SUMMARY

TITLE

CC01 - 1410/7010 Limited CPU Instruction Set

PURPOSE

To test enough of the basic instruction set to read in and operate the tape control program.

It does not contain any error typeouts, loops, tad controls, or options to repeat. It is strictly a Go - No Go test that runs prior to the tape control program and halts on any error.

LOADING PROCEDURE

See Loading Procedures

SYSTEM AND CHANNEL CONTROL CARDS

None used

TADS

None used

EQUIPMENT

Minimum storage (10K)
One tape unit on any channel
Console Printer

TC50
SUMMARY 1
SEARCH

Condensed Directions For Running Programs From A TC50 Diagnostic System Tape.

I Loading

A. Ready TC50 tape on any tape drive 0.

B. Load via:

(1) Depress 7010 tape load button

or (2) a. ALTER addresses 00000-00011 to:

```
RL%B000011$.    If TC50 tape is on channel 1
XL¤B000011$.    If TC50 tape is on channel 2
3L?B000011$.    If TC50 tape is on channel 3
1L!B000011$.    If TC50 tape is on channel 4
```

b. COMPUTER RESET, START

II Searching

A. When TC50 Search types OPTION?,

ENTER:

(1) * Program identity, i.e., "CU01"
Designated program will be run in its entirety.

or (2) * Portion of program identity.
All programs having designated portion of the identity will be run in their entirety, i.e., if "C" were entered, all programs with a "C" identity would be run; if "CU" were entered, all programs with a "CU" identity would be run, etc.

or (3) Nothing. (Just request/release)
All programs on the tape will be run in sequence starting at the point the tape is located when this entry is made.

or (4) $

Entering a dollar sign will select the reliability option.

*NOTE: Normally when a program identity or a portion of a program identity is entered, the diagnostic source tape is rewound before the search of the tape is started. If a word mark is entered over the first character of the identity, this rewind will be inhibited.

B. Restarting Locations

(1) 00334

Starting at this address will cause "OPTION?" to by typed.

(2) 00400

This is the address where all diagnostic programs go when complete.

(3) 02000

This is the starting address of all diagnostic programs with the exception of some memory programs

TC50
SUMMARY 2
DUPLICATION
3-31-64

Condensed Directions For Duplicating A TC50 Diagnostic Tape.

I. Ready the TC50 Diagnostic Tape to be duplicated on any tape drive 0.

II. Ready from 1 to 20 blank tapes (outputs) on any tape drives.

III. Load TC50 Search from your tape drive 0, and select "TC50"

IV. TC50 Update will type its identity and several questions. As each question is typed, use the inquiry request button to enter answers as follows:

CORE SIZE? 0-10K, 1-20K, 3-40K, ETC.
Enter the core memory size of the system being operated on as follows:

"0" - 10K	"5" - 60K
"1" - 20K	"7" - 80K
"3" - 40K	"9" - 100K

CONTROL CARD SOURCE?
Request/Release

DIAGNOSTIC TAPE SOURCE?
Enter "E0", "F0", "G0", or "H0" to indicate the channel that the tape to be duplicate is on.

CARD IMAGE SOURCE?
Request /Release

AUTO EDIT? Y/N
Enter "N"

OUTPUT TAPE LOCATIONS?
Enter an "E", "F", "G" or "H" to indicate the first channel output tapes are located on, followed by the drive selections of all output tapes on that channel, followed by an "E", "F", "G" or "H" for the next channel output tapes are located on, followed by the drive selections of all drives on that channel, etc. i.e., "E24G5H79" would indicate output tapes on channel 1 drives 2 and 4, channel 3 drive 5, and channel 4 drives 7 and 9.

V. The duplication will now proceed.

VI. I/O Status Indicators

A. If a tape drive should unexpectedly become NOT READY, the duplication process will hang in a loop until the tape drive is made ready.

B. If a tape DATA CHECK should occur, the program will halt with the IAR at 00408.

START to backspace/ re-read or backspace/skip/re-write.

COMPUTER RESET & START to attempt to ignore the bad data.

VII. Halt with the IAR at 00773, the duplication is complete.

TC50
SUMMARY 3
UPDATE/EDIT

Condensed Directions For A Normal Field Update

The following procedures will produce -

- A new MASTER and a new EDITED WORKING TAPE if any control card or program changes are made.

- Only a new EDITED WORKING TAPE if no control card or program changes are made.

I. Ready your MASTER TC50 DIAGNOSTIC TAPE on any tape drive 0.

II. Ready an OUTPUT TAPE on any tape drive 1

III. If control card or program changes are to be made, ready a second OUTPUT TAPE on any tape drive 2.

IV. If configuration control cards are to be added to your tape-

- From cards, place them in your card reader and make it ready. (If a 7223 reader, place a blank card behind the control cards.)

- From tape, place the control card image tape on any tape drive 3, and make it ready.

V. If additions, deletions or patches to programs are to be made to your tape-

- From cards, place them in your card reader and make it ready. (If a 7223 reader, place a blank card behind the program changes)

- From tape, place the "change " card image tape on any tape drive 4, and make it ready.

VI. Load TC50 Search from your MASTER TAPE on tape drive 0, and select "TC50".

VII. TC50 Update will type its identity and several questions. As each question is typed, use the inquiry request button to enter answers as follows:

CORE SIZE? 0-10K, 1-20K, 3-40K, ETC.

Enter the core memory size of the system being operated on as follows:

"0" - 10K	"5" - 60K
"1" - 20K	"7" - 80K
"3" - 40K	"9" - 100K

CONTROL CARD SOURCE?

-If no control card changes - Request/Release

-If control card changes are from a 1402 or 1442 reader, enter "EC" or "FC" to indicate channel 1 or channel 2 reader

-If control card changes are from a 7223 reader, enter "EZ" or "FZ" to indicate channel 1 or channel 2 reader.

- If control card changes are from tape, enter "E3", "F3", "G3" or "H3" to indicate the channel the control card image tape is on. * If only 3 tape drives are available, see note on next page .

DIAGNOSTIC TAPE SOURCE?

Enter "E0, "F0, "G0", or "H0" to indicate the channel that your MASTER TC50 DIAGNOSTIC TAPE is on.

CARD IMAGE SOURCE?

- If no program changes - Request/Release

- If program change card images are from a 1402 or 1442 reader, enter "EC" or "FC" to indicate channel 1 or channel 2 reader.

- If program change card images are from a 7223 reader, enter "EZ" or "FZ" to indicate channel 1 or channel 2 reader.

-If program change card images are from tape, enter "E4", "F4", "G4" or "H4" to indicate the channel that the program change card image tape is located on. * If only 3 tape drives are available, see note below.

AUTO EDIT? Y/N
Enter "Y"

1 OUTPUT TAPES?
Enter "E1", "F1","G1" or "H1" to indicate the channel your output tape is on.

2 OUTPUT TAPES?
Enter "E", "F", "G", or "H" to indicate the channel of your first output tape, followed by "1", followed by "E", "F", "G" or "H" to indicate the channel of your second output, tape followed by "2". * If only 3 tape drives are available, see note below.

* NOTE: If only 3 tape drives are available, control card image tape, program change card image tape, and the second output tape may all use the same physical tape drive since none of these tapes are required simultaneously by TC50 Update.

VIII The Update / Edit operation will now proceed.

IX I/O Status Indicators

A. If a tape drive or card reader should unexpectedly become NOT READY, the Update/Edit process will hang in a loop until the I/O unit is made ready.

B. If a DATA CHECK should occur, the program will halt with the IAR at 00408

- If card read data check, correct problem, make the reader ready with the mis-read card in the hopper and START.

-If a tape data check, START to backspace/re-read or backspace/skip/ re-write. COMPUTER RESET & START to attempt to ignore the bad data.

X Halt with the IAR at 00687 , the Update/Edit operation is complete.

XI If "*LEVEL ERR" is typed, you are missing a previous update, or your present tape is at a higher level than the update.

SUMMARY

I. Card C021B001 is the System Control Card. This record must provide information to the program which indicates whether the CPU is a 1410 or a 7010, whether the European Edit Feature is in effect, and the CPU storage capacity. A minimum capacity of 40K is required by C021B.

II. Operation of the program begins immediately upon reading the last record. There is no request for standard TADs or special TADs.

III. The execution of subroutine Nos. 30.01 and 30.02 is optional, depending on the status of TAD 4. It should be set to a "1" once during the test. The execution of routine Nos. 32.00 and 33.00 depends on System Control Card information. These routines will be performed only if the control card indicates that the CPU is a 7010.

C022
SUMMARY
3/31/64

LOADING Standard 1410/7010 loading procedures.

TADS No TADS are required for operation. The following standard and special TADS may be used to alter program operation:

TAD	ADDRESS	NOT 1 (NORMAL)	1
0	01000	Normal Typeouts	Bypass typeouts for scoping. (Directions to operator are not bypassed.)
1	01001	No Loops	Loop Present Routine
2	01002	No Error Halts	Halt on Error
3	01003	Single Program Pass	Repeat Program
4	01004	Run Auto Section Only	Run Entire Program
5	01005	No Effect	Repeat the RESET-RESTART MODE routines in the Auto Section.

START AT 00030 Starting at address 30 will restart the last routine run.

START AT 02000 Starting at address 2000 will restart entire program.

START AT BEGINNING OF ANY ROUTINE You may restart the program at the beginning of any routine at any time.

SUCCESS INDICATIONS

1. C022C typed at beginning of program,
2. AND none of the below listed error indications,
3. AND END C022 AUTO or END C022 typed at the completion of the program.

ERROR INDICATIONS

1. ERR XXXXX typed, (XXXXX will be the address of an error halt. Directly following this halt in the listing will be an explanation of the error, and there will probably be a logic page and scope point.)
2. OR alarm stops, alarm typeouts or system check indicators not being as indicated by program typeouts,
3. OR error halt if TAD2 is a 1,
4. OR the lack of any of the above success indications.

I. LOADING PROCEDURES

Use the new standard 1410/7010 Loading Procedures.

I I OPERATING PROCEDURES

These programs may be executed in either of two Check Control modes: Normal or Restart. The recommended conditions under which each mode should be used are as follows:

Normal - During Scheduled Maintenance time and/or prior to execution test runs of CPU reliability and error-detection programs.

Restart - When exclusive memory errors are known to exist or suspected.

A. NORMAL CHECK CONTROL MODE

Console Switch Setting:

Check Control Switch	-	Normal
Print Control Switch	-	Normal

B. RESTART CHECK CONTROL MODE

Console Switch Settings:

Check Control Switch	-	Restart
Print Control Switch	-	Inhibited

Note: If and when Restart Mode is used, it is advisable to refer to the main writeup for more detailed operational information.

III PROGRAM RESTART PROCEDURES

For CS43 - Depress Computer Reset
Depress Start

For CS44-
CS46-

Depress Computer Reset.
Set Mode Switch to Address Set.
Depress Start.
Enter Address 22000 (for CS44)
42000 (for CS46)
Set Mode Switch to Run.
Depress Start.

IV TEST ALTERATION DIGIT SWITCHES (TADS)

Each TAD function, when set to 1, is as follows:

		Memory Locations		
		CS43	CS44	CS46
TAD 0	Bypass Normal and Error Typeouts	01000	21000	41000
TAD 1	Repeat Section	01001	21001	41001
TAD 2	Halt on Error (not used in the CS series)	01002	21002	41002
TAD 3	Repeat Program	01003	21003	41003
TAD 4	Automatic Section Selection	01004	21004	41004
TAD 5	Suppress Tabulation of Errors	01005	21005	41005
TAD 6	Error Table Output	01006	21006	41006
TAD 7	Print Immediate Errors and Table on Printer	01007	21007	41007
TAD 8	Bypass Sections 6-11 Discrimination	01008	21008	41008
TAD 9	Bypass Sections 6C-11C Complements	01009	21009	41009
TAD 10	Repeat Error Address	01010	21010	41010
TAD 11	Not Used	01011	21011	41011
TAD 12	Bypass Stack Regen Check	01012	21012	41012

V. NORMAL INDICATIONS OF SUCCESSFUL ERROR-FREE PROGRAM EXECUTION

1) CS43 - or CS44 - or CS46 -

2) (CS43) TESTS 20000-39999 AREA OF, or
TESTS 40000-x9999 AREA OF

(CS44)
(CS46) TESTS 00001-x9999 AREA OF

3) 40K or 60K or 80K or 100K Memory

4) QUICK RUN (If Quick Run Mode is called for.)

5) TAD STATUS -
---

6) S-01
S-02
S-03
S-04
S-05
S-06
S-06C
S-07
S-07C
S-08
S-08C
S-09
S-09C
S-10
S-10C
S-11
S-11C
S-12
S-13

7) PASS 001-CS43 or PASS 001-CS44, or 46.

VI ERROR INDICATIONS

A. IN NORMAL MODE

1) B Channel Check causing an "E" format printout and/or halt.

2) A-Y35004, C-Y15004 - Typical format example of a Section 05 error.

B. IN RESTART MODE

1) Typical format example of error in all sections except Section 05.

37906 ---≠ ---G ----D--- CH-3 SS-B Z-B XSG-0 XWO-6 YSG-7 YWO-9

2) A-Y19584, C-Y19 - Typical format example of Section 05 error.

Note: It is strongly recommended that if and when any of the above error indications are encountered, the main program writeup be used and referred to in order that the full facilities and spectrum of the test can be employed.

LOADING - New standard 1410/7010 loading procedures.

TADS - No TADS are required for operation. The following standard and special TADS may be used:

TAD	ADDRESS	NOT 1 (NORMAL)	1
0	01000	TYPED OUTPUT	BYPASS TYPED OUTPUT
1	01001	NO LOOP	LOOP ROUTINE
2	01002	NO ERROR HALTS	HALT ON ERROR
3	01003	1000 PASSES ONLY	CYCLE INDEFINITELY
4	01004	NO LOOP ON ERROR	ON ERROR, PROGRAM SETS TAD1 TO CAUSE ERROR ROUTINE LOOP
5	01005	NO PRINT EXTRA ERROR DATA	PRINT EXTRA ERROR DATA
6	01006	USE PROGRAMMED CONSTANTS	USE OPERATOR ENTERED CONSTANTS (PROGRAM SETS TAD7, AND CLEARS TAD6.)
7	01007	USE PROGRAMMED CONSTANTS	MAINTAIN PRESENT CONSTANTS AND BYPASS ROUTINES 2-45.
8	01008	CHECK INTERRUPT	BYPASS INTERRUPT CHECK

RESET AND START - This will restart program from beginning.

START AT 00008 - This will cause the typing of the present pass number, present applicable index register contents, and the present six constants, followed by a halt.

CU01
SUMMARY
3/31/64

SUCCESS INDICATIONS

1. CU01B typed when program is loaded,
2. AND none of the below listed ERROR INDICATIONS,
3. AND 1000 PASSES, 1000 OK typed after every 1000 passes.

ERROR INDICATIONS

1. *RT XXX, ADDR YYYYY, ERR typed. (XXX is routine number and YYYYY is error halt address.),
2. OR error halt if TAD2 is a 1,
3. OR any alarm indication,
4. OR 1000 PASSES, XXXX OK typed with "XXXX" differing from "1000".
5. OR the lack of any of the above SUCCESS INDICATIONS.

SUMMARY

SET UP

None

LOADING

Use Standard Diagnostic Loading procedure.
Refer to "1410/7010 Introduction", Volume 1.00 for assistance.

CONTROL

No manual intervention is required to run this test. Program operation can be altered at anytime using the "Program Alter Routine." TADs are loaded as blanks and TAD locations are only tested for 1.

STANDARD TADS

TAD	ADDRESS	NOT 1	1
TAD 0	01000	Do Not	Bypass Typeouts
TAD 1	01001	Do Not	Loop on Routine
TAD 2	01002	Do Not	Halt on Error
TAD 3	01003	Do Not	Repeat Program

SPECIAL TAD

TAD 4	01004	Do Not	Typeout Summary

SUCCESS INDICATIONS

No error typeouts and only the test identification, the "CLOCK TIME" and EOJ typed out.

ERROR INDICATIONS

All typeouts preceded by *s are error messages. Refer to the write-up, section 8.01.05.0 for more complete explanations of error typeouts.

LOADING New standard 1410/7010 loading procedures.

TADS No TADS are required for operation. The following standard and special TADS may be used.

TAD	ADDRESS	NOT 1 NORMAL	1
0	01000(00)	Typed Output	Bypass Typed Output
1	01001(01)	No Loop	Loop Routine
2	01002(02)	No Error Halts	Halt on Error
3	01003(03)	100 Passes Only	Cycle Indefinitely
4	01004(04)	Bypass Manual Routines	Execute Manual Routines

RESET AND START This will restart program from beginning if during the first 10 routines to test basic machine instructions. Will restart the last routine entered if during the main program loop.

SUCCESS INDICATIONS

1. "MO11A" and instruction to set compatibility switch to 1401 typed when program is loaded,
2. AND 2 Normal Halts occurring at locs. 2010 and 2018 .
3. AND instruction to set sense switches ON typed prior to Normal Halt at 6480 . (If TAD4 is a 1)
4. AND instruction to set sense switches OFF typed prior to Normal Halt at 6332 . (If TAD4 is a 1)
5. AND "PASS" and instruction to set compatibility switch to 1410/7010 Typed after 100 passes.

ERROR INDICATIONS

1. ERR XXX Typed (XXX is 3 digit representation of 5 position core address)
2. OR any Halt other than Normal Halts specified in section 2. XX. 04. 0
3. OR any alarm condition
4. OR the lack of any of the above SUCCESS INDICATIONS.

SUMMARY

TITLE

M012 - 1410/7010-1401 I/O Compatibility Test

PURPOSE

This program is designed to test the reliability of the 1410/7010 I/O while operating in 1401 mode. The following channel 1 I/O attachments are tested:

1402 Card Read-Punch
1403 Printer
729 and/or 7330 Tape

LOADING

Use new standard 1410/7010 loading procedure.

Note: Units to be tested should be made ready prior to loading of the program. Immediately after loading, non-ready units will be deleted from the control area. A 70 card reader test deck is required for reader check.

RESET AND START

After program has begun execution in 1401 mode and before typing PASS, reset and start will restart the program with the last routine entered. At halt after typing PASS, reset and start will return program to the loader if TAD3 is not 1 (no repeat) or will cause program to begin again with routine No. 1 if TAD3 contains 1 (repeat).

TADS

It is not necessary to enter any TADS for normal program operation. It is recommended, however, that an occasional pass of the program be made with TAD4 set to 1 to allow the execution of manual routines.

STANDARD TADS

TAD	Location			
TAD0	01000	OFF	$\overline{1}$	Allow error typeouts
		ON	$\underline{1}$	Bypass error typeouts
TAD1	01001	OFF	$\overline{1}$	Proceed to next routine
		ON	$\underline{1}$	Repeat the routine
TAD2	01002	OFF	$\overline{1}$	Bypass error halts
		ON	$\underline{1}$	Halt on error
TAD3	01003	OFF	$\overline{1}$	One pass of program
		ON	$\underline{1}$	Repeat the program

SPECIAL TADS

TAD	Location			
TAD4	01004	OFF	$\overline{1}$	Bypass manual routines
		ON	1	Execute manual routines

SEE PROGRAM WRITE-UP FOR DETAILS

SUMMARY

TITLE

M014 - 1410/7010-1401 Topsy Compatibility Test

PURPOSE

To provide 1401 compatibility tests for both CPU and I/O to supplement tests made in compatibility diagnostics M011, M012 and M013.

LOADING

Use new standard 1410/7010 loading procedure.

Note: Units to be tested should be made ready prior to loading of the program. Immediately after loading, non-ready units will be deleted from the control area.

86 CARD READER TEST DECK IS REQUIRED FOR READER CHECK

RESET AND START

After program has begun execution in 1401 mode and before typing PASS, reset and start will restart the program with the last routine entered. At halt after typing PASS, reset and start will return program to the loader if TAD3 is not 1 (no repeat) or will cause program to begin again with routine No. 1 if TAD3 contains 1 (repeat).

TADS

It is not necessary to enter any TADS for normal program operation. It is recommended, however, that an occasional pass of the program be made with TAD4 set to 1 to allow the execution of manual routines.

STANDARD TADS

TAD	Location			
TAD0	01000	OFF	$\overline{1}$	Allow error typeouts
		ON	1	Bypass error typeouts
TAD1	01001	OFF	$\overline{1}$	Proceed to next routine
		ON	1	Repeat the routine
TAD2	01002	OFF	$\overline{1}$	Bypass error halts
		ON	1	Halt on error
TAD3	01003	OFF	$\overline{1}$	One pass of program
		ON	1	Repeat the program

SPECIAL TADS

TAD	Location			
TAD4	01004	OFF	$\overline{1}$	Bypass manual routines
		ON	1	Execute manual routines
TAD5	01005	OFF	$\overline{1}$	Proceed within routine with next data

UNITS TESTED

CPU, 1402 Reader Punch, 1403 Printer and 729 or 7330 Tapes

SEE PROGRAM WRITE-UP FOR DETAILS

SUMMARY

SET UP

Load and set to READY status all units to be tested. If using tape, set to drive No. 1. Be sure that the channel 1 and channel 2 priority select on-off key is off.

LOADING

Use Standard 1410/7010 Diagnostic Loading procedure. Refer to "1410/7010 Introduction," Volume 1.00, for assistance.

CONTROL

Program operation can be changed at any time using the "Program Alter Routine."

STANDARD TADS

TAD	Address	1	Not 1
TAD0	01000	Bypass type	Type output
TAD1	01001	Loop	Do not Loop
TAD2	01002	Halt	Do not Halt
TAD3	01003	Repeat Prgm	Do not Repeat

Note: After any INQUIRY REQUEST testing of the device in process is terminated and the main program resumes with the next unit in the Ready Table.

To add a new unit to the test or drop one in use, the program must be restarted (RESET-START).

SUCCESS INDICATIONS

No error typeouts and "PASS" typed on completion.

ERROR INDICATIONS

Refer to program write-up Section 3.00.05.2.

SUMMARY OF DESCRIPTION

Summary of Operation

1. Place card numbers 1-128 behind TAD's (last program card.
2. If using 7223 Add 1 Blank Card at end of Test Deck.
3. Put in reader, press reader Start and EOF key.
4. Use loading procedures to read in program.
5. Punch control cards before running program. (See page 007)
6. Set asterisk insert switch ON.
7. Set priority ON-OFF switch ON, and dial reader if testing interrupt.
8. Omit step 7 if not testing interrupt.
9. Note " Pass ". This is the End.

Read Pre-punched Cards

Deck I (ripple) Checks	I/O Stat. Ind. Errs. Compare Errs. Interrupt Errs. Clutch latch-up Photocell Malfunction
Deck II (illegal) Checks	"No-expected-data-check" Errors. Interrupt Errs. Photocell Malfunction

THREE (3) CONTROL CARDS PROPERLY PUNCHED MUST BE USED WITH THIS PROGRAM.

SUMMARY

TITLE ST01 - 1410/7010 System Test

PURPOSE

Overall operating reliability of I/O units attached to 1410, 1410 accelerator or 7010 systems with 20K - 100K memories. Testing will be done in unoverlap and/or overlap(if available) modes. One to four channels or combinations thereof and their associated I/O units may be tested.

LOADING PROCEDURES

Refer to Loading Procedures.

SYSTEM AND CHANNEL CONTROL CARDS

This program must have the system and channel configuration punched correctly. (See 1410/7010 INTRODUCTION).

System Control Card	Card No. 001
Channel One Control Card	Card No. 002
Channel Two Control Card	Card No. 003
Channel Three Control Card	Card No. 004
Channel Four Control Card	Card No. 005

TADS

DO NOT ENTER ANY STANDARD OR SPECIAL TADS FOR NORMAL OPERATION. NORMALLY SET OFF (1).

STANDARD TADS

TAD	Location	Off (1)	On (1)
TAD 0	01000	Typeout	Bypass Typeouts
TAD 1	01001	Proceed to Next Routine	Repeat this Routine
TAD 2	01002	Bypass Error Halts	Halt on Error
TAD 3	01003	One Program Pass	Repeat Program

SPECIAL TADS

TAD 4	01004	Test in Unoverlap Mode	Bypass Unoverlap Mode
TAD 5	01005	Test in Overlap Mode	Bypass Overlap Mode

SUMMARY (continued)

UNITS TESTED

1415 Console Printer
1402 Reader/Punch
1442 Serial Reader
1403 Printer
729 and/or 7330 Tape Drives
1301 Files
1311 Impac Model V Disk and Control Unit and 1311 Model II

SEE WRITE-UP FOR DETAILS.

SUMMARY

TITLE

7010 System Test (40K minimum)

PURPOSE

A system reliability test for the purpose of exercising all available I/O units on all available channels simultaneously in the overlap and priority mode. Though written for 7010, it is compatible with 1410 on 1410 accelerator with a minimum core storage of 40K and the overlap and priority features.

LOADING PROCEDURES

Refer to Loading Procedures

SYSTEM AND CHANNEL CONTROL CARDS

This program must have the system and channel configuration punched correctly. (See instructions in introductory material)

TADS

Do not enter any standard tads for normal operation. Normally set off($\bar{1}$) Standard tads.

TAD	LOCATION	OFF($\bar{1}$)	ON(1)
TAD 0	01000	NOT USED	
TAD 1	01001	NOT USED	
TAD 2	01002	NOT USED	
TAD 3	01003	One program pass Repeat program	

NO SPECIAL TADS ARE USED.

DO NOT USE THE CONSOLE INQUIRY KEY DURING THE OPERATION OF THIS PROGRAM.

SUMMARY (continued)

UNITS TESTED

1415 Console Printer
1402 Reader/Punch
1442 Serial Card Reader
1403 Printer
729 and/or 7330 Tape Drives
7631/1301 Files

SUMMARY

SET UP

Load and set to READY status all units to be tested

LOADING

Use Standard 1410/7010 Diagnostic Loading procedure Refer to "1410/7010 Introduction" Volume 1.00, for assistance.

CONTROL

Program operation may be altered at any time by using the "Program Alter Routine." TADs are loaded as blanks and TAD locations are only tested for 1.

Standard TADs

TAD	Address	Not 1	1
TAD 0	01000	Do Not	Bypass Typeouts
TAD 1	01001	Do Not	Loop on Routine
TAD 2	01002	Do Not	Halt on Error
TAD 3	01003	Do Not	Repeat Program

Special TADs

TAD 4	01004	Do Not	Use Overlap
TAD 5	01005	Do Not	Use Priority

NOTE: After changing TAD 4 the test must be restarted to change the mode of operation. This can be accomplished by using RESET and START or ADDRESS SET to 02000.

SUCCESS INDICATIONS

The typeouts of the test identity ST03 followed by PASS with no error typeouts in between.

ERROR INDICATIONS

All typeouts except ST03 and PASS are error typeouts. In addition 3 programmed error stops are possible. Refer to PROGRAM STOPs, RESTARTS for further information.

SUMMARY

SET UP - Prior to loading test program, rewind and set to READY status, a drive. to be tested. Additional units on a channel can be added in ascending sequence.

LOADING - Use standard 1410 Diagnostic Loading Procedures. Refer to "1410/ 7010 Introductory Material" for additional information.

CONTROL - The following TADs are available for program control. None need be set in order to run the test.

TADs	ADDR	NOT 1	1
TAD0	01000	Do Not	Bypass Typeout
TAD1	01001	Do Not	Loop on Routine
TAD2	01002	Do Not	Halt on Error
TAD3	01003	Do Not	Repeat Program
TAD4	01004	Do Not	Bypass Overlap Mode
TAD5	01005	Do Not	Halt after 1 I/O Operation
TAD6	01006	Do Not	Rewind Unload
TAD7	01007	Do Not	Run LRCR Test
TAD8	01008	Do Not	Bypass Status Ind. Error typeouts.

Reset and Start - Start at the beginning of the routine in progress when RESET was pressed. Start at the beginning of the test after EOJ is typed.

SUCCESS INDICATIONS

Typeouts of tape drive identification and "PASS" with no asterisk typeouts in between.

ERROR INDICATIONS

All typeouts preceeded by asterisks are error indications.

Error Typeout formats

1. Status Indicator Set

*M%B109400W 4 05000
a b c

a. Instruction issued - Write
b. d-character bit of test and branch instruction used to test indicator -4- Data Check
c. Starting address of routine in progress. To repeat routine ADDRESS SET to this location.

SUMMARY Continued

ERROR INDICATIONS

Error Typeout formats

2. Some expected condition not met:

```
* ERROR     35       06000
         a             b
```

a. Error indication and code number for the condition not met. Refer to the program listing for explanation. (In the listing the error number is the Label of a Set Word Mark instruction.)
b. Starting address of routine.
To repeat routine ADDRESS SET to this address.

3. A "Not Ready", (1), indication or three successive errors in the first two routines(ERROR 01-ERROR 09) causes the testing of the drive to be terminated. This action is reported following the error typeout:

```
* DROPPED
```

4. The B-register bit pick up and A-register drop out test reports results in this manner:

```
* B 0325
* C-0980
* 1-1000

  ab c
```

a. Indicates bit (1248ABC)..
b. Blank indicates bits picked up.
Hyphen indicates bits dropped.
c. Indicates number of bits picked up or dropped.

SUMMARY

T021A TAPE MULTI-CHANNEL AND INTERCHANGE TEST

T021A may be run as a multi-channel test by looping the write or read pass. To test interchangeability, tapes may be interchanged at the completion of each read pass.

Loading Procedure

New 1410/7010 loading procedures: This is a two-phase program, the read phase will be read into memory automatically following completion of the write phase.

TADS

No TADS are required for operation. The following standard and special TADS may be used.

TAD	Address	Not 1 (Normal	1
0	01000	Type error	No error type on each data check or compare error.
1	01001	No loops	Loop
2	01002	No error halts	Halt on error
3	01003	One write or read pass	Repeat pass
4	01004	Use overlap	Don't use overlap
5	01005	Use odd parity	Use even parity
6	01006	Use move mode	Use load mode

Operating Hints

1. Before running the test:

   a. The drives to be used in the test must be made ready.

   b. Asterisk insert switch must be on.

2. TADS 4, 5, or 6 should be altered immediately before or after the typing of the ready table during the write phase. This is to insure proper initialization before writing starts.

3. TAD 5 and 6 should remain the same during the write and read phase. TAD 4 may be altered at the beginning of any read pass.

SUMMARY (continued)

4. Tapes must be written and read at the same density.

5. Summary typeouts follow each write and read pass. Typeouts for overlap and load mode failures are unconditional while individual error typeouts for data checks, wrong length record and compare errors are under control of TAD 0.

SUMMARY

TITLE: IRG Test

PURPOSE: Measure the time, in milliseconds, between records written on tape with varying go down times between the write instructions.

LOADING PROCEDURES:

Refer to Loading Procedures

SYSTEM AND CHANNEL CONTROL CARDS:

This program must have the system and channel configuration insert prior to running. (See 1410/7010 INTRODUCTION).

TADS:

NORMAL TADS

TAD	LOCATION	OFF (Ī)	ON (1)
TAD 0	01000	Normal Typeouts	Bypass Typeouts
TAD 1	01001	No loops	Loop
TAD 2	01002	No error halts	Halt on error
TAD 3	01003	One Program Pass	Repeat Program (Read Section Only)
	SPECIAL TADS		
TAD 4	01004	Not Used	
TAD 5	01005	Print Bad Gaps	Bypass Bad Gap Print
TAD 6	01006	No Tape Output	Output on Tape 0
TAD 7	01007	Type Averages	Type Graph

EQUIPMENT:

Basic System CPU - 1410, 1410 Accelorator, 7010.
1414 I/O Adapter
729 (Any model)
7330

SEE WRITE-UP FOR DETAILS

SUMMARY

SET UP

Set right and left hand margin selector tabs to their maximum positions, 0 and 85 on the margin scale, respectively.

LOADING

Use standard 1410/7010 Diagnostic Loading Procedure. Refer to "1410/7010 Introduction," Volume 1.00, for additional information.

CONTROL

The following Standard and Special TADs are available for program control. None need be set to run this test.

TADs	Address	Not 1	1
TAD 0	01000	Do Not	Bypass Typeouts
TAD 1	01001	Do Not	Loop on Routine
TAD 2	01002	Do Not	Halt on Error
TAD 3	01003	Do Not	Repeat Test
TAD 4	01004	Do Not	Typeout time to type 1 line (use only if system has overlap)
TAD 5	01005	Do Not	Select Test Pattern by letter

The following may be used in TAD 5 to select test patterns:

A Test A COLLATING SEQUENCE
B Test B ROCKING EXERCISE
C Test C ROLLING EXERCISE
D Test D TWISTING EXERCISE
E Test E WORDMARK ALIGNMENT
F Test F BANDWIDTH-ALIGNMENT
X Test X SELECTED CHARACTERS
Z THE END EOJ MESSAGE & B 400

SUCCESS INDICATIONS

No error typeout, test patterns A through F typed-all pass visual inspection, and the end of job message.

ERROR INDICATIONS

Only one error typeout is given:

*** DATA CHECK IN LAST LINE TYPED ***

All other error indications are in the form of incorrectly typed test patterns, character alignment and positioning, etc., and can only be found through careful visual inspection of the typed page(s).