

PREFACE

This manual contains information pertaining to the IBM 3705 Communications Controller Channel Adapter and Wrap All Lines On-Line Tests.

The material in this manual was previously released in D99-3705A which has been replaced by D99-3705C, D99-3705D, and D99-3705E. In addition to the material in D99-3705A, this manual has been updated to include the type 4 channel adapter.

Chapter 1 provides information about the type 1 and type 4 channel adapter on-line tests. Chapter 2 provides information about the type 2 and type 3 channel adapter on-line tests. Chapter 3 contains information about the wrap all lines on-line tests.

Appendix A is included to provide information about the Configuration Data Set (CDS) and the Unit Configurator programs.

A companion manual that should be referred to is:

IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

Prerequisite manuals that should be referred to are:

DOS OLTEP SRL, GC24-5086.

IBM System/360 Operating System On-Line Test Executive Program, GC28-6650.

OLTSEP Operators Guide, D99-SEPDT.

SUMMARY OF AMMENDMENTS FOR D99-3705C-01

New test sections T3705AH and T3705AI are described in this version of the manual.

In addition to the new test sections, a correction to the wording of the description of T3705BB Routine 5 is incorporated.

Changes have been made to Appendix A to reflect multiple type 4 channel adapters.

SUMMARY OF AMMENDMENTS FOR D99-3705C-02

This edition incorporates DCL-3705C-02 and provides an updated Table of Contents that shows Chapter and Page numbers.

In addition, Appendix A has been corrected so that it agrees with Appendix A in D99-3705D.

SUMMARY OF AMENDMENTS FOR D99-3705C-04

This edition incorporates DCL-3705C-03 and provides an updated Configuration Data Set Description.

D99-3705C-04

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1.0 CHANNEL ADAPTER ON-LINE TESTS

1.1 T3705AA-AI TYPE 1 AND TYPE 4 CHANNEL ADAPTER ON-LINE TESTS
DESCRIPTION

The type 1 and type 4 channel adapter on-line test is composed of the following test sections:

T3705AA
T3705AB
T3705AC
T3705AD
T3705AE
T3705AF Type 4 Channel Adapter only.
T3705AG Type 4 Channel Adapter only.
T3705AH Type 4 Channel Adapter only.
T3705AI Type 4 Channel Adapter only.

An attempt to identify a fault with a card is made for the various results below. All the cards listed here are on gate 01A, board position A4.

Failure Symptom	Card	Location
Command decode	2325	A4M2
Status	2325 2326 7602	A4M2 A4T2 A4L2
Sense	7601	A4P2
Residual Byte count	7602	A4L2
Traps ESC address when ESC lines not enabled	2325 2326	A4M2 A4T2
Wide spread errors	2342	A4N2
Interface A	6836	A4Q2
Interface B	6836 6837	A4S2 A4R2
Extended Buffer	AC05	A4J2

Control Circuitry

Extended Buffer AC06 A4H2
Data Flow

All Test sections print out a diagnostic message indicating the section was not run if the CUTEST questions received a 'C' (for cancel) response just prior to running the test.

1.1.1 T3705AA, T3705AB, AND T3705AC CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

Test sections T3705AA through AC primarily test the common controls and interface. The 3705 ROS bootstrap program responds to the functions of these 3 sections.

T3705AB, Routines 3 and 4, test HIO and TIO. These routines do not check the results of these tests if the CDS for the line being tested defines it as shared; OLTSEP will not have processed the command requested if the line is shared.

1.1.1.1 TEST SECTION T3705AA

Routine - 01 - Checks No-op Command

Issue a No-op command to the NSC address.

01001 Expected results

Condition code	01
First CSW status	0C00
Expected sense	00

Issue a No-op command to the ESC address.

01002 Expected results

Condition code	03
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Routine - 02 - Checks Write IPL Command

Issue a Write IPL command with an invalid byte count of one to the NSC address.

02001 Expected results

Condition code 00
Ending status 0F00
Expected sense 02

Issue a Write IPL command with an invalid byte count of one to the ESC address.

The ESC address has not been enabled.

02002 Expected results

Condition code 03

Routine - 03 - Checks Illegal Commands

Issue all illegal commands to the NSC address on consecutive passes.

03001 Expected results

Condition code 00
Ending status 0E00
Expected sense 82

Routine - 04 - Checks Write Command

Issue the Write command to the NSC address that has not been initialized.

04001 Expected results

Condition code 00
Ending status 0E00
Expected sense 02

1.1.1.2 TEST SECTION T3705AB

Routine - 01 - Checks Read Command

Issue the Read command to the NSC address that has not been initialized.

01001 Expected results

Condition code 00
Ending status 0E00
Expected sense 02

Routine - 02 - Checks Write Break command

Issue the Write Break command to the NSC address that has not been initialized.

02001 Expected results

Condition code 00
Ending status 0E00
Expected sense 02

Routine - 03 - Checks Halt I/O Operation

This routine runs under OLTSEP only.

Issue a Halt I/O.

03001 Expected results

Condition code 01
Initial status 0000
Expected sense 00

Routine - 04 - Checks the Resulting Status of Test I/O

This routine runs under OLTSEP only.

Issue a Test I/O.

04001 Expected results

Condition code 00
first CSW status 0000
Expected sense 00

1.1.1.3 TEST SECTION T3705AC

Routine - 01 - Checks the Transfer of Data Using Write IPL Command

Write 18 bytes of data with the Write IPL command. The ending status presented because of an invalid Write IPL command is Channel End, Device End, Unit Check and Unit Exception. This status is presented by ROS. The second 2 bytes of data transferred did not contain a count of 18.

01001 Expected results

Condition code	00
first CSW status	0F00
Expected sense	02

Routine - 02 - Test the ROS Generated Asynchronous status

Set attention equals yes, and issue a No-op command.

This is a manual intervention routine. The manual intervention option must be specified in the request for test or this routine is bypassed. A message to the operator requests 'Press the LOAD pushbutton on the 3705 control panel'.

If the LOAD pushbutton is not pressed within 60 seconds after the operator message, a timeout results. An error message presents the first CSW status as shown below, but the ending or second CSW status is zeros.

02001 Expected results

Condition code	01
first CSW status	0C00
Ending status	0600
Expected sense	00

1.1.2 T3705AD AND T3705AE CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

Sections AD and AE load a responder program, U3705A, into the 3705 which responds to their commands.

Before beginning T3705AD or AE, the 3705 responder is loaded into

the 3705. When the responder is successfully loaded into the 3705, the bootstrap program ROS turns control over to the responder program. Failure to load successfully results in an error printout similar to those resulting from errors in normal test functions.

This section issues I/O commands to the NSC and ESC addresses.

1.1.2.1 TEST SECTION T3705AD

T3705AD and AE load a responder into the 3705. Upon successful loading of the responder program into the 3705 ROS bootstrap program gives control to the responder. Failure to load successfully results in an error printout similar to those resulting from errors in normal test functions. All commands in T3705AD are issued to the NSC address.

Routine - 01 - Checks Data Transfer With the Write Command

Write 4 bytes of data.

01001 Expected results

Condition code	00
first CSW status	0800
second CSW status	0400
Expected sense	00

Routine - 02 - Checks Data Wrap With the Write and Read Commands

Write and read 4 bytes of data.

Data read is compared for accuracy.

02001 Expected results

Condition Code	00
Initial status	0800
Ending status	0400
Expected sense	00

02002 Expected results.

Condition code	00
----------------	----

Initial status 0800
Ending status 0400
Expected sense 00

Routine - 03 - Checks 1 Byte Data Wrap

Write 1 byte of data.

03001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Issue a Read command with a byte count of 4.

Data is compared to verify 1 byte read.

03002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 04 - Checks 3 Byte Wrap

Write 3 bytes of data.

04001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Issue a Read command with a byte count of 4.

Data is compared to verify bytes read.

04002 Expected results.

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 05 - Checks data wrap with the write and read commands
Using Command Chaining

Issue a write command of 4 bytes chained to a read command of 4 bytes.

05001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

(A failure in this routine and not in other routines might be due to chaining failure - suspect card 2342 at A4N2.)

Routine - 06 - Checks NSC status Byte

Issue a Write Break command with a byte count of 4.

The status presented here is not a valid presentation of status, but a test of the ability to set status bits.

06001 Expected results

Condition code 00
First status CC00
Second status 0000
Expected sense 00

Routine - 07 - Checks for status Modifier, Control Unit End, and Busy

Issue a No-op command.

The responder sets up to present the initial and ending status as indicated below. As in the previous routine, this is a test for the ability to set status bits.

07001 Expected results

Condition code 01
Initial status 7000
Ending status 8400
Residual Count 00
Expected sense 00

1.1.2.2 TEST SECTION T3705AE

Routine - 01 - Checks That a No-Op Command Causes Channel and Device
End

Issue a No-op to the NSC address.

01002 Expected results

Condition code 01
first CSW status 0C00

Issue a No-op to the ESC address.

01003 Expected results

Condition code 01
first CSW status 0C00

Routine - 02 - Checks Data Wrap With the Write and Read Commands

Issue a Read command to the NSC address (18 bytes). Issue a wrap
command to the ESC address (18 bytes).

02001 Expected results (NSC address)

Condition code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

02001 Expected results (ESC address)

Condition code 00
first CSW status 0C00

Expected sense 00

1.1.3 T3705AF CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AF is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing the type 4 channel adapter.

T3705AF uses responder modules, U3705I and U3705J. U3705I is loaded into the 3705 via an IPL command. Chained to the IPL is a write command to load U3705J.

U3705I loads U3705J at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705J. U3705J sets various mode states according to the routine being run.

T3705AF consists of eight routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a count with which to regulate the read byte count.

At the end of this test the routine requests and receives a count of the data written. An error message results if the count is wrong.

Routine 5 can be made to loop 256 times by entering EXT = L in the options field of the test request message to employ a longer wrap operation. The extra looping increases the run time for T3705AF from about 10-15 seconds to about 3 1/2 minutes.

Routine - 01 -Checks Normal Mode Wrap Test

This routine writes a 16 byte message on the first test address and reads the message back on the second address. The wrap is made in normal mode - not extended buffer mode - inbound data/status interrupts occurs each time a 4 byte buffer is filled.

01002 Expected results from the write

Condition code	00
first CSW status	0800
second CSW status	0400
Expected sense	00

01002 Expected results from the read

Condition Code 00
first CSW Status 00C0
second CSW Status 0000
Expected Sense 00

Routine - 02 - Checks 36 Byte Data Wrap in Extended Buffer Mode.

This routine writes a 36 byte message on the first test address and reads the message back on the second address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

02002 Expected results from the write

Condition Code 00
Initial status 0800
Ending status 0400
Expected sense 00

02002 Expected results. from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 03 - Checks Recognition of ETB and ETX in EBCDIC Mode.

This routine writes a 36 byte message on the first test address and reads the message back on the second address. This wrap is made in extended buffer mode. The first Inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB. This causes the channel adapter to present channel stop to the responder. The write ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of two. On the second pass, the ETB is replaced with an ETX.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 04 - Checks recognition of ETB and ETX in USASCII Mode

This routine writes a 36 byte message on the first test address and reads the message back on the second address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB and causes the channel adapter to present channel stop to the responder. The write command ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of 2. On a second pass, the ETB is replaced with an ETX.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 05 - Checks The Recognition of DLE-STX.

A 72 byte message with the DLE-STX character sequence inserted after 36 Bytes is written. ETB and ETX characters are also inserted in the data following the DLE-STX sequence. The DLE-STX sequence causes channel adapter hardware to discontinue monitoring for control characters. The ETB and ETX characters should not cause an end to the write. All data written is read back on the ESC address.

The above is performed first in EBCDIC mode, and then in USASCII mode.

If EXT = L is entered in the Test Request Message, this routine will loop 256 times.

05002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

05002 Expected results from the read

Condition code 00
Initial Status 0C00
Ending Status 0000
Expected Sense 00

Routine - 06 - Checks the DLE Remembrance.

Two 36 byte messages are written on the native sub-channel address. The DLE is the last character of the first message. The STX is the first character of the second message. The responder, sees the DLE remember latch bit set because of the DLE. When the second write is recognized the responder sets this bit in register X'6C'. The arrival of the STX character then causes the hardware to discontinue monitoring for control characters. Subsequent control characters, not being recognized by hardware, should not cause the write to end.

A 72 byte read command is issued to the ESC address. All 72 bytes written by the 2 write commands are read back.

The above is performed first in EBCDIC mode followed by USASCII

mode.

06002 Expected results from the Write

Condition Code 00
Initial Status 0800
Ending Status 0400
Expected Sense 00

06002 Expected results from the read

Condition code 00
First status 0C00
Second status 0000
Expected sense 00

Routine - 07 - Checks SYN Character Monitor Test (positive).

This routine writes a 16 byte message. The first pass has 4 EBCDIC SYN characters as the first 4 characters. The hardware was set to EBCDIC mode, disconnects from the channel, and present a level 3 interrupt to the responder. The responder presents ending status to the write if it sees the SYN Monitor bit set. On a second pass, the SYN characters and Mode are changed to USASCII Mode.

Because the write command is terminated after 4 bytes, a residual byte count of 12 results. The 4 bytes written are read and verified. The read command is also a 16 byte read and ends with a residual byte count of 12.

07002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Residual Count 0C
Expected sense 00

07002 Expected results from the Read

Condition code 00
First status 0C00
Second status 0000

Residual Count 0C
Expected sense 00

Routine - 08 - Checks SYN Character Monitor Test (negative).

This routine writes a 16 byte message. On the first pass, the 3705 is placed in EBCDIC mode. The first 4 bytes of the message are USASCII SYN characters.

The channel adapter hardware should not recognize a SYN character sequence. On a second pass of the test, the mode and the SYN characters are reversed. The results should be the same.

08002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Residual Count 00
Expected sense 00

08002 Expected results from the Read

Condition code 00
First status 0C00
Second status 0000
Residual Count 00
Expected sense 00

1.1.4 T3705AG CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AG is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing the type 4 channel adapter.

T3705AG uses responder modules, U3705I and U3705K. U3705I is loaded into the 3705 via with an IPL command. Chained to the IPL is a write command to load U3705K.

U3705I loads U3705K at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705K. U3705K sets various mode states according to the routine being run.

T3705AG consists of four routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a 3705 storage address where the test message is to be written and read. This section tests the type 4 channel adapter C. S. mode.

At the end of this test the routine requests and receives a count of the data written. An error message results if count is wrong.

Routine - 01 - Two-hundred-fifty Byte Wrap Test

This routine writes a 250 byte message on the first test address and reads the message back on the second address. The responder sets the channel adapter to the C. S. mode.

Condition code	00
first CSW status	0800
second CSW status	0400
Expected sense	00

01002 Expected results from the read

Condition Code	00
first CSW Status	0C00
second CSW Status	0000
Expected Sense	00

Routine - 02 - Checks 255 Byte Data Wrap

This routine writes a 255 byte message on the first test address and reads the message back on the second address. The responder sets up the channel adapter for C. S. mode.

02002 Expected results from the write

Condition Code	00
Initial status	0800
Ending status	0400
Expected sense	00

02002 Expected results. from the read

Condition code	00
Initial status	0C00

Ending status 0000
Expected sense 00

Routine - 03 - Checks The 512 Byte Wrap Test

This routine writes a 520 byte message on the first test address and reads the message back on the second address. The responder sets the channel adapter to C. S. mode. The count of 520 causes the channel adapter to require servicing three times from the responder. The first and second service is for 256 bytes each and the third is for the remaining 8 bytes.

This test makes two passes. On the second pass, the IBM 3705 storage address where the test message is written and read is changed from X'1000' to X'1001'.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 04 - Checks the 520 Byte Wrap Test (to and from high storage)

This routine is similar to routine three. The differences are the responder receives and transmits back the test message from high storage, starting at address X'FF00. This test verifies setting the byte X address bits in the C.S. address register X'6E'. Prior to this test a four byte Write Break command sends the routine identification to the responder. The first two bytes identify the routine and the second two bytes define the 3705 storage address of the test message.

This routine makes 3 passes altering the test message address in the 3705 from X'FF00' to X'1FF00' to X'2FF00' respectively. If the 3705 storage is too small for these addresses, the responder defaults

to an acceptable address.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

1.1.5 T3705AH CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AH is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing the type 4 channel adapter.

T3705AH uses responder modules, U3705I and U3705J. U3705I is loaded into the 3705 via an IPL command. Chained to the IPL is a write command to load U3705J.

U3705I loads U3705J at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705J. U3705J sets various mode states according to the routine being run.

T3705AH consists of eight routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a count with which to regulate the read byte count.

At the end of this test the routine requests and receives a count of the data written. An error message results if the count is wrong.

Routine 5 can be made to loop 256 times by entering EXT = L in the options field of the test request message to employ a longer wrap operation. The extra looping increases the run time for T3705AH from about 10-15 seconds to about 3 1/2 minutes.

Routine - 01 - Checks Normal Mode Wrap Test

This routine writes a 16 byte message on the nsc test address and reads the message back on the same address. The wrap is made in normal mode - not extended buffer mode - inbound data/status interrupts occurs each time a 4 byte buffer is filled.

01002 Expected results from the write

Condition code	00
first CSW status	0800
second CSW status	0400
Expected sense	00

01002 Expected results from the read

Condition Code	00
first CSW Status	0800
second CSW Status	0400
Expected Sense	00

Routine - 02 - Checks 36 Byte Data Wrap in Extended Buffer Mode.

This routine writes a 36 byte message on the nsc test address and reads the message back on the same address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

02002 Expected results from the write

Condition Code	00
Initial status	0800
Ending status	0400
Expected sense	00

02002 Expected results. from the read

Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

Routine - 03 - Checks Recognition of ETB and ETX in EBCDIC Mode.

This routine writes a 36 byte message on the nsc test address and reads the message back on the same address. This wrap is made in extended buffer mode. The first Inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB. This causes the channel adapter to present channel stop to the responder. The write ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of two. On the second pass, the ETB is replaced with an ETX.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 04 - Checks recognition of ETB and ETX in USASCII Mode

This routine writes a 36 byte message on the nsc test address and reads the message back on the same address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB and causes the channel adapter to present channel stop to the responder. The write command ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of 2. On a second pass, the ETB is replaced with an ETX.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 05 - Checks The Recognition of DLE-STX.

A 72 byte message with the DLE-STX character sequence inserted after 36 Bytes is written. ETB and ETX characters are also inserted in the data following the DLE-STX sequence. The DLE-STX sequence causes channel adapter hardware to discontinue monitoring for control characters. The ETB and ETX characters should not cause an end to the write. All data written is read back on the SAME address.

The above is performed first in EBCDIC mode, and then in USASCII mode.

If EXT = L is entered in the Test Request Message, this routine will loop 256 times.

05002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

05002 Expected results from the read

Condition code 00
Initial Status 0800
Ending Status 0400
Expected Sense 00

Routine - 06 - Checks the DLE Remembrance.

Two 36 byte messages are written on the native sub-channel address. The DLE is the last character of the first message. The STX is the first character of the second message. The responder, sees the DLE remember latch bit set because of the DLE. When the second write is recognized the responder sets this bit in register X'6C'. The arrival of the STX character then causes the hardware to discontinue monitoring for control characters. Subsequent control characters, not being recognized by hardware, should not cause the write to end.

A 72 byte read command is issued to the NSC address. All 72 bytes written by the 2 write commands are read back.

The above is performed first in EBCDIC mode followed by USASCII mode.

06002 Expected results from the Write

Condition Code 00
Initial Status 0800
Ending Status 0400
Expected Sense 00

06002 Expected results from the read

Condition code 00
First status 0800
Second status 0400
Expected sense 00

Routine - 07 - Checks SYN Character Monitor Test (positive).

This routine writes a 16 byte message. The first pass has 4 EBCDIC SYN characters as the first 4 characters. The hardware was set to EBCDIC mode, disconnects from the channel, and present a level 3 interrupt to the responder. The responder presents ending status to the write if it sees the SYN Monitor bit set. On a second pass, the SYN characters and Mode are changed to USASCII Mode.

Because the write command is terminated after 4 bytes, a residual byte count of 12 results. The 4 bytes written are read and verified. The read command is also a 16 byte read and ends with a residual byte

count of 12.

07002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Residual Count 0C
Expected sense 00

07002 Expected results from the Read

Condition code 00
First status 0800
Second status 0400
Residual Count 0C
Expected sense 00

Routine - 08 - Checks SYN Character Monitor Test (negative).

This routine writes a 16 byte message. On the first pass, the 3705 is placed in EBCDIC mode. The first 4 bytes of the message are USASCII SYN characters.

The channel adapter hardware should not recognize a SYN character sequence. On a second pass of the test, the mode and the SYN characters are reversed. The results should be the same.

08002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Residual Count 00
Expected sense 00

08002 Expected results from the Read

Condition code 00
First status 0800
Second status 0400
Residual Count 00
Expected sense 00

1.1.6 T3705AI CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AI is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing the type 4 channel adapter.

T3705AI uses responder modules, U3705I and U3705K. U3705I is loaded into the 3705 via with an IPL command. Chained to the IPL is a write command to load U3705K.

U3705I loads U3705K at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705K. U3705K sets various mode states according to the routine being run.

T3705AI consists of four routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a 3705 storage address where the test message is to be written and read. This section tests the type 4 channel adapter C. S. mode.

At the end of this test the routine requests and receives a count of the data written. An error message results if count is wrong.

Routine - 01 - Two-hundred-fifty Byte Wrap Test

This routine writes a 250 byte message on the nsc test address and reads the message back on the same address. The responder sets the channel adapter to the C. S. mode.

01002 Expected results from the Write

Condition code	00
first CSW status	0800
second CSW status	0400
Expected sense	00

01002 Expected results from the read

Condition Code	00
first CSW Status	0800
second CSW Status	0400
Expected Sense	00

Routine - 02 - Checks 255 Byte Data Wrap

This routine writes a 255 byte message on the nsc test address and reads the message back on the same address. The responder sets up the channel adapter for C. S. mode.

02002 Expected results from the write

Condition Code 00
Initial status 0800
Ending status 0400
Expected sense 00

02002 Expected results. from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 03 - Checks The 512 Byte Wrap Test

This routine writes a 520 byte message on the first nsc address and reads the message back on the same address. The responder sets the channel adapter to C. S. mode. The count of 520 causes the channel adapter to require servicing three times from the responder. The first and second service is for 256 bytes each and the third is for the remaining 8 bytes.

This test makes two passes. On the second pass, the IBM 3705 storage address where the test message is written and read is changed from X'1000' to X'1001'.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0800

Ending status 0400
Expected sense 00

Routine - 04 - Checks the 520 Byte Wrap Test (to and from high storage)

This routine is similar to routine three. The differences are the responder receives and transmits back the test message from high storage, starting at address X'FF00. This test verifies setting the byte X address bits in the C.S. address register X'6E'. Prior to this test a four byte Write Break command sends the routine identification to the responder. The first two bytes identify the routine and the second two bytes define the 3705 storage address of the test message.

This routine makes 3 passes altering the test message address in the 3705 from X'FF00' to X'1FF00' to X'2FF00' respectively. If the 3705 storage is too small for these addresses, the responder defaults to an acceptable address.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

1.2.1 T3705AA-AI TYPE 1 AND TYPE 4 CHANNEL ADAPTER ON-LINE TEST REQUIREMENTS

If initial attempts to run on line tests fail, check that a channel interface is enabled and that the 3705 is in an initial reset state. Ensure the 3705 is in the initial reset state by by pressing the RESET and then the LOAD pushbuttons on the IBM 3705 control panel.

Then set the MODE SELECT and DIAGNOSTIC CONTROL switches in the PROCESS position and the DISPLAY/FUNCTION switch in the STATUS

position.

Display B bits 0.2 and 0.3 should be on after pressing the RESET and LOAD push buttons to indicate that ROS has reached IPL phase 3. The LOAD light should be on. HARDSTOP, TEST, WAIT, and PROGRAM STOP should be off.

If the above conditions cannot be achieved, refer to "CE PANEL TEST" and "ROS TEST" in the IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

The test request message for the channel adapter on-line tests must include the 3705 native sub-channel address followed by the emulator sub-channel address.

T3705AA and AE test the NSC and ESC addresses. If only the NSC address is entered in the device field of the test request message, T3705AA will bypass that part of the test using the second address (the last half of routines 1 and 2).

T3705AE interrogates for a second address in the TRM and for emulator line definition in the NSC CDS. If either is missing, a message, (NO ESC ADDRESS DEFINED IN NSC CDS OR TEST REQUEST) is printed out and the test section is terminated.

EXAMPLE: R 01,'005,020/3705AA-AE/nfE/'

When an emulator line address is entered in the device field of "DEV/TEST/OPT/", DOS/OLTEP prints a "DVC NOT OP" message for that address. OLTEP performs a data protection function when the emulator line address is not available. Condition code 3 results and the printout occurs.

Routine 2 of T3705AC requires manual intervention. The option 'MI' must be included in the test request message for this routine to be run.

If any of these OLT sections are run by reading them in from the card reader, U3705C must follow the first section called for in the test request message.

Test sections T3705AD and AE also require the 3705 responder program and U3705A, to follow each deck.

Upon termination, T3705AD through T3705AI, issue an invalid channel Write IPL command (4 bytes of zeros) to leave the 3705 in a ROS loaded state.

Routines 3 and 4 of T3705AB test the Halt I/O and Test I/O commands. These routines are run only under OLTSEP and are bypassed if the executive program is not OLTSEP. If these routines are requested, and the executive is other than OLTSEP, the start and terminate messages appear but the routines are not run.

T3705AF and AG require two addresses in the Test Request Message (TRM), these being the NSC followed by the ESC address. T3705AH and AI are virtually copies of the tests in AF and AG with the exception that all commands are issued to the NSC address. The reason for this is to provide these tests when the CA's are attached to selector channels and no ESC address is available. When this is the case, T3705AF and T3705AG cannot run.

1.3.1 T3705AA-AI TYPE 1 AND TYPE 4 CHANNEL ADAPTER ON-LINE TEST OPERATING INSTRUCTIONS

When the OLT detects an error (bad CSW, CC, Sense, Data, etc.), an error printout occurs at the host CPU printer. All pertinent information about the error that can be obtained by the OLT appears in the printout.

Should the error printouts report that no interrupt occurred from the 3705, refer to the Responder Error Displays at the end of this OLT section description.

When an interface control check causes a machine check, OLSTEP enters its WAIT state with an error code displayed in the instruction counter of the CPU. The wait state error codes are defined in the OLTSEP Operator's Guide, D99-SEPDT. Such a machine check is catastrophic to OLTEP under OS or DOS. Running SEREP is the next logical step if such a failure occurred.

The message ID number for the failing section of the on-line test is printed in the first three digits of the test description (second line) of the DPRINT message. The test section numbers and the corresponding message ID numbers follow.

Test Section Number	Message ID Number
------------------------	----------------------

T3705AA	30-41	
T3705AB	42-53	
T3705AC	54-62	
T3705AD	63-76	
T3705AE	77-88	
T3705AF	1-19	Type 4 Channel Adapter only
T3705AG	1-9 and 20-29	Type 4 Channel Adapter only
T3705AH	1-19	Type 4 Channel Adapter only
T3705AI	1-9 and 20-29	Type 4 Channel Adapter only

Refer to the following manual for a description of the error printout format:

DOS OLTEP SRL, GC24-5086 IBM System/360 Operating System On-Line Test Executive Program, GC28-6650 OLTSEP Operator's Guide, D99-SEPDT

1.3.1.1 INITIALIZATION MESSAGES

Responding to operator messages permit the operator to either cancel, proceed, or retry the requested OLT procedure.

THE STATUS OF THE 3705 CANNOT BE DETERMINED. ****WARNING**** CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER 'C' TO CANCEL OR 'P' TO PROCEED.

The OLT cannot determine the status (offline or stopline) of the 3705. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator/user has the responsibility of continuing by responding with a "C" or "P" as follows:

r id, 'C' (for Cancel)
or
r id, 'P' (for Proceed)

Any other response results in the program repeating the last line of the above message. If after 5 responses the program still has not received a C or P, it prints:

INVALID RESPONSE AFTER 5 REQUESTS.

The program assumes the response of 'C' and terminates the OLT.

ALL 3705 ADDRESSES ARE NOT STOPPED OR OFFLINE. **WARNING**
CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER
'C' TO CANCEL, OR 'R' TO RETRY.

The OLT has been notified by the executive that all 3705 addresses are not offline or stopped. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator/user is being given the opportunity to make all addresses available to the OLT using standard system facilities. He also has the responsibility of continuing by responding with a "C", or "R" as follows:

r id, 'C' (for Cancel)
or
r id, 'R' (for Retry)

The "R" means the operator has been taking the addresses off line and wants the program to verify all units are now available to the OLT.

Any other response results in the program repeating the last line of the above message. If after 5 responses, the program still has not received a C or R, it prints:

INVALID RESPONSE AFTER 5 REQUESTS

The program assumes the response of 'C' and terminates the OLT.

If the Test Loop option is used, "DEV/TEST/OPT" should be entered via the console and not in the JCL stream. This minimizes the chances of OLTEP reloading the OLT section thereby reducing the need to reply to the "CANCEL/PROCEED" messages for each pass.

1.4.1 RESPONDER ERROR DISPLAYS

The following is a list and description for the responder error codes. The DISPLAY/FUNCTION switch must not be in the STATUS or TAR & OP positions. These error codes do not give error isolation but indicate

that an error did occur. The program sets one of the codes below in Display B and sets hardstop. To continue, press the START pushbutton. If the FUNCTION SELECT switch is in FUNCTION 5, the program will not stop on type 1 channel adapter level 1 interrupts.

1.4.1.1 U3705A RESPONDER DISPLAY CODES

<u>CODE</u>	<u>MEANING</u>
C100	Level 1 interrupt not from CA type 1
C104	Level 1 interrupt from CA type 1
C10A	Undefined level 3
C10E	Undefined Initial Selection level 3 interrupt from type 1 CA
C110	Invalid command
C1FF	Looping in level 4 awaiting level 3 interrupt

1.4.1.2 U3705I RESPONDER DISPLAY CODES

<u>CODE</u>	<u>MEANING</u>
C200	Non CA L1 (CCU, CSB, Etc.)
C202	CA2 Selected for IPL, but L3 not Set
C203	CA1 Selected for IPL, but L3 not Set
C204	Unexpected CA L1
C20A	Unknown L3 (not timer, PCI, Panel or CAS)
C20E	Unknown CA L3 Interrupt
C210	Inbound Transfer when not Expected
C211	Inbound Transfer with Count of Zero
C212	Unexpected Command Received.
C2FF	Normal Display Code

1.4.1.3 U3705J AND U3705K RESPONDER DISPLAY CODES

<u>CODE</u>	<u>MEANING</u>
C200	Non Channel Adapter L1 (CCU, CSB, Etc.)
C202	CA2 Selected for IPL, but L3 not Set
C203	CA1 Selected for IPL, but L3 not Set
C204	Unexpected CA L1
C20A	Unknown L3 (Not Timer, PCI, Panel or CAS)
C20C	Branch to Zero Detected
C20E	Unknown CA L3 Interrupt
C210	Inbound Transfer when not expected

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C211 Inbound Transfer with Count of Zero
C212 Unexpected Command Received
C2FF Normal Display Code

2.0 TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TESTS

2.1 T3705BA-BH TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TESTS DESCRIPTION

The 3705 type 2 and type 3 Channel Adapter on-line tests are comprised of the following OLT sections

T3705BA
T3705BB
T3705BC
T3705BD
T3705BE
T3705BF type 3 channel adapter only
T3705BG
T3705BH

An attempt to identify a fault with a card is made for the various results of the tests within these sections. The channel adapter circuit cards are in board A4 of the frame in which the channel adapter resides. The failure location to a card cross reference is as shown.

Board A4 is referred to as Z4 in the type 2 channel adapter logics and as W4 in the type 3 channel adapter logics.

Failure Symptom	Card	Location
Command Decode	6840	A4L2
Sense and status	6842	A4J2
	6838	A4N2
Byte Count	6839	A4M2
Data Check	6843	A4G2
		A4H2
Interface Control Check	6838	A4N2
Wide Spread Failures:		
Interface A Driver	6836	A4Q2, W4E2
Interface B Driver	6836	A4S2, W4E2

Interface A Receiver	6837	A4P2, W4D2, W4E2
Interface B Receiver	6837	A4R2, W4D2, W4E2
Misc. Circuitry	6844	A4F2
	6841	A4K2

All programs issue a Write IPL command and destroy any program being executed in the 3705. The sections that load a responder program into the 3705 terminate by issuing a Write IPL with 4 bytes of zeros to leave the 3705 in a ROS loaded state.

2.1.1 T3705BA AND T3705BB CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

Test sections BA and BB test the common controls and interface. The 3705 ROS bootstrap program code is used to respond to the functions of these 2 sections.

Routines 2 and 3 of T3705BB run only under OLTSEP and issue HIO and TIO commands. If the address being tested is defined as shared in the CDS, OLTSEP will not provide an expected return code of zero for the issuance of these commands. If these routines recognize a non zero return code and if the shared bit is set in the CDS, the error message is bypassed.

```
*****  
*  
* If the type 2 OLTs (T3705BA-BE) are run on a type 3 channel *  
* adapter, the other interface must be disabled. *  
* *  
*****
```

2.1.1.1 TEST SECTION T3705BA

Routine - 01 - Checks the No-Op Command

Issue a No-op command.

01001 Expected results

Condition code	01
Initial status	0C00
Expected sense	00

Routine - 02 - Checks the Write IPL Command

Issue a Write IPL command with a byte count of 2. The data is blank and is of no significance.

02001 Expected results

Condition code 00
Initial status 0800
Ending status 0700
Expected sense 02

Routine - 03 - Checks the Sense Command

Issue an illegal command.

03001 Expected results

Condition code 01
Initial status 0200
Expected sense 82

Issue a sense command.

03002 Expected results

Condition code 01
Ending status 0C00
Expected sense 82

Routine - 04 - Checks Illegal Commands

Issue all illegal commands on consecutive passes.

04001 Expected results

Condition code 01
Initial status 0200
Expected sense 82

Routine - 05 - Checks the Write Command

Issue a Write command.

05001 Expected results

Condition code 01
Initial status 0200
Expected sense 02

Routine - 06 - Checks the Read Command

Issue a Read command.

06001 Expected results

Condition code 01
Initial status 0200
Expected sense 02

2.1.1.2 TEST SECTION T3705BB

Routine - 01 - Checks the Write Break command

Issue a Write Break command

01001 Expected results

Condition code 01
Initial status 0200
Expected sense 02

Routine - 02 - Checks Halt I/O Operation

This routine runs under OLTSEP only.

Issue a Halt I/O.

02001 Expected results

Condition code 01
Initial status 0000
Expected sense 00

Routine - 03 - Checks the Resulting status of a Test I/O

This routine runs under OLTSEP only.

Issue a Test I/O.

03001 Expected results

Condition code 00
Initial status 0000
Expected sense 00

Routine - 04 - Tests Data Transfer With a Write IPL Command

Write 18 bytes of data using the Write IPL command. The second 2 bytes of data sent by a valid Write IPL command contain the length of the data being sent. In this test step, the second 2 bytes do not equal 18 (the length of the data transfer). Therefore, the ROS bootstrap program maintains control and presents the status below.

04001 Expected results

Condition code 00
Initial status 0800
second CSW status 0700
Expected sense 02

Routine - 05 - Checks ROS Generated Asynchronous Status

This is a manual intervention routine. A message to the operator requests 'INITIAL PROGRAM LOAD FROM THE IBM 3705'. If MI is not in the option field of the test request message, this routine will be by-passed.

Issue a No-op.

05001 Expected results

Condition code 01
Initial status 0C00
Ending status 0600
Expected sense 02

2.1.2 T3705BC, T3705BD, AND T3705BE CHANNEL ADAPTER ON-LINE TESTS
DESCRIPTION

Test sections T3705BC, BD and BE load a responder program, U3705B, into the 3705 which responds to their functions. Routine 4 of T3705BE issues HIO or TIO commands. If the address being tested is defined as shared in the CDS, OLTSEP will not provide an expected return code of zero for the issuance of these commands. If these routines recognize a non zero return code and if the shared bit is set in the CDS, the error message is bypassed.

The 2880 channel ignores the SLI bit in the CCW and sets the Incorrect Length status bit if the residual count of a read or write command is not zero. T3705BE 'AND's out this bit in the status word if it is on.

2.1.2.1 TEST SECTION T3705BC

Routine - 01 - Checks Data Transfer With the Write Command

Write 18 bytes of data.

01001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 02 - Checks Data Wrap With the Write and Read Commands

Write 18 bytes of data.

02001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Read 18 bytes of data.

02002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 03 - Checks Data Wrap With the Write Break and Read Commands

Write 18 bytes of data.

03001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Read 18 bytes of data.

03002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 04 - Checks Data Wrap Using Write and Read Commands Chained

Write command of 9 bytes chained to write command of 9 bytes chained
to read command of 18 bytes.

04001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

2.1.2.2 TEST SECTION T3705BD

Routine - 01 - Checks Communication Controller Generated Attention

Issue a Write Break command chained to a No-op command.

01001 Expected results

Condition code 01
Initial status 0C00
Ending status 8000
Expected sense 00

Routine - 02 - Checks Invalid CW in the Communications Controller

Issue a Write command of one byte.

02001 Expected results

Condition code 01
Ending status 0100
Expected sense 00

Issue a Read command.

02002 Expected results

Condition code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

Two bytes of data written at the beginning to identify the routine are expected to be read back.

Issue a Read command.

02003 Expected results

Condition code 01
Ending status 0100
Expected sense 00

Issue a write command to write 1 byte.

02004 Expected results

Condition code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

Routine - 03 - Checks Breaking of Chained CCW's

Issue a write break command of 18 bytes chained to a write command of 18 bytes.

03001 Expected results

Condition code 00
Ending status 0500
Expected sense 00

Issue the above Write command again.

03003 Expected results

Condition code 00
Ending status 8400
Expected sense 00

Routine - 04 - Checks the Out Stop Control Word

Issue a read command to read 12 bytes.

04001 Expected results

Condition code 00
Initial status 0C00
Ending status 0000
Residual count 03
Expected sense 00

The data read is the first 6 bytes written.

Issue a read command to read 12 bytes again.

04002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Residual count 03
Expected sense 00

The data read is the first 6 bytes written.

2.1.2.3 TEST SECTION T3705BE

Routine - 01 - Checks Hardware Generated CE, DE, UC, Status and IR Sense

Issue a Read command of one byte.

01001 Expected results

Condition code	00
Ending status	0E00
Residual count	01
Expected sense	40

Routine - 02 - Checks the Busy Condition

This routine runs under OLTSEP only.

Issue a Write Break command to the address, sending an ID code to the responder for this routine. A Read command is issued after a 1 second delay.

02001 Expected results

Condition code	01
Initial status	1000
Ending status	0400
Residual count	01
Expected sense	00

Routine - 03 - Checks Communications Controller Program Abort

Issue a Read command.

03001 Expected results

Condition code	00
Ending status	0E00
Residual count	01
Expected sense	01

Issue a write command of 18 bytes.

03002 Expected results

Condition code	00
first CSW status	0800
second CSW status	0400
Residual count	00
Expected sense	00

This step verifies that the responder program is still functioning. If a failure is detected, the test section is aborted because the next routine would appear to fail because of a fault in this step.

Routine - 04 - Checks a Halt I/O to a Read Command

This routine runs under OLTSEP only.

Issue a read command of 64K bytes, (the skip flag in the CCW is set).

Issue a halt I/O command

04001 Expected results

Condition code	00
Resulting status	0C00
Expected sense	00

2.1.3 T3705BF TYPE 3 CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

OLT section T3705BF tests the unique features of the type 3 Channel Adapter interface. This OLT section should not be run on a type 2 Channel Adapter. T3705BF is a time dependant test. Routines 2 and 3 may erroneously report failure if system activity causes delay in the I/O activity of the test.

| The loader program U3705M is loaded into 3705 storage starting
| at address X'400' by T3705BF. The responder program U3705E which
| responds to the commands of this test section is loaded starting
| at X'800'.

If a hardware failure is suspected, dedicated or nearly dedicated system time should be arranged so that the test can be run in a quieter environment.

Routine 4, the asynchronous interrupt test runs only under OLTSEP.

If only 1 address is available for test as in the case of a multi-processor installation, only Routine 1 is run.

T3705BF verifies the two states of the type 3 channel adapter interface. In the normal state, I/O activity may occur. In the alternate state, Busy status is presented to a command by one interface, normally, when the other interface is executing a command.

The two processor switch can best be tested if the test addresses of the A and B interfaces are different.

Testing for interaction between the 2 interfaces can only be performed in uniprocessor mode where the same CPU can access both interfaces. A UCB for each address must be entered on the test request message. Only one address of an alternate path pair may be used because both addresses use the same UCB.

OLTEP does not provide multiprocessor support that allows testing on the channels of both CPUs concurrently. Therefore, if uniprocessor mode is not the testing environment, only one address (one interface) can be tested at a time. The OLT must be run in both CPUs to test both interfaces. The one interface test tests all logic on that interface except for the channel interface circuitry which handles the contention situation.

Testing both interfaces simultaneously has the possible advantage of catching a failure because of interaction or timing.

If only one interface is available for test, T3705BF will not test for the busy condition as the result of I/O activity on the other interface. The busy condition is set by the responder and reset after a delay. During this busy condition the OLT verifies the inability to successfully execute I/O commands to that interface.

If both interfaces are available for test, T3705BF tests for

the busy condition as the result of I/O activity on the other interface. An I/O command is issued on 1 interface with the responder providing a delay between Channel End and Device end. During this delay, the OLT verifies an unsuccessful attempt to issue a read successfully to the address on the other interface. Under OLTEP the OLT verifies an expiration of time with no interrupt posted followed by the posting of Channel End and Device End separately.

If the 3705 type 3 Channel Adapter is attached to a multi-processor system dynamically testing both interfaces requires recabling so that one CPU has access to both addresses.

The interfaces may be connected to any combination of selector and/or multiplexor channels. If both interfaces are connected to the same multiplexor channel, the unit addresses must be different. The test will not run if the interfaces are connected to the same selector channel.

All routines go to an initialize subroutine before starting the test. On the first pass through initialization, certain steps are taken that are bypassed on subsequent passes.

The following are those initial steps:

1. Request for configuration data for a second address, if defined in the Test Request Message (TRM).

EXAMPLE: R 01,'106,207/3705bf/nfe/'

2. Check to see if PROCEED has been established via a procedure established to assure that no emulated lines are active that testing would disrupt.
3. Prompt the operator for interface ID (A or B), when running routine 1. The following message follows the start message:

XX MSG ID ENTER 3705 INTERFACE BEING TESTED. (A OR B).

The operator should respond with:

r XX,'A'
OR
r XX,'B'

Where XX is the message ID preceding the above message and MSG ID is IFD101D if running under OLTEP, or MSG ID is SEP101D if running under OLTSEP.

4. Load the responder into the 3705. On each pass, the program determines if 1 or 2 addresses are in the TRM. Routines 2 and 3 are bypassed if 2 addresses are not in the TRM.

No printout occurs for Routines 2 and 3 unless failure occurs.

Read, write, and other work areas are housekept on every entry to the initialize subroutine.

Routine - 01 - (Sequence of events)

Type 3 channel adapter test on one interface.

1. Initialize.
2. Issue a write command of 4 bytes - (ABCD).

01000	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

3. Issue a read command of 6 bytes.
4. Verify the busy condition has been created by the responder.
 - a. If OLTEP is the executive, verify a time expiration followed by the posting of normal status.

01001	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

- b. If OLTSEP is the executive, verify that Busy is posted followed by Device End when the interface becomes available again.

01001 Expected results

Condition code 00
Initial status 1000
Ending status 0400
Expected sense 00

- c. A subsequent read command is issued when OLTSEP is the executive. Normal ending status is verified.

01002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00
Expected data C1C2C3C4XXXY

The XXXY digits are not known, but if bit 5 of byte XY is set, it defines interface 'A'. Bit 6, if set, defines interface 'B'. The XXXY typically appears as 2084 and the 4 defines interface 'A'. If XXXY were 2082, interface 'B' is defined.

- d. Verification that (ABCD) has been read. A sixth byte is interrogated to determine which interface was tested as indicated by the hardware. The program verifies the response agreed with prompting and reports discrepancies.

Either of the following messages print between the start and terminate message:

'TEST FOR BUSY AND NOT BUSY CONDITION VERIFIED ON INTERFACE X'
'TEST FOR BUSY AND NOT BUSY CONDITION FAILED ON INTERFACE X',

where X is A or B.

Routine - 02 - (Sequence of Events)

Type 3 channel adapter test on two interfaces.

1. Initialize.
2. Issue a write command of 4 bytes (BCDE) to first address.

02000	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

3. Issue a read command of 6 bytes to second address.
4. Verify the busy condition on the second address:
 - a. If OLTEP is the executive, verify a time expiration followed by the posting of normal status.

02001	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00
Expected data	C2C3C4C5

- b. If OLTSEP is the executive, verify that Busy status is posted followed by Device End when the interface becomes available.

02001	Expected results
Condition code	00
Initial status	1000
Ending status	0400
Expected sense	00

- c. A subsequent read command is issued if OLTSEP is the executive.

02002	Expected results
Condition code	00

Initial status 0800
Ending status 0400
Expected sense 00
Expected data C2C3C4C5

d. Verification is made that the message 'BCDE' is read and that normal ending status resulted.

Routine - 03 - (Sequence of Events)

Type 3 channel adapter test on two interfaces.

The sequence of events is the same for routine 2 except the addresses are reversed.

Routine - 04 - (Sequence of Events)

Type 3 Channel Adapter Asynchronous Interrupt Test.

No-Ops are issued to both addresses with ATTN=yes set.

Verification is made that the one interface receives 2 interrupts and the other interface 1 interrupt.

Both addresses end with Channel End and Device End in the first CSW. One of the addresses gets a second interrupt with the Attention bit set in the status field.

2.1.4 T3705BG TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705BG tests the control command recognition capability. Test section T3705BG loads a responder program U3705F into the 3705 storage to respond to the commands issued by this test section.

In the five routines, three steps occur. The first step issues a Write Break command and sends X, A, B, C, or D to signal the responder how to respond to the Control command.

Steps 2 and 3 loop as the Control command is changed through all commands excluding legal and channel commands.

Routine 1 sends the letter X and the responder ends the Write Break command for the X. Routine 1 tests for the hardware being off as a

result of being in an initial power on or reset state. Do not run routine 1 after routines 2, 3, or 4: the hardware will be turned on and routine 1 expects it to be off.

Routines 2, 3, and 4 send the letters A, B, and C respectively. Each of these letters results in having the responder turn the hardware on.

Routine 5 sends the letter D which causes the responder to turn the hardware off.

Routine - 01 - Checks for hardware reject of all but legal commands with the hardware off.

Issue a Write Break command (send the letter X)

01000	Expected results
Condition code	00
First status	0800
Ending status	0400
Expected sense	00

Issue a control command.

01001	Expected results
Condition code	01
Initial status	0200
Expected sense	80

Issue an 8 byte read command.

01002	Expected results
Condition code	00
First status	0800
Ending status	0400
Expected sense	00

Verify the X Read back.

Routine - 02 - Checks for software acceptance of valid commands.

Issue a Write Break command (send the letter A)

02001 Expected results

Condition code	00
First status	0800
Ending status	0400
Expected sense	00

Issue a control command.

02001 Expected results

Condition code	00
First status	0800
Ending status	0400
Expected sense	00

Issue an 8 byte read command.

02002 Expected results

Condition code	00
First status	0800
Ending status	0400
Expected sense	00

The responder sends back 8 bytes. The first byte is the letter 'A', the 7th is the Control command. Bit 4 of the 5th byte should be on, the results of the control command issued in the previous step.

Routine - 03 - Checks software ending of control commands with Reject.

Issue a Write Break command (4 bytes, the first being the letter B)

03000 Expected results

Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

Issue a control command.

03001 Expected results

Condition code 00
First status 0800
Ending status 0600
Expected sense 80

Issue an 8 byte read command.

03002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Verify the letter B

Routine - 04 - Checks software ending of control commands with data check.

Issue a Write Break command (send the letter C)

04000 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Issue a control command.

04001 Expected results

Condition code 00
Initial status 0800
Ending status 0600
Expected sense 08

Issue an 8 byte read command.

04002 Expected results

Condition code 00

Initial status 0800
Ending status 0400
Expected sense 00

Routine - 05 - Checks software turning the hardware off.

Issue a Write Break command (send the letter D)

05000 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Issue a control command.

05001 Expected results

Condition code 01
Initial status 0200
Expected sense 80

Issue an 8 byte read command.

05002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

2.1.5 T3705BH TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

| T3705BH tests the channel chaining capability in a manner similar to
| the I/O application of NCP programming. T3705BH also tests the
| Command and Data chaining capability on the interface between host CPU
| and 3705 type 2 or type 3 channel adapter. The loader program U3705M
| is loaded into 3705 storage starting at address X'400' by T3705BF. The
| responder program U3705E which responds to the commands of this test
| section is loaded starting at X'800' . The responder receives and

| sends data from and to core location X'1000' in the 3705.

The 400 byte test message initially written by the OLT contains eight sets of the characters A-X preceded by the numeral 1 for the first set, 2 for the second set, etc. to 8 for the last. The chained CCW's handling the write are 3 writes and 1 write-break, each with a count of 100. Four 100 byte chained Read CCW's receive 300 of 400 bytes from the 3705. If routine 2 is run by itself, no 400 byte write occurs and the data read is zeros. Each routine loops 256 times.

Control commands begin the Write and Read sequences, X'31' or X'51' for the Write, and X'52' or X'32' for the Read. Each CCW is chained to a TIC, which in turn points to the next write or read CCW.

Routine 1 is a write only Routine. The Write sequence chains into a NOP, and the expected ending status is Channel End Device End.

Routine 2 is a read only routine. The last Read CCW is not chained and ends with Channel End initial status followed with Device End and Unit Exception.

The control words for the read operation in the responder cause the read operation of the second and fourth CCW's to end after 50 bytes of data transfer. This results in 300 bytes of data being read back of the 400 bytes written. In the data compare, the 100 bytes not read back are expected to be zero. Beginning with byte number 151 of the data read back, zeros are forced for 50 bytes. The data compare ends after 350 bytes.

In routine 3, the control command that begins the Write chain is changed from 31 to 51 to cause the responder to add Status Modifier status to the Write break command ending status. The status modifier status causes the channel to skip over the NOP CCW which follows the write break. This skip causes the channel to execute a TIC to the Read Chain, and the data is read back with the exception of the short data transfer of the second and fourth Read CCW's.

On alternate passes of routine 3, the control command, at the beginning of the read chain, alternates between X'52' and X'32'. The responder alternates the read ending status. When the Control Command is X'52', the ending status is Device End and Unit Exception. When the control command is X'32', the ending status for the read is Device End and Attention.

Place the MODE SELECT and DIAGNOSTIC CONTROL switch in the PROCESS position and the DISPLAY/FUNCTION switch in the STATUS position.

If the above conditions cannot be achieved, refer to CE panel test and ROS test in the IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

The request for test message for these sections should be entered in the following format.

Example:

```
R 01,'005/3705ba-be/nfe/'
```

Routine 5 of test section T3705BB requires the manual intervention option in the test request message. Otherwise this routine is bypassed.

The first test section to run calls and executes a module identified as U3705D to determine if all lines on the 3705 are available. If this cannot be determined from the executive program, the program prompts the operator for proceed or cancel entry ('P' or 'C') on the operating console.

If any of these sections are run by reading them in from the card reader, module U3705D must follow the first section named in the request for test. Test section T3705BC-BE must have the responder program U3705B following them.

T3705BF uses a responder program U3705E instead of U3705B.

2.3.1 T3705BA-BH TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TESTS OPERATING INSTRUCTIONS

When the OLT detects an error (bad CSW, CC, sense, data, etc.), an error printout occurs. All pertinent information about the error that can be obtained by the OLT appears in the printout.

Should the error printouts indicate no interrupt occurred from the 3705 refer to the responder error displays. If a responder program has not been loaded, refer to ROS test procedure in the IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

When interface control checks cause a machine check, OLTSEP enters

a wait state with an error code displayed in the instruction counter of the host CPU. The wait state error codes are defined in the OLTSEP Operators Guide, D99-SEPDT. These machine checks are catastrophic to OLTEP under OS or DOS. Running SEREP is the next logical step for such a failure.

The message number of the failing section of the on-line test is printed in the first three digits of the Test Description (second line) of the DPRINT message. The test section number and the corresponding message ID numbers follow.

Test Section Number	Message ID Number
T3705BA	100-114
T3705BB	115-127
T3705BC	128-139
T3705BD	140-153
T3705BE	154-166
T3705BF	167-188
T3705BG	189-204
T3705BH	205-218

Refer to the OLTSEP Operators Guide, D99-SEPDT for a description of the error printout format.

2.3.1.1 INITIALIZATION MESSAGES

Responding to operator messages permits the operator to either cancel, proceed, or retry the requested OLT procedure.

THE STATUS OF THE 3705 CANNOT BE DETERMINED. ****WARNING**** CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER 'C' TO CANCEL OR 'P' TO PROCEED.

The OLT cannot determine the status (offline or stopline) of the 3705. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator/user has the responsibility of continuing by responding with a "C" or "P" as follows:

r id,'C' (for cancel)

or
r id,'P' (for proceed)

T3705BA-BE and BG provide a section ABORT message between the start and terminate message for each section if a 'C' response is entered. Any other responses result in the program repeating the last line of the above message. If after 5 responses the program has not received either a C or P, it will print:

INVALID RESPONSE AFTER 5 REQUESTS

The program assumes the response of 'C' and terminates the OLT.

ALL 3705 ADDRESSES ARE NOT STOPPED OR OFFLINE. **WARNING**
CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER 'C' TO CANCEL, OR 'R' TO RETRY.

The OLT has been notified by the Executive that all 3705 addresses are not offline or stopped. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator has the opportunity to make all addresses available to the OLT using standard system facilities. The operator also has the responsibility of continuing by responding with a "C", or "R" as follows:

r id,'C' (for Cancel)

or

r id,'R' (for Retry)

The "R" means the operator has been taking the addresses off line and wants the program to verify that all units are now available to the OLT. Any other response results in the program repeating the last line of the above message. If after 5 responses the program has not received a C, or R, it will print:

INVALID RESPONSE AFTER 5 REQUESTS.

The program assumes the response of 'C' and proceed to terminate the OLT.

When using the test loop option it is recommended the DEV/TEST/OPT be entered via the console and not in the JCL stream. This minimizes the chances of OLTEP reloading the OLT section eliminating the need to reply to the CANCEL/PROCEED messages for each pass.

```
*****  
*                                                                 *  
* If T3705BA-BE are run on a type 3 channel                    *  
* adapter, the other interface must be disabled.              *  
*                                                                 *  
*****
```

2.4.1 RESPONDER ERROR DISPLAYS

The responder error codes do not provide error isolation but indicate that an error occurred. The program sets one of the codes below in display B and sets hardstop. To continue, press the START pushbutton. If the FUNCTION SELECT switch is set to FUNCTION 5, the program will not stop on type 2 CA level 1 interrupts.

2.4.1.1 U3705B TYPE 2 AND TYPE 3 CHANNEL ADAPTER OLT RESPONDER DISPLAYS

<u>CODE</u>	<u>MEANING</u>
C200	Undefined level 1 interrupts
C201	No CA selection during IPL
C202	Adapter number 2 selected level 3 request not from adapter number 2
C203	Adapter number 1 selected level 3 request not from adapter number 1
C204	Unexpected level 1 from type 2 CA
C20A	Unknown level 3 interrupt
C20B	Unknown CA number 2 level 3 interrupt
C2FF	Loop in level 4 awaiting a level 3 interrupt

| 2.4.1.2 U3705E AND U3705M TYPE 3 CHANNEL ADAPTER OLT RESPONDER DISPLAYS

CODE MEANING

C200 Non-Channel Adapter Level 1 interrupt (CCU, CSB, etc.)
C201 Neither CA selected for IPL.
C202 CA2 selected for IPL, but Level 3 not set.
C203 CA1 selected for IPL, but Level 3 not set.
C204 Unexpected CA Level 1.
C205 CA1 Level 3 set, select CA1 failed.
C206 CA2 Level 3 set, select CA2 failed.
| C207 Unexpected control Cmd received.
C20A Unknown Level 3 interrupt.
C20B Incorrect data transfer.
C20C Branch to zero detected.
C20D Level 3 CA, NO Cmd bit in register X'5C'
C20E Neither interface active for CA Level 3 interrupt.
C2FF Normal display.

| 2.4.1.3 U3705F AND U3705M TYPE 2 AND TYPE 3 CHANNEL ADAPTER OLT
RESPONDER DISPLAYS

CODE MEANING

C200 Non-Channel Adapter Level 1 interrupt (CCU, CSB, etc.)
C201 Neither CA selected for IPL.
C202 CA2 selected for IPL, but Level 3 not set.
C203 CA1 selected for IPL, but Level 3 not set.
C204 Unexpected CA Level 1.
C205 CA1 Level 3 set, select CA1 failed.
C206 CA2 Level 3 set, select CA2 failed.
| C207 Unexpected control Cmd received
C20A Unknown Level 3 interrupt.
C20B Incorrect data transfer.
C20C Branch to zero detected.
C20D Level 3 interrupt from channel adapter without CMD bit.
C20E Neither interface active for CA Level 3 interrupt.
C2FF Normal display.

2.4.1.4 U3705G AND U3705H TYPE 2 AND TYPE 3 CHANNEL ADAPTER RESPONDER
DISPLAYS

<u>CODE</u>	<u>MEANING</u>
C200	Non Channel Adapter Level 1 (CCU, CSB, etc.)
C201	Neither CA Selected for IPL
C202	CA2 Selected for IPL, but lev 3 not set.
C203	CA1 Selected for IPL, but lev 3 not set
C204	Unexpected C.A. level 1
C205	CA1 lev 3, Select CA1 failed.
C206	Channel adapter level 3, select channel adapter 2 failed
C207	Unexpected control Cmd received
C208	In CW Error
C209	Out CW Error
C20A	Unknown Lev 3 (not timer, PCI, Panel)
C20B	Incorrect data transfer.
C20C	Branch No Zero Detected
C20D	Level 3 CA, NO Cmd bit in register X'5C'
C20E	Unknown Lev 3 interrupt
C2FF	Normal Display

3.0 WRAP ALL LINES ON-LINE TESTS

3.1 T3705B WRAP ALL LINES ON-LINE TEST PURPOSE AND DESCRIPTION

T3705B is an OLT that test IBM 2701, IBM 2702, and IBM 2703 type lines that recognize ending characters such as EOT and EOB. It will not support those lines which are generated in the emulator program to not return Unit Exception status to EOT characters.

A similar wrap all lines on-line test, T3705X, tests all lines without character recognition. T3705X is described later in this chapter.

When given control, this program executes a 'GRAB' (request for secondary test line address and its configuration data). The program interrogates the configuration to determine the line control type to select the appropriate test message to be wrapped.

The line types considered in this program are:

IBM1, IBM2, IBM3, TTY1, TTY2, World Trade TTY, and BSC including the distinction between EBCDIC, USASCII, and Transcode data.

No special features are considered.

This program interrogates the CDS of the Test Line Address for information relative to the following RPQ's:

E66707
E62376
E62920
Y24344
P85004

T3705B routine 1 checks data wrap with write and read commands.

The sequence of events in the first Routine are:

1. Issue disable to the test line.
2. Issue disable to the wrap line.
3. Wrap a PAD character on the test line.
4. Issue a Read to the test line.
5. Write a test message on the wrap line.

6. Issue disable to the test line.
7. Issue disable to the wrap line.
8. Issue a 'GRAB' for the next test line.
9. When no more lines exist, the section is terminated.
10. Return to 1 until all lines are tested.

The test message for each test line is the alphabetic characters A through Z and numerics 0 through 9 followed by the EOT sequence.

If a IBM 2701 is defined for BSC, a set mode is issued for interface A before step 3 above. If a IBM 2701 is defined for dual code, a set mode is issued for interface B on a second pass.

This routine's ending status for the test line is Channel End and Device End and for the wrap line Channel End, Device End, and Unit Exception. The residual byte count equals zero and the data received is equal to the data expected.

T3705B routine 2 runs only on IBM-1 or IBM-2 lines and checks that EOB ends with Channel End and Device End.

This routine uses the same message as routine 1 with the following exceptions:

1. An end of address character (circle D=X'16') starts the message.
2. An end of block character (circle B=X'3D') replaces the character preceeding the EOT.
3. On second, third, and fourth passes, the EOB character is advanced one position in the data stream.

The data read ends upon recognition of the first EOB received on each pass. Data comparison, residual byte count, and ending status of Channel End and Device End are checked on each pass.

After the above has completed, the EOB character (X'BD') is inserted and the same passes made again. If the test line is defined for 1030, X'3D' is expected to be read.

T3705B routine 3 runs only on IBM-3 lines and checks that ETX ends IBM-3 lines with Channel End and Device End.

This routine uses the same message as routine 1 with the following

exceptions:

1. A start of text character (STX=X'02') starts the message.
2. An end of text character (ETX=X'03') replaces the character preceding the EOT.
3. On second, third, and fourth passes, the ETX character is advanced one position in the data stream.

Data read ends upon recognition of the first ETX character on each pass. Data comparison, residual byte count and ending status of Channel End and Device End are checked on each pass.

T3705B routine 4 checks that EOB is not recognized by IBM-3 line control. A start of text character (STX=X'02'), is wrapped followed by the alphabet, the numbers 0-8, an EOB (X'3D) and an EOT.

Data wrapped is compared with data read with the exception that the EOB (X'3D') will lose a bit and become (X'1D') when read.

The read ends with Channel End, Device End and Unit Exception status. The write ends with Channel End and Device End status.

T3705B routine 5 checks ETX inserted in an IBM-1 or IBM-2 test message.

An end of address character (EOA=X'16'), is wrapped followed by the alphabet, the numbers 0-8, an IBM-3 ETX=X'03 and an EOT.

Data wrapped is compared with data read. The ETX should not cause end, but, because it is even parity, it should cause Data Check sense and Channel End, Device End, Unit Exception and Unit Check status. The write command ends with Channel End, Device End, and Unit Check.

If the test line be defined for a IBM 2741, Unit Exception is not set by the EOT.

T3705B routine 6 tests WT-TTY EOB for IBM 2703-RPQ Y24344. A teletype message consisting of the alphabet (A-Z), the numbers (0-9), followed by the EOB sequence is wrapped. If the EOB sequence is 4 characters, the numbers 8 and 9 of the message will be overlaid by 2 of the EOB characters.

Ending status for both addresses is Channel End and Device End.

The data wrapped is compared with the data read.

T3705B routine 7 test the WT-TTY EOB for IBM 2703-RPQ Y24344 if EOB is 4 characters. This routine is bypassed if EOB is not 4 characters.

A teletype message consisting of the alphabet (A-Z), the numbers (1 and 2), followed by the EOB sequence interspersed with PAD characters as follows:

NPPNPPNPPN - where N is the character used in the EOB sequence and P is a PAD character.

Verification is made that the PAD characters are stripped from the data stream read and that the message ending in 4 N's (EOB sequence) ends with Channel End and Device End.

3.1.1 T3705B WRAP ALL LINES ON-LINE TEST REQUIREMENTS

The test request message must contain at least 2 addresses. The first address must be the sub channel address that corresponds to the wrap line defined in the generation of the emulation program. All subchannel addresses must correspond to those IBM 2701, IBM 2702, or IBM 2703 addresses being emulated. All addresses in an OLT request must correspond to the address range of an individual scanner.

The CDS (configuration data set) must be configured for the lines being tested as if they were IBM 2701, IBM 2702, or IBM 2703 lines. Refer to the appropriate users guide for CDS generation.

Line definition must be the same in the UCB's (defined at system generation), in the CDS, and in the emulator program. Differences may cause the wrap program to report failures.

Define the address, class and type part of the CDS as per instructions found in IBM 2701, IBM 2702, or IBM 2703 OLT descriptions. Refer to IBM 2702 or IBM 2703 OLT descriptions for CDS generation for RPQs E66707, E62376, and E62920.

The CDS for RPQ Y24344 is as follows:

Bit 7 of CDS byte 4 defines the presence of an RPQ. (Punch 01 into CDS card columns 18 and 19).

Four other fields require information for Y24344 definition.

CDS byte 20, card columns 52 and 53, is the control byte. It is defined as follows:

- Bit 0 set to a 1 = FIGS X LTRS FOR EOT
- Bit 1 set to a 1 = NNNN for EOT
- Bit 2 set to a 1 = FIGS Y for EOB
- Bit 3 set to a 1 = KKKK for EOB

For example, if the RPQ defines 4 N's as EOT and 4 K's as EOB, the control byte defined in columns 52 and 53 of the CDS made up of bits 1 and 3 and you is punch '50' into the card.

CDS bytes 24-27 or card columns 60-67 contains the EBCDIC representation of the EOT sequence. For example: if the EOT is FIG H LTRS, place a 25 in card columns 60 and 61. If the EOT sequence is 4 N's, enter D5D5D5D5 in card columns 60-67.

CDS bytes 28-31 define the EOB character sequence. A one character sequence calls for the one character punched into column 68 and 69. A 4 character sequence calls for the EBCDIC representation to be punched into card columns 68-71 of the card, any character punched into column 72, and columns 16-19 of a second card.

For example, 4 K's are defined as D2D2D2D2 in card columns 68-71 of the first card and 16-19 of a 2nd card. Column 72 of the first card must have any non blank character punched in it.

The fourth field defines the RPQ number, in this case Y24344. The program looks at 6 consecutive CDS byte entries for Y24344. 6 bytes of EBCDIC zeros ends the search. If Y24344 is the first entry, punch E8F2F4F3F4F4 into card columns 20-31 of the 2nd CDS card. Follow the last RPQ number with F0F0F0F0F0F0.

If the line type is defined for PRPQ P85004 bits 0 and 1 set in the the test message byte, bits 0 and 1 are stripped from the data stream.

The CDS for P85004 is as follows:

CDS BYTE	CARD	COL	
0-3	14-17	UNIT ADDR	
4	18-19	01	Defines an RPQ present
5	20-21	08	Defines Binary Synchronous Adapter
6	22-23	40	T.P.

7 Control unit type
01 = 2701 06 = 3705
02 = 2702 09 = 3704
03 = 2703

8-11 Not used - leave blank or zero.
12 36-37 04 Defines transcode.
13-31 Not applicable to this test. Enter a
character in card column 72 on the
first CDS card.

2ND CDS CARD

32-37 20-31 RPQ definition in EBCDIC begins here. The
program will scan the CDS starting here
comparing 6 bytes at a time for the EBCDIC
representation of P85004

'D7F8F5F0F0F4'
P 8 5 0 0 4

38-43 32-43 Follow the above definition with the EBCDIC
representation of 6 zeros. 'F0F0F0F0F0F0'
If P85004 is defined, the high order bits 0
and 1 are set in each byte of the test
message in Routine 1. Verification is made
that these bits are stripped from each byte
of data when read.

44 Enter a slash (/) after the 6 bytes of
EBCDIC zeros.

3.1.2 T3705B - WRAP ALL LINES ON-LINE TEST OPERATING INSTRUCTIONS

The test request is made when the preceding requirements are met and the On-line Tests are running.

The following is a test request message entry for OLTSEP:

R 01,'020,031/3705b/NFE/'

3.1.2.1 ERROR DISPLAY PRINTOUTS

The following is a forced error printout of routine 1 of T3705B displaying title messages, CCW contents, CSW contents and test messages. If an error causes one of the printouts, an asterisk (*) precedes that part of the printout showing an error and the CCW issued resulting in an error detected.

SEP158I S T3705B Unit 0020

*T3705B-0 RTN 001 DEV/LN 0030 ECA 0 REFUM 01000
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 10 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705B-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01001
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 10 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705B-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01002
SET THE WRAP LATCH.
*CCW01 15 020A23 20 00 0001 CAW 00020400
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WRTN DATA DF

*T3705B-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS.
*CCW01 02 020A49 20 00 0025 CAW 00020408

IBM MAINTENANCE DIAGNOSTIC PROGRAM
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D99-3705C-04

XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020410 0D00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020410 0D00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
XPTD DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C2325
RCVD DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C2325
WRTN DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C23253F

*T3705B-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01003

CHECK DATA WRAP WITH WRITE AND READ COMMANDS

*CCW01 01 020A23 20 00 0026 CAW 00020400

XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WBTN DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39301A21353C2C23253F

T3705B-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01004

ISSUE DISABLE TO BOTH WRAP AND TEST LINES.

*CCW01 2F 020410 20 00 0001 CAW 00020410

XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

IBM MAINTENANCE DIAGNOSTIC PROGRAM
IBM 3705 WRAP ALL LINES ON-LINE TEST T3705B

D99-3705C-04

*T3705B-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*DCW01 2F 020410 20 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
BCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

SEP158I *T T3705B UNIT 0020

3.2 T3705C WRAP ALL LINES ON-LINE TEST PURPOSE AND DESCRIPTION

This program performs a data wrap on all test lines with PRPQ P85007 defined in the CDS.

When given control, this program executes a 'GRAB' (request for secondary test line address and its configuration data) and interrogates the configuration to determine the line control type to select the appropriate test message to be wrapped.

This test is comprised of six routines as follows:

- | | |
|-------|----------------------------------------------------------|
| RTN-1 | Check data wrap with write and read commands. |
| RTN-2 | Check for proper ending of EOB. |
| RTN-3 | Check for 23 second timeout before first data character. |
| RTN-4 | Check for 2 second timeout between data characters. |
| RTN-5 | Check search command. |
| RTN-6 | Check inhibit read command. |

No special features are considered.

T3705C routine 1 checks data wrap with write and read commands. (This routine is bypassed if EOT is not defined.)

The sequence of events in the first routine is:

1. Issue disable to the test line.
2. Issue disable to the wrap line.
3. Wrap a PAD character on the test line.
4. Issue a Read to the test line.
5. Write a test message on the wrap line.
6. Issue disable to the test line.
7. Issue disable to the wrap line.
8. Issue a 'GRAB' for the next test line.
9. When no more lines exist, the section is terminated.
10. Return to 1 until all lines are tested.

The test message for each test line is the EBCDIC alphabetic characters A through Z and numerics 0 through 9 followed by the EOT sequence. If EOB or EOT characters defined in the CDS conflict with any of the characters in test message, that character in the test message is changed to the non-recognition character defined in CDS byte 24.

This routine's ending status for the test line is Channel End and Device End and for the wrap line Channel End, Device End, and Unit Exception. The residual byte count equals zero and the data received equals data expected.

T3705C routine 2 checks for proper ending of EOB and uses the same message as routine 1 with the following exceptions:

If an EOB is defined, the EOB should cause an end to the read command. Four passes are made inserting the EOB forward 1 position each time. Only 1 pass for each command occurs if no EOB character is defined. This routine is bypassed if no EOB is defined.

The data read is expected to end upon recognition of the first EOB received on each pass or 2 seconds of no data. Data comparison, residual byte count and ending status of Channel End and Device End are checked on each pass.

T3705C routine 3 checks for 23 second timeout before first data character is read. A read command is issued to the test address with no data wrapped to it. Interrupts are allowed, but with expected timeout set at 21 seconds. Verification is made that no interrupt occurs before the 21 seconds expire.

A second read command is issued with the time allowed set to 36 seconds. Interrupts are again allowed. Verification is made that the interrupt occurs before the 36 seconds expire and that the ending status is Channel End, Device End, and Unit Check because of Timeout found in the sense byte.

T3705C routine 4 checks for 2 second timeout between data characters. (This routine is bypassed if no data for 2 seconds is the EOB). A read command to read 37 bytes is issued to the test line. A 36 byte write command is issued to the wrap line. Interrupts are allowed for 3 seconds.

The read command should end with Channel End, Device End and Unit Check status, Timeout in the sense byte and a residual byte count of 1. The Write should end with Channel End and Device End status.

T3705C routine 5 checks the search command and is bypassed if search command is not defined in the CDS. The search command in this test is expected to ignore all data except a 3 character sequence which will cause an EOT Ending of Channel End, Device End and Unit

Exception.

The EOT sequence is taken from the CDS. Two 3 byte messages are generated using the 3 characters, but not the EOT sequence. These messages are wrapped to the search command. Not recognizing the EOT sequence, the search command should time out.

A third message is wrapped, this time the message is the EOT sequence. The search command should end with Channel End, Device End and Unit Exception.

The residual byte count for the search command should be 3 as no data is transferred to the channel.

T3705C routine 6 checks the inhibit read command. An inhibit read command of 15 bytes is issued to the test line and interrupts are allowed for 30 seconds; no interrupt should occur. A 9 byte write is now issued to the wrap line, and interrupts are allowed. Both lines should end normally with Channel End and Device End.

The data written is compared with data read. The inhibit read command ends with a residual byte count of 6.

3.2.1 T3705C WRAP ALL LINES ON-LINE TEST REQUIREMENTS

The emulator program must be running in the 3705 prior to starting the on-line tests.

T3705C runs only on line addresses with PRPQ P85007 defined in the CDS (configuration data set). (This does not apply to the wrap line.)

The test request message must contain at least 2 addresses. The first address must be the sub-channel address corresponding to the wrap line defined in the generation of the emulation program. All addresses in an OLT request must correspond to the address range of an individual scanner.

The CDS must have been configured for the lines being tested. The line definition in the emulator program must match the UCB's of the host system, and the CDS in the OLT library. The program may indicate errors if differences exist.

The CDS for RPQ P85007 is as follows:

Punch CDS into card columns 2-4.

The unit address goes into bytes 0-3 of the CDS or card columns 14-17.

Ex: 0020

Punch 40 into card columns 22 and 23.

Bit 7 of CDS byte 4 defines the presence of an RPQ. (Punch 01 into CDS card columns 18 and 19).

Four other fields require information for P85007 definition. CDS byte 20, card columns 52 and 53, is the control byte. It is defined as follows:

HEX	DEFINITION
00	No EOT or EOB is defined.
01	An EOB character is in CDS Byte 23.
02	An EOT character is in CDS Byte 21.
03	Both EOB and EOT are defined.
04	No data for 2 seconds equals EOB.
08	The search command is to be tested (a 3 character EOT sequence is in CDS bytes 25-27).

If an EOT character is defined, punch the Hex equivalent into columns 54-55. Card columns 56-57 may be blank or zero. If an EOB character is to be defined, punch its Hex equivalent into columns 58-59.

If neither EOB nor EOT is defined, punch a character that will not be an ending character. If the search command is to be tested, enter the 3 character sequence (in Hex) in card columns 61-66. (Representing CDS bytes 25-27).

Column 72 of the first card must contain any non blank character.

The fourth field defines the RPQ number, in this case P85007. The program looks at 6 consecutive CDS byte entries for P85007 6 bytes of EBCDIC zeros ends the search. Punch D7F8F5F0F0F7 into card columns 20-31 of the 2nd CDS card. Follow the last RPO number with F0F0F0F0F0F0; following the last field, enter a '/'.

3.2.2 T3705C WRAP ALL LINES TEST ON-LINE TEST OPERATING INSTRUCTIONS
(PRPQ P85007)

This test starts by making the standard request for Online Test entry according to the OLT executive being used. Refer to the appropriate users guide, (OLTEP, OLTSEP, or TOTE). The test request can be made when the above requirements are met and the on-line tests are running. The following is a test request message example for OLTSEP:

R 01,'020,031/3705b/NFE/'

3.2.2.1 ERROR DISPLAY PRINTOUTS

The following is a forced error printout of routine 1 displaying title messages, CCW contents, CSW contents and test messages. If an error causes one of the following printouts, an asterisk (*) precedes the line showing an error and the CCW issued resulting in an error detected. Address 20 is the wrap line and 30 is the test line.

SEP158I S T3705C Unit 0020

```
*T3705C-0 RTN 001 DEV/LN 0030 ECA 0 REFUM 01000
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 10 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
```

```
*T3705C-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01001
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 10 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
```

```
*T3705C-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01002
SET THE WRAP LATCH.
*CCW01 15 020A23 20 00 0001 CAW 00020400
```

XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WRTN DATA DF

*T3705C-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS.
*CCW01 02 020A49 20 00 0025 CAW 00020408
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020410 0D00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020410 0D00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
XPTD DATA C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7E8
E9F0F1F2F3F4F5F6F7F8F925
RCVD DATA C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7E8
E9F0F1F2F3F4F5F6F7F8F925
WRTN DATA C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7E8
E9F0F1F2F3F4F5F6F7F8F925

*T3705C-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS
*CCW01 01 020A23 20 00 0026 CAW 00020400
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WBTN DATA C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7E8
E9F0F1F2F3F4F5F6F7F8F925

T3705C-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 20 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

IBM MAINTENANCE DIAGONSTIC PROGRAM
IBM 3705 WRAP ALL LINES ON-LINE TESTS T3705C

D99-3705C-04

*T3705C-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 20 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
BCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

SEP158I *T T3705C UNIT 0020

3.3 T3705D WRAP ALL LINES ON-LINE TEST PURPOSE AND DESCRIPTION

T3705D performs a data wrap on all test lines with PRPQ P85009 defined in the CDS.

When given control, this program executes a 'GRAB' (request for secondary test line address and its configuration data). This program interrogates the configuration to determine the line control type to select the appropriate test message to be wrapped.

T3705D routine 1 checks data wrap with write and read commands. The sequence of events in the first routine is:

1. Issue disable to the test line.
2. Issue disable to the wrap line.
3. Wrap a PAD character on the test line.
4. Issue a Read to the test line.
5. Write a test message on the wrap line.
6. Issue disable to the test line.
7. Issue disable to the wrap line.
8. Issue a 'GRAB' for the next test line.
9. When no more lines exist, the section is terminated.
10. Return to 1 until all lines are tested.

The test message for each test line is the characters A through Z and numerics 0 through 9 followed by the ending character provided in the CDS.

This routine's ending status for the test line is Channel End and Device End and for the wrap line Channel End, Device End, and Unit Exception. The residual byte count equals zero and the data received equals data expected.

3.3.1 T3705D WRAP ALL LINES ON-LINE TEST REQUIREMENTS

The emulator program for PRPQ P85009 must be running in the 3705 prior to starting the on-line tests.

The line definition in the emulator program must match the UCB's of the host system, and the CDS in the OLT library. T3705D runs only on line addresses with PRPQ P85009 defined in the CDS. (This does not apply to the wrap line.) The CDS must be configured for the lines being tested.

No special features are considered.

CDS for RPQ P85009 is as follows:

Punch CDS into card columns 2-4.

The unit address goes into bytes 0-3 of the CDS or card columns 14-17.

Ex: 0020

Punch 40 into card columns 22 and 23.

Bit 7 of CDS byte 4 defines the presence of an RPQ. (Punch 01 into CDS card columns 18 and 19).

Four other fields require information for P85009 definition.

CDS byte 20, card columns 52 and 53, is the control byte. It is defined as follows:

HEX	DEFINITION
01	8A1 line control
02	85A line control
04	M37 line control

CDS byte 21 defines the ending character for the Read command. Punch the Hex equivalent of the ending character into columns 54-55.

CDS byte 22 defines the expected ending status of the read when it recognizes the ending character. Punch the hex equivalent of the ending status into card columns 56 and 57. For example, Channel End and Device End status punch '0C' into card columns 56 and 57.

CDS byte 23 contains a non recognized character. The ending character, chosen at emulation program generation time, might compare with one of the test message characters. If it does, this program substitutes that character with the non recognized character provided here. Insert the 2 hex digits of this character into card columns 58 and 59.

Column 72 of the first card must have any non blank character punched in it.

The fifth field defines the RPQ number, in this case P85009. The program looks at 6 consecutive CDS byte entries for P85009 6 bytes of EBCDIC zeros ends the search. Punch D7F8F5F0F0F9 into card columns 20-31 of the second CDS card. Follow the last RPQ number with F0F0F0F0F0F0. Following the last field, enter a '/'.

3.3.2 T3705D WRAP ALL LINES ON-LINE TEST OPERATING INSTRUCTIONS (PRPQ P85009)

This test starts by making the standard request for on-line test entry according to the OLT executive being used. Refer to the appropriate users guide, (OLTEP, OLTSEP, or TOTE).

The test request can be made when the above requirements are met and the on-line tests are running. The test request message must contain at least 2 addresses. The first address must be the sub channel address corresponding to the wrap line defined in the generation of the emulator program. All addresses in an OLT Test request must correspond to the address range of an individual scanner.

The following is a test request message entry for OLTSEP:

```
R 01,'020,031/3705d/NFE/'
```

3.3.2.1 ERROR DISPLAY PRINTOUTS

The following is a forced error printout of the test displaying title messages, CCW contents, CSW contents and test messages. If an error causes one of the printouts, an asterisk (*) precedes that part of the printout showing an error and the CCW issued resulting in an error detected. Address 20 is the wrap line and 30 is the test line. The ending character for the test message is 21 and the expected ending status for the read command is Channel End, Device End and Unit Exception (0D).

```
SEP158I   S   T3705C Unit 0020
```

```
*T3705D-0   RTN 001   DEV/LN 0030   ECA 0   REFUM 01000  
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.  
*CCW01 2F 020410 10 00 0001   CAW 00020410  
XPTD CC 0   RCVD CC 0  
XPTD CSW1 XX 020418 0C00 0001   CSW2 XX XXXXXX 0000 XXXX  
RCVD CSW1 00 010418 0C00 0001   CSW2 00 000000 0000 0000  
XPTD SNS   00
```

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D99-3705C-04

RCVD SNS 00

*T3705D-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01001
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.

*CCW01 2F 020410 10 00 0001 CAW 00020410

XPTD CC 0 RCVD CC 0

XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX

RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000

XPTD SNS 00

RCVD SNS 00

*T3705D-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01002
SET THE WRAP LATCH.

*CCW01 15 020A23 20 00 0001 CAW 00020400

XPTD CC 0 RCVD CC 0

XPTD CSW1 XX 020408 0C00 0001 CSW2 XX XXXXXX 0000 XXXX

RCVD CSW1 00 020408 0C00 0001 CSW2 00 000000 0000 0000

XPTD SNS 00

RCVD SNS 00

WRTN DATA DF

*T3705D-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS.

*CCW01 02 020A49 20 00 0025 CAW 00020408

XPTD CC 0 RCVD CC 0

XPTD CSW1 XX 020410 0D00 0000 CSW2 XX XXXXXX 0000 XXXX

RCVD CSW1 00 020410 0D00 0000 CSW2 00 000000 0000 0000

XPTD SNS 00

RCVD SNS 00

XPTD DATA 8242C322A363E2129353D233B272F30A8B4BCA2BAA6AEB1B9A
5A0C8D4DCC2DAC6CED1D9C21

RCVD DATA 8242C322A363E2129353D233B272F30A8B4RCA2BAA6AEB1B9A
5A0C8D4DCC2DAC6CED1D9C21

WRTN DATA 8242C322A363E2129353D233B272F30A8B4BCA2BAA6AEB1B9A
5A0C8D4DCC2DAC6CED1D9C21

*T3705D-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS

*CCW01 01 020A23 20 00 0026 CAW 00020400

XPTD CC 0 RCVD CC 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM
IBM 3705 WRAP ALL LINES ON-LINE TESTS T3705D

D99-3705C-04

XPTD CSW1 XX 020408 0C00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WBTN DATA 8242C322A363E2129353D233B272F30A8B4BCA2BAA6AEB1B9A
5A0C8D4DCC2DAC6CED1D9C21

T3705D-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.

*CCW01 2F 020410 20 00 0001 CAW 00020410

XPTD CC 0 RCVD CC 0

XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX

RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000

XPTD SNS 00

RCVD SNS 00

*T3705D-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.

*CCW01 2F 020410 20 00 0001 CAW 00020410

XPTD CC 0 RCVD CC 0

XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX

BCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000

XPTD SNS 00

RCVD SNS 00

SEP158I *T T3705C UNIT 0020

3.4 T3705E WRAP ALL LINES ON-LINE TEST PURPOSE AND DESCRIPTION

This program performs a data wrap on a pair of duplex lines with PRPQ P85010 defined in the CDS. The even address of the pair should be first.

When given control, this program executes a 'GRAB' and a 'GETCONFIG' (request for secondary test line address and its configuration data).

T3705E routine 1 checks data wrap with write and read commands. The sequence of events in the test is:

1. Issue disable to the first test line.
2. Issue disable to the 2nd test line.
3. Wrap a PAD character on the first test line.
4. Issue a Read to the first test line.
5. Write a test message on the 2nd test line.
6. Issue disable to the first test line.
7. Issue disable to the 2nd test line.

The test message is the alphabetic characters A through Z and numerics 0 through 9 followed by the EOT sequence.

If an IBM 2701 is defined for dual code, issue a set mode for interface A on the first pass and for interface B on the second pass.

This routine's ending status for the test line is Channel End and Device End and for the wrap line Channel End, Device End, and Unit Exception. The residual byte count equals zero and the data received equals data expected.

3.4.1 T3705E WRAP ALL LINES ON-LINE TEST REQUIREMENTS

The emulator program must be running in the 3705 prior to starting the on-line tests.

The CDS (configuration data set) for the first or even address of the duplex pair need only define its address, class code '40', and unit code '06'. The 2nd or odd address of the duplex pair requires in addition to its address, class code and unit code, a field defining the RPQ.

The OLT interrogates the CDS and/or the operator for message information. A canned message within the program, from the CDS or

from the operator, may be used. This option may be defined to the program via the EXT option in the option field of the Test Request Message (TRM).

If no EXT information is provided, the CDS will be interrogated. If the CDS does not specify a message, a canned message within the program is used. If the operator wishes to provide the test message via the console, the EXT option should be EXT=CON. If he wishes the message to be from the CDS he may either leave the EXT option out of the TRM or make it EXT=CDS. If he desires the canned message from the program, but the CDS defines a message, make the EXT option EXT=CAN. If EXT=CDS, the message information must have been included in the CDS. Refer to CDS development for details.

Information required by the program if a message other than that supplied by the program is to be used is:

The message, (If the message is entered into the CDS, it's maximum length is 38 bytes (76 Hex digits). If from the console, the maximum length is 60 Hex digits.) The message length, (will also be the write command length) The read command length will be 1 less than the written length. The expected ending status for the read.

Line definitions must be the same in the UCB's, (defined at system generation), in the CDS, and in the emulator program. Differences may cause the wrap program to report failures.

The CDS for PRPQ P85010 is as follows:

CDS BYTE	CARD COL		
0-3	10-17	UNIT ADDR	Such as: 020 in columns 15, 16, and 17.
6	22-23	40	Class code (terminal control unit)
7	24-25	06	Unit or type code (06 = 3705)
20-25	52-63		RPQ definition in EBCDIC begins here. The program compares for the EBCDIC representation of P85010

'D7F8F5F0F1F0'
P 8 5 0 1 0

26	64-65		Enter the Read command ending status in HEX, '0D' for example.
28	68-69		Enter the message length in HEX, '38' for example.
	72	*	Enter a non blank character in column 72.

Second CDS Card
CDS CARD
BYTE COL

30-67	16-71		Enter test message digits in Hex.
	72	*	Enter any non blank character.

Third CDS Card

68-77	16-35		Enter remaining test message digits in HEX.
	72		Enter a / in column 72 to end the CDS.

3.4.2 T3705E WRAP ALL LINES ON-LINE TEST OPERATING INSTRUCTIONS

This test starts by making the standard request for on-line test entry according to the OLT executive being used. Refer to the appropriate users guide, (OLTEP, OLTSEP, or TOTE). The test request can be made when the preceeding requirements are met and the On-line Tests are running.

The following is a test request message entry for OLTSEP:

```
R 01,'020,031/3705e/nfe/'
```

3.4.2.1 ERROR DISPLAY PRINTOUTS

The following is a forced error printout of T3705E displaying title messages, CCW contents, CSW contents and test messages. If an error causes one of the printouts, an asterisk (*) precedes that part of the printout showing an error and the CCW issued resulting in an error detected.

```
SEP158I  S  T3705E Unit 0020
```

```
*T3705E-0  RTN 001  DEV/LN 0020  ECA 0  REFUM 01000  
ISSUE DISABLE TO BOTH TEST LINES.  
*CCW01 2F 020410 10 00 0001  CAW 00020410
```

XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705E-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01001
ISSUE DISABLE TO BOTH TEST LINES.

*CCW01 2F 020410 10 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705E-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01002
SET THE WRAP LATCH.

*CCW01 15 020A23 20 00 0001 CAW 00020400
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WRTN DATA DF

*T3705E-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS.

*CCW01 02 020A49 20 00 0025 CAW 00020408
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020410 0D00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020410 0D00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
XPTD DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C2325
RCVD DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C2325
WRTN DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C23253F

IBM MAINTENANCE DIAGNOSTIC PROGRAM
IBM 3705 WRAP ALL LINES ON-LINE TESTS T3705E

D99-3705C-04

*T3705E-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS
*CCW01 01 020A23 20 00 0026 CAW 00020400
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WBTN DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39301A21353C2C23253F

T3705E-0 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH TEST LINES.
*CCW01 2F 020410 20 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705E-0 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH TEST LINES.
*CCW01 2F 020410 20 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
BCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

3.5 T3705X WRAP ALL LINES ON-LINE TEST PURPOSE AND DESCRIPTION

This program performs a data wrap on all test lines contained in an OLT test request message. T3705X is a wrap all lines OLT which runs against an emulator program in the 3705.

T3705X contains only one routine OLT that determines which test message to use by interrogating the CDS for the second address in the Test Request Message (TRM).

When given control, this program executes a 'GRAB' (request for secondary test line address and its configuration data). The program interrogates the configuration to determine the line control type to select the appropriate test message to be wrapped.

The line types considered in this program are:

IBM1, IBM2, IBM3, TTY1, TTY2, World Trade TTY,
and BSC including the distinction between EBCDIC, USASCII,
and Transcode data.

No special features are considered.

Define the address, class and type part of the CDS as per instructions found in IBM 2701, IBM 2702, or IBM 2703 OLT descriptions.

The CCW for the read command has a count of 36. The read command expects to end with CE, DE and UC because of lost data in the sense byte. Verification is accomplished by comparing the 36 characters read.

The IBM-3 type test message first character is X'02' for 'STX' instead of the X'A1' for the letter 'A'. The test message is the alphabet (A-Z) and the numbers (0-9). An additional 9 is in the written message, for a total of 37 characters written.

T3705X routine 1 checks data wrap with write and read commands in the following sequence.

1. Issue disable to the test line.
2. Issue disable to the wrap line.
3. Wrap a PAD character on the test line.
4. Issue a Read to the test line.

5. Write a test message on the wrap line.
6. Issue disable to the test line.
7. Issue disable to the wrap line.
8. Issue a 'GRAB' for the next test line.
9. When no more lines exist, the section is terminated.
10. Return to 1 until all lines are tested.

This routine's ending status for the test line is Channel End and Device End and for the wrap line Channel End, Device End, and Unit Exception. The residual byte count equals zero and the data received equals data expected.

3.5.1 T3705X WRAP ALL LINES ON-LINE TEST REQUIREMENTS

The emulator program must be running in the 3705 prior to starting the on-line tests.

The test request message must contain at least 2 addresses. The first address must be the sub channel address that corresponds to the wrap line defined in the generation of the emulation program. All subchannel addresses must correspond to those 2701, 2702, or 2703 addresses being emulated. All addresses in an OLT request must correspond to the address range of an individual scanner.

The CDS (configuration data set) must be configured for the lines being tested as if they were 2701, 2702, or 2703 lines. Refer to the appropriate users guide for CDS development. Line definition must be the same in the UCB's (defined at system generation) in the CDS, and in the emulator program. Differences may be the reason for the wrap program reporting failures.

3.5.2 T3705X WRAP ALL LINES ON-LINE TEST OPERATING INSTRUCTIONS

This test starts by making the standard request for on-line test entry according to the OLT executive being used. Refer to the appropriate users guide, (OLTEP, OLTSEP, or TOTE). The test request can be made when the preceding requirements are met and the on-line tests are running.

The following is a test request message example for OLTSEP:

```
R 01,'020,031/3705x/nfe/'
```


3.5.2.1 ERROR DISPLAY PRINTOUTS

The following is a forced error printout of routine 1 of T3705X displaying title messages, CCW contents, CSW contents and test messages. If an error causes one of the printouts, an asterisk (*) precedes that part of the printout showing an error and the CCW issued resulting in an error detected.

SEP158I S T3705X Unit 0020

*T3705X-00 RTN 001 DEV/LN 0030 ECA 0 REFUM 01000
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 10 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705X-00 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01001
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 10 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705X-00 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01002
SET THE WRAP LATCH.
*CCW01 15 020A23 20 00 0001 CAW 00020400
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WRTN DATA DF

*T3705X-00 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS.
*CCW01 02 020A49 20 00 0025 CAW 00020408

XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020410 0E00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020410 0E00 0000 CSW2 00 000000 0000 0000
XPTD SNS 02
RCVD SNS 02
XPTD DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C23
RCVD DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C23
WRTN DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39302A21353C2C2323

*T3705X-00 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01003
CHECK DATA WRAP WITH WRITE AND READ COMMANDS
*CCW01 01 020A23 20 00 0026 CAW 00020400
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020408 0C00 0000 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020408 0C00 0000 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00
WBTN DATA 18130E1210160B050C1A1E090706030D1D0A14011C0F191715
112D3D39301A21353C2C2323

T3705X-00 RTN 001 DEV/LN 0030 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 20 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
RCVD CSW1 00 020418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

*T3705X-00 RTN 001 DEV/LN 0020 ECA 0 REFNUM 01004
ISSUE DISABLE TO BOTH WRAP AND TEST LINES.
*CCW01 2F 020410 20 00 0001 CAW 00020410
XPTD CC 0 RCVD CC 0
XPTD CSW1 XX 020418 0C00 0001 CSW2 XX XXXXXX 0000 XXXX
BCVD CSW1 00 010418 0C00 0001 CSW2 00 000000 0000 0000
XPTD SNS 00
RCVD SNS 00

APPENDIX A. CONFIGURATION DATA SET (CDS) DESCRIPTION

The Channel Adapter On-Line Test (OLT) and the Internal Functional Tests (IFT), for the 3705 require 3705 hardware definition. The definition is provided in the OLT configuration data set (CDS) for the 3705.

The IFT's for the 3705 are loaded into the 3705 by a host CPU program called the IFT Loader. The IFT loader is an OLT executed under an On-Line Test Executive (OS/TCAM/TOTE, OS/OLTEP, DOS/OLTEP, or OLTSEP). The IFT Loader appends the CDS to the Diagnostic Control Module (DCM) when the DCM is loaded into the 3705. The DCM refers to the CDS as required by the requested IFT.

The storage location of CDS information in the 3705 can be determined by adding the CDS byte location (from CDS Byte Column) to X'F00'.

The 3705 CDS is composed of the following sections:

<u>Channel Data</u>	<u>Data Block Index</u>	<u>Data Blocks</u>
Part 1 Fixed Format	Part 2 Variable Format	

A.1 CONFIGURATION DATA SET PART 1

Part 1 format is fixed and is 28 bytes (X'1B') in length and is defined and punched in Columns 1-67 of Card #1 as follows:

<u>Card</u>	<u>CDS Byte (Hex)</u>	<u>Card Col.</u>	<u>Contents/Description</u>
1		1	Must be blank
		2-4	CDS
		5-9	Blank

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<u>Card</u>	<u>CDS Byte (Hex)</u>	<u>Card Col.</u>	<u>Contents/Description</u>
	0-3	10-17	Native subchannel unit address in hex (right justified) (example 0000010A) The IFTs load across this channel addr.
	4	18	= 4 if cycle utilization counter RPQ 8Q0058 is installed = C if model J, K, or L (cycle utilization counter and 20 bit data path are installed.)
		19	Blank
1	5	20-21	Feature code - (CS-Comm. Scanner; CA-Channel Adapter) Enter only the channel adapter defined in card col 10-17.
		20	<u>HEX</u>
		8	1=Storage size greater than 64K bytes. 0=Storage size 64K or less.
		4	1=NCP used. 0=NCP not used.
		2	1=type 4 CA installed. 0=type 4 CA not installed.
		1	1=Type 1 CS installed. 0=Type 1 CS not installed.
		21	8 1=Type 2 CS installed. 0=Type 2 CS not installed.
		4	1=Type 3 or Type 3 Hi Speed CS installed. 0=type 3 or Type 3 Hi Speed CS not installed.
		2	1=Type 1 CA installed. 0=Type 1 CA not installed.
		1	1=Type 2 or 3 CA installed. 0=Type 2 or 3 CA not installed.
	6	22-23	= 40 Class Code (terminal control unit)
	7	24-25	= 06 Unit or Type Code(3705)

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8	26-29	Unused, leave blank.
9	30-31	Flags
	30	= 4 if Device shared with another system, (CPU)
	31	= 4 if Two channel switch is installed on this unit
0A-0B	32-35	Blank

<u>Card</u>	<u>CDS Byte (Hex)</u>	<u>Card Col.</u>	<u>Contents/Description</u>
1	0C-0D	36-39	The emulator sub-channel (ESC) unit address in Hex of lowest IBM 2701, 2702, or 2703 emulator Line address (determined by CA jumper options - See Range Definition) If Type 2 or 3 CA or if Type 1 or 4 CA in NCP mode only, leave card columns 36 thru 41 <u>blank</u> .
	0E	40-41	Hexadecimal number of contiguous Emulator Line addresses (each address used in testing requires a 2701, 2, 3 CDS entry). - See Range Definition
	0F-13	42-51	Blank (reserved)
	14-1B	52-67	Hexadecimal (EBCDIC) representation of the symbolic name of the Network Control Program (NCP) CDS. This is required by the On Line Terminal Test (OLTT). The symbolic name is assigned by the customer at SYSGEN time. Hex 'C3' (C) is to suffix the NCP CDS symbolic name. Any unused positions in this field should be filled with X'40's. For example: If the NCP symbolic name is 'RTP', then this name will be 'RTPC' and

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the Hex EBCDIC representation would
be:
D9E3D7C340404040
If no NCP is installed, leave blank.

1C-1D	68-71	Blank (allow CDS Part 2 to start on card 2)
	72	Continuation character (any character except /)
	73-80	Any desired information, ie ID, card count, etc.

A.1.1 RANGE DEFINITION

It is mandatory that each address in the described Emulator address range be defined by a IBM 2701, 2702, or 2703 CDS entry in order to use that address as a test device address. It is recommended that a CDS entry be included for all addresses in the range in order to prevent a 'NO CDS ENTRY' message for each undefined address.

If it is necessary to use a large range of emulator addresses, the following dummy CDS entry can be used for each unused subchannel address to minimize the OLT printouts:

Card Col	2-4	10-17	22-25	52
Punch	CDS	DEV ADDR	4001	/

Part 2 of the CDS has a variable length and is composed of the Index/Data blocks needed to define the hardware. Each hardware feature is referred to by its unique block type (i.e. CCU data block is type A, type 1 channel adapter data block is type B, etc.)

The index block contains 2 bytes for each data block to be defined, one byte to indicate block type and another to indicate the half-word displacement value of the corresponding data block containing the hardware definition. Each data block must start on a halfword boundary.

Communication scanners 3 and 4 are contained on a symbolic CDS entry because of length restrictions. This entry is not punched unless the third or fourth communication scanners are present. This CDS entry is handled by the OLT loader and is not referred to by the CE when entering the 'DEV/TEST/OPT/' parameters.

Following is the format for machine configuration. Punch cards as indicated using CDS card format as provided. The index identifies the hardware installed and provides a pointer to the data block containing the detailed description. If not applicable, an index entry may be left blank, or punched with zeros, but the assigned card columns must be maintained.

After completing the definition of the last line sets of the last LIB installed on the 3705, insert a '/' in that card column that would normally start the next Scanner definition.

Index - Part 2

<u>Card</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents(Type-Address)</u>
			Adapter Number/IFT Number - (00 or blank if not installed) CDS Address of Data Block - pointer to adapter description Block type - data block containing adapter description - - - Description
2		1-15	Must be blank
	1E-1F	16-19	11 23 (A) CCU
	20-21	20-23	22 23 (A) Storage BSM 2 (Blank if FET storage)
	22-23	24-27	32 23 (A) Storage BSM 3 (Blank if FET storage)
	24-25	28-31	42 23 (A) Storage BSM 4 (Blank if FET storage)
	26-27	32-35	52 23 (A) Storage BSM 5 (Blank if FET storage)
	28-29	36-39	62 23 (A) Storage BSM 6 (Blank if FET storage)
	2A-2B	40-43	72 23 (A) Storage BSM 7 (Blank if FET storage)
	2C-2D	44-47	82 23 (A) Storage BSM 8 (Blank if FET storage)
	2E-2F	48-51	12 23 (A) Storage BSM 1 or FET storage installed
	30-31	52-55	13 22 (B) Type 1 CA in 1st position.
	-	-	14 22 (C) If type 2 or type 3 CA in 1st position.
	32-33	56-59	19 22 (C) If type 4 CA in 1st position. 24 24 (C) If type 2 or type 3 CA in 2nd position.
	34-35	60-63	29 24 (C) If type 4 CA in 2nd position. 39 25 (C) If type 4 CA in 3rd position.

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36-37	64-67	49 26 (C)	If type 4 CA in 4th position.
38-39	68-71		Enter one of the following for the communication scanner in the first frame:
		15 27 (D)	If type 1 communication scanner is first scanner. This entry may be punched in card col 64-67 without causing an error.
		16 27 (D)	If type 2 communication scanner is first scanner
		17 27 (D)	If type 3 or type 3 Hi Speed communication scanner is the first scanner
	72		Continuation character (any character except /)

<u>Card</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents(Type-Address)</u>
3	3A-3B	1-15 16-19	Must be blank Enter one of the following for the communication scanner in the second frame: 26 3D (E) If type 2 communication scanner is the second scanner 27 3D (E) If type 3 or type 3 Hi Speed communications scanner is the second scanner
	3C-3D	20-23	Enter one of the following for the communication scanner in the third frame: 36 91 (E) If type 2 communication scanner is the third scanner 37 91 (E) If type 3 or type 3 Hi Speed communications scanner is the third scanner
	3E-3F	24-27	Enter one of the following for the communication scanner in the fourth frame:

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46 B0 (E) If type 2 communication
scanner is the fourth scanner
47 B0 (E) If type 3 or type 3 Hi Speed
communication scanner is the
fourth scanner

40-41	28-31	Blank (reserved)
42-43	32-35	FFFF End of index

The definition of each block type follows.

A.2.0 CHANNEL ADAPTER BLOCKS

A.2.1.0 FIRST CHANNEL ADAPTER DEFINITION - BLOCK C -

This CDS block defines the channel adapter in the first machine
 This may be a type 1, 2, 3, or 4 channel adapter.

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
3	C00	44	36-37	NSC unit address -- interface A
	C01	45	38	Governor speed for cycle steal (normally jumpered for 277K bytes for type 2 or 3 CA) = 0 if type 1 or type 4 channel adapter The following is for type 2 or 3 channel adapter when EC 318882 is not installed. = 1 if 49K bytes = 2 if 92K bytes = 3 if 188K bytes = 4 if 277K bytes The following is for type 2 or 3 channel adapter when EC 318882 is installed. = 9 if 49K bytes = A if 92K bytes = B if 188K bytes = C if 277K bytes
			39	= 1 This data block is for 1st machine frame channel adapter.

A.2.1.1 CCU DEFINITION - BLOCK A -

This CDS block defines the central control unit.

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
3		***	CCU - BLOCK	***
	A00	46	40-41	Define storage type and size

The following is for Bridge storage:

= 01 if 16K
= 02 if 48K
= 03 if 80K
= 04 if 112K
= 05 if 144K
= 06 if 176K
= 07 if 208K
= 08 if 240K

The following is for FET storage:

= 81 if 32K
= 82 if 64K
= 83 if 96K
= 84 if 128K
= 85 if 160K
= 86 if 192K
= 87 if 224K
= 88 if 256K
= 8A if 320K
= 8C if 380K
= 8E if 448K
= 90 if 512K

47 42-43 Defines RPQ Features.

IBM 3705 COMMUNICATIONS CONTROLLER
CONFIGURATION DATA SET DESCRIPTION

D99-3705C-04

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Comments</u>
	A01	47	42 43	= 0 if no RPQ's = 0 If no RPQ's = 1 If RPQ 858655 installed. = 2 If RPQ 858911 installed. = 6 If RPQ's 858911 and MK5393 are installed.

A.2.1.2 SECOND CHANNEL ADAPTER DEFINITION - BLOCK C -

This CDS block defines the channel adapter in the second position.
 The channel adapter in this position may be type 2, 3, or 4.

<u>Card</u>	<u>Block Addr</u>	<u>CDS Bvte</u>	<u>Card Col</u>	<u>Contents</u>
3	C00	48	44-45	Native sub-channel (NSC) unit address - Interface A
	C01	49	46	Governor speed for cycle steal (normally jumpered for 277K bytes for type 2 or 3 CA) = 0 if type 4 channel adapter The following is for type 2 or 3 channel adapter when EC 318882 is not installed. = 1 if 49K bytes = 2 if 92K bytes = 3 if 188K bytes = 4 if 277K bytes The following is for type 2 or 3 channel adapter when EC 318882 is installed. = 9 if 49K bytes = A if 92K bytes = B if 188K bytes = C if 277K bytes
			47	= 1 If the 2nd Channel Adapter is a Type 4 and is located in the 1st machine frame. = 2 If 2nd Channel Adapter is a Type 2 or 3 Channel Adapter. If the 2nd Channel Adapter is a Type 4 in the 2nd machine frame.

A.2.1.3 THIRD CHANNEL ADAPTER - BLOCK C - SECOND MACHINE FRAME

This CDS block defines the third channel adapter which must be located in the second machine frame. The adapter can only be type 4.

Card	Block Addr	CDS Byte	Card Col	Contents
3	C00	4A	48-49	NSC unit address - interface A
	C01	4B	50	Governor speed for cycle steal = 0 For type 4 channel adapter

This data block is for 2nd machine frame channel adapter.

A.2.1.4 FOURTH TYPE 4 CHANNEL ADAPTER - BLOCK C - SECOND MACHINE FRAME

(Leave this block blank if no CA installed).

Card	Block Addr	CDS Byte	Card Col	Contents
3	C00	4C	52-53	NSC unit address - interface A
	C01	4D	54	Governor speed for cycle steal = 0 For type 4 channel adapter

This data block is for 2nd machine frame channel adapter.

A.2.1.5 FIRST COMMUNICATION SCANNER DEFINITION - BLOCK D

This CDS block defines the first communication scanner installed.
 The scanner may be type 1, 2, or 3.

The definition of each block type follows.

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
3	D00	4E	56-57	CS type defined by this block.
			56	= 8 if type 1 communication scanner. = 4 if type 2 communication scanner. = 3 if type 3 Hi-Speed communication scanner. = 2 if type 3 communication scanner.
			57	= 0 first CS address bits.
	D01	4F-50	58-61	Blank
		51	62-63	RPQ description Byte.
			62	= 0 (reserved spare)
			63	= 0 If no RPQ's
				The following is for type 2 scanner:
				= 1 if RPQ 858657
				= 2 if RPQ 858680
				= 4 if RPQ 858678
				= 8 if RPQ S30114
				The following is for type 3 scanner:
				= 1 if RPQ 858912
				= 2 if RPQ EH4100

IBM 3705 COMMUNICATIONS CONTROLLER
 CONFIGURATION DATA SET DESCRIPTION

D99-3705C-04

D02 52 64-65 Speed of oscillator position 1 (osc 00)
 Multi-speed clock with type 3
 communication scanner has 150,
 600, and 1200 bps oscillator.

<u>Code</u>	<u>Speed</u>	
00	If not installed	
01	45.5	BPS
03	50.0	
05	56.89	
07	74.2	
09	75.0	
0B	100.0	
0D	110.0	
0F	134.5	
11	150.0	
13	200.0	
14	300.0	
15	600.0	
16	950.0	
17	1200.0	
18	1050.0	RPQ (M02116)
19	2000.0	
1B	2400.0	

Ref OSC position 1 Definition for the
 following:

D03 53 66-67 Speed of oscillator position 2 (osc 01)
 D04 54 68-69 Speed of oscillator position 3 (osc 02)
 D05 55 70-71 Speed of oscillator position 4 (osc 03)
 72 Continuation character (any character
 except /)
 73-80 Any desired data (ref card 1)

<u>Card</u>	<u>Block</u> <u>Addr</u>	<u>CDS</u> <u>Byte</u>	<u>Card</u> <u>Col</u>	<u>Contents</u>
4			1-15	Must be blank

IBM 3705 COMMUNICATIONS CONTROLLER¹
 CONFIGURATION DATA SET DESCRIPTION

D99-3705C-04

D06	56	16-17	Code = LIB type - position 1 = 00 if not installed = 01 if Type 1 = 02 if Type 2 = 03 if Type 3 etc. = 0A if Type 10 = 0B if Type 11 = 0C if Type 12
D07	57	18-19	Code = LIB Type - position 2
D08	58	20-21	Code = LIB Type - position 3
D09	59	22-23	Code = LIB type - position 4 Not valid for type 3 scanner.
D0A	5A-61	24-39	Code for line set types installed in LIB position 1
D0A	5A	24-25	Lines 0 & 1
D0B	5B	26-27	Lines 2 & 3
D0C	5C	28-29	Lines 4 & 5
D0D	5D	30-31	Lines 6 & 7
D0E	5E	32-33	Lines 8 & 9
D0F	5F	34-35	Lines A & B
D10	60	36-37	Lines C & D
D11	61	38-39	Lines E & F

Code Line Set Type

00	None. Use this code to define a pair of line addresses that are not used or not installed.
01	A (e.g. 1a, 2a, 3a, 4a, etc.) Use this code to define a pair of installed line addresses for a LIB type that does not have a line set type specified. (e.g. LIB type 7)
02	B (e.g. 1b, 3b, 4b, etc.)
03	C (e.g. 1c, 4c, etc.)
04	D
05	E
06	F

IBM 3705 COMMUNICATIONS CONTROLLER
 CONFIGURATION DATA SET DESCRIPTION

D99-3705C-04

07	G or GA
08	H
0A	J
0B	K
0D	S
0E0E	T or TA (must define 2 partitions for each line set)
0F0F	U (must define 2 partitions for each line set)
10	W
1313	Z (must define 2 partitions for each line set)
30	ALC RPQ (858657) type 2 scanner only
34	Reverse Chan RPQ (858664) type 2 scanner only
38	X-Y Plotter RPQ (858663) type 2 scanner only
39	N jumpered for medium speed operation (9600 bits per second or less)
3A3A	N jumpered for high speed operation (greater than 9600 bits per second, must define 2 partitions)

D12 62-69 40-55 Line set type codes installed in LIB position 2 lines 0-F (refer to LIB 1)

D13 6A-71 56-71 Line set type codes installed in LIB position 3 lines 0-F (refer to LIB 1)

72 Continuation character (any character except /)

73-80 Any desired data (Ref card 1)

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
5			1-15	Must be blank
		72-79	16-31	Code for line set types installed in LIB position 4 lines 0-F (refer to LIB 1) Not valid for type 3 scanner.

A.2.2 TYPE 2 OR 3 COMMUNICATION SCANNER - SECOND SCANNER BLOCK E

The type 2 or type 3 scanner defined by block type E is identical to block type D except for the installed position and number of LIBs available. Refer to block D for the format. If no scanner is installed in this position and no further data blocks are required, punch a slash (/) in the 1st column of this block and omit the continuation character for this card to end the CDS (no further punching is required).

<u>Card</u>	<u>Addr</u>	<u>Byte</u>	<u>Col</u>	<u>Contents</u>
5	E00	7A	32-33	CS defined by this block
			32	= 4 If type 2 communication scanner 3 If type 3 Hi-Speed Communication Scanner 2 If type 3 communication scanner
			33	= 1 CS address bits for 2nd Scanner.
	E01	7B-7C	34-37	Blank
		7D	38-39	RPQ Definition Byte (Refer to CS1)
	E02	7E-81	40-47	Oscillator speed codes
	E06	82-87	48-59	LIB type codes
	E0C	88-8D	60-71	LIB position 1 line set types lines 0-B
			72	Continuation character (any character except /)
			73-80	Any Desired Data (Ref card 1)

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
6			1-15	Must be blank
		8E-8F	16-19	LIB position 1 line set types lines C-F

IBM 3705 COMMUNICATIONS CONTROLLER
 CONFIGURATION DATA SET DESCRIPTION

D99-3705C-04

	E10	90-97	20-35	LIB position 2 line set types lines 0-F
	E14	98-9F	36-51	LIB position 3 line set types lines 0-F
	E18	A0-A7	52-67	LIB position 4 line set types lines 0-F
	E1C	A8-A9	68-71	LIB position 5 line set types lines 0-3 Not valid for type 3 scanner.
			72	Continuation Character (any character except /)
			73-80	Any desired data (See card 1)
7			1-15	Must be blank
		AA-AF	16-27	LIB position 5 line set types lines 4-F Not valid for type 3 scanner.
	E20	B0-B7	28-43	LIB position 6 line set types lines 0-F Not valid for type 3 scanner.
		B8-BC	44-53	Blank
		BD-C2	54-65	C3E4F3F7F0F5 if communication scanner is installed in frame 3 or 4.
		C3-C4	66-69	Hexadecimal representation of unique two digit identification number assigned by the CE to this CDS. Example: ID number 01 would be - "F0F1". IF a 3rd or 4th CS is installed, this number must be the same as that in col. 42-43 of the symbolic CDS entry.
			70	Slash (/)
			73-80	Any desired data (ref. card 1)

A.2.3 SYMBOLIC CDS ENTRY FOR COMMUNICATION SCANNERS 3 AND 4

This CDS entry is necessary only when the third or fourth communication scanners are present. The symbolic name of this CDS will be the characters CU3705 plus a unique two digit identification number. An example would be "CU370501". This CDS entry will only be used by T3705A. NO Reference to this CDS entry should ever be made with the "Device/TEST/OPT/" parameter. This CDS entry must be placed directly behind the first CDS entry for this device.

<u>Card</u>	<u>Block</u> <u>Addr</u>	<u>CDS</u> <u>Byte</u>	<u>Card</u> <u>Col</u>	<u>Contents/Description</u>
1			1	Must be blank
			2-4	CDS
			5-21	Blank
			22-23	= 40 class code
			24-25	= 06 unit or type code
			26-29	Blank
			30-31	= 08
			32-35	Blank
			36-41	= CU3705
			42-43	= Two digit identification of this box's CDS. Example: 01
			44-71	Blank
			72	Continuation character (any character except /)
			73-80	Any desired data (Ref card 1)

IBM 3705 COMMUNICATIONS CONTROLLER
 CONFIGURATION DATA SET DESCRIPTION

D99-3705C-04

A.2.3.1 TYPE 2 OR 3 COMMUNICATION SCANNER - THIRD SCANNER BLOCK E

Refer to the note in second scanner.

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
2			1-15	Must be blank
	E00	122	16-17	Installed CS configuration
			16	= 4 If type 2 communication scanner = 3 If type 3 Hi-Speed communication scanner = 2 If type 3 communication scanner
			17	= 2 (CS Adr bits for 3rd Scanner)
		123-124	18-21	Blank
		125	22-23	RPQ definition byte (refer to CS1)
	E02	126-129	24-31	Oscillator speed codes
	E06	12A-12F	32-43	LIB type codes
	E0C	130-137	44-59	LIB position 1 line set types lines 0-F
	E12	138-13D	60-71	LIB position 2 line set types lines 0-B
			72	Continuation character (any character except /)
			73-80	Any desired data (refer to card 1)

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
3			1-15	Must be blank
		13E-13F	16-19	LIB position 2 line set types lines C-F
	E14	140-147	20-35	LIB position 3 line set types lines 0-F
	E18	148-14F	36-51	LIB position 4 line set types lines 0-F
	E1C	150-157	52-67	LIB position 5 line set types lines 0-F

			Not valid for type 3 scanner.
E20	158-159	68-71	LIB position 6 line set types lines 0-3 Not valid for type 3 scanner.
		72	Continuation character (any character except /)
		73-80	Any desired data (Ref card 1)
4		1-15	Must be blank
	15A-15F	16-27	LIB position 6 line set types lines 4-F Not valid for type 3 scanner.

A.2.3.2 TYPE 2 OR 3 COMMUNICATION SCANNER - FOURTH SCANNNER BLOCK E

Refer to the note in the second scanner

<u>Card</u>	<u>Addr</u>	<u>Byte</u>	<u>Col</u>	<u>Contents</u>
	E00	160	28-29	Installed CS configuration
			28	= 4 If type 2 communication scanner = 3 If type 3 Hi-Speed communication scanner
			29	= 2 If type 3 communication scanner = 3 (CS Adr bits for 4th Scanner)
		161-162	30-33	Blank
		163	34-35	RPQ definition byte (refer to CS1)
	E02	164-167	36-43	Oscillator speed codes
	E06	168-16D	44-55	LIB type codes
	E0C	16E-175	56-71	LIB position 1 line set types lines 0-F
			72	Continuation character (any character except /)
			73-80	Any desired data (Ref card 1)

IBM 3705 COMMUNICATIONS CONTROLLER
 CONFIGURATION DATA SET DESCRIPTION

D99-3705C-04

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
5			1-15	Must be blank
	E12	176-17D	16-31	LIB position 2 line set types lines 0-F
	E14	17E-185	32-47	LIB position 3 line set types lines 0-F
	E18	186-18D	48-63	LIB position 4 line set types lines 0-F
	E1C	18E-18F	64-71	LIB position 5 line set types lines 0-7 Not valid for type 3 scanner.
			72	Continuation character (any character except /)
			73-80	Any desired data (Ref card 1)

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
6			1-15	Must be blank
		190-195	16-23	LIB position 5 line set types lines 8-F Not valid for type 3 scanner.
	E20	196-19D	24-39	LIB position 6 line set types lines 0-F Not valid for type 3 scanner.
			40	SLASH (/) End of CDS

The punched card format of the 3705 CDS is as follows:

Card 1	1	Blank
	2-4	CDS
	5-9	Blanks
	10-25	Bytes 0 to 7 of the CDS (one Hex character per column)

26-29 Blanks (becomes byte 8 of CDS)
30-31 Flags (byte 9 of CDS)
32-51 Zeros (bytes 10-19 (X'0A'-X'13')
of CDS)
52-67 Symbolic name of CDS for network
control program (bytes 20-27
(X'14'-X'1B) of CDS)
68-71 First two bytes of variable data
(bytes 28-29 (X'1C'-X'1D')
of CDS)
72 Continuation character (any character
except /)
73-80 Any desired information, such as
machine ID, card count, etc.

Card 2

1-15 Blanks
16-71 Bytes 30-57 (X'1E'-X'39') of
the CDS (one Hex character per
column)
72 Continuation character (any character
except /)
73-80 Any desired data (refer to Card 1)

Cards 3-6 Same format as Card 2.

Card 3 CDS bytes 58-85 (X'3A'-X'55')
Card 4 CDS bytes 86-113 (X'56'-X'71')
Card 5 CDS bytes 114-141 (X'72'-X'8D')
Card 6 CDS bytes 142-169 (X'8E'-X'A9')
Card 7 1-15 Blanks

16-69 CDS bytes 170-196 (X'AA'-X'C4')
 70 Slash (/)
 71-72 Blanks
 73-80 Any desired data (refer to Card 1)

A.2.4.1 SYMBOLIC CDS ENTRY COMMUNICATION SCANNERS 3 AND 4

<u>Card</u>	<u>Addr</u>	<u>Byte</u>	<u>Col</u>	<u>Contents</u>
Card 1		1		Blank
		2-4		CDS
		5-21		Blank
		22-25		4006
		26-29		Blank
		30-31		08
		32-35		Blank
		36-41		CU3705
		42-43		A unique two digit identification number assigned to the 3705 CDS.
		44-71		Blank
		72		Continuation character (any character)
		73-80		Any desired data (refer to Card 1)

Cards 2-5 Same format as Card 2 of first CDS.

Card 2			CDS Bytes	290-317	(X'122'-X'13D')
Card 3			CDS Bytes	318-345	(X'13E'-X'159')
Card 4			CDS Bytes	346-373	(X'15A'-X'175')
Card 5			CDS Bytes	374-401	(X'176'-X'18F')
Card 6		1-15	Blank		
		16-39	CDS Bytes	402-413	(X'190'-X'19D')
		40	Slash (/)		
		41-72	Blanks		
		73-80	Any desired data (refer to Card 1)		

A.3 TOTE UNIT CONFIGURATOR

The 3705 Unit Configurator requires an interface to Telecommunications On-Line Test Executive (TOTE), a sub-task of TCAM. When a TCAM MCP, message control program, is running, a configurator request message (CRM) may be entered at the system console or a remote terminal defined in the MCP.

The following is an example of a configurator request message at the system console when a MCP named TEST is running:

```
F TEST,OLT=SYSCON///CONFIG/
```

Refer to the OS TCAM User's Guide, GC30-2025 for more detail on the functions of TOTE.

The TOTE configurator issues the following messages:

```
IED211I ON-LINE TESTING ACTIVE
IED3351                ***CONTROL TERMINAL ID IS 01***
IED280I CONFIGURATOR STARTED
*00 IED282D ENTER FUNCTION: ADD,CHANGE,DELETE,EXHIBIT, OR NONE
```

Respond with: r 00,'add' if the CDS does not exist, 'change' to alter an existing CDS, etc. Exhibit provides a display of an existing CDS.

After the above response, the TOTE Configurator requests a line address or a symbolic terminal name. To configure a 3705 with more than 2 scanners, requires two configure runs. The second run is called a CDS extension. When adding or changing the CDS, 'CU3705XX' where XX is a 2-digit alphanumeric entry.

To define the main part of the CDS without a CDS in the CDS library, respond to the above question with the native address on the 3705.

Respond with:

r 00,'00a' for example.

The next question from the TOTE Configurator is:

```
*00 IED316D IS THE DEVICE TO BE CONFIGURED A 3704? Reply YES OR NO.
```

Respond with:

r 00, 'NO'

The next question from the 3705 Unit Configurator,

'IS THIS CONFIG AN EXTENSION?'

Respond to the first part with: r 00, 'N' or 'NO'. Respond to the second part with: r 00, 'yes'.

Information needed for Unit Configuration is:

Is the device shared?
Is the two channel switch present?
Is the first channel adapter type 1 or 2?
Is a second channel adapter installed?
What type is the first channel adapter?
The lowest emulator line address.
What is the number of contiguous emulator lines installed.
Does an NCP have a symbolic name for the line being configured?
The letter 'C' is to suffix the NCP CDS symbolic name.

For example:

If the NCP symbolic name is 'RTP', the NCP CDS symbolic name will be 'RTPC'.

The three digit model number of the 3705, (eg. D07). Two digit address for channel 1 interface A. Two digit address for channel 2 interface A (if applicable). Governor speed for channel adapters. Oscillator speeds. What is the type of the first scanner? RPQ definition for CCU, and scanners? How many scanners? LIB types for each scanner? Line set types for each LIB. Two digit suffix for symbolic name of extended CDS (if applicable).

When the question sequence following appears:

REFER TO THE CDS GUIDE FOR LINE SET TYPE CODES REFER TO
INSTALLATION INSTRUCTIONS FOR RPQ DEFINITION ENTER 00 FOR LINE
SETS NOT INSTALLED *0 IED136D ENTER 8 (2 DIGIT) CODES FOR LIB 1
LINE SETS

Respond with eight two digit codes defining the line set types for

LIB 1. The example response following is for eight line sets type A in LIB 1.

```
r 00,'0101010101010101'
```

When the 3705 Unit Configurator Module receives the response, control returns to the TOTE Configurator. If the library data set, into which the new CDS is to be placed, is date protected, the following message prints out at the terminal or console:

```
*XX IEC107D E 190,YYYYYY,TEST,ZZZZZZ
```

In this message, XX is the message ID, 190 is the address where the OLT library disk pack is mounted, YYYYYY is the serial number of the disk pack mounted, TEST is the name of the MCP, ZZZZZZ is the DSNAME of the OLT library.

If this message occurs, respond with r xx,'u'.

To add or alter a CDS extension at the 'Enter Function' request of the TOTE configurator, the following message appears:

```
*00 IED304D IS THIS A CDS EXTENSION CONFIGURATION?
```

A.4 UNIT CONFIGURATOR UNDER OLTSEP AND OLTEP

Configuration data set (CDS) generation or alteration under OLTSEP may be invoked by entering a test request message to run T3700GEN. Alter an existing CDS by including EXT=CHANGE in the option field. A new CDS may be generated by not using the EXT option.

CDS can be generated or altered for the following areas of testing.

3705	2770	RFT's
3704	2780	NCP
1050	2792	
2740	3270	
2741	3780	

Examples of test request messages showing how to invoke CDS generation and alteration are:

```
R 01,'00D/3700GEN/NFE/'  
R 01,'00D/3700GEN/NFE,EXT=CHANGE/'
```

The address portion of the above messages must be that of the card punch. When the generation of the CDS is complete T3700GEN punches the CDS cards. The cards can be used to replace the old cards or be added in the CDS deck for the OLTSEP system to be changed. Then the final step would be to do the CONFIG run under SOSP.

A.4.1 OPERATOR MESSAGES

After entering the test request message (TRM) for T3700GEN, prompting questions direct the operator. Each line of message to the console device is given a number required by OLT directives. The messages used are self explanatory and are only listed to verify that the message is a unit configurator message.

The 3 digit numbers preceding each message on the console are assigned to the following areas of CDS development.

3705	Msg Numbers 508-557, 583-621 and 640-662
3704	Msg Numbers 558-582 and 665-699
NCP	Msg Numbers 293-351
1050	Msg Numbers 356-402
2740	Msg Numbers 416-468

2741	Msg Numbers 469-502
RFT's	Msg Numbers 200-248
RFT's 2770	Msg Numbers 249-264
RFT's 2780	Msg Numbers 265-270
RFT's 3780	Msg Numbers 270-275
RFT's 3792	Msg Numbers 276-280
RFT's 3270	Msg Numbers 280-285

The following is a typical message at a console device:

04 SEP101D 508 IS THIS DEVICE SHARED?

Respond with either r 04, 'YES' or r 04, 'NO'

The following information is needed for 3705 CDS generation.

- Is the device shared?
- Is a two channel switch present?
- What type is the first channel adapter?
- Is there a 2nd channel adapter?
- Are there emulator lines to define?
- The lowest emulator line address.
- The number of contiguous emulator lines.
- Does an NCP have a symbolic name for the line being configured?
- The letter 'C' is to suffix the NCP CDS symbolic name.

For example:

If the NCP symbolic name is 'RTP', the NCP CDS symbolic name will be 'RTPC'.

- The model number of the 3705.
- Two digit address for channel 1 interface A.
- Two digit address for channel 2 interface A (if applicable).
- Governor speed for channel adapters.
- Oscillator speeds.
- What type is the first communication scanner?
- RPQ definition for CCU, and scanners?
- How many scanners?
- LIB types for each scanner?
- Line set types for each LIB.
- Two digit suffix for symbolic name of extended CDS (if applicable).

When the following question sequence appears:

REFER TO THE CDS GUIDE FOR LINE SET TYPE CODES
REFER TO INSTALLATION INSTRUCTIONS FOR RPQ DEFINITION
ENTER 00 FOR LINE SETS NOT INSTALLED
*****00 IED136D ENTER 8 (2 DIGIT) CODES FOR LIB 1 LINE SETS

Respond with eight two digit codes defining the line set types in
LIB 1. The example response following is for eight line sets type A
in LIB 1.

r 00,'0101010101010101'

For information applicable to terminal CDS development, see IBM
Maintenance Diagnostic Program On-Line Terminal Test User's Guide,
D99-2705B.

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APPENDIX B. OLT RUN EXAMPLES

This example is a sample run of IBM 3705 Channel Adapter On-Line Tests.

The request shown test all adapters with all tests excluding Manual Intervention and external wrap routines.

The referenced paragraph numbers provide information to run individual tests using different parameters such as error loops and test loops etc. The paragraph numbers also provide a starting point whenever unexpected error stops occur.

The sequence shown assumes OLTEP or OLTSEP is running in the host CPU and the CDS is correct for all adapters. The DIAGNOSTIC CONTROL switch should be set to PROCESS, and the DISPLAY/FUNCTION SELECT switch should be set to STATUS.

SYSTEM COMMUNICATION

NOTES AND REFERENCES

System;
ENTER DEV/TEST/OPT

D99-3705C Para 1.2.1 for type 1 or 4 CA, Para 2.2.1 for type 2 or 3 CA.

reply:
'xxx,yyy/3705aa-ai/nfe,mi/'
(aa-ae for type 1 CA)

This entry request CA OLT's for type 1/4 CA (D99-3705C paragraph 1.1). BA-BH are OLTs for type 2/3 CA (D99-3705C paragraph 2.1). xxx=NSC address, (yyy= any ESC address for type 1/4 only).

System;
S T3705aa

If 3705 hard-stops during CA OLTs refer to D99-3705C paragraph 1.4.1 for type 1/4 or paragraph 2.4.1 for type 2/3 CA.

System;
THE STATUS OF THE 3705 CANNOT

D99-3705C paragraph 1.3.1.1

SYSTEM COMMUNICATION

NOTES AND REFERENCES

BE DETERMINED. WARNING-
CONTINUATION WILL CAUSE THE
ENTIRE 3705 TO BECOME
UNAVAILABLE. ENTER 'C' TO
CANCEL OR 'P' TO PROCEED.

'Initial Messages'. Warning
message may or may not occur
depending upon operating
system.

Reply;
'p'

System;

T T3705AA
S T3705AB
T T3705AB
S T3705AC
T T3705AC
S T3705AD
T T3705AD
S T3705AE
T T3705AE
S T3705AF
T T3705AF
S T3705AG
T T3705AG
S T3705AH
T T3705AH
S T3705AI
T T3705AI

D99-3705C paragraph 1.3.1 for
type 1/4 errors, 2.3.1 for
type 2/3 errors. Tests AA-AI
are for type 1/4 CA. Tests BA-BH
are for type 2/3 CA. Depending
on machine features and CDS,
some tests may be bypassed by
OLTEP or OLTSEP.

Tests AF through AI are for
type 4 CA only.

IBM/TECHNICAL NEWSLETTER

DCL-3705C-05
D99-3705C-04

IBM MAINTENENCE DIAGNOSTIC PROGRAM
IBM 3705 COMMUNICATIONS CONTROLLER
CHANNEL ADAPTER AND WRAP ALL LINES ON-LINE TESTS

This Technical Newsletter provides page updates for the IBM 3705 Communications Controller Configuraton Data Set Description, Doc. No. D99-3705C-04, App. A, previously released with OLT Diagnostic Release 11.5. These are editorial changes in the CDS description.

<u>Remove Pages</u>	<u>Add Pages</u>
D99-3705C-04	DCL-3705C-05
Cover	Cover
ii - iv	ii - iv
A.1 - A.2	A.1 - A.2
A.9 - A.10	A.9 - A.10
A.17 - A.18	A.17 - A.18

File this cover letter with the manual to provide a record of the change.

IBM Network Products RAS, SCD Laboratory, Dept. G64,
P.O. Box 12295, Research Triangle Park, North Carolina, 27709



DCL-3705C-05
D99-3705C-04

IBM MAINTENANCE DIAGNOSTIC PROGRAM
3705 COMMUNICATIONS CONTROLLER
CHANNEL ADAPTER AND WRAP ALL LINES
ON-LINE TESTS
DATE: 12/13/80

PREFACE

This manual contains information pertaining to the IBM 3705 Communications Controller Channel Adapter and Wrap All Lines On-Line Tests.

The material in this manual was previously released in D99-3705A which has been replaced by D99-3705C, D99-3705D, and D99-3705E. In addition to the material in D99-3705A, this manual has been updated to include the type 4 channel adapter.

Chapter 1 provides information about the type 1 and type 4 channel adapter on-line tests. Chapter 2 provides information about the type 2 and type 3 channel adapter on-line tests. Chapter 3 contains information about the wrap all lines on-line tests.

Appendix A is included to provide information about the Configuration Data Set (CDS) and the Unit Configurator programs.

A companion manual that should be referred to is:

IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

Prerequisite manuals that should be referred to are:

DOS OLTEP SRL, GC24-5086.

IBM System/360 Operating System On-Line Test Executive Program, GC28-6650.

OLTSEP Operators Guide, D99-SEPDT.

SUMMARY OF AMMENDMENTS FOR D99-3705C-01

New test sections T3705AH and T3705AI are described in this version of the manual.

In addition to the new test sections, a correction to the wording of the description of T3705BB Routine 5 is incorporated.

Changes have been made to Appendix A to reflect multiple type 4 channel adapters.

SUMMARY OF AMMENDMENTS FOR D99-3705C-02

This edition incorporates DCL-3705C-02 and provides an updated Table of Contents that shows Chapter and Page numbers.

In addition, Appendix A has been corrected so that it agrees with Appendix A in D99-3705D.

SUMMARY OF AMENDMENTS FOR D99-3705C-04

This edition incorporates DCL-3705C-03 and provides an updated Configuration Data Set Description.

SUMMARY OF AMENDMENTS FOR DCL-3705C-05

This DCL updates the Configuration Data Set Description, Appendix A.

DCL-3705C-05
D99-3705C-04

T3705

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APPENDIX A. CONFIGURATION DATA SET (CDS) DESCRIPTION

The Channel Adapter On-Line Test (OLT) and the Internal Functional Tests (IFT), for the 3705 require 3705 hardware definition. The definition is provided in the OLT configuration data set (CDS) for the 3705.

The IFT's for the 3705 are loaded into the 3705 by a host CPU program called the IFT Loader. The IFT loader is an OLT executed under an On-Line Test Executive (OS/TCAM/TOTE, OS/OLTEP, DOS/OLTEP, or OLTSEP). The IFT Loader appends the CDS to the Diagnostic Control Module (DCM) when the DCM is loaded into the 3705. The DCM refers to the CDS as required by the requested IFT.

The storage location of CDS information in the 3705 can be determined by adding the CDS byte location (from CDS Byte Column) to X'F00'.

The 3705 CDS is composed of the following sections:

Channel Data	Data Block Index	Data Blocks
Part 1 Fixed Format	Part 2 Variable Format	

A.1 CONFIGURATION DATA SET PART 1

Part 1 format is fixed and is 28 bytes (X'1B') in length and is defined and punched in Columns 1-67 of Card #1 as follows:

<u>Card</u>	<u>CDS Byte (Hex)</u>	<u>Card Col.</u>	<u>Contents/Description</u>
1		1	Must be blank
		2-4	CDS
		5-9	Blank

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 CONFIGURATION DATA SET DESCRIPTION

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0-3 10-17 Native subchannel unit address in hex
 (right justified) (example 0000010A)
 The IFTs load across this channel addr.

4 18 = 4 If model E,F,G or H with
 RPQ 8Q0058 installed.
 (cycle utilization counter)
 = C If model J, K, or L.

 19 Blank

<u>Card</u>	<u>CDS Byte (Hex)</u>	<u>Card Col.</u>	<u>Contents/Description</u>
1	5	20-21	Feature code - (CS-Comm. Scanner; CA-Channel Adapter) Enter only the channel adapter defined in card col 10-17.
		20	<u>HEX</u> 8 1=Storage size greater than 64K bytes. 0=Storage size 64K or less. 4 1=NCP used. 0=NCP not used. 2 1=type 4 CA installed. 0=type 4 CA not installed. 1 1=Type 1 CS installed. 0=Type 1 CS not installed.
		21	8 1=Type 2 CS installed. 0=Type 2 CS not installed. 4 1=Type 3 or Type 3 Hi Speed CS installed. 0=type 3 or Type 3 Hi Speed CS not installed. 2 1=Type 1 CA installed. 0=Type 1 CA not installed. 1 1=Type 2 or 3 CA installed. 0=Type 2 or 3 CA not installed.
	6	22-23	= 40 Class Code (terminal control unit)
	7	24-25	= 06 Unit or Type Code(3705)

A.2.0 CHANNEL ADAPTER BLOCKS

A.2.1.0 FIRST CHANNEL ADAPTER DEFINITION - BLOCK C -

This CDS block defines the channel adapter in the first machine
 This may be a type 1, 2, 3, or 4 channel adapter.

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
3	C00	44	36-37	NSC unit address - interface A
	C01	45	38	Governor speed for cycle steal (normally jumpered for 277K bytes for type 2 or 3 CA) = 0 if type 1 or type 4 channel adapter The following is for type 2 or 3 channel adapter when EC 318882 is not installed. = 1 if 49K bytes = 2 if 92K bytes = 3 if 188K bytes = 4 if 277K bytes The following is for type 2 or 3 channel adapter when EC 318882 is installed. = 9 if 49K bytes = A if 92K bytes = B if 188K bytes = C if 277K bytes
			39	= 1 This data block is for 1st machine frame channel adapter.

A.2.1.1 CCU DEFINITION - BLOCK A -

This CDS block defines the central control unit.

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
3		***	CCU - BLOCK	***
	A00	46	40-41	Define storage type and size

The following is for Bridge storage:

- = 01 if 16K
- = 02 if 48K
- = 03 if 80K
- = 04 if 112K
- = 05 if 144K
- = 06 if 176K
- = 07 if 208K
- = 08 if 240K

The following is for FET storage:

- = 81 if 32K
- = 82 if 64K
- = 83 if 96K
- = 84 if 128K
- = 85 if 160K
- = 86 if 192K
- = 87 if 224K
- = 88 if 256K
- = 8A if 320K
- = 8C if 384K
- = 8E if 448K
- = 90 if 512K

47 42-43 Defines RPQ Features.

IBM 3705 COMMUNICATIONS CONTROLLER
 CONFIGURATION DATA SET DESCRIPTION

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 D99-3705C-04

07	G or GA
08	H
0A	J
0B	K
0D	S
0E0E	T or TA (must define 2 partitions for each line set)
0F0F	U (must define 2 partitions for each line set)
10	W
1313	Z (must define 2 partitions for each line set)
30	ALC RPQ (858657) type 2 scanner only
34	Reverse Chan RPQ (858664) type 2 scanner only
38	X-Y Plotter RPQ (858663) type 2 scanner only
39	N/R jumpered for medium speed operation (9600 bits per second or less)
3A3A	N/R jumpered for high speed operation (greater than 9600 bits per second, must define 2 partitions)

D12	62-69	40-55	Line set type codes installed in LIB position 2 lines 0-F (refer to LIB 1)
D13	6A-71	56-71	Line set type codes installed in LIB position 3 lines 0-F (refer to LIB 1)
		72	Continuation character (any character except /)
		73-80	Any desired data (Ref card 1)

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
5			1-15	Must be blank
		72-79	16-31	Code for line set types installed in LIB position 4 lines 0-F (refer to LIB 1) Not valid for type 3 scanner.

A.2.2 TYPE 2 OR 3 COMMUNICATION SCANNER - SECOND SCANNER BLOCK E

The type 2 or type 3 scanner defined by block type E is identical to block type D except for the installed position and number of LIBs available. Refer to block D for the format. If no scanner is installed in this position and no further data blocks are required, punch a slash (/) in the 1st column of this block and omit the continuation character for this card to end the CDS (no further punching is required).

<u>Card</u>	<u>Addr</u>	<u>Byte</u>	<u>Col</u>	<u>Contents</u>
5	E00	7A	32-33	CS defined by this block
			32	= 4 If type 2 communication scanner 3 If type 3 Hi-Speed Communication Scanner 2 If type 3 communication scanner
			33	= 1 CS address bits for 2nd Scanner.
	E01	7B-7C	34-37	Blank
		7D	38-39	RPQ Definition Byte (Refer to CS1)
	E02	7E-81	40-47	Oscillator speed codes
	E06	82-87	48-59	LIB type codes
	E0C	88-8D	60-71	LIB position 1 line set types lines 0-B
			72	Continuation character (any character except /)
			73-80	Any Desired Data (Ref card 1)

<u>Card</u>	<u>Block Addr</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents</u>
6			1-15	Must be blank
		8E-8F	16-19	LIB position 1 line set types lines C-F

IBM/TECHNICAL NEWSLETTER

DCL-3705C-06
D99-3705C-04

IBM MAINTENENCE DIAGNOSTIC PROGRAM
IBM 3705 COMMUNICATIONS CONTROLLER
CHANNEL ADAPTER AND WRAP ALL LINES ON-LINE TESTS

This Technical Newsletter provides page updates for the IBM 3705 Communications Controller Configuration Data Set Description, Doc. No. D99-3705C-04, App. A, previously released with OLT Diagnostic Release 12.0. These are editorial changes in the CDS description.

<u>Remove Pages</u>	<u>Add Pages</u>
D99-3705C-04	DCL-3705C-06
Cover	Cover
ii - iii	ii - iii
A.5 - A.6	A.5 - A.6

File this cover letter with the manual to provide a record of the change.

IBM Network Products RAS, SCD Laboratory, Dept. G64,
P.O. Box 12295, Research Triangle Park, North Carolina, 27709



DCL-3705C-06
D99-3705C-04

IBM MAINTENANCE DIAGNOSTIC PROGRAM
3705 COMMUNICATIONS CONTROLLER
CHANNEL ADAPTER AND WRAP ALL LINES

ON-LINE TESTS

DATE: 1/25/82



PREFACE

This manual contains information pertaining to the IBM 3705 Communications Controller Channel Adapter and Wrap All Lines On-Line Tests.

The material in this manual was previously released in D99-3705A which has been replaced by D99-3705C, D99-3705D, and D99-3705E. In addition to the material in D99-3705A, this manual has been updated to include the type 4 channel adapter.

Chapter 1 provides information about the type 1 and type 4 channel adapter on-line tests. Chapter 2 provides information about the type 2 and type 3 channel adapter on-line tests. Chapter 3 contains information about the wrap all lines on-line tests.

Appendix A is included to provide information about the Configuration Data Set (CDS) and the Unit Configurator programs.

A companion manual that should be referred to is:

IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

Prerequisite manuals that should be referred to are:

DOS OLTEP SRL, GC24-5086.

IBM System/360 Operating System On-Line Test Executive Program, GC28-6650.

OLTSEP Operators Guide, D99-SEPDT.

SUMMARY OF AMMENDMENTS FOR D99-3705C-01

New test sections T3705AH and T3705AI are described in this version of the manual.

In addition to the new test sections, a correction to the wording of the description of T3705BB Routine 5 is incorporated.

Changes have been made to Appendix A to reflect multiple type 4 channel adapters.

SUMMARY OF AMMENDMENTS FOR D99-3705C-02

This edition incorporates DCL-3705C-02 and provides an updated Table of Contents that shows Chapter and Page numbers.

In addition, Appendix A has been corrected so that it agrees with Appendix A in D99-3705D.

SUMMARY OF AMENDMENTS FOR D99-3705C-04

This edition incorporates DCL-3705C-03 and provides an updated Configuration Data Set Description.

SUMMARY OF AMENDMENTS FOR DCL-3705C-05

This DCL updates the Configuration Data Set Description, Appendix A.

SUMMARY OF AMENDMENTS FOR DCL-3705C-06

This DCL updates the Configuration Data Set Description, Appendix A page A.6.

A.1.1 RANGE DEFINITION

It is mandatory that each address in the described Emulator address range be defined by a IBM 2701, 2702, or 2703 CDS entry in order to use that address as a test device address. It is recommended that a CDS entry be included for all addresses in the range in order to prevent a 'NO CDS ENTRY' message for each undefined address.

If it is necessary to use a large range of emulator addresses, the following dummy CDS entry can be used for each unused subchannel address to minimize the OLT printouts:

Card Col	2-4	10-17	22-25	52
Punch	CDS	DEV ADDR	4001	/

Part 2 of the CDS has a variable length and is composed of the Index/Data blocks needed to define the hardware. Each hardware feature is referred to by its unique block type (i.e. CCU data block is type A, type 1 channel adapter data block is type B, etc.)

The index block contains 2 bytes for each data block to be defined, one byte to indicate block type and another to indicate the half-word displacement value of the corresponding data block containing the hardware definition. Each data block must start on a halfword boundary.

Communication scanners 3 and 4 are contained on a symbolic CDS entry because of length restrictions. This entry is not punched unless the third or fourth communication scanners are present. This CDS entry is handled by the OLT loader and is not referred to by the CE when entering the 'DEV/TEST/OPT/' parameters.

Following is the format for machine configuration. Punch cards as indicated using CDS card format as provided. The index identifies the hardware installed and provides a pointer to the data block containing the detailed description. If not applicable, an index entry may be left blank, or punched with zeros, but the assigned card columns must be maintained.

After completing the definition of the last line sets of the last LIB installed on the 3705, insert a '/' in that card column that would normally start the next Scanner definition.

Index - Part 2

<u>Card</u>	<u>CDS Byte</u>	<u>Card Col</u>	<u>Contents(Type-Address)</u>
			Adapter Number/IFT Number - (00 or blank if not installed) CDS Address of Data Block - pointer to adapter description Block type - data block containing adapter description - - - Description
2		1-15	Must be blank
	1E-1F	16-19	11 23 (A) CCU
	20-21	20-23	22 23 (A) Storage BSM 2 (Blank if FET storage)
	22-23	24-27	32 23 (A) Storage BSM 3 (Blank if FET storage)
	24-25	28-31	42 23 (A) Storage BSM 4 (Blank if FET storage)
	26-27	32-35	52 23 (A) Storage BSM 5 (Blank if FET storage)
	28-29	36-39	62 23 (A) Storage BSM 6 (Blank if FET storage)
	2A-2B	40-43	72 23 (A) Storage BSM 7 (Blank if FET storage)
	2C-2D	44-47	82 23 (A) Storage BSM 8 (Blank if FET storage)
	2E-2F	48-51	12 23 (A) Storage BSM 1 or FET storage installed
	30-31	52-55	13 22 (C) TYPE 1 CA IN 1ST POSITION.
	-	-	14 22 (C) If type 2 or type 3 CA in 1st position.
			19 22 (C) If type 4 CA in 1st position.
	32-33	56-59	24 24 (C) If type 2 or type 3 CA in 2nd position.
			29 24 (C) If type 4 CA in 2nd position.
	34-35	60-63	39 25 (C) If type 4 CA in 3rd position.

IBM/TECHNICAL NEWSLETTER

DCL-3705C-07
D99-3705C-04

IBM MAINTENENCE DIAGNOSTIC PROGRAM
IBM 3705 COMMUNICATIONS CONTROLLER
CHANNEL ADAPTER AND WRAP ALL LINES ON-LINE TESTS

This TECHNICAL NEWSLETTER provides page replacement for the IBM 3705 Communications Controller Channel Adapter and Wrap All Lines Tests NO. D99-3705C-04, CHAPTERS 2 AND 3.

RELEASE 13.0. Comments were added to indicate that merged ending status to channel adapter operation may result when running under 370/XA operation.

<u>Remove Pages</u>	<u>Add Pages</u>
D99-3705C-04	DCL-3705C-07
Cover	Cover
ii - iii	ii - iii
1.1 - 1.32	1.1 - 1.34
2.1 - 2.32	2.1 - 2.32

File this cover letter with the manual to provide a record of the change.

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DCL-3705C-07
D99-3705C-04

IBM MAINTENANCE DIAGNOSTIC PROGRAM
3705 COMMUNICATIONS CONTROLLER
CHANNEL ADAPTER AND WRAP ALL LINES

ON-LINE TESTS

DATE: 12/29/82

T3705



PREFACE

This manual contains information pertaining to the IBM 3705 Communications Controller Channel Adapter and Wrap All Lines On-Line Tests.

The material in this manual was previously released in D99-3705A which has been replaced by D99-3705C, D99-3705D, and D99-3705E. In addition to the material in D99-3705A, this manual has been updated to include the type 4 channel adapter.

Chapter 1 provides information about the type 1 and type 4 channel adapter on-line tests. Chapter 2 provides information about the type 2 and type 3 channel adapter on-line tests. Chapter 3 contains information about the wrap all lines on-line tests.

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OLTSEP Operators Guide, D99-SEPDT.

SUMMARY OF AMMENDMENTS FOR D99-3705C-01

New test sections T3705AH and T3705AI are described in this version of the manual.

In addition to the new test sections, a correction to the wording of the description of T3705BB Routine 5 is incorporated.

Changes have been made to Appendix A to reflect multiple type 4 channel adapters.

SUMMARY OF AMMENDMENTS FOR D99-3705C-02

This edition incorporates DCL-3705C-02 and provides an updated Table of Contents that shows Chapter and Page numbers.

In addition, Appendix A has been corrected so that it agrees with Appendix A in D99-3705D.

SUMMARY OF AMENDMENTS FOR D99-3705C-04

This edition incorporates DCL-3705C-03 and provides an updated Configuration Data Set Description.

SUMMARY OF AMENDMENTS FOR DCL-3705C-05

This DCL updates the Configuration Data Set Description, Appendix A.

SUMMARY OF AMENDMENTS FOR DCL-3705C-06

This DCL updates the Configuration Data Set Description, Appendix A page A.6.

SUMMARY OF AMENDMENTS FOR DCL-3705C-07

This DCL updates the channel adapter routine descriptions with a comment that explains the possibility of merged ending status when running under 370/XA.

1.0 CHANNEL ADAPTER ON-LINE TESTS

1.1 T3705AA-AI TYPE 1 AND TYPE 4 CHANNEL ADAPTER ON-LINE TESTS DESCRIPTION

The type 1 and type 4 channel adapter on-line test is composed of the following test sections:

- T3705AA
- T3705AB
- T3705AC
- T3705AD
- T3705AE
- T3705AF Type 4 Channel Adapter only.
- T3705AG Type 4 Channel Adapter only.
- T3705AH Type 4 Channel Adapter only.
- T3705AI Type 4 Channel Adapter only.

An attempt to identify a fault with a card is made for the various results below. All the cards listed here are on gate 01A, board position A4.

Failure Symptom	Card	Location
Command decode	2325	A4M2
Status	2325 2326 7602	A4M2 A4T2 A4L2
Sense	7601	A4P2
Residual Byte count	7602	A4L2
Traps ESC address when ESC lines not enabled	2325 2326	A4M2 A4T2
Wide spread errors	2342	A4N2
Interface A	6836	A4Q2
Interface B	6836 6837	A4S2 A4R2

Extended Buffer Control Circuitry	AC05	A4J2
Extended Buffer Data Flow	AC06	A4H2

All Test sections print out a diagnostic message indicating the section was not run if the CUTEST questions received a 'C' (for cancel) response just prior to running the test.

1.1.1 T3705AA, T3705AB, AND T3705AC CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

Test sections T3705AA through AC primarily test the common controls and interface. The 3705 ROS bootstrap program responds to the functions of these 3 sections.

T3705AB, Routines 3 and 4, test HIO and TIO. These routines do not check the results of these tests if the CDS for the line being tested defines it as shared; OLTSEP will not have processed the command requested if the line is shared.

1.1.1.1 TEST SECTION T3705AA

Routine - 01 - Checks No-op Command

Issue a No-op command to the NSC address.

01001	Expected results
Condition code	01
First CSW status	0C00
Expected sense	00

Issue a No-op command to the ESC address.

01002	Expected results
Condition code	03

Routine - 02 - Checks Write IPL Command

Issue a Write IPL command with an invalid byte count of one to the NSC address.

02001 Expected results

Condition code 00
Ending status 0F00
Expected sense 02

Issue a Write IPL command with an invalid byte count of one to the ESC address.

The ESC address has not been enabled.

02002 Expected results

Condition code 03

Routine - 03 - Checks Illegal Commands

Issue all illegal commands to the NSC address on consecutive passes.

03001 Expected results

Condition code 00
Ending status 0E00
Expected sense 82

Routine - 04 - Checks Write Command

Issue the Write command to the NSC address that has not been initialized.

04001 Expected results

Condition code 00
Ending status 0E00
Expected sense 02

1.1.1.2 TEST SECTION T3705AB

Routine - 01 - Checks Read Command

Issue the Read command to the NSC address that has not been initialized.

01001 Expected results

Condition code 00
Ending status 0E00
Expected sense 02

Routine - 02 - Checks Write Break command

Issue the Write Break command to the NSC address that has not been initialized.

02001 Expected results

Condition code 00
Ending status 0E00
Expected sense 02

Routine - 03 - Checks Halt I/O Operation

This routine runs under OLTSEP only.

Issue a Halt I/O.

03001 Expected results

Condition code 01
Initial status 0000
Expected sense 00

Routine - 04 - Checks the Resulting Status of Test I/O

This routine runs under OLTSEP only.

Issue a Test I/O.

04001 Expected results

Condition code 00
first CSW status 0000
Expected sense 00

1.1.1.3 TEST SECTION T3705AC

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks the Transfer of Data Using Write IPL Command

Write 18 bytes of data with the Write IPL command. The ending status presented because of an invalid Write IPL command is Channel End, Device End, Unit Check and Unit Exception. This status is presented by ROS. The second 2 bytes of data transferred did not contain a count of 18.

01001	Expected results
Condition code	00
first CSW status	0F00
Expected sense	02

Routine - 02 - Test the ROS Generated Asynchronous status

Set attention equals yes, and issue a No-op command.

This is a manual intervention routine. The manual intervention option must be specified in the request for test or this routine is bypassed. A message to the operator requests 'Press the LOAD pushbutton on the 3705 control panel'.

If the LOAD pushbutton is not pressed within 60 seconds after the operator message, a timeout results. An error message presents the first CSW status as shown below, but the ending or second CSW status is zeros.

02001	Expected results
Condition code	01
first CSW status	0C00
Ending status	0600
Expected sense	00

1.1.2 T3705AD AND T3705AE CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

Sections AD and AE load a responder program, U3705A, into the 3705 which responds to their commands.

Before beginning T3705AD or AE, the 3705 responder is loaded into the 3705. When the responder is successfully loaded into the 3705, the bootstrap program ROS turns control over to the responder program. Failure to load successfully results in an error printout similar to those resulting from errors in normal test functions.

This section issues I/O commands to the NSC and ESC addresses.

1.1.2.1 TEST SECTION T3705AD

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

T3705AD and AE load a responder into the 3705. Upon successful loading of the responder program into the 3705 ROS bootstrap program gives control to the responder. Failure to load successfully results in an error printout similar to those resulting from errors in normal test functions. All commands in T3705AD are issued to the NSC address.

Routine - 01 - Checks Data Transfer With the Write Command

Write 4 bytes of data.

01001	Expected results
Condition code	00
first CSW status	0800
second CSW status	0400
Expected sense	00

Routine - 02 - Checks Data Wrap With the Write and Read Commands

Write and read 4 bytes of data.

Data read is compared for accuracy.

02001	Expected results
Condition Code	00
Initial status	0800
Ending status	0400
Expected sense	00

02002 Expected results.

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 03 - Checks 1 Byte Data Wrap

Write 1 byte of data.

03001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Issue a Read command with a byte count of 4.

Data is compared to verify 1 byte read.

03002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 04 - Checks 3 Byte Wrap

Write 3 bytes of data.

04001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Issue a Read command with a byte count of 4.

Data is compared to verify bytes read.

04002 Expected results.

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 05 - Checks data wrap with the write and read commands
Using Command Chaining

Issue a write command of 4 bytes chained to a read command of 4 bytes.

05001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

(A failure in this routine and not in other routines might be due to
chaining failure - suspect card 2342 at A4N2.)

Routine - 06 - Checks NSC status Byte

Issue a Write Break command with a byte count of 4.

The status presented here is not a valid presentation of status, but a
test of the ability to set status bits.

06001 Expected results

Condition code 00
First status CC00
Second status 0000
Expected sense 00

Routine - 07 - Checks for status Modifier, Control Unit End, and Busy

Issue a No-op command.

The responder sets up to present the initial and ending status as indicated below. As in the previous routine, this is a test for the ability to set status bits.

07001	Expected results
Condition code	01
Initial status	7000
Ending status	8400
Residual Count	00
Expected sense	00

1.1.2.2 TEST SECTION T3705AE

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks That a No-Op Command Causes Channel and Device End

Issue a No-op to the NSC address.

01002	Expected results
Condition code	01
first CSW status	0C00

Issue a No-op to the ESC address.

01003	Expected results
Condition code	01
first CSW status	0C00

Routine - 02 - Checks Data Wrap With the Write and Read Commands

Issue a Read command to the NSC address (18 bytes). Issue a wrap command to the ESC address (18 bytes).

02001	Expected results (NSC address)
-------	--------------------------------

Condition code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

02001 Expected results (ESC address)

Condition code 00
first CSW status 0C00
Expected sense 00

1.1.3 T3705AF CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AF is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing the type 4 channel adapter.

T3705AF uses responder modules, U3705I and U3705J. U3705I is loaded into the 3705 via an IPL command. Chained to the IPL is a write command to load U3705J.

U3705I loads U3705J at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705J. U3705J sets various mode states according to the routine being run.

T3705AF consists of eight routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a count with which to regulate the read byte count.

At the end of this test the routine requests and receives a count of the data written. An error message results if the count is wrong.

Routine 5 can be made to loop 256 times by entering EXT = L in the options field of the test request message to employ a longer wrap operation. The extra looping increases the run time for T3705AF from about 10-15 seconds to about 3 1/2 minutes.

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 -Checks Normal Mode Wrap Test

This routine writes a 16 byte message on the first test address and reads the message back on the second address. The wrap is made in normal mode - not extended buffer mode - inbound data/status interrupts occurs each time a 4 byte buffer is filled.

01002 Expected results from the write

Condition Code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

01002 Expected results from the read

Condition Code 00
first CSW Status 00C0
second CSW Status 0000
Expected Sense 00

Routine - 02 - Checks 36 Byte Data Wrap in Extended Buffer Mode.

This routine writes a 36 byte message on the first test address and reads the message back on the second address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

02002 Expected results from the write

Condition Code 00
Initial status 0800
Ending status 0400
Expected sense 00

02002 Expected results. from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 03 - Checks Recognition of ETB and ETX in EBCDIC Mode.

This routine writes a 36 byte message on the first test address and reads the message back on the second address. This wrap is made in extended buffer mode. The first Inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB. This causes the channel adapter to present channel stop to the responder. The write ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of two. On the second pass, the ETB is replaced with an ETX.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 04 - Checks recognition of ETB and ETX in USASCII Mode

This routine writes a 36 byte message on the first test address and reads the message back on the second address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB and causes the channel adapter to present channel stop to the responder. The write command ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of 2. On a second pass, the ETB is replaced with an ETX.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 05 - Checks The Recognition of DLE-STX.

A 72 byte message with the DLE-STX character sequence inserted after 36 Bytes is written. ETB and ETX characters are also inserted in the data following the DLE-STX sequence. The DLE-STX sequence causes channel adapter hardware to discontinue monitoring for control characters. The ETB and ETX characters should not cause an end to the write. All data written is read back on the ESC address.

The above is performed first in EBCDIC mode, and then in USASCII mode.

If EXT = L is entered in the Test Request Message, this routine will loop 256 times.

05002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

05002 Expected results from the read

Condition code 00
Initial Status 0C00
Ending Status 0000
Expected Sense 00

Routine - 06 - Checks the DLE Remembrance.

Two 36 byte messages are written on the native sub-channel address. The DLE is the last character of the first message. The STX is the first character of the second message. The responder, sees the DLE remember latch bit set because of the DLE. When the second write is recognized the responder sets this bit in register X'6C'. The arrival of the STX character then causes the hardware to discontinue monitoring for control characters. Subsequent control characters, not being recognized by hardware, should not cause the write to end.

A 72 byte read command is issued to the ESC address. All 72 bytes written by the 2 write commands are read back.

The above is performed first in EBCDIC mode followed by USASCII mode.

06002 Expected results from the Write

Condition Code 00
Initial Status 0800
Ending Status 0400
Expected Sense 00

06002 Expected results from the read

Condition code 00
First status 0C00
Second status 0000
Expected sense 00

Routine - 07 - Checks SYN Character Monitor Test (positive).

This routine writes a 16 byte message. The first pass has 4 EBCDIC SYN characters as the first 4 characters. The hardware was set to EBCDIC mode, disconnects from the channel, and present a level 3 interrupt to the responder. The responder presents ending status to the write if it sees the SYN Monitor bit set. On a second pass, the SYN characters and Mode are changed to USASCII Mode.

Because the write command is terminated after 4 bytes, a residual byte count of 12 results. The 4 bytes written are read and verified. The read command is also a 16 byte read and ends with a residual byte count of 12.

07002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Residual Count 0C
Expected sense 00

07002 Expected results from the Read

Condition code 00
First status 0C00
Second status 0000
Residual Count 0C
Expected sense 00

Routine - 08 - Checks SYN Character Monitor Test (negative).

This routine writes a 16 byte message. On the first pass, the 3705 is placed in EBCDIC mode. The first 4 bytes of the message are USASCII SYN characters.

The channel adapter hardware should not recognize a SYN character sequence. On a second pass of the test, the mode and the SYN characters are reversed. The results should be the same.

08002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Residual Count 00
Expected sense 00

08002 Expected results from the Read

Condition code 00
First status 0C00
Second status 0000
Residual Count 00
Expected sense 00

1.1.4 T3705AG CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AG is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing

the type 4 channel adapter.

T3705AG uses responder modules, U3705I and U3705K. U3705I is loaded into the 3705 via with an IPL command. Chained to the IPL is a write command to load U3705K.

U3705I loads U3705K at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705K. U3705K sets various mode states according to the routine being run.

T3705AG consists of four routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a 3705 storage address where the test message is to be written and read. This section tests the type 4 channel adapter C. S. mode.

At the end of this test the routine requests and receives a count of the data written. An error message results if count is wrong.

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Two-hundred-fifty Byte Wrap Test

This routine writes a 250 byte message on the first test address and reads the message back on the second address. The responder sets the channel adapter to the C. S. mode.

Condition code	00	first CSW status	0800
second CSW status	0400		
Expected sense	00		

01002 Expected results from the read

Condition Code	00
first CSW Status	0C00
second CSW Status	0000
Expected Sense	00

Routine - 02 - Checks 255 Byte Data Wrap

This routine writes a 255 byte message on the first test address and reads the message back on the second address. The responder sets up the channel adapter for C. S. mode.

02002 Expected results from the write

Condition Code 00
Initial status 0800
Ending status 0400
Expected sense 00

02002 Expected results. from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 03 - Checks The 512 Byte Wrap Test

This routine writes a 520 byte message on the first test address and reads the message back on the second address. The responder sets the channel adapter to C. S. mode. The count of 520 causes the channel adapter to require servicing three times from the responder. The first and second service is for 256 bytes each and the third is for the remaining 8 bytes.

This test makes two passes. On the second pass, the IBM 3705 storage address where the test message is written and read is changed from X'1000' to X'1001'.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

Routine - 04 - Checks the 520 Byte Wrap Test (to and from high storage)

This routine is similar to routine three. The differences are the responder receives and transmits back the test message from high storage, starting at address X'FF00. This test verifies setting the byte X address bits in the C.S. address register X'6E'. Prior to this test a four byte Write Break command sends the routine identification to the responder. The first two bytes identify the routine and the second two bytes define the 3705 storage address of the test message.

This routine makes 3 passes altering the test message address in the 3705 from X'FF00' to X'1FF00' to X'2FF00' respectively. If the 3705 storage is too small for these addresses, the responder defaults to an acceptable address.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0C00
Ending status 0000
Expected sense 00

1.1.5 T3705AH CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AH is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing the type 4 channel adapter.

T3705AH uses responder modules, U3705I and U3705J. U3705I is loaded into the 3705 via an IPL command. Chained to the IPL is a write command to load U3705J.

U3705I loads U3705J at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705J. U3705J sets various mode states according to the routine being run.

T3705AH consists of eight routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a count with which to regulate the read byte count.

At the end of this test the routine requests and receives a count of the data written. An error message results if the count is wrong.

Routine 5 can be made to loop 256 times by entering EXT = L in the options field of the test request message to employ a longer wrap operation. The extra looping increases the run time for T3705AH from about 10-15 seconds to about 3 1/2 minutes.

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks Normal Mode Wrap Test

This routine writes a 16 byte message on the nsc test address and reads the message back on the same address. The wrap is made in normal mode - not extended buffer mode - inbound data/status interrupts occurs each time a 4 byte buffer is filled.

01002 Expected results from the write

Condition code	00
first CSW status	0800
second CSW status	0400
Expected sense	00

01002 Expected results from the read

Condition Code	00
first CSW Status	0800
second CSW Status	0400
Expected Sense	00

Routine - 02 - Checks 36 Byte Data Wrap in Extended Buffer Mode.

This routine writes a 36 byte message on the nsc test address and reads the message back on the same address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

02002 Expected results from the write

Condition Code 00
Initial status 0800
Ending status 0400
Expected sense 00

02002 Expected results. from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 03 - Checks Recognition of ETB and ETX in EBCDIC Mode.

This routine writes a 36 byte message on the nsc test address and reads the message back on the same address. This wrap is made in extended buffer mode. The first Inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB. This causes the channel adapter to present channel stop to the responder. The write ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of two. On the second pass, the ETB is replaced with an ETX.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 04 - Checks recognition of ETB and ETX in USASCII Mode

This routine writes a 36 byte message on the nsc test address and reads the message back on the same address. This wrap is made in extended buffer mode. The first inbound Data/Status interrupt occurs when the 32 byte buffer is filled. The second Data/Status interrupt occurs with the remaining 4 bytes written and the occurrence of channel stop.

The 34th character in the message is an ETB and causes the channel adapter to present channel stop to the responder. The write command ends with a residual count of 2. The read command receives only 34 bytes and ends with a residual byte count of 2. On a second pass, the ETB is replaced with an ETX.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 05 - Checks The Recognition of DLE-STX.

A 72 byte message with the DLE-STX character sequence inserted after 36 Bytes is written. ETB and ETX characters are also inserted in the data following the DLE-STX sequence. The DLE-STX sequence causes channel adapter hardware to discontinue monitoring for control characters. The ETB and ETX characters should not cause an end to the write. All data written is read back on the SAME address.

The above is performed first in EBCDIC mode, and then in USASCII mode.

If EXT = L is entered in the Test Request Message, this routine will loop 256 times.

05002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

05002 Expected results from the read

Condition code 00
Initial Status 0800
Ending Status 0400
Expected Sense 00

Routine - 06 - Checks the DLE Remembrance.

Two 36 byte messages are written on the native sub-channel address. The DLE is the last character of the first message. The STX is the first character of the second message. The responder, sees the DLE remember latch bit set because of the DLE. When the second write is recognized the responder sets this bit in register X'6C'. The arrival of the STX character then causes the hardware to discontinue monitoring for control characters. Subsequent control characters, not being recognized by hardware, should not cause the write to end.

A 72 byte read command is issued to the NSC address. All 72 bytes written by the 2 write commands are read back.

The above is performed first in EBCDIC mode followed by USASCII mode.

06002 Expected results from the Write

Condition Code 00
Initial Status 0800
Ending Status 0400
Expected Sense 00

06002 Expected results from the read

Condition code 00
First status 0800
Second status 0400
Expected sense 00

Routine - 07 - Checks SYN Character Monitor Test (positive).

This routine writes a 16 byte message. The first pass has 4 EBCDIC SYN characters as the first 4 characters. The hardware was set to EBCDIC mode, disconnects from the channel, and present a level 3 interrupt to the responder. The responder presents ending status to the write if it sees the SYN Monitor bit set. On a second pass, the SYN characters and Mode are changed to USASCII Mode.

Because the write command is terminated after 4 bytes, a residual byte count of 12 results. The 4 bytes written are read and verified. The read command is also a 16 byte read and ends with a residual byte count of 12.

07002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Residual Count 0C
Expected sense 00

07002 Expected results from the Read

Condition code 00
First status 0800
Second status 0400
Residual Count 0C
Expected sense 00

Routine - 08 - Checks SYN Character Monitor Test (negative).

This routine writes a 16 byte message. On the first pass, the 3705 is placed in EBCDIC mode. The first 4 bytes of the message are USASCII SYN characters.

The channel adapter hardware should not recognize a SYN character sequence. On a second pass of the test, the mode and the SYN characters are reversed. The results should be the same.

08002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400

Residual Count 00
Expected sense 00

08002 Expected results from the Read

Condition code 00
First status 0800
Second status 0400
Residual Count 00
Expected sense 00

1.1.6 T3705AI CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705AI is a 3705 type 4 channel adapter test section and will not run on a type 1 channel adapter. However, T3705AA-AE are applicable to testing the type 4 channel adapter.

T3705AI uses responder modules, U3705I and U3705K. U3705I is loaded into the 3705 via with an IPL command. Chained to the IPL is a write command to load U3705K.

U3705I loads U3705K at X'800' in the 3705 storage and gives ending status to the I/O operation that loaded them; then transfers control to U3705K. U3705K sets various mode states according to the routine being run.

T3705AI consists of four routines. Each routine sends a 4 byte signal prior to a test. The signal identifies the routine and gives the responder a 3705 storage address where the test message is to be written and read. This section tests the type 4 channel adapter C. S. mode.

At the end of this test the routine requests and receives a count of the data written. An error message results if count is wrong.

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Two-hundred-fifty Byte Wrap Test

This routine writes a 250 byte message on the nsc test address and reads the message back on the same address. The responder sets the channel adapter to the C. S. mode.

01002 Expected results from the Write

Condition code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

01002 Expected results from the read

Condition Code 00
first CSW Status 0800
second CSW Status 0400
Expected Sense 00

Routine - 02 - Checks 255 Byte Data Wrap

This routine writes a 255 byte message on the nsc test address and reads the message back on the same address. The responder sets up the channel adapter for C. S. mode.

02002 Expected results from the write

Condition Code 00
Initial status 0800
Ending status 0400
Expected sense 00

02002 Expected results. from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 03 - Checks The 512 Byte Wrap Test

This routine writes a 520 byte message on the first nsc address and reads the message back on the same address. The responder sets the channel adapter to C. S. mode. The count of 520 causes the channel adapter to require servicing three times from the responder. The first and second service is for 256 bytes each and the third is for the remaining 8 bytes.

This test makes two passes. On the second pass, the IBM 3705 storage address where the test message is written and read is changed from X'1000' to X'1001'.

03002 Expected results from the write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

03002 Expected results from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 04 - Checks the 520 Byte Wrap Test (to and from high storage)

This routine is similar to routine three. The differences are the responder receives and transmits back the test message from high storage, starting at address X'FF00. This test verifies setting the byte X address bits in the C.S. address register X'6E'. Prior to this test a four byte Write Break command sends the routine identification to the responder. The first two bytes identify the routine and the second two bytes define the 3705 storage address of the test message.

This routine makes 3 passes altering the test message address in the 3705 from X'FF00' to X'1FF00' to X'2FF00' respectively. If the 3705 storage is too small for these addresses, the responder defaults to an acceptable address.

04002 Expected results from the Write

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

04002 Expected results from the read

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

1.2.1 T3705AA-AI TYPE 1 AND TYPE 4 CHANNEL ADAPTER ON-LINE TEST REQUIREMENTS

If initial attempts to run on line tests fail, check that a channel interface is enabled and that the 3705 is in an initial reset state. Ensure the 3705 is in the initial reset state by pressing the RESET and then the LOAD pushbuttons on the IBM 3705 control panel.

Then set the MODE SELECT and DIAGNOSTIC CONTROL switches in the PROCESS position and the DISPLAY/FUNCTION switch in the STATUS position.

Display B bits 0.2 and 0.3 should be on after pressing the RESET and LOAD push buttons to indicate that ROS has reached IPL phase 3. The LOAD light should be on. HARDSTOP, TEST, WAIT, and PROGRAM STOP should be off.

If the above conditions cannot be achieved, refer to "CE PANEL TEST" and "ROS TEST" in the IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

The test request message for the channel adapter on-line tests must include the 3705 native sub-channel address followed by the emulator sub-channel address.

T3705AA and AE test the NSC and ESC addresses. If only the NSC address is entered in the device field of the test request message, T3705AA will bypass that part of the test using the second address (the last half of routines 1 and 2).

T3705AE interrogates for a second address in the TRM and for emulator line definition in the NSC CDS. If either is missing, a message, (NO ESC ADDRESS DEFINED IN NSC CDS OR TEST REQUEST) is printed out and the test section is terminated.

EXAMPLE: R 01,'005,020/3705AA-AE/nfE/'

When an emulator line address is entered in the device field of "DEV/TEST/OPT/", DOS/OLTEP prints a "DVC NOT OP" message for that address. OLTEP performs a data protection function when the emulator

line address is not available. Condition code 3 results and the printout occurs.

Routine 2 of T3705AC requires manual intervention. The option 'MI' must be included in the test request message for this routine to be run.

If any of these OLT sections are run by reading them in from the card reader, U3705C must follow the first section called for in the test request message.

Test sections T3705AD and AE also require the 3705 responder program and U3705A, to follow each deck.

Upon termination, T3705AD through T3705AI, issue an invalid channel Write IPL command (4 bytes of zeros) to leave the 3705 in a ROS loaded state.

Routines 3 and 4 of T3705AB test the Halt I/O and Test I/O commands. These routines are run only under OLTSEP and are bypassed if the executive program is not OLTSEP. If these routines are requested, and the executive is other than OLTSEP, the start and terminate messages appear but the routines are not run.

T3705AF and AG require two addresses in the Test Request Message (TRM), these being the NSC followed by the ESC address. T3705AH and AI are virtually copies of the tests in AF and AG with the exception that all commands are issued to the NSC address. The reason for this is to provide these tests when the CA's are attached to selector channels and no ESC address is available. When this is the case, T3705AF and T3705AG cannot run.

1.3.1 T3705AA-AI TYPE 1 AND TYPE 4 CHANNEL ADAPTER ON-LINE TEST OPERATING INSTRUCTIONS

When the OLT detects an error (bad CSW, CC, Sense, Data, etc.), an error printout occurs at the host CPU printer. All pertinent information about the error that can be obtained by the OLT appears in the printout.

Should the error printouts report that no interrupt occurred from the 3705, refer to the Responder Error Displays at the end of this OLT section description.

When an interface control check causes a machine check, OLSTEP enters its WAIT state with an error code displayed in the instruction counter of

the CPU. The wait state error codes are defined in the OLTSEP Operator's Guide, D99-SEPDT. Such a machine check is catastrophic to OLTEP under OS or DOS. Running SEREP is the next logical step if such a failure occurred.

The message ID number for the failing section of the on-line test is printed in the first three digits of the test description (second line) of the DPRINT message. The test section numbers and the corresponding message ID numbers follow.

Test Section Number	Message ID Number
T3705AA	30-41
T3705AB	42-53
T3705AC	54-62
T3705AD	63-76
T3705AE	77-88
T3705AF	1-19 Type 4 Channel Adapter only
T3705AG	1-9 and 20-29 Type 4 Channel Adapter only
T3705AH	1-19 Type 4 Channel Adapter only
T3705AI	1-9 and 20-29 Type 4 Channel Adapter only

Refer to the following manual for a description of the error printout format:

DOS OLTEP SRL, GC24-5086 IBM System/360 Operating System On-Line Test Executive Program, GC28-6650 OLTSEP Operator's Guide, D99-SEPDT

1.3.1.1 INITIALIZATION MESSAGES

Responding to operator messages permit the operator to either cancel, proceed, or retry the requested OLT procedure.

THE STATUS OF THE 3705 CANNOT BE DETERMINED. ****WARNING**** CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER 'C' TO CANCEL CR 'P' TO PROCEED.

The OLT cannot determine the status (offline or stopline) of the 3705. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator/user has the responsibility of continuing by responding with a "C" or "P" as follows:

r id, 'C' (for Cancel)
OR
r id, 'P' (for Proceed)

Any other response results in the program repeating the last line of the above message. If after 5 responses the program still has not received a C or P, it prints:

INVALID RESPONSE AFTER 5 REQUESTS.

The program assumes the response of 'C' and terminates the OLT.

ALL 3705 ADDRESSES ARE NOT STOPPED OR OFFLINE. ****WARNING**** CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER 'C' TO CANCEL, OR 'R' TO RETRY.

The OLT has been notified by the executive that all 3705 addresses are not offline or stopped. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator/user is being given the opportunity to make all addresses available to the OLT using standard system facilities. He also has the responsibility of continuing by responding with a "C", or "R" as follows:

r id, 'C' (for Cancel)
OR
r id, 'R' (for Retry)

The "R" means the operator has been taking the addresses off line and wants the program to verify all units are now available to the OLT.

Any other response results in the program repeating the last line of the above message. If after 5 responses, the program still has not received a C or R, it prints:

INVALID RESPONSE AFTER 5 REQUESTS

The program assumes the response of 'C' and terminates the OLT.

If the Test Loop option is used, "DEV/TEST/OPT" should be entered via the console and not in the JCL stream. This minimizes the chances of OLTEP reloading the OLT section thereby reducing the need to reply to the "CANCEL/PROCEED" messages for each pass.

1.4.1 RESPONDER ERROR DISPLAYS

The following is a list and description for the responder error codes. The DISPLAY/FUNCTION switch must not be in the STATUS or TAR & OP positions. These error codes do not give error isolation but indicate that an error did occur. The program sets one of the codes below in Display B and sets hardstop. To continue, press the START pushbutton. If the FUNCTION SELECT switch is in FUNCTION 5, the program will not stop on type 1 channel adapter level 1 interrupts.

1.4.1.1 U3705A RESPONDER DISPLAY CODES

<u>CODE</u>	<u>MEANING</u>
C100	Level 1 interrupt not from CA type 1
C104	Level 1 interrupt from CA type 1
C10A	Undefined level 3
C10E	Undefined Initial Selection level 3 interrupt from type 1 CA
C110	Invalid command
C1FF	Looping in level 4 awaiting level 3 interrupt

1.4.1.2 U3705I RESPONDER DISPLAY CODES

<u>CODE</u>	<u>MEANING</u>
C200	Non CA L1 (CCU, CSB, Etc.)
C202	CA2 Selected for IPL, but L3 not Set
C203	CA1 Selected for IPL, but L3 not Set
C204	Unexpected CA L1
C20A	Unknown L3 (not timer, PCI, Panel or CAS)
C20E	Unknown CA L3 Interrupt
C210	Inbound Transfer when not Expected
C211	Inbound Transfer with Count of Zero
C212	Unexpected Command Received.
C2FF	Normal Display Code

1.4.1.3 U3705J AND U3705K RESPONDER DISPLAY CODES

<u>CODE</u>	<u>MEANING</u>
C200	Non Channel Adapter L1 (CCU, CSB, Etc.)
C202	CA2 Selected for IPL, but L3 not Set
C203	CA1 Selected for IPL, but L3 not Set
C204	Unexpected CA L1
C20A	Unknown L3 (Not Timer, PCI, Panel or CAS)
C20C	Branch to Zero Detected
C20E	Unknown CA L3 Interrupt
C210	Inbound Transfer when not expected
C211	Inbound Transfer with Count of Zero
C212	Unexpected Command Received
C2FF	Normal Display Code

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C212 Unexpected command Received
C2FF Normal Display Code

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IBM 3705 CHANNEL ADAPTER ON-LINE TEST T3705AA-AI**

**DCL-3705C-07
D99-3705C-04**

2.0 TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TESTS

2.1 T3705BA-BH TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TESTS DESCRIPTION

The 3705 type 2 and type 3 Channel Adapter on-line tests are comprised of the following OLT sections

T3705BA
T3705BB
T3705BC
T3705BD
T3705BE
T3705BF type 3 channel adapter only
T3705BG
T3705BH

An attempt to identify a fault with a card is made for the various results of the tests within these sections. The channel adapter circuit cards are in board A4 of the frame in which the channel adapter resides. The failure location to a card cross reference is as shown.

Board A4 is referred to as Z4 in the type 2 channel adapter logics and as W4 in the type 3 channel adapter logics.

Failure Symptom	Card	Location
Command Decode	6840	A4L2
Sense and status	6842	A4J2
	6838	A4N2
Byte Count	6839	A4M2
Data Check	6843	A4G2
		A4H2
Interface Control Check	6838	A4N2
Wide Spread Failures:		
Interface A Driver	6836	A4Q2, W4E2
Interface B Driver	6836	A4S2, W4E2
Interface A Receiver	6837	A4P2, W4D2, W4E2

Interface B Receiver	6837	A4R2, W4D2, W4E2
Misc. Circuitry	6844	A4F2
	6841	A4K2

All programs issue a Write IPL command and destroy any program being executed in the 3705. The sections that load a responder program into the 3705 terminate by issuing a Write IPL with 4 bytes of zeros to leave the 3705 in a ROS loaded state.

2.1.1 T3705BA AND T3705BB CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

Test sections BA and BB test the common controls and interface. The 3705 ROS bootstrap program code is used to respond to the functions of these 2 sections.

Routines 2 and 3 of T3705BB run only under OLTSEP and issue HIO and TIO commands. If the address being tested is defined as shared in the CDS, OLTSEP will not provide an expected return code of zero for the issuance of these commands. If these routines recognize a non zero return code and if the shared bit is set in the CDS, the error message is bypassed.

```
*****  
*  
* If the type 2 OLTs (T3705BA-BE) are run on a type 3 channel *  
* adapter, the other interface must be disabled. *  
* *  
*****
```

2.1.1.1 TEST SECTION T3705BA

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY
| 0400 MAY OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks the No-Op Command

Issue a No-op command.

01001	Expected results
-------	------------------

Condition code 01
Initial status 0C00
Expected sense 00

Routine - 02 - Checks the Write IPL Command

Issue a Write IPL command with a byte count of 2. The data is blank and is of no significance.

02001 Expected results

Condition code 00
Initial status 0800
Ending status 0700
Expected sense 02

Routine - 03 - Checks the Sense Command

Issue an illegal command.

03001 Expected results

Condition code 01
Initial status 0200
Expected sense 82

Issue a sense command.

03002 Expected results

Condition code 01
Ending status 0C00
Expected sense 82

Routine - 04 - Checks Illegal Commands

Issue all illegal commands on consecutive passes.

04001 Expected results

Condition code 01
Initial status 0200
Expected sense 82

Routine - 05 - Checks the Write Command

Issue a Write command.

05001 Expected results

Condition code 01
Initial status 0200
Expected sense 02

Routine - 06 - Checks the Read Command

Issue a Read command.

06001 Expected results

Condition code 01
Initial status 0200
Expected sense 02

2.1.1.2 TEST SECTION T3705BB

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY
| 0400 MAY OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks the Write Break command

Issue a Write Break command

01001 Expected results

Condition code 01
Initial status 0200
Expected sense 02

Routine - 02 - Checks Halt I/O Operation

This routine runs under OLTSEP only.

Issue a Halt I/O.

02001 Expected results

Condition code 01
Initial status 0000
Expected sense 00

Routine - 03 - Checks the Resulting status of a Test I/O

This routine runs under OLTSEP only.

Issue a Test I/O.

03001 Expected results

Condition code 00
Initial status 0000
Expected sense 00

Routine - 04 - Tests Data Transfer With a Write IPL Command

Write 18 bytes of data using the Write IPL command. The second 2 bytes of data sent by a valid Write IPL command contain the length of the data being sent. In this test step, the second 2 bytes do not equal 18 (the length of the data transfer). Therefore, the ROS bootstrap program maintains control and presents the status below.

04001 Expected results

Condition code 00
Initial status 0800
second CSW status 0700
Expected sense 02

Routine - 05 - Checks ROS Generated Asynchronous Status

This is a manual intervention routine. A message to the operator requests 'INITIAL PROGRAM LOAD FROM THE IBM 3705'. If MI is not in the option field of the test request message, this routine will be by-passed.

Issue a No-op.

05001 Expected results

Condition code 01
Initial status 0C00
Ending status 0600
Expected sense 02

2.1.2 T3705BC, T3705BD, AND T3705BE CHANNEL ADAPTER ON-LINE TESTS DESCRIPTION

Test sections T3705BC, BD and BE load a responder program, U3705B, into the 3705 which responds to their functions. Routine 4 of T3705BE issues HIO or TIO commands. If the address being tested is defined as shared in the CDS, OLTSEP will not provide an expected return code of zero for the issuance of these commands. If these routines recognize a non zero return code and if the shared bit is set in the CDS, the error message is bypassed.

The 2880 channel ignores the SLI bit in the CCW and sets the Incorrect Length status bit if the residual count of a read or write command is not zero. T3705BE 'AND's out this bit in the status word if it is on.

2.1.2.1 TEST SECTION T3705BC

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks Data Transfer With the Write Command

Write 18 bytes of data.

01001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 02 - Checks Data Wrap With the Write and Read Commands

Write 18 bytes of data.

02001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Read 18 bytes of data.

02002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 03 - Checks Data Wrap With the Write Break and Read Commands

Write 18 bytes of data.

03001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Read 18 bytes of data.

03002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

Routine - 04 - Checks Data Wrap Using Write and Read Commands Chained

Write command of 9 bytes chained to write command of 9 bytes chained to
read command of 18 bytes.

04001 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

2.1.2.2 TEST SECTION T3705BD

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY
| 0400 MAY OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks Communication Controller Generated Attention

Issue a Write Break command chained to a No-op command.

01001 Expected results

Condition code 01
Initial status 0C00
Ending status 8000
Expected sense 00

Routine - 02 - Checks Invalid CW in the Communications Controller

Issue a Write command of one byte.

02001 Expected results

Condition code 01
Ending status 0100
Expected sense 00

Issue a Read command.

02002 Expected results

Condition code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

Two bytes of data written at the beginning to identify the routine are expected to be read back.

Issue a Read command.

02003 Expected results

Condition code 01
Ending status 0100
Expected sense 00

Issue a write command to write 1 byte.

02004 Expected results

Condition code 00
first CSW status 0800
second CSW status 0400
Expected sense 00

Routine - 03 - Checks Breaking of Chained CCW's

Issue a write break command of 18 bytes chained to a write command of 18 bytes.

03001 Expected results

Condition code 00
Ending status 0500
Expected sense 00

Issue the above Write command again.

03003 Expected results

Condition code 00
Ending status 8400
Expected sense 00

Routine - 04 - Checks the Out Stop Control Word

Issue a read command to read 12 bytes.

04001 Expected results

Condition code 00
Initial status 0C00

Ending status 0000
Residual count 03
Expected sense 00

The data read is the first 6 bytes written.

Issue a read command to read 12 bytes again.

04002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Residual count 03
Expected sense 00

The data read is the first 6 bytes written.

2.1.2.3 TEST SECTION T3705BE

THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks Hardware Generated CE, DE, UC, Status and IR Sense

Issue a Read command of one byte.

01001 Expected results

Condition code 00
Ending status 0E00
Residual count 01
Expected sense 40

Routine - 02 - Checks the Busy Condition

This routine runs under OLTSEP only.

Issue a Write Break command to the address, sending an ID code to the responder for this routine. A Read command is issued after a 1 second delay.

02001 Expected results

Condition code	01
Initial status	1000
Ending status	0400
Residual count	01
Expected sense	00

Routine - 03 - Checks Communications Controller Program Abort

Issue a Read command.

03001 Expected results

Condition code	00
Ending status	0E00
Residual count	01
Expected sense	01

Issue a write command of 18 bytes.

03002 Expected results

Condition code	00
first CSW status	0800
second CSW status	0400
Residual count	00
Expected sense	00

This step verifies that the responder program is still functioning. If a failure is detected, the test section is aborted because the next routine would appear to fail because of a fault in this step.

Routine - 04 - Checks a Halt I/O to a Read Command

This routine runs under OLTSEP only.

Issue a read command of 64K bytes, (the skip flag in the CCW is set).

Issue a halt I/O command

04001 Expected results

Condition code	00
Resulting status	0C00
Expected sense	00

2.1.3 T3705BF TYPE 3 CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

OLT section T3705BF tests the unique features of the type 3 Channel Adapter interface. This OLT section should not be run on a type 2 Channel Adapter. T3705BF is a time dependant test. Routines 2 and 3 may erroneously report failure if system activity causes delay in the I/O activity of the test.

The loader program U3705M is loaded into 3705 storage starting at address X'400' by T3705BF. The responder program U3705E which responds to the commands of this test section is loaded starting at X'800'.

If a hardware failure is suspected, dedicated or nearly dedicated system time should be arranged so that the test can be run in a quieter environment.

Routine 4, the asynchronous interrupt test runs only under OLTSEP.

If only 1 address is available for test as in the case of a multi-processor installation, only Routine 1 is run.

T3705BF verifies the two states of the type 3 channel adapter interface. In the normal state, I/O activity may occur. In the alternate state, Busy status is presented to a command by one interface, normally, when the other interface is executing a command.

The two processor switch can best be tested if the test addresses of the A and B interfaces are different.

Testing for interaction between the 2 interfaces can only be performed in uniprocessor mode where the same CPU can access both interfaces. A UCB for each address must be entered on the test

request message. Only one address of an alternate path pair may be used because both addresses use the same UCB.

OLTEP does not provide multiprocessor support that allows testing on the channels of both CPUs concurrently. Therefore, if uniprocessor mode is not the testing environment, only one address (one interface) can be tested at a time. The OLT must be run in both CPUs to test both interfaces. The one interface test tests all logic on that interface except for the channel interface circuitry which handles the contention situation.

Testing both interfaces simultaneously has the possible advantage of catching a failure because of interaction or timing.

If only one interface is available for test, T3705BF will not test for the busy condition as the result of I/O activity on the other interface. The busy condition is set by the responder and reset after a delay. During this busy condition the OLT verifies the inability to successfully execute I/O commands to that interface.

If both interfaces are available for test, T3705BF tests for the busy condition as the result of I/O activity on the other interface. An I/O command is issued on 1 interface with the responder providing a delay between Channel End and Device end. During this delay, the OLT verifies an unsuccessful attempt to issue a read successfully to the address on the other interface. Under OLTEP the OLT verifies an expiration of time with no interrupt posted followed by the posting of Channel End and Device End separately.

If the 3705 type 3 Channel Adapter is attached to a multi-processor system dynamically testing both interfaces requires recabling so that one CPU has access to both addresses.

The interfaces may be connected to any combination of selector and/or multiplexor channels. If both interfaces are connected to the same multiplexor channel, the unit addresses must be different. The test will not run if the interfaces are connected to the same selector channel.

All routines go to an initialize subroutine before starting the test. On the first pass through initialization, certain steps are taken that are bypassed on subsequent passes.

The following are those initial steps:

1. Request for configuration data for a second address, if defined in the Test Request Message (TRM).

EXAMPLE: R 01,'106,207/3705bf/nfe/'

2. Check to see if PROCEED has been established via a procedure established to assure that no emulated lines are active that testing would disrupt.
3. Prompt the operator for interface ID (A or B), when running routine 1. The following message follows the start message:

XX MSG ID ENTER 3705 INTERFACE BEING TESTED. (A OR B).

The operator should respond with:

r XX,'A'
or
r XX,'B'

Where XX is the message ID preceding the above message and MSG ID is IFD101D if running under OLTEP, or MSG ID is SEP101D if running under OLTSEP.

4. Load the responder into the 3705. On each pass, the program determines if 1 or 2 addresses are in the TRM. Routines 2 and 3 are bypassed if 2 addresses are not in the TRM.

No printout occurs for Routines 2 and 3 unless failure occurs.

Read, write, and other work areas are housekept on every entry to the initialize subroutine.

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400
| MAY OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - (Sequence of events)

Type 3 channel adapter test on one interface.

1. Initialize.
2. Issue a write command of 4 bytes - (ABCD).

01000 Expected results

Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

3. Issue a read command of 6 bytes.
4. Verify the busy condition has been created by the responder.
 - a. If OLTEP is the executive, verify a time expiration followed by the posting of normal status.

01001 Expected results

Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

- b. If OLTSEP is the executive, verify that Busy is posted followed by Device End when the interface becomes available again.

01001 Expected results

Condition code	00
Initial status	1000
Ending status	0400
Expected sense	00

- c. A subsequent read command is issued when OLTSEP is the executive. Normal ending status is verified.

01002 Expected results

Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00
Expected data	C1C2C3C4XXXY

The XXXY digits are not known, but if bit 5 of byte XY is set, it defines interface 'A'. Bit 6, if set, defines interface 'B'. The XXXY typically appears as 2084 and the 4 defines interface 'A'. If XXXY were 2082, interface 'B' is defined.

- d. Verification that (ABCD) has been read. A sixth byte is interrogated to determine which interface was tested as indicated by the hardware. The program verifies the response agreed with prompting and reports discrepancies.

Either of the following messages print between the start and terminate message:

'TEST FOR BUSY AND NOT BUSY CONDITION VERIFIED ON INTERFACE X'
'TEST FOR BUSY AND NOT BUSY CONDITION FAILED ON INTERFACE X',

where X is A or B.

Routine - 02 - (Sequence of Events)

Type 3 channel adapter test on two interfaces.

1. Initialize.
2. Issue a write command of 4 bytes (BCDE) to first address.

02000	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

3. Issue a read command of 6 bytes to second address.
4. Verify the busy condition on the second address:
 - a. If OLTEP is the executive, verify a time expiration followed by the posting of normal status.

02001	Expected results
-------	------------------

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00
Expected data C2C3C4C5

- b. If OLTSEP is the executive, verify that Busy status is posted followed by Device End when the interface becomes available.

02001 Expected results

Condition code 00
Initial status 1000
Ending status 0400
Expected sense 00

- c. A subsequent read command is issued if OLTSEP is the executive.

02002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00
Expected data C2C3C4C5

- d. Verification is made that the message 'BCDE' is read and that normal ending status resulted.

Routine - 03 - (Sequence of Events)

Type 3 channel adapter test on two interfaces.

The sequence of events is the same for routine 2 except the addresses are reversed.

Routine - 04 - (Sequence of Events)

Type 3 Channel Adapter Asynchronous Interrupt Test.

No-Ops are issued to both addresses with ATTN=yes set. Verification is made that the one interface receives 2 interrupts and the other interface 1 interrupt.

Both addresses end with Channel End and Device End in the first CSW. One of the addresses gets a second interrupt with the Attention bit set in the status field.

2.1.4 T3705BG TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705BG tests the control command recognition capability. Test section T3705BG loads a responder program U3705F into the 3705 storage to respond to the commands issued by this test section.

In the five routines, three steps occur. The first step issues a Write Break command and sends X, A, B, C, or D to signal the responder how to respond to the Control command.

Steps 2 and 3 loop as the Control command is changed through all commands excluding legal and channel commands.

Routine 1 sends the letter X and the responder ends the Write Break command for the X. Routine 1 tests for the hardware being off as a result of being in an initial power on or reset state. Do not run routine 1 after routines 2, 3, or 4: the hardware will be turned on and routine 1 expects it to be off.

Routines 2, 3, and 4 send the letters A, B, and C respectively. Each of these letters results in having the responder turn the hardware on.

Routine 5 sends the letter D which causes the responder to turn the hardware off.

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

Routine - 01 - Checks for hardware reject of all but legal commands with the hardware off.

Issue a Write Break command (send the letter X)

01000 Expected results

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Condition code 00
First status 0800
Ending status 0400
Expected sense 00

Issue a control command.

01001 Expected results

Condition code 01
Initial status 0200
Expected sense 80

Issue an 8 byte read command.

01002 Expected results

Condition code 00
First status 0800
Ending status 0400
Expected sense 00

Verify the X Read back.

Routine - 02 - Checks for software acceptance of valid commands.

Issue a Write Break command (send the letter A)

02001 Expected results

Condition code 00
First status 0800
Ending status 0400
Expected sense 00

Issue a control command.

02001 Expected results

Condition code 00
First status 0800
Ending status 0400
Expected sense 00

Issue an 8 byte read command.

02002	Expected results
Condition code	00
First status	0800
Ending status	0400
Expected sense	00

The responder sends back 8 bytes. The first byte is the letter 'A', the 7th is the Control command. Bit 4 of the 5th byte should be on, the results of the control command issued in the previous step.

Routine - 03 - Checks software ending of control commands with Reject.

Issue a Write Break command (4 bytes, the first being the letter B)

03000	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

Issue a control command.

03001	Expected results
Condition code	00
First status	0800
Ending status	0600
Expected sense	80

Issue an 8 byte read command.

03002	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

Verify the letter B

Routine - 04 - Checks software ending of control commands with data check.

Issue a Write Break command (send the letter C)

04000	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

Issue a control command.

04001	Expected results
Condition code	00
Initial status	0800
Ending status	0600
Expected sense	08

Issue an 8 byte read command.

04002	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

Routine - 05 - Checks software turning the hardware off.

Issue a Write Break command (send the letter D)

05000	Expected results
Condition code	00
Initial status	0800
Ending status	0400
Expected sense	00

Issue a control command.

05001	Expected results
-------	------------------

Condition code 01
Initial status 0200
Expected sense 80

Issue an 8 byte read command.

05002 Expected results

Condition code 00
Initial status 0800
Ending status 0400
Expected sense 00

2.1.5 T3705BH TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TEST DESCRIPTION

T3705BH tests the channel chaining capability in a manner similar to the I/O application of NCP programming. T3705BH also tests the Command and Data chaining capability on the interface between host CPU and 3705 type 2 or type 3 channel adapter. The loader program U3705H is loaded into 3705 storage starting at address X'400' by T3705BH. The responder program U3705E which responds to the commands of this test section is loaded starting at X'800'. The responder receives and sends data from and to core location X'1000' in the 3705.

The 400 byte test message initially written by the OLT contains eight sets of the characters A-X preceded by the numeral 1 for the first set, 2 for the second set, etc. to 8 for the last. The chained CCW's handling the write are 3 writes and 1 write-break, each with a count of 100. Four 100 byte chained Read CCW's receive 300 of 400 bytes from the 3705. If routine 2 is run by itself, no 400 byte write occurs and the data read is zeros. Each routine loops 256 times.

Control commands begin the Write and Read sequences, X'31' or X'51' for the Write, and X'52' or X'32' for the Read. Each CCW is chained to a TIC, which in turn points to the next write or read CCW.

Routine 1 is a write only Routine. The Write sequence chains into a NOP, and the expected ending status is Channel End Device End.

Routine 2 is a read only routine. The last Read CCW is not chained and ends with Channel End initial status followed with Device End and Unit Exception.

The control words for the read operation in the responder cause the read operation of the second and fourth CCW's to end after 50 bytes of data transfer. This results in 300 bytes of data being read back of the 400 bytes written. In the data compare, the 100 bytes not read back are expected to be zero. Beginning with byte number 151 of the data read back, zeros are forced for 50 bytes. The data compare ends after 350 bytes.

In routine 3, the control command that begins the Write chain is changed from 31 to 51 to cause the responder to add Status Modifier status to the Write break command ending status. The status modifier status causes the channel to skip over the NOP CCW which follows the write break. This skip causes the channel to execute a TIC to the Read Chain, and the data is read back with the exception of the short data transfer of the second and fourth Read CCW's.

On alternate passes of routine 3, the control command, at the beginning of the read chain, alternates between X'52' and X'32'. The responder alternates the read ending status. When the Control Command is X'52', the ending status is Device End and Unit Exception. When the control command is X'32', the ending status for the read is Device End and Attention.

A typical failure reported would be an interface control check indicating a channel failure.

| THIS TEST SECTION MAY EXPERIENCE MERGED CHANNEL ENDING STATUS WHEN
| RUNNING UNDER 370/XA. I.E. EXPECTED STATUS OF 0800 FOLLOWED BY 0400 MAY
| OCCUR AS 0C00 IN ONE INTERRUPT INSTEAD OF TWO.

| THIS TEXT SECTION WILL NOT RUN UNDER THE VIRTUAL EQUALS VIRTUAL
| CONDITION.

The following is a forced printout of the test by routine 2. There are no errors here, just a display to show the CCW's, condition codes, CSW's, sense and Data. Should a printout similar to this occur, the fault might be found by comparing data expected and data received.

```
SEP1071 Options are NTL, NEL, NPP, NFE, NMI, EP, CP, PR, SI, NTR 01
SEP105D Enter Dev/Test/Opt/ R 01, '00A/3705BH//' SEP1581 S T3705BH Unit
000A
*T3705BH - 00 RTN 002    DEV/LN 000A    ECA 0    REFNUM 02001
  Check Chained Read Commands
```


F3C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F4C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F5C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F6C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F7C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F8C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F1C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F2C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F3C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F4C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F5C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F6C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F7C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7
F8C1C2C3C4C5C6C7C8C9D1D2D3D4D5D6D7D8D9E2E3E4E5E6E7

ROUTINE ABORT

SEP158I *T T3705BH UNIT 000A
SEP107I OPTIONS ARE NTL, NEL, NPP, NFE, NMI, EP, CP, PR, SI, NTR

2.2.1 T3705BA-BH TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TEST REQUIREMENTS

If initial attempts to run on-line tests fail, ensure that a channel interface is enabled.

Press the RESET and LOAD push buttons on the 3705 control panel to ensure that the 3705 is in initial reset state. Observe that bits 0.2 and 0.3 in display B on the 3705 control panel are on. This indicates that ROS has reached IPL Phase 3. The LOAD light should be on. HARDSTOP, TEST, WAIT, and PROGRAM STOP should be off.

Place the MODE SELECT and DIAGNOSTIC CONTROL switch in the PROCESS position and the DISPLAY/FUNCTION switch in the STATUS position.

If the above conditions cannot be achieved, refer to CE panel test and ROS test in the IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

The request for test message for these sections should be entered in the following format.

Example:

R 01, '005/3705ba-be/nfe/'

Routine 5 of test section T3705BB requires the manual intervention option in the test request message. Otherwise this routine is bypassed.

The first test section to run calls and executes a module identified as U3705D to determine if all lines on the 3705 are available. If this cannot be determined from the executive program, the program prompts the operator for proceed or cancel entry ('P' or 'C') on the operating console.

If any of these sections are run by reading them in from the card reader, module U3705D must follow the first section named in the request for test. Test section T3705BC-BE must have the responder program U3705B following them.

T3705BF uses a responder program U3705E instead of U3705B.

2.3.1 T3705BA-BH TYPE 2 AND TYPE 3 CHANNEL ADAPTER ON-LINE TESTS OPERATING INSTRUCTIONS

When the OLT detects an error (bad CSW, CC, sense, data, etc.), an error printout occurs. All pertinent information about the error that can be obtained by the OLT appears in the printout.

Should the error printouts indicate no interrupt occurred from the 3705 refer to the responder error displays. If a responder program has not been loaded, refer to ROS test procedure in the IBM 3705 Communications Controller Theory Maintenance Manual, SY27-0107.

When interface control checks cause a machine check, OLTSEP enters a wait state with an error code displayed in the instruction counter of the host CPU. The wait state error codes are defined in the OLTSEP Operators Guide, D99-SEPDT. These machine checks are catastrophic to OLTEP under OS or DOS. Running SEREP is the next logical step for such a failure.

The message number of the failing section of the on-line test is printed in the first three digits of the Test Description (second line) of the DPRINT message. The test section number and the corresponding message ID numbers follow.

Test Section Number	Message ID Number
T3705BA	100-114
T3705BB	115-127

T3705BC	128-139
T3705BD	140-153
T3705BE	154-166
T3705BF	167-188
T3705BG	189-204
T3705BH	205-218

Refer to the OLTSEP Operators Guide, D99-SEPDT for a description of the error printout format.

2.3.1.1 INITIALIZATION MESSAGES

Responding to operator messages permits the operator to either cancel, proceed, or retry the requested OLT procedure.

THE STATUS OF THE 3705 CANNOT BE DETERMINED. ****WARNING**** CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER 'C' TO CANCEL OR 'P' TO PROCEED.

The OLT cannot determine the status (offline or stopline) of the 3705. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator/user has the responsibility of continuing by responding with a "C" or "P" as follows:

```
r id,'C'   (for cancel)
  or
r id,'P'   (for proceed)
```

T3705BA-BE and BG provide a section ABORT message between the start and terminate message for each section if a 'C' response is entered. Any other responses result in the program repeating the last line of the above message. If after 5 responses the program has not received either a C or P, it will print:

INVALID RESPONSE AFTER 5 REQUESTS

The program assumes the response of 'C' and terminates the OLT.

ALL 3705 ADDRESSES ARE NOT STOPPED OR OFFLINE. ****WARNING**** CONTINUATION WILL CAUSE THE ENTIRE 3705 TO BECOME UNAVAILABLE. ENTER 'C' TO CANCEL, OR 'R' TO RETRY.

The OLT has been notified by the Executive that all 3705 addresses are not offline or stopped. If allowed to continue, the OLT destroys the contents and operational characteristics of the 3705. The operator has the opportunity to make all addresses available to the OLT using standard system facilities. The operator also has the responsibility of continuing by responding with a "C", or "R" as follows:

r id, 'C' (for Cancel)

or

r id, 'R' (for Retry)

The "R" means the operator has been taking the addresses off line and wants the program to verify that all units are now available to the OLT. Any other response results in the program repeating the last line of the above message. If after 5 responses the program has not received a C, or R, it will print:

INVALID RESPONSE AFTER 5 REQUESTS.

The program assumes the response of 'C' and proceed to terminate the OLT.

When using the test loop option it is recommended the DEV/TEST/OPT/ be entered via the console and not in the JCL stream. This minimizes the chances of OLTEP reloading the OLT section eliminating the need to reply to the CANCEL/PROCEED messages for each pass.

```
*****  
*                                                                 *  
* If T3705BA-BE are run on a type 3 channel                    *  
* adapter, the other interface must be disabled.              *  
*                                                                 *  
*****
```

2.4.1 RESPONDER ERROR DISPLAYS

The responder error codes do not provide error isolation but indicate that an error occurred. The program sets one of the codes below in display B and sets hardstop. To continue, press the START pushbutton. If the FUNCTION SELECT switch is set to FUNCTION 5, the program will not stop on type 2 CA level 1 interrupts.

2.4.1.1 U3705B TYPE 2 AND TYPE 3 CHANNEL ADAPTER OLT RESPONDER DISPLAYS

<u>CODE</u>	<u>MEANING</u>
C200	Undefined level 1 interrupts
C201	No CA selection during IPL
C202	Adapter number 2 selected level 3 request not from adapter number 2
C203	Adapter number 1 selected level 3 request not from adapter number 1
C204	Unexpected level 1 from type 2 CA
C20A	Unknown level 3 interrupt
C20B	Unknown CA number 2 level 3 interrupt
C2FF	Loop in level 4 awaiting a level 3 interrupt

2.4.1.2 U3705E AND U3705M TYPE 3 CHANNEL ADAPTER OLT RESPONDER DISPLAYS

<u>CODE</u>	<u>MEANING</u>
C200	Non-Channel Adapter Level 1 interrupt (CCU, CSB, etc.)
C201	Neither CA selected for IPL.
C202	CA2 selected for IPL, but Level 3 not set.
C203	CA1 selected for IPL, but Level 3 not set.
C204	Unexpected CA Level 1.
C205	CA1 Level 3 set, select CA1 failed.
C206	CA2 Level 3 set, select CA2 failed.
C207	Unexpected control Cmd received.
C20A	Unknown Level 3 interrupt.
C20B	Incorrect data transfer.
C20C	Branch to zero detected.
C20D	Level 3 CA, NO Cmd bit in register X'5C'
C20E	Neither interface active for CA Level 3 interrupt.
C2FF	Normal display.

2.4.1.3 U3705F AND U3705M TYPE 2 AND TYPE 3 CHANNEL ADAPTER OLT

RESPONDER DISPLAYS

CODE MEANING

C200 Non-Channel Adapter Level 1 interrupt (CCU, CSB, etc.)
C201 Neither CA selected for IPL.
C202 CA2 selected for IPL, but Level 3 not set.
C203 CA1 selected for IPL, but Level 3 not set.
C204 Unexpected CA Level 1.
C205 CA1 Level 3 set, select CA1 failed.
C206 CA2 Level 3 set, select CA2 failed.
C207 Unexpected control Cmd received
C20A Unknown Level 3 interrupt.
C20B Incorrect data transfer.
C20C Branch to zero detected.
C20D Level 3 interrupt from channel adapter without CMD bit.
C20E Neither interface active for CA Level 3 interrupt.
C2FF Normal display.

2.4.1.4 U3705G AND U3705H TYPE 2 AND TYPE 3 CHANNEL ADAPTER

RESPONDER DISPLAYS

CODE MEANING

C200 Non Channel Adapter Level 1 (CCU, CSB, etc.)
C201 Neither CA Selected for IPL
C202 CA2 Selected for IPL, but lev 3 not set.
C203 CA1 Selected for IPL, but lev 3 not set
C204 Unexpected C.A. level 1
C205 CA1 lev 3, Select CA1 failed.
C206 Channel adapter level 3, select channel adapter 2 failed
C207 Unexpected control Cmd received
C208 In CW Error
C209 Out CW Error
C20A Unknown Lev 3 (not timer, PCI, Panel)
C20B Incorrect data transfer.
C20C Branch No Zero Detected
C20D Level 3 CA, NO Cmd bit in register X'5C'
C20E Unknown Lev 3 interrupt
C2FF Normal Display

**IBM MAINTENANCE DIAGNOSTIC PROGRAM
IBM 3705 CHANNEL ADAPTER ON-LINE TESTS T3705BA-BH**

**DCL-3705C-07
D99-3705C-04**

**IBM MAINTENANCE DIAGNOSTIC PROGRAM
IBM 3705 CHANNEL ADAPTER ON-LINE TESTS T3705BA-BH**

**DCL-3705C-07
D99-3705C-04**