling, and validity of the Control Terminal specified. Then re-enter the command.
NOTE: The cancel request may not always be honored immediately. The exact timing will depend upon the function being performed by the OLTT at the precise time of the request.

Normal completion of a test causes the following message to be printed at the control terminal:

IED334I T T3700OLT UNIT TermName

where TermName is the symbolic name of the test device.

Abnormal termination of a test causes this message to be printed at the control terminal preceded by *. A description of the error messages is provided in Section 4.1 of this document.

3.2.2 PROGRAM TERMINATION OLT(S)EP/TOLTEP

OLT(s) may be canceled prior to normal completion by replying 'cancel' to a "if SEP1050 ENTER DEV/TEST/OPT/" (OLTSEP) or "id IFD1050 ENTER DEV/TEST/OPT/" (OLTEP), or "ITA1050 ENTER-DEV/TEST/OPT/" (TOLTEP) communications interval message (see NOTE). The format of the entry would be:

r id,'cancel'	for OLT(S)EP
cancel	for TOLTEP

where

r - Reply command.

id - is the message identifier (id) in message IFD1050 (OLTEP) or SEP1050 (OLTSEP).

NOTE: The communications interval message may be forced by:

OLTSEP-

- pressing the "REQUEST" key on the System Console.

TOLTEP-

- pressing the "ATTENTION" key.

OLTEP-

- replying r id,'x' to the message;

id IFD104E TO FORCE COMMUNICATION WITH OLTEP EXECUTIVE, ENTER ANY CHAR

where,

- r - REPLY command.
- id - is the message identifier (id) in message IPD104E.
- x - is any character on the System Console keyboard.

This reply may be made at any time after message IPD104E is printed except that any immediate reply messages (IPDXIID) must be responded to first.

3.3 UNIT CONFIGURATOR PROGRAM (TERMINAL CONFIGURATION)

3.3.1 TOTE CONFIGURATOR

Terminal configuration may be performed dynamically if TCAM/TOTE and the Unit Configurator programs are installed in the System. This may be accomplished by correctly answering a series of prompting questions generated by the Configurator program. To start the Configurator program, a configuration request message is entered at communications interval time via the operator control terminal or system console. A configuration request message is similar to the Test Request Message (TRM) format except that the device and test option fields are null fields and the option field must contain config. The devices supported by the CLASS=44 Unit Configurator Programs are the supported terminals listed in Section 1.0 of this document, plus the NCP and VME CDS's.

```

If entry
Terminal is:          ENTER

Start/Stop, e.g. 1050, 99999CT///config/
                  2740,
                  2741,
                  3767

Bi-Sync,    e.g. 2770, sohX/CT///config/
              2780,
              2972,
              3770,
              3780

System Console      modify jobname,olt=CT///config/

Operator Console    opid modify jobname,olt=CT///config/

```

See Section 3.1 for a definition of these operands. See Section 4.3.1 under message 003 for an example of control terminal data entry under TOTE. See Section 4.3.4 for a list of the messages printed by the 3700 family of unit configurator modules.

NOTE: Not all devices are supported by TOTE or by the Configurator programs. If on-line configuration is attempted concerning a non supported device, the user is so informed via the following error message:

IED325 NO UNIT CONFIG MODULE FOR THIS DEVICE

3.3.2 OLT(S) EP CONFIGURATOR

Terminal configuration may be performed dynamically by correctly answering a series of prompting questions generated by the OLT(S) EP configurator program. To start the configurator program enter:

```

DEV/T3700GEN/EXT=[DISPLAY],[PROMPT]/
                CHANGE
                NCP
                EP
                GEN

```

at communications interval time, where

- DEV - is the channel address of the system card punch.
- DISPLAY - is an optional EXT= option that causes a requested CDS to be displayed on the print device. Specify OPT equal PP (see Section 3.1 Execution Procedures) to display it at the control terminal (CT).
- CHANGE - is an optional EXT= option and would be specified only if you desire to change a portion of a CDS and do not wish to create a complete new CDS. If omitted, all applicable questions will be asked.
- NCP - is an optional EXT= option that must be specified if you are configuring devices to be tested in an NCP environment.
- EP - is an optional EXT= option that must be specified if you are configuring devices to be tested in an EP/2701/2702/2703 environment.
- GEN - is an optional EXT=option that must be specified when using an NCP Stage 1 sysgen input deck to generate OLT terminal CDS decks. The NCP stage 1 input deck must have run error free before it can be used with this option to produce the OLT terminal CDS deck. Place the following two

header cards in front of the stage 1 deck and the trailer card at the end.

Header Card 1 CC 1-10

VOL1GENCDS

Header Card 2 CC 1-21 32-35 54-60

HDR10LT.READD.DATASET 0001 0000000

Stage 1 NCP sysgen deck

Trailer card CC 1-5
//END

The Test Request Message (TRM), used to invoke T3700GEN should be as follows:

R01,'00D/3700GEN/EXT=GEN/'

(00D is assumed to be the card punch).

The following console output will result.

SEP158I S T3700GEN UNIT 000D
04 SEP101D 883 ENTER 4 DIGIT SUB CHANNEL ADDR FOR THIS CDS.
If the channel address for example is 10A, your reply would be:

R 04,'010A'

The following console output will follow:

04 SEP197D MOUNT GENCDS REPLY DEV ADDR

Your reply, assuming the Stage 1 deck is in the card reader (address 000C), is

R 04,'000C'

The stage 1 deck will now be read and interpreted. The hard copy device, normally the printer (000E) will print the CDS as it is developed and the card punch, normally 000D, will punch your CDS.

Information from the following NCP GEN Stage 1 Macros is used in developing Terminal CDS.

BUILD
HOST
IDLIST
MTALCST
GROUP
LINE
CLUSTER
TERMINAL
COMP

The NCP GEN must be completed and error free prior to using the Stage 1 input deck to create the CDS. The AUTO CDS Module expects the NCP GEN Deck to be valid. Verification of accuracy is not made.

CDS for the following BI-SYNC and Start Stop Terminal will be developed:

<u>START/STOP</u>	<u>BI-SYNC</u>
1050	2770
2740-1	2780
2740-2	3780
2741	2972
	3270
	RPTS

If the terminal is defined as BI-SYNC and not recognized as one of the above, the Terminal definition codes for CDS bytes 28-29 will be defaulted to '0606'.

If the terminal is defined as S/S and not recognized as one of the above, processing that CDS will be aborted.

When a terminal is recognized that is not supported, message 880 will be printed to signify which terminal it is and the terminal type.

Other messages that may appear at the console are:

04 SEP101D 887 REMEDY PUNCH PROB. ENTER C TO CONTINUE OR A TO ABORT.

The above message normally occurs if the Punch runs out of cards or needs to be readied. The following messages should not occur. If they do and the configuration is terminated, take note of the last card read and what Macro is being processed. If the Configurator program should be at fault, the above information would be helpful in debugging the problem.

```
04 SEP101D 881 UNEXPECTED CARD IN THE DATA STREAM
"          880 AAAAAAAA TTTT CDS NOT SUPPORTED
"          882 ATTEMPT TO CONVERT BCD TO HEX FAILED. TEST ABORT
"          884 REQUEST FOR MTALCST NAME AND NO ENTRIES FOUND
"          885 REQUEST FOR MTALCST NAME AND NAME NOT FOUND
"          886 REQUEST FOR MORE CORED FAILED. CONFIG ABORTED.
```

where,

AAAAAAA is the symbolic name of the terminal not configured, as defined in the stage 1 input.

TTTT is the type of terminal not configured, as defined in the stage 1 input.

DISPLAY, CHANGE, GEN, NCP, and EP are mutually exclusive. (i.e. only one (1) may be specified in the EXT= field.)

PROMPT - is an optional EXT= option that causes additional configuration information messages to be issued prior to prompting for configuration data. PROMPT is defaulted to for the first CDS configured.

The questions asked in this configurator program are self explanatory. They are listed in Section 4.3.4. Your stage 1 sysgen listing will be required. Note that options NCP, EP, CHANGE, or DISPLAY may be entered in response to message '802 ENTER A 4 DIGIT DEVICE NUMBER FOR THE NEXT CDS, OR 'END''. For example, '3705, DISPLAY' or '3705' is a valid response to message number 802. Also, 'TERMINATE' may be entered in response to any of the 800-899 series of messages to abort a CDS configuration and allow a new request via message number 802.

The devices supported by the OLT(S)EP configurator program are the terminals listed in Section 1.0 of this document, plus the 3704/3705, NCP, and LINE CDS's. Devices should be configured in the following order: all 3704/3705 CDS's, all NCP CDS's, all LINE CDS's, and last all terminal CDS's.

The successful execution of this program causes a CDS deck to be punched containing CDS entries for all devices configured by the T3700GEN run. This CDS deck must be merged with the existing CDS and added to the OLT(S)EP system by using SOSPB. The procedure used would be as follows.

- Execute a PUNCHCDS SOSPB job to punch the existing CDS by entering DEV/TEST/OPT/ equal

DEV1,DEV2/SOSPB/EXT=PUNCHCDS,TERM/

where DEV1 - is the OLT(S)EP disk drive address (e.g. 130).
DEV2 - is the OLT(S)EP card punch address (e.g. 00D).
- Using the listing printed with the CDS punched by SOSPB in step 1 above, remove any CDS's to be changed from this punched CDS deck.
- Merge the T3700GEN punched CDS deck with the remaining SOSPB punched CDS deck. Remember that all control unit (3704/3705) and NCP CDS cards must be grouped at the beginning of the CDS deck immediately before all line and terminal CDS cards (CDS entries with a X'0A' or greater in cc 30 and 31 of the 1st card).
- Execute a CONFIG SOSPB job to add the new CDS deck by entering
DEV/TEST/OPT/ equal

DEV1,DEV2/SOSPB/EXT=CONFIG,TERM/

where DEV1 - is the OLT(S) EP disk drive address (e.g. 130).
DEV2 - is the OLT(S) EP card reader address (e.g. 00C).

Note: To temporarily add a partial CDS deck under OLTSEP,
remove the blank header and trailer cards from the T3700GEN
punched output and place the deck in the card reader.
Enter 'CDSGEN' at DEV/TEST/OPT/ time to read this deck into a temporary
CDS storage area that will be searched prior to the permanent CDS file.
This temporary CDS file will be destroyed by each
subsequent 'CDSGEN' run, a PSW restart or a re-IPL.

3.4 PROMPT FOR TRM

The prompt function is used to help the user respond correctly to the Test Request Message (TRM).

OLT(S)EP - Under OLT(S)EP/TOLTEP it provides example entries and formats. It may be invoked
or at communications interval time by entering:
TOLTEP

```
r id,'PROMPT XXXX'
```

where: "r" and "id" are defined as in Section 3.1 and, XXXX defines the portion of the Test Request Message (TRM) entry you need help with. Enter one of the following XXXX values:

```
XXXX = DEV - devices  
       TEST - tests  
       OPT - options  
       ALL - all of the above
```

TOTE - The information required by TOTE to run OLTs can be entered in prompting mode. Prompting mode can be entered:

- upon receipt of an invalid entry in a TRM.
- by entering:

```
99999CT///PROMPT/           from Start/Stop terminals  
SOH%/CT///prompt/          from Bi-Sync terminals  
modify jobname,olt=CT///PROMPT/   from System Console  
opid modify jobname,olt=CT///PROMPT/ from Operator Console
```

See Section 3.1 for a definition of these operands. See Section 4.3.1 under message 003 for an example of control terminal data entry under TOTE.

4.0 PRINTOUTS

4.1 STANDARD ERROR PRINTOUTS

4.1.1 STANDARD TEST= T3700OLT ERROR PRINTOUT

The following is an example of a typical error print format.
Refer to Section 4.1.5 - Common Error Printouts, if your
error print format is not compatible with this format.

```
*T3700OLT-00 RTN 021 DEV/LN 0020 G1050 ECA 0      (a)
ALL CHARACTER PRINT TEST                          (b)
SEQUENCE SENT - SELECT-ANY DEVICE                 (c)
RESPONSE EXPECTED - CIRCLE-Y                     (d)
*RESPONSE RECEIVED - CIRCLE-N                    (e)
```

- (a) Header Line - This line indicates the "TEST" running, its version and level, the routine running when the error occurred, the channel address, the symbolic name of the test DEV, the ECA number (engineering change), and a message reference number (REFNUM) if any. (Valid REFNUMs are listed in Appendix I along with their corresponding message line description.) Note that the * indicates this is an error printout. Asterisk (*) messages imbedded in the body of such an error printout contain pertinent error data. See line (e).
- (b) Description Line 1 - (Title) This line defines the particular operation being performed when the error was detected. (See Section 5.0 - OLT Test Messages and Section 6.0 - RPT Compatibility for a definition of the test messages.)
- (c) Description Line 2 - (Transmitted Sequence) This line defines in English the actual transmission to the terminal. Line control characters are represented by appropriate keywords ... e.g., the bi-sync enquiry character by ENQ, etc. Actual messages transmitted are defined by the keyword "TEXT". Note that the data making up the "TEXT" is not printed in this line. When required, it will be printed in hexadecimal in a line labeled WRTN DATA.
- (d) Description Line 3 - (Expected Response) This line is similar to (c) above except that it defines an expected response sequence from the terminal. Any "TEXT" data will be printed, when required, in hexadecimal in a line labeled XPTD DATA.
- (e) Description Line 4 - (Actual Response) This line is similar to (c) above except that it defines the actual response sequence received from the terminal. Any "TEXT" data will be printed, when required, in hexadecimal in a line labeled PCVD DATA.

4.1.2 STANDARD TEST= T3700RSP ERROR PRINTOUT

The following is an example of a typical error print format. Refer to Section 4.1.5 - Common Error Printouts, if your error print format is not compatible with this format.

```
*T3700RSP-00 RTN 000 DEV/LN 000A MPBSCT ECA 0 (a)
TEST MESSAGE REQUEST (b)
SEQUENCE SENT - POLL - (c)
RESPONSE EXPECTED - SOH, TEXT, ETX (d)
*RESPONSE RECEIVED - ENQ (e)
```

Lines (a) through (e) are defined as (a) through (e) under Section 4.1.1 - Standard "TEST"= "37000LT Error Printout. Note that (b) in this case does not represent a test message but indicates the error occurred while POLLing for a test request.

4.1.3 STANDARD TEST= T3700REQ ERROR PRINTOUT

The following is an example of a typical error print format. Refer to Section 4.1.5 - Common Error Printouts, if your error print format is not compatible with this format.

```
*T3700REQ-00 RTN 000 DEV/LN 0005 C3PP3705 ECA 0 (a)
36 CHAR EBCDIC TEST (b)
SEQUENCE SENT - ENQ (c)
RESPONSE EXPECTED - ACK0 (d)
*RESPONSE RECEIVED - TIMEOUT (e)
```

Line (a) through (e) are defined as (a) through (e) under Section 4.1.1 - Standard "TEST"= T3700OLT Error Printout.

4.1.4 STANDARD TEST= T3700ACT ERROR PRINTOUT

The following is an example of a typical error print format.

```
*T3700ACT-00 RTW 001 DEV/LN 0020 G1050 REFNUM 00101 (a)
  ACTIVATE LINE (b)
  CCW01 02 021B8860007FFF CAW 021A00 (c)
  *CCW02 03 011B8820000001 (d)
  ACTCSW XX 021A100C000001 (e)
  *RCVD DATA 00000001E000E2F4089840000000 (f)
  WRIN DATA 00000001E0000000089840000000 (g)
  023 INVALID SYSTEM RESPONSE (h)
  OLTT IS BEING TERMINATED (i)
```

(a) and (b) are defined as (a) and (b) under Section 4.1.1 - Standard "TEST"= T3700OLT Error Printouts.

- (c) CCW and - These lines are the hexadecimal representation of the CCW chain
- (d) CAW and the Channel Address Word (CAW) location for the channel program being executed when the error occurred.
- (e) Received CSW - This line is the hexadecimal representation of the Channel Status Word (CSW) stored as a result of the execution of the channel program described in lines (c) and (d).
- (f) Received Data - This line is the hexadecimal representation of the MCP response BTU/PIU. It can be used to determine if the MCP detected any errors. (See the BTU/PIU definition in APPENDIX E.)
- (g) Written Data - This line is the hexadecimal representation of the BTU/PIU transmitted to the MCP for execution.
- (h) Message Line 1 - These lines describe the reason for the error. The numeric value preceding the first line may be used to reference a more detailed
- (i) Message Line 2 description of the message in Section 4.1.5 - Common Error Printouts.

4.1.5 COMMON ERROR PRINTOUTS

The following messages may appear for a given print/error print. The error print may include other items such as CCWs, CSW, Condition Code, etc. An example of such an error printout is as follows:

```
*T3700OLT-02 RTN 016 DEV/LN 000A HP2770A ECA 0
LOWER CASE KEYBOARD TEST
010 BRANCH DISPLACEMENT TABLE CAPACITY EXCEEDED
OLTTC MACRO POINTERS - CURRENT= 020766 - PREVIOUS= 020762
OLTTC IS BEING TERMINATED
```

(a)
(b)
(c)
(d)
(e)

- (a) and (b) are defined as (a) and (b) under Section 4.1.1 - Standard "TEST"= T3700OLT Error Printouts
- (c) Description Line 2 - This line describes in brief the problem. For further details use the 3 digit message number at the head of the message as an index into the table of messages defined in this section.
- (d) and (e) Description Lines 3 and 4 - Give further details about the error described in description line 2 (c) above.

Message Table

010 BRANCH DISPLACEMENT TABLE CAPACITY EXCEEDED

This message is printed when the OLTTC Branch Displacement Table length is exceeded. This message indicates an OLTTC programming problem. The section is terminated.

Operator Action:

- a) Request OLTTC programmer assistance.

011 TABLE OF CONTENTS CAPACITY EXCEEDED

This message is printed when the OLTTC Table of Contents length is exceeded. This message indicates an OLTTC programming problem. The section is terminated.

Operator Action:

- a) Request OLTTC programmer assistance.

012 INPUT/OUTPUT BUFFER CAPACITY EXCEEDED

This message is printed when the OLTTC attempts to build an interpretive command string greater than the OLTTC Input/Output Buffer (IOB) size. This buffer is composed of text data and interpretive commands ready for MCP execution. A message with pointers to the current and previous OLTTC macros processed is included with this message. The section is terminated.

Operator Action:

- a) Request OLTTC programmer assistance.

013 INVALID OLTTC MACRO TYPE FOUND

This message is printed when the OLTTC macro processor encounters an undefined OLTTC macro ID. A message with pointers to the current and previous OLTTC macros processed is included with this message. The section is terminated.

Operator Action:

- a) Request OLTTC programmer assistance.

014 INVALID MACRO SEQUENCE

This message is printed when the OLTTC detects an IO sequence in the OLTTC which is not valid for the terminal being tested ... e.g., WACK indicated for a start/stop line. The section is terminated.

Operator Action:

- a) Request OLTTC programmer assistance.

015 RIOB MACRO ALREADY PROCESSED

This message is printed when the OLTTCP macro processor detects more than 1 RIOB macro in a test section. The section is terminated.

Operator Action:

- a) Request OLTT programmer assistance.

016 RIOB MACRO SIZE ERROR

This message is printed when the OLTTCP detects an invalid RIOB macro buffer size. The section is terminated.

Operator Action:

- a) Request OLTT programmer assistance.

017 PLINK ERROR - CODE=XX, MODULE=AAAAAAA, FUNCTION=LOAD
DELETE

This message is printed when the OLTTCP gets a bad return code from the OLT Executive PLINK macro. AAAAAAA is the PLINKed module ID. The PLINK function being attempted on this module is either LOAD or DELETE. XX is the return code received from a PLINK. PLINK return code value (XX) definitions are:

- 04 - the function (LOAD/DELETE) is not available.
- 08 - a LOAD error occurred. Either the entry point list address is 0 or the number of modules to be loaded is 0.
- 0C - the module to be loaded or deleted was not found.
- 10 - no storage space available for the module to be loaded.

Operator Action:

- a) If the module = AAAAAAA is not in the OLT library, add it.
- b) If it is, the problem is most likely an OLT Executive problem -- request PSR assistance.

020 INVALID VALUE IN RESOURCE TAG FIELD

This message is printed when the Request Tag field in a BTH response from NCP was not the value expected (X'E000') for OLTT responses. It indicates that the section received an NCP response designated for another resource. The response BTU (BTH and BDU) is printed as "RCVD DATA" with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU and fix the problem if you can. (See APPENDIX E for a definition of the BTU format.)
- b) Otherwise, request PSR assistance.

021 INVALID DESTINATION NAME

This message is printed when the Destination Name in a BTH/RU response from NCP was not the value for the device being tested. This indicates that the OLTT received a response from some other device than the test device. The response BTU/PIU is printed as "RCVD DATA" with this message and the section is terminated.

Operator Action:

- a) Verify that the CDS defined Destination Name is the same as that defined for the device in the Stage 1 NCP Sysgen listing.

022 OLTT INTERPRETIVE COMMAND ERROR

This message is printed when the NCP system response indicates that the NCP detected an error in the current interpretive command block being executed. The BTU/PIU and OLTTCB defining the interpretive command in error are returned to the host and printed as "RCVD

DATA" along with this message. The section is terminated.

Operator Action:

- a) Request OLTT and NCP programmer assistance.

023 INVALID SYSTEM RESPONSE

This message is printed when an unexpected NCP system response is detected by the OLTT in an NCP phase 2 error response BTH/RU. The BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated if the test is T3700OLT. If the test is T3700ACT, the section will continue if recovery is possible.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request NCP programmer assistance.

024 OLTT RESET BY OPERATOR CONTROL

This message is printed when the current NCP command has been abnormally terminated due to the execution of a deactivate line operation. The section is terminated.

Operator Action:

None.

025 INVALID COMMAND

This message is printed when the command in the response BTU/PIU is not the one expectede.g., the section was waiting for a response to a previously issued command but received a response from some other command. The response BTU/PIU is printed as "RCVD DATA" along with this message. For "TEST"= T3700ACT the section will then return to re-issue the READ command in anticipation of receiving the proper response - it does not mean that the line was not activated, but that ERP has commenced. If the "TEST" is not T3700ACT the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request PSR assistance.

026 NO OLTT CONTROL BLOCK ATTACHED

This message is printed when an NCP response is received for an NCP OLT command in progress, but no OLTT control block (OLTTCB) is returned to allow the OLTTCP to determine the reason for the response. The response BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Request NCP programmer assistance.

027 INVALID STEP COUNTER VALUE

This message is printed when the OLTT step counter is too high or it points to an unused position in the table of contents of processed OLTT macros. (NCP operation only.) The response BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Request OLTT and NCP programmer assistance.

028 UNABLE TO RESET ERROR LOCK

This message is printed when a previous operation ended with an "ERROR LOCK SET" indication and the attempt to "RESET ERROR LOCK" failed e.g., the NCP response to a "RESET ERROR

LOCK" sequence was not "ERROR LOCK RESET". The response BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request NCP programmer assistance.

029 LINE INACTIVE - RUN T3700ACT TO ACTIVATE

This message is printed when an attempt to establish a session on a line under OLTEP/OLTSEP ends with an NCP system response indicating that the line is not active. The section is terminated.

Operator Action:

- a) Run "TEST" = T3700ACT to the test terminal line symbolic name.

030 UNABLE TO ESTABLISH SESSION

This message is printed when the OLTTCPC attempts to initiate an NCP session via a TEST with CONTACT command but can not. The NCP response BTU/PIU and IOB are printed along with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU to determine the reason the session can not be established and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request PSR assistance.

031 UNABLE TO ACTIVATE DEVICE

This message is printed when an attempt to activate the test device ends with an NCP system response indicating that the NCP could not activate the device. The BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request PSR assistance.

032 LINE ACTIVATE COMPLETE

This message is printed prior to terminating test section T3700ACT if the requested NCP and/or line activate function has been successfully completed. Note that you may receive test message 025 prior to receiving message 032 - this merely means that some ERP was required to activate the line.

Operator Action:

None

033 LINE INACTIVE - ACCESS METHOD MUST ACTIVATE

This message is printed when an attempt to establish a session on a line under TCAM/TOTE ends with an NCP system response indicating that the line is not active. The section is terminated.

Operator Action:

- a) Activate the line using the OS "vary" operator commande.g., 'vary (line group name, relative line #) ontp'.

034 UNABLE TO TERMINATE SESSION

This message is printed when the OLTTCPC attempts to terminate a session via a TEST with DISCONNECT command but the NCP system response indicates the session did not terminate properly.

The NCP response BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request PSR assistance.

035 UNABLE TO DEACTIVATE DEVICE

This message is printed when the OLTTCP attempts to deactivate the test device via a TEST with DISCONNECT command but the NCP system response indicates the device was not deactivated. The NCP response BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request PSR assistance.

070 EXECUTE TEST REQUEST FAILED - EXCEPTION BIT SET

This message is printed when the OLTTCP issues an EXECUTE TEST REQUEST command to the NCP and the command can not be executed by the NCP. The section is terminated. Four (4) bytes of sense data will follow the RH field of the PIU and may be used to determine the cause of the exception. Only the first 2 bytes of this field are significant for the EXECUTE TEST command and they are defined as follows:

1001 - RU data error - An invalid command or modifier is specified within the EXECUTE TEST RU.

0809 - Mode inconsistency -

- An OLLT command is received when an OLTT command is in progress on that link.
- An OLTT command is received when an OLLT command is active on that link.

080C - Function not supported - An OLTT PIU is received, but the network address in the RU is not that of a device.

0815 - Request rejected - function active -

- The required link is active. For OLLTs the link must be inactive.
- A test is already active on the required link.

0816 - Request rejected - function inactive -

The EXECUTE TEST RU contains a reset command but the OLLT or OLTT is inactive.

Operation Action:

- a) Analyze the sense data in the received PIU and take appropriate action.
- b) Check the received PIU to verify that the DAF, RH, and TH are valid. The TH should be a hexadecimal 1E00XXXXYYYYNNNN0000, where XXXX is the DAF (Destination Address Field) of the NCP-3 Physical Services, YYYY is the OAF (Origination Address Field) of the host SSCP (System Service Control Point), and NNNN is the current SNF (Sequence Number Field). The RH byte 0 should be a hexadecimal 9B. If the DAF/OAF is in error, verify the device CDS for the test terminal and if in error reconfigure it.
- c) If any other fields are not as indicated, an OLTT/NCP-3 programming interface specification has been violated. Request PSR assistance.

071 INVALID RESPONSE TO EXECUTE TEST REQUEST

This message is printed when the OLTTCP detects a command response

sequence other than an EXECUTE TEST response (X'010301') in the RU Prefix and Request Code fields of the PIU response to the EXECUTE TEST REQUEST. The section is terminated.

Operator Action:

- a) An OLTT/NCP-3 programming interface specification has been violated. Request PSR assistance.

072 RESPONSE BIT NOT SET IN EXECUTE TEST RESPONSE

This message is printed when a PIU is received in response to an EXECUTE TEST REQUEST but the response bit is not set in the PIU received. The section is terminated.

Operator Action:

- a) An OLTT/NCP-3 programming interface specification has been violated. Request PSR assistance.

073 PIU RECEIVED WAS NOT A RECORD TEST DATA REQUEST PIU

This message is printed when an EXECUTE TEST REQUEST and RESPONSE has completed OK and another request/response is received which is not a RECORD TEST DATA REQUEST PIU. The section is terminated.

Operator Action:

- a) An OLTT/NCP-3 programming interface specification has been violated. Request PSR assistance.

074 PIU RECEIVED DOES NOT HAVE A FID1 FORMAT

This message is printed when a PIU is received that is not a FID1 format PIU. The section is terminated.

Operator Action:

- a) An OLTT/NCP-3 programming interface specification has been violated. Request PSR assistance.

075 PIU RECEIVED DOES NOT CONTAIN A WHOLE NIR

This message is printed when a PIU is received that indicates that multiple NIRs are mapped together or the RU is segmented. The OLTTCP can not handle multiple NIRs or segmented RU's. The section is terminated.

Operator Action:

- a) An OLTT/NCP-3 programming interface specification has been violated. Request PSR assistance.

101 INVALID CDS CONTROL UNIT COUNT FIELD

This message is printed when the OLTTCP determines that the POLL or SELECT sequence field in the CDS for the device under test is not the number of characters required by that device type. The section is terminated.

Operator Action:

- a) Correct the Terminal CDS via reconfiguring and rerun the test.

102 INVALID CDS DEVICE CLASS - NOT 44

This message is printed when the test terminal CDS or the NCP CDS is not a CLASS= X'44' CDS. The section is terminated.

Operator Action:

- a) Correct the CDS in error via reconfiguring and rerun the test. The

problem may be the NCP CDS name in the 3705 CLASS= X'40' CDS. Note that a CLASS= X'44' CDS is required for 3700 terminal OLTs; not a CLASS= X'42' - the old 2701/2702/2703 RPT and terminal OLT CDS CLASS.

103 CANNOT GET CDS FOR COMMUNICATION CONTROL UNIT

This message is printed when the section can not get the 2701/2702/2703, 3704, or 3705 Transmission Control Unit (TCU) CLASS= X'40' CDS due to a bad return code from the TCU GETCONFG. The section is terminated.

Operator Action:

- a) Verify that a CLASS= X'40' TCU CDS is defined and has the correct channel address. If not, configure it and rerun the test.
- b) Otherwise, an OLT Executive problem most likely exists -- request PSR assistance.

104 INVALID COMMUNICATIONS CONTROL UNIT CLASS - NOT 40

This message is printed when the 2701/2702/2703, 3704, or 3705 TCU CDS CLASS= value is not X'40' as it must be. The section is terminated.

Operator Action:

- a) Verify that the CDS for the symbolic name of the device entered in the TRM is correct and that it has the correct channel address.
- b) Verify that the TCU CDS CLASS= value is X'40'.
- c) Correct any error via reconfiguring and rerun the test.

105 UNSUPPORTED COMMUNICATIONS CONTROL UNIT TYPE

This message is printed when the TCU CDS TYPE= operand indicates the CDS is for a TCU that the OLT does not support e.g. other than 2701, 2702, 2703, 3704, or 3705. The section is terminated.

Operator Action:

- a) Verify that the CDS for the symbolic name of the device entered in the TRM is correct and that it has the correct channel address.
- b) Verify that the TCU CDS TYPE= value is correct.
- c) Correct any error via reconfiguring and rerun the test.

106 CANNOT GET CDS FOR DEVICE

This message is printed if the section can not get the test terminal CDS or the line CDS due to a bad return code from GETCONFG. The section is terminated.

Operator Action:

- a) Verify that the line and test terminal CDS's are properly defined and in the CDS library.
- b) Correct any errors via reconfiguring and rerun the test.

107 UNSUPPORTED OLT EXECUTIVE

This message is printed when the section is being run under an OLT Executive that it does not support e.g. other than OLTSEP, DOS/OLTEP, OS/OLTEP, TOLTEP, or TCAM/TOTE (section T3700ACT will issue this message if run under TCAM/TOTE or TOLTEP). The section is terminated.

Operator Action:

- a) Rerun the test under one of the supported executives.

108 CECOM ERROR

This message is printed when the section detects a bad return code from the CECOM macro used to ask the operator to dial the test terminal. The section is terminated.

Operator Action:

- a) Request PSR assistance - an OLT Executive problem most likely exists.

110 HOST BUFFER SIZE EXCEEDS OLTT BUFFER SIZE

This message is printed when the Host Buffer size specified in the NCP CDS is greater than the OLTT Input/Output Buffer (IOB) size (The IOB is 512 bytes for the OLTT.). The section is terminated.

Operator Action:

- a) Verify that the Host Buffer Size specified in the NCP CDS is the value specified by the UNITSZ= operand of the HOST macro in the Stage 1 Sysgen listing.
- b) If the Host Buffer Size is specified incorrectly, reconfigure the NCP CDS and rerun the test.
- c) If the Host Buffer Size is correct, the NCP will have to be re-sysgened with a UNITSZ= of 512 or less before OLTTs can be run.

111 ERROR IN CDS DIAL DIGIT FIELD

This message is printed when the OLTTCP detects an error in the Terminal CDS Dial Digit Field. This error may be due to the dial digit count being too large, or at least one of the dial digits not being a decimal number, a dash (-), a data set dial pause character (X'6D'), or a 2701/2702/2703 RPQ dial pause character (X'70' - X'79'). The section is terminated.

Operator Action:

- a) Verify the Terminal CDS dial digit field. Correct it via reconfiguring and rerun the test.

112 CANNOT GET CDS FOR NCP

This message is printed if the section can not get the NCP CDS due to a bad return code from the OLT Executive GETCONF macro. The section is terminated.

Operator Action:

- a) Verify that the TCU CDS symbolic name for the NCP CDS is correct.
- b) Verify that the NCP CDS is in the OLT CDS library.
- c) Correct any CDS errors via configuring and rerun the test.

113 INVALID DEVICE FIELD IN NCP CDS

This message is printed when the Device Type value in the NCP CDS is not X'F0' to X'FF'. The section is terminated.

Operator Action:

- a) Correct the NCP CDS Device Type value by reconfiguring and rerun the test.

114 HOST BUFFER SIZE OF ZERO IS INVALID

This message is printed when the OLTTCP detects a 0 value in the NCP CDS Host Buffer size field. The section is terminated.

Operator Action:

- a) Correct the Host Buffer Size specified in the NCP CDS to indicate the value of the UNITSZ= operand in the HOST macro of the Stage 1 NCP Sysgen listing and rerun the test.

115 WRONG TYPE IN CDS FOR CLASS 44, EXPECTED E0-EF

This message is given if the CDS for the line entered in the test request

does not indicate that it is a "Line CDS" (i.e., Device Type value (CDS byte 28) is not E0)

Operator action:

- a) Verify that the line symbolic name entered in the test request is the line you wish to activated. If yes, reconfigure the "line CDS" with Device Type value (CDS byte 28) equal to hexadecimal E0.

115 WRONG TYPE IN CDS FOR CLASS 44, EXPECTED F0-FF

This message is given if the CDS obtained pertaining to the NCP does not indicate NCP Device Type values F0-FF. The section is terminated.

Operator action:

- a) Verify that the test device symbolic name entered in the TRM is that for the device to be tested.
- b) Verify that the channel address (CDS bytes 0-3) is valid in the test device CDS.
- c) Verify that the 3704/3705 CLASS=40 CDS has the proper NCP CDS name in it.
- d) Verify that the NCP CDS Device Type value is F0.
- e) Correct any errors by re-configuring the appropriate CDS and rerun the test.

117 REQUESTED MORECORE = HOST BUFFER SIZE, REQUEST NOT GRANTED.

If the Host Buffer Size indicated in the NCP CDS or via prompting is larger than 4K bytes, the Section will request MORECORE from the executive equal to the size indicated. The executive was unable to provide the amount of core requested. The section is terminated.

Operator Action:

- a) If feasible, provide a larger region in which to run the OLT Executive.

118 WRONG TYPE IN CDS FOR CLASS 40, 06 OR 09 EXPECTED

This message is given if the CDS for the Transmission Control Unit does not indicate a 3705 (TYPE=06), or 3704 (TYPE=09). The section is terminated.

Operator Action:

- a) verify the CDS for the Transmission Control Unit is an 06 or an 09.

122 BAD RETURN CODE FROM READD

This message occurs if the input DD card is missing from the JCL.

Operator Action:

- a) Verify that JCL is correct.

200 SYNC READ FAILURE

This message is valid only for 2701/2702/2703 BSC operation and is printed when the OLTTCF receives an EOT while OLTTCF is trying to read ENQ after receiving CE, DE, and UE to previous write command. The section is terminated.

Operator Action:

- a) Run the 2701/2701/2703 OLTs to determine the cause of the problem.

201 FXIO WAS NOT ACCEPTED

This message is printed when the section issued an EXIO (an EXIO request does a start I/O) to the OLT Executive and the return code indicated the EXIO was not executed. The section is terminated.

Operator Action:

- a) Request PSR assistance - an OLT Executive problem probably exists.

202 EVENT DID NOT COMPLETE IN ALLOTTED TIME

This message is printed when no response is received from the NCP or 2701/2702/2703 within 5 minutes after the start of an OLT Executive EXIO macro (the EXIO macro execution causes a Start I/O to be performed). The section is terminated.

Operator Action:

- a) The TP activity is probably too high. Wait until the activity diminishes and rerun the test.
- b) If the problem persists, request PSR assistance.

203 WAITIO WAS NOT ACCEPTED

This message is printed when the OLT TCP receives a bad return code from the OLT Executive WAITIO macro execution, indicating that the WAITIO was not executed. It is also printed if an event occurred but was not posted in the section TECB. The section is terminated.

Operator Action:

- a) Request PSR assistance - an OLT Executive problem probably exists.

204 CONDITION CODE ERROR ON EXIO

This message is printed when a section Start IO ends with a condition code equal to 2 (Busy) or 3 (unit not operational). The actual condition code is printed in the error message and the section is terminated.

Operator Action:

- a) Define and correct the reason for the indicated condition code error and rerun the test.

205 CHANNEL STATUS ERROR

This message is printed when channel status other than X'00' is posted in the second command status byte in the CSW for a READ or WRITE operation. This indicates that some sort of channel error has occurred. The actual CSW is printed along with this message and the section is terminated.

Operator Action:

- a) Define and correct the reason for the indicated channel status error and rerun the test.

207 3705/3704/2703/2702/2701 STATUS ERROR

This message is printed when the section receives a command status error in the first status byte of the CSW in error. The actual CSW and sense (if any) are printed along with this message and the section is terminated.

Operator Action:

- a) Define and correct the reason for the indicated status error and rerun the test.

208 UNABLE TO ESTABLISH CONNECTION

This message is printed when the section can not establish a line connection. An ENABLE or DIAL operation failed. The response BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request PSR assistance.

209 2701 IS HUNG IN BI-SYNC TRANSPARENT MODE
2703

This message is printed when the section attempts to execute some command other than a write to a BSC line that is in transparent mode. The section is terminated.

Operator Action:

- a) Reset transparent mode and rerun the test.

210 RECEIVED DATA EXCEEDED OLTTCP BUFFER CAPACITY

This message is printed when the 3704/3705 NCP sends more bytes than the OLTTCP IO buffer can hold.

Operator Action:

None.

400 ILLOGICAL STATUS RECEIVED FROM NCP

This message is printed when the NCP response status is not recognizable to the section. The response BTU/PIU is printed as "RCVD DATA" along with this message and the section is terminated.

Operator Action:

- a) Analyze the response BTU/PIU and fix the problem if you can. (See APPENDIX E for a definition of the BTU/PIU format.)
- b) Otherwise, request PSP assistance.

500 - 517 These are self explanatory error messages that may occur during a 3704/3705 load or dump function under T3700ACT.

600 - 699 These are self explanatory error messages that may occur during execution of the 3700GEN Unit Configurator program.

FF0 INVALID ERROR MESSAGE DETECTED

This message is printed when the OLTTCP is linked to for an error print, but the message to be printed is not in his table. This indicates an OLTTCP programming problem.

Operator Action:

- a) Request OLTT programmer assistance.

OLTT MACRO POINTERS - CURRENT= CCCCCC - PREVIOUS= PPPPPP

This message is printed when:

- the OLTT Input/Output Buffer capacity is exceeded.
- an invalid OLTT macro type is found.
- the Branch Displacement Table capacity is exceeded.
- the Table of Contents capacity is exceeded.

The current pointer is a pointer to the OLTT macro being processed when the error occurred. The previous pointer is a pointer to the last macro successfully processed. The reason for this message is explained by previous messages.

OLTT IS BEING TERMINATED

This message says that the OLTT is terminating due to critical errors. The reason for the termination is explained by the previous message(s).

4.2 SPECIAL ERROR PRINTOUTS

Special error messages and analysis for 3705 NCP operation. If more detailed information about NCP operation (e.g., BTU/PIU content, commands, etc.) is required, see the NCP PLM SY30-3003.

4.2.1 LINE STATUS ERROR

*RESPONSE RECEIVED - LINE STATUS ERROR = BBBB BBB B BBB BBBB B BBBBBBBB

This message is included in the OLTT error printout when the OLTTCP detects bad line status in the NCP response to an OLTT IO sequence.

The following is an example of such a printout:

```
*T3700OLT -00 RTN 021 DEV/LN 0020 G1050 ECA 0
ALL CHARACTER PRINT TEST
SEQUENCE SENT - SELECT-ANY DEVICE
RESPONSE EXPECTED - CIRCLE-Y
*RESPONSE RECEIVED - LINE STATUS ERROR = 0000 100 0 111 0010 0 00000000
```

Using APPENDIX C it can be determined that the problem was a hardware CSB check. A detailed explanation of the LINE STATUS ERROR fields is given in Appendix C.

4.2.2 BTU/PIU

```
BTU/PIU
RCVD DATA XXXX.....XXXX
```

This message is printed with various of the OLTT error printouts. It contains the BTU/PIU and can be used to determine the reason for the error. See the BTU/PIU description in APPENDIX E.

4.2.3 BTU/PIU WITH OLTTCB

```

          BTU/PIU          OLTTCB
RCVD DATA  XXXX.....XXXXXXXXXXXXXXXXXXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXX (+ any response text data)

```

This message is included with various of the OLTT error printouts. It can be used to determine the 3704/3705 status, the OLTT status, the terminal status, and/or the NCP status resulting from the OLTT to NCP communication causing the error. An example of such a printout is as follows:

```

*T3700RSP-00 RTN 000 DEV/LN 000A PP2770NP ECA 0
TEST MESSAGE REQUEST
022 OLTT INTERPRETIVE COMMAND ERROR
OLTT IS BEING TERMINATED
RCVD DATA 00000004E000E80003004000001A140000001D0701030000A0
0200200010080600004480100001B2

```

The first 14/22 bytes of the RCVD DATA is usually (see NOTE 1) the BTU/PIU response to the last OLTT to NCP communication. It can be used to determine the NCP status at the time of the error. The BTU/PIU format is defined in APPENDIX E.

NOTE 1: The BTU/PIU will be preceded by prefix characters if the NCP Sysgen has specified the BFRPAD= operand in the HOST macro. When specified, these characters will be prefixed to the BTU in "RCVD DATA" printouts. When prefix characters are printed, the first byte of the "RCVD DATA" indicates the number of prefix characters. This byte can be used to index into the "RCVD DATA" to the start of the BTU/PIU.

The next 26 bytes of the RCVD DATA is the OLTT Control Block (OLTTCB). These bytes indicate the terminal status, the 3704/3705 status, and/or the OLTT status. The OLTTCB format is defined in APPENDIX D.

4.2.4 BTU/PIU WITH I/O BUFFER

```

          BTU/PIU
RCVD DATA  XXXX.....XXXX (+ last IO buffer)

```

This message is included with various of the OLTT error printouts. It is composed of the 14/22 byte BTU/PIU followed by the last interpretive command block sent to the NCP. See the BTU/PIU description in APPENDIX E. Also, see APPENDIX H to determine what the interpretive commands do.

4.2 OTHER MESSAGES TO THE OPERATOR

4.2.1 OLT messages for TRM TEST= T3700OLT

Note that the "ITR" message number prefix and the "T" or "D" suffix of the following messages will only be printed under TOTE or TOLTEP. Control terminal messages output by the OLT under any other executive will print the same 3 character message number, but no prefix or suffix characters are printed. Control messages transmitted to the test terminal are void of these prefix and suffix characters regardless of the executive the OLT is running under.

(ITB)000(I) PLINK ERROR - SECTION TERMINATED.

This message is printed at the control terminal when the OLTTC could not be loaded due to a PLINK load error.

Operator Action:

- a) Verify if module N3700A is in the OLT library.
- b) If it is not, add it and re-enter the TRM.
- c) If it is, an OLT Executive PLINK load error has occurred. Call a PSR and advise him of the problem.

(ITB)001(I) ERROR IN EXT= OPTION.

The TRM contained an undefined or invalid EXT= option. (See Section 3.1 of this document under OPT for valid options.)

(ITB)002(I) THE OLT TEST REQUEST FORMAT IS: "NNLL".

(ITB)002(I) NN IS A 2 OR 3 DECIMAL DIGIT TEST NUMBER.

(ITB)002(I) LL IS AN OPTIONAL 2 DECIMAL DIGIT TEST LOOP COUNT.

(ITB)002(I) OPTIONS ARE: END, RM, RC, PC, SC, PT, ST.

This message is printed at the control terminal if the TRM contained no routine requests. If the EXT= RT option was entered in the TRM, this message will precede the test request message to the test terminal, except that the options line will be:

(ITB)002(I) OPTIONS ARE: END, LM, LC, PC, SC, PT, ST.

The valid test number entries (NN values) may be obtained from Section 5.0 - OLT TEST MESSAGES.

The options are defined as follows:

- LL - the test loop count is optional, but when entered it must be 2 decimal characters in length. If omitted or 00, 1 is assumed.
- END - will terminate the OLT test.
- RM - when entered from the control terminal, allows the control terminal operator to pass a message to the test terminal operator along with giving him control of test requesting. The message can be up to 58 characters and should be separated from RM by a space. "RM" is an invalid entry from the test terminal. This option must be entered by itself. (See NOTE 1 below.)
- RC - when entered from the control terminal causes test control to be passed to the test terminal. (See NOTE 1 below.)
- LM - when entered from the test terminal, allows the test terminal operator to return control of test requesting to the control terminal operator along with up to a 58 character message. The message should be separated from LM by a space. "LM" is an invalid entry from the control terminal. This option must be entered by itself.
- LC - when entered from the test terminal causes test control to be returned to the control terminal.

PC, SC, PT, ST - See definition of PCn, SCn, PTn and STn under EXT= option in Section 3.1 of this document.

NOTE 1: Options RM or RC must not be entered unless the remote test terminal has both

output and input capability.

NOTE 2: The options RC, LC, PC, SC, PT, or ST may be entered in the EXT= field of the TRM. (See Section 3.1 under OPT.)

(ITB)003(D) ENTER AN OLTT TEST REQUEST OR OPTION.

When this message is printed at the control terminal it gives the local operator the capability of requesting OLTT tests and the responsibility of allowing OLTT test requests from the test terminal. The response should be:

- a.>NNLL - to request test message NN, repeated LL times, where LL is optional.
- b. One of the above defined options - END, RM, RC, PC, SC, PT, or ST.
- c. A combination of the above, delimited by commas and not to exceed 44 bytes in length. Note that entries are executed one at a time in the order entered.

An example entry is:

Under OLT(S)EP from the System Console:

r 04,'PT1 01 ST2,13,15.PC2.SC1,RC'

Under TOTE if the control terminal is:

System Console r 1,PT1 01 ST2,13,15.PC2.SC1,RC

Start/Stop 99999idPT1 01 ST2,13,15.PC2.SC1,RC

Bi-Sync SOH%/idPT1 01 ST2,13,15.PC2.SC1,RC

Operator Console olt=idPT1 01 ST2,13,15.PC2.SC1,RC
(refrain from using)

NOTE: The id value for Start/Stop, Bi-Sync, and operator console control terminals must be the 2 character identification value assigned by TOTE at the start of the test. It will be printed by TCAM/TOTE at the terminal.

This entry would cause routines 01, 13, and 15 to be executed in that order to output device 2 (ST2) and input device 1 (PT1) of the test device. Then the RC option would cause the next test request message to go to output device 1 (SC1) with the request being read from input device 2 (PC2). Note that commas are the delimiters between sequential operations, while grouped options/routine numbers such as "PT1 01 ST2" are delimited by a space or period. Entry execution proceeds from left to right.

When this message (003) is printed at the test terminal, the remote operator response should be:

- a.>NNLL - to request test message NN, repeated LL times, where LL is optional.
- b. One of the above defined options - END, LM, LC, PC, SC, PT, or ST.
- c. A combination of the above, delimited by commas and not to exceed 44 bytes in length. Note that entries are executed one at a time in the order entered.

An example entry is:

1602.PT2.ST1.PC1,SC1,1403,15,END

This entry would cause routines 16, 14, and 15 to be executed in that order to output test device 1 (ST1) and input test device 2 (PT2), with any control messages going to output device 1 (SC1) and control message responses coming from input device 1 (PC1). "END" will cause the OLTT to be terminated. Note that commas are the delimiters between sequential operations. The order of execution is from left to right. Grouped options/routine numbers such as "1602.PT2.ST1.PC1.SC1" are delimited by a space or period.

(ITB)004(D) INVALID ENTRY. RE-ENTER THE OLTT TEST REQUEST.

This message indicates an invalid OLTT test request or option was entered from the

control or test terminal. If 5 successive invalid entries are made from the test terminal, test control will be returned to the control terminal.

Operator Action:

- a) Check the validity of the previous request. Correct the error and re-enter the test request. See message 003 for test request entry description.

(ITB)005(I) W3700XXX OLTT MODULE PLINK LOAD ERROR.
(ITB)005(I) TEST MESSAGE NN NOT DEFINED OR NOT ON CPU DISK.

This message is printed when the requested test message could not be loaded.

Operator Action:

- a) Verify that the entered test message NN is valid (refer to Section 5.1 in this document entitled, OLTT Test Messages).
- b) If it is, verify if module W3700XXX is in the OLTT library.
- c) If it is not in the library, add it and re-enter your test request.
- d) If the test message is valid and is in the OLTT library, an OLT Executive PLINK load error has occurred. Call a PSR and advise him of the problem.

(ITB)006(I) YOUR TEST REQUEST IS NOT BEING RECEIVED PROPERLY.
(ITB)006(I) ENTER IT FROM THE CONTROL TERMINAL.

This message will be printed at the test terminal when 5 successive invalid test requests have been made from the test terminal. Control is then returned to the control terminal.

Operator Action:

- a) Advise the control terminal operator of the tests you wish to run and let him request them.

(ITB)007(I) THE OLTT USER MADE 5 SUCCESSIVE INVALID REMOTE REQUESTS.
(ITB)007(I) USE THE CONTROL TERMINAL TO ENTER THE OLTT TEST REQUESTS.

This message is printed at the control terminal when 5 successive invalid OLTT requests have been received from the test terminal.

Operator Action:

- a) Determine what test to run from the test terminal operator and request them at OLTT test request time at the control terminal.

(ITB)005(I) W3700PXX OLTT MODULE PLINK LOAD ERROR.

This test message is printed when a PLINK load error is detected when trying to load a critical operator communication module.

Operator Action:

- a) Verify if module W3700PXX is in the OLTT library.
- b) If it is not, add it and re-enter your TRM.
- c) If it is in the OLTT library, an OLT Executive PLINK load error has occurred. Call a PSR and advise him of the problem.

(ITB)005(I) V3700XX OLTT MODULE PLINK LOAD ERROR.
(ITB)009(I) AN INVALID IO MODULE IS DEFINED IN THE CDS OR TEST MESSAGE.

This message will occur at the control terminal when a PLINK load error is detected while trying to load IO module V3700XXX.

Operator Action:

- a) Verify that V3700XXX is the required IO module by checking the CDS Line Control byte in the terminal CDS and the requested test message IO module requirements.
- b) If the module is a valid one, add it to the OLTT library and re-enter

the TRM.

- c) If the module is already in the OLTT library, an OLT Executive PLINK load error has occurred. Call a PSR and advise him of the problem.

(ITB)010 (I) ERROR XMITTING/RECEIVING TEST TERMINAL CONTROL MESSAGE.

This message is printed at the test terminal when an error is detected while transmitting a control message to or receiving control data from the test terminal.

Operator Action:

- a) Wait for the next message. If none occurs, go enter request from control terminal.

(ITB)010 (I) ERROR XMITTING/RECEIVING TEST TERMINAL CONTROL MESSAGE.
(ITB)011 (I) OLTT ERP FAILED - USE THE CONTROL TERMINAL.

This message is printed at the control terminal when an unrecoverable error is detected while trying to transmit or receive a CE communication message to or from the test terminal.

Operator Action:

- a) Determine what tests are to be run from the test terminal operator and enter them at the control terminal at OLTT test request time.

(ITB)012 (I) ERROR IN OLTT ROUTINE NN.

This message is printed at either the control terminal or test terminal when OLTT routine number NN detected a failure.

Operator Action:

- a) Check error printout on the OLT print device to determine the exact cause of the failure.
- b) Replace or repair failing component and re-run routine NN.

(ITB)013 (I) OLTT ROUTINE NN ABORTED DUE TO UNRECOVERABLE ERROR.

This message is printed at the control terminal when the OLTTCP has detected some unrecoverable system condition during the execution of routine NN.

Operator Action:

- a) Check the error printout on the OLT print device to determine the nature of the error causing the abort.
- b) Fix the problem and re-run routine NN.

(ITB)014 (I) INVALID POLL OR SELECT VALUE FOR THE CONTROL DEVICE.
(ITB)014 (I) CHECK THE ENTERED OPTIONS PC AND/OR SC.

This message is printed at the control terminal if the POLL or SELECT "n" value entered in the PC or SC options was determined to be invalid.

Operator Action:

- a) Correct the option(s) in error at test request time and retry your request.

(ITB)015 (I) INVALID POLL OR SELECT VALUE FOR THE TEST DEVICE.
(ITB)015 (I) CHECK THE ENTERED OPTIONS PT AND/OR ST.

This message may be printed at the control or test terminal if the POLL or SELECT "n" value entered in the PT or ST options was determined to be invalid.

Operator Action:

- a) Correct the option(s) in error at test request time and retry your request.

(ITB)016 (I) END OF OLTT TESTING.

This message is printed at the control and/or test terminal when the OLTT option "END" is entered. Testing will then be terminated.

(ITB) 100 (I) PLINK ERROR - SECTION TERMINATED

This message is printed at the control terminal when module W3700PAG could not be loaded due to a PLINK load error. This indicates that 2 successive PLINK load errors have occurred.

Operator Action:

- a) Verify if module W3700PAG is in the OLT library.
- b) If it is not, add it and re-enter the TRM.
- c) If it is, an OLT Executive PLINK load error has occurred. Call a PSR and advise him of the problem.

4.3.2 OLT messages for TRM TEST= T3700RSP

Note that the "ITB" message number prefix and the "I" or "D" suffix of the following messages will only be printed under TOTE or TOLTEP. Control terminal messages output by the OLT under any other executive will print the same 3 character message number, but no prefix or suffix characters are printed.

(ITR)001(D) RPT TO BE RUN? (Y) OR (N)

This message is printed at the control terminal when the test section is ready to respond to a remote test request.

Operator Action:

- a) Reply with "Y" if the remote test device has an RPT test request ready to send. Note that the RPT requestor program (if required) must be running in the test device and ready to send a request, before responding "Y" to this message. (See Section 5.2 - RPT Compatibility.)
- b) Reply with "N" if you want to terminate testing. (Testing will automatically be terminated if response is not "Y".)

(ITB)002(I) TEST XX=NN YY=NN COMPLETED

This message is printed at the control terminal when the RPT test is successfully completed. (NN= a valid XX or YY value.)

Operator Action:

None.

(ITB)003(I) TEST XX=NN YY=NN TERMINATED DUE TO ERROR

This message is printed at the control terminal when testing is terminated due to an unrecoverable error.

Operator Action:

- a) Use the error printout to determine the cause of the failure.
- b) Fix the problem and re-run the test.

(ITB)004(I) TEST CANCELLED - UNABLE TO RECEIVE RPT

This message is printed whenever the RPT request is not received successfully.

Operator Action:

None.

(ITB)005(I) INVALID RPT

Data was received but was not a valid RPT.

Operator Action:

- a) Compare received data with RPT format and re-enter RPT request.

(ITB)100(I) PLINK ERROR - SECTION TERMINATED

This message is printed at the control terminal when module W3700PEE could not be loaded due to a PLINK load error. This indicates that 2 successive PLINK load errors have occurred.

Operator Action:

- a) Verify if module W3700PEE is in the OLT library.
- b) If it is not, add it and re-enter the TRM.
- c) If it is, an OLT Executive PLINK load error has occurred. Call a PSR and advise him of the problem.

4.3.3 OLT messages for TRM TEST= T3700REQ

Note that the "ITB" message number prefix and the "I" or "D" suffix of the following messages will only be printed under TOTE or TOLTEP. Control terminal messages output by the OLT under any other executive will print the same 3 character message number, but no prefix or suffix characters are printed.

(ITB)001(D) ENTER XXYY OR (T) TO TERMINATE

This message is printed at the control terminal when the test section is ready for a test request.

Operator Action:

- a) Reply with a 2 decimal digit test number "XX" and a 2 decimal digit test loop count "YY". Note that the RPT responder program must be running in the test device and ready to receive a request, before "XXYY" can be entered. (See Section 5.2 - RPT Compatibility for a definition of the valid tests.)
- b) Or, reply with "T" if you desire to terminate testing.

(ITB)002(I) INVALID XXYY ENTRY

This message is printed at the control terminal when the previous XXYY value entered was found to be invalid.

Operator Action:

- a) Reply with a 2 decimal digit test number "XX" and a 2 decimal digit test loop count "YY". Note that the remote responder program must be running and ready to receive a request before "XXYY" can be entered. (See Section 6.0 - RPT Compatibility for a definition of the valid tests.)
- b) Or, reply with "T" if you desire to terminate testing.

(ITB)003(D) ENTER TEST DATA OR (Y) FOR A-Z, 0-9

This message is printed at the control terminal when test message IX=01 (Echo Test) has been requested to be run. It is issued to request the echo data that is to be transmitted.

Operator Action:

- a) Enter up to 50 characters of echo data.
- b) Enter "Y" if you want to use A thru Z and 0 thru 9 as your echo data.

(ITB)004(I) TEST XX=NN YY=NN COMPLETED

This message is printed at the control terminal when the RPT test is successfully completed. (NN= a valid XX or YY value.)

Operator Action:

None.

(ITB)005(I) TEST XX=NN YY=NN TERMINATED DUE TO ERROR

This message is printed at the control terminal when testing is terminated due to an unrecoverable error.

Operator Action:

- a) Use the error printout to determine the cause of the failure.
- b) Fix the problem and re-run the test.

(ITB)100(I) PLINK ERROR - SECTION TERMINATED

This message is printed at the control terminal when module W3700PEE could not be loaded due to a PLINK load error. This indicates that 2 successive PLINK load errors have occurred.

Operator Action:

- a) Verify if module W3700PEE is in the OLT library.

- b) If it is not, add it and re-enter the TRM.
- c) If it is, an OLT Executive PLINK load error has occurred. Call a PSR and advise him of the problem.

4.3.4 COMMON MESSAGES

Note that the "ITC" message number prefix and the "I" or "D" suffix of the following messages will only be printed under TOTE or TOLTEP. Control terminal messages output by the OLTT under any other executive will print the same 3 character message number, but no prefix or suffix characters are printed.

(ITC)001(D) ENTER P (THEN/AFTER) DIAL NNNN

This message is issued when the test terminal is defined as being on a switched line without autodial. NNNN is the dial number defined in the Dial Digit field of the terminal CDS. Note that the program does not verify the number used, therefore a number other than NNNN may be dialed without changing the CDS. When the message is printed, establish the line connection by manually dialing the required number as indicated below. (The connection may be established in either direction permitted by your data set options.)

Operator Action:

- a) If the message indicates "...AFTER DIAL...", you have an NCP configuration and must establish the connection by dialing the required number and THEN responding with "P".
- b) If the message indicates "...THEN DIAL...", you have a 270X or EP configuration and must establish the connection by responding "P" and then dialing the required number. (Under 270X or EP operation, the ENABLE command is not issued until after the "P" response.)

(ITC)111 - (ITC)131 These messages may occur in the 3704/3705 load and dump utility functions when running T3700ACT. They are self explanatory.

(ITC)132(I) LOAD FAILED - ERROR CODE=XX

This message occurs when an unrecoverable error is detected while attempting to load the 3704/3705 via T3700ACT. The type of error that occurred is indicated by the XX value. Valid XX error codes and corresponding definitions are:

- 01 - A return code error occurred from the CECOM macro in the CARD processor module.
- 02 - The operator decided to terminate the load after a CARD format error was detected.
- 04 - READD return code error.
 - Function not available.
 - Macro level is not 2.
 - READD device not available (volume).
 - Reset/Backspace request and data set is on cards.
- 08 - READD return code error.
 - Buffer address is below test section load address (OLTSEP only).
 - Buffer count is equal to 0.
 - Device goes 'not ready' and operator responds TERM.
 - Permanent read, backspace record or reset error.
- 0C - READD return code error
 - End of data set and load module not found.
- 21 - Tape record problem.
- 22 - Tape record numbers are not sequential.

(ITC)151 - (ITC)164 These messages may occur in the 3704/3705 load and dump utility functions when running T3700ACT. They are self explanatory.

(ITC)200 - (ITC)899 These messages are OLT(S) EP (T3700GEN) and TOTE Unit Configurator messages that prompt for configuration information. They are self explanatory.

(ITC)203(I) DATA RECEIVED WAS =

(ITC)205(I) 1ST SUSPECTED ERROR IS

(ITC)207(I) ERROR. INVALID ENTRY. AN * MARKS SUSPECTED ENTRY.

(ITC)210(I) REQUEST FOR U3700FA? FAILED. UNIT CONFIG ABORTED.

(ITC)211(I) INVALID RESPONSE. RE-ENTER.

(ITC)212(I) IMPROPER RESPONSE - UNIT CONFIG ABORTED.

(ITC)213(I) CAN NOT DELETE MODULE.

(ITC)214(I) CONFIG ABORTED.

(ITC)215(I) THE RESOURCE ID HAS BEEN CHANGED.

(ITC)216(I) THE RESOURCE ID HAS NOT CHANGED SINCE THE LAST CONFIG RUN.

(ITC)217(D) ANY MORE CHANGES? REPLY 'Y' FOR YES OR 'N' FOR NO.

(ITC)220(I) ERROR. INVALID HEX ENTRY. ONLY 0-9 AND A-F ARE VALID CHARS.

(ITC)221(I) ERROR. A) OR (IS MISSING OR AN INVALID LENGTH IN().

(ITC)222(I) ERROR. MAG CD RDR MUST HAVE KEYBOARD INSTL. START OVER.

(ITC)223(I) ERROR. DEV. AND CU BUFFERS MUST BE THE SAME FOR 3275.

(ITC)224(I) ERROR. AUTOCALL REQUIRES THAT SWITCHED LINE BE CONFIGURED.

(ITC)230(I) **** LIST 7 **** SELECT ONE CHARACTER FROM EACH COLUMN.

(ITC)231(I)	COL 1	COL 2	
(ITC)231(I)	-A- 3277	-E- LOCAL	1008
(ITC)231(I)	-B- 3275	-F- SNA/SDLC	421D
(ITC)231(I)	-C- PRINTER	-G- PRESNA NCP	4416
(ITC)231(I)	-D- OTHER	-H- EP/270X	4216 (T3270A)
(ITC)231(I)	EXAMPLE: 'AF' WOULD BE SNA 3277.		

(ITC)233(D) ENTER 2 CHARACTERS FROM LIST 7.

(ITC)234(I) ERROR. REPLY IS NOT 2 CHARACTERS. START OVER.

(ITC)235(I) ERROR. A LOCAL 3275 IS INVALID. START OVER.

(ITC)240(I) **** LIST 8 ****

(ITC)241(I)	-A- A MAG CARD READER INSTL	-B- A KEYBOARD IS INSTAL.
(ITC)241(I)	-C- A LIGHT PEN IS INSTL.	-D- DEV HAS 480 CHAR BUFFER.
(ITC)241(I)	-E- CU HAS 480 CHAR BUFFER	-F- KATAKANA FEAT IS INSTL.
(ITC)241(I)	-G- SIGNATURE DISP RPQ	-H- 129 DATA RECORDER RPQ.
(ITC)241(I)	-I()- ENTER THE LOWEST CHANNEL ADDR AND # OF CONTIGUOUS	
(ITC)241(I)	ADDR IN HEX, E.G. I(014A1C) IS ADDR OF 14A & 28 ADDRS.	

(ITC)242(D) ENTER CHARACTERS FROM LIST 8.

(ITC)243(I) ERROR. 'I' IS A REQUIRED ENTRY. START OVER.

(ITC)244(I) ERROR. NO) FOUND OR NOT 6 CHAR IN (). START OVER.

```
(ITC)250(I) **** LIST 9 ****
(ITC)251(I) -E- NONBUFFERED PRINTER INST      -F- A LIGHT PEN IS INST.
(ITC)251(I) -G- A MAG CARD READER INST.        -H- A KEYBOARD IS INST.
(ITC)251(I) -I- THE TCU IS SHARED              -J- 2 CH SWITCH ON TCU.
(ITC)251(I) -K- ESC WORLD TRADE DATASET        -L- KATAKANA FEAT IS INST.
(ITC)251(I) -M- LEASED LINE                    -N- AUTOCALL FEAT ON SW-LN.
(ITC)251(I) -O- DEVICE HAS 480 CHAR BUF        -P- CU HAS 480 CHAR BUFFER.
(ITC)251(I) -Q- ASCII LINE CODE                -R()- COPY FEAT. HEX DEV # OF.
(ITC)251(I)      EBCDIC IS DEFAULT              TERMINAL IN(). 00-1F.
(ITC)251(I) EXAMPLE: JR(1C) IS 2 CH SW. SWITCHED LN, EBCDIC AND
(ITC)251(I) COPY FEATURE TERMINAL DEV NUMBER 28.

(ITC)252(D) ENTER CHARACTERS FROM LIST 9.

(ITC)255(I) ERROR. AUTO CALL FEAT. CANNOT BE ON LEASED LINE.

(ITC)260(I) **** LIST 10 ****
(ITC)261(I) -A- NONBUFFERED PRINTER INST      -B- LIGHT PEN INSTL.
(ITC)261(I) -C- A MAG CARD READER INSTL.      -D- A KEYBOARD IS INSTL.
(ITC)261(I) -E- INTEGRATED MODEM INSTL.        -F- TCU USES TRANSPARENCY.
(ITC)261(I) -G- THE TCU IS SHARED              -H- 2 CH SWITCH ON TCU.
(ITC)261(I) -I- ESC WORLD TRADE DATA SET     -J- KATAKANA FEATURE.
(ITC)261(I) -K- ASCII CODE, NOT EBCDIC        -L- COPY FEAT. IS INSTL.
(ITC)261(I) -M- DEVICE HAS 480 CHAR BUF        -N- CU HAS 480 CHAR BUFFER.
(ITC)261(I) -O- SIGNATURE DISP RPQ            -P- 129 DATA RECORDER RPQ.
(ITC)261(I) EXAMPLE: GL IS SHARED, COPY FEAT AND EBCDIC CODE.

(ITC)262(I) ENTER CHARACTERS FROM LIST 10.

(ITC)270(I) **** LIST 11 ****
(ITC)271(I) -A()- LEASED LN. DEV ADDR, POSS AND SEL CHAR IN ().
(ITC)271(I) -B()- ID SEQUENCE REQ. ENTER 8 CHAR HEX ID SEQ IN ().
(ITC)271(I) -C()- AUTOCALL. ENTER UP TO 20 DIAL DIGITS IN ().
(ITC)271(I) -D- LINE SPEED IS 6-1200 BPS      DEFAULT IS
(ITC)271(I) -E- LINE SPEED IS 48-7200 BPS    2400 BPS.
(ITC)271(I) -F- 2701 INTERFACE B
(ITC)271(I) -G- 2701 TRANSMISSION CODE B
(ITC)271(I) EXAMPLE: A(C1C2E3) IS LEASED LINE WITH DEV ADDR A,
(ITC)271(I) POLL CHAR B, SEL CHAR T AND LINE SPEED OF 2400 BPS.
(ITC)272(D) ENTER CHARACTERS FROM LIST 11.

(ITC)273(I) ERROR. ID SEQ OR AUTOCALL CANNOT BE ON LEASED LINE.
(ITC)274(I) ERROR. LINE SPEED MUST BE EITHER D OR E OR NEITHER D OR E.

(ITC)280(I) **** LIST 1 ****
(ITC)281(I) -A- 2740 MODEL 1                  -B- RECORD CHECKING, LRC.
(ITC)281(I) -C- DEVICE IS SHARED              -D- 2 CHANNEL SWITCH ON TCU.
(ITC)281(I) -E- CORRESPONDENCE                -F- BCD. DEFAULT IS EBCD LINE CODE.
(ITC)281(I) -G- SWITCHED TP LINE              -H- AUTOCALL. DIAL DIGITS IN ().
(ITC)281(I) -I- MULTIPOINT LINE              -J()- STATION ADDR IN ().
(ITC)281(I) EXAMPLE: CF IS SHARED AND BCD LINE CODE.

(ITC)282(D) ENTER CHARACTERS FROM LIST 1.

(ITC)284(I) ERROR. 'J' IS A REQUIRED ENTRY. START OVER.

(ITC)286(I) ERROR. STATION ADDRESS MUST BE 2 CHARS ENCLOSED IN ().

(ITC)288(I) ERROR. LINE CODE MUST BE EITHER E OR F OR NEITHER E OR F.

(ITC)290(I) **** LIST 3 ****
(ITC)291(I) -A- SWITCHED LINE                  -B()- AUTOCALL. DIAL DIGITS IN ().
(ITC)291(I) -C- STATION CONTROL                -D- TRANSMIT CONTROL
(ITC)291(I) -E- MULTIPOINT LINE                -F()- ENTER ADDR SEL CHAR IN HEX.
(ITC)291(I) -G- BUFFER SIZE=120                -H- BUFFERSIZE=248. DEFAULT IS 440.
(ITC)291(I) EXAMPLE: CP(C2) IS STATION CTL AND SEL CHAR B.

(ITC)292(D) ENTER CHARACTERS FROM LIST 3.

(ITC)294(I) STATION SELPCT AND XMIT CNTL CANNOT COEXIST. REENTER.

(ITC)296(I) ERROR. A C MUST BE ENTERED IF F IS ENTERED.

(ITC)297(I) ERROR. ENTER EITHER G OR H OR NEITHER G OR H.

(ITC)300(I) **** LIST 2 ****
```

(ITC)301(I) SELECT THREE (3) INPUT DEVICES AS FOLLOWS:
 (ITC)301(I) ENTER 1ST CHAR. K IF KEYBOARD OR X IF NO KEYBOARD.
 (ITC)301(I) 2ND & 3RD CHARS OF REPLY ARE FOR READS 1 AND 2.
 (ITC)301(I) (X) IF NONE AND (P) IF 1054, (C) IF 1056.
 (ITC)301(D) E.G., 'KPC' FOR KBRD,RDR1 A 1054 AND RDR2 A 1056.

(ITC)303(I) CCCC DATA RECEIVED

(ITC)304(I) CCCC ENTRY IN ERROR

(ITC)305(I) **** LIST 2B ****
 (ITC)306(I) SELECT FOUR (4) OUTPUT DEVICES AS FOLLOWS:
 (ITC)306(I) 1ST & 2ND CHARS FOR PRINTERS 1 & 2,
 (ITC)306(I) (X) IF NONE AND (P) IF PRESENT.
 (ITC)306(I) 3RD & 4TH CHARS FOR PUNCHES 1 & 2,
 (ITC)306(I) (X) IF NONE, (P) IF 1055, (C) IF 1057/58.
 (ITC)306(I) PXP FOR PRTR1, NO PRTR2, PUNCH 1 AND 2 ARE 1055'S.

(ITC)310(I) **** LIST 4****
 (ITC)311(I) -A- SHARED DEVICE -B- ASCII LINE CODE
 (ITC)311(I) -C- COMPONENT SEL IS REQ. -D- ESC DATA SET ATTCH.
 (ITC)311(I) -E- 2 CHANNEL SWITCH -F- SWITCHED LINE
 (ITC)311(I) -G()- MULTIPOINT LN. HEX
 (ITC)311(I) POLL CHAR IN ().
 (ITC)311(I) -H()- 2701 SET MODE. HEX
 (ITC)311(I) SET MODE CHAR IN ().

(ITC)312(D) ENTER CHARACTERS FROM LIST 4.

(ITC)313(I) ERROR. REQUIRED ENTRY MUST BE 2 CHAR ENCLOSED IN ().

(ITC)314(I) ERROR. ENTRY 'H' IS REQUIRED FOR 2701 TCU.

(ITC)320(I) **** LIST 5 ****
 (ITC)321(I) -A()- AUTOCALL. ENTER DIAL DIGITS IN ().
 (ITC)321(I) -B()- TD SEQ REQ. ENTER HEX ID SEQ IN ().
 (ITC)321(I) -C()- SECURITY ID SEQ. ENTER HEX CHARS IN ().
 (ITC)321(I) 2780 MODEL NUMBER, SELECT ONE OF THE FOLLOWING:
 (ITC)321(I) -D- MODEL 1,RDR & PRT -E- MODEL 2,RDR & PRT & PCH.
 (ITC)321(I) -E- MODEL 3, PRT ONLY -G- MODEL 4, RDR & PCH

(ITC)321(I) EXAMPLE: B(C1C2C3) A(555-1212) IS AUTOCALL WITH
 (ITC)321(I) PHONE # 5551212 AND SEQ ID OF ABC.

(ITC)322(D) ENTER CHARACTERS FROM LIST 5.

(ITC)324(I) ERROR. SECURITY SEQ. REQUIRES THAT ID SEC BE CONFIG.

(ITC)326(I) ERROR. 2780 MODEL NUMBER MUST BE ENTERED. START OVER.

(ITC)328(I) ERROR. MORE THAN ONE MODEL NUMBER ENTERED. START OVER.

(ITC)330(I) **** LIST 6 ****
 (ITC)331(I) SELECT 4 INPUT DEVICES FROM THE FOLLOWING:
 (ITC)331(I) (X) NONE. (A) KBRD, (B) 5496, (C) 2502.
 (ITC)331(I) (D) 2265, (F) 1442, (GN) 1054, (H) 1017,
 (ITC)331(I) (I) 1056, (M) 1255, (N) IBM 50.
 (ITC)331(I) A/X FOR POS 1; B/C/D/F/G/H/I/M/N FOR POS 2 THRU 4.
 (ITC)331(I) FOR EXAMPLE: APIC DEFINES KBRD, 1442, NONE AND 2502.

(ITC)332(D) ENTER CHARACTERS FROM LIST 6.

(ITC)333(I) CCCC DATA RECEIVED

(ITC)334(I) CCCC ENTRY IN ERROR

(ITC)335(I) **** LIST 6B ****
 (ITC)336(I) SELECT 4 OUTPUT DEVICES FROM THE FOLLOWING:
 (ITC)336(I) (X) NONE, (A) 1053, (B) 5496, (C) 545,
 (ITC)336(I) (D) 2265, (F) 1442, (G) 1055, (H) 1018, (I) 1057/58,
 (ITC)336(I) (J) 2203, (K) 2213, (L) 1443.
 (ITC)336(I) A/J/K/L FOR POS 1, AND A-D F-L FOR POS 2 THRU 4.
 (ITC)336(I) FOR EXAMPLE: KFLD DEFINES 2213, 1442, 1443 AND 2265.

(ITC)337(D) ENTER CHARACTERS FROM LIST 6B.

(ITC)340 (I) DUE TO LACK OF INFO, THE I/O DEVICE FIELDS CANNOT
(ITC)340 (I) BE CONFIGURED AT THIS TIME. IN ORDER TO ALLOW AN
(ITC)340 (I) EXHIBIT OF A 2972 CDS THAT CAN BE USED AS A GUIDE TO
(ITC)340 (I) PUNCH A 2972 CDS, THE INPUT AND OUTPUT DEVICE FIELD
(ITC)340 (I) COUNT WILL BE SET TO 10 WITH ALL DEVICES ZEROED OUT.

(ITC)350 (I) DO YOU WANT THE CUSTOMER TO GIVE PERMISSION TO USE THIS
(ITC)350 (D) DEVICE BEFORE A TEST CAN BE RUN? REPLY 'Y' YES OR 'N' NO.

(ITC)800 (I) THE REQUIRED CDS FOR IPT/OLT OR EP/NCP OLTT/OLLT TESTS IS:
(ITC)800 (I) 3704/3705 CDS - REQUIRED BY IPT/OLT & EP/NCP OLTT/OLLT.
(ITC)800 (I) NCP AND LINE CDS - REQUIRED FOR NCP OLTT/OLLT TESTS ONLY.
(ITC)800 (I) TERMINAL CDS - REQUIRED BY EP AND NCP OLTT TESTS.
(ITC)800 (I) 3704/3705, NCP, AND LINE CDS CARDS ARE NOT REQUIRED FOR
(ITC)800 (I) OLTT/OLLT TESTS WITH NCP3,2/TOLTEP(SNA2 RELEASE).
(ITC)800 (I) CONFIGURE THE CDS'S IN THE FOLLOWING ORDER: ALL 3704/3705.
(ITC)800 (I) CDS'S, ALL NCP CDS'S, ALL LINE AND TERMINAL CDS'S.
(ITC)800 (D) READ ALL OF MESSAGE 800 AND THEN 'EOB' TO CONTINUE.

(ITC)801 (I) VALID 3700 CDS DEVICE NUMBERS ARE 3704, 3705, NCP, LINE,
(ITC)801 (I) 1050, 2740, 2741, 2770, 2780, 2972, 3270, 3767, 3770,
(ITC)801 (I) 3780, RETS.

(ITC)802 (D) ENTER A 4 DIGIT DEVICE NUMBER FOR THE NEXT CDS, OR 'END'.

(ITC)803 (I) NCP GEN PARAMETERS ARE LISTED IN YOUR STAGE 1 NCP SYSGEN
(ITC)803 (I) LISTING. MAXSUBA= AND SUBAREA= ARE LISTED IN THE BUILD
(ITC)803 (I) MACRO. ENTER THEM IN DECIMAL. ENTER THE NATIVE SUBCHANNEL
(ITC)803 (I) ADDRESS IN HEXADECIMAL. ENTER OPERANDS IN THE ORDER
(ITC)803 (I) LISTED, DELIMITED BY COMMAS. E.G. '15,10,A'.

(ITC)804 (D) ENTER MAXSUBA=, SUBAREA=, AND NATIVE SUBCHANNEL ADDRESS.

(ITC)805 (I) THE TERMINAL OR LINE RESOURCE NAME(CDS SYMBOLIC NAME) AND
(ITC)805 (I) DECIMAL RESOURCE ID ARE IN THE RESPECTIVE TERMINAL OR LINE
(ITC)805 (I) MACROS IN YOUR STAGE 1 SYSGEN LISTING. FOR AN NCP CDS,
(ITC)805 (I) ENTER THE BUILD MACRO NEWNAME= KEYWORD AS THE RESOURCE
(ITC)805 (I) NAME AND ENTER 0 FOR THE NCP RESOURCE ID. E.G. 'NCP3,0'.
(ITC)805 (I) THE PROGRAM WILL APPEND 'C' TO THE NCP RESOURCE NAME
(ITC)805 (I) ENTERED TO GET THE NCP CDS SYMBOLIC NAME.

(ITC)806 (D) ENTER THE NNNN RESOURCE NAME, AND RESOURCE ID.

(ITC)807 (I) THE SYMBOLIC NAME FOR A TERMINAL UNDER EP IS IN THE
(ITC)807 (I) TCAM, BTAM, ETC. ASSEMBLY LISTING: OR IF TESTING UNDER
(ITC)807 (I) OLTSEP, ASSIGN ANY 1 TO 8 BYTE ALPHA-NUMERIC VALUE.
(ITC)807 (I) SUBCHANNEL ADDRESS IS IN HEXADECIMAL. E.G. 'MP2740,00B'.

(ITC)808 (D) ENTER THE NNNN SYMBOLIC NAME, AND SUBCHANNEL ADDRESS.

(ITC)809 (I) 'CHANGE' REQUIRED: THE EXISTING CDS SYMBOLIC NAME FOR
(ITC)809 (I) THE NCP, LINE, TERMINAL, OR EXTENDED 3705 CDS TO BE
(ITC)809 (I) CHANGED; OR THE EXISTING CDS HEXADECIMAL SUBCHANNEL
(ITC)809 (I) ADDRESS FOR THE PRIMARY 3704/3705 CDS TO BE CHANGED.

(ITC)810 (D) ENTER THE CHANGE CDS SYMBOLIC NAME OR SUBCHANNEL ADDRESS.

(ITC)811 (I) THE VALID LINE CONNECTION COMMAND SEQUENCE CODES ARE:
(ITC)811 (I) 01-NO SETMODE OR SAD 03-SETMODE 04-SADZERO
(ITC)811 (I) 05-SADONE 06-SADTWO 07-SADTHREE
(ITC)811 (I) SET MODE DATA IS ONE(1) BYTE LONG AND IS ENTERED IN
(ITC)811 (I) HEXADECIMAL. IF SET MODE DATA IS OMITTED, ZERO(0) IS
(ITC)811 (I) ASSUMED. AN EXAMPLE ENTRY IS: '03,80' OR '03'.

(ITC)812 (I) ENTER THE LINE CONNECTION COMMAND SEQUENCE CODE (01, 03,
(ITC)812 (D) 04, 05, 06, OR 07) AND THE SET MODE DATA (OPTIONAL).

(ITC)813 (I) NCP LEVEL 3 OR GREATER SYSGENS MUST HAVE THE MAXSUB=
(ITC)813 (I) KEYWORD SPECIFIED IN THE BUILD MACRO OF THE STAGE 1
(ITC)813 (I) SYSGEN LISTING.

(ITC)814 (D) IS NCP GEN LEVEL 3 OR GREATER? ANSWER YES(Y) OR NO(N).

(ITC)816 (D) ENTER THE GEN TYPE: EP, NCP, OR CHANGE.

(ITC)817 (D) ENTER THE CHANGE CDS GEN TYPE - EP OR NCP.

(ITC)818 (I) NOTE: NCP AND LINE CDS ENTRIES ARE NOT REQUIRED TO TEST
(ITC)818 (I) IN EP MODE. ENTER 'TERMINATE' TO ABORT THIS NCP OR LINE
(ITC)818 (I) CONFIGURATION OR 'EOB' TO CONTINUE IT.

(ITC)819 (I) THE NCP CDS RESOURCE ID MUST BE 0. ENTER 'TERMINATE' TO
(ITC)819 (D) ABORT THIS CDS OR 'EOB' TO ASSUME A RESOURCE ID = 0.

(ITC)820 (D) ENTER THE WWWW NATIVE SUBCHANNEL ADDRESS IN HEXADECIMAL.

(ITC)821 (I) INVALID DECIMAL ENTRY.

(ITC)822 (I) INVALID HEXADECIMAL ENTRY.

(ITC)823 (I) INVALID ENTRY.

(ITC)826 (D) NOTE: ENTRIES ARE OPTIONAL FOR CHANGE. 'EOB' IF NO CHANGE.

(ITC)827 (I) MAXSUBA= AND SUBAREA= ARE REQUIRED FOR NCP3 RESOURCE IDS.

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5.0 COMMENTS

5.1 OLTT TEST MESSAGES (T3700OLT)

The OLTT test messages defined in this section may be run to any T3700OLT supported device. They may be entered as routine numbers (rtn) in the TRM (see Section 3.1 - Execution Procedures), or in response to message 003 (see Section 4.3.1 - OLTT Message for TRM "TEST"= T3700OLT). However, it should be noted that when tests are run to devices for which they were not designed (i.e., display tests to a selectric printer, etc.) the test results in most cases will not be exactly as described in this document. Listed below are the terminals supported by T3700OLT.

- IBM 1050 Data Communications System
- IBM 2740 Communications Terminal Model 1
- IBM 2740 Communications Terminal Model 2
- IBM 2741 Communications Terminal
- IBM 2770 Data Communications System
- IBM 2780 Data Transmission Terminal
- IBM 2972 General Banking Terminal System
- IBM 3767 Communications Terminal (supported as a 2740/2741 - refer to Section 6.1.5 of this manual)
- IBM 3770 Data Communications System (supported as a 2770 - refer to Section 6.2.3 of this manual)
- IBM 3780 Data Communications Terminal
- IBM 3781 Card Punch

5.1.1 MISCELLANEOUS TESTS

01 Echo Test - Non Transparent (requires operator intervention)

A prompt message is issued to the test terminal asking for an up to 100 character echo message to be entered. (Only 1 card image or message can be entered.) The message entered is read and wrapped character for character back to the test terminal. A carriage return (CR) is automatically provided preceding each message entered.

02 Echo Test - Transparent (requires operator intervention)

Applicable to Bi-sync terminals only. This test message is exactly like 01 except that data transfer is done in transparent mode.

NOTE: Carriage Return (CR) function is not valid in transparent mode. Thus echo data entered will cause a carriage return only when the end of a print line is reached.

03 Repetitive Poll Test (for multipoint devices only)

This test will continually poll the test terminal the number of times specified by the loop count (LL). If the terminal is set up to reply positively to the poll, an EOT must be transmitted from the terminal to end the poll or the poll will end via TIMEOUT.

04 Repetitive Select Test (for multipoint devices only)

This test will continually select the test terminal the number of times specified by the loop count (LL).

05 Receive Interrupt Test (requires operator intervention)

This routine tests the 2741 ATTENTION (ATTN) break capability for either a 2741 or a 3767 emulating a 2741. Press the ATTENTION (ATTN) key when the message;

TO TEST RECEIVE BREAK HIT ATTENTION KEY

is printed at the test terminal. Successful receiving of the BREAK signal will result in the message;

TEST COMPLETE - BREAK WAS RECEIVED

being printed at the test terminal.

5.1.2 SELECTRIC PRINTER TESTS.....E.G. (1052, 1053, 2740, AND 2741)

11 Standard Selectric Message

Alphanumeric data and basic functions are tested by the test message as follows:

```

PRINT/PUNCH NUMERIC AND BACKSPACE
1234567890123456789012345678901234567890
0      1      2      3      4      5
SPACE AND CRLF
                                5
                                0
CHARACTER 0 SHOULD PRINT IN POSITION 10
TAB
                                1
SHOULD HAVE PRINTED 1 AT THE FIRST TAB SET
LF1
2
3
4
5
6
PRINT ALPHABETIC
Aa Bb Cc Dd Ee Ff Gg Hh Ii Jj Kk Ll Mm Nn Oo Pp Qq
Rr Ss Tt Uu Vv Ww Xx Yy Zz
END OF MESSAGE

```

- 12 Selectric Rock Test - Tilt function test.
Data = 2 lines of worst case Tilt data
- 13 Selectric Roll Test - Rotate function test.
Data = 2 lines of worst case rotate data
- 14 Selectric Twist Test - tilt/rotate function test.
Data = 2 lines worst case twist data
- 15 Selectric Rock/Roll/Twist Test - Combination rock/roll/twist test.
Data = 1 line rock data
1 line roll data
1 line twist data

5.1.3 KEYBOARD TESTS - STORE COMPARE...E.G. (1052, 2740, 2741, AND 2770)

- 16 Lower Case Keyboard Test (requires operator intervention)
Data = qwertyuiopasdfghjklzxcvbnm
- 17 Upper Case Keyboard Test (requires operator intervention)
Data = QWERTYUIOPASDFGHJKLZXCVBNM

5.1.4 MATRIX AND BAR PRINTER TESTS...E.G. (2203, 2213, AND 1443)

- 21 All Character Print Test
Data = 65 characters alphanumeric and special characters.
- 22 120 Character Print Test - test ability to print in 120 print positions.
Data = 120 'A' characters
- 23 Matrix Print Position Test - test all matrix positions.
Data = 111111=====*****HHHHHHZZZZZZVVVVVV\$\$\$\$\$\$
- 24 Printer Function Test - Test miscellaneous printer functions:

```

NEWLINE
NEWLINE
NEWLINE
S P A C E
BACKSPACE
L
I
N
E
P
R
I
N
T

```

- 25 Horizontal Tab Test - Test ability to TAB by printing the letters 'T A B : E S T'

at positions having tab set. The TAB should be set for each letter (7 tabs).

26

Vertical Forms Control Test

a. Test data provide the following functions:

1. Restore to carriage tape channel 1
2. Print 'FF' to identify form feed
3. Skip to channel 1
4. Print '1' to identify channel
5. Repeat skip and print for channels 2 thru 12
6. Vertical Tab
7. Print 'VT' to identify function
8. Single space and print 'SINGLE SPACE'
9. Double space and print 'DOUBLE SPACE'
10. Triple space and print 'TRIPLE SPACE'

NOTE: This test applies only to Matrix Printers that have the vertical forms control feature.

27

Ribbon Shift Test - prints color that should be printed.

Data = NL Black ESC 'RED' NL RED shift BLACK

5.1.5 CARD READER/PUNCH TESTS..E.G. (1056, 1057, 1058, 549, 2502, 1442, AND 545)

- 31 Card Punch Column and Row Test - 80 Columns
Data = 888888-----000000111111222222333333444444
555555666666777777888888999999-012345
- 32 Card Punch Early Eject Test - for the 545 Card Punch
Data = 0 Eject (Card 1)
00 Eject (Card 2)
000 Eject (Card 3)
0000 Eject (Card 4)
00000 Eject (Card 5)
- 33 80 Column Card Punch Test
Data = A-Z, 0-9, A-Z, 0-9, A-H
- 34 80 Column Card Read Test (requires operator intervention)
Data = A-Z, 0-9, A-Z, 0-9, A-H (Enter 1 card only.)
- 35 51 Column Card Punch Test
Data = A-Z, 0-9, A-0
- 36 51 Column Card Read Test (requires operator intervention)
Data = A-Z, 0-9, A-0 (Enter 1 card only.)/

5.1.6 DISPLAY TERMINAL TESTS.....E.G. (2265)

- 41 Display All Characters Test
Data = 64 characters A-Z 0-9 and special characters
- 42 Display Write Line Address Test
- a. Clear Screen
 - b. WLA and display line numbers
 - c. Display generated:
- 1
2
3
4
5
6
7
8
9
10
11
12
- 43 Display Protect Data Feature Test
- a. Writes 'PROTECT' in protected data format.
 - b. Attempts to write 'OVERWRITE' in same positions.
 - c. Correct display is: '(PROTECT) OVERWRITE'
- 44 Display Horizontal Tab Test
- a. Clear screen and set tab.
 - b. Space and set tab 7 times.
 - c. Newline (NL) function.
 - d. Horizontal tab and print:
- T A B T E S T

5.1.7 PAPER TAPE TESTS.....E.G. (1054, 1055, 1017, AND 1018)

- 51 Punch Paper Tape Test
Data = ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789
- NOTE: If the tape punched by this test is to be read by test 52, a few inches of header delete characters should be punched to facilitate tape alignment.
- NOTE: For start/stop terminals the EOT character must be manually punched if this punched tape is to be read by test 52.

- 52 Read Paper Tape Test (requires operator intervention)
Data = ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789

- 53 Paper Tape Punch Pattern Test

The following visual data pattern is generated on tape: (For ERCDIC only pinches.)

```

1*****
2*****
3*****
P.....
4*****
5*****
6*****
7*****
8*****

```

5.1.8 RPT MESSAGES

For the terminals supported by T37000LT, it is suggested that you use test messages 01 thru 53. The RPT messages listed below do not have the same run procedures as the existing RPT's and the RPT's supported by T3700REQ and T3700RSP. (See the descriptive paragraph at the beginning of Section 5.1. for T37000LT run procedure and go to Section 5.2 for details about RPT run procedures.)

- 101-122 RPT test messages XX=01 through XX=22 are provided as OLTT test messages NN=101 through NN=122. Refer to XX test definition in Section 5.2 - RPT Compatibility (e.g., test XX=14 would be run under T37000LT as NN=114.)

5.2 RPT COMPATIBILITY

Note that before an RPT can be run to a CPU type device, that device must have its RPT program started and the procedure for entering RPT requests known. (In the case of the System 360 MODEL 20, this is done by loading the RPT program, setting some rotary hex switches, and pushing different MOD 20 panel push-button switches at the appropriate time.) To determine these procedures, see the RPT program documentation for the device you want to test. (See the devices and corresponding document numbers listed under 5.2.B below.)

OLTT compatibility is provided in one of two ways depending on whether the terminal is a hardware terminal (i.e., 2770, 2780) or a CPU/CPU-type terminal (i.e., CPU, 3735).

5.2.1 HARDWARE TERMINALS

Hardware Terminals (See Section 5.1 - OLTT Test Messages.)

5.2.2 CPU/CPU-TYPE TERMINALS

CPU/CPU-Type Terminals

The CPU type devices supported by T3700REQ and T3700RSP RPT's and the corresponding device documentation that describes the device's RPT setup and run procedures is as follows:

- IBM 3650 Retail Store System
Maintenance Information Manual (Section 1-1000) SY27-0122
- IBM 3660 Supermarket System
Service Guide (Section 1-1010) (EC controlled)
- IBM 3735 Programmable Buffered Terminal
Theory-Maintenance Manual (Service Procedures Section) SY27-0096
- IBM 3740 Data Entry System
3741 Theory-Maintenance Manual (Section 751) (EC controlled)
3747 Theory-Maintenance Manual (Section 12-8) (EC controlled)
- IBM System/3
User's Guide Block 19 (Section 1.3) (EC Controlled)
- IBM System/7
Maintenance Diagnostic Program Descriptions (MDP's)
- IBM 1130 Computing System
- IBM 1800 Data Acquisition and Control System
- IBM System/360 Model 20
- IBM System/360 Model 25
- IBM System/370 Model 135

1. RPT test messages XX = 00 through XX = 22 are provided as described in 5.2.3 below.
2. TRM "TEST"= T3700RSP if OLTT is to be the responder.

- a) When running "TEST"= 3700RSP to a terminal (such as the System 360 Mod 20) which is subject to restarting after sending the RPT, you must turn on the INHIBIT TIMEOUT Switch after the RPT is sent. (In the case of the Mod 20, the associated test message is printed when the RPT is sent.) Note that TIMEOUT indications will normally occur at the terminal while waiting for RPT messages, but should stop when the message is transmitted.

b) Example

Assume you want to run test message 14 ten (10) times to the host resident T3700RSP program from an IBM System 360 Model 20 that has a symbolic name of M20S360.

- If running under MCP, activate the line that the Mod 20 is on using the procedure for the OLT executive you are running under. See Section 3.1 - Execution Procedures.

- At DEV/TEST/OPT/ time, enter:

M20S360/3700RSP//

- Setup the Mod 20 as a requestor using the procedures described in the document listed under 5.2.B above.

- When the message

001 RPT TO BE RUN? (Y) OR (N)

is printed at the control terminal, respond:

Y

- When the test is successfully completed, the message

004 TEST XX=14 YY=10 COMPLETED

will be printed at the control terminal followed by message 001 again. Respond N to terminate test section T3700RSP.

3. TRM "TEST"= T3700REQ if OLTT is to be the requester.

- a) When running "TEST" = T3700REQ to a System 360 MOD 20 using a 2701/2703 TCU the INHIBIT TIMEOUT Switch must be on.

b) Example

Assume you want to run RPT test message 01 ten (10) times to a remote IBM System 360 model 20 from the host resident T3700REQ Program. Assume that the Mod 20 has a symbolic name of M20S360.

- If running under MCP, activate the line that the Mod 20 is on using the procedure for the OLT executive you are running under. See Section 3.1 - Execution Procedures.

- At DEV/TEST/OPT/ time, enter:

M20S360/T3700REQ//

- Setup the Mod 20 as a responder using the procedures described in the document listed under 5.2.B. above.

- When the message

001 ENTER XYY OR (T) TO TERMINATE

is printed at the control terminal, respond:

0110

- When the message

003 ENTER TEST DATA OR (Y) FOR A-Z, 0-9

is printed at the Control Terminal, respond:

Y

- When the test is successfully completed, the message
004 TEST XX=01 YY=10 COMPLETED

will be printed at the control terminal followed by message 001.
Respond T to message 001 to terminate test section T3700REQ.

4. "LOST" DATA" Printout (3704/3705 with NCP).

- a) NCP definition of "lost data" includes line control ENQ repeated after a timeout. Therefore, the following printout should be considered normal provided the test recovers and is completed:

```
*T3700RSP-00 RTN 000 DEV/LN 000A PPBSCT ECA 0
Test Message Request
Response Expected - ENQ
*Response received - LOST-DATA
```

5. "TIMEOUT" Error Indications

- a) Due to timing variations, a single "TIMEOUT" received indication should be considered normal provided the test recovers and is completed. Such a printout is likely during line synchronization. An example of such a printout is:

```
*T3700RSP-00 RTN 000 DEV/LN 000A PPBSCT ECA 0
Test Message Request
Response Expected - ENQ
*Response received - TIMEOUT
```

5.2.3 RPT TEST MESSAGES

RPT Test Messages:

XX VALUE DEFINITIONS

The following chart gives a description of the pattern and source of data defined by XX values. XX values 02 through 22 request the responder to send a specific test message data pattern to the requestor. XX value 00 or 01 defines the requestor as the source of data.

- XX=00 Requestor Sends yy blocks of data (50 bytes maximum), the first is preceded by the RPT request header (SOH%00YY0) and the responder acknowledges the data by sending ACK1. Transparent data is not supported by XX=00. Use XX=02 responder for transparent data. XX=00 is only valid for NCP operation.
- XX=01 Requestor sends one block (50 bytes maximum) containing RPT, followed by test data; and the responder returns the test data; YY times.
- XX=02 256 Characters, EBCDIC Transparency
DLE, STX, 256 8-bit bytes (00 through FF), STX, DLE, ETX
- XX=03 128 Characters, ASCII Transparency
DLE, STX, 128 7-bit bytes (00 through 7F), DLE, ETX
- XX=04 245 Characters, EBCDIC
STX, 245 8-bit bytes (no control characters), ETX
- XX=05 117 Characters, ASCII
STX, 117 7-bit bytes (no control characters), ETX
- XX=06 36 Characters, ASCII
STX, A through Z and 0 through 9, ETX
- XX=07 36 Character 2780 Printer message, ASCII
STX, ESC, Q, A through Z and 0 through 9, ETX
- XX=08 36 Character 2780 Punch message, ASCII
STX, ESC, 4, A through Z and 0 through 9, ETX

XX=09 36 Character 2780 Printer message, Transcode
STX, ESC, /, A through Z and 0 through 9, ETX

XX=10 36 Character 2780 Punch message, Transcode
STX, ESC, 4, A through Z and 0 through 9, ETX

XX=11 36 Character message, Transcode
STX, A through Z and 0 through 9, ETX

XX=12 36 Character 2780 Printer message, EBCDIC
STX, ESC, /, A through Z and 0 through 9, ETX

XX=13 36 Character 2780 Punch message, EBCDIC
STX, ESC, 4, A through Z and 0 through 9, ETX

XX=14 36 Character message, EBCDIC
STX, A through Z and 0 through 9, ETX

XX=15 80 Characters, Weak Pattern, EBCDIC (2000 bps, 201A
or compatible data set)
STX, 74 bytes of '00', 6 bytes of SYN, ETX

XX=16 80 Characters, Weak Pattern, EBCDIC (2400 bps, 201B
or compatible data set)
STX, 40 bytes of 'AA', 40 bytes of '55', ETX

XX=17 80 Characters, Weak Pattern, Transcode (2000 bps,
201A or compatible data set)
STX, 80 bytes of '00', ETX

XX=18 80 Characters, Weak Pattern, Transcode (2400 bps, 201B or compatible
data set)
STX, 40 characters of 'N', 40 characters of 'ESC', ETX

XX=19 290 Characters, Weak Pattern, EBCDIC Transparency (201A or compatible
data set)
DLE, STX, 280 bytes of '00', 10 bytes of SYN, DLE, ETX

XX=20 80 Character message, EBCDIC Transparency
DLE, STX, U through Z and 0 through 9, Hex '00' through
'3F', DLE, ETX

XX=21 120 Character message, EBCDIC Transparency
DLE, STX, A through Z and 0 through 9, Hex '00' through '53',
DLE, ETX

XX=22 144 character message, EBCDIC Transparency
DLE, STX, A through Z and 0 through 9, Hex '00' through Hex '6B', DLE,
ETX

5.2.4 RESTRICTIONS

- a. The test terminal Transparent Switch must be on only when the terminal is transmitting transparent test data and not during transmission of the remote test request message (message 003 in Section 4.3.1).
- b. Test results are not predictable if tests are run to devices other than those for which they were designed (e.g., ASCII tests to EBCDIC devices).
- c. Note that ITB mode, XX=00 test, and XX=99 test are not supported.

6.0 OPERATING HINTS

6.1.0 START/STOP TERMINALS

General

1. Messages from terminals with LRC error checking capability and manually entered CIRCLE-B (EOB) and CIRCLE-C (EOT) characters (1050 and 2740 MOD 1) may be ended with EOB and EOT or EOT alone.

6.1.1 1050

1. Component Assignment Switches Setup Procedure

The 1050 SYSTEM must have power on and the Component Assignment Switches must be properly positioned. These switch settings will vary according to the 1050 SYSTEM devices available and the components to which they are assigned. The normal switch settings for line loop operation are indicated below. (Reference the IBM 1050 OPERATORS GUIDE Section 2 for further information on these switch settings.)

SWITCH NAME *****	1050 DEVICES ATTACHABLE *****	COMPONENT SELECT CHAR. *****	SWITCH POSITION *****
SYSTEM			ATTEND
MASTER			OFF
PRINTER 1	1052 or 1053	1 or 9	SEND REC
PRINTER 2	1052 or 1053	2 or 9	SEND REC
KEYBOARD	1052 or 1092/93	5 or 0	SEND - if 1050 has KEYBOARD OFF - otherwise
READER 1	1054 or 1056	6 or 9	SEND - if 1050 has READER 1 OFF - otherwise
READER 2	1054 or 1056	7 or 9	SEND - if 1050 has READER 2 OFF - otherwise
PUNCH 1	1055 or 1057/58	3 or 0	REC - if 1050 has PUNCH 1 OFF - otherwise
PUNCH 2	1055 or 1057/58	4 or 0	REC - if 1050 has PUNCH 2 OFF - otherwise
STOP CODE			SENSE
AUTO FILL			OFF
PUNCH			UP
SYSTEM			PROGRAM
EOB			UP
TEST			OFF
SINGLE CY			OFF
RDR STOP			OFF

2. 1055 Paper Tape Punch Setup Procedure
 1. Place a reel of tape in the tape supply pan.
 2. Move the document-pressure lever to the left. This lever is available only when the edge punching special feature is available.
 3. Flip the tape-pressure lever up.
 4. Take the leading edge of the tape and thread it over the guide pin and under the tape tension lever.
 5. Now pass the tape under the document-pressure lever, the punch die and the tear guide.
 6. Lower the tape pressure-lever.
 7. Press the DELETE and FEED buttons to punch 4 to 6 inches of header delete characters in the tape.
 8. When tape punching is complete prepare a trailing edge of at least six inches of tape by operating the FEED key.
3. 1054 Paper Tape Reader Setup Procedure
 1. Place the tape face up on the reader table with the pointed edge indicating the start of the tape pointing to your right. The tape is face up if the punched holes reading from the back of the table to the front are 3 large data holes, 1 small feed hole, and then 4 large data holes.
 2. Position the T-D lever so the T is visible. This lever is available only when the edge-punch read special feature is installed.
 3. Press the table release button to raise the table and allow insertion of the paper tape.
 4. Insert the tape under the raised tape guide making sure that the top edge of the tape is aligned against the registration rail at the back of the table.
 5. Move the tape either right or left to position a tape column under the red line of the guide.
 6. Press the table down to latch it in position, and check the feed-hole registration using the advance wheel.
 7. Move the tape right or left using the advance wheel until the first data character is located under the red line on the guide. The first data character is the first non-feed character from the start of the tape.
4. 1057/1058 Card Punch Setup Procedure
 1. Set the punch mainline switch on.
 2. Set the punch keyboard switches as follows:
 - a. Auto feed - on
 - b. Auto skip, auto dup - on
 - c. Print - on (for 1058 only)
 - d. Auto punch - auto punch position
 - e. Motor control - on
 3. Install a program card and lower the starwheels.
 4. Load the punch hopper with cards.
 5. Operate the keyboard REL key 3 times.
5. 1056 Card Reader Setup Procedure
 1. Turn mainline power on.
 2. Press the reader eject button to clear the reader of any cards.
 3. Set the auto-EOF switch to off.
 4. Place the deck of cards to be read in the hopper face down, column-1 edge to

- the back of the hopper, 12-edge to your left.
5. Place the card weight on top of deck.
 6. Press the feed button to feed the first card into the reading position. The reader is now ready.
 6. Procedure for manually preparing a punched paper tape on the 1055 Paper Tape Punch:
 1. Power on the 1050.
 2. Press the HOME RESET button.
 3. Modify the assignment switch settings as follows:
 - a. Set PRINT 1 to the HOME position.
 - b. Set KEYBOARD to the HOME position.
 - c. Set the PUNCH 1 or 2 switch attached to the paper tape punch to the HOME position.
 - d. Set the STOP CODE switch to the off position.
 - e. Set the SYSTEM switch to the DUP position.
 - f. All other switches will be set as described above under Component Assignment Switches Setup Procedures.
 4. Prepare the paper tape punch as described above under 1055 Paper Tape Punch Setup Procedure.
 5. Punch the desired message using the 1052 Keyboard.
 7. Procedure for manually preparing a punched card on the 1057/1058 Card Punch:
 1. Power on the 1050.
 2. Press the HOME RESET button.
 3. Modify the assignment switch settings as follows:
 - a. Set PRINTER 1 to the HOME position.
 - b. Set KEYBOARD to the HOME position.
 - c. Set the PUNCH 1 or 2 switch attached to the paper tape punch to the HOME position.
 - d. Set the STOP CODE switch to the off position.
 - e. Set the SYSTEM switch to the DUP position.
 - f. All other switches will be set as described above under Component Assignment Switches Setup Procedure.
 4. Prepare the card punch as described above under 1057/1058 Card Punch Setup Procedures.
 5. Punch the desired message using the 1052 Keyboard.
 8. The REQUEST key must be manually depressed to initiate a transmission from a 1050 system that has a REQUEST key. The terminal will respond CIRCLE-N to a POLL until this is done.

6.1.2 2740 MOD 1

1. The terminal must be in the standby status (light labeled S is on when in standby status). This requires the terminal to be powered on (ON/OFF Switch in the ON position), to be on-line (COM/LCL Switch in the COM position), and the paper to be properly inserted in the typewriter to close the paper-presence contact.
2. Device Polling (only for 2740 MOD 1 with Station Control feature.)
 - a. Wait for polling to begin (e.g., when the S (standby), R (receive), and T (transmit) lights light up one at a time in a repeating sequence.)
 - b. Depress the BID key to unlock the keyboard and allow a message to be entered.
 - c. Enter the message.
3. End all entered messages by depressing:
 1. EOB and then EOT keys, or

2. RETURN and EOT keys if Automatic EOB feature is installed, or
3. EOT key.

6.1.3 2740 MOD 2

1. The terminal must be in the standby status (light labeled STANDBY is on when in standby status). This requires the terminal to be powered on (ON/OFF Switch in the ON position), to be on-line (COM/LCL Switch in the COM position), and the paper to be properly inserted in the typewriter to close the paper-presence contact.
2. The terminal buffer must be cleared of any data.
3. Device Polling
 - a. Wait for polling to begin (e.g., when the STANDBY, RECEIVE, and TRANSMIT lights light up one at a time in a repeating sequence.)
 - b. Depress the ENTER key to unlock the keyboard and allow a message to be entered into the buffer. If this is done before polling begins errors may occur and any buffered data may be lost.
 - c. Enter the message into the buffer via the keyboard. Note that while data is being entered into the buffer the terminal will reply negatively (CIRCLE-N) to the POLL. You have approximately 3 minutes to enter the message.
 - d. Depress the BID key to end the buffer entry and cause the buffered message to be transmitted on the next POLL.
4. Device Selection

When selecting (addressing) the 2740 MOD 2 a sense character is returned to the host along with the Start/Stop line control character CIRCLE-Y or CIRCLE-N. This sense character indicates the status of the terminal and will be printed as * RCVD DATA in error prints caused by selection failures. These characters are defined as follows:

- a. For CIRCLE-Y (YES)

<u>Sense Char.</u>	<u>EBCDIC Value in Hex</u>	<u>Terminal Status</u>
Space	40	No failure detected for the last message received.
/	61	Electronic failure on last message received.
S/s	E2/A2	IO hardware failure for last message received.
U/u	E4/A4	Line VRC Error for last message received.
Y/y	E8/A8	Terminal line parity error induced by terminal on a transmitted message.

- b. For CIRCLE-N (NO)

<u>Sense Char.</u>	<u>EBCDIC Value in Hex</u>	<u>Terminal Status</u>
1	F1	Terminal is in ENTER mode. A message is being entered into the buffer.
2	F2	Terminal is in BID mode and has a message to send.
4	F4	Terminal is performing a buffer print operation while in communication mode (COM).
8	F8	Terminal is in local mode (LCL).
9	F9	Terminal is in communicate mode (COM), but is without paper.
@	7C	Terminal is in communicate mode (COM) but document device is open.

6.1.4 2741

1. An EOT must be entered from the 2741 terminal by hitting the RETURN or ATTN key when the keyboard is unlocked, to allow line turnaround. Any messages sent to the 2741 when it has such an EOT outstanding will be lost and no error indication given.

Note the following deviations in normal 2741 test operation:

- If the OLTT does not control the 2741 test line when the first EOT is sent by the 2741, it will be lost and a second EOT must be sent when the OLTT unlocks the 2741 keyboard.
- Any 2741 'POWER ON RESET' occurring after the initial EOT is sent by the 2741 will require the T3700OLT test section to be ended and restarted.

6.1.5 3767

The IBM 3767 Communication Terminal can be run in the Start/Stop mode if one of four Start/Stop features is installed and activated. The IBM 3767 can operate under any one of four distinct Start/Stop line control modes by emulating one of the following terminal configurations:

1. 2740 Mod 1 point-to-point (i.e. without the Station Control feature) with the Record or Error Checking feature. The Transmit Control feature is not available on the 3767.
 - a. The terminal must be in the standby status (light labeled PROCEED and light labeled ON LINE will be off when in standby status). This requires the terminal:
 - 1) to be in Start/Stop mode (SDLC/S/S Switch in the S/S position),
 - 2) to be powered on (POWER/OFF Switch in the POWER position),
 - 3) to be on-line (COMM/LOCAL Switch in the COMM position),
 - 4) and the paper to be properly inserted in the printer to close the paper-presence contact.
 - b. A message can be entered by depressing:
 - 1) SYS REQ key, and then
 - 2) Data/Function keys.
 - c. End all entered messages by depressing:
 - 1) EOB and then EOM keys, or
 - 2) RETURN and EOM keys if AUTO/OFF switch is in the AUTO position, or
 - 3) EOM key.
2. 2740 Mod 1 multipoint (i.e. with the Station Control feature) with the Record or Error Checking feature. The Transmit Control feature is not available on the 3767.
 - a. The terminal must be in the standby status (light labeled PROCEED and light labeled ON LINE will be off when in standby status). This requires the terminal:
 - 1) to be in Start/Stop mode (SDLC/S/S switch in the S/S position),
 - 2) to be powered on (POWER/OFF switch in the POWER position),
 - 3) to be on-line (COMM/LOCAL switch in the COMM position),
 - 4) and the paper to be properly inserted in the printer to close the paper-presence contact.
 - b. Device Polling
 - 1) Wait for polling to begin (the ON LINE light will turn on and then off as the polling sequence is received.)
 - 2) Depress the SYS REQ key to allow a message to be entered (PROCEED light will turn on).
 - 3) Enter the message.
 - c. End all entered messages by depressing:
 - 1) EOB and then EOM keys, or
 - 2) RETURN and EOM keys if AUTO/OFF switch is in the AUTO position, or
 - 3) EOM key.
3. 2740 Mod 2 with the Buffer Receive and Record or Error Checking features.
 - a. The terminal must be in the standby status (light labeled PROCEED and light labeled ON LINE will be off when in standby status). This requires the terminal:
 - 1) to be in Start/Stop mode (SDLC/S/S switch in the S/S position),
 - 2) to be powered on (POWER/OFF switch in the POWER position),
 - 3) to be on-line (COMM/LOCAL switch in the COMM position),
 - 4) and the paper to be properly inserted in the printer to close the paper-presence contact.
 - b. The terminal buffer must be cleared of any data.
 - c. Device Polling

- 1) Wait for polling to begin (the ON LINE light will turn on and then off as the polling sequence is received.)
- 2) Depress the ATTN key to allow a message to be entered into the buffer (PROCEED light will turn on). If this is done before polling begins, errors may occur and any buffered data may be lost.
- 3) Enter the message into the buffer. Note that while data is being entered into the buffer the terminal will reply negatively (Circle N) to the POLL. You have approximately 3 minutes to enter the message.
- 4) Depress the SYS REQ key to end the buffer entry and cause the buffered message to be transmitted on the next POLL.

d. Device Selection

See Section 6.1.3.4 above.

4. 2741

See Section 6.1.4.1 above. Note when reading Section 6.1.4.1, that the 3767 keyboard is unlocked when the 'ON LINE' and 'PROCEED' lights are on.

The IBM 3767 Communication terminal must be configured as the 2740/2741 terminal that its installed start/stop feature is to emulate. See Appendix A to determine how to configure a 2740/2741. (Note that if your 3767 is emulating start/stop and is operating in EBCDIC mode, you must specify EBCD in CDS byte 30 - Line Code.)

6.2.0 BI-SYNC TERMINALS

General

1. The terminal must be in a RESET condition at the start of the test (i.e. - to transmit data in the buffer, etc.)
2. TRANSPARENT DATA is transmitted when the applicable transparency switch for the terminal is set in the ON position. The transparency switch should be turned on only for transparent TEST MESSAGE transmissions. Test requests and options must be transmitted with the transparency switch OFF.
3. Device Polling and Selection - Multipoint
Input and output devices are polled or selected via POLL or SELECT character sequences. If testing with "TEST" = T3700OLT, the POLL and/or SELECT sequence can be modified using the options described in Section 3.0 - "Use Procedures". (These options are not available for "TEST" = T3700RSP or T3700REQ.)
4. Device Selection - Point-to-Point
Output devices are selected by:
 - a. output switch setting and/or internal priority selection of the device by the terminal control unit. Desired output device must be ready (i.e., to select output device #3 on a 2770, place the 'JOB SELECT' rotary switch in 'VARIABLE SELECT' position, turn output SW #3 ON and output switch #1 and #2 OFF).
 - b. transmitted data sequence, provided the MODE switch is in the correct position to allow device selection (i.e. "VARIABLE SELECT" (2770) or "REC" (2780)). Note that only the predefined RPT test messages contain device selection characters. If device selection is desired for an OLT Test Message other than provided by RPT messages, it is recommended that the desired data sequence be entered as non-transparent ECHO data (OLT test 001 or 101) preceded by the appropriate select characters, i.e., 'DC2 data' selects output device #2.
5. Switched Lines
Terminals on switched lines must be in "MANUAL ANSWER" mode in order to avoid automatic disconnect.

6.2.1 2770, 3780, 3781

1. Test requests and options may be entered from a card reader. No special ending characters are required.

6.2.2 2780

1. Test requests and options may be entered from a card reader by punching an "EM" character following the data (11-1-8-9 punches).
2. Devices previously READY are RESET when the MODE Switch is rotated to another position and must be made READY again.
3. The NEWLINE (NL) function is not executed by the 2780. Thus, messages containing NL characters will not be printed in the expected visual format.

6.2.3 3770

1. The IBM 3770 Data Communications System is supported as a bi-sync 2770 under T3700 OLTs. It must be configured like a 2700 with a keyboard input device (i.e. IDPC/IDP=0410000000) and a printer output device (i.e. ODPC/ODP=0420000000).
2. OLTs are recommended for link verification only. The 3770 off-line cassette diagnostic tests are to be used to satisfy device exerciser test requirements. Although other tests may be used, it is recommended that OLT NN=101 (the equivalent of RPT XX=01) or NN=114 (the equivalent of RPT XX=14) be used. Note that if the 3770 uses ASCII code, run NN=106 (the equivalent of RPT XX=06) in place of NN=114.
3. Transparent data can be sent to a 3770 terminal only if a card punch feature is attached. Transparent data blocks will be automatically routed to the card punch by the 3770 terminal, independent of any component select character. If punch is to be used, make sure that it has power on and is ready.
4. The following procedures should be followed at the terminal to make sure that it is

ready to run OLTT's:

- a. forms properly loaded in the console printer.
 - b. terminal power switch on.
 - c. BSC/SDLC switch in BSC position (if present).
 - d. operate the "SYSTEM RESET" key.
 - e. make customer disk(s) not ready if feature(s) present.
 - f. turn off DISK or PUNCH operator console switches if present.
 - g. if the terminal is on a switched line it must be put into manual disconnect mode to avoid an automatic disconnect. To do this:
 - press the CODE key
 - press the M key
 - h. if you are entering a TRM from the 3770 terminal, skip to step 6.
 - i. start a "line to console printer" job. (Refer to the 3770 Operators Guide for the exact procedure for the particular 3770 model being tested.)
5. If data is to be entered from the keyboard during the test, press the SYSTEM REQUEST key, enter the data, and terminate by pressing the EOM key.
 6. If the 3770 terminal is being used to enter a TRM, the terminal must first be put into On Line Test Mode. (Refer to the 3770 Operators Guide for the procedure to enter On Line Test Mode.) In On Line Test Mode the terminal automatically inserts the "SOH" character prior to the TRM entry. See Section 3.1 of this manual to determine the TRM format to be entered.

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APPENDIX A - CONFIGURATION DATA SET CARD FORMAT

Each device and line supported by the T3700 family of On-Line Terminal Tests (OLTTS) must have a Configuration Data Set as described here-in. The CDS is structured in such a manner as to group all the information required by the OLTT Control Program in a specific area.

The T3700 family of On-Line Terminal Tests (OLTTS) provides the on-line maintenance support for IBM terminals supported by the 3704/3705 Communication Controller Network Control Program (NCP). (See Section 1.0 - Purpose, of this document.)

Types of CDS Cards

There are several types of CDS cards to be punched for devices supported by the T3700 family of OLTTS. They are as follows:

1. Terminal CDS - One (1) CDS for each terminal, control unit, or CPU to be tested or supported. See list of supported terminals, control units, and CPUs at the beginning of this CDS writeup.
2. NCP CDS - One (1) CDS for each NCP that will be on the system (probably one per 3704/3705).
3. Line CDS (with NCP) - One (1) CDS for each line interface address to be tested. The line information should be the same as in the NCP Stage 1 sysgen listing.
4. 3270 CDS - See D99-3270C for instructions on punching remote 3270 CDS for running 3270 OLTTS with the T3700 control program (OLTTCP).
5. Control Unit CDS - One (1) CDS for 3704/3705 or 2701/2702/2703 control unit to which the terminal is attached. Refer to CDS Guide D99-CDSGA.

General Configuration notes.

- When count fields such as the Dial Digit Count (DDC) in the TERMINAL CDS are punched 00, it indicates that the corresponding data field (e.g. Dial Digits (DD)) is empty. Do not punch anything in the data field for such cases.
- Note that a re-SYSGEN of the NCP will require reconfiguring any devices whose resource ID's are changed from the old to the new SYSGEN.
- Note that under TCAM/TOTE the NCP CDS should be Linkage Edited into the OLT module library.
- The IBM 3767 Communication terminal must be configured as the 2740/2741 terminal that its installed start/stop feature is to emulate. See Section 6.1.5.
- The IBM 3770 Data Communications System must be configured like a bi-sync 2770 with a keyboard input device (i.e. IDPC/IDP=0410000000) and a printer output device (i.e. ODPC/ODF=0420000000).

TERMINAL CDS (or remote control unit .. e.g. 1050, or remote CPU ... e.g. 1130)

Note that where the word "terminal" is used in the TERMINAL CDS writeup, it also applies to remote control units and remote CPUs to be configured. Examples of TERMINAL CDSs are given at the end of this CDS layout.

<u>CC</u>	<u>CDS</u> <u>Byte</u>	<u>Description</u>
1	-	Always Blank
2-4	-	CDS
5-9	-	Always Blank
10-17	0-3	Unit Address (right justified)
		The subchannel address of the 270X/3704/3705 to be used for communicating with the terminal. This address is right justified ... e.g., address 0A would be punched 0000000A.
18-19	4	Terminal Flags (used only for 2740 - leave blank otherwise) Bit 0=0 Bit 1=1 if 2740 has station control Bit 2=1 if 2740 has transmit control Bit 3=0 Bit 4=0 Bits 5-7=001 if 2740 has error checking
20-21	5	Feature Byte - leave blank
22-23	6	Class - Hex "44"
24-25	7	Type - Hex "20"

The following OLT families will be selected on the SOSF Auto Edit Tape for Type=20:

- 3700
- 1050
- 2740
- 2741
- 2700

Only the 3700 family is required. The other families may be deleted unless the OLT executive program is TOTE running under TCAM level 5 to 10, but not including 10. The TOTE Unit Configurator modules to be added for these levels of TOTE are:

<u>1050</u>	<u>2740</u>	<u>2741</u>	<u>2700</u>
U1050UCA	U2740UCA	U2741UCA	U2700UCA
U1050UCB	U2740UCB	U2741UCB	U2700UCB
U1050UCD	U2740UCD	U2741UCD	U2700UCD
U1050UCE	U2740UCR	U2741UCR	U2700UCE
U1050UCR			U2700UCG
			U2700UCH
			U2700UCI
			U2700UCJ
			U2700UCK
			U2700UCR
			U2700UCZ

(continued next page)

<u>CC</u>	<u>CDS Byte</u>	<u>Description</u>
26-29	8	CDS Byte Count - leave blank (calculated by SOSF)
30-31	9	<p>FLAGS</p> <p>Bit 0=0</p> <p>Bit 1=1 if this terminal is shared with another system. This is an OLT Executive requirement. It is not used by the OLTs. It is normally 0, but would be 1 under the following conditions:</p> <ul style="list-style-type: none"> • If the 3704/3705 has 2 type 2 channel adapters installed, and the BUILD macro in the Stage 1 NCP Sysgen listing has "CHANTYP= (TYPE 2, TYPE 2)" and "SECCHAN= BACKUP" coded. • If the terminal has a TP path to 2 different CPU's and is capable of being controlled by either one. <p>Bit 2=0</p> <p>Bit 3=0</p> <p>Bit 4=1 must be 1</p> <p>Bit 5=0</p> <p>Bit 6=1 This bit must be 1 for a TERMINAL CDS.</p> <p>Bit 7=0</p>
32-35	10-11	<p>FLAGS (TOTE only)</p> <p>Bit 0-1=0</p> <p>Bit 2 =1 if this device is to be protected against implicit use. If set, explicit permission to use this device must be asked for at SYSCON by any driver that allows remote TRM entry.</p> <p>Bit 3-7=0</p>
36-43	12-19	<p>Symbolic Name (left justified)</p> <p>The alpha-numeric name assigned to this terminal. This name will be one of the following:</p> <ul style="list-style-type: none"> • NCP - The name given in the Stage 1 NCP Sysgen listing under "TERMINAL FEATURES" for the TERMINAL macro defining this terminal. - The symbolic name given the VTERM macro if the NCP terminal output is generated using the MTA macro. • EP or 2701/2702/2703 - The name given in the TCAM, BTAM, etc. assembly listing. <p>The name is punched left justified e.g., if the symbolic name is RAL1, card columns 36-39 would be punched RAL1 followed by 4 blanks in card columns 40-43.</p>

(continued next page)

<u>CC</u>	<u>CDS</u> <u>Byte</u>	<u>Description</u>
44-45	20	<p>OLTT Control Program Fixed Area Length</p> <p>This byte contains the byte count (in Hexadecimal) of the On-Line Terminal Test Control Program Fixed Area. The information contained in that area is used by the OLTT control program to control the TP Line the terminal is attached to. This count includes card column 44-45 (byte 20). To calculate this count, start at card columns 44-45 (byte 20) and end with the last card column prior to the "/" indicating the end of the CDS. Count all columns in this field (including blanks and 0's). Do not count card columns 1 to 15 of any continuation card. (A continuation card is any card following a card with a non-blank character in card column 72. Columns 1 to 15 of continuation cards must be blank.) Divide the total number of card columns counted by 2 for the byte count. This value must be punched in Hexadecimal and the minimum value is decimal 12 (X'0C').</p>
46-47	21	<p>FLAG Byte 1</p> <p>Bit 0=1 if the TP line the terminal is on is switched. Bit 1=1 if the TP line the terminal is on uses multipoint line control. Bit 2=1 if an identification sequence is required. If this bit is 1, the identification sequence must be defined in the ICC and IC fields of this TERMINAL CDS and the terminal must be on a switched line (Bit 0=1). The identification sequence (Bit 2=1) and the security identification sequence (Bit 3=1) are mutually exclusive. Bit 3=1 if a security identification sequence is required. If this bit is 1, the security identification sequence must be defined in the SICC and SIC fields of this TERMINAL CDS and the terminal must be on a switched line (Bit 0=1). The security identification sequence (Bit 3=1) and identification sequence (Bit 2=1) are mutually exclusive. Bit 4=1 if component selection is required for this terminal, e.g., for 2740, 2741 bit 4=0; for 1050, 2770 bit 4=1. Bit 5=1 if an autodial unit is associated with the TP line the terminal is on. If this bit is 1 the dial digits must be defined in the DDC and DD fields of this TERMINAL CDS. Bit 6=1 if a ESC world trade data set is attached. This bit should be 0 for IBM USA use. Bit 7=0</p>
48-49	22	<p>FLAG Byte 2 - leave blank</p> <p>Reserved for future use.</p>
50-51	23	<p>Reserved - leave blank</p>

(continued next page)

CC	CDS Byte	Description
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***** The following four bytes (24-27) have different meanings when the local control unit is a 3704/3705 with NCP or a 2701/2702/2703 or 3704/3705 with EP.

***** If the Local Control Unit is a 3704/3705 with NCP, punch:

52-55	24-25	<p>Destination Name (subarea - left justified + resource ID - right justified)</p> <p>The Destination Name is composed of 2 fields - the subarea and the Resource ID.</p> <ul style="list-style-type: none"> • subarea - the subarea field is the value of the NCP node subarea. It is a left justified variable bit width field of up to 8 bits, the bit width being equal to the number of bits required to specify the maximum subarea (MAXSUBA) operand of the NCP-3 Sysgen BUILD macro. (e.g. MAXSUBA=7 would be a 3 bit wide subarea field.) The subarea value is defined by the SUBAREA operand of the BUILD macro in the NCP-3 Sysgen listing. For NCP-3 the minimum value is 2 and the maximum value is that specified by MAXSUBA. For NCP 2.1 and below, this field is always 0. See the examples at the end of the Terminal CDS definition. • resource ID - the terminal element resource ID for this destination name composes the remaining bits of this 16 bit field. This field is right justified and contains the Resource ID assigned to this terminal by the 3704/3705 Network Control Program System Generation (Stage 1). Note that the Stage 1 NCP Sysgen listing specifies this value in the terminal macro for this terminal under TERMINAL FEATURES. It is specified in decimal and must be punched in the CDS card in hexadecimal. See the examples at the end of the terminal CDS definition.
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56-59	26-27	Reserved - leave blank
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***** Go to byte 28 (Device Type) to continue TERMINAL CDS definition.

***** If the Local Control Unit is a 2701/2702/2703 or 3704/3705 with EP, punch:

CC	CDS Byte	Description
52-53	24	Line Connection Command Sequence Code
	00	Reserved
	01	DISABLE, ENABLE or DIAL 2701/2703 IBM 1 - 1050, 2740, 2741 2701/2703 IBM 2 - NA 2701/2703 TTY 1 - NA 2701/2703 TTY 2 - NA 2701/2703 WTC (World Trade) - NA 2703 IBM 1 (BREAK) - 1050, 2740, 2741
	02	Reserved
	03	DISABLE, SETMODE, ENABLE or DIAL 2701 SDA 1 - NA 2701 SDA 2 - supported Bi-Sync devices 2703 BSA (Bi-Sync) supported Bi-Sync devices
	04	DISABLE, SADZERO, ENABLE or DIAL (use for 2702 only) 2702 IBM 1 - 1050, 2740, 2741 2702 IBM 2 - NA 2702 IBM 1 (BREAK) - 1050, 2740, 2741 2702 TTY 1 - NA 2702 TTY 2 - NA 2702 WTC - NA
	05	DISABLE, SADONE, ENABLE or DIAL Same as for 04 - SADZERO
	06	DISABLE, SADTWO, ENABLE or DIAL Same as for 04 - SADZERO
	07	DISABLE, SADTHREE, ENABLE or DIAL Same as for 04 - SADZERO
	08-FF	Reserved

(continued next page)

<u>CC</u>	<u>CDS Byte</u>	<u>Description</u>
54-55	25	<p>Set Mode Data</p> <p>This byte contains the data to be used when a SETMODE is issued to a Synchronous Data Adapter type II (BSC). The bits are defined as follows:</p> <p>Bit 0 = 0 not used.</p> <p>Bit 1 = 1 if intermediate block check (ITB) is to be performed.</p> <p>Bit 2 = 0 if dual communications interface A is to be selected. (2701 only) = 1 if dual communications interface B is to be selected.</p> <p>Bit 3 = 1 if the adapter is to run in TEST MODE. (2701 only) (This permits all commands to be executed by the adapter, but signals are not transmitted to the data set interface.)</p> <p>Bit 4 = 0 if transmission code A (first code) is to be used or if the Dual Code Feature is not installed. (2701 only) = 1 if transmission code B (second code) is to be used.</p> <p>Bit 5 = 0 if non-interrupt mode of operation is to be used. (2701 only) = 1 if interrupt mode of operation is to be used.</p> <p>Bit 6 and 7 = 0 not used.</p>
56-59	26-27	Reserved - leave blank

(continued next page)

CC	CDS Byte	Description																												
60-61	29	<p>Device Type</p> <table><tr><td>00</td><td>BSC0 (2770,*3780)</td><td>10</td><td>Start/Stop (1050)</td></tr><tr><td>01</td><td>BSC1 (3270)</td><td>11</td><td>Start/Stop (2740 Mod 1 and 2)</td></tr><tr><td>02</td><td>Reserved</td><td>11</td><td>Start/Stop (2741)</td></tr><tr><td>03</td><td>BSC3 (2780)</td><td></td><td></td></tr><tr><td>04</td><td>BSC4 (3780, 2715)</td><td></td><td></td></tr><tr><td>05</td><td>BSC5 (2972 Mod 8 and 11)</td><td></td><td></td></tr><tr><td>06</td><td>BSC6 (3650, 3660, 3735, 3740, 360 Mod 20, 360 Mod 25, 1130, 1800, Sys 3 and 7, 370 CPU ICA)</td><td></td><td></td></tr></table> <p>*3780 is a 3780 with the component select feature.</p>	00	BSC0 (2770,*3780)	10	Start/Stop (1050)	01	BSC1 (3270)	11	Start/Stop (2740 Mod 1 and 2)	02	Reserved	11	Start/Stop (2741)	03	BSC3 (2780)			04	BSC4 (3780, 2715)			05	BSC5 (2972 Mod 8 and 11)			06	BSC6 (3650, 3660, 3735, 3740, 360 Mod 20, 360 Mod 25, 1130, 1800, Sys 3 and 7, 370 CPU ICA)		
00	BSC0 (2770,*3780)	10	Start/Stop (1050)																											
01	BSC1 (3270)	11	Start/Stop (2740 Mod 1 and 2)																											
02	Reserved	11	Start/Stop (2741)																											
03	BSC3 (2780)																													
04	BSC4 (3780, 2715)																													
05	BSC5 (2972 Mod 8 and 11)																													
06	BSC6 (3650, 3660, 3735, 3740, 360 Mod 20, 360 Mod 25, 1130, 1800, Sys 3 and 7, 370 CPU ICA)																													
62-63	29	<p>Line Control</p> <p>This byte defines the data link control to be used.</p> <table><tr><td>00</td><td>BSC0 (2770, *3780)</td><td>10</td><td>Start/Stop (1050)</td></tr><tr><td>01</td><td>BSC1 (3270)</td><td>11</td><td>Start/Stop (2740 Mod 1)</td></tr><tr><td>02</td><td>Reserved</td><td>12</td><td>Reserved</td></tr><tr><td>03</td><td>BSC3 (2780)</td><td>13</td><td>Start/Stop (2740 Mod 2)</td></tr><tr><td>04</td><td>BSC4 (3780,2715)</td><td>14</td><td>Reserved</td></tr><tr><td>05</td><td>BSC5 (2972 Mod 8 and 11)</td><td>15</td><td>Start/Stop (2741)</td></tr><tr><td>06</td><td>BSC6 (3650, 3660, 3735 3740, 360 mod 20, 360 Mod 25, 1130, 1800, Sys 3 and 7, 370 CPU ICA)</td><td></td><td></td></tr></table> <p>*3780 is a 3780 with the component select feature.</p>	00	BSC0 (2770, *3780)	10	Start/Stop (1050)	01	BSC1 (3270)	11	Start/Stop (2740 Mod 1)	02	Reserved	12	Reserved	03	BSC3 (2780)	13	Start/Stop (2740 Mod 2)	04	BSC4 (3780,2715)	14	Reserved	05	BSC5 (2972 Mod 8 and 11)	15	Start/Stop (2741)	06	BSC6 (3650, 3660, 3735 3740, 360 mod 20, 360 Mod 25, 1130, 1800, Sys 3 and 7, 370 CPU ICA)		
00	BSC0 (2770, *3780)	10	Start/Stop (1050)																											
01	BSC1 (3270)	11	Start/Stop (2740 Mod 1)																											
02	Reserved	12	Reserved																											
03	BSC3 (2780)	13	Start/Stop (2740 Mod 2)																											
04	BSC4 (3780,2715)	14	Reserved																											
05	BSC5 (2972 Mod 8 and 11)	15	Start/Stop (2741)																											
06	BSC6 (3650, 3660, 3735 3740, 360 mod 20, 360 Mod 25, 1130, 1800, Sys 3 and 7, 370 CPU ICA)																													
64-65	30	<p>Line Code (transmission code)</p> <p>This byte indicates the line code (transmission code) used by the terminal. See Stage 1 NCP Sysgen listing under "TERMINAL FEATURES" for this terminal or ask the customer what code is being used.</p> <p>00 - EBCDIC - 2770, 2780, 3780, 3270, 2972, 3650, 3660, 3735, 3740, 1130, 1800, 2715, System 3, System 7, System 360 Mod 20 and 25, System 370 CPU ICA.</p> <p>01 - USASCII - (Same as for EBCDIC)</p> <p>02 - EBCD - 1050, 2740, 2741</p> <p>03 - Correspondence - 2740, 2741</p> <p>05 - BCD - 1050, 2740, 2741</p>																												
66-67	31	Reserved - leave blank																												
68-71	32-33	Device Buffer Size (right justified and in hexadecimal) if less than 256. Punch 0000 for unbuffered devices or those with buffers greater than or equal to 256.																												
72		Continuation column = any non-blank character.																												

(continued next page)

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CC	CDS Byte	Description
***** Start of second CDS card.		
16-19	34-35	Reserved - leave blank
<p>**** The CDS data from byte 36 on has a variable length and may require a 3rd card to be punched. Remember that card column 71 is the last column that data can be punched in, and that card column 72 must have some non blank character punched in it if more CDS data follows on the next card, and also that CDS data contained on the next card must begin in card column 16.</p> <p>**** Note that examples of TERMINAL CDS cards are given at the end of this CDS layout.</p>		
20-21	36 (1 byte)	<p>Input Device Field Count (IDFC)</p> <p>This byte contains the number of Input Device bytes in the Input Device Field in hexadecimal. If there are no Input Device bytes, this byte must be 00. Refer to Appendix B, IDFC column.</p>
22+	IDFC +1 (X bytes)	<p>Input Device Field (IDF)</p> <p>This field contains an ordered sequence of bytes, one for each possible terminal data input port ... e.g. for the 1050 it would have 3 bytes - one for the KEYBOARD, one for READER 1 and one for READER 2. The data punched for each byte depends on the input device attached to that port ... e.g. for a 1052 KEYBOARD punch a hexadecimal 10 in byte 1, for a 1054 paper tape reader in the READER 1 position punch a hexadecimal 50 in byte 2, etc. If there is no device attached to a particular port, punch a hexadecimal 00 for the byte representing that port. See Appendix B for the IDF format for each device type and the input device values.</p>
	37+IDFC (1 byte)	<p>Output Device Field Count (ODFC)</p> <p>This byte contains the number of Output Device bytes in the OUTPUT DEVICE FIELD in hexadecimal. If there are no Output Device bytes, this byte must be 00. Refer to Appendix B, ODFC column.</p>
	ODFC+1 (X bytes)	<p>Output Device Field (ODF)</p> <p>This field contains an ordered sequence of bytes, one for each possible terminal data output port ... e.g., for the 1050 it would have 4 bytes - one for PRINTER 1, one for PRINTER 2, one for PUNCH 1 and one for PUNCH 2. The data punched for each byte depends on the output device attached to that port ... e.g., for a 1053 printer in the PRINTER 1 position punch a hexadecimal 20 in byte 1, for a 1055 paper tape punch in the PUNCH 2 position punch a hexadecimal 50 in byte 4, etc. If there is no device attached to a particular port, punch a hexadecimal 00 for the byte representing that port. See Appendix B for the ODF format for each device type and the output device values.</p>

(continued next page)

CC	CDS Byte	Description
	39+IDPC+ CDPC (1 byte)	Control Unit Poll Sequence Count (CUPSC) This byte contains the count (in hexadecimal) of the Control Unit Poll Sequence characters in the CONTROL UNIT POLL SEQUENCE field. If there are no characters, this byte must be 00. Maximum value is 14.
	CUPSC+1 (0-14 bytes)	Control Unit Poll Sequence (CUPS) This field contains the address characters required to poll a terminal on a multipoint line. The characters in this field are in the hexadecimal representation of EBCDIC (e.g. A=C1). If the terminal requires address character duplication, both characters must appear in this field. Note that data link control characters (e.g., BSC inquiry character) and remote control unit (e.g. 1050) component selection characters are not part of this sequence. NOTE: For a 2740 Mod 1 with Transmit Control a X'61' Poll Sequence must be entered.
	39+IDPC+ CDPC+CUPSC (1 byte)	Control Unit Select Sequence Count (CUSSC) This byte contains the count (in hexadecimal) of the Control Unit Select Sequence characters in the Control Unit Select Sequence field. If there are no characters, this byte must be 00. Maximum value is 14.
	CUSSC+1 (0-14 bytes)	Control Unit Select Sequence (CUSS) This field contains the address characters required to select (address) a terminal on a multipoint line. The characters in this field are in the hexadecimal representation of EBCDIC (e.g. B=C2). If the terminal requires address character duplication, both characters must appear in this field. Note that data link control characters (e.g., BSC inquiry character) and remote control unit (e.g., 1050) component selection characters are not part of this sequence.

(continued next page)

CC	CDS Byte	Description
	40+IDPC+ CDPC+ CUPSC+ CUSSC (1 byte)	Dial Digit Count (DDC) This byte contains the count (in hexadecimal) of the dial digits in the DIAL DIGIT field. Dial digits are only valid if the device resides on a switched line. If there are no digits, this byte must be 00. The maximum value is 32.
	DDC+1 (0-32 bytes)	Dial Digits (DD) This field contains the dial digits to be used when initiating a call to the device. The digits are in the hexadecimal representation of EBCDIC (e.g., 0=F0, 9=F9, etc.). The dash character (-), hex "60" may be inserted one or more times to indicate a dialing pause. When the dash character is encountered, it will cause a one second delay before the next digit is dialed. This pause will allow the establishing of a "secondary" dial tone. The dashes are considered dial digits and must be included in the count. NOTE: The dialing pause is only valid for terminals attached to the 3704/3705 with MCP. If the dial unit has a hardware delay or pause capability, the SEP character X'6D' may be entered in the place of the MCP dialing pause character.
	41+IDPC+ CDPC+ CUPSC+ CUSSC+ DDC (1 byte)	Identification Characters Count (ICC) This byte contains the count (in hexadecimal) of the identification characters in the IDENTIFICATION CHARACTER field. Identification characters are only valid for terminals on a switched lines. If there are no characters, this byte must be 00. Maximum value is 15. Note that the IC and SIC fields are mutually exclusive.
	ICC+1 (0-15 bytes)	Identification Characters (IC) This field contains the characters used when ID exchange and verification is required for the terminal. These characters are the ones transmitted by the terminal. The characters are in the hexadecimal representation of EBCDIC (e.g., A=C1, 9=F9, etc.) This field must not contain any IDENTIFICATION CHARACTERS if Security ID exchange and verification is required for this terminal - the IDENTIFICATION CHARACTERS are included in the SECURITY IDENTIFICATION CHARACTER field in this case. The ID characters for a particular terminal must be obtained from the customer.

(continued next page)

CC	CDS Byte	Description
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42+IDFC+
CDPC+
CUPSC+
CUSSC+
DDC+ICC
(1 byte)

Security Identification Character Count (SICC)

This byte contains the count (in hexadecimal) of the identification characters in the SECURITY IDENTIFICATION CHARACTER field. Security identification characters are only valid for terminals on a switched line with ID exchange and verification (the identification characters are part of the SECURITY IDENTIFICATION character field). Note that the SIC and IC fields are mutually exclusive. If there are no characters, this byte must be 00. Maximum value is 15.

SICC+1

Security Identification Characters (SIC)

characters used when Security ID exchange and verification is required for the terminal. The characters are in the hexadecimal representation of EBCDIC (e.g., A-C1, 9=F9, etc.). These characters are the ones transmitted by the terminal. The security ID characters must be obtained from the customer. Note that these are hardware plugged characters not those entered manually by a terminal operator.

**** NOTE ****

Punch a / in the next even card column to indicate the end of the TERMINAL CDS card data. Note that this character is entered in the next even card column following the last field punched. All fields must punched with valid data or represented by 00 in the count field.

**** EXAMPLES - see next page ****

**** EXAMPLES **** (all omitted card columns (cc) are blank.)

• A 1050 on a leased line under NCP. (Start/Stop)

*** Card 1 ***

CC	Punched Data	Description
2-4	CDS	
10-17	0000001A	Channel Address.
22-25	4420	CLASS and TYPE.
30-31	0A	Customer assigned symbolic name is used.
36-42	MP1050A	Symbolic name.
44-45	20	OLTTCP fixed area byte length.
46-47	48	1050 is multipoint with component selection.
52-55	400C	Subarea and 1050 Resource ID. (See note below.)
60-61	10	1050 device type.
62-63	10	1050 line control.
64-65	05	BCD line code.
68-71	0000	1050 buffer size.
72	X	Continuation character.

Note: Assume MAXSUBA=7 and SUBAREA=2 in the NCP-3 sysgen BUILD macro. Also, assume the Resource ID listed in the TERMINAL macro expansion for MP1050A in the stage 1 NCP-3 sysgen listing is 12 decimal. Then (in binary):

Maxsuba = 7 = xxx (3 bit field)

Subarea = 2 = 010 (=2 in hex)

Resource ID = 0 0000 0000 1100

Destination Name = 0100 0000 0000 1100 = 40JC in hex

(Card 2 on next page)

*** Card 2 ***

CC	Punched Data	Description
20-21	03	1050 has 3 input ports.
22-27	105030	1050 has a 1052 KEYBOARD, a 1054 paper tape reader in the READER 1 position and a 1056 card reader in the READER 2 position.
28-29	04	1050 has 4 output ports.
30-37	20003000	1050 has a 1053 printer in the PRINTER 1 position, nothing in the PRINTER 2 position, a 1057 card punch in the PUNCH 1 position, and nothing in PUNCH 2 position.
38-39	01	1050 has 1 poll station address character.
40-41	C1	1050 poll character is an A.
42-43	01	1050 has 1 select station address character.
44-45	C1	1050 select address character is A.
46-47	00	No Dial Digits.
48-49	00	No Identification Characters
50-51	00	No Security Identification Characters
52	/	End of CDS.

(continued next page)

- A CPU/Programmed Terminal on an auto-dial line under NCP. It has ID exchange and verification. (CPU/Programmed Terminal - RPT).

*** Card 1 ***

CC CC	Punched Data	Description
2-4	CDS	
10-17	0000001A	Channel address.
22-25	4420	CLASS and TYPE.
30-31	0A	Customer assigned symbolic name is used.
36-42	CPUTERM	Symbolic name.
44-45	1P	OLTTCP fixed area length.
46-47	A4	CPU Terminal is on a switched auto-dial line and has ID exchange and verification.
52-55	4080	Subarea and Mod 20 Resource ID. (See note below.)
60-61	06	CPU Terminal device type.
62-63	06	CPU Terminal line control.
64-65	00	EBCDIC line code.
68-71	0000	Default buffer size (6256).
72	X	Continuation character.

Note:

Assume MAXSUBA=15 and SUBAREA=4 in the NCP-3 sysgen BUILD macro. Also assume the Resource ID listed in the TERMINAL macro expansion for MP1050A in the stage 1 NCP-3 sysgen listing is 128 decimal. Then (in binary):

Maxsuba = 15 = xxxx (4 bit field)

Subarea = 4 = 0100 (=4 in hex)

Resource ID = 0000 1000 0000

Destination Name = 0100 0000 1000 0000 = 4080 in hex

*** Card 2 ***

CC	Punched Data	Description
20-21	01	CPU Terminal has one input port.
22-23	01	CPU Terminal is a CPU input device.
24-25	01	CPU Terminal has one output port.
26-27	01	CPU Terminal is a CPU output device.
28-29	00	CPU Terminal has no POLL sequence.
30-31	00	CPU Terminal has no SELECT sequence.
32-33	04	CPU Terminal has four dial digits.
34-41	F6F4F6F9	dial digits are 6469.
42-43	02	CPU Terminal has 2 ID characters.
44-47	C1C1	ID characters are AA.
48-49	00	No Security Identification Characters.
50	/	end of CDS.

(continued next page)

- A 2770 on a switched auto-dial line with Security ID. (BSC)

*** Card 1 ***

CC	Punched Data	Description
2-4	CDS	
10-17	0000001A	Channel address.
22-25	4420	CLASS and TYPE.
30-31	0A	Customer assigned symbolic name is used.
36-41	SW2770	Symbolic name.
44-45	28	OLTTCP fixed area byte length.
46-47	94	2770 is switched auto-dial and has Security ID exchange and verification.
52-55	4003	Subarea and 2770 Resource ID. (See note below.)
60-61	00	2770 device type.
62-63	00	2770 line control.
64-65	01	USASCII line code.
68-71	0000	Default buffer size (256).
72	X	Continuation character.

Note:

Assume MAXSUBA = 255 and SUBAREA = 4 in the MCP-3 sysgen BUILD macro. Also assume the Resource ID listed in the terminal macro expansion in the stage 1 MCP-3 sysgen listing is 3 decimal. Then (in binary):

Maxsuba = 255 xxxx xxxx (8 bit field)

Subarea = 64 0100 0000 (=40 in hex)

Resource ID = 0000 0011

Destination Name=0100 0000 0000 0011 = 4003 in hex

(Card 2 on next page)

*** Card 2 ***

CC	Punched Data	Description
20-21	04	2770 has 4 input ports.
22-29	10005000	2770 has a KEYBOARD in position 1, nothing in Input 2 position, a 1054 paper tape reader in Input 3 position, and nothing in Input 4 position.
30-31	04	2770 has 4 output ports.
32-39	20410050	2770 has a 1053 in the Printer position, a 2265 display in Output 2 position, nothing in Output 3 position, and a 1055 paper tape punch in Output 4 position.
40-41	00	2770 has no POLL sequence.
42-43	00	2770 has no SELECT sequence.
44-45	04	2770 has 4 dial digits.
46-53	F4F9F9F4	Dial digits are 4994.
54-55	00	2770 has ID characters but they are in the SIC field.
56-57	05	2770 has 5 Security ID characters including the ID characters.
58-57	C1C1818283	The first 2 characters are ID characters AA. The next 3 characters are the actual Security ID characters abc.
68	/	end of CDS.

NCP_CDS

No NCP CDS is required for terminals or lines tested under OLT release 8.0 or greater with NCP-3.2/TOLTEP (SWA 2 release) or greater. Testing terminals under OLT(S) EP requires a line and NCP CDS.

<u>CC</u>	<u>CDS Byte</u>	<u>Description</u>
1	-	Always Blank
2-4	-	CDS
5-9	-	Always Blank
10-17	0-3	Unit Address (right justified) The native subchannel address of the 3704/3705 that will contain the NCP. This address is right justified ... e.g., address 0A would be punched 0000000A.
18-19	4	Not used - leave blank
20-21	5	Feature Byte - leave blank
22-23	6	Class - Hex "44"
24-25	7	Type - Hex "20"

The following OLT families will be selected on the SOSF Auto Edit Tape for Type=20:

- 3700
- 1050
- 2740
- 2741
- 2700

Only the 3700 family is required. The other families may be deleted unless the OLT executive program is TOTE running under TCAM level 5 to 10, but not including 10. The TOTE Unit Configurator modules to be added for these levels of TOTE are:

<u>1050</u>	<u>2740</u>	<u>2741</u>	<u>2700</u>
U1050UCA	U2740UCA	U2741UCA	U2700UCA
U1050UCB	U2740UCB	U2741UCB	U2700UCB
U1050UCD	U2740UCD	U2741UCD	U2700UCD
U1050UCE	U2740UCR	U2741UCR	U2700UCE
U1050UCR			U2700UCG
			U2700UCH
			U2700UCI
			U2700UCJ
			U2700UCK
			U2700UCR
			U2700UCZ

26-29 8 CDS Byte Count - Leave blank (calculated by SOSF)

30-31 9 FLAGS - Punch 08

Note that the NCP CDS is a local symbolic CDS and must precede all TERMINAL and LINE CDS cards in the CDS configuration deck.

32-35 10-11 Reserved - leave blank
(continued next page)

CC	CDS Byte	Description
36-43	12-19	<p>Symbolic Name (left justified)</p> <p>The alpha-numeric name assigned to this MCP. This symbolic name must be the value in the NEWNAME= operand of the BUILD macro in the Stage 1 MCP Sysgen listing, with the suffix "C" appended to it ....e.g., if the MCP load module name is RTP (NEWNAME=RTP), then the MCP CDS name entered would be RTPC.</p>
44-45	20	<p>OLTT Control Program Fixed Area Length</p> <p>This byte contains the byte count (in Hexadecimal) of the On-Line Terminal Test Control Program Fixed Area. The information contained in that area is used by the OLTT control program to control the TP Line the terminal is attached to. This count includes card column 44-45 (byte 20). To calculate this count, start at card columns 44-45 (byte 20) and end with the last card column prior to the "/" indicating the end of the CDS. Count all columns in this field (including blanks and 0's). Do not count card columns 1 to 15 of any continuation card. (A continuation card is any card following a card with a non-blank character in card column 72. Columns 1 to 15 of continuation cards must be blank.) Divide the total number of card columns counted by 2 for the byte count. This value must be punched in Hexadecimal and the minimum value is decimal 16 (X'10').</p>
46-47	21	FLAG Byte 1 - Punch 00
48-49	22	<p>FLAG Byte 2</p> <p>Bit 0 = 1 must be one if this CDS is for an MCP-3 or greater Network Control Program. Bit 1 = 0 reserved for MCP simulation, do not set to 1. Bit 2 = 0 reserved for trace, do not set to 1. Bit 3 = 0 reserved for trace, do not set to 1. Bit 4 - 7 reserved for future use.</p>
50-51	23	<p>Maximum Subarea (MCP-3 or greater)</p> <p>This field specifies the maximum subarea that will be allowed in the total MCP-3 or greater network. It is equal to the value in hexadecimal of the MAXSUBA operand of the BUILD macro in the MCP-3 or greater stage 1 sysgen listing. Leave this field blank for MCP 2.1 and below.</p>

(continued next page)

<u>CC</u>	<u>CDS Byte</u>	<u>Description</u>
52-55	24-25	<p>Destination Name (subarea - left justified + resource ID - right justified)</p> <p>The Destination Name is composed of 2 fields - the subarea and the Resource ID</p> <ul style="list-style-type: none"> • subarea - the subarea field is the value of the NCP node subarea. It is a left justified variable bit width field of up to 8 bits, the bit width being equal to the number of bits required to specify the maximum subarea (MAXSUBA) operand of the NCP-3 or greater Sysgen BUILD macro. (e.g. MAXSUBA=127 would be a 7 bit wide subarea field.) The subarea value is defined by the SUBAREA operand of the BUILD macro in the NCP-3 Sysgen listing. For NCP-3 or greater the minimum value is 2 and the maximum value is that specified by MAXSUBA. For NCP 2.1 and below, this field is always 0. See the example at the end of the NCP CDS definition. • resource ID - the element value for the NCP composes the remaining bits of this 16 bit field. It is always 0.
56-59	26-27	<p>Origination Address Field (NCP-3 only - leave blank if not NCP-3)</p> <p>This field is divided in 2 parts - the subarea 1 and element.</p> <ul style="list-style-type: none"> • subarea 1 - this field is defined the same as 'subarea' in the Destination Name field above. It is the DAF of the SSCP (System Service Control Point) in the host. See the example at the end of the NCP CDS definition. • element - This field is always 0. <p>Leave this field blank if not NCP-3.</p>
60-61	28	Device Type - punch P0
62-63	29	Line Control - leave blank
64-65	30	Line Code - leave blank
66-67	31	Reserved - leave blank
68-71	32-33	<p>Host Buffer Size</p> <p>This is the value in Hexadecimal specified in decimal in the UNITSZ= operand of the HOST Macro in the Stage 1 NCP Sysgen listing. It must be punched in Hexadecimal.</p>
72		Continuation column = any non-blank character.

(continued next page)

CC	CDS Byte	Description
----	-------------	-------------

***** Start of second CDS card.

16-17	34	<p>Flags</p> <p>Bit 0 = 1 indicates pad characters are prefixed to BTU/PIU. This bit is set if the BFPAD= operand of the HOST MACRO IN THE Stage 1 MCP Sysgen listing is coded other than 0.</p> <p>Bit 1 = 0</p> <p>Bit 2 = 0</p> <p>Bit 3 = 0</p> <p>Bit 4 = 0</p> <p>Bit 5 = 0</p> <p>Bit 6 = 0</p> <p>Bit 7 = 0</p>
-------	----	---

18-19	35	Reserved - leave blank
-------	----	------------------------

20+	36+	<p>Host ID characters</p> <p>These are the characters that appear in the CUID= operand of the BUILD macro in the Stage 1 MCP Sysgen listing. The first byte of this field (2 hexadecimal characters) should contain the number of HOST ID characters. If there are no HOST ID characters, leave the field blank.</p>
-----	-----	--

**** NOTE **** Punch a / in the next even card column to indicate the end of the MCP CDS card data. If there is no CUID, punch the / in card column 20.

**** EXAMPLES - see next page ****

**** EXAMPLE **** (All omitted card columns (CC) are blank.)

- Assume an NCP-3 sysgen with the following gen options:

- BUILD macro NEWNAME = NCP3BR2
 MAXSUBA = 127
 SUBAREA = 18
- HOST macro UNITSZ = 128
 BFRPAD = 28

*** CARD 1 ***

CC	Punched Data	Description
2-4	CDS	
10-17	0000001A	Channel Address.
22-25	4420	CLASS and TYPE.
30-31	08	Flags.
36-42	NCP3BR2C	Sysgen name.
44-45		OLTTCP fixed area byte length.
48-49	80	NCP-3 gen.
50-51	FF	Up to 255 subareas in this system.
52-55	2400	Destination name. (See note below.)
56-59	0200	Origination address field (OAF). (See note below.)
60-61	F0	Device type.
68-71	0080	Host buffer size.
72	X	Continuation Character.

*** CARD 2 ***

CC	Punched Data	Description
16-17	80	Buffer pads are prefixed to received PIU's.
18	/	end of CDS.

Note: Using the gen options defined above,
then (in binary):

Maxsuba = 127 = xxxx xxx (7 bit field)

Subarea = 18 = 0010 010 (=12 in hex)

Resource ID = 0 0000 0000

Destination Name=0010 0100 0000 0000=2400 in hex

Subarea 1 = 0000 001

Element = 0 0000 0000

OAF = 0000 0010 0000 0000=0200 in hex

LINE_CDS

No line or NCP CDS is required for lines and terminals tested under OLT release 8.0 and greater, operating with NCP 3.2/TOLTEP (SNA 2 release) or greater. Testing terminals under OLT(s) EP requires a line and NCP CDS.

<u>CC</u>	<u>CDS</u> <u>Byte</u>	
1	-	Always Blank
2-4	-	CDS
5-9	-	Always Blank
10-17	0-3	Unit Address

The native subchannel address of the 3704/3705 to be used for communication with the line. This address is right justified e.g., address 0A would be punched 0000000A.

18-19	4	Terminal Flags - leave blank
20-21	5	Feature Byte - leave blank
22-23	6	Class - Hex "44"
24-25	7	Type - Hex "20"

The following OLT families will be selected on the SOSP Auto Edit Tape for Type=20:

- 3700
- 1050
- 2740
- 2741
- 2700

Only the 3700 family is required. The other families may be deleted unless the OLT executive program is TOTE running under TCAM level 5 to 10, but not including 10. The TOTE Unit Configurator modules to be added for these levels of TOTE are:

<u>1050</u>	<u>2740</u>	<u>2741</u>	<u>2700</u>
U1050UCA	U2740UCA	U2741UCA	U2700UCA
U1050UCB	U2740UCB	U2741UCB	U2700UCB
U1050UCD	U2740UCD	U2741UCD	U2700UCD
U1050UCE	U2740UCR	U2741UCR	U2700UCE
U1050UCR			U2700UCG
			U2700UCH
			U2700UCI
			U2700UCJ
			U2700UCK
			U2700UCR
			U2700UCZ

26-29	8	CDS Byte Count
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Leave blank (calculated by SOSP)

(continued next page)

CC	CDS Byte	Description
30-31	9	<p>FLAGS</p> <p>Bit 0=0 Bit 1=1 if this 3705 is shared with another system. This is an OLT Executive requirement. It is not used by the OLTT's. It is normally 0, but would be 1 under the following conditions:</p> <ul style="list-style-type: none"> If the 3705 has 2 Type 2 channel adapters installed, and the BUILD macro in the Stage 1 WCP Sysgen listing has "CHANTYP= (TYPE 2, TYPE2)" and "SECCHAN= BACKUP" coded. <p>Bit 2=0 Bit 3=0 Bit 4=1 Bit 5=0 Bit 6=1 This bit must be 1 for a LINE CDS. Bit 7=0</p>
32-35	10-11	Reserved - leave blank
36-43	12-19	<p>Symbolic Name (left justified)</p> <p>The alpha-numeric name assigned to this line. The name must be the same as the one in the Stage 1 Network Control Program System Generation listing under "LINE FEATURES" for the line macro defining this line. The name is punched left justified e.g. if the line symbolic name is LINE1, card columns 36-41 would be punched LINE1 followed by 2 blanks in card columns 42-43.</p>
44-45	20	<p>OLTT Control Program Fixed Area Length</p> <p>This byte contains the byte count (in hexadecimal) of the On-Line Terminal Test Control Program Fixed Area. Punch a hexadecimal 10 in this field.</p>
46-47	21	FLAG Byte 1 - Punch 00
48-49	22	<p>FLAG Byte 2 - leave blank</p> <p>Reserved for future use.</p>
50-51	23	Reserved - leave blank

(continued next page)

CC	CDS Byte	Description
52-55	24-25	<p>Destination Name (subarea - left justified + resource ID - right justified)</p> <p>The Destination Name is composed of 2 fields - the subarea and the Resource ID.</p> <ul style="list-style-type: none"> • subarea - the subarea field is the value of the MCP mode subarea. It is a left justified variable bit width field of up to 8 bits, the bit width being equal to the number of bits required to specify the maximum subarea (MAXSUBA) operand of the MCP-3 Sysgen BUILD macro. (e.g. MAXSUBA=31 would be a 5 bit wide subarea field.) The subarea value is defined by the SUBAREA operand of the BUILD macro in the MCP-3 Sysgen listing. For MCP-3 the minimum value is 2 and the maximum value is that specified by MAXSUBA. For MCP 2.1 and below, this field is always 0. • resource ID - the line element resource ID for this destination name composes the remaining bits of this 16 bit field. This field is right justified and contains the Resource ID assigned to this line by the 3704/3705 Network Control Program System Generation (Stage 1). Note that the Stage 1 MCP Sysgen listing specifies this value in the LINE macro for this line under LINE FEATURES. It is specified in decimal and must be punched in the CDS card in hexadecimal.
56-59	26-27	Reserved - leave blank
60-61	28	Device Type - Punch 00
62-63	29	Line Control - Punch 00
64-65	30	Line Code - Punch 00
66-67	31	Reserved - leave blank

(continued next page)

*****Line CDS bytes 32, 33, and 35 are not required for OLT release 7.0.
*****Line CDS bytes 32 thru 35 are not required for OLT release 8.0 and above.

CDS
Byte Description

18-49 32 LCD Setting

The Line Control Definer (LCD) assigned to this line by the Stage 1 NCP Sysgen listing (See NOTE 1 below). The acceptable values for this field are:

Punch	LCD Setting	if Line Type	Definition
00		Not used	Start-Stop 9/6
02		83B3, 115A, WTY	Start-Stop 8/5
04		1050, 2740, 2741, HTA	Start-Stop 9/7
05		Not used	Start-Stop 10/7
06		Not used	Start-Stop 10/8
07		TWX	Start-Stop 11/8
09		SDLC	SDLC
0C		Bi-sync - EBCDIC	Bi-sync - EBCDIC
0D		Bi-sync - USASCII	Bi-sync - USASCII

70-71 33 CS Number

The CS number is the CS to which the line is attached. It can be determined from the MOD= operand of the CSB macro in the Stage 1 NCP Sysgen listing. The valid values are:

If MOD=	Punch	CS #	Definition
0		01	CS1
1		02	CS2
2		03	CS3
3		04	CS4

72 Continuation column = any non-blank character.
(continued next page)

CC	CDS Byte	Description
----	-------------	-------------

***** Start of second CDS card.

16-17	34	<p>Flags</p> <p>Bit 0=1 if the CS for this line is a Type 1 CS. This can be determined from the TYPE= operand of the CSB macro in the Stage 1 NCP Sysgen listing.</p> <p>Bit 1=1 if this line is attached to a 1200 bps integrated modem (half or full duplex).</p> <p>Bit 2=1 if this line is attached to a 2400 bps integrated modem (half or full duplex) or an externally attached 3872, 3874 or 3875.</p> <p>Bit 3=0</p> <p>Bit 4=0</p> <p>Bit 5=0</p> <p>Bit 6=0</p> <p>Bit 7=0</p>
-------	----	---

18-19	35	<p>Oscillator Select Byte</p> <p>The oscillator selected by the NCP sysgen to be used with this line. (It can be found in the expansion of the "LINE" macro in the NCP sysgen stage 1 listing as "CSB Oscillator Select Address".)</p>
-------	----	--

**** NOTE **** Punch a / in the next even card column to indicate the end of the LINE CDS card data.

NOTE 1: There are at least three methods of determining the assigned LCD setting of a line. Three that may be used are:

A. Using the NCP stage 1 sysgen listing:

1. Find the 'LINE' macro for the desired line in the stage 1 listing.
2. Now, locate the next 'LINE' or 'GROUP' or 'STARTBH' macro in the listing whichever comes first (or the 'GENEND' macro if there are no more 'LINE' or 'GROUP' or 'STARTBH' macros). Following this macro is a comment:

```
* ,*****
* ,**** LCD STATE FOR LINE XXXXXXXX- Y
* ,*****
```

where, XXXXXXXX is the symbolic name of the line being defined, and Y is the LCD. Put a 0 in front of "Y" and you have the required entry.

B. Using a storage dump:

1. The first part of a 3705 dump contains a formatted print of some of the NCP control blocks. The LCB's for each line are listed in resource ID sequence (the resource ID is printed alongside each LCB address), and following each LCB is the associated ACB (See glossary).
2. Locate the byte that is at X'51' into the ACB for the desired line. The first hex digit of this byte is the LCD for this line. Put a zero in front of it, and you have the required CDS entry.

C. Displaying 3705 Storage:

1. Lines attached to a type 2 scanner:
 - a) Multiply the desired hex line address by 2. Add X'800' to it. Display this address. Contained at this address is the halfword address of the line's ACB.
 - b) Add X'51' to the address of the ACB. Display this location. The first hex digit of this byte is the LCD for this line. Put a leading zero in front of it, and you have the required CDS entry.

2. Lines attached to a type 1 scanner:

- a) Determine the desired line's BCB (Bit Control Block) address. (Refer to the "IBM 3705 Communications Controller, Principles of Operation", form #GC30-3004, or the 3705 PTHM for information about how to determine a BCB address.)
- b) Display the line's BCB address. This address contains a pointer to the line's ACB.
- c) Add X'51' to the line's ACB address. Display this address. The first hex digit of this byte is the LCD for this. Put a leading zero in front of it, and you have the required CDS entry.

APPENDIX B - INPUT/OUTPUT DEVICE FIELD FORMAT AND CONTENT

I. Input/Output Device Type Values

To find the Device Type value for a particular device:

1. Find the IBM device number in the Input or Output column.
2. The Device Type Value will be in the Device Type Value column on the same line as the IBM device number.

<u>Media</u>	<u>Input</u>	<u>Output</u>	<u>Device Type Value</u>
CPU Type (See NOTE 1)	CPU	CPU	01
Keyboard	1052	---	10
	2740	---	10
	2741	---	10
	2972	---	10
Print	---	Selectric	20
	---	1052	20
	---	1053	20
	---	2740	20
	---	2741	20
	---	2203/3780	21
	---	2213	22
	---	1443	23
Card	1056	1057/58	30
	5496	5496	31
	2502/3780	545	32
	1442	1442/3781	33
Display	3277	3277	40
	2265	2265	41
Paper Tape	1054	1055	50
	1017	1018	51
Magnetic Tape/Char	IBM 50	---	60
	1255	---	61

NOTE 1: CPU type terminals are all those devices listed as "RPT only" support in the list of OLTT supported terminals at the beginning of Appendix A.

II. IDF/ODF Format

To use the table below to determine the CDS IDF/ODF layout (Refer to the examples at the end of the TERMINAL CDS layout in Appendix A):

1. Find your device type (e.g. 1050) under the Input or Output Device column. If your device type is not in these tables, it is a one input-one output type terminal (e.g. 2740 or remote CPU) and has only one byte in the IDF field and one byte in the ODF field.
2. Determine the components that are attached to this device (e.g. 1056 in RDR 1 position on a 1050).
3. Find the Device Type Value in the above table for each component (e.g. 1056 equals 30).
4. Put the Device Type Value in the #n byte of the CDS IDF/ODF field (e.g. for the 1056, 30 would be Input Device position #2 or it would go into the second byte of the IDF CDS field). Note that the hexadecimal number below each of the components in the table below is the component address of the device attached to that position (#n) of that terminal control unit (e.g. for the 1056 in Input Device position #2 of a 1050 system, it is X'P6').

<u>INPUT Device</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5thru#n</u>	<u>IDFC</u>
1050	Keyboard (X'P5')	RDR1 (X'P6')	RDR2 (X'P7')	N/A	N/A	03
2780	RDR (X'P6')	N/A	N/A	N/A	N/A	01

3780 with component select feature	N/A	Input 2 (X'F6')	Input 3 (X'F7')	N/A	N/A	03
2770	Keyboard (X'F5')	Input 2 (X'F6')	Input 3 (X'F7')	Input 4 (X'F8')	N/A	04
2972 Station Address	N/A	N/A	N/A	N/A	N/A	01

<u>OUTPUTDevice</u>	<u>#1</u>	<u>#2</u>	<u>#3</u>	<u>#4</u>	<u>#5thru#n</u>	<u>ODFC</u>
1050	PRT1 (X'F1')	PRT2 (X'F2')	Pun1 (X'F3')	Pun2 (X'F4')	N/A	04
2780	PRT (X'F3')	PUN (X'F4')	N/A	N/A	N/A	02
3780 with component select feature	Printer (X'11')	Output 2 (X'12')	Output 3 (X'13')	N/A	N/A	03
2770	Printer (X'11')	Output 2 (X'12')	Output 3 (X'13')	Output 4 (X'5D')	N/A	04
2972 Station Address	0 (X'40')	1 (X'F1')	2 (X'F2')	3 (X'F3')	4 thru 9 (X'F8,5C, 61,E2,E3,E8')	#n

Alternate address 0-9 is #11 thru 20.
Common Buffer address is #21. The actual
address characters in order are Hex F4,
F5, F6, F7, 34, E4, E5, E6, E7, 24, and F9.

APPENDIX C - LINE STATUS ERROR FIELD AND IOB STATUS FIELD DEFINITION

LINE STATUS ERROR Fields - The IOB Status Field is equal to the CHECK INDICATORS, the COMPLETION CODES and EXTENDED STATUS portion of the LINE STATUS ERROR Fields.

										CHECK INDICATORS								COMPLETION CODES								EXTENDED STATUS									
*RESPONSE RECEIVED - LINE STATUS ERROR =										B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
BITS										0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7	0	1	2	3	4	5	6	7		
										E	F	S	D			L											L	O	L	L	S				
										X	O	Y	A	P		E	F			F							E	A	E	N	A	B		N	
										T	R	N	T	H		N	I			I							A	R	E	D	B		O		
										E	M	C	A	A		G	R			N							D	R	E	D	B		T		
										N	A			S		T	S			A							I	R	I	L					
										D	T	C	C	E		H	T			L							N	U	Q	N	O				
										E		H	H														G	N	U	G	C		U		
										D	E	E	E	E		C	S			S							/	I	K		S				
										X	C	C		R		H	T			T					C	U	E	D							
										E	C	K	K	R		E	A			A					H	N	T	L	E		D				
										R	E			O		C	T			T					A	R	E	T	E	R					
										R	P	F	F	R		K	U			U						A	R	E	T	E	R				
										O	T	L	L				S			S						A	R	I	F	O					
										R	I	A	A			F									C	R	H	O	R						
										O	G	G													T	U	E	R							
										S	N					L									E	N	O	N	F						
										T						A									R	U	A	L							
										A	F														S	F	T	T	A						
										T	L															L			G						
										U	A															A	F	C							
										S	G															F	G	L	H						
																										L	A	E							
										F																A	G	C							
										L																									
										A																									
										G																									

NOTE: For a breakdown of PHASE ERROR, FIRST STATUS, and FINAL STATUS fields, see the next two pages.

PHASE ERROR FIELD

CHECK INDICATOR

BITS

4,5,6

READ OR WRITE GROUP

0 0 0	No Errors
0 0 1	Receive Text
0 1 0	Receive Text Reply
0 1 1	Receive Control/Command Reject
1 0 0	Status outstanding when command issued; command not executed.
1 0 1	Send Text Reply
1 1 0	Send Text
1 1 1	Send Control

DATA SET CONTROL GROUP

No Errors
Receive ID
Receive ID reply
Connect
Status outstanding when command issued.
Dial (Error in dialing phase)
Send ID
Disconnect

NOTE: The command group used in the PHASE ERROR FIELD is dependent upon the IO operation being performed. It is the READ OR WRITE GROUP for this message. See the IOB Command Field content description under PHASE ERROR FIELD in this appendix.

FIRST STATUS

COMPLETION CODE

BITS

0,1,2

0 0 0	Control	
0 0 1	Text	Normal
0 1 0	Transparent Text	
0 1 1	Heading	

1 0 0	Special
1 0 1	-
1 1 0	-
1 1 1	Hardware Check

FINAL STATUS

IF FIRST STATUS IS:	NORMAL: CONTROL, TEXT, TRANSPARENT TEXT, HEADING	SPECIAL	HARDWARE CHECK
COMPLETION CODE BITS 3,4,5,6--			
0 0 0 0	Timeout (something received)	Timeout (nothing received)	User Error
0 0 0 1	-	Command Reject	-
0 0 1 0	Cutoff	Buffer Pool End	CSB Check
0 0 1 1	Abort Block	Selected	-
0 1 0 0	EOT Halted ERP	Received Disconnect Signal	Adapter Check
0 1 0 1	DLE-Control End	Lost Data	Adapter Feedback Check
0 1 1 0	Wrong ACK	Reset (Command)	Equipment Check
0 1 1 1	Negative ACK (NAK)	Polled	-
1 0 0 0	Rcv Sub-Block End	Xmit Sub-Block End	Modem Check
1 0 0 1	End of text (EOT)	EOT sent after WACK received	Clear-to-Send Failure
1 0 1 0	End of Block (EOB)	Received Break in Text	DSR Turn-on Check
1 0 1 1	Enquiry (ENO)	Polling Stop	-
1 1 0 0	EOT	EOT Sent	DSR Turn-off Check
1 1 0 1	Reverse Interrupt	Received Break	-
1 1 1 0	Positive ACK	Disconnected	ACU Check
1 1 1 1	Wait ACK (WACK)	Connected	Program Failure

CheckIndicators

EXTENDED ERROR STATUS FLAG

This bit is on whenever any error conditions are on in the Extended Status byte.

FORMAT EXCEPTION FLAG

This bit is on when a line control sequence is received with an unorthodox format. It is set whenever leading graphics were received, and either the Reject Received Lead Graphics command modifier bit is on, or if lead graphics are not permitted for the particular line control procedure.

SYNC CHECK FLAG

This flag currently applies to start-stop operation only. It is set when a stop bit error occurs; that is, the line is at space at stop bit time.

DATA CHECK FLAG

This bit is on if VRC, LRC or CRC error was encountered in the last received block or reply. It is also set when, in BSC operation, an ending character in a control sequence is not followed by a valid PAD (first four bits must all be ones); the recognition of the control function is inhibited. If a VRC (parity) or CRC/LRC error occurs in a received block, data continues to be received until an end character or cutoff occurs. Any such received data stored into buffers is transferred to background if the IOB command ends at that point; if an error recovery procedure is performed instead, that data is "lost."

PHASE ERROR FIELD (Read/Write Group or Data Set Control Group)

This field indicates in which phase an IOB command encountered a permanent error or exception condition that caused the command to end. This field is always set in the event an error or exception condition occurs during IOB command execution; otherwise, this field is set to all zeros when an IOB command ends. To properly interpret this field, you must know the IOB command being executed when the error occurred. A read or write command error (see the IOB Read/Write Command Group below) has a different Phase Error Field definition than that for a Control Command error (see the IOB Control Command Group below).

HEX IOB Write Command Group

10	WRITE INITIAL
12	WRITE CONTINUE
16	WRITE RECOVER
19	WRITE
98	WRITE EOT
9B	WRITE CONTROL

HEX IOB Read Command Group

28	READ INITIAL
2A	READ CONTINUE
25	READ
AC	READ STATUS

HEX IOB Control Command Group

8D	ENABLE
8F	DIAL
83	DISABLE

NOTE: For a description of the IOB commands, see the Data Areas Handbook.

LENGTH CHECK FLAG

This bit is set when a transmission ends because an ending character is encountered in text before the count field is exhausted. However, this bit is never set if the Suppress Length Check command modifier is on. Note that if an end of block character is the last data character in a chain of buffers, the Length Check Flag is not set, since there is no more data to be sent from the buffer chain.

COMPLETION CODES

The First Status and Final Status fields together form a matrix of ending conditions.

First status normally indicates the type of information received last. Other First Status values indicate special conditions, data set errors and equipment check errors. First status generally indicates the first control character(s) (if any) received and stripped from the received block. "Control" Status means no character was stripped. On certain start-stop terminals (e.g., the 1050) "Text" status does not always indicate that the start of text character (e.g., Circle-D) was received and stripped. Only the start of text character preceding the first block in the transmission is stripped; all blocks that follow until an EOT is received (e.g., Circle-C) have no start of text character, although the First Status for these blocks is "Text".

The meaning of the Final Status field depends on the value of First Status. It normally indicates how the last block received had ended. When First Status indicates a special condition or hardware check, Final Status supplies information regarding how or why the command ended. It also indicates if the block ended with an end character; note that the specific end character is not stored with the text or control sequence, but it is defined uniquely by end status.

In the event that the Status field signals a permanent error, the PHASE ERROR field of the Check Indicator byte specifies the operation at the point that the Status field was set and the command ended.

a. NORMAL FIRST STATUS

The first four values of First Status are designated "normal". Final Status is defined identically for all normal First Status values.

- | | | |
|-----|-------------------------|---|
| (0) | <u>Control</u> | - Indicates that a control sequence was received; i.e., the sequence is neither text, transparent text nor heading. |
| (1) | <u>Text</u> | - A block of text has been received (STX or Circle-D). |
| (2) | <u>Transparent Text</u> | - Applies to synchronous lines only; a block of transparent text has been received (DLE STX). |
| (3) | <u>Heading</u> | - Applies to synchronous lines only; the received block began with heading (SOH). Note that STX may have been received within the block, causing it to include text; this would not be indicated unless STX has been specified by the customer to set a Record Descriptor bit; the STX is stored as a delimiter between heading and text. |

b. NORMAL FINAL STATUS

If any of the above First Status values are set, Final Status has the following definitions:

- (0) Timeout - Data was received but a timeout completed before the block ended.
- (2) Cutoff - Data was lost because the received block length limit for the line (Received Buffer Sub-block Factor) was reached before a block ending character was received.
- (3) Abort Block - Applies to BSC operation only; a received block terminated with ENQ after one or more text characters were received.
- (4) EOT Halted ERP - While receiving data on a line with error control procedures, an EOT was received while a negative acknowledge was outstanding. This indicates that the remote station cut off the error recovery procedure with the error condition still outstanding.
- (5) DLE - Control End - Applies to BSC operation only; one of the undefined DLE - end character sequences was received, (and ended the control sequence). The sequence is stored so it may be interpreted by a customer provided program.
- (6) Wrong ACK - Applies to synchronous operation only; the wrong positive sequential acknowledge was received in reply to a block or initial selection.
- (7) Negative ACK - The negative acknowledge reply was received (NAK or Circle-N).
- (8) Rcv Sub-Block End - Applies to sub-blocking mode only; indicates a received sub-block has ended before the end of the transmission block.
- (9) End of Text - Applies to BSC operation only; the transmission ended with ETX.
- (10) End of Block - The transmission ended with the end of block character (EFB or Circle-B).
- (11) Enquiry - Applies to BSC operation only; the transmission ended with the ENQ character. If Text is the First Status, this is the Temporary Text Delay (TTD) sequence.
- (12) EOT - The end of transmission character was received (EOT or Circle-C).
- (13) Reverse Interrupt - Applies to BSC operation only; the "Reverse Interrupt" reply was received.
- (14) Positive ACK - The positive acknowledge character or sequence was received (ACK0, ACK1, or Circle-Y). Where sequential positive acknowledgement is used (BSC), this indicates that the received ACK was in correct sequence. This status is also set after a block is sent to a terminal without checking or control (e.g., a 2741), (that is, not equipped to send an acknowledgement), as a pseudo "go-ahead" status.
- (15) Wait ACK - Applies to BSC operation only; WACK (Wait Positive Acknowledge) was received.

c. SPECIAL FIRST STATUS

Various special conditions are signalled through Final Status when Special First Status is set.

d. SPECIAL FINAL STATUS

- (0) Timeout - A timeout completed because nothing was received after the last transmission. In the Dialing phase under the DIAL command this status is set if the ACU signals Abandon Call and Retry, before the call is answered; it is also set if the DIAL Timeout (defaults to 60 seconds) completes after the last digit is transferred, but before the call is answered.
- (1) Command Reject - The command could not be carried out because of a specification error in the IOB or some related field. It is also set if a command is issued in an invalid sequence (e.g. trying to WRITE while a receive sub-block operation is in progress).
- (2) Buffer Pool End - A receiving operation could not be carried out because the Free Buffer Pool was exhausted. When this condition occurs, all buffers associated with this line that contain received data, except the first if it is an assigned buffer, are returned to the Free Buffer Pool. The command is ended after the incoming transmission ends.

- (3) Selected - Applies to synchronous multipoint tributary and point-to-point station operation only. In multipoint operation, it indicates that the command ended because the line's selection address was received (e.g. additional control characters followed the address and preceded ENQ; or a WRITE INITIAL without Send Priority is outstanding). In point-to-point BSC operation, an ENQ was received and a WRITE INITIAL without Send Priority was outstanding.
- (4) Received Disconnect Signal - Applies to synchronous operation on a switched network, only. It indicates that the disconnect signal (e.g., DLE EOT) was received.
- (5) Lost Data - One or more characters were received while no command was outstanding. In sub-blocking mode, it indicates that Background failed to issue the READ command before the end of a sub-block was reached.
- (6) Reset - Set if an IMMEDIATE XIO command has caused the current normal command to end prematurely.
- (7) Polled - Applies to synchronous, multipoint, tributary station operation only; it indicates that the command ended because the line's poll address was received.
- (8) WRITE Sub-Block End - Applies to sub-blocking mode only; indicates a sub-block being sent has ended before the end of the transmission block.
- (9) EOT Sent After WACK Received - Applies to write type commands with the Reset command modifier bit on, and BSC lines only. The command ended when EOT was sent, after the WACK reply was received.
- (10) Received Break in Text - Applies to start-stop, receive text operations only; it indicates that a break was received while receiving text. That is, a character all space bits was received, including the start bit, all data bits (including parity if any) and the stop bit.
- (11) Polling Stop - READ INITIAL ended either because: (a) the indicated number of the Service Order Table entries were serviced, the Send Priority command modifier is off and only negative responses to polling were received; (b) the Single Poll command modifier is on and the specified number of negative responses were received; (c) WRITE REQUEST was issued and the last station polled did not respond with data; or (d) a Device Status byte was found with the Skip, Select and Poll flags all off (this indicates an On-Line Terminal Test request).
- (12) EOT Sent - The command ended when EOT was sent, so no reply is forthcoming.
- (13) Received Break - Applies to start-stop operations only; it indicates that a break signal was received while in the process of transmitting or while receiving anything but text data.
- (14) Disconnected - This is the normal ending status for the DISABLE command. It is also set if a read or write type command is issued to a line that is disabled. Note that the disabled condition may have resulted from the other party disconnecting or the modem being turned off.
- (15) Connected - The ENABLE or DIAL ended after the connection was established; this is the normal ending status for these commands when Identification Mode is not specified.

e. HARDWARE CHECK FIRST STATUS

Hardware Check status indicates that a level 1 interrupt CSB error has occurred or that the CS signaled an adapter or modem error through the SCF or LCD.

f. HARDWARE CHECK FINAL STATUS

- (0) User Error - A specification error was made under a SET MODE XIO or ENABLE MTA selection.
- (2) CS Check - The CS handling this line has caused a level 1 interrupt; the line adapter is set in no-op mode.
- (4) Adapter Check - The adapter failed to supply level 2 interrupt when expected within a reasonable interval. The line is set in no-op mode.
- (5) Adapter Feedback Check - The CS has detected an adapter feedback check condition.

The line is set in no-op mode.

- (6) Equipment Check - This status is set when an operation is ended because of an undetermined 3705 hardware malfunction.
- (8) Modem Check - Data Set Ready or Clear to Send have failed to turn on during normal operation. To protect against an incoming call unwittingly being answered after the original party was disconnected, CICP will reset Data Terminal Ready before ending the command; thus, the switched network connection is broken. When DSR turns off and no command is present, DTR is reset and, when the next command is issued, this status is signaled.
- (9) Clear to Send Failure - The Clear to Send modem interface signal failed to turn on within a reasonable interval (when the LGT Transmit Timeout expires), after Data Terminal Ready is turned on.
- (10) DSR Turn-on Check - Data Set Ready has failed to turn on after Data Terminal Ready was turned on.
- (12) DSR Turn-off Check - Data Set Ready from the modem has failed to turn off after Data Terminal Ready was turned off. (This condition may be normal for certain non-switched network modems; e.g., the 201B).
- (13) ACU Check - The Automatic Calling Unit (dialer) has failed in one of the following ways: (a) Data Line occupied (DLO) found on before call Request (CRQ) is turned on; (b) Present Next Digit (PND) fails to turn on after CR and Data Set Ready (DTR) are turned on (c) PND fails to turn off after Digit Present (DPR) is turned on; (d) PND fails to turn on after DPR is turned off; or (e) Call Originating Status (COS) is found to be off after the last digit is transferred. In items a through d above, the DIAL timeout (defaults to 60 seconds) is used to protect against the failure. If the timeout completes before the condition is satisfied, ACU check is set in the IOB Status field with Hardware Check first status. There are no first level error recovery procedures for ACU check.
- (15) Program Failure - A condition occurred which the NCP was not programmed to handle. This condition should be recoverable by restarting the I/O operation (it is not an 'ABEND').

LEADING CHARACTERS FLAG

This flag is set if any characters (except synchronizing patterns or idles) were received and stored before the start of block character or, for control sequences, before the end character(s). For example, it is set whenever leading graphics are received with a BSC reply or in an identification sequence. Where leading graphics are permitted by the particular type of line control, the operation is ended at that point to permit the Background to interpret the leading character sequence. If leading characters are received preceding a start of text, transparent text or heading character(s), the line control character(s) is stored in the text buffer as a delimiter (although it is normally stripped if there were no leading characters). Note that on BSC lines, leading characters ahead of STX, SOH, DLE STX is invalid; therefore, Format Check status is set when this occurs. BSC, tributary station polling and selection address characters (the first two characters following the synchronizing pattern in Control Mode) are not treated as leading graphics.

If leading graphics are received under a line control where they are not permitted, or if the Reject Received Lead Graphics command modifier bit is on, then the Leading Characters flag is not set; Format Check is set instead.

EXTENDED STATUS

This one byte status field in the IOB contains error indicators, so it is normally all zeros. When certain error conditions are encountered during command execution the appropriate bits are set. Bit 0 of the Status field is also set, indicating that error conditions are flagged in Extended Status. These error flags are described below:

OVERRUN/UNDERRUN

This bit is set when the CSB signals that the NCP character service program failed to service a line within one character time. Thus, if receiving, data is lost. If transmitting on a synchronous line an error occurs because the last character is repeated. NCP terminates the command in the event of an overrun/underrun error. In synchronous operation, an abort block sequence is sent to conclude a text block. In all other cases, an ERP will be invoked. Any receiving operations on the line are allowed to complete. NCP ends the command and indicates in which phase the error occurred in the Phase Error field within the Status half-word.

LINE QUIET TIMEOUT

Applies to an error condition encountered only in start-stop operations. CIRC performs a check for "line quiet" whenever a block or sequence is received in error or a block ends with an invalid LRC (also when no LRC is received). The check for line quiet is simply a procedure to check that no more data is being received after the apparent ending point; it insures that no characters are received for the period of approximately one to two character times following the last received start bit. A timeout limits this check phase when start bits continue to be received; if the timeout expires it forces the command to end with Status that indicates this error condition. Note that characters received during line quiet check phase are not stored.

LEADING DLE FORMAT CHECK

Applies to BSC operation only. When the first character after initial phase is DLE and the next character does not complete a valid DLE line control sequence, this bit will be set in the Extended Status field (and the Extended Status flag is set in the IOB's Status field). This status is also considered a Format Check condition; it is always accompanied by the Leading Characters Flag (on) in the Completion Codes byte.

SUB-BLOCK ERROR FLAG

This bit is set when an error is detected while executing the WRITE or READ command, the error condition is otherwise recoverable under First Level Error Recovery Procedures and the error retry limit has not been exceeded. First level error recovery procedures are initiated when Background issues WRITE RECOVER or READ CONTINUE. This flag is not set when WRITE or READ ends if an unrecoverable error condition is outstanding, the error retry limit is exhausted or no retry could have been attempted because the Suppress Text Mode ERP's command modifier bit is on.

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APPENDIX D - ON LINE TERMINAL TEST CONTROL BLOCK (OLTTCB)

The OLTTCB is a block of control and status information maintained in the NCP and returned in responses to the OLTTCP for analysis. It is modified in the NCP by OLTT interpretive command block execution and is used by the OLTTCP to determine the current interpretive command program status in the NCP and decides what the next logical step in the OLTT program flow will be.

ON LINE TERMINAL TEST CONTROL BLOCK(OLTTCB)

OLTTCB BYTE

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XXXX		
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
SC	C	C	C	C	C	C	C	CF	CF	CF	CF	CF	CF	CF	CC	IF	IF	IF	IF	EF	EF	EF	EF	I	C	
TO	O	O	O	O	O	O	O	OL	OL	OL	OL	OL	OL	OL	OO	OL	OL	OL	OL	XL	XL	XL	XL	N	O	
EU	U	U	U	U	U	U	U	UA	UA	UA	UA	UA	UA	UA	UN	BA	BA	BA	BA	PA	PA	PA	PA	T	M	
PN	N	N	N	N	N	N	N	NG	NG	NG	NG	NG	NG	NG	NT	G	G	G	G	AG	AG	AG	AG	E	M	
T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	TR	S	S	E	S	N	N	N	N	R	A	
E	E	E	E	E	E	E	E	E0	E1	E2	E3	E4	E5	E6	EO	T8	T9	X1	T1	D1	D1	D1	D1	P	N	
CR	R	R	R	R	R	R	R	R	R	R	R	R	R	R	RL	A	A	T0	A1	E2	E3	E4	E5	R	D	
O								O	O	O	O					T	T	E	T					E		
U0	1	2	3	4	5	6	7	8r	9r	1r	1r	1	1	1	1P	U	U	N	U					T	P	
N								0	1	2	3	4	5L	S	S	D	S	I	I	I	I	I	I	I	O	
T				O	O	O	O	oD	oC	B	A				A			E		O	O	O	O	V	I	
E				r	r	r	r	r	r	r	r				G	0	1	D		R	B	B	B	B	E	N
R															S					E				T		
				H	G	F	E	D	C		B	A						S	S	S	S	S	S		R	
												S						T	E	T	T	T	T			
												I						A	R	A	A	A	A			
												G						T	V	T	T	T	T			
												N						U	E	U	U	U	U			
												B														
												I								0	1	2	3			
												T														
												S														

OLTTCB
BYTE

- 0 Step_Counter (Counter 0) - This is an index into the OLTT interpretive command block being executed. It should index you back to the OLTT macro being executed when the error occurred.
- 1-3 Counter_1-3 - Not used.
- 4 Counter_H (Counter 4) - Is the current value of OLTT counter H. It is usually used as a POLL or SELECT retry counter.
- 5 Counter_G (Counter 5) - Is the current value of OLTT counter G. It is used in the OLTT as a send TEXT retry counter for Start/Stop terminals. For Bi-Sync terminals it contains a wait loop count.
- 6 Counter_F (Counter 6) - Is the current value of OLTT counter F. It is used for the OLTT test message loop count.
- 7 Counter_E (Counter 7) - Is the current value of OLTT counter E. It is used in the Bi-Sync terminal OLTT as an error retry counter.
- 8 Flag_D (Flag 0) - Is the current value of OLTT counter D or flag D. It contains
Counter_D (Counter 8) any CDS flags required by the OLTT.
- 9 Flag_C (Flag 1) - Is the current value of OLTT counter C or flag C. It contains
Counter_C (Counter 9) the current test message flag byte 1.
- 10 Flag_B (Flag 2) - Is the current value of OLTT counter B or flag B. It contains
Counter_B (Counter 10) the current test message flag byte 0.
- 11 Flag_A (Flag 3) - Is the current value of OLTT counter A or flag A. It contains
Counter_A (Counter 11) miscellaneous temporary OLTT indicators.
- 12 Counter_Sign_Bits (Counter 12) - Is the current sign value of the OLTT counters.

(Flag 4)

Bit

- 0 - Counter H is minus or 0 if on - plus if off.
- 1 - Counter G is minus or 0 if on - plus if off.
- 2 - Counter F is minus or 0 if on - plus if off.
- 3 - Counter E is minus or 0 if on - plus if off.
- 4 - Counter D is minus or 0 if on - plus if off.
- 5 - Counter C is minus or 0 if on - plus if off.
- 6 - Counter B is minus or 0 if on - plus if off.
- 7 - Counter A is minus or 0 if on - plus if off.

13-14 Counters 13 and 14 (or Flags 5 and 6) - Reserved for OLTTCP use.

15 Control Flags (Flag 7) - These are MCP - OLTT status indicators.
Counter 15

Bit

- 0 - Error detected.
- 1 - Final response.
- 2 - Sharing allowed after final response.
- 3 - No compare.
- 4 - Busy
- 5 - Command reject.
- 6 - Text received
- 7 - First text character override.

16 IOB Status 0 (Flag 8) - See Check Indicators in APPENDIX C.

17 IOB Status 1 (Flag 9) - See Completion Codes in APPENDIX C.

18 IOB Extended Status (Flag 10) - See Extended Status in APPENDIX C.

19 IOB Status Reserved (Flag 11) - Not used.

20 Expanded IOB Status 0 (Flag 12) - Phase Error response.

BIT MEANING WHEN ON

- READ or WRITE Group -
- 0 - No errors.
- 1 - Receive Text.
- 2 - Receive Text Reply.
- 3 - Receive Control/Command Reject.
- 4 - Status outstand when command issued.
- 5 - Send text reply.
- 6 - Send text.
- 7 - Send control.
- DATA SET CONTROL GROUP-
- 0 - No errors.
- 1 - Receive ID.
- 2 - Receive ID reply.
- 3 - Connect/command reject.
- 4 - Status outstanding when command issued.
- 5 - Dial.
- 6 - Send ID.
- 7 - Disconnect.

21 Expanded IOB Status 1 (Flag 13) - First Status response.

BIT MEANING WHEN ON

- 0 - Control.
- 1 - Text.
- 2 - Transparent text.
- 3 - Heading.
- 4 - Special
- 5 -
- 6 -
- 7 - Hardware check.

22 Expanded IOB Status 2 (Flag 14) - Final Status 1 response.

BIT MEANING WHEN ON

-CONTROL, TEXT, TRANSPARENT TEXT OR HEADING-
0 - Timeout
1 -
2 - Cutoff.
3 - Abort block.
4 - EOT halted ERP.
5 - DLE-control end.
6 - Wrong ACK.
7 - Negative ACK.
-SPECIAL-
0 - Timeout.
1 - Command reject.
2 - Buffer pool end.
3 - Selected.
4 - Received disconnect signal.
5 - Lost data.
6 - Reset.
7 - Polled.
-HARDWARE CHECK-
0 - User error.
1 -
2 - CSB check.
3 -
4 - Adapter check.
5 - Adapter Feedback Check.
6 - Equipment check.
7 -

23 Expanded IOB Status 3 (Flag 15) - Final Status 2 response.

BIT	MEANING WHEN ON
-CONTROL, TEXT, TRANSPARENT TEXT OR HEADING-	
0	Receive sub-block end.
1	End of text.
2	End of block.
3	Enquiry.
4	EOT.
5	Reverse interrupt.
6	Positive ACK.
7	Wait ACK.
-SPECIAL-	
0	Transmit sub-block end.
1	EOT sent after WACK received.
2	Received break in text.
3	Polling stopped.
4	EOT sent.
5	Receive break.
6	Disconnected.
7	Connected.
-HARDWARE CHECK-	
0	Modem check.
1	Clear-to-Send failure.
2	DSR turn-on check.
3	
4	DSR turn-off check.
5	
6	ACU check.
7	Program failure.

24-25 Interpretive Command Pointer - This is a displacement into the OLTT IOB that contains the interpretive command block currently being executed by the NCP. It should point to the interpretive command being executed when the error occurred.

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APPENDIX E - BASIC TRANSMISSION UNIT (BTU) FIELD DEFINITION

- Path Information Unit (PIU) Field Definition

The BTU/PIU is preceded by prefix characters if the WCP Sysgen has specified the BFRPAD= operand in the HOST macro. When specified, these characters will be prefixed to the BTU/PIU in "RCVD DATA" printouts. When prefix characters are printed, the first byte of the "RCVD DATA" indicates the number of prefix characters. This byte can be used to index into the "RCVD DATA" to the start of the BTU/PIU.

BTU

BASIC TRANSMISSION UNIT (BTU)

BTU BYTE	BASIC TRANSMISSION HEADER (BTH)							BASIC DEVICE UNIT (BDU)												
	0	1	2	3	4	5	6	7	8	9	10	11	12	13						
	XXXX	XXXX	XXXX	XX	XX	XX	XX	XX	XX	XX	XX	XXXX								
S O U R C E		D E S T I N A T I O N		R E Q U E S T		S Y S T E M		E X T E N D E D		C O M M A N D		H O D I F I E R		F U N C T I O N		B D U		D A T A		C O U N T
W A M E				T A G		R E S P O N S E		R E S P O N S E						F L A G S		F L A G S				

NOTE 1: This appendix defines verbally each field. Appendix F defines the values of the COMMAND and MODIFIER fields. Appendix G defines the values of the SYSTEM RESPONSE byte. See the COMPLETION CODES byte in Appendix C for a definition of the EXTENDED RESPONSE.

PIU

PATH INFORMATION UNIT

NODE INFORMATION RECORD (NIR)																							
REQUEST/RESPONSE												REQUEST/RESPONSE											
HEADER (RH)												UNIT (RU)											
TRANSMISSION HEADER (TH)																							
PIU	BYTE	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
		XX	XX	XXXX	XXXX	XXXX	XXXX					XX	XX	XX	XXXX	XX	XXXX	XX	XX	XX	XX	XX	XX
		T	T	D	O	S	D					R	R	R	P	R	D	C	H	S	E		
		H	H	E	R	E	A					H	H	H	R	E	E	O	O	Y	X		
				S	I	Q	T								E	Q	S	M	D	S	T		
		P	P	T	G	U	A					P	P	P	F	U	T	H	I	T	E		
		L	L	I	I	E						L	L	L	I	E	I	A	P	E	N		
		A	A	N	N	N	C					A	A	A	X	S	N	N	I	N	D		
		G	G	A	A	C	O					G	G	G			T	A	D	E			
				T	T	E	U												R	R	D		
		1	2	I	I	N	T					1	2	3						E			
				O	O	N														S	R		
				N	N	U														P	E		
						M	P													O	S		
				A	A	B	I													N	P		
				D	D	F	E													A	S	O	

D	D	R	L			
R	R		D	M	E	N
E	E	P		E		S
S	S	I				E
S	S	E				
		L				
F	F	D				
I	I					
E	E					
L	L					
D	D					

(See NOTE 1 above)

TH Fields

TH Flag 1 (1 byte)

This field defines the transmission data format and content as follows:

Bit	Meaning
0-3	format identifier - defines the PIU format to be used. It should always be 0001 for OLTs.
4-5	mapping field (MPP) - specifies how NIRs (RH + RU) are mapped into PIUs. 11 - PIU contains a whole NIR. Always the case for OLTs. 10 - PIU contains first portion of an NIR. 01 - PIU contains the end of an NIR. 00 - PIU contains the middle of an NIR.
6	primary/secondary flow indicator (PSI) - specifies the direction of request flow and control. 1 - flow is primary to secondary. This bit is on for PIUs transmitted by the OLT. 0 - flow is secondary to primary. This bit is 0 for RECORD TEST DATA requests from the destination address.
7	asynchronous flow indicator (AFI) specifies whether or not RUs are flowing asynchronously or synchronously. 1 - asynchronous flow. 0 - synchronous flow. OLT RUs flow synchronously.

TH Flag 2 (1 byte)

This field further defines the transmission data format and content.

Bit	Meaning
0-3	priority field (PPF) - specifies 1 of 16 PIU handling priorities. For OLTs this field should be 0000/
4-5	security field (SEF) - specifies 1 of 4 levels of information security. 00 - says no security and is the value of this field for OLTs.
6-7	code definition field (CDF) - specifies 1 of 4 data codes in the information field. 00 - says 8 bit transparent bytes and EBCDIC in the RU.

Destination Address Field (DAF) - 2 bytes

Network address denoting the destination node for transmitted PIUs.

Origin Address Field (OAF) - 2 bytes

Network address denoting the originating node for received PIUs.

Sequence Number Field (SNF - 2 bytes)

Two byte binary field used as an identifier for each NIR (RH + RU). This number is updated by 1 each time a new NIR is transmitted with the same OAF and DAF network addresses.

Data Count Field (DCP - 2 bytes)

A 2 byte binary count indicating the number of bytes contained in the NIR or portion of an NIR.

NIR Fields

RH Fields

RH Flag 1 (1 byte)

<u>Bit</u>	<u>Meaning</u>
0	request/response flag 1 - says response 0 - says request
1	RU type 1 - says control 0 - says data
2	subsystem control indicator 1 - says function management 0 - says system control
3	Restricted
4	formatted indicator 1 - says formatted 0 - says unformatted
5	sense data included 1 - says sense data included 0 - says sense data not included
6	Begin chain
7	End chain

RH Flag 2 (1 byte)

<u>Bit</u>	<u>Meaning when on</u>
0	definite response 1
1	restricted
2	definite response 2
3	exception response
4	restricted
5	reserved
6	reserved
7	pacing request indicator

RH Flag 3 (1 byte)

<u>Bit</u>	<u>Meaning when on</u>
0	begin brackets
1	end brackets
2	change direction
3	reserved
4	code selection indicator
5	reserved
6	reserved
7	reserved

RU Fields

Prefix (2 bytes)

This field is used by NCP-3 in conjunction with the REQUEST field for OLTT setup and posting test results. It should always be X'0103'.

Request (1 byte)

This field is used by NCP-3 in conjunction with the PREFIX field for OLTT setup and posting test results. It should be equal to:

- EXECUTE TPST Request (X'01') from the host to NCP-3. Interpretive commands are transmitted via this request.
- PFCORD TEST DATA Request (X'82') from NCP-3 to the host. Test results are posted back to the host via this request.

*Other RU fields are defined below under BTH and BDU field definitions. Note that these RU fields are defined and used the same as the BTH fields defined below.

BTH Fields

Source Name (2 bytes)

This field may be used by the host to contain a 16 bit ID of the source of the request. NCP Release I will not examine or modify this field.

Destination Name (2 bytes)

This field contains the 16 bit binary name of the network resource for which the function is requested. The destination names are defined by NCP generation.

Request Identification Tag (2 bytes)

This field is available to the originator of the request for any purpose desired. It will be preserved by the NCP and will be returned with all responses associated with the request. The high order three bits of this field must always be one for OLTT requests/responses.

System Response (1 byte)

This field contains the response to the requested function if the function has been completed, otherwise, it contains zero. The direction which the BTH has in the network can be ascertained from this field. If this field is equal to zero, it implies that the BTH is moving from the source to the destination and vice versa.

The format of the system response is as follows:

Bit	Meaning
0	0 = no error 1 = error
1-2	Phase or step to which response applies. Phase 0 (binary 00) is that period during which the BTH command is being validated in level 5. Phase 1 and 2 (binary 01 or 10) are the phases in which the I/O to the communications line takes place provided no errors were detected in phase 0. Phase 3 (binary 11) is the completion phase for BTH commands. See APPENDIX G.
3-7	Specific Response Code. See Appendix G.

Extended Response (1 byte)

This field will contain additional response information as required. For the 3705 TP commands, i.e., Read, Write Contact, Invite and Disconnect, it will contain the line status information as defined under IOB Completion Codes in APPENDIX C. This field is undefined if the system response is zero.

BDU Fields

Command (1 byte)

The command field defines the basic operation to be performed by the 3705 as a result of this BDU. If this command is not valid, the request is responded to immediately indicating that an invalid command was received.

BTU COMMANDS

<u>Command</u> <u>Byte</u> <u>(hex)</u>	<u>Name</u>	<u>Meaning</u>
<u>Data Transfer Commands</u>		
02	Write	Transfers a block of data from the host to the device.
01	Read	Transfers a unit of data from the device to the host
03	Test	Controls the On-Line Terminal Test functions.
08	Control	Provides dynamic system examination or alteration functions.
04	Restart	Requests restart of the 3705 using the most current checkpoint information.

Session Establishing Commands

05	Invite	Allows the device to start a session by sending data to the host
06	Contact	Starts a session by making it possible for the host to send data to the device

Session Terminating Command

07	Disconnect	Terminates the current session
----	------------	--------------------------------

Miscellaneous

77		Unsolicited response. The Miscellaneous Data Recorder (MDR) records are returned to the host with this value in the command field. Any other Invalid.
----	--	---

Modifier (1 byte)

The Modifier field complements the command field to determine the specific operation to be performed by 3705 as a result of this BDU. The full set of 3705 commands and Modifiers is described in NCP PLM. If the modifier of a request is not valid, the request is responded to immediately indicate that an invalid modifier was received. See Appendix P.

Functional Flags (1 byte)

This field specifies the unique functional options to be used for this request. The contents of this field are uniquely defined for each command.

<u>BITPATTERN</u>	<u>MEANING</u>
1... ..	Checkpoint select or start of header.
.1.. ..	Header prefix.
..1.	Suppress invite or leading graphics.
...1	First block of message.
.... 1...	Transparent data.
.... .1..	Positive acknowledgement.
.... ..1.	Negative acknowledgement.
.... ...1	Alternate acknowledgement.

Explanation of Functional Flags

CHECKPOINT SELECT

This flag indicates that a checkpoint record is requested for the Control command. The Control command must be one for which a checkpoint record is applicable, the checkpoint support must have been selected at NCP generation, and this flag must be on for a checkpoint record to be sent.

START OF HEADER

This flag indicates that the block of data should start with SOH when sent over BSC data links. The host provides the STX character at the appropriate point in the data block. This flag is ignored when the data is being sent to a start-stop terminal.

HEADER PREFIX

If this flag is on when the communications controller sends text to the host, the header prefix is used instead of the text prefix in the channel transfer. These prefixes are padding characters required by the host access method. This flag is set by the NCP for Read and Invite requests. For other requests, it is set by the host if the larger header prefix is used. The size of the header and text prefixes are defined at NCP generation. This flag is valid regardless of the outcome of the Invite or Read operation.

SUPPRESS INVITE

This flag indicates that any unsatisfied Invite command is to be suppressed by the NCP for the following commands: (1) deactivate device, (2) deactivate line halt, (3) deactivate line orderly, (4) deactivate group orderly. The Invite remains associated with the device and becomes active when the device or line is activated again. If this flag is not set for these commands, the Invite request is rejected by the NCP and is returned to the host.

LEADING GRAPHICS (valid for Read only)

This flag indicates that the host is sending up to seven leading graphic characters as part of the acknowledgement to the preceding block. The leading graphic characters are sent as data accompanying the Read command from the host. This flag is only used in conjunction with the positive or negative acknowledgement flags and the Read block command or in sending a hardware ID for the host. The previous block must have been received with the non-standard ERP flag on. Leading graphic characters are allowed only with BSC devices and IBM 2740, Model 2.

FIRST BLOCK OF MESSAGE

This bit identifies the first block of a message. For Read and Invite commands, this bit is maintained internally: it is on in the first block of a transmission and in the first block following an ETX control character for binary synchronous line discipline. For Write commands, the host access method is responsible for identifying the first block of a message by turning this bit on.

TRANSPARENT DATA

This flag indicates that the text being sent to a device may have bit combinations that represent control characters. Therefore, the data should be transmitted in transparent mode. The flag is valid for BSC devices only.

POSITIVE ACKNOWLEDGEMENT*

This flag indicates that a positive acknowledgement should be sent to the last block received. This flag is used with any unit of data transfer.

NEGATIVE ACKNOWLEDGEMENT*

This flag indicates that a negative acknowledgement should be sent to the previous block received.

ALTERNATE ACKNOWLEDGEMENT (valid for BSC operations only)

The communications controller keeps track of which ACK sequence (ACK0 or ACK1) is to be sent as the response to a received block. This flag indicates that a switch should be made to the opposite acknowledgment character. The flag is ignored for start-stop terminals.

*NOTE: Both the positive and negative flags may be set on to send an RVI response to a BSC terminal.

BDI Flags (1 byte)

This field contains the following flags:

- Bit 0 = Unused
- 1 = Command Chain
- 2 = SILLI
- 3 = SKIP
- 4 = PCI
- 5 = STPP
- 6-7 = Unused

NCP-1 only supports the STPR flag as defined below. The other flags are reserved and may be supplied in future releases of the NCP.

STPR Flags - if this flag is on for Write Commands, it will cause the response to be suppressed if the Write operation completes successfully.

Data Count (2 bytes)

This field contains the number of data bytes associated with this BDU. If no data accompanies the request, this field must be set to zero.

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APPENDIX F - BTU COMMANDS AND MODIFIERS

Following is a list of the BTU commands with a brief description of each modifier and the hex value and acronyms of each.

READ COMMAND (X'01')

<u>Modifier</u>	<u>Hex</u>	<u>Meaning</u>
Read normal	R 00	Unit of data for this command is that specified at NCP generation.
Read block	Rb 01	Unit of data for this command is the block.
Read message	Rm 02	Unit of data for this command is the message.
Read transmission	Rt 03	Unit of data for this command is the transmission.
Read transmission with Disconnect	Rd 04	Executed as a Read transmission command followed by a Disconnect command.
Read with Invite	Ri 05	Executed as a Read transmission with Disconnect followed by an Invite normal command.

WRITE COMMAND (X'02')

<u>Modifier</u>	<u>Hex</u>	<u>Meaning</u>
Write normal	W 00	Unit of data is one block.
Write with end of message	Wm 01	Unit of data is one block followed by the appropriate control sequence or character for an end of message.
Write with end of transmission	Wt 02	Unit of data is one block followed by the control sequence for end of transmission.
Write with Disconnect	Wd 03	Executed as a Write transmission command followed by a Disconnect command.
Write with Read (implied EOT)	Wr 06	Executed as a Write command followed by a Read command.
Write with Invite	Wi 07	Executed as a Write command with end of transmission followed by a Disconnect command and then an Invite command.
Write with Contact*	Wc 08	Executed as a Contact command followed by a Write normal command.
Write with Contact* (ETX)	Wcm 09	Executed as a Contact command followed by a Write with end of message.
Write with Contact* (EOT)	Wct 0A	Executed as a Contact command followed by a Write with end of transmission.
Write with Contact* and Disconnect (implied ETX & EOT)	Wcd 0B	Executed as a Contact command followed by a Write with end of transmission followed by a Disconnect command.
Write with Contact* and Read	Wcr 0E	Executed as a Contact command followed by a Write with end of transmission followed by a Read normal command.

TEST COMMAND (X'03')

<u>Modifier</u>	<u>Hex</u>	<u>Modifier</u>
Test device normal	T 00	Tests a device. This value is used when in session to transmit interpretive command blocks to the NCP for execution.
Test device with Contact	Tc 01	Establishes a session with the device to be tested.
Test device with Disconnect	Td 02	Ends a session with the device to be tested.
Test device with Contact and Disconnect	Tcd 03	Establishes and ends a session with the device to be tested.
Test line normal	Tl 04	Tests a line.

Test line with Contact	T1c	05	Establishes a session with the line to be tested.
Test line with Disconnect	T1d	06	Ends a session with the line to be tested.
Test line with Contact and Disconnect	T1cd	07	Establishes and ends a session with the line to be tested.

RESTART COMMAND (X'04')

<u>Modifier</u>	<u>Hex</u>	<u>Modifier</u>
Line	00	The BTU contains a checkpoint record for a line.
Device	01	The BTU contains a checkpoint record for a device.
Replace session initiation information for a line	02	The BTU contains session initiation information for a line.
Replace session initiation information for a device	22	The BTU contains session initiation information for a device.

INVITE COMMAND (X'05') - Session establishing command.

<u>Modifier</u>	<u>Hex</u>	<u>Meaning</u>
Invite normal	I 00	Unit of data for this command is that specified at NCP generation.
Invite block	Ib 01	Unit of data for this command is the block.
Invite message	Im 02	Unit of data for this command is the message.
Invite transmission	It 03	Unit of data for this command is the transmission.
Invite transmission with Disconnect	Id 04	Executed as an Invite transmission command followed by a Disconnect command.
Invite with auto restart	Ia 05	Executed as an unbounded series of Invite with Disconnect commands. This command must be terminated with a reset request.
Invite perpetual (valid only for clusters)	Ip 06	Executed as an unbounded series of Invite transmission commands with no intervening Disconnect commands.

CONTACT COMMAND (X'06') No modifiers. Session establishing command.

DISCONNECT COMMAND (X'07') - Session terminating command.

<u>Modifier</u>	<u>Hex</u>	<u>Meaning</u>
Disconnect normal	D 00	No modifier.
Disconnect with Invite	Di 01	Executed as a Disconnect normal command followed by an Invite normal command.
Disconnect with end of call	De 02	For switched lines, this modifier results in the physical connection between the terminal and the communications controller being broken. For all other lines, this modifier is the same as normal.
Disconnect with EOC and Invite	Dei 03	Executed as a Disconnect with end of call followed by an Invite command.

CONTROL COMMAND (X'08')

<u>Modifier</u>	<u>Hex</u>	<u>Meaning</u>
Display line status	01	See Appendix C of the MCP PLM document #SY30-3003
Replace session initiation information	02	
Activate Invites	03	
Deactivate Invites	04	
Copy session initiation information	05	
Display device status	06	
Request device statistics	07	
Display storage	08	
Set time and data	09	
Set channel mode secondary	0A	
Display associated line's resource ID	0B	
Activate line trace	0C	
Terminate line trace	0D	
Activate group	10	
Deactivate group orderly (group flush)	11	
Set channel mode primary	15	
Copy destination mode	18	
Copy device session information	21	
Replace device session information	22	
Reset error lock	41	
Reset device queues	42	
Request control mode reset	43	
Reset immediate	44	
Reset online terminal test	48	
Switch to backup	4A	
Switch from backup to primary	4C	
Reset conditional	50	
Reset at end of command	60	
Change line service seeking pause	84	
Change line negative poll response limit	85	
Change session limit	86	
Change retry count	87	
Activate device	88	
Deactivate device	89	
Change device transmission limit	8C	
Modify block handler set association	8D	
Activate line	98	
Deactivate line orderly	99	
Set destination mode	9A	
Deactivate line halt	C2	

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APPENDIX G - BTU RESPONSES

The appendix lists the responses returned to the host in the System Response field of the BTU. The following chart shows the phases to which the responses apply.

Phase 0 Responses

X'00'	Invalid bit configuration.
X'01'	Attention timeout or unrecoverable error on current primary channel adapter.
X'03'	Device association completed.
X'04'	MTA device identified.
X'05'	Channel adapter set to primary mode.
X'06'	Channel adapter set to secondary mode.
X'07'	Entering system slowdown.
X'08'	Leaving system slowdown.
X'09'	Initialization completed.
X'0A'	Miscellaneous Data Recorder records.
X'1B'	Automatic network shutdown initiated via channel time-out or channel adapter failure.
X'1C'	Automatic network shutdown initiated via panel.
X'1D'	Network is now shut down via automatic network shutdown.
X'1E'	Serviceability aid - host logging.
X'1F'	(Reserved).

Phase 1 OK Responses

X'20'	Command executed OK this far. Pertains to all commands not represented by X'22'.
X'21'	Leading graphics received.
X'22'	Command executed OK this far. Pertains only to: <ul style="list-style-type: none"> • Read, Invite commands. • Write commands in conversational mode. • WR or WCR commands in the read phase.
X'23'	Negative poll limit reached - QUEUE option.
X'24'	OLTT request message.
X'25'	BSC status message.
X'26'	Negative poll limit reached - NOWAIT option.
X'27'	Line trace output.
X'3F'	(Reserved).

Phase 2 OK Responses

X'40'	Command executed OK this far. Pertains to all command not represented by X'42'.
X'41'	Leading graphics received.
X'42'	Command executed OK this far. Pertains only to: <ul style="list-style-type: none"> • Read, Invite commands. • Write command in conversational mode. • WR or WCR commands in the read phase.
X'43'	Negative Poll limit reached - QUEUE option.
X'44'	OLTT request message.
X'45'	BSC status message.
X'46'	Negative poll limit reached - NOWAIT option.
X'47'	Line trace output.
X'5F'	(Reserved).

Phase 3 OK Responses

X'60'	Command concluded OK.
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X'61'	Pertains to all commands not represented by X'62'. For PEP line switch it indicates the line switched OK.
X'62'	Leading graphics received. Command executed OK this far. Pertains only to:
	<ul style="list-style-type: none"> • Read, Invite commands. • Write commands in conversational mode. • WR or WCR commands in the read phase.
X'63'	Negative poll limit reached - QUEUE option.
X'64'	OLTT request message.
X'65'	BSC status message.
X'66'	Negative poll limit reached - NOWAIT option.
X'67'	Final line trace output.
X'7P'	Overflow configuration.

Phase 0 Error Responses

X'81'	Invalid resource ID.
X'82'	Invalid command.
X'83'	Invalid modifier.
X'84'	Reset or deactivate in progress.
X'85'	Device inactive.
X'86'	Line inactive.
X'87'	Command not valid for resource.
X'88'	Command syntax error. Possibly already in session.
X'89'	Command rejected; did not conform to BSC specifications.
X'8A'	Invalid control data length.
X'8B'	Reset not performed.
X'8C'	Data not resident in storage.
X'8D'	Dial set queue limit reached.
X'8E'	Line and device incompatibility on switched call-out.
X'8P'	Invalid text length.
X'91'	Invalid control data.
X'92'	Incomplete BTU.
X'93'	Deactivate line orderly or deactivate device command rejected because of error on one or more of the devices.
X'94'	Data in use.
X'95'	Invalid control command modifier or control command not valid for resource.
X'96'	OLTT command rejected-queue not empty.
X'98'	Multiple dial requests.
X'99'	Mode inconsistency. (Request was made to alter the mode of a resource but this resource was already in that mode).
X'9A'	Buffers required to complete operation are not available; system in slowdown mode.
X'9B'	Command rejected; system in auto network shutdown.
X'9C'	Command rejected; error lock set.
X'9D'	Command rejected; secondary channel adapter not operative.
X'9E'	Command rejected; line deactivated or command reset.
X'9P'	Switch command rejected; line to be switched is active with IO or has line trace active (9PE1), or the line to be switched is not SYSGEN'd as a PEP line (9PE0).

Phase 1 Error Responses

X'A0'	Data check.
X'A1'	Possible intervention required.
X'A2'	Intervention required.
X'A3'	Negative poll limit reached - WAIT option.
X'A4'	Yielded to contention.

X'A5'	Device error - BSC status pending.
X'A6'	BSC or TWX ID error.
X'A7'	Line trace terminated due to error.
X'A8'	OLTT command or Reset OLTT Control command processing terminated.
X'A9'	Session not started due to hardware error.
X'AA'	BSC error status message.
X'AB'	General poll operation aborted due to error.
X'B3'	Break received on this block.
X'B8'	Contact rejected-session started.
X'B9'	Dial data inconsistency.
X'BA'	Buffers required to complete operation are not available.
X'BE'	Command rejected, line deactivated or command reset.
X'BF'	(Reserved).

Phase 2 Error Responses

X'C0'	Data check.
X'C1'	Possible intervention required.
X'C2'	Intervention required.
X'C3'	Negative poll limit reached - WAIT option.
X'C4'	Yielded to contention.
X'C5'	Device error-BSC status pending.
X'C6'	BSC or TWX ID error.
X'C7'	Line trace terminated due to error.
X'C8'	OLTT command or reset OLTT Control command processing terminated.
X'C9'	Session not started due to hardware error.
X'CA'	BSC status message.
X'CB'	General poll operation aborted due to error.
X'D3'	Break received on this block.
X'D8'	Contact rejected-session started.
X'D9'	DIAL data inconsistency.
X'DA'	Buffers required to complete operation are not available; system in slowdown mode.
X'DE'	Command rejected; line deactivated or command reset.
X'DF'	(Reserved).

Phase 3 Error Responses

X'E0'	Data check.
X'E1'	Possible intervention required.
X'E2'	Intervention required.
X'E3'	Negative poll limit reached - WAIT option.
X'E4'	Yielded to contention.
X'E5'	Device error - BSC status pending.
X'E6'	BSC or TWX ID error.
X'E7'	Line trace terminated due to error.
X'E8'	OLTT command or Reset OLTT Control command processing terminated.
X'E9'	Session not started due to hardware error.
X'EA'	BSC error status message.
X'EB'	General poll operation aborted due to error.
X'E3'	Break received on this block.
X'E8'	Contact rejected-session started.
X'E9'	Dial data inconsistency.
X'FA'	Buffers required to complete operation are not available.
X'FE'	Command rejected, line deactivated or command reset.
X'FF'	(Reserved).

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APPENDIX H - ONLINE TEST INTERPRETIVE COMMANDS

This appendix consists of two parts: part 1 summarizes the online terminal test procedure, and part 2 gives an explanation and the format of the online test interpretive commands.

Online Terminal Test Summary

The following steps summarize the online terminal testing procedure:

1. OLTT routine constructs a BTU with a Test with Contact command, generates a string of interpretive commands via macro expansions.
2. The BTU is sent to the NCP.
3. NCP recognizes Test with Contact command, establishes session with test terminal, and builds OLTT control block.
4. NCP executes interpretive commands, receives and stores test data from terminal.
5. NCP returns test data and OLTT control block to host for each Return Data and Terminate interpretive command.
6. OLTT routine analyzes test data, determines next action to be taken.
7. OLTT builds and sends next Test command BTU to NCP.
8. Steps 1-7 are repeated until OLTT routine sends a Test with Disconnect command. (Note: A Test with Contact and Disconnect may be the only Test command.)
9. NCP ends session with test device and returns final test data to host.
10. Host sends pertinent test results to control terminal via NCP.

Online Test Interpretive Commands

Test Under Mask: Tests one of six fields against the bit configuration specified by the mask. This command is 6 bytes long.

Byte	Bit	
0	0-3	Operation Code: X'8'
	4-7	<u>Flag Byte Select Field:</u> Specifies which of the 16 flag and control bytes in the online terminal test (OLTT) control block the command modifies as a result of the test.
1	0-5	<u>Index:</u> Selects one of six 4-byte fields in the OLTT control block to test.
		B'000000' - Counters 0-3 B'000001' - Counter 4-7 B'000010' - Flags 0-3 (Counters 8-11) B'000011' - Flags 4-7 (Counters 12-15) B'000100' - IOB Status and Extended Status (Flags 8-11) B'000101' - Phase Error, First Status, and Final Status (Flags 12-15)
	6	Unused - must be 0
	7	<u>Flag Hex Select:</u> Indicates the hex digit within the selected flag byte that the command modifies as a result of the test.
		B'0' - High-order (left) digit. B'1' - Low-order (right) digit.
		The high-order three bits in the indicated hex digit are set to the following bit patterns as a result of the test:

B'100' - All of the selected bits under the mask are ones.
B'010' - All of the selected bits under the mask are zeros.
B'001' - Some of the selected bits under the mask are ones.

2-5 -- Mask

Set Flags On: Sets any combination of bits in the selected flag byte to ones.

0	0-3	Operation Code: X'9'
	4-7	<u>Flag Byte Select</u> : Specifies which of the 16 flag bytes in the OLTT control block to modify.
1	--	<u>Flag Bit Select</u> : Specifies the bits in the selected field that are set to one.

Set Flags Off: Sets any combination of bits in the selected flag byte to zeros.

Byte	Bit	
0	0-3	Operation Code: X'A'
	4-7	<u>Flag Byte Select</u> : Specifies which of the 16 flag bytes in the OLTT control block to modify.
1	--	<u>Flag Bit Select</u> : Specifies the bits in the selected field that are set to zero.

Set Counter: Initializes the selected counter in the OLTT control block.

Byte	Bit	
0	0-3	Operation Code: X'B'
	4-7	<u>Counter Select Field</u> : Specifies which of the 16 counters in the OLTT control block to initialize.
1	--	<u>Value</u> : Specifies the value to which the counter is to be set.

Decrement Counter: Decrements the specified counter in the OLTT control block by one and tests for a zero or negative value. The fifth byte of the 16 flag bytes is reserved for counter status.

Byte	Bit	
0	0-3	Operation Code: X'C'
	4-7	<u>Counter Select</u> : Specifies which of the 16 counters in the OLTT control block to decrement.
1	0	<u>Flag Bit Select</u> : Specifies the bit(s) in flag byte 5 that are modified as a result of the counter changing state. The bit(s) are set to one if the counter reaches zero or goes negative; they are set to zero if the counter goes positive.

Branch if Flags On: Branches to the specified interpretive command if the indicated flags are on.

Byte	Bit	
0	0-3	Operation Code: X'D'
	4-7	<u>Flag Byte Select</u> : Specifies which of the 16 flag bytes in the OLTT control block to test.
1	--	<u>Flag Bit Select</u> : Specifies the bit(s) in the selected field to test.
2-3	--	<u>Branch Address</u> : The displacement from the beginning of the interpretive command string to the command to be branched to.

Branch if Flags Off: Branches to the specified interpretive command if the indicated flags are off.

Byte	Bit	
0	0-3	Operation Code: X'E'

- 4-7 **Flag Byte Select:** Specifies which of the 16 flag bytes in the OLTT control block to test.
- 1 -- **Flag Bit Select:** Specifies the bit(s) in the selected field to test.
- 2-3 -- **Branch Address:** The displacement from the beginning of the interpretive command string to the command to be branched to.

Diagnostic I/O (Normal): Performs all communication line I/O operations for the OLTT. The XIO flags, I/O command, and command modifiers are stored into the IOB before the XIO command is issued.

Byte Bit

- 0 -- **Operation Code:** X'00'
- 1 -- **I/O Flags:** X'00'
- 2 -- **I/O Command:** One-byte IOB command.
- | | |
|-------|-----------------------|
| X'10' | Write initial. |
| X'12' | Write continue. |
| X'16' | Write recover. |
| X'17' | Write delay (NCP/VS). |
| X'19' | Write. |
| X'25' | Read. |
| X'27' | Read delay (NCP/VS). |
| X'28' | Read initial. |
| X'2A' | Read continue. |
| X'83' | Disable. |
| X'8D' | Enable. |
| X'8F' | Dial. |
| X'94' | Write EOT. |
| X'9B' | Write control. |
| X'AC' | Read status. |

For further information on the function of these commands, contact your NCP support representative.

- 3-4 -- **Command Modifiers:** Two-byte IOB command modifier.

Byte 0 bit	0	1	2	3	4	5	6	7	Definition
	1	.	.	.	.	.	.	.	Suppress lost data.
	.	1	.	.	.	.	.	.	Override text mode ERPs.
	.	.	1	.	.	.	.	.	Reject received leading graphics.
	.	.	.	1	.	.	.	.	Inhibit text timeout (start-stop).
	1	.	.	.	ITB mode not transparent (BSC).
	1	.	.	Sub-blocking mode.
	1	.	Inhibit WACK limit (BSC).
	1	Inhibit time fill (start-stop).
	Enable length check.
	ITB mode transparent.
	1	Hold buffers.
Byte 1 bit	0	1	2	3	4	5	6	7	Definition
	1	.	.	.	.	.	.	.	Reset.
	.	1	.	.	.	.	.	.	Send priority.
	.	.	1	.	.	.	.	.	ETX (write commands).
	.	.	.	1	.	.	.	.	Single poll (Read commands).
	1	.	.	.	Offset (Write commands).
	1	.	.	First buffer assigned (Read commands).
	1	.	Insert (Write commands).
	1	Send leading graphics (Read commands).
	Send identification (Enable).
	1	Transparent text (Write commands).
	Send positive ACK (Read commands).
	Identification mode (Enable).
	1	Set negative ACK (Read commands).
	SOH (Write commands).
	Multiple terminal access mode (Enable).
	1	Set alternate ACK.

Variable **Count Field:** Contains the number of bytes of data in the

data field. The count field begins with the first byte following the command modifier field and ends with the first byte that is not X'FF'.

Example:

<u>Data Length</u>	<u>Count Field</u>
18 bytes	X'12'
256 bytes	X'PF01'
512 bytes	X'FFFF02'

Variable Data: Immediately follows the last byte of the count field. Received data is stored in buffers that are chained to the OLTT control block.

NOTE: If data is provided when the command (byte 2) is Enable, the first two data bytes are used to modify the set-mode SDF field of the ICW by using the first byte as an AND mask and the second as an OR mask.

Diagnostic I/O (Set Mode): Sets the mode specified by the command field.

<u>Byte</u>	<u>Bit</u>	
0	--	Operation Code: X'00'
1	--	XIO Flags: X'80'
2	--	Command: Set Mode function.
		<u>Executed Any Time</u>
		04 - Read type identification
		06 - Set text error retry limit
		08 - Set printer line size
		0A - Set carriage return rate
		0C - Set timeout negative reply to poll
		0E - Reset timeout negative reply to poll
		10 - Set receive buffer cutoff factor
		12 - Start line trace
		14 - Stop line trace
		16 - Enter out interrupt level 3
		18 - Set operational link
		1A - Reset operational link
		<u>Executed When Line Not Busy</u>
		05 - Set line adapter interface parameters
		07 - Set line control procedures
		0D - Set diagnostic mode
		0F - Reset diagnostic mode
3-4	--	X'0000'
5	--	<u>Parameters</u> : Contains the new parameters that are set by the command.

Diagnostic I/O (Immediate): Performs immediate I/O for the OLTT.

<u>Byte</u>	<u>Bit</u>	
0	--	Operation Code: X'00'
1	--	XIO Flags: X'40'
2	--	<u>Command</u> : Loaded into register 1 before the XIO is issued. It specifies the immediate command that is performed.
	0	Reset Immediate.
	1	Conditional Reset.
	2	Monitor Mode.
	3	Send Interrupt.
	4	Conditional Send Interrupt.
	5-7	Not Used.
3	--	X'00'

Diagnostic I/O (Dial): Establishes a connection with a remote terminal.

Byte	Bit	
0	--	Operation Code: X'00'
1	--	XIO Flags: X'20'
2	--	<u>I/O Command</u> : One-byte IOB command. (See IOB command field (IOBCHAND) in Data Areas Handbook.)
3-4	--	<u>Command Modifiers</u> : Two-byte IOB modifier. (See IOB modifier field (IOBCHODS) in Data Areas Handbook.)
5	--	Count of Dial Digits
Variable		Dial Digits

Return Data: Transfers the entire OLTT control block and any received data to the OLTT module in the host for analysis.

Byte	Bit	
0	--	Operation Code: X'01'
1	--	<u>Return Modifier</u> :
		X'00' - Transfer OLTT control block and received data.
		X'01' - Transfer OLTT control block only.

Terminate: Stops execution of the interpretive command chain and releases the associated buffers.

Byte	Bit	
0	--	Operation Code: X'02'
1	--	<u>Terminate Modifier</u> :
		X'00' - Release the OLTT control block and restore the line.
		X'01' - Retain the OLTT control block.
		X'03' - NO-OP.

Compare: Compares the data received with the data in the data field.

Byte	Bit	
0	--	Operation Code: X'05'
1	--	<u>Compare Data Length</u> : Length of the compare data field. The maximum length is 40 bytes. Bit 3, flag 7 (control flags) is set on if the fields do not compare (not equal). Otherwise the bit is 0. See Appendix D for description of the control flags in the OLTTCB.
Variable		Compare Data

Set Time Delay: Inserts time delays between the execution of the interpretive commands.

Byte	Bit	
0	--	Operation Code: X'04'
1	--	<u>Time Delay</u> : An unsigned 8-bit integer specifying the number of one-second intervals of delay.

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APPENDIX I - ERROR PRINTOUT REFNUMS

Note that the first 2 hexadecimal characters (NN) in REFNUM are the hexadecimal routine number.

NN001 CAN'T SEND TEXT

This message is printed whenever a text transmission error is detected by the OLTT and is not recovered from. The written data (WRTN) is printed along with this message. The data is printed in the Hexadecimal representation of EBCDIC.

NN001 UNABLE TO ESTABLISH INITIAL CONNECTION

This message is only valid for 2741 operation and indicates that the terminal is not responding EOA, EOT or EOA, TEXT, EOT to an EOA, EOT from the CPU.

NN002 TEXT ERROR

This message indicates that manually entered test data did not compare with that expected. The expected (XPTD) and received (RCVD) data is printed along with this message and should be compared character for character to determine where the error is. The data is printed in the Hexadecimal representation of EBCDIC.

NN003 (No message line)

This REFNUM is given to selection error printouts on a 2740 MOD 2. The error printout contains the keyword selection sequence description lines described in Section 4.1.1. The expected (XPTD) and received (RCVD) GRAPHICS characters are printed along with this error printout in the hexadecimal representation of EBCDIC. See Section 6.1.3.4 for a description of the valid 2740 MOD 2 graphic response characters and their meanings.

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APPENDIX J - ONLINE CONFIG PROGRAM FOR ALL 360/370 OLIS OS
OLTEP USERS

An Online Config program (T3700A) has been added to run on 360/370 CPU's. With it, you may add or replace ANY INDIVIDUAL CDS card(s) in either the local or remote libraries. The normal CONFIG and EDITOS functions under SOSPB will no longer be required to make changes to these libraries. You will find this program most helpful, especially when adding remote devices to your system in a teleprocessing environment, such as a 370X system under MCP.

This program is contained on your release update tape under an alias name of 'T3700A'. To obtain a deck of the program, execute the SOSPB 'PUNCH' function. Then follow the instructions on the following pages.

This program is designed to update, or add online, to the operating system (OS, VS1 or VS2), the Configuration Data Set (CDS) entries. It adds them to the Online datasets in the Operating System without having to use SOSPB. It is ONLY for CDS entries, NOT OLT sections.! To update OLTS, use the normal SOSPB EDITOS function.

This program does NOT provide any verification of the CDS cards. They will be added AS PUNCHED!

There is no need to replace the entire CDS deck, as with SOSPB. You may update, add, or change only the required entries. A CDSEND card is not required and MUST NOT be used.

USE OF THE PROGRAM

The JCL to run the program and to do the updating must initially be set up and tailored to the particular account. The following information is required:

1. The name and location of the dataset which contains the OLT sections and local CDS entries.
2. The name and location of the dataset which contains the remote CDS entries.

3. A valid JOB card for your installation.

Punch the following JCL according to the Operating System being run. Consult the PSR or customer system programmer for assistance with the JCL if unsure of the correct procedures.

NOTE - Certain warning or error messages may occur which are normal, depending on the Operating System and the job (updating or adding only local or only remote CDS cards, for example). As a rule, only errors causing a condition code of 8 or greater will cause problems.

VS1 RELEASE 3 AND VS2 RELEASE 2

```
//jobname      JOB    valid job accounting information for your account
//STEP1        EXEC   LKEDG,PARM='LET,LIST,NCAL,XREF,REUS'
//LKED.SYSIN    DD     *
```

CONFIGURATOR PROGRAM DECK (T3700A) HERE

```
/*
//GO.LOCAL      DD     UNIT=SYSDA,SPACE=(CYL,(1,1)),DISP=(NEW,PASS)
//GO.REMOTE     DD     UNIT=SYSEA,SPACE=(CYL,(1,1)),DISP=(NEW,PASS)
//GO.IN         DD     *
```

YOUR CDS CARD(S) HERE PUNCHED ACCORDING TO THE CDS GUIDE

```
/*
//STEP2        EXEC   PGM=IPDOLT99
//DIAGMSG       DD     SYSOUT=A
//OLTCDSDD      DD     DSN=note1,UNIT=note2,VOL=SER=note3,DISP=(OLD,KEEP)
//CNTRLIN       DD     DSN=*.STEP1.GO.LOCAL,DISP=(OLD,DELETE)
//STEP3        EXEC   PGM=IPDOLT99
//DIAGMSG       DD     SYSOUT=A
//OLTCDSDD      DD     DSN=*.STEP2.OLTCDSDD,DISP=(OLD,KEEP)
//SYMSYM        DD     DSN=note4,UNIT=note2,VOL=SER=note3,DISP=(OLD,KEEP)
//CNTRLIN       DD     DSN=*.STEP1.GO.REMOTE,DISP=(OLD,DELETE)
/*
```

***** NOTES *****

note1 - name of your local dataset (eg: SYS1.OLTLIB)

note2 - unit name (eg: 3330) *

note3 - volume serial number of disk where dataset resides
(eg: SYSRES) *

* 'UNIT'= and 'VOL=SER=' parameters not required if datasets
are already catalogued.

note4 - name of your remote CDS dataset (eg: SYS1.CDSLIB)

Information in CAPITAL letters above may be punched exactly
as shown. Information according to the notes is account
dependent. Consult your PSR or customer systems programmer
for assistance.

If your account does not have standard IBM procedures, it
may be necessary to punch different JCL for the linkedit.
Again, consult your PSR or customer systems programmer.

OS,VS1 RELEASE 1, VS2 RELEASE 1

```
//jobname      JOB    valid job accounting information for your account
//STEP1        EXEC   LKEDG,PARM='LET,LIST,NCAL,XREF,REUS'
//LKED.SYSIN   DD      *
```

CONFIGURATOR PROGRAM DECK (T3700A) HERE

```
//GO.LOCAL     DD      UNIT=SYSDA,SPACE=(CYL,(1,1)),DISP=(NEW,PASS)
//GO.REMOTE    DD      UNIT=SYSDA,SPACE=(CYL,(1,1)),DISP=(NEW,PASS)
//GO.IN        DD      *
```

YOUR CDS CARD(S) HERE PUNCHED ACCORDING TO THE CDS GUIDE

```
*
//STEP2        EXEC   LKED,PARM='LET,LIST,NCAL,XREF,REUS'
//LKED.SYSLMOD DD      DSN=note1,UNIT=note2,VOL=SER=note3,DISP=(OLD,KEEP)
//LKED.SYSIN   DD      DSN=*.STEP1.GO.LOCAL,DISP=(OLD,DELETE)
//STEP3        EXEC   LKED,PARM='LET,LIST,NCAL,XREF,REUS'
//LKED.SYSLMOD DD      DSN=note4,UNIT=note2,VOL=SER=note3,DISP=(OLD,KEEP)
//LKED.SYSIN   DD      DSN=*.STEP1.GO.REMOTE,DISP=(OLD,DELETE)
/*
```

***** NOTES *****

note1 - name of your local dataset (eg: SYS1.OLTLIB)

note2 - unit name (eg: 3330)*

note3 - volume serial number of disk where dataset resides
(eg: SYSRES)*

* 'UNIT=' and 'VOL=SER=' parameters not required if datasets
are already catalogued.

note4 - name of your remote CDS dataset (eg: SYS1.CDSLIB)

Information in CAPITAL letters above may be punched exactly
as shown. Information according to the notes is account
dependent. Consult your PSR or customer systems programmer
for assistance.

If your account does not have standard IBM procedures, it
may be necessary to punch different JCL for the linkedit.
Again, consult your PSR or customer systems programmer.

An Online Config program (T3700B) has been added to run on 360/370 CPU's. With it, you may add or replace ANY INDIVIDUAL CDS card(s) in either the local or remote libraries. The normal CONFIG and EDITDOS functions under SOSPB will no longer be required to make changes to these libraries. You will find this program most helpful, especially when adding remote devices to your system in a teleprocessing environment, such as a 370X system under NCP.

This program is contained on your release update tape under an alias name of 'T3700B'. To obtain a deck of the program, execute the SOSPB 'PUNCH' function. Then follow the instructions on the following pages.

This program is designed to update, or add online, to the disk operating system the Configuration Data Set (CDS) entries. It adds them to the Online datasets in the Disk Operating System without having to use SOSPB. It is ONLY for CDS entries, NOT OLT sections! To update OLTs, use the normal SOSPB EDITDOS function.

This program does NOT provide any verification of the CDS cards. They will be added AS PUNCHED!

There is no need to replace the entire CDS deck, as with SOSPB. You may update, add, or change only the required entries. A CDSSEND card is not required and must NOT be used.

The output of the DOS Online Config program will be used as input to the regular DOS linkage editor. The remote and local CDS's will be placed on system work files SYS003 and SYS002 respectively.

The DOS Online Config program is supplied as an object module. The SOSPB program must be used to obtain this module.

The DOS Online Config Program is actually four programs. The specific program that is required is determined by the physical devices that SYS002 and SYS003 are assigned to. Following is a table which indicates which module should be used.

Use: If SYS002 and SYS003 are assigned to a:

T3700B	3330	disk
T3700C	3340	disk
T3700D	2314	disk
T3700G	3350	disk

The JCL to run this program must be tailored to the particular account. Following is an example of the JCL which might be used.

```
// JOB          CDSLKED
// OPTION       LINK
// ACTION       F1
// PHASE        CDSPGM,S
// INCLUDE

      (DOS CDS LINKEDIT DECK)

/*
// EXEC          LNKEDIT
// DLBL          DCBLOC, 'SYSTEM WORK FILE NO. 2',99/365,SD
// EXTENT        SYS002.DOSRES,1,0,1260,30
// ASSGN         SYS002,X'191'
// DLBL          DCBREM, 'SYSTEM WORK FILE NO. 3',99/365,SD
// EXTENT        SYS003.DOSRES,1,0,0990,30
// ASSGN         SYS003,X'191'
// ASSGN         SYSRDR,X'00C'
// EXEC

      (CDS CARD(S) PUNCHED ACCORDING TO THE CDS GUIDE)
/*
/&

// JOB          REMOTE
// DLBL          IJSYSIN,'DISKIN FILE'
// EXTENT        SYSIN,DOSRES,1,0,0990,30
// ASSGN         SYSIN,X'191'

// JOB          LOCAL
// DLBL          IJSYSIN,'DISKIN FILE'
// EXTENT        SYSIN,DOSRES,1,0,1260,30
// ASSGN         SYSIN,X'191'
```

Contact your PSR or systems Programmer to get additional information about the use of this program.

*The DOS system Generation parameter (SYSFIL=Yes) must be specified for this program to run.

*DCBLOC must be specified as the filename in the DLBL for SYS002.

*DCBREM must be specified as the filename in the DLBL for SYS003.

GLOSSARY

- ACB adapter control block - an NCP data area containing line control information and the status of I/O operations. See the IBM 3704 and 3705 Program Reference Handbook (GY30-3012).
- BDU basic device unit - a part of the BTU exchange between the host access method and NCP. It specifies a request for action by some device in the network.
- BTH basic transmission header - a part of the BTU exchange between the host access method and NCP. It is used to exchange information about the network resource for which the BTU is issued.
- BTU basic transmission unit - the data exchange between the host processor and the communications controller (3704/3705 NCP). It consists of the BTH and BDU plus additional text if any.
- CDS configuration data set - a data set catalogued on a library accessible to the OLT executive, which contains the system configuration information required to test a device using OLTs/OLTts. There is at least one entry for each device on line to be tested and others as required by the OLT executive or OLT (OLTt).
- Communications interval - this is the interval of time when the operator can request a particular test section to be run (such as T3700OLT) or request a particular executive function to be performed (such as CANCEL).
- EP Emulator Program - this is a program written in 3704/3705 machine language and designed to make the 3704/3705 in which it runs present a 2701/2702/2703 interface to a locally attached CPU.
- IOB Input/Output Block - this is the OLTtCP input and output data area. The interpretive command block is built in it and transmitted from it. Also, response BTU's are received in it.
- NCP Network Control Program - this is a program written in 3704/3705 machine language and designed to control the data flow from the host CPU to terminals in such a way as to minimize CPU intervention. The NCP is loaded from the CPU into the 3704/3705 for execution.
- NIR Node Information Record - that portion of the NCP-3 PIU defined by the RH and RU fields. It includes data. (See Appendix E.)
- node An intelligent concentrator type addressable area of a network, in this case a 3704/3705 with NCP-3.
- OLT executive - this is a program that is executed in the host CPU, which provides an interface between the OLT and the system devices (printers, terminals, system consoles, etc.). Most executives do not interface directly to the devices but do so through an access method or operating system. OLTSEP is an exception - it is a standalone OLT executive. The OLT executives are OLTSEP, OLTEP, TOTEP, and TOLTSEP.
- OLTt On Line Terminal Test - this is an OLT written to run with the 3704/3705 NCP and test terminals that are supported by the NCP. It interfaces to the NCP and OLT executive through the OLTtCP. The program runs in the host CPU.
- OLTtCB On Line Terminal Test Control Block - this is a block of data returned to the OLTtCP by the NCP which describes the current OLTt status in the NCP.
- OLTtCP On Line Terminal Test Control Program - this is the OLTt program interface to the NCP and OLT executive. It is called by the OLTt and runs in the host CPU.
- PIU Path Information Unit - the basic transmission unit for NCP-3 operation in a network. It replaces the BTU of NCP-2.1 and is composed of the TH, RH, and RU. (See Appendix E.)
- RH Request/Response Header - the first 3 bytes of the NCP-3 PIU NIR. These bytes contain various network mode controls and flags. (See Appendix E.)
- RU Request/Response Unit - that portion of the NIR that follows the 3 byte RH field, including the data field. (See Appendix E.)
- SOSP Standalone Online Support Processor - a utility program called at communications interval time and providing various cataloging and data manipulating functions (e.g., punch a module, add a module, etc.).
- TCAM this is a program that interfaces with the operating system to control the teleprocessing network.
- TH Transmission Header - The first 10 bytes of the PIU. It contains various network control indicators and addresses. (See Appendix E.)
- TRM Test Request Message - this is a message input to the OLT executive at communications interval time which defines the test device, the test to be run, and any test options or parameters. The

OLT/OLTT test is not in the system at the time this message is entered, but is loaded and executed as a result of this entry.