

Diagnostic Engineering Publications

1410/7010

Subject: Diagnostic Program DA01D, DA03D, DA04E, DA05C

Sequence Number 313, 301, 309, 305

Replaces DA01C, DA03C, DA04D

- I The following programs have been updated effective April 15, 1964

Old Level	New Level
DA01C	DA01D
DA03C	DA03D
DA04D	DA04E

- II The DA05C Program is unchanged with this Update

- III The problems of selecting the Diagnostic or CE cylinders in the cylinder mode have been corrected in DA01D.

- IV A possible erroneous Nbt Ready Indication on the 1st pass through Rout 19 has been corrected in DA03D.

- V The portions of DA04D that overlayed at location 2000 have been corrected in DA04E. In addition a more extensive test of the I/O No-Op has been added in Routines 1 and 2.

- IV In the DA01 write-up, the Flag-a-Track procedure has been rewritten to clarify and alleviate the confusion created by the original write-up.

Enclosures: 300 Pages

Card Deck for CARD ONLY SYSTEMS (as punched by UP51)

Cards - Card Loader and Core Clear

Cards No.	Data Cards
Card	Execute Card

Distribution: 1410

7010

Other 1410/7010 Installations with 1301-7631

APR 15 1964

VI Description of Card Decks (Punched from Memory Dump Tape using UP51)

DA01D	L1A Card Loader	7	Cards 1-7
	Core Clear Card	1	Card N/A
	System & Channel Cards	5	Cards 001-005
	Data Cards	130	Cards 006-135
	Execute Card	<u>1</u>	Card N/Aa
	Program Total		
DA03D	L1A Card Loader	7	Cards 1-7
	Core Clear Card	1	Card N/A
	System & Channel Cards	5	Cards 001-005
	Data Cards	168	Cards 006-173
	Execute Card	<u>1</u>	Card N/A
	Program Total		
DA04E	L1A Card Loader	7	Cards 1-7
	Core Clear Card	1	Card N/A
	System & Channel Cards	5	Cards 001-005
	Data Cards	171	Cards 006-176
	Execute Card	<u>1</u>	Card N/A
	Program Total		
DA05C	L1A Card Loader	7	Cards 1-7
	Core Clear Card	1	Card N/A
	System & Channel Cards	5	Cards 001-005
	Data Cards	113	Cards 006-118
	Execute Card	<u>1</u>	Card N/A
	Program Total	127	Cards

APR 15 1964

4/15/64

7631 - 1301

**ADVANCED DISK FILE DIAGNOSTIC
PROGRAM PACKAGE**

To be used with 1410/7010 Systems

April 15, 1964

- * DA01D Home Address & Surface Test
- * DA03D 1301 - 7631 Reliability
- * DA04E Electronic Operation
- DA05C Mechanical

* Note: These programs have been altered with this
Up Date
These Programs use Channel and System Control
Cards. Please Read the Write Up Carefully.

006

INDEX

<u>Vol. Index</u>	<u>Title</u>	<u>Page</u>
6.01	7631-1301 PACKAGE WRITE-UP	
6.01.01	DESCRIPTION	001
6.01.02	OPERATING PROCEDURES	004
	System and Channel Cards	004
	Standard TADS	004
	Special TADS	005
	Program Control Options	005
6.01.03	OPERATING HINTS	009
6.01.04	PROGRAM STOPS AND RESTARTS	009
	Error Halts	009
	Normal Halts	009
	Automatic Restart Procedure	009
	Manual Restart Procedure	009
	Loading Procedures	010
6.01.05	TYPEOUTS	011
	Title	011
	Error Typeouts Standard Format	011
	Summary Typeouts	012
	End of Test Message	013
6.01.06	FLOW CHARTS	013
	Monitor Routine	014
	Channel Alter Routine	016
	Status Check Routine	018
	Error Control Routine	020
	Program Control Routine	022
	Alter Routine Sequence	024
	Test Routine Using Control Routines	026
	General Flow Chart of Standard Control Routines	028

008

INDEX (continued)

<u>Vol. Index</u>	<u>Title</u>	<u>Page</u>
6. 02	DA01 HOME ADDRESS AND SURFACE TEST	
6. 02. 00	DESCRIPTION	030
6. 02. 01	OPERATING PROCEDURE	030
	Switch Settings Previous to Running	030
	Special Requests	031
	Special TADS	032
	Special Options (Flag-A-Track)	032
	Standard Options Not Available	032
6. 02. 02	OPERATING HINTS	032
	Timing Considerations	032
	Cylinder Mode	033
	Entire Module Mode	033
	Alter Special TAD	033
6. 02. 03	PROGRAM STOPS	033
	Error Stops	033
	Normal Stops	033
6. 02. 04	TYPEOUTS	033
6. 02. 05	FLOW CHARTS	034
6. 02. 06	ROUTINE/ ERROR INDEX DA01	036
6. 02. 07	DA01 PROGRAM LISTING AND COMMENTS	037
6. 03	DA03 RELIABILITY TEST	
6. 03. 00	DESCRIPTION	080A
6. 03. 01	OPERATING PROCEDURE	080A
	Switch Settings Previous to Running	080A
	Special Requests	081
	Special TADS	081
	Standard Options	081
	Manual Mode	081
	Summary Typeout	081

INDEX (continued)

<u>Vol. Index</u>	<u>Title</u>	<u>Page</u>
6.03.02	OPERATING HINTS	082
	Selecting Manual Mode	082
	Reliability Run	082
	Alter Routine Sequence	082
6.03.03	PROGRAM STOPS	082
	Error Stops	082
	Normal Stops	082
6.03.04	TYPEOUTS	082
6.03.05	FLOW CHARTS	083-084
6.03.06	ROUTINE/ERROR INDEX DA03	085
6.03.07	DA03 PROGRAM LISTING AND COMMENTS	087
6.04	DA04 7631 ELECTRONIC TEST	
6.04.00	DESCRIPTION	149A
6.04.01	OPERATING PROCEDURE	149A
	Switch Settings Previous to Running	149A
	Special Requests	149A
	Special TADS	150
	Standard Options	150
	Manual Mode	150
	Summary Typeout	150
6.04.02	OPERATING HINTS	151
	Selecting Manual Mode	151
	Looping Routines	151
6.04.03	PROGRAM STOPS	151
	Error Stops	151
	Normal Stops	151
6.04.04	TYPEOUTS	152

INDEX (continued)

<u>Vol. Index</u>	<u>Title</u>	<u>Page</u>
6.04.05	FLOW CHARTS	152
6.04.06	ROUTINE/ERROR INDEX DA04	156
6.04.07	DA04 PROGRAM LISTING AND COMMENTS	159
6.05	DA05 MECHANICAL AND HYDRAULIC TEST	
6.05.00	DESCRIPTION	224A
6.05.01	OPERATING PROCEDURE	224A
	Switch Settings Previous to Running	224A
	Special Requests	224A
	Special TADS	224B
	Standard Options	224B
	Manual Mode	224B
	Summary Typeout	224B
6.05.02	OPERATING HINTS	224B
	Selecting Manual Mode	224B
	Power On Warm-Up	224C
6.05.03	PROGRAM STOPS	224C
	Error Stops	224C
	Normal Stops	224C
6.05.04	TYPEOUTS	224D
6.05.05	FLOW CHARTS	225
6.05.06	ROUTINE/ERROR INDEX DA05	226
6.05.07	DA05 PROGRAM LISTING AND COMMENTS	227
6.06	7631-1301 PACKAGE SUMMARY	269A
	Removable Summary Data	269C

7631-1301

PACKAGE WRITE-UP

6.01.00.0 DESCRIPTION

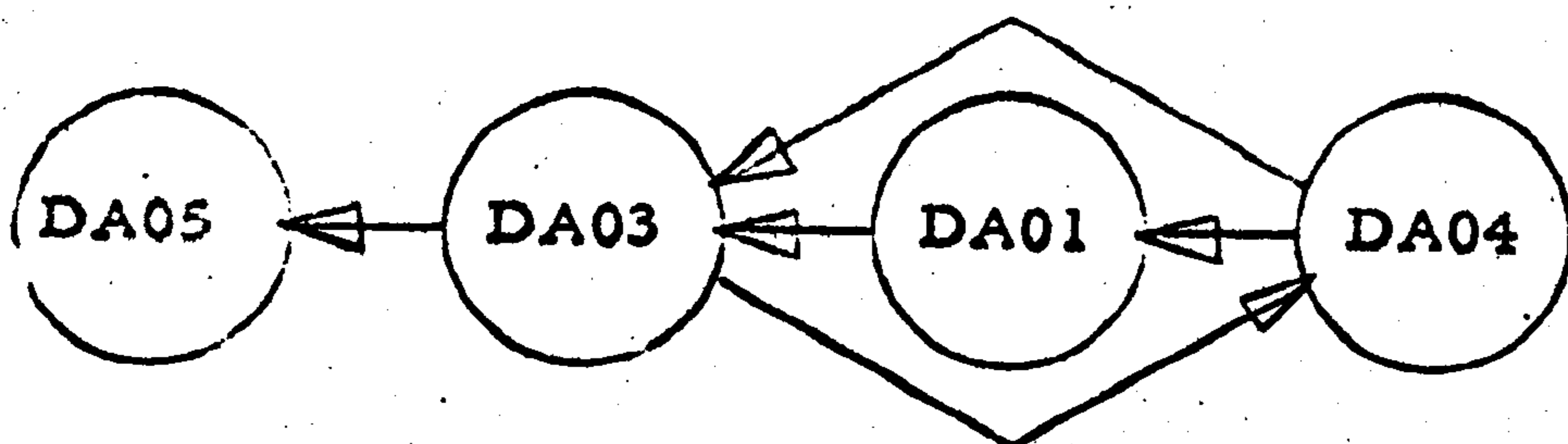
This package obsoletes the previous set of diagnostic programs used on the 7631-1301. The package makes use of control functions which are standard for all the programs in the set, making operation and utilization of the programs much easier.

The programs in this package are designed to test the 7631-1301 when attached to a 1410 or 7010 system. Each program tests a specific area and together the programs make up a diagnostic package.

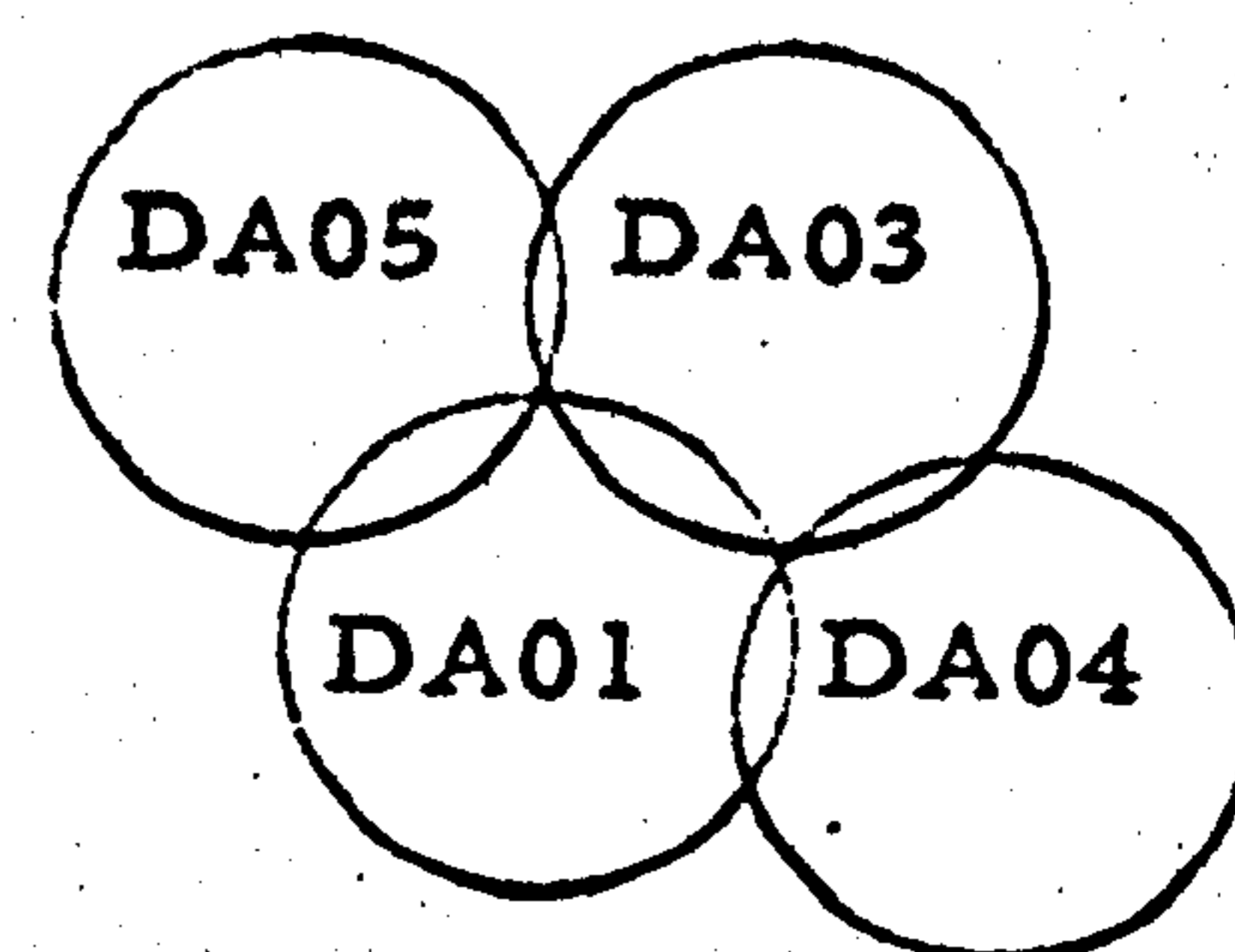
Program Functions

<u>New</u>	<u>Function</u>	<u>Old</u>
DA01D	Write HAI's Analyze Surfaces	DA01C
DA03D	Reliability Test of 7631-1301	DA03C
DA04E	Electronic Operation Test (7631)	DA04D
DA05C	Mechanical Test (1301)	DA05B

It is important to realize that these programs do overlap in scope, and this overlapping should be used to aid in determining which program to run next. Figure 1 will help in showing how the programs are to a degree inter-dependent and overlapping.



Inter-Dependent



Overlapping

6.01.00.0 DESCRIPTION (continued)

Being inter-dependent means certain programs assume correct operation of an area that is tested by another program. In this case DA04 is the only independent program, all others are dependent. This all points out the fact that the programs constitute one overall test of the 1301-7631 and understanding the general test philosophy will aid in learning the individual programs.

The package can be divided into four areas - utility, mechanical-physical, reliability, and electronic.

Utility is covered by the portion of DA01 which prepares the 1301 for usage by writing the home addresses and insuring they are correct. This is generally only run upon installation and may never be used again unless the home addresses are destroyed.

Mechanical-Physical - This area takes into account the condition of the 1301 access mechanism and the physical condition of the disk surfaces on the 1301. DA05 performs the necessary tests on the access mechanism while DA01 analyzes the disk surface.

Reliability - This makes a general test of the 7631-1301 as an operating device attached to the 1410-7010. DA03 is a test which should tell of trouble areas, including areas of priority and overlap.

Electronic - This area is covered by DA04 which makes a stringent test of the logic in the 7631-1301 and the lines from the 1410-7010 to the 7631. This program attempts to isolate troubles to the smallest possible area, starting with the simplest operation it builds upon the tested logic in order to test other logic.

Within each program is a set of small routines, each routine is to a large degree independent of the other routines in the program, but together the routines test one of the four areas previously described. By using this technique of breaking each program into small parts, the purpose and methods of a test should be easier understood.

6.01.00.0 DESCRIPTION (continued)

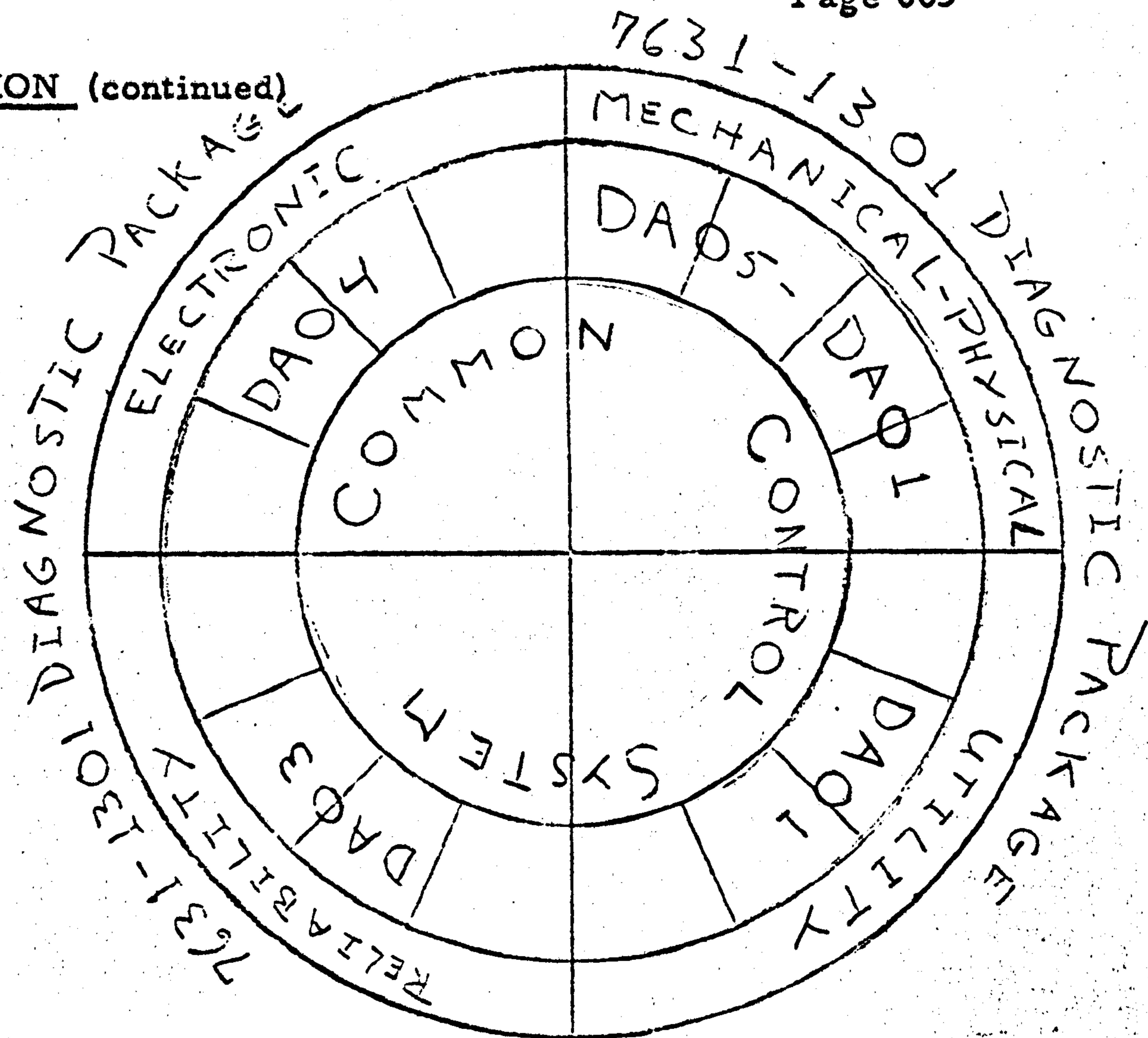


Figure 2 shows the overall package broken into the four areas of coverage, each area being tested by certain programs and each program broken into routines which test a part of the area. If memory space were available, the entire package could be written as one program, which would certainly simplify the operating procedures. Because this is impossible, a standard operating control system has been designed which is used by all the programs. This system encompasses the following areas, and the remainder of this write-up is devoted to it.

1. Loading Procedure
2. System and Channel Control Cards
3. Standard Pre-Set TAD's (1000-1003)
4. Standard Error Typeout Format
5. Standard Program Options
6. Standard Channel Alter Routine
7. Standard Looping Methods
8. Standard Type Routine
9. Standard Restart Procedures

The standard procedures outlined here will not be repeated in the individual program write-ups since these apply for every program.

014

DA01, DA03,
DA04, DA05

Page 004

6.01.02.0 OPERATING PROCEDURES

The following operating procedures apply to all programs in this package.

02.1 SYSTEM AND CHANNEL CARDS

All the "DA" series programs use system and channel control cards to provide information about—

- a. Overlap
- b. Priority
- c. Machine Type
- d. Channels Available
- e. Files Available
- f. Tapes Available

These cards must be pulled from the card decks and the proper data entered according to the procedure outlined in the 1410/7010 Introductory Material. The system and channel cards in each of these programs are numbered card 9, 10, 11, 12 and 13. Cards 12 and 13 apply only to a 7010 and may be discarded on a 1410.

02.2 STANDARD TADS (1000-1003)

The standard TAD's 1000-1003 are used by all the "DA" series programs. The TAD's are pre-set to "I" when the programs are initially loaded and are changed to a "1" setting only by manual intervention. Definition of standard TAD's is as follows:

	<u>Not 1</u>	<u>1</u>
01000 TAD 0	Allow error typeouts	Bypass error typeouts
01001 TAD 1	Do not Req loop after error	Req loop after error
01002 TAD 2	No error halts	No error halts
01003 TAD 3	Single program pass	Repeat program

Note: In the "DA" series programs TAD 1 = 1 does not mean unconditional looping; rather it means that after an error has occurred, the program will request if the CE wants to take action. At this point the CE may take any of the standard program options available. (These options are described later in the write-up.)

Also, TAD 2 = 1 has no meaning as there are no error halts in the "DA" series programs.

Methods for altering the TAD's are discussed later in this write-up under program options.

6. 01. 02. 0 OPERATING PROCEDURES (continued)

02.3 SPECIAL TAD's (1004-1012)

Every effort has been made to keep the special TAD's required to a minimum. When special TAD's are required, they will be pre-set to a 1 condition and may be altered by the CE when so desired. Refer to the individual programs for the definition of the special TAD's that it uses.

02.4 PROGRAM CONTROL OPTIONS

Each of the "DA" programs has a standard set of control options which are available to the CE through the I/O console printer. Using the Inquiry Request key the CE may interrupt the program and take any of the control options he desires. The following procedure is used to accomplish this.

- a. Press Inquiry Request key
- b. When the keyboard unlocks, enter
 - 1) Control option code desired
 - 2) Data required by the program to honor the request
- c. Press Inquiry Release key.

Providing a legal option has been requested, the program will immediately honor the request. If the option is illegal (it does not exist), the program returns to the read console operation, a legal option must be requested.

Table 1 shows the options available, and the code and data required to request the option. See control option definitions for details of each option.

Option	Code	Data Required-Enter
End of Test.	Blank	None
Alter TAD's (1000-1003)	1	Four new TAD settings desired (all 4 TAD's altered)
Alter Memory	2	Five-digit memory address to be altered
Alter Sequence of Routines	3	01, 03, 04, L Enter routine numbers separated by comma, last character is L or E
Loop a Routine	4	Five-digit starting address of routine to be looped
Loop an Instruction	5	Enter M or L, Ch code Char, Specific File Op, W or R, BOSIO Op Code, HA1, No. of Rec's, No. of Char's/Rec, Data Char, Rec Addr.
Restart	6	Five-Digit Memory Address to start at
Continue	7	None

TABLE 1

6.01.02.0 OPERATING PROCEDURES (continued)

Definition of Control Options

1. End Test - This option will terminate the test immediately unless TAD 3 = 1, in which case the program would restart from the beginning.
2. Alter TAD's - This option will alter the standard TAD's to those entered after the option code. This option will not alter any special TAD's.
3. Alter Memory - On this option the address to be altered is entered after the option code. After pressing release, the Inquiry Request is pressed again and the alteration is made. Special TAD's may be altered in this manner.
4. Alter Sequence of Routines - This option allows the CE to alter the sequence of the routines in a program. Each routine is numbered in the sequence in which they normally run, i. e., 01, 02, 03, etc., by selecting this option and entering 03, 01, 02, L, the program will run the routines in the requested sequence. A comma is entered between each routine number and the last character entered is an L or E.

L The program loops on routine sequence entered.

E The program returns to the program control option routine after one pass. CE now selects a new control option, i. e., continue.

Any group of routines or all of the routines may be selected in the sequence desired.

WARNING - Before using this option, one should be very familiar with the functions of the individual routines being selected.

5. Loop a Routine - This option causes the program to loop on the routine whose starting address was entered with the option code. When looping a routine, all error typeouts are bypassed and the loop is ended only by pressing Inquiry Request and selecting another option (probably the continue option).

6.01.02.0 OPERATING PROCEDURES (continued)

6. Loop an Instruction - Through this option the CE may cause the program to loop on anyone of five file operations with data fields of a format requested. The file operations which may be selected are:

Single Record Op
Track Record Op
Home Address Op
Track Record with Addresses
Write Format Op

Besides the control option code, the CE must enter the data required to build the one instruction loop and data field desired. This data must be entered in the following manner after the control option code.

- a. M for 6 bit mode
L for 8 bit mode
- b. % - Ch 1
 ⌘ - Ch 2 Unoverlap
 ? - Ch 3
 ! - Ch 4
 @ - Ch 1
 * - Ch 2 Overlap
 \$ - Ch 3
 # - Ch 4
- c. 1 for SRO
2 for TRO
5 for HAO
6 for TWA
7 for WFO
- d. W for Write
R for Read
- e. R Ch 1
X Ch 2
3 Ch 3
1 Ch 4
- f. 9#0088 - 9#5988 File Home Address (CE tracks only)
- g. 000 - 999 Number of Records desired
- h. 0000 - 2840 Number of Characters/Record

6.01.02.0 OPERATING PROCEDURES (continued)

6. i. X Any data character desired to be used in the records
- j. XXXXXX Any six-digit record addr desired. This addr will be incremented by 1 for each record.

NOTE: When using this option the CE should be aware of the limitations on the number of records versus the number of characters. Knowledge of the existing format track or rewriting the format track (use this option) is necessary to insure valid operation. Once the program enters this loop, the Inquiry Request must be used to exit from the loop. Then another option must be selected, most likely the continue option would be selected. No errors are indicated while in this loop.

7. Restart at Desired Memory Location - This allows the CE to begin at any point in the program by entering the memory location at which the restart is desired. To restart a program from the beginning, always enter 02000.
8. Continue from Point Where Program was Interrupted - This allows the CE to cause the program to continue in a normal fashion after interrupting it for looping purposes or accidentally pressing the Inquiry Request.

The program control options described here are available at any time and should be used as much as possible for aids in troubleshooting.

The control option "Alter Sequence of Routines" will not be available in programs which do not lend themselves to this option. Refer to individual program write-ups for this information.

In addition to the standard options, a program may have a special purpose option available; again refer to the individual program write-ups for this information.

When TAD 1 = 1 (request action after error), the CE may take any of the control options available by using the procedures outlined here after an error has occurred.

6.01.03.0 OPERATING HINTS

Read and understand the package write-up and program write-ups.

- 03.1 The alter memory option and loop a routine option could be used to alter a routine for some condition and then loop on the routine altered for troubleshooting the bug.
- 03.2 Several options may be selected sequentially by pressing Inquiry Request immediately after pressing Release for a selected option.
- 03.3 To restart a program from the beginning, use option 6 and a starting address of 02000.
- 03.4 The programs in this package require switch settings before the program is run. Be certain these switches are set. Refer to the program write-ups for details.
- 03.5 Any routine may be bypassed by altering the first instruction of the routine to an unconditional branch to the exit (or last instruction) of the routine.

6.01.04.0 PROGRAM STOPS AND RESTARTS

The following stops and restart procedures apply to all programs in this package.

04.1 ERROR HALTS

There are no program halts due to error results; TAD 2 = 1 has no meaning in this package of programs.

04.2 NORMAL HALTS

The programs may have normal halts to allow for switch settings; if so, they will be defined in the individual program write-ups.

04.3 AUTOMATIC RESTART PROCEDURE

By setting the check control switch on the console-CE-Test-Panel to Reset and Restart, the programs will automatically restart after a 1410/7010 alarm condition. This can be used to great advantage when looping a routine or instruction which is causing an alarm condition. Furthermore, this technique can be used to insure that once a program is started, it may be left unattended without fear of stopping because of alarms.

04.4 MANUAL RESTART PROCEDURE

If the check control switch is not used and an alarm condition is encountered, the program can be made to continue by pressing Computer Reset and Start.

020

DA01, DA03,
DA04, DA05

Page 010

6.01.04.0 LOADING PROCEDURES

04.1 FROM CARDS (Load Program LIA preceding Card Deck)

A. 7010-1410 without Load Button.

1. Display Memory Location 00000
2. Alter to

```

VV          V
RL%1100011$.
V
X  □
Y  ?
V
I  !

```

Enter according to channel location
of the card reader.

3. Set to Run, Computer Reset and Start.

B. 7010 with Load Button

1. Computer Reset
2. Depress Load Button

04.2 FROM TAPE (80 Character Master or Memory Dump Tape)

A. 7010-1410 without Load Button

1. Display Memory Location 00000
2. Alter to

```

VV          V
RL%B000011$.
V
X  □
Y  ?
V
I  !

```

Enter according to channel location
of the tape drive.

3. Set to Run, press Computer Reset.

B. 7010 with Load Button

1. Computer Reset
2. Depress Load Button

6.01.05.0 TYPEOUTS

The standard typeouts for all the "DA" series programs are as follows:

05.1 TITLE

The first typeout will be the five-digit program identification.

Example: DA01C

05.2 ERROR TYPEOUTS STANDARD FORMAT

- a. All errors will be preceded by "ROUTINE N00." This identifies the failing routine.
- b. All status errors, errors indicating status condition on the I/O device, will appear in this format:

```
*Error       00000       M%F099999W       1248AB
```

```
      1)           2)           3)           4)
```

- 1) Error Flag
- 2) Starting address of failing routine
- 3) Failing instruction
- 4) Status indicator that was on

1	Not ready
2	Busy
4	Data Check
8	Ext. Cond.
A	No transfer
B	Wrong length record

- c. All program detected errors, errors for which the computer does not give an indication of error, will appear in the following format. Refer to program listing for explanation of error.

```
*Error       01 02       00000
```

```
      1)           2)           3)
```

- 1) Error Flag
- 2) Error(s) detected during routine
- 3) Starting address of failing routine

6. 01. 05. 0 TYPEOUTS (continued)

- d. Combinations of status errors and program detected errors will appear in this format:

```
*Error 01 00000 M%F099999W 1248AB
```

- e. Any data which may be pertinent to the error, i. e., file address, may appear as the third line of the error message. This is not standard and will be given only as required. (See individual program write-ups.)

- f. If TAD 1 = 1 (request loop after error), the following will appear; it will be the last line of the error message.

```
REQ ERROR ACTION
```

- g. The maximum error message would look like this:

```
ROUTINE N00  
*Error 01 00000 M%F099999W 1248AB  
PERTINENT DATA  
REQ ERROR ACTION
```

05.3 SUMMARY TYPEOUTS

Programs which may be run in a reliability mode for long periods of time will give a summary of errors. This summary will be given when:

- a. A specific error has occurred ten times
- b. The test is terminated.
- a. In the case where a specific error has occurred ten times, the following is typed:

```
"ERR00 COUNT 10"
```

The program continues automatically after this typeout.

6.01.05.0 TYPEOUTS (continued)

- b. When the program is terminated (manually or by the program itself), a complete summary of errors is typed.

"ERROR COUNT"

"00 6"

"01 4"

"07 3"

etc.

"NR BY DC EC NT WLR"

" 0 3 1 6 0 12 "

The first table indicates the number of times a program detected error occurred. This total should be added to the "10 COUNT" typeouts for any specific error.

The second table is the number of times any of the status indicators were found to be on.

NOTE: The summary is given whether or not TAD 0 is set to 1. This allows normal error typeouts to be bypassed without a loss of information. Refer to the individual programs for information on the availability of the summary typeout.

05.4 END OF TEST MESSAGE

When the program is complete or has been terminated, the word "PASS" is typed out before transferring to the load program.

NOTE: All messages are given on the typewriter.

6.01.06.0 FLOW CHARTS

The following pages contain flow charts of the control routines which are common to all the programs in this package. With each flow chart is a short description of the routine. By understanding these routines, a basic knowledge of the control for all the programs is gained.

06.1 MONITOR ROUTINE

This routine is used by all programs and is entered after each test routine is completed. It serves the following functions:

- A. Checks for manual intervention requests.
- B. Checks for looping of a routine and returns to start of routine being looped.
- C. Allows the error routine to check for errors that may have occurred.
- D. Checks if the "alter sequence of routines" option has been selected. If it has, monitor gives control to the sequence control routine.
- E. Determines if test routine was completed or if test routine encountered an error which it requested be indicated immediately. After making this decision, it returns to the next instruction in the routine or goes to the start of the next routine.

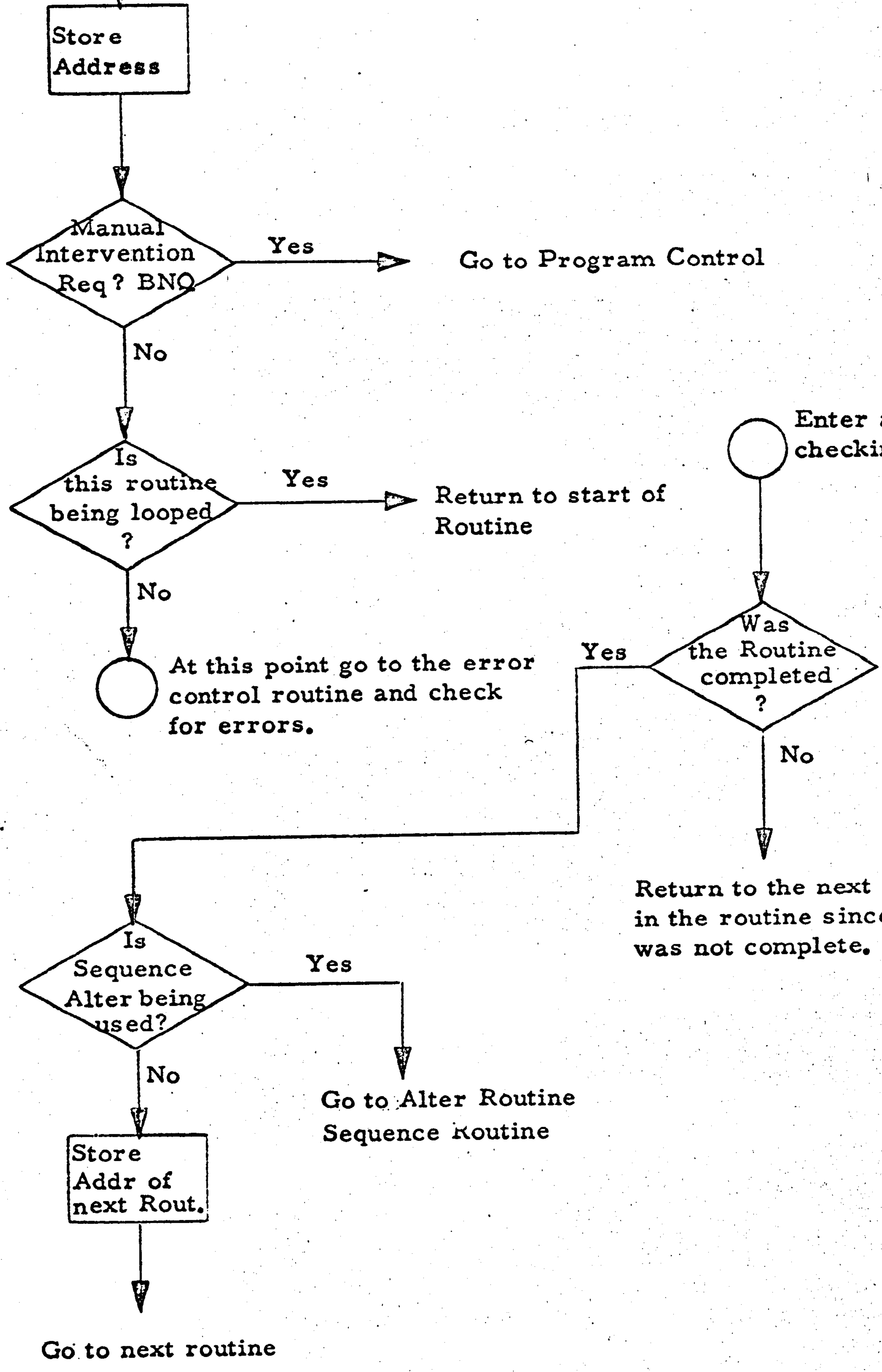
025

DA01, DA03,
DA04, DA05

Page 015

MONITOR ROUTINE

Enter here from
Test Routine



06.2 CHANNEL ALTER ROUTINE

The channel alter is used by all the diagnostic programs in this package to initialize themselves for operation on channel 1, 2, 3 or 4.

The routine which needs to be initialized branches to the channel alter routine; immediately following the branch are constants which define the Hi and Low limits of memory to be altered and the characters required to alter for a given channel. This data is used by the alter routine which scans from the Hi limit to the Low limit in memory altering the following instruction according to the channel desired.

1. The branch-on-status indicator-on instructions are changed to

R	Ch 1	3	Ch 3
X	Ch 2	1	Ch 4

2. The Hi order position of the X-Ctl field is changed to

%	Ch 1		@	Ch 1	
□	Ch 2		*	Ch 2	Overlap
?	Ch 3	Unoverlap	\$	Ch 3	
!	Ch 4		#	Ch 4	

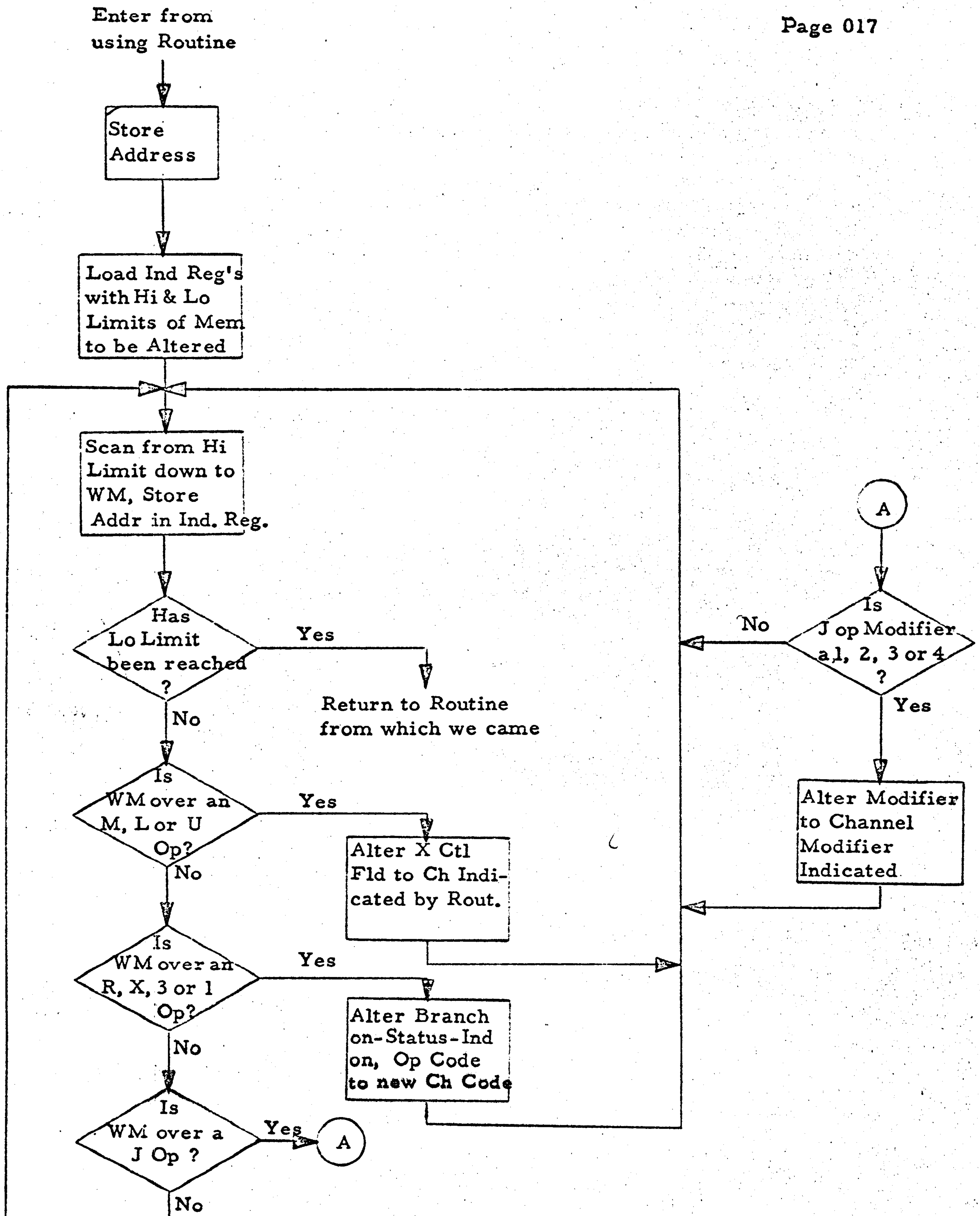
3. The branch on overlap in process modifier is changed to 1, 2, 3 or 4 according to the channel.

CHANNEL ALTER ROUTINE

DA01, DA03,
DA04, DA05

027

Page 017



029

DA01, DA03,
DA04, DA05

Page 018

06.3 STATUS CHECK ROUTINE

All programs use this routine to determine which of the six indicators is on. When a test routine encounters an unexpected status error, it branches to the status check routine. Here each indicator is checked for the on condition and a total is kept for each time a specific indicator comes on. Coded characters are placed in the print field for each indicator found on, and the status check routine finally branches to the error control routine where the error will be typed out.

029

STATUS CHECK ROUTINE

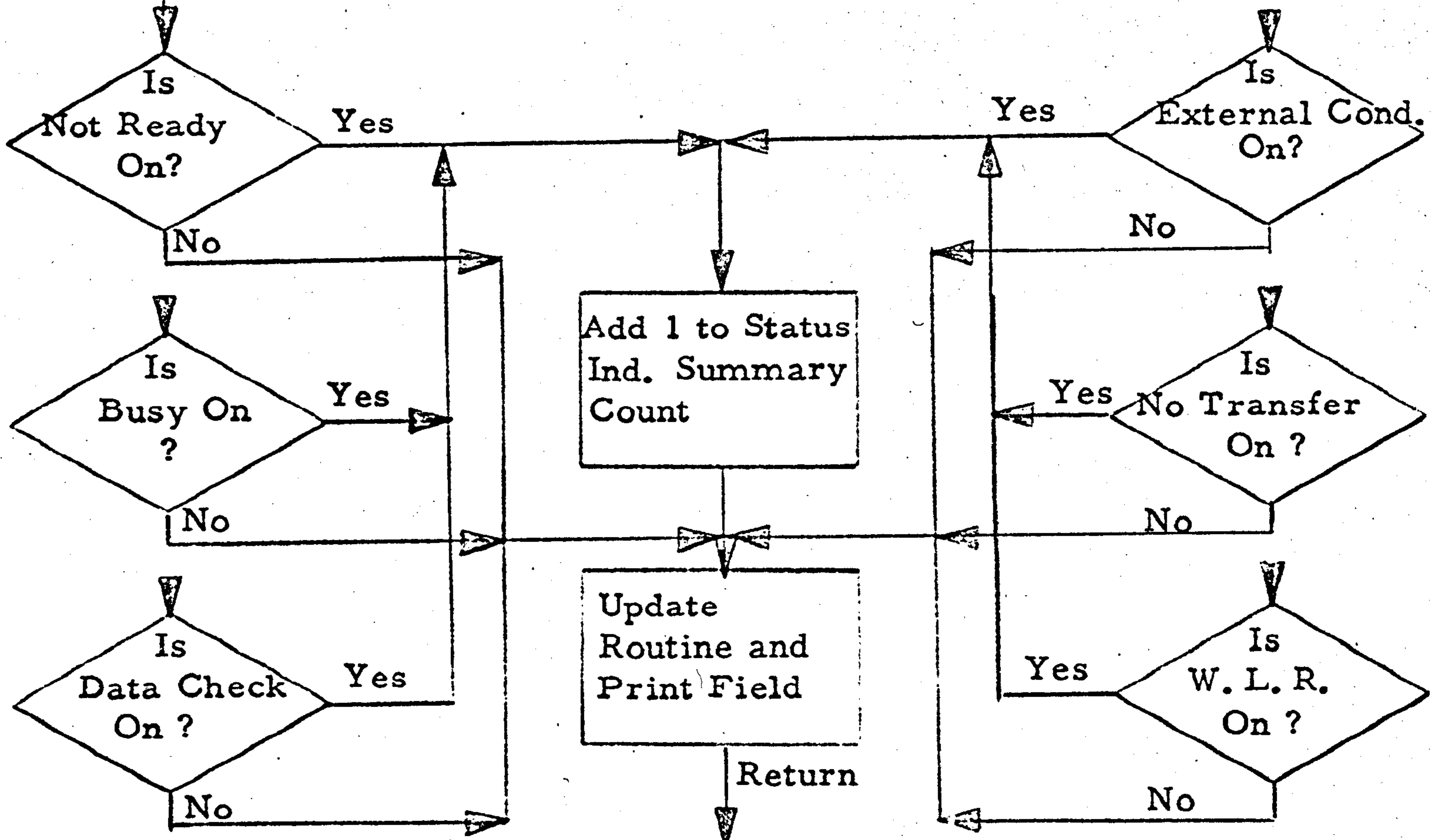
Enter here from
Test Routine

Store Address
Determine
which Channel
to Check

Load Ind Reg
and Move Codes
to Print Area
Prepare for Char.

Go to the channel alter routine and
alter this routine to the proper channel.

Return here after
Channel Alter.



Return to next
Branch-on-Status-
Ind-on Instruction

Go to error
control routine
and type out the
error.

030
DA01, DA03,
DA04, DA05

Page 020

06.4 ERROR CONTROL ROUTINE

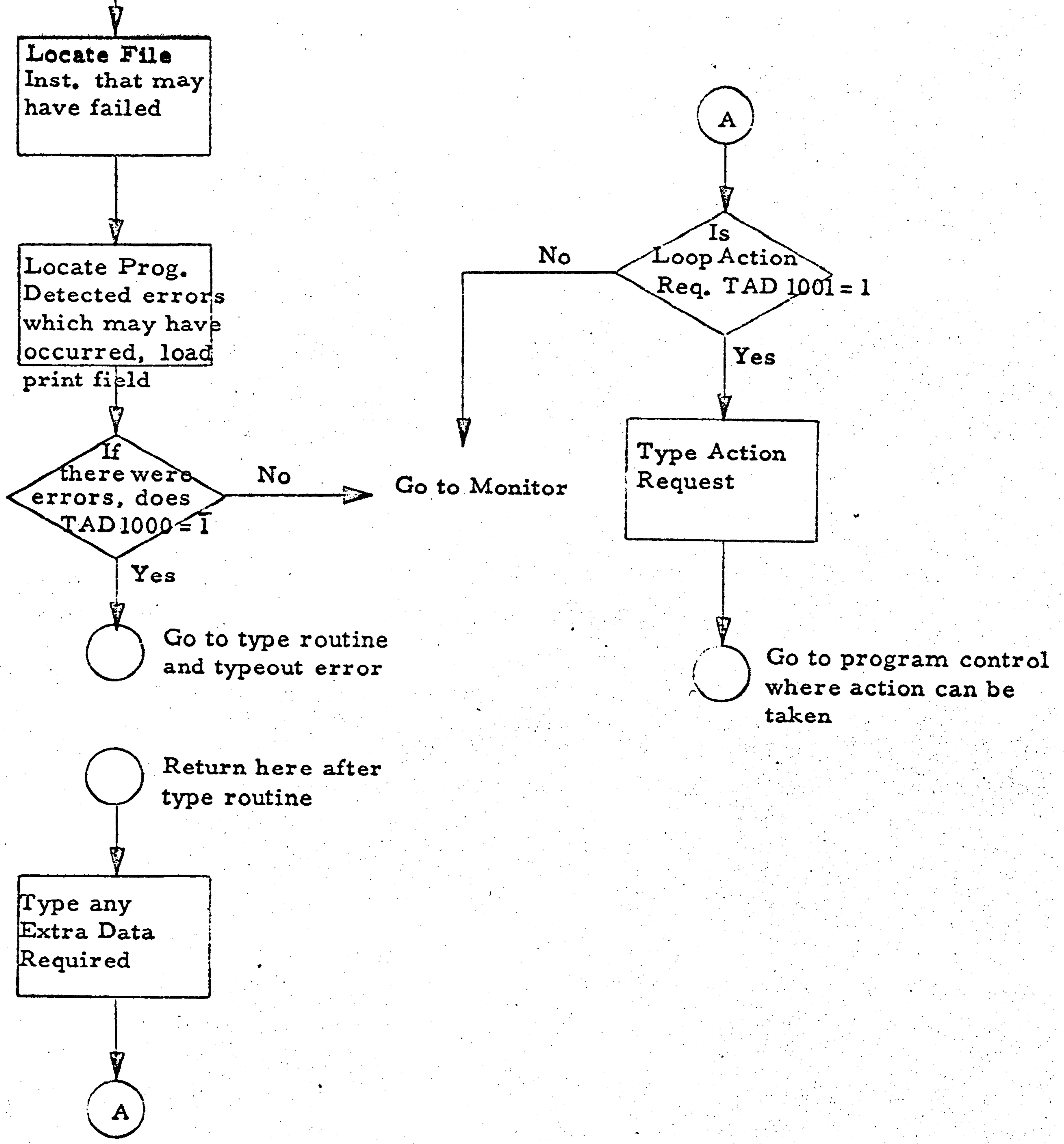
This routine locates the file instruction in the test routine that may have caused the error, determines if any program detected errors occurred, prepares the print field, checks TAD 1000 and types the standard error message plus any extra data specified by the using program.

Error control is entered from the status check routine or from monitor. It exits to monitor or to the program control routine if TAD 1001 = 1.

031

ERROR CONTROL ROUTINE

Enter from Monitor
or Status Check Routine



032
DA01, DA03,
DA04, DA05

Page 022

06.5 PROGRAM CONTROL ROUTINE

- This routine allows the operator to interrupt the program at any time and take any one of eight standard options which are available.

There are two ways to enter this routine, by pressing Inquiry Request or by setting TAD 1001 to a 1. By using inquiry the monitor will give control to program control, with TAD 1001=1 error control will branch to program control after requesting action. In either case, once program control is entered the operator may take any option available. In certain programs special options will be available, and in some cases a standard option may not be available.

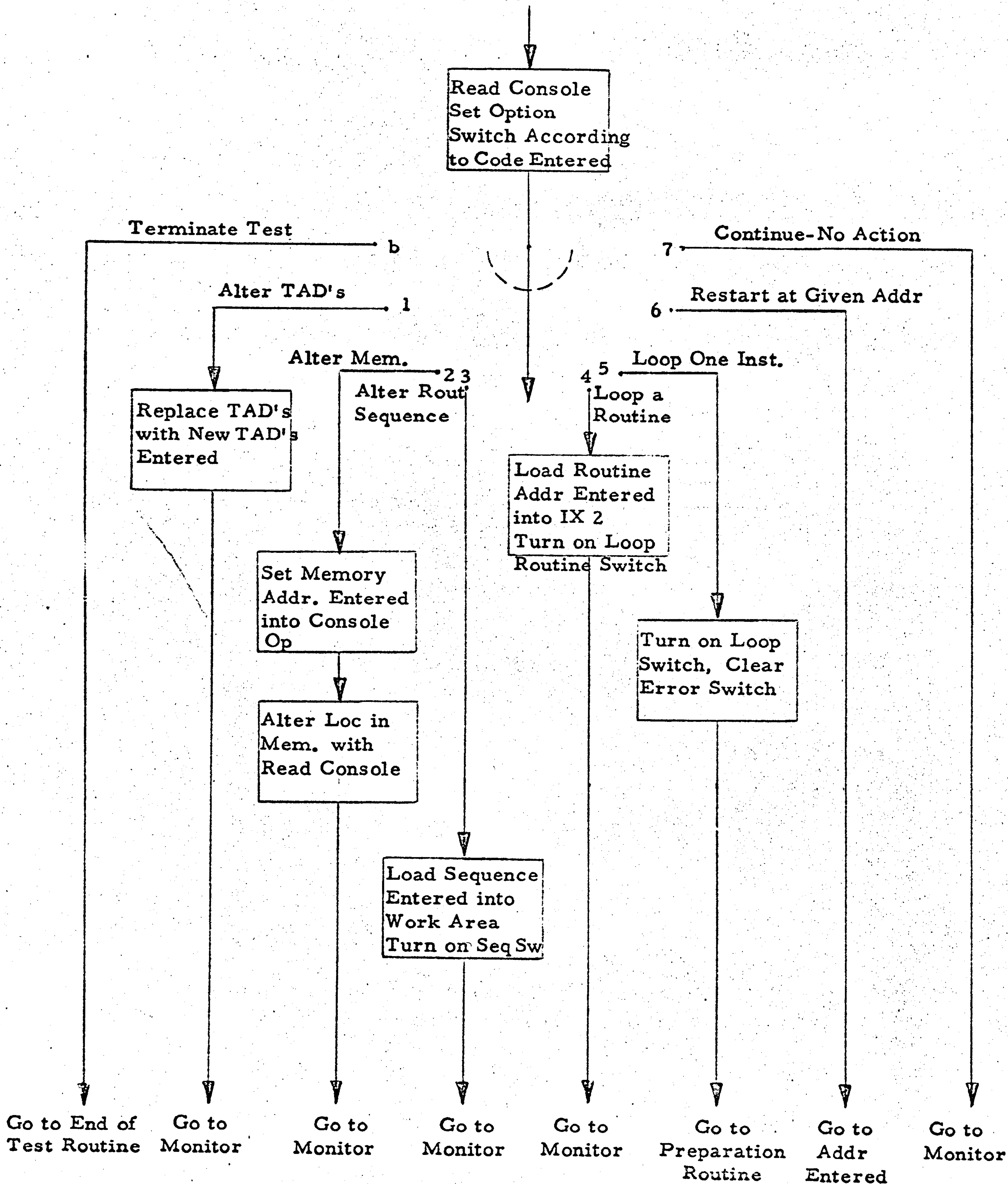
PROGRAM CONTROL

DA01, DA03,
DA04, DA05

633

Enter here from
Monitor or Error
Control

Page 023



034
DA01, DA03,
DA04, DA05

Page 024

06.6 ALTER ROUTINE SEQUENCE

This routine is entered from the monitor routine only after the CE has selected the option through program control.

When the CE selects this option, he enters a list of routine numbers in the sequence he wants them run. Up to 25 routine numbers may be entered, and any routine number may be repeated.

Once the alter routine sequence option is selected, the routines listed by the CE are run one time or looped according to the last character entered by the CE. If it is "L" the routines are repeated, if it is "E" the routines are run only once.

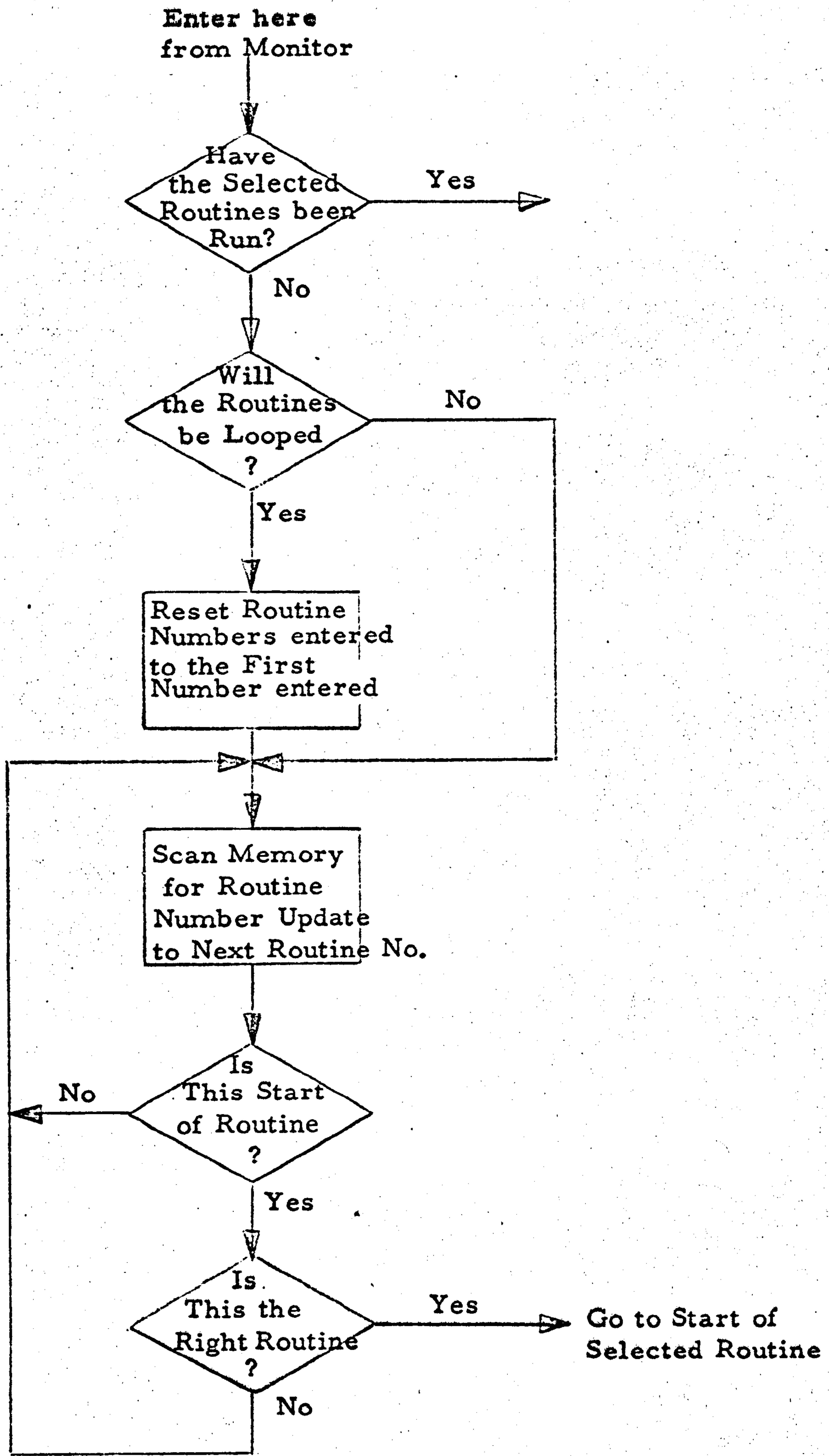
When monitor recognizes that this option is selected, it does not go to the next sequential routine, but rather goes to the "alter routine sequence" routine. Here the routine numbers entered are searched for one at a time and the routines are executed in the sequence selected by the CE.

035

DA01, DA03,
DA04, DA05.

Page 025

ALTER ROUTINE SEQUENCE



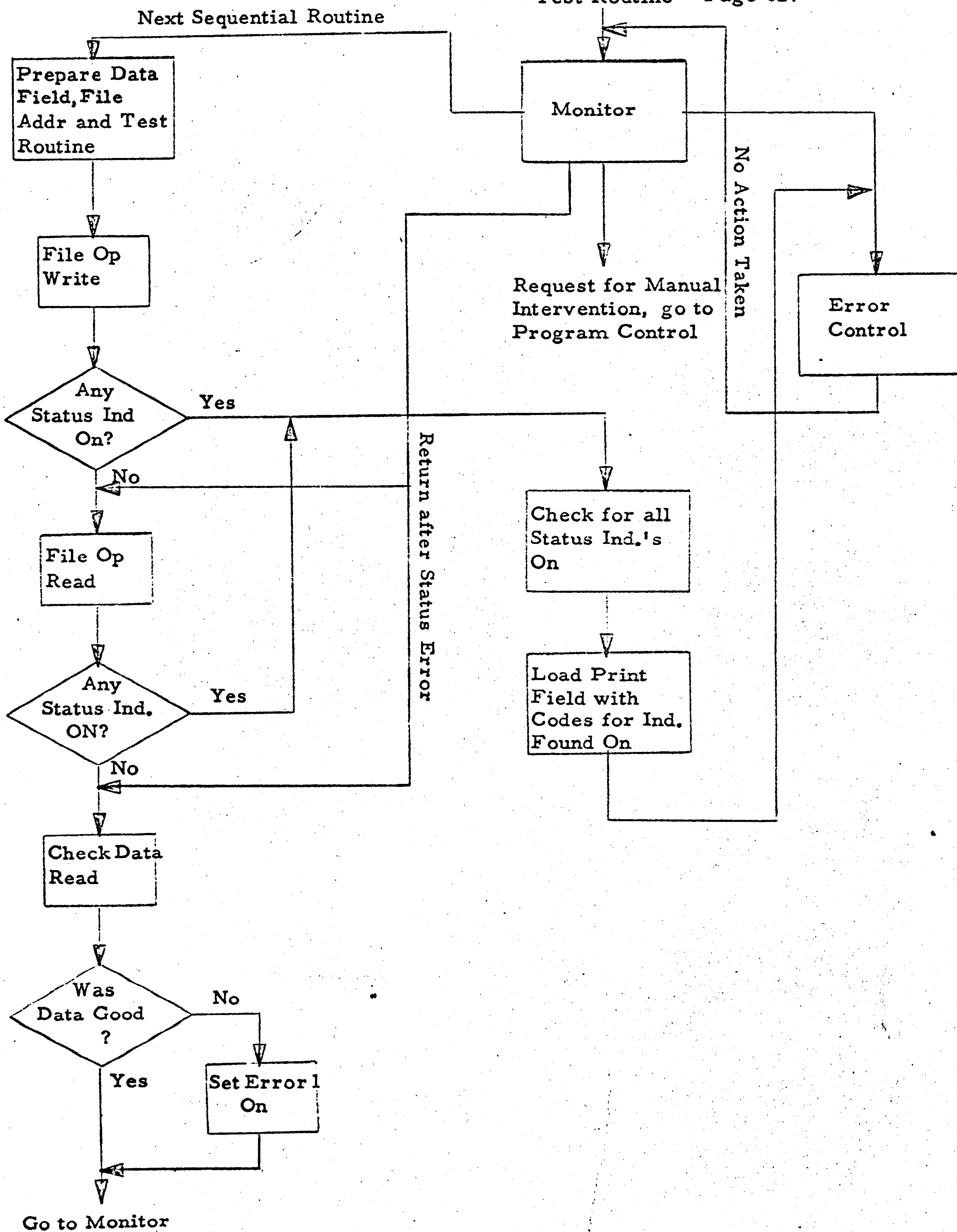
TEST ROUTINE USING CONTROL ROUTINES

This flow chart shows a typical test routine and how it is linked to the control routines. Note how the routine is entered from the monitor control routine and when it is completed returns to the monitor routine. It is also important to understand that when a status error occurs, the test routine exits directly to the status check control routine. After the status error has been indicated, the monitor control routine returns to the test routine one instruction after the point where the status error was detected. The program detected error, read data was no good, is stored until the test routine is complete and goes to monitor. Monitor allows the error control routine to check for these program detected errors, if any are found to be on an error message is given.

Example of Test Routine using Control Routines

DA01, DA03,
DA04, DA05

Previous Test Routine Page 027



**GENERAL FLOW CHART OF STANDARD CONTROL ROUTINES
AS USED WITH A PROGRAM**

This flow chart shows the relationship of the standard control routines to the diagnostic test routines and to one another. Since these control routines apply to all the programs in the "DA" series, this flow chart can be used as a block diagram of all the "DA" programs. Note that each test sub-routine is entered from and exits to a standard control routine. This is true of all sub-routines used in the "DA" series.

APR 15 1964

6.02.00.0

DA01 HOME ADDRESS AND SURFACE TEST DESCRIPTION

This test performs the functions previously performed by DA01C, the program is made up of 5 tests which may be run in 1 of 4 modes, giving a total of 20 variations. The tests which may be run are:

- a. Write home addresses and verify addresses
- b. Verify addresses
- c. Analyze surfaces
- d. Write addr, verify addresses, and analyze surfaces
- e. Analyze surfaces and verify addresses

The modes in which these tests may be run are:

- a. Entire module
- b. One cylinder
- c. One surface
- d. One track

There is actually one other selection which may be made, this is for flagging a defective track. The flagging routine is available as a program option and would usually be selected only when the surface analysis test has determined that a track is defective.

It is important to remember that the surface analysis and write home address tests will destroy any data on the tracks being tested. This also includes the format track for the cylinder in which the tested tracks are located. The verify addresses test does not destroy any data that may be on the file.

6.02.01.0

OPERATING PROCEDURE

The standard procedures outlined in the package description apply to this program, in addition the following procedures are used to run this program.

01.1 SWITCH SETTINGS PREVIOUS TO RUNNING PROG.

- a. Write Format Switch ON (on every 1301 to be tested)
- b. HAO Switch ON
- c. All 1301 modules not to be tested are set inoperative.
- d. All other 7631-1301 switches OFF.

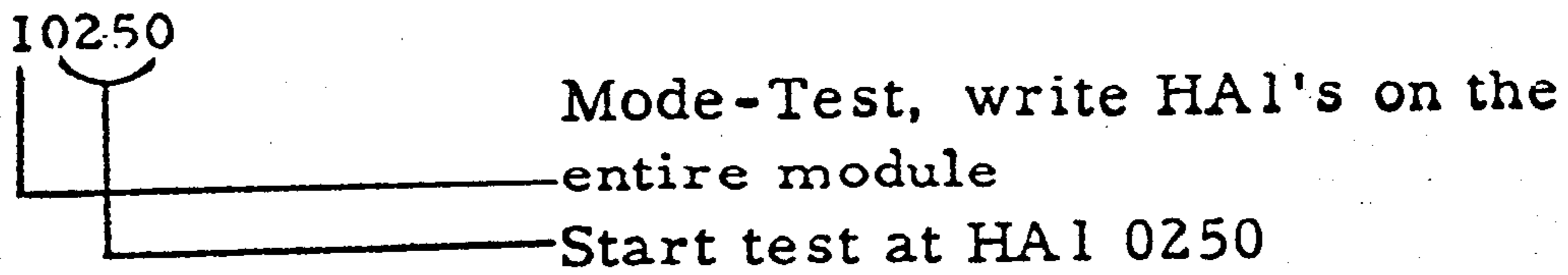
CAUTION: THIS PROGRAM CAN DESTROY CUSTOMER DATA AND/OR FORMATS.

6.02.01.0 OPERATING PROCEDURE (continued)

01.2 SPECIAL REQUESTS

- a. "Sel Mode" (CE enters on the typewriter one of 15 mode-test variations plus the four digit HAl at which the program should start operating.)

ex. 10250



Mode-Test, write HAl's on the entire module
Start test at HAl 0250

2014
20014

The codes for the 15 Mode-Test variations

Test	MODE			One
	Entire Mod.	One Cyl.	One Track	Surface
Write HAl's and verify addr's	1	A	J	I
Verify addr's	2	B	K	S
Analyze surfaces	3	C	L	T
Write HAl's, analyze surfaces and verify addr.	4	D	M	U
Analyze surfaces and verify addr.	5	E	N	V

- b. "Testing Mod Ch " (If the module number and channel are correct, the CE should enter a 1. If it is not a module which is to be tested, a $\bar{1}$ (any character other than 1) is entered and another module is selected.)
- c. "CE-HAO ON"
This request is followed by a halt so that the switch on the 7631 may be turned on. Press start to continue.
- d. "CE-HAO OFF"
This request is followed by a halt so that the switch on the 7631 may be turned off. Press start to continue.
- e. "TRCK FLGD OK"
This typeout occurs after a successful flagging operation. The CE must now select any one of the standard program options.

Note:

Reference Operating Hints for rules of selecting modes and starting HAl address.

42

6.02.01.0 OPERATING PROCEDURE (continued)

01.3 SPECIAL TADS

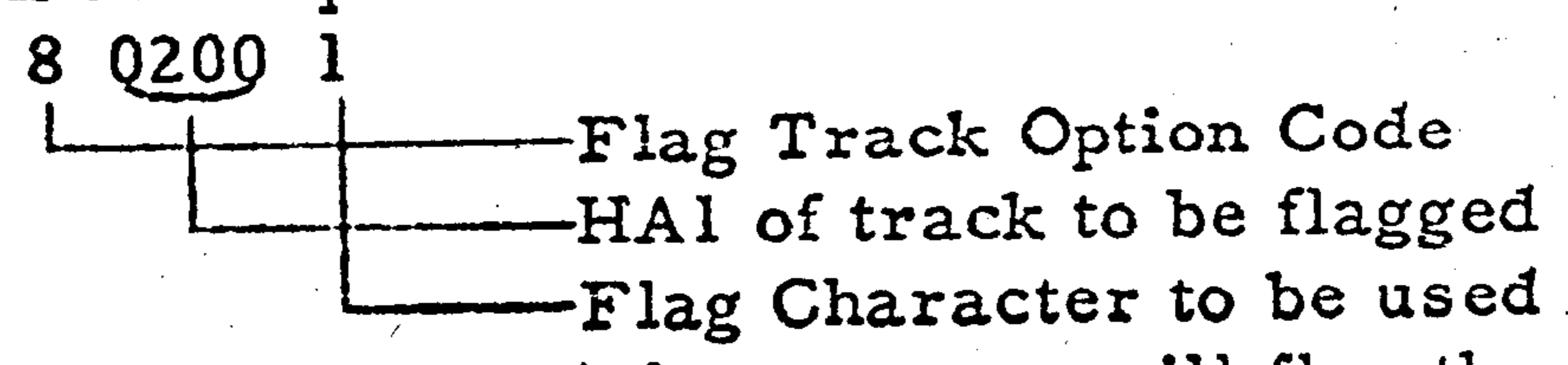
There is one special TAD for this program (Memory Location 01004).

If this TAD is set to a 1, the verify address test will cause all failing addresses to be read from the file and displayed on the typewriter. This TAD is set to 1 when the program is loaded.

01.4 PROCEDURE TO FLAG-A-TRACK

In order to Flag-A-Track, the following procedure should be used.

- a. Load DA01
- b. When the Select Mode Request is made, enter *Kxxxx* (Address of track to be flagged).
- c. Immediately after ~~selecting mode~~, press Inquiry Request.
- d. When the request is honored, enter:



- e. Press Release, and the program will flag the selected track.

K 3-30

first position in cylinder

warning message

01.5 STANDARD OPTIONS NOT AVAILABLE IN THIS PROGRAM

Alter routine sequence - Code 3.

6.02.02.0 OPERATING HINTS

02.1 TIMING CONSIDERATIONS

When operating in the "entire module" mode, the program requires rather large amounts of time. The following were timed on a 1410, with accelerator feature, running the entire module:

- a. Write addresses 29 Min.
- b. Verify addresses 11 Min.
- c. Analyze surfaces 87 Min.
- d. Write address, analyze surfaces and verify addr. 109 Min.
- e. Analyze surfaces and verify addresses 91 Min.

6.02.02.0 OPERATING HINTS (continued)

02.2 CYLINDER MODE

When running in the cylinder mode, the HA1 entered must be for the lowest track in the cylinder to be tested.

02.3 ONE SURFACE

When this mode is selected, the HA1 of the outermost track of the surface to be tested is entered. If the fourth surface is to be tested, HA1 0004 would be entered.

02.4 ENTIRE MODULE MODE

When this mode is selected, the first HA1 in the first cylinder to be tested is entered. The program need not start at cylinder 000, it may start at any cylinder.

02.5 ALTER SPECIAL TAD

Use program option code 2 (alter memory) to alter the special TAD to a 1 or $\bar{1}$. Special TAD location is 01004.

6.02.03.0 PROGRAM STOPS

03.1 ERROR STOPS

None

03.2 NORMAL STOPS

Mem Loc

Reason

5923 Wait for CE-HAO to be turned off, press Start.

5961 Wait for CE-HAO to be turned on, press Start.

7471 Test is completed, press Start to go to loader.

6.02.04.0 TYPEOUTS (Other than Request or Standard Typeouts)

Following the standard error message will be the eight-digit file address being used at the time of the error. This will be the third line of the error message.

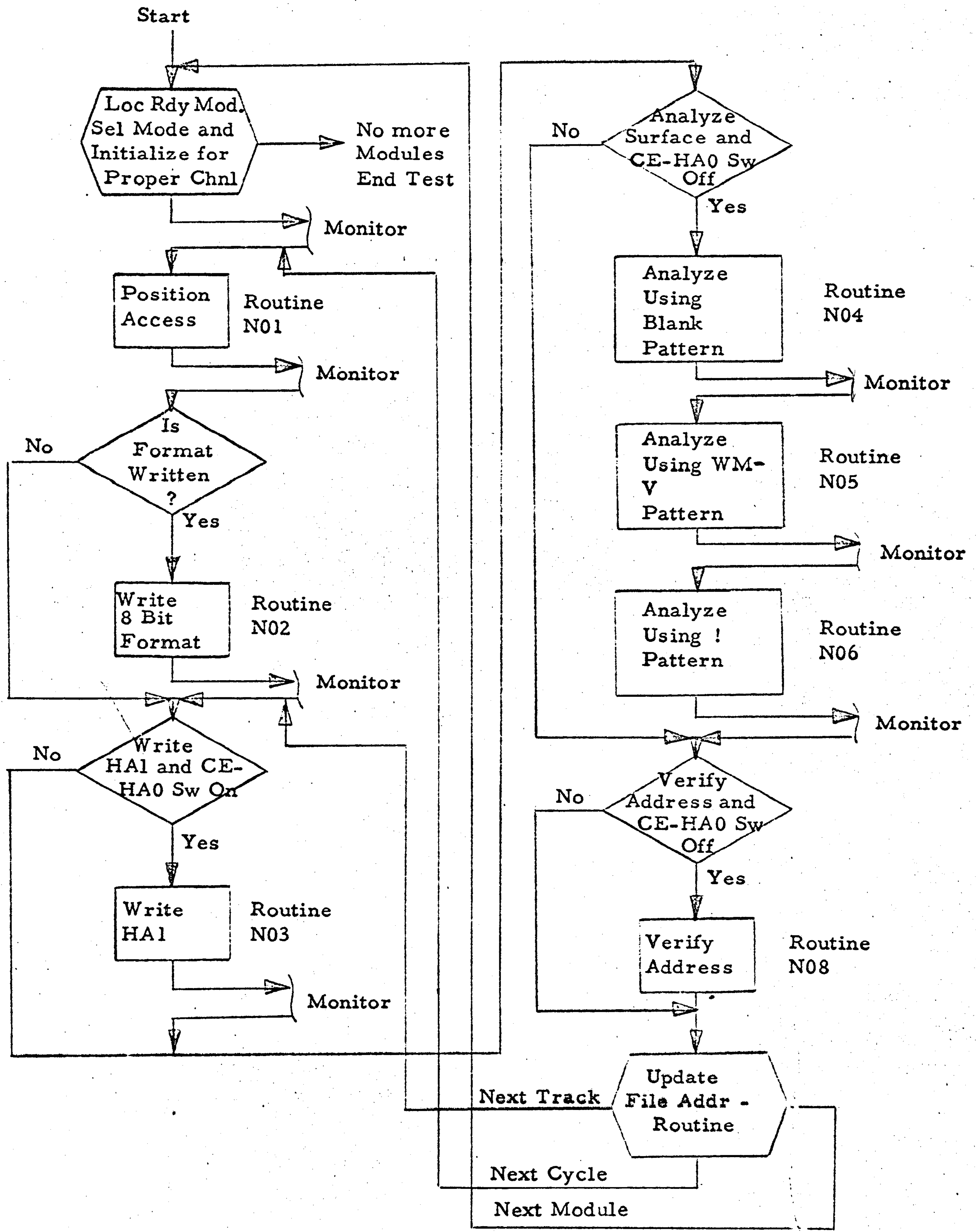
044

DA01

Page 034

6.02.05.0 FLOW CHART

The following flow chart is designed to give a general picture of the test routine's relationship to one another.



646

DA01

Page 036

6.02.06.0 ROUTINE/ERROR INDEX DA01

To locate routines and errors in the program listing.-

<u>Routine Number</u>	<u>Error Number</u>	<u>Page</u>
N01	01	56
N02	02	57,
N03	03	59,
N04	04	61, 62
	05	62
N05	06	63, 64
	07	64
N06	08	65, 66
	09	66
N08	10	67
N09		68
N10	11	72,
	12	73
	13	73

I/O DICOST DEFINE TADS
I/O DICOPT DEFINE TADS

CT ADDR INSTRUCTION

PCLIN LABEL OPCOD OPERAND

PCLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1002		CTL	2			
1003						
1004						
1005						
1006		DRG	1000		01000	
1007	TADO	DCH	2 2	1	01000	
1008	TAD1		2 2	1	01001	
1009	TAD2		2 2	1	01002	
1010	TAD3			1	01003	
1011						
1012						
1013						
1014	SPTADO	DCH	2 2	1	01004	
1015	SPTAD1		2 2	1	01005	
1016	SPTAD2		2 2	1	01006	
1017	SPTAD3		2 2	1	01007	
1018	SRTAD4		2 2	1	01008	
1019	SPTAD5		2 2	1	01009	
1020	SPTAD7		2 2	1	01010	
1021	SPTAD8		2 2	1	01011	
1022	SPTAD9		2 2	1	01012	
1023						

J/O DICOST ONE INSTRUCTION LOOP

CT ADDR INSTRUCTION

PGLIN LABEL

OPCOD OPERAND

```

1029 *** I/O DICOST PROGRAM ***
1026 *** ONE INSTRUCTION LOOP ROUTINE ***
1027 WHEN THE CE SELECTS A ONE INSTRUCTION LOOP THE I/O INSTRUCTION
1028 IN THIS ROUTINE IS ALTERED AND THE LOOP IS ENTERED. NOTE THAT THE
1029 BRANCH ON INQUIRY INSTRUCTION IS THE ONLY EXIT FROM THE LOOP.
1030 LOOP MU $11,0,R I/O INST BEING LUP 0
1031 BAI $81
1032 BNQ PRGCTL BRCH ON INQ TO PRGCL
1033 B LOOP CONTINUE TO LOOP
1034 H
1035

```

```

10 01013 M $11 00000 R
7 01023 R 01030 H
7 01030 J 02238 Q
7 01037 J 01013
1 01044 .

```


049

I/O DICOST CHANNEL ALTER

PGLIN	LABEL	OPCOD	CPERAND	CT	ADDRS	INSTRUCTION
1038			*** I/C DICOST PROGRAM ***			
1039			*** CHANNEL ALTER ROUTINE ***			
1040			THIS ROUTINE ALTERS ALL I/O INSTRUCTIONS, BRANCH-ON-STATUS-			
1041			INDICATOR-ON INSTRUCTIONS, AND BRANCH ON CHANNEL OVERLAP IN PRO-			
1042			CESS INSTRUCTIONS ACCORDING TO THE CHANNEL INDICATED. THIS IS DONE			
1043			BY SCANNING A DEFINED AREA OF MEMORY AND ALTERING THESE INSTRUCTIONS.			
1044						
1045						
1046	CHALTR	SUR	X5	7	01045	G 00049 B
1047		MLCA	9&X5, X7	12	01052	D 00+7 00059 I S
1048	SCAN	SCNLA	0&X6, 0&X6	12	01064	D 00+0 00+0 B
1049		SAR	X6	7	01076	G 00054 A
1050		C	X6, X7	11	01083	C 00054 00059
1051		BH	13&X5	7	01094	J 00+73 U
1052		MLCS	1&X6, *&12	12	01101	D 00+1 01124 3
1053		BCE	MLCRU, CODES,	12	01113	B 01149 02563
1054		BCE		1	01125	B
1055		BCE		1	01126	B
1056		BCE	RX30R1	6	01127	B 01168
1057		BCE		1	01133	B
1058		BCE		1	01134	B
1059		BCE		1	01135	B
1060		BCE	JAY	6	01136	B 01187
1061		B	SCAN	7	01142	J 01064
1062	PLORU	MLCS	10&X5, 2&X6	12	01149	D 00+70 00+2 3
1063		B	SCAN	7	01161	J 01064
1064	RX30R1	MLCS	11&X5, 1&X6	12	01168	D 00+71 00+1 3
1065		B	SCAN	7	01180	J 01064
1066	JAY	MLCS	7&X6, *&12	12	01187	D 00+7 01210 3
1067		BCE	ONE234, MOOS,	12	01199	B 01221 02567
1068		BCE		1	01211	B
1069		BCE		1	01212	B
1070		BCE		1	01213	B
1071		B	SCAN	7	01214	J 01064
1072	CNE234	MLCS	12&X5, 7&X6	12	01221	D 00+72 00+7 3
1073		B	SCAN	7	01233	J 01064

I/O DICOST CHANNEL ALTER
 OPCOD OPERAND
 CT ADDR INSTRUCTION

1 01240 .

1074

H

1075

1076

DEFINE SYSTEM & CHANNEL CONTROL CARDS

1077

ORG 1233

01233

1078

DCH @FN2FJKFJZFI313#9@

17 01249

**

1082

DEFINE PROGRAM TITLE

1083

**

1084

ORG 1250

01250

1085

DCW @DA01D@,G

5 01254

1086

LOCATE THE SYSTEM & CHANNEL CARDS

1087

1088

1089

ORG 1256

01256

1090

DC @

@

50 01256

1091

DC @

@

7

01312

1092

ORG 1289

01289

1093

DC @

@

50 01289

1094

DC @

@

7

01345

1095

ORG 1346

01346

1096

DC @

@

50 01346

1097

DC @

@

7

01402

1098

ORG 1403

01403

1099

DC @

@

50 01403

1100

DC @

@

7

01459

1101

ORG 1460

01460

1102

DC @

@

50 01460

1103

DC @

@

7

01516

1104

CT ADDR INSTRUCTION

I/O DISPT TYPE

OPCOD OPERAND

LABDL

PGLIN

1141	CW	REPLY&I		6	01697	D	01652
1142	B	0&X1	RETURN	7	01703	J	000&0
1143	MLCWS	2&N2,PASS1	RESET FIRST PASS INST	12	01710	D	07585 01944 7
1144	BCE	0&I3,1264,1	BRCH IF PRIORITY AVAILABLE	12	01722	B	01746 01264 1
1145	MLCWS	2&N2,MONITR&7	ALTER PRIORITY INST TO NO-OP	12	01734	D	07585 02073 7
1146	MRCWG	0&9,1230	RESTORE CHANNEL ALTER ROUTINE	12	01746	D	01766 01230 L
1147	B	PASS1&7	RETURN TO NORMAL INITIALIZE	7	01758	J	01951
1148	H			1	01765	.	
1149	DC	2,732		3	01768		
1150	DCW	2JA		1	01769		
1151	DC	SCAN		5	01774		01064
1152	DC	2 2		1	01775		
1153	DCW	2,2,0,0		1	01776		
1154	DS	12			01789		

*** ERROR TABLES THESE ARE USED FOR ERROR ***

*** SUMMARIES AND ERROR IDENTIFICATION ***

1155					01800		
1156					01801		
1157					01801		
1158					01802		
1159	ORG	0&X00			01803		
1160	ORG	0&I			01804		
1161	DCH	2&A	STPTAB	1	01805		
1162	DC	2 2	E1	1	01806		
1163		2 2	E2	1	01807		
1164		2 2	E3	1	01808		
1165		2 2	E4	1	01809		
1166		2 2	E5	1	01810		
1167		2 2	E6	1	01811		
1168		2 2	E7	1	01812		
1169		2 2	E8	1	01813		
1170		2 2	E9	1	01814		
1171		2 2	E10	1	01815		
1172		2 2	E11	1	01816		
1173		2 2	E12				
1174		2 2	E13				
1175		2 2	E14				
1176	DC	2 2	F,5	1			

I/O DICOST TYPE
PGLIN LABEL OPCOD OPERAND

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION#
1177	E16		00	1	01817	
1178	E17		00	1	01818	
1179	E18		00	1	01819	
1180	E19		00	1	01820	
1181	E20		00	1	01821	
1182	E21		00	1	01822	
1183	E22		00	1	01823	
1184	E23		00	1	01824	
1185	E24		00	1	01825	
1186	E25	DC	00	1	01826	
1187	E26	DC	00	1	01827	
1188	E27		00	1	01828	
1189	E28		00	1	01829	
1190	E29		00	1	01830	
1191	E30		00	1	01831	
1192	E31		00	1	01832	
1193	E32		00	1	01833	
1194	E33		00	1	01834	
1195	E34		00	1	01835	
1196	E35		00	1	01836	
1197	E36		00	1	01837	
1198	E37		00	1	01838	
1199	E38		00	1	01839	
1200	E39		00	1	01840	
1201	E40		00	1	01841	
1202	E41		00	1	01842	
1203	E42		00	1	01843	
1204	E43		00	1	01844	
1205	E44		00	1	01845	
1206	E45		00	1	01846	
1207	E46		00	1	01847	
1208	E47		00	1	01848	
1209	E48		00	1	01849	
1210	E49		00	1	01850	
1211	E50		00	1	01851	
1212	E51	DC	00	1	01852	

054

I/O DIGEST TYPE

INSTRUCTION

CT ADDR

OPCOD OPERAND

LABEL

PGLIN

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1213	E52		0 0	1	01853	
1214	E53		0 0	1	01854	
1215	E54		0 0	1	01855	
1216	E55		0 0	1	01856	
1217	E56		0 0	1	01857	
1218	ERRTAB	DC	0+0	1	01858	
1219		DC	0 0	1	01859	
1220						

055

I/O DICOST INITIALIZE ROUTINE

DA01
CT ADDR INSTRUCTION

PGLIN	LABEL	OPCODE	OPERAND	PRINT TITLE	CT	ADDR	INSTRUCTION
1222				*** INITIALIZE ROUTINE FOR THE DICOST PROGRAM ***			
1223	INITLE	WCP	1250		10	01860	M XTO 01250 H
1224		BCB1	*-16		7	01870	R 01860 2
1225		DA1	*61		7	01877	R 01884 M
1226		CS	99	RESET IND REG S	6	01884	/ 00099
1227		SW	25	SET WM IN IND REG 1	6	01890	* 00025
1228		MLCS	@a,100	PREPARE TO LOAD 2-15	12	01896	D 07586 00100 3
1229		MRWR	25,30	LOAD IND REG 2-15	12	01908	D 00025 00030 3
1230		MRCWG	RESUME,1	MOVE RESET PROCEDURE	12	01920	D 02015 00001 D
1231		MRCWG	INTR,101	MOVE INTERRUPT PROC	12	01932	D 02007 00101 D
1232	PASS1	B	DATA	GO DO MORE INITIALIZING	7	01944	J 01710
1233		CW	LPRT,SW1161		11	01951	H 02575 01549
1234		CS	656	CLEAR AND RESET	6	01962	/ 01857
1235		MLCWS	@a,STPTAB	ERROR TABLE	12	01968	D 07587 01801 7
1236		B	START	GO TO ROUTINE INIT.	7	01980	J 03377
1237		H			1	01987	.
1238		ORG	2000			02000	
1239		B	INITLE		7	02000	J 01860
1240				*** RESET & INTERRUPT ROUTINES, THESE ROUTINES ***			
1241				*** ARE MOVED TO LOCATIONS 1 & 101			
1242		BNO	PRGCTL	RETURN TO PROG CNTRL	7	02007	J 02238 Q
1243	INTR	DCW	@M@		1	02014	
1244		B	CKLUP		7	02015	J 02023
1245	RESUME	DCW	@M@		1	02022	
1246		BW	MONTR,LPRT	CHECK FOR LOOP ROUT	12	02023	V 02066 02575 1
1247	CKLUP	BW	LOOP,LPINST	CHECK INST LOOP SW	12	02035	V 01013 02576 1
1248		MLNA	X3,X2	LOAD IX 2	12	02047	D 00039 00034 /
1249		B	MONTR&7	GO TO MONTR	7	02059	J 02073
1250							
1251							

CT ADDR INSTRUCTION

I/O DICOST MONITOR
OPCOD OPERAND

PGLIN LABEL

```

1253 *** I/O DICOST PROGRAM ***
1254 *** MONITOR ROUTINE ***
1255 THE MONITOR IS ENTERED AFTER EVERY TEST ROUTINE IS COMPLETED, OR
1256 A STATUS ERROR HAS BEEN DETECTED AND INDICATED. IN THE CASE OF A
1257 STATUS ERROR MONITOR SIMPLY BRANCHES BACK TO THE POINT AT WHICH
1258 THE STATUS ERROR WAS DETECTED. WHEN ENTERED FROM THE END OF A
1259 TEST ROUTINE MONITOR CHECKS TO SEE IF THE CE PRESSED INQUIRY, THE
1260 ROUTINE IS BEING LOOPEO, ANY ERRORS OCCURED, ALTER ROUTINE SEQUENCE
1261 IS SELECTED, OR THE NEXT SEQUENTIAL ROUTINE SHOULD BE RUN.

```

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1262	MONLTR	SBR	X2	7	02066	G 00034 B
1263		BXPA	*E1	7	02073	Y 02080 X
1264		BNQ	PRGCTL	7	02080	J 02238 Q
1265	MONLT1	BW	0EX3,LPRT	12	02087	V 000M0 02575 1
1266	MONLT2	MLCWS	@M@,224	12	02099	D 07588 00224 7
1267		B	BRRCTL	7	02111	J 02635
1268	MONLT3	NOP		1	02118	N
1269		MLCWA	X2,X3	12	02119	D 00034 00039 X
1270		MLCWS	@ @,224	12	02131	D 07589 00224 7
1271		B	0EX2	7	02143	J 000.0
1272	WHERE2	MLCWS	@ @,224	12	02150	D 07589 00224 7
1273		BCE	*E@,0EX2,N	12	02162	B 02181 000.0 N
1274		B	0EX2	7	02174	J 000.0
1275		BZN	*E@,1EX2,2	12	02181	V 02200 000.1 2
1276		B	0EX2	7	02193	J 000.0
1277		BZN	*E@,2EX2,2	12	02200	V 02219 000.2 2
1278		B	0EX2	7	02212	J 000.0
1279		BW	MONIT3,3EX2	12	02219	V 02118 000.3 1
1280		B	0EX2	7	02231	J 000.0
1281						
1282						

I/O DICOST PROGRAM CONTROL

CT ADDR INSTRUCTION

1284 *** I/O DICOST PROGRAM ***

1285 *** PROGRAM CONTROL ***

1286 WHEN THE CE PRESSES INQUIRY TO SELECT A STANDARD PROGRAM OPTION

1287 THIS ROUTINE IS ENTERED. THE CE ENTERS ON THE TYPEWRITER THE

1288 OPTION CODE DESIRED, ALONG WITH THE DATA NEEDED BY THE OPTION. THE

1289 ROUTINE DETERMINES WHICH OPTION HAS BEEN SELECTED AND INITIATES

1290 THE OPTION.

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1291	PRGCTL	RCPW	CTLFLD	10	02238	L XTO 00201 R
1292		SBR	X1	7	02248	G 00029 B
1293		BEX1	PRGCIL ^S M	7	02255	R 02238 M
1294		SW	QTLFLD&1	6	02262	00202 G
1295		BA1	*&1	7	02268	R 02275 M
1296		CW	LPRT,LPINST	11	02275	D 02575 02576
1297		HLWS	*E1	12	02286	D 02297 01802 4
1298		MRWR	E1,E2	12	02298	D 01802 01803 2
1299		MLCS	CTLFLD,*&12	12	02310	D 00201 02333 3
1300		BCE	ENDTST,CTLCOD,	12	02322	B 07429 02574
1301		BCE	ALTADS	6	02334	B 02389
1302		BCE	ALTMEM	6	02340	B 02412
1303		BCE	LUPRT	6	02346	B 02459
1304		BCE	ONELUP	6	02352	B 02488
1305		BCE	RSTART	6	02358	B 02522
1306		BCE	CONT	6	02364	B 02545
1307		BCE	N10,CTLFLD,8	12	02370	B 06127 00201 8
1308		B	PRGCTL	7	02382	J 02238
1309	ALTADS	MLCA	CTLFLD&4,1003	12	02389	D 00205 01003 T
1310		CS	MONIT1,299	11	02401	/ 02087 00299
1311	ALTMEM	MLCA	CTLFLD&5,*&9	12	02412	D 00206 02432 T
1312		RCPW	O	10	02424	L XTO 00000 R
1313		BEX1	*-16,M ^S	7	02434	R 02424 M
1314		BA1	*&1	7	02441	R 02448 M
1315		CS	MONIT1,299	11	02448	/ 02087 00299
1316		SW	LPRT	6	02459	02575
1317	LUPRT	MLNA	CTLFLD&5,X2	12	02465	D 00206 00034 /
1318		CS	MONIT2,299	11	02477	/ 02099 00299
1319						

I/O DICOST PROGRAM CONTROL

DA01

INSTRUCTION

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1320	ONEUP	SW	LPINST	6	02488	02576
1321	LUPINT	NOP		1	02494	N
1322		B	*68	7	02495	J 02509
1323		B	PREP	7	02502	J 06580
1324		CW	LUPINT&1	6	02509	02495
1325		B	LOOP	7	02515	J 01013
1326	RSTART	MLNA	CTLFLD&5,X2	12	02522	D 00206 00034 /
1327		CS	MONIT2,299	11	02534	/ 02099 00299
1328	CONT.	CS	WHERE2,299	11	02545	/ 02150 00299

I/O DICOST CONSTANTS

1330	CODES	DCW	0J13XRULM0	8	02563	
1331	MODS	DCW	043210	4	02567	
1332		DCW	070	1	02568	
1333		DC	060	1	02569	
1334			050	1	02570	
1335			040	1	02571	
1336			020	1	02572	
1337			010	1	02573	
1338			00	1	02574	
1339	CTLCOO			1	02575	
1340	LPRF	DC	00	1	02576	
1341	LPINST	DC	00	5	02581	01858
1342	ADDR02	DCW	ERRTAB	6	02587	
1343	ERR	DCW	0*ERROR0	16	02588	
1344	ACTION	DC	0REQ ERROR ACTION0,G	4	02608	
1345	ERCODE	DCW	0547P0	11	02609	
1346	SAVIND	DCW	01 2 4 8 A B0,G	11	02621	
1347	SIIND	DC	01 2 4 8 A B0,G	2	02633	
1348	NOERSH	DC	00			
1349						

ADDR OF ERR TABLE

I/O DICOST ERROR CONTROL

PGLIN LABEL OPCODE OPERAND CT ADDR INSTRUCTION

1351 *** I/O DICOST PROGRAM ***

1352 *** ERROR CONTROL ***

1353 THIS ROUTINE DETERMINES IF ANY STATUS ERRORS OR PROGRAM DETECT-

1354 ED ERRORS HAVE TO BE INDICATED, IF THERE ARE THIS ROUTINE BUILDS

1355 THE ERROR MESSAGE AND HAS IF TYPED OUT. THIS ROUTINE ALSO CHECKS

1356 JAD 1 TO SEE IF A REQUEST FOR ERROR ACTION SHOULD BE MADE.

LOCATE FAILING INST

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1359	ERRCTL	MLCA	X2, X5	12	02635	D 00034 00049 T
1360		S	010, X5	11	02647	S 07590 00049 S
1361		SCNLA	00X5, 00X5	12	02658	D 00000 00000 B
1362		SAR	X5	7	02670	G 00049 A
1363		MLCS	10X5, 0012	12	02677	D 00001 02700 3
1364		BCE	GOTONE, CODES,	12	02689	B 02733 02563
1365		BCE		1	02701	B
1366		BCE	SHORT1	6	02702	B 02752
1367		C	X3, X5	11	02708	C 00039 00049
1368		BL	LODFLD	7	02719	J 02776 T
1369		B	ERRCTL012	7	02726	J 02647
1370	GOTONE	MLCHA	100X5, LOOP09	12	02733	D 00000 01022 X
1371		B	LODFLD	7	02745	J 02776
1372	SHORT1	MLCHA	50X5, LOOP09	12	02752	D 00005 01022 X
1373		MLCS	0000, LOOP	12	02764	D 07585 01013 3
1374						INSTRUCTION
1375						MOVE FAILING OPER
1376	LOADRLD	MLNA	X3, 223	12	02788	D 00039 00223 /
1377		ZA	ADDR02, X1	11	02800	H 02581 00029
1378		ZA	0002090, X5	11	02811	M 07595 00049
1379						SCAN ERROR TABLE & UPDATA ERROR COUNT
1380	ERSCAN	SCNLA	00X1, 00X1	12	02822	D 00000 00000 S
1381		SAR	X1	7	02834	G 00029 A
1382		BCE	AFTSRH, 10X1, L	12	02841	B 02900 00001 L
1383		SM	X1-1	6	02853	V 00028
1384		MLNWA	X1, 00X5	12	02859	D 00029 00000 V
1385		A	000, X5	11	02871	A 07596 00049
1386						UPDATE IND REG 5

I/O DICOST ERROR CONTROL

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1387						
1388		CW	10X1,X1-1	11	02882	□ 000+1 00028
1389		B	ERSCAN	7	02893	J 02822
1390						
1391	AFTSRH	BCE	WHERE2,1000,1	12	02900	B 02150 01000 1
1392	ERROSH	NOP		1	02912	N
1393		BCE	WHERE2,209	12	02913	B 02150 00209
1394		SW	ERROSH&1	6	02925	• 02913
1395		MLCA	ERR,206	12	02931	D 02587 00206 T
1396		MLCA	2&X3,ROUTID	12	02943	D 000M2 02972 T
1397		B	TYPI	7	02955	J 01593
1398		DCW	ROUTINE @	8	02969	
1399	ROUTID	DC	@ @*G	3	02972	
1400		B	TYMES	7	02974	J 01517
1401						
1402	EXTRA	NOPWM		1	02981	N
1403		WCP	DATA	10	02982	M &T0 01710 W
1404		BCB1	*-16	7	02992	R 02982 Z
1405		BA1	*&1	7	02999	R 03006 M
1406		CW	EXTRAG1	6	03006	□ 02902
1407	ACT	BCE	*&8,1001,1	12	03012	B 03031 01001 1
1408		B	WHERE2	7	03024	J 02150
1409		SW	LUPINT&1	6	03031	• 02495
1410		MRCNG	ACTION,201	12	03037	D 02588 00201 L
1411		B	TYMES	7	03049	J 01517
1412		B	PRGCTL	7	03056	J 02238
1413						
1414						
1415						
1416						
1417						
1418						
1419	STACHK	SBR	X5	7	03063	G 00049 B
1420		SBR	X2	7	03070	G 00034 B
1421		BW	0&X2,LPRT	12	03077	V 000.0 02575 1
1422		S	@7@,X5	11	03089	S 07597 00049

*** I/O DICOST PROGRAM ***

*** DETERMINE WHICH STATUS INDICATORS ARE ON ***

THIS ROUTINE DETERMINES WHICH STATUS INDICATORS ARE ON, ON THE CHANNEL BEING USED. THE INDICATORS FOUND ON ARE STORED IN THE PRINT FIELD AND THE PROGRAM BRANCHES TO ERROR CONTROL.

STORE ADDR IN IND 5

REDUCE ADDR BY 7

I/O DICOST ERROR CONTROL

DA01 INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADRS	INSTRUCTION
1423		MLCS	0&X5,LOOP&10	12	03100	D 00#0 01023 3
1424		MRCWG	STIND,237	12	03112	D 02621 00237 L
1425		MLCS	0&X5,NUOPCO	12	03124	D 00#0 03154 3
1426		B	CHALTR	7	03136	J 01045
1427		DCW	CNTERR	5	03147	03309
1428		DC	NOTROY	5	03152	03167
1429		DCW	a a	1	03153	
1430	NUOPCO	DC	a a	1	03154	
1431		DC	a a	1	03155	
1432		ZA	200237a,X5	11	03156	Q 07602 00049
1433	NOTROY	NOP		1	03167	N
1434		BNR1	CNTERR	7	03168	R 03309 1
1435		B	UPIX	7	03175	J 03340
1436	BUSY	NOP		1	03182	N
1437		BCB1	CNTERR	7	03183	R 03309 2
1438		B	UPIX	7	03190	J 03340
1439	DATAACK	NOP		1	03197	N
1440		BER1	CNTERR	7	03198	R 03309 4
1441		B	UPIX	7	03205	J 03340
1442	EXTCND	NOP		1	03212	N
1443		BEF1	CNTERR	7	03213	R 03309 8
1444		B	UPIX	7	03220	J 03340
1445	NOTRMS	NOP		1	03227	N
1446		BNT1	CNTERR	7	03228	R 03309 B
1447		B	UPIX	7	03235	J 03340
1448	WLR	NOP		1	03242	N
1449		BH11	CNTERR	7	03243	R 03309 -
1450		B	UPIX	7	03250	J 03340
1451		SW	NOTROY&1,BUSY&1	11	03257	, 03168 03183
1452		SW	DATAACK&1,EXTCND&1	11	03268	, 03198 03213
1453		SW	NOTRMS&1,WLR&1	11	03279	, 03228 03243
1454		MRCG	237,SAVIND	12	03290	D 00237 02609 \$
1455		B	ERRCTL	7	03302	J 02635
1456	CNTERR	SBR	X6	7	03309	G 00054 B
1457		A	27a,X6	11	03316	A 07597 00054
1458		CW	ERROSW&1	6	03327	2 02913

MOVE STATUS CODES
 STORE CHNL CODE
 HIGH LIMIT
 LOW LIMIT
 LOAD IX 5
 CHECK FOR NOT READY
 GO UPDATE IND REG
 CHECK FOR BUSY
 GO UPDATE IND REG
 CHECK DATA CNK
 GO UPDATE IND REG
 CHECK FOR EXT COND
 GO UPDATE IND REG
 CHECK FOR NO TRANS
 GO UPDATE IND REG
 CHECK FOR WLR
 GO UPDATE IND REG
 RESET INSTRUCTIONS
 SAVE IND
 RETURN
 STORE RETURN ADDR
 UPDATE RETURN ADDR
 TURN OFF ERROR SW

DA01

L/O DICOSY ERROR CONTROL

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1459		B	UPIX619	7	03333	J 03359
1460	UPIX	SBR	X6	7	03340	G 00054 B
1461		MLCS	@ 00X5	12	03347	D 07509 0000 3
1462		A	@20.X5	11	03359	A 07603 00049
1463		B	00X6	7	03370	J 00000
1464						

STORE RETURN ADDR
 REMOVE STATUS CHAR
 UPDATE IND REG 5
 RETURN TO PROGRAM

063

PAGE 53

DA01

CT ADDR INSTRUCTION

I/O DICOST SEQUENCE CONTROL

OPCOD OPERAND

LABEL

PGLIN

201

EQU

CTLFLD

1466

PST

1487

DETERMINE WHICH CHANNEL TO USE

PGM	LABEL	OPCOD	OPERAND	INITIALIZE ROUTINE	OPCOD	OPERAND	INITIALIZE ROUTINE	CT	ADDR	INSTRUCTION
1469										
1470										
1471										
1472	START	CW	CEHAD,OUT&1	TURN				11	03377	□ 07472 04602
1473		CW	NOG000&1,LAST2&1	OFF				11	03388	□ 04930 05483
1474		CW	PAS2SW&1,FILE&4	SWITCHES				11	03399	□ 06046 07695
1475		CW	SURFSW&1					6	03410	□ 05508
1476		MLCA	@00@,FILE&1	RESET ACCESS & MOD				12	03416	D 07605 07692 T
1477		SW	FILE&1					6	03428	• 07692
1478		S	TRKCNT	RESET TRCK COUNT				6	03434	S 07511
1479		ZA	@0000@,X15	LOAD IX 15				11	03440	M 07609 00099
1480		ZA	@1308@,X14	LOAD IX 14				11	03451	M 07613 00094
1481	ONE	BCE	@&@,0&X14,F	BRCH IF FILES AVAIL				12	03462	B 03481 00M.0 F
1482		B	UPX15					7	03474	J 03569
1483		MLCA	CODE3&X15,TSTCH	MOVE CHANNEL CODES				12	03481	D 07EG5 03512 T
1484		B	CHALTR	GO TO CHANNEL ALTER				7	03493	J 01045
1485		DCW	TOP	TOP LIMIT				5	03504	07465
1486		DC	BOTTOM-1	LOW LIMIT				5	03509	03512
1487		DCW		CHANNEL				1	03510	
1488		DC		CODES				1	03511	
1489	TSTCH	DC	@ @					1	03512	
1490	BOTTOM	SD	1,FILE	TEST FOR READY FILE				10	03513	M &FO 07691 R
1491		BA1	@&1					7	03523	R 03530 M
1492		BNR1	@&8	BRCH NOT READY				7	03530	R 03544 1
1493		B	RIGHT1					7	03537	J 03610
1494	UP1	A	@1@,FILE&1	UP MOD ADDR				11	03544	A 07590 07692
1495		BZ	@&8	BRCH IF ALL MOD TRID				7	03555	J 03569 Y
1496		B	BOTTOM					7	03562	J 03513
1497	URX15	A	@3@,X15	UPDATE IX 1K				11	03569	A 07596 00099
1498		A	@57@,X14	UPDATE IX 14				11	03580	A 07615 00094
1499		BCE	ENDTST,X15-1,1	BRCH IF ALL MOD CHKD				12	03591	B 07429 00098 1
1500		B	ONE					7	03603	J 03462
1501	RIGHT1	MLNS	FILE&1,RDYMES&11	MOVE MOD ADDR				12	03610	D 07692 03652 1
1502		MENS	TSTCH,RDYMES&15	MOVE CHNL ADDR				12	03622	D 03512 03656 1
1503		B	TYP2	GO TYPE MESSAGE				7	03634	J 01607
1504		RDYMES	@TESTING MOD CH @,G					16	03641	

ods

APR 15 1964

INITIALIZE ROUTINE

PGLIN	LABEL	OPCOD	OPERAND	REPLY AREA	CT	ADDRS	INSTRUCTION
1506		DCW	2 2,G		1	03658	
1507		BCE	FOUND1,--13,1	BRCH IF THIS ONE IS	12	03660	B 03679 03658 I
1508		B	UPI	TO BE TESTED	7	03672	J 03544
1509							

PREPARE PROG TO RUN UNDER MODE SELECTED

1510							
1511							
1512	FOUND1	B	TYP2		7	03679	J 01607
1513		DCW	2SEL MCDE2,G		8	03693	
1514	MODE	DCW	2N 2,G		5	03695	
1515		SW	MODE1,FILE2	SAVE ADDRESS	11	03701	, 03696 07693
1516		MLCA	MODE4,LOEND	SET FILE TKHD ADDR	12	03712	D 03699 07515 I
1517		MLCA	MODE4,FILE5	SET FILE ADDR LIMIT	12	03724	D 03699 07696 I
1518		MLNA	MODE4,LIMIT	SET FILE ADDR LIMIT	12	03736	D 03699 07476 /
1519		BZN	CYL,MODE,6	BRCH IF CYL MODE	12	03748	V 07668 03695 H
1520		BZN	TRCK,MCDE,-	BRCH IF USING TRACK	12	03760	V 03834 03695 K
1521		BZN	SURF,MCDE,#		12	03772	V 03821 03695 S
1522		MLNA	20002,LIMIT	SET FILE ADDR LIMIT	12	03784	D 07609 07476 /
1523		B	CKOPT		7	03796	J 03845
1524	CYL	A	242,LIMIT	DETERMINE HIGH LIMIT	11	03803	A 07617 07476
1525		B	CKOPT		7	03814	J 03845
1526	SURF	SW	SURFSW1	SET SWITCH TO TEST ONE SWITCH	6	03821	, 05508
1527		B	CKOPT		7	03827	J 03845
1528	TRCK	A	212,LIMIT	DETERMINE HIGH LIMIT	11	03834	A 07590 07476
1529	CKOPT	MLNS	MODE,OPTNSW	STORE OPTION SELECTD	12	03845	D 03695 07484 I
1530		BCE	CESWON,OPTNSW,1	WILL HAI BE WRITTEN	12	03857	B 05936 07484 I
1531		BCE	CESWON,OPTNSW,4	WILL HAI BE WRITTEN	12	03869	B 05936 07484 4
1532		B	MONITR	GO TO MONITER	7	03881	J 02066
1533							

POSITION THE ACCESS

CT ADDR INSTRUCTION

PGLIN LABEL

OPCCD OPERAND

1535 *** TEST ROUTINE DESCRIPTION ***
 1536 *** POSITION THE ACCESS ***
 1537 THIS ROUTINE SEEKS THE ACCESS TO THE LATEST TRACK AND HEAD ADDR
 1538 BEING USED, IT SHOULD BE POINTED OUT THAT THIS ROUTINE IS BYPASSED
 1539 WHEN THE ADDRESS CHANGE DOES NOT REQUIRE THE ACCESS TO BE MOVED.
 1540 AFTER THE SEEK OPERATION A READ HAD IS ISSUED, THIS READ IS GIVEN
 1541 ONLY IF THE CE-HAD SWITCH IS OFF, IF THE READ OP RESULTS IN A
 1542 NO RECORD FOUND, ERROR 1 IS INDICATED. ALL STATUS ERRORS ARE ALSO
 1543 INDICATED.

PGLIN	NOI	NGP	ROUTINE INDENT	CT	ADDR	INSTRUCTION
1544				1	03888	N
1545		DC	2012	2	03890	
1546		SD	1, FILE	10	03891	M %F0 07691 R
1547		RCB1	*-16	7	03901	R 03891 2
1548		BAL	STACHK	7	03908	R 03063 M
1549		BW	NOIXIT, CEHAD	12	03915	V 03971 07472 1
1550		LU	%F5, FILE, R	10	03927	L %F5 07691 R
1551		BCB1	*-16	7	03937	R 03927 2
1552		BAL	*E1	7	03944	R 03951 M
1553		BEX1	*E8, Y	7	03951	R 03965 Y
1554		B	NOIXIT	7	03958	J 03971
1555		SW	E1	6	03965	* 01802
1556			ACCESS POSITIONED INCORRECTLY, READ OP CAUSES NO RECORD FOUND.	7	03971	J 02066
1557			MONITR			
1558						
1559						
1560						

PGLIN	LABEL	OPCOD	OPERAND	WRITE FORMAT FOR MAXIMUM LENGTH	CT	ADDRS	INSTRUCTION	DAOI
1561				*** TEST ROUTINE DESCRIPTION ***				
1562				*** WRITE MAXIMUM LENGTH FORMAT IN 8 BIT MODE ***				
1563				THIS ROUTINE WRITES A FORMAT IN 8 BIT MODE EACH TIME A NEW				
1564				CYLINDER IS BEGUN. IF THE PROGRAM IS BEING RUN IN THE VERIFY ADDR				
1565				MODE ONLY THIS ROUTINE IS COMPLETELY BYPASSED. AFTER THE FORMAT IS				
1566				WRITTEN IT IS WRITE CHECKED, IF THIS RESULTS IN A DATA CHECK, ERROR				
1567				2 IS INDICATED. ALL STATUS ERRORS ARE ALSO INDICATED.				
1568								
1569				FORMAT WRITTEN IN 8 BIT MODE				
1570				44433333333333333333333333333333 HAZ AREA CONSISTS OF 2180 CHAR 4				
1571								
1572				FORMAT ORGANIZATION				
1573				GAP1---HA1---GAP2---HA2 2209CHARS---GAP3				
1574								
1575	N02	NOP			1	03978	N	
1576		DC	0200	ROUTINE IDENT	2	03980		
1577		BCE	N02XIT,OPTNSW,2	IS FORMAT BEING WRTN	12	03981	B	04155 07484 2
1578		SH	DATAFD		6	03993		07700
1579		ZA	ADDR1,X10	LOAD IX 10	11	03999	M	07567 00074
1580	CLRFLD	CS	OCX10	CLEAR THE DATA FLD	6	04010	/	00...0
1581		SBR	X10	STORE ADDR REG	7	04016	G	00074 B
1582		BW	CLRFLD,DATAFD	MORE TO CLEAR	12	04023	V	04010 07700 1
1583		SH	DATAFD&2232	PREPARE TO LOAD	6	04035	,	09932
1584		MLCS	030,DATAFD	DATA FIELD	12	04041	D	07596 07700 3
1585		MRN	DATAFD,DATAFD&1	MOVE IN HAL FORMAT	12	04053	D	07700 07701 9
1586		MLCS	040,DATAFD&2233	SET IN LAST GAP	12	04065	D	07618 09933 3
1587		MLCA	HAAREA,DATAFD&23	MOVE IN HAL FORMAT	12	04077	D	07508 07723 T
1588		MLCWS	0H0,DATAFD&2234	SET TERMINATING WHGM	12	04089	D	07588 09934 7
1589		MU	0F7,FILE,W	WRITE THE FORMAT	10	04101	M	0F7 07691 H
1590		BCB1	0-16		7	04111	R	04101 2
1591		BA1	STACHK	BRCH ON ANY ERROR	7	04118	R	03063 M
1592		WDC	1,FILE	WRITE DISK CHECK	10	04125	M	0F3 07691 H
1593		BA1	008	BRCH ON ANY ERROR	7	04135	R	04149 M
1594		B	N02XIT		7	04142	J	04155
1595				*** SET ERROR 2 ON ***				
1596		SH	E2		6	04149	,	01803

068

WRITE FORMAT FOR MAXIMUM LENGTH

PAGE 58

DA01

PGLIN

LABEL

OPCOD OPERAND

CT ADDR INSTRUCTION

1597 WRITE CHECK OF FORMAT RESULTS IN DATA CHECK

1598 N02XIT B MONITR

7 04155 J 02066

1599

069

WRITE THE HOME ADDR & CHECK IT

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

1601 *** TEST ROUTINE DESCRIPTION ***
 1602 *** WRITE THE HOME ADDRESS 1 AND CHECK IT ***
 1603 WHEN THE WRITE ADDRESS MODE IS BEING USED AND THE CE-HAO SWITCH
 1604 IS ON THIS ROUTINE WRITES HA1&2.THE ROUTINE ASSUMES THE ACCESS IS
 1605 PROPERLY POSITIONED FOR WRITTING THE ADDRESS,AFTER WRITTING HAO
 1606 A READ HAO BRINGS THE WRITTEN HAO BACK INTO MEMORY.THE ADDRESS
 1607 READ IS CHECKED IN MEMORY,IF IT DOESN T COMPARE WITH THE ADDRESS
 1608 WRITTEN ERROR 3 IS INDICATED.STATUS ERRORS WILL ALSO BE INDICATED

FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE NO2

DATA FIELD USED WRITE AND READ IN 8 BIT MODE

0000888 THE FIRST 4 ZEROS ARE HA1,THE FIRST 8 BIT IS THE FLAG

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1601				1	04162	N
1602				2	04164	
1603				12	04165	H 04341 07484 2
1604				12	04177	B 04341 07484 5
1605				12	04189	V 04208 07472 1
1606				7	04201	J 04341
1607				12	04208	D 07588 09910 7
1608				12	04220	D 07693 07700 3
1609				12	04232	D 07619 07706 3
1610				6	04244	H 03243
1611				10	04250	L 2F5 07691 W
1612				7	04260	R 04250 2 G
1613				7	04267	R 04274 M S
1614				7	04274	R 03063 M
1615				6	04281	/ 07722
1616				10	04287	L 2F5 07691 R
1617				7	04297	R 04304 M S
1618				7	04304	R 03063 M
1619				6	04311	0 03243
1620				11	04317	C 07705 07698
1621				7	04328	J 04341 S
1622						
1623						
1624						
1625						
1626						
1627						
1628						
1629						
1630						
1631						
1632						
1633						
1634						
1635						
1636						

*** SET ERROR 3 ON ***

070

DA01
CT ADORS INSTRUCTION

6 04335 , 01804

7 04341 J 02066

WRITE THE HOME ADDR & CHECK IT

LABEL. OPCODE OPERAND

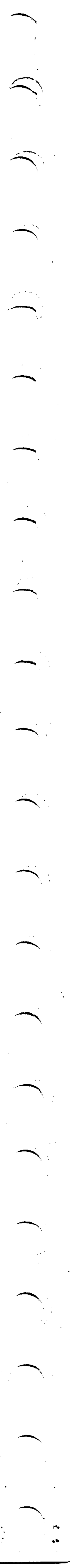
TURN ON ERROR

ADDRESS READ BACK DOES NOT COMPARE TO ADDRESS WRITTEN

1637
1638
1639
1640

SH E3

NO3X1T B HONITR



ANALYZE DISK SURFACE FOR DEFECTS

PGLIN LABEL OPCOD OPERAND

1542 *** TEST ROUTINE DESCRIPTION ***

1543 *** USE BLANKS TO ANALYZE SURFACE ***

1544 THIS ROUTINE WRITES A MAXIMUM RECORD OF BLANKS IN THE 8 BIT

1545 MODE, THE RECORD ACTUALLY BEING THE HA2 AREA, THE RECORD IS READ

1546 BACK AND CHECKED IN MEMORY. IF THE RECORD IS NOT ALL BLANKS THE

1547 PROGRAM BRANCHES TO ROUTINE N07 WHERE EACH CHARACTER IS CHECKED

1548 UNTIL THE FAILING CHARACTER IS LOCATED. THE PROGRAM RETURNS TO

1549 THIS ROUTINE AND THE RECORD IS WRITTEN AND READ AGAIN. IF THE READ

1550 DATA IS GOOD ON THE 2ND PASS ERROR 5 IS INDICATED, THIS WOULD BE A

1551 SOFT ERROR AND DOES NOT INDICATE A DEFECTIVE SURFACE. IF THE 2ND

1552 PASS READ DATA IS BAD, THE PROGRAM ONCE MORE BRANCHES TO ROUTINE

1553 N07 FOR A CHARACTER BY CHARACTER CHECK. IF THE FAILING CHARACTER

1554 LOCATION IN RECORD IS THE SAME AS THE FIRST PASS, ERROR 4 IS

1555 INDICATED. THIS WOULD BE A SOLID ERROR AND A STRONG INDICATION OF

1556 A DEFECTIVE TRACK. IF THE FAILING CHARACTER IS NOT THE SAME AS THE

1557 FIRST PASS ERROR 5 WOULD BE INDICATED. ALL STATUS ERRORS BUT WRONG

1558 LENGTH RECORD WILL ALSO BE INDICATED.

1559 FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE N02

1660

1661 DATA FIELD USED IN 8 BIT MODE

1662 2205 BLANKS THE ENTIRE FIELD IS HA2

1663

1664

1665

1666

PART I USE BLANKS TO ANALYZE SURFACE

1667	N04	NOP		1	04348	N
1668	DC	0400	ROUTINE IDENT	2	04350	
1669	BCE	N06XIT,OPTNSH,1	IS THIS ROUTINE USED	12	04351	B 05282 07484 1
1670	BCE	N06XIT,OPTNSH,2	IS THIS ROUTINE USED	12	04363	B 05282 07484 2
1671	BH	N06XIT,CEHAO	IS THE CE-HAO SW ON	12	04375	V 05282 07472 1
1672	CW	HLR&1	TURN OFF HLR CHECK	6	04387	B 03243
1673	SW	DATAFD		6	04393	B 07700
1674	ZA	ADDR2,X10	LOAD IX 10	11	04399	M 07572 00074
1675	CS	06X10	CLEAR	6	04410	/ 00:00
1676	SBR	X10	OUT	7	04416	G 00074 B
1677	BH	CLEAN,DATAFD	THE DATA FLD	12	04423	V 04410 07700 1

672

ANALYZE DISK SURFACE FOR DEFECTS

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1678		MLCWS	DATAFD&2205	12	04435	D 07588 09905 7
1679		MLCS	Q Q, TSTBIT	12	04447	D 07589 07509 3
1680		LU	EF5, FILE, W	10	04459	L 8F5 07691 H
1681		BCBI	16	7	04469	R 04459 2 G
1682		BAI	61	7	04476	R 04483 M
1683		BEX1	STACHK, S	7	04483	R 03063 M
1684		LU	8F5, FILE, R	10	04490	L 8F5 07691 R
1685		BAI	61	7	04500	R 04507 M
1686		BEX1	STACHK, S	7	04507	R 03063 M
1687		SW	DATAFD, WLR&1	11	04514	0 07700 03243
1688		C	DATAFD&2204, DATAFD&2203	11	04525	C 09904 09903
1689			CHECK THE DATA FLD IN MEMORY			
1690		BE	FIRST	7	04536	J 04570 S
1691		B	CHARCK	7	04543	J 05977
1692		B	IN	7	04550	J 04393
1693			*** SET ERROR 4 ON ***			
1694		SW	E4	6	04557	0 01805
1695			ON 2 PASSES THE SAME CHARACTER LOCATION FAILED, PROBABLY DEFECTIVE			
1696			SURFACE			
1697		B	OUT	7	04563	J 04601
1698		BW	68, PAS2SH&1	12	04570	V 04589 06046 I
1699		B	OUT	7	04582	J 04601
1700		CW	PAS2SH&1	6	04589	0 06046
1701			*** SET ERROR 5 ON ***			
1702		SW	E5	6	04595	0 01806
1703			CHARACTER LOCATION FAILED ONCE ON TWO PASSES			
1704			OUT			
1705		B	ALTRK	1	04601	N
1706		B	MONITR	7	04602	J 06471
1707			PART II USE V TO ANALYZE SURFACE			
1708						
1709						
1710			*** TEST ROUTINE DESCRIPTION ***			
1711			*** USE WORD MARK V TO ANALYZE SURFACE ***			
1712			THIS ROUTINE FUNCTIONS IN THE SAME WAY AS ROUTINE NO4 EXCEPT			
1713			WORD MARK V IS USED. SINCE WORD MARKS ARE USED IT IS			

ANALYZE DISK SURFACE FOR DEFECTS

CT ADDR INSTRUCTION

1714 VERY DIFFICULT TO CHECK THE DATA IN MEMORY SO A WRITE DISK CHECK
 1715 IS USED TO CHECK THE DATA WRITTEN. IF A DATA CHECK RESULTS THEN
 1716 THE RECORD IS READ BACK INTO MEMORY AND A CHARACTER BY CHARACTER
 1717 CHECK IS MADE. THE LOCATION OF THE FAILING CHARACTER IS SAVED AND
 1718 THE ROUTINE IS REPEATED. ON THE 2ND PASS IF THE WRITE CHECK DOES
 1719 NOT FAIL, OR IF IT DOES BUT THE FAILING CHARACTER LOCATION IS NOT
 1720 THE SAME AS THE FIRST PASS, ERROR 7 IS INDICATED. IF ON THE 2ND
 1721 PASS A FAILURE OF SAME CHARACTER LOCATION OCCURES, ERROR 6 IS
 1722 INDICATED. THIS BEING THE SOLID ERROR. ALL STATUS ERRORS WILL ALSO
 1723 BE INDICATED.

1724 FORMAT REQUIRED IS THE SAME AS DESCRIBED TO ROUTINE NO2

1726 DATA FIELD USED 8 BIT MODE

1728 2205 WORD MARK V S

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1730	N05	NOP		1	04616	N
1731	DC	2052		2	04618	
1732	CM	MLR61		6	04619	D 03243
1733	GETRDY	ZA	ADDR2, X10	11	04625	M 07572 00074
1734	SW	DATAFD		6	04636	, 07700
1735	CLEAN3	CS	06X10	6	04642	/ 00:00
1736	SBR	X10		7	04648	G 00074 B
1737	BH	CLEAN3, DATAFD		12	04655	V 04642 07700 I
1738	SW	DATAFD		6	04667	, 07700
1739	MLCWS	2V3, DATAFD&2204	LOAD THE	12	04673	D 07620 09904 7
1740	MLCWB	DATAFD&2204, DATAFD&2203	DATA FIELD	12	04685	D 09904 09903 P
1741	MLCWS	2V3, TSTBIT	SAVE THE TEST BIT	12	04697	D 07620 07509 7
1742	MLCWS	2M3, DATAFD&2205	SET TERMINATING WMGM	12	04709	D 07588 09905 7
1743	LU	BF5, FILE, M	WRITE MA2 FULL TRCK	10	04721	L 2F5 07691 W
1744	BAL	6E1		7	04731	R 04738 H
1745	BEX1	STACHK, M	BRCH ANY BUT WLR	7	04738	R 03063 H
1746	WRTCHK	LU	2F3, FILE, M	10	04745	L 2F3 07691 W
1747	BAL	6E1		7	04755	R 04762 M
1748	BEX1	STACHK, .	BRCH ON ANY BUT DC	7	04762	R 03063 .
1749	BER1	6E8	BRCH ON DATA CHECK	7	04769	R 04783 4

ANALYZE DISK SURFACE FOR DEFECTS

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION	DAOI
1750		D	OK	7	04776	J 04962	
1751		ZA	ADDR2,X10	11	04783	M 07572 00074	
1752		SW	DATAFD	6	04794	, 07700	
1753	CLEAN4	CS	06X10	6	04800	/ 00000	
1754		SDR	X10	7	04806	G 00074 B	
1755		BW	CLEAN4,DATAFD	12	04813	V 04800 07700 I	
1756		LU	SFS,FILE,R	10	04825	L 3F5 07691 R	
1757		BAL	0&1	7	04835	R 04842 M	
1758		BEX1	STACHK,M	7	04842	R 03063 M	
1759		SW	HLR&1	6	04849	, 03243	
1760		ZA	022040,X7	11	04855	M 07624 00059	
1761	CHKM	BW	0C0,DATAFD&X7	12	04866	V 04885 07XMO I	
1762		B	NOGOOD	7	04878	J 04929	
1763		BCE	0E8,DATAFD&X7,V	12	04885	B 04904 07XMO V	
1764		B	NOGOOD	7	04897	J 04929	
1765		S	010,X7	11	04904	S 07590 00059	
1766		BZ	OK	7	04915	J 04862 Y	
1767		B	CKM	7	04922	J 04866	
1768	NOGOOD	NOPIH		1	04929	N	
1769		B	0&14	7	04930	J 04950	
1770		SW	NOGOOD&1	6	04937	, 04930	
1771		B	GETRDY	7	04943	J 04625	
1772		SW	*** SET ERROR 6 ON ***	6	04950	, 01807	
1773		SW	E6				
1774			ON 2 PASSES THE SAME CHARACTER LOCATION FAILED,PROBABLY DEFECTIVE				
1775			SURFACE				
1776		CW	NOGOOD&1	6	04956	0 04930	
1777	OK	BW	0E8,NOGOOD&1	12	04962	V 04981 04930 I	
1778		B	NO5XIT	7	04974	J 04993	
1779		SW	*** SET ERROR 7 ON ***	6	04981	, 01808	
1780		SW	E7				
1781			CHARACTER LOCATION FAILED ONCE ON TWO PASSES				
1782		CH	NOGOOD&1	6	04987	0 04930	
1783	NO5XIT	B	MONITR	7	04993	J 02066	
1784							
1785			PART III USE - TO ANALYZE SURFACE				

ANALYZE DISK SURFACE FOR DEFECTS

DA01

CT ADDR INSTRUCTION

PGLIN LABEL

OPCOD OPERAND

1822	BEXL	STACHK, H	BRCH ANY BUT WLR	7	05188	R 03063 H
1823	SW	DATAFD, MLR&1		11	05195	, 07700 03243
1824	C	DATAFD&2204, DATAFD&2203		11	05206	C 09904 09903

CHECK THE DATA FIELD IN MEMORY

1825	BE	AOK	IF FIELD IS OK BRCH	7	05217	J 05251 S
1827	B	CHARCK	GO CHECK CHAR	7	05224	J 05977
1828	B	GETSET		7	05231	J 05009

*** SET ERROR 8 ON ***

1830	SW	E0	TURN ON ERROR IND	6	05238	, 01809
------	----	----	-------------------	---	-------	---------

ON 2 PASSES THE SAME CHARACTER LOCATION FAILED, PROBABLY DEFECTIVE

SURFACE

1832	B	N06XIT		7	05244	J 05282
1834	BW	*E8, PAS2SH&1	BRCH IF 2ND PASS	12	05251	V 05270 06046 1
1835	B	N06XIT		7	05263	J 05282
1836	CW	PAS2SH2&1	TURN OF PASS SH	6	05270	B 06046

*** SET ERROR 9 ON ***

1837	SW	E9	TURN ON ERROR IND	6	05276	, 01810
------	----	----	-------------------	---	-------	---------

CHARACTER LOCATION FAILED ONCE ON TWO PASSES

1840	N06XIT	B	MONITR	7	05282	J 02066
------	--------	---	--------	---	-------	---------

1841

VERIFY HAI ADDRESSES
 PGLJN LABEL OPCOD OPERAND CT ADDR INSTRUCTION

1843		*** TEST ROUTINE DESCRIPTION ***			
1844		*** VERIFY THAT HAI ADDRESSES ARE CORRECT ***			
1845		WHEN RUNNING IN A MODE THAT USES THIS ROUTINE AND THE CE-HAD			
1846		SWITCH IS OFF A READ HAD OP IS ISSUED. IF THE READ HAD OP RESULTS			
1847		IN A NO RECORD FOUND, ERROR 10 IS INDICATED. IF THE ERROR OCCURS			
1848		THE PROGRAM WILL REQUEST THE CE-HAD SWITCH BE TURNED ON, THE FAIL-			
1849		ING ADDRESS IS THEN READ BACK INTO MEMORY AND DISPLAYED FOR			
1850		ANALYSIS. ALL STATUS ERRORS ARE ALSO INDICATED.			
1851					
1852	NOP			1 05289	N
1853	DC	2080	ROUTINE IDENT	2 05291	
1854	BCE	N08XIT, OPTNSW, 3	BRCH IF NOT USED	12 05292	B 05472 07484 3
1855	BW	N08XIT, CEHAD	IS CE-HAD SW ON	12 05304	V 05472 07472 1
1856	MLCHS	0H0, DATAFD&15	SET FLD LENGTH	12 05316	D 07588 07715 7
1857	LU	0F5, FILE, R	READ HAZ FULL TRK	10 05328	L 0F5 07691 R
1858	BCB1	0-16		7 05338	R 05328 2
1859	BAL	0E1		7 05345	R 05352 H
1860	BEX1	0E8, Y	BRCH ON NO-TR DR EC	7 05352	R 05366 Y
1861	B	N08XIT		7 05359	J 05472
1862		*** SET ERROR 10 ON ***			
1863	SW	E10	TURN ON ERROR IND	6 05366	01811
1864		READ HAZ RESULTS IN A NO RECORD FOUND			
1865	BCE	0E8, SPTAD0, 1	BRCH IF IN MANUAL MD	12 05372	B 05391 01004 1
1866	B	N08XIT		7 05384	J 05472
1867	B	MONITR	GO INDICATE ADDR ERR	7 05391	J 02066
1868	B	CESHON		7 05398	J 05936
1869	MU	0R5, FILE, R	READ BACK ADDR	10 05405	M 0F5 07691 R
1870	BAL	0E1		7 05415	R 05422 M
1871	SW	DATAFD		6 05422	07700
1872	MLCA	DATAFD&4, ADRMSG&16	MOVE FAILING ADDR	12 05428	D 07704 05463 T
1873	B	TYP1	GO TYPE MESSAGE	7 05440	J 01593
1874	ADRMGS	0HAI READ IS	0, G	17 05447	
1875	B	SNOFF	GO TURN OFF CE-HAD	7 05465	J 05897
1876	B	MONITR		7 05472	J 02066
1877					

CT ADDR INSTRUCTION

ADDRESS UPDATE ROUTINE

LABL ORCOD OPERAND

PGLIN

*** TEST ROUTINE DESCRIPTION ***

*** FILE ADDRESS UPDATE ROUTINE ***

1879
 1880
 1881 THIS ROUTINE UPDATES THE HAI ADDRESS IN THE FILE ADDRESS, IT
 1882 DETERMINES WHEN A CYLINDER HAS BEEN COMPLETED AND WHEN ALL OF THE
 1883 CUSTOMER CYLINDERS HAVE BEEN COMPLETED. WHEN A CYLINDER IS
 1884 COMPLETED AND THE NEXT CYLINDER MUST BE STARTED IT INSURES THAT
 1885 THE POSITION ACCESS ROUTINE IS RUN. WHEN ALL CUSTOMER CYLINDERS
 1886 HAVE BEEN COMPLETED IT SETS THE FILE ADDRESS FOR THE DIAGNOSTIC
 1887 CYL. IN ADDITION THIS ROUTINE CHECKS WHEN THE PROGRAM IS COMPLETED
 1888 ACCORDING TO THE MODE BEING RUN, 1 TRACK, 1 CYLINDER, THE ENTIRE MOD

PGLIN	LABL	ORCOD	OPERAND	CT	ADDR	INSTRUCTION
1879		NOP		1	05479	N
1880		DC	2092	2	05481	
1881	LAST2	NOPWM		1	05482	N
1882		B	TR053	7	05483	J 05704
1883		SW	FILE62	6	05490	Q 07693
1884		ZA	LN01,X3	11	05496	M 07630 00039
1885	SURFSW	NOPWM		1	05507	N
1886		B	UPSURF	7	05508	J 05787
1887		A	212,FILE65	11	05515	A 07590 07696
1888		C	FILE65,LIMIT	11	05526	C 07696 07476
1889		BE	ANYMOR	7	05537	J 05616 S
1890		A	212,TRKCNT	11	05544	A 07590 07511 D
1891		HRCWG	FILE,DATA	12	05555	D 07691 01710 L
1892		SW	EXTRA&1	6	05567	0 02982
1893		BCE	CYLCMP,TRKCNT-1,4	12	05573	B 05603 07510 4
1894		ZA	LN03,X3	11	05585	M 07635 00039
1895		B	N03	7	05596	J 04162
1896		S	TRKCNT	6	05603	S 07511
1897		B	N01	7	05609	J 03888
1898		S	TRKCNT	6	05616	S 07511
1899		BZN	SUMORE,MODE,2	12	05622	V 05679 03695 2
1900		BW	AGAIN,CEHAD	12	05634	V 05653 07472 1
1901		B	ALLDUN	7	05646	J 05835
1902		B	SNOFF	7	05653	J 05897
1903	AGAIN	B		12	05660	D 07515 07696 T
1904		MLC	LOFNO,FILES			

ADDRESS UPDATE ROUTINE
 PGLIN LABEL OPCODE OPERAND CT ADDRS INSTRUCTION

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1915		B	N01	7	05672	J 03888
1916	SUMORE	SW	LAST2&1	6	05679	05483
1917		MLCA	@9#002,FILE&5	12	05685	D 07639 07696 T
1918		B	N01	7	05697	J 03888
1919	TW053	SW	FILE&4	6	05704	07695
1920		A	@12,FILE&5	11	05710	A 07590 07696
1921		BCE	ALLDUN,FILE&4,6	12	05721	B 05835 07695 6
1922		C	FILE&5,@20@	11	05733	C 07696 07641
1923		BE	TW054	7	05744	J 05769 S
1924		ZA	&N03,X3	11	05751	M 07635 00039
1925		B	N03	7	05762	J 04162
1926	TW054	ZA	&N01,X3	11	05769	M 07630 00039
1927		B	N01	7	05780	J 03888
1928	UPSURF	A	@40@,FILE&5	11	05787	A 07617 07696
1929		C	FILE&5,LIMIT	11	05798	C 07696 07476
1930		BE	*&8	7	05809	J 05823 S
1931		B	N01	7	05816	J 03888
1932		BW	AGAIN,CEHAD	12	05823	V 05653 07472 1
1933	ALLDUN	CW	LAST2&1,FILE&4	11	05835	05483 07695
1934		CW	SURFSW&1	6	05846	05508
1935		MLCA	LOEND,FILE&5	12	05852	D 07515 07696 T
1936		BW	*&8,CEHAD	12	05864	V 05883 07472 1
1937		B	UP1	7	05876	J 03544
1938		B	SWOFF	7	05883	J 05897
1939		B	N01	7	05890	J 03888
1940	SWOFF	SBR	OFFXIT&5	7	05897	G 05934 B
1941		B	TYP1	7	05904	J 01593
1942		DCW	@CE-HAD OFF@,G	10	05920	
1943		H		1	05922	
1944		CW	CEHAD	6	05923	07472
1945	OFFXIT	B	O	7	05929	J 00000
1946	CESWON	SBR	ONXIT&5	7	05936	G 05972 B
1947		B	TYP1	7	05943	J 01593
1948		DCW	@CE-HAD ON@,G	9	05958	
1949		H		1	05960	
1950		SW	CEHAD	6	05961	07472

GO TO ROUTINE 1
 TURN ON SW
 RESET ADDR
 GO TO ROUTINE 1
 UPDATE ADDR
 ARE CE TRCKS COMPLET
 WAS TRK 253 JUST CMPL
 IF SO BRCH
 LOAD IND REG 3
 GO TO ROUTINE 3
 LOAD IND REG 3
 GO TO ROUTINE 1
 UPDATE BY 40 TO ADDRESS NEXT TRCK
 HAS SURFACE BEEN COMPLETED
 IF SO BRCH
 GO TEST NEXT TRACK
 BRCH IF WRITTING ADDRESSES
 TURN OFF PASS SW
 TURN OFF SURFACE TEST SWITCH
 IS CE-HAD SW ON
 GO FIND ANOTHER MOD
 GO TO ROUTINE 1
 STORE RETURN ADDR
 GO TO TYPE ROUTINE
 TURN OFF CE-HAD SW
 STORE RETURN ADDR

080

DA01

CT ADDR INSTRUCTION

7 05967 J 00000

ADDRESS UPDATE ROUTINE

OPCOD OPERAND

LABEL

PGLIN

B 0

ONXLT

195E



CHARACTER BY CHARACTER CHECK

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1953			OF THE DATA FIELD			
1954			*** TEST ROUTINE DESCRIPTION ***			
1955			*** CHARACTER BY CHARACTER CHECK ROUTINE ***			
1956			THIS ROUTINE IS USED BY ROUTINE ND4 & ND6, TWO FO THE SURFACE			
1957			ANALYSIS ROUTINES. THE ROUTINE CHECKS EVERY CHARACTER IN THE REC.			
1958			READ BACK FROM THE FILE, WHEN A CHARACTER IS LOCATED WHICH WAS NOT			
1959			RECORDED ITS LOCATION IN THE RECORD IS STORED IN INDEX REG. 7, AND			
1960			THE ROUTINE RETURNS TO THE ROUTINE THAT DISCOVERED THE FAILURE.			
1961			IF THE SAME TRACK FAILS AGAIN THIS ROUTINE CHECKS EVERY CHARACTER			
1962			AND WHEN IT LOCATES A FAILURE THE LOCATION IN THE RECORD IS CHECK			
1963			ED AGAINST THE FIRST FAILING LOCATION. IF THE LOCATIONS ARE THE			
1964			SAME A SOLID ERROR WILL BE INDICATED, IF NOT A SOFT ERROR IS IND.			
1965				1	05974	N
1966	NOP			2	05976	
1967	DC		0070	7	05977	G 00064 B
1968	SBR		X8	11	05984	Q 07645 00054
1969	ZA		021630, X6	12	05995	D 07509 06018 3
1970	MLCS		TSTBIT, 0&12	12	06007	B 06026 07X:0
1971	BCE		*60, DATAFD&X6	7	06019	J 06045
1972	B		PAS2SW	12	06026	V 06045 07X:0 1
1973	BW		PAS2SW, DATAFD&X6	7	06038	J 06077
1974	B		MATCH	1	06045	N
1975	NOPHM			7	06046	J 06102
1976	B		PASS2	11	06053	M 00054 00069
1977	ZA		X6, X9	6	06064	, 06046
1978	SW		PAS2SH&1	7	06070	J 00:00
1979	B		0&X8	11	06077	S 07590 00054
1980	S		010, X6	7	06088	J 00:20 V
1981	BZ		20&X8	7	06095	J 06007
1982	B		CHKONE	11	06102	C 00054 00069
1983	C		X6, X9	7	06113	J 00:07 S
1984	BE		7&X8	7	06120	J 00:20
1985	B		20&X8			
1986						

1988 *** TEST ROUTINE DESCRIPTION ***

1989 *** FLAG A DEFECTIVE TRACK ***

1990 THIS ROUTINE IS ENTERED ONLY AT THE DIRECTION OF CE, ITS PURPOSE

1991 IS TO ALLOW THE CE TO FLAG DEFECTIVE TRACKS AND TO INSURE THAT

1992 THE SELECTED ALTERNATE TRACK IS FREE OF DEFECTS. THE CE SELECTS

1993 THE ROUTINE AS A PROGRAM OPTION AND AT THE SAME TIME ENTERS THE

1994 HAI ADDRESS AND FLAG CHARACTER. THE ROUTINE POSITIONS THE ACCESS,

1995 WRITES THE HOME ADDRESS ON THE ALTERNATE TRACK PLUS A CODE CHAR-

1996 ACTER, AND WRITES THE FLAG BIT ON THE DEFECTIVE TRACK. THE CE-HAO

1997 SWITCH IS TURNED OFF AND A READ HAO IS ISSUED. IF A NO RECORD

1998 FOUND RESULTS ERROR 11 IS INDICATED. IF THE TRACK READ DOESN'T

1999 CONTAIN THE CODE CHARACTER RECORDED ON THE ALTERNATE TRACK ERROR

2000 12 IS INDICATED. THE ALTERNATE TRACK DID NOT GET SELECTED. IF

2001 EITHER ERROR 11 OR 12 OCCUR THE CE SHOULD RE-SELECT THE FLAG

2002 ROUTINE USING A DIFFERENT FLAG CHAR. IF THERE HAVE BEEN NO ERROR

2003 INDICATIONS THE ROUTINE BRANCHES TO SURFACE ANALYSIS ROUTINE NO4,

2004 THE ALTERNATE TRACK IS ANALYZED FOR DEFECTS. IF A HARD ERROR

2005 RESULTS, ERROR 13 IS INDICATED. IN THIS CASE THE CE SHOULD RESELECT

2006 THE FLAG ROUTINE USING A DIFFERENT FLAG CHARACTER. WHEN THE ROUT-

2007 INE IS COMPLETE IT REQUESTS--WHAT NEXT--THE CE AT NOW SELECTS

2008 ANY PROGRAM OPTION AVAILABLE, NORMALLY THE CONTINUE OPTION WOULD

2009 BE TAKEN. ALL STATUS ERRORS WILL BE INDICATED.

2010

2011

2012 NOTE EXTREME CAUTION SHOULD BE USED WHEN SELECTING A FLAG CHAR-

2013 ACTER, SO THAT AN ALTERNATE TRACK THAT IS ALL READY IN USE IS NOT

2014 SELECTED AGAIN.

2015

2016

2017 FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE NO2

2018

2019 DATA FIELD USED ON ALTERNATE TRACK AND DEFECTIVE TRACK

2020 HAI-FLAG CHAR-HAZ-CODE CHARACTER CODE CHAR IS A IN POSITION 8

2021 EXAMPLE 0000888A ALTERNATE TRACK

2022 EXAMPLE 0000288N DEFECTIVE TRACK

2023

FLAGGING ROUTINE

PGLIN	LABEL	OPCCD	CPERAND	CT	ADDRS	INSTRUCTION
2025	N10	NCP		1	06127	N
2026		DC	21C2	2	06129	
2027		MLCB	FILE65, SAVADD	12	06130	D 07696 07524 L
2028		MLCA	206, FILE66	12	06142	D 00206 07697 F
2029		SC	1, FILE	10	06154	M %FO 07691 R
2030		BCB1	*-16	7	06164	R 06154 2
2031		BAL	*61	7	06171	R 06178 M
2032		BY	ITISON, CEHAD	12	06178	V 06203 07472 I
2033		SW	OPTNSH	6	06190	, 07484
2034		B	CESWON	7	06196	J 05936
2035	ITISON	MLCB	*68, NO2XIT-31	12	06203	D 06222 04124 L
2036		DCW	2NJ2	2	06216	
2037		DC	2062302	5	06221	
2038		DC	2	1	06222	
2039		B	CLRFLD-17	7	06223	J 03993
2040	BACHER	MLCB	NO1226, NO2XIT-31	12	06230	D 03914 04124 L
2041		BAL	*61	7	06242	R 06249 M
2042		MLCHS	2M2, DATAFD623	12	06249	D 07588 07723 7
2043		MRCG	FILE62, DATAFD	12	06261	D 07693 07700 3
2044		MLCA	2888A2, DATAFD67	12	06273	D 07649 07707 F
2045		ZA	EN10, X3	11	06285	M 07654 00039
2046		LU	%F5, FILE, W	10	06296	L %F5 07691 W
2047		BCB1	*-16	7	06306	R 06296 2
2048		BAL	*61	7	06313	R 06320 M
2049		MLCS	FILE66, DATAFD64	12	06320	D 07697 07704 3
2050		MLCS	282, FILE66	12	06332	D 07619 07697 3
2051		MLCS	2N2, DATAFD67	12	06344	D 07585 07707 3
2052		LU	%F5, FILE, W	10	06356	L %F5 07691 W
2053		BAL	*61	7	06366	R 06373 M
2054		B	SWCFF	7	06373	J 05897
2055		LU	%F5, FILE, R	10	06380	L %F5 07691 R
2056		BAL	*61	7	06390	R 06397 M
2057		BEX1	*615, Y	7	06397	R 06418 Y
2058		BEX1	STACHK, 7	7	06404	R 03063 7
2059		B	HA1OK	7	06411	J 06431

*** SET ERROR 11 CN ***

FLAGGING ROUTINE
CPCCO OPERAND
CY ADDR INSTRUCTION

PGLIN	LABEL	SW	CPCCO	OPERAND	TURN ON ERRCR IND	CY	ADDR	INSTRUCTION
2061		SW	E11		TURN ON ERRCR IND	6	06418	01812
2062				AFTER FLAGGING DEFECTIVE TRACK AND WRITTING HAI ALTERNATE A READ				
2063				HAC OP CAUSES A NO RECCRD FOUND.				
2064		B	MCNITR			7	06424	J 02066
2065	HAIDK	BCE	TRK,DATAFD&2,A	BRCH IF ALTER TRK SL		12	06431	B 06456 07702 A
2066				*** SET ERROR 12 CN ***				
2067		SW	E12		TURN ON ERRCR IND	6	06443	01813
2068				AFTER FLAGGING BAD A READ OF THAT ADDRESS DOES NOT SELECT				
2069				ALTERNATE TRACK				
2070		B	MONITR		GO IND ERROR	7	06449	J 02066
2071	TRK	SW	CUT&1			6	06456	04602
2072		B	IN-6			7	06462	J 04387
2073	ALTRK	CW	CUT&1			6	06469	04602
2074		BW	*&8,OPTNSW		BRCH IF CE SW WAS NOT ON	12	06475	V 06494 07484 I
2075		B	CESWON		GO TURN ON CE SWITCH	7	06487	J 05936
2076		CW	CPTNSW			6	06494	07484
2077		MLCA	SAVADD,FILE&5		RESTORE FILE ADDRESS	12	06500	D 07524 07696 T
2078		ZA	ENCL,X2			11	06512	M 07630 00034
2079		BW	BADTRK,E4		BRCH ON HARD ERROR	12	06523	V 06560 01805 I
2080	LETSGC	B	TYPI			7	06535	J 01593
2081		DCW	GTK FLGD OK&G			10	06551	
2082		B	PRGCTL		GO TO PRG CCNTRCL	7	06553	J 02238
2083				*** SET ERROR 13 CN ***				
2084	BADTRK	SW	E13		TURN ON ERROR IND	6	06560	01814
2085				SELECTED ALTERNATE TRACK APPEARS TO BE DEFECTIVE				
2086		B	MONIT2			7	06566	J 02099
2087		B	PRGCTL			7	06573	J 02238

085

PREPARE ONE INSTRUCTION LOOP AND DATA FIELD

DA01

CT ADDR

INSTRUCTION

PGLIN	LABEL	OPCCD	CPERAND	CT	ADDR	INSTRUCTION
2086			*** TEST ROUTINE DESCRIPTION ***			
2087			*** PREPARE ONE INSTRUCTION LOOP AND DATA FIELD ***			
2088			*** ACCORDING TO CE REQUEST ***			
2089			WHEN THE CE SELECTS THE PROGRAM OPTION FOR ONE INSTRUCTION LOOP			
2090			ING, THIS ROUTINE TAKES THE DATA ENTERED BY THE CE AND PUILDS THE			
2091			DATA FIELD AND LOOP INSTRUCTION FROM IT. WHEN IT HAS COMPLETED			
2092			THIS IT POSITIONS THE ACCESS TO THE ADDRESS ENTERED AND BRANCHES			
2093			TO THE LOOP ROUTINE.			
2094						
2095	PREP	MLCA	226, RECAD	12	06580	D 00226 07549 I
2096		CS	299	6	06592	/ 00299
2097		ZA	ADLR1, X10	11	06598	M 07567 00074
2098		SW	DATAFD	6	06609	, 07700
2099	CLEAN7	CS	08X10	6	06615	/ 00...0
2100		SBR	X10	7	06621	G 00074 B
2101		BW	CLEAN7, DATAFD	12	06628	V 06615 07700 I
2102		MLCB	XCTL1-1, LOOP&1	12	06640	D 07526 01014 L
2103		MLCS	XCTL1, LOOP&3	12	06652	D 07527 01016 3
2104		MLCS	XCTL1&1, LOOP&9	12	06664	D 07528 01022 3
2105		ZA	NCFCHR, X8	11	06676	M 07542 00064
2106		ZA	NOFREC, WORK1	11	06687	M 07538 07557
2107		A	26&, NOFCHR	11	06698	A 07660 07542
2108		M	NOFCHR, WORK2	11	06709	0 07542 07562
2109		ZA	WORK2, X9	11	06720	M 07562 00069
2110		MLCS	NOFCHR&1, DATAFD	12	06731	D 07543 07700 3
2111		MLCS	BOS10, LOOP&10	12	06743	D 07529 01023 3
2112		MLCA	HA2, FILE&7	12	06755	D 07535 07698 I
2113		S	WORK2	6	06767	S 07562
2114		MLCS	LOOP&1, *&2	12	06773	D 01014 06786 3
2115		SD	1, FILE	10	06785	M &FO 07691 R
2116		BCB1	*-16	7	06795	R 06785 2
2117		BA1	*&1	7	06802	R 06803 M
2118		MLCS	LOOP&3, *&12	12	06809	D 01016 06832 3
2119		BCE	SRC, SPECOD,	12	06821	B 06864 07554
2120		BCE	TRC	6	06833	B 06913
2121		BCE	HAD	6	06839	B 07000

*** TEST ROUTINE DESCRIPTION ***
 *** PREPARE ONE INSTRUCTION LOOP AND DATA FIELD ***
 *** ACCORDING TO CE REQUEST ***
 WHEN THE CE SELECTS THE PROGRAM OPTION FOR ONE INSTRUCTION LOOP
 ING, THIS ROUTINE TAKES THE DATA ENTERED BY THE CE AND PUILDS THE
 DATA FIELD AND LOOP INSTRUCTION FROM IT. WHEN IT HAS COMPLETED
 THIS IT POSITIONS THE ACCESS TO THE ADDRESS ENTERED AND BRANCHES
 TO THE LOOP ROUTINE.

CT	ADDR	INSTRUCTION
12	06580	D 00226 07549 I
6	06592	/ 00299
11	06598	M 07567 00074
6	06609	, 07700
6	06615	/ 00...0
7	06621	G 00074 B
12	06628	V 06615 07700 I
12	06640	D 07526 01014 L
12	06652	D 07527 01016 3
12	06664	D 07528 01022 3
11	06676	M 07542 00064
11	06687	M 07538 07557
11	06698	A 07660 07542
11	06709	0 07542 07562
11	06720	M 07562 00069
12	06731	D 07543 07700 3
12	06743	D 07529 01023 3
12	06755	D 07535 07698 I
6	06767	S 07562
12	06773	D 01014 06786 3
10	06785	M &FO 07691 R
7	06795	R 06785 2
7	06802	R 06803 M
12	06809	D 01016 06832 3
12	06821	B 06864 07554
6	06833	B 06913
6	06839	B 07000

STORE LOOP DATA
 CLEAR CNTL FLD
 LOAD IX 10
 CLEAR
 THE DATA FIELD
 SET MODE & CHANNEL
 SET SPECIFIC OPER
 SET MODIFIER
 LOAD IND REG 8
 ADD NO. OF RECORDS
 INCREASE CHAR CCUNT
 RECORDS X CHARS
 LOAD RESULT INTO IX9
 ALTER B-O-S-I-O OP
 RESET WORK 2
 POSITION THE ACC
 MOVE THE OP CODE
 IS THE OP CCDE 1
 IS THE OP CCDE 2
 IS THE OP CODE 5

PREPARE ONE INSTRUCTION LOOP AND DATA FIELD

DA01

CT ADDR INSTRUCTION

PGLIN LABEL

OPCCD OPERAND

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDR	INSTRUCTION
2122		BCE	TWA	6	06845	B 07123
2123		BCE	WFC	6	06851	B 07223
2124		B	PRGCTL	7	06857	J 02238
2125	SRO	MLCA	RECADD, FILE&7	12	06864	D 07549 07698 T
2126		SW	DATAFD&X8	6	06876	, 07P00
2127		MRCW	DATAFD, DATAFD&1	12	06882	D 07700 07701 M
2128		MLCWS	DATA, DATAFD&X8	12	06894	D 07588 07P00 7
2129		B	LOCP&10	7	06906	J 01023
2130	TRO	S	NOFCHR	11	06913	S 07660 07542
2131		S	WORK2	6	06924	S 07562
2132		ZA	NOFREC, WORK1	11	06930	M 07538 07557
2133		M	NOFCHR, WORK2	11	06941	Q 07542 07562
2134		ZA	WORK2, X9	11	06952	M 07562 00069
2135		SW	DATAFD&X9	6	06963	, 07P#0
2136		MRCW	DATAFD, DATAFD&1	12	06969	D 07700 07701 M
2137		MLCWS	DATA, DATAFD&X9	12	06981	D 07588 07P#0 7
2138		B	LOCP&10	7	06993	J 01023
2139	HA0	A	DATA, X9	11	07000	A 07603 00069
2140		ZA	NOFCHR, X8	11	07011	M 07665 00064
2141		SW	DATAFD&X9	6	07022	, 07P#0
2142		MRCW	DATAFD, DATAFD&1	12	07028	D 07700 07701 M
2143		MLCWS	DATA, DATAFD&X9	12	07040	D 07588 07P#0 7
2144		MRC	HA2-1, DATAFD	12	07052	D 07534 07700 #
2145	LOADDR	MLCA	RECADD, DATAFD&7&X8	12	07064	D 07549 07P07 T
2146		S	NOFREC	11	07076	S 07590 07538
2147		BZ	LOCP&10	7	07087	J 01023 V
2148		A	NOFCHR, X8	11	07094	A 07542 00064
2149		A	RECADD	11	07105	A 07590 07549
2150		B	LOADDR	7	07116	J 07064
2151	TWA	SW	DATAFD&X9	6	07123	, 07P#0
2152		MRCW	DATAFD, DATAFD&1	12	07129	D 07700 07701 M
2153		MLCWS	DATA, DATAFD&X9	12	07141	D 07588 07P#0 7
2154		ZA	NOFCHR, X8	11	07153	M 07665 00064
2155	LOADDR	MLCA	RECADD, DATAFD&5&X8	12	07164	D 07549 07P05 T
2156		S	NOFREC	11	07176	S 07590 07538
2157		BZ	LOCP&10	7	07187	J 01023 V

087

PREPARE ONE INSTRUCTION LOOP AND DATA FIELD

PGLIN	LABEL	OPCCD	OPERAND	INTC	CT	ADDRS	INSTRUCTION
2158		A	NOFCHR, X8		11	07194	A 07542 00064
2159		A	@1@, RECADD	THE	11	07205	A 07590 07549
2160		B	LOCADD	DATA FIELD	7	07216	J 07164
2161	WFO	SW	DATAFD@2205	LOAD DATA	6	07223	, 09965
2162		MRC	DATAFD, DATAFD@1	FIELD	12	07229	D 07700 07701 #
2163		MLCA	HAAREA, DATAFD@23	LCAD THE	12	07241	D 07508 07723 I
2164		S	@6@, NOFCHR	RESET NO. OF CHAR	11	07253	S 07660 07542
2165		ZA	NOFREC, WCRK1	DETERMINE THE END	11	07264	M 07538 07557
2166		A	@1@, NOFCHR@1	ADDRESS AREAS	11	07275	A 07590 07543
2167		SW	DATAFD@30	AND	6	07286	, 07730
2168		MLCS	NOFCHR@1, DATAFD@41		12	07292	D 07543 07741 3
2169		MLCB	DATAFD@41, DATAFD@40	GAP	12	07304	D 07741 07740 L
2170		MLCS	DATAFD@41, DATAFD@52	LOAD	12	07316	D 07741 07752 3
2171		MLCS	DATAFD@41, DATAFD@63	SHORT GAPS	12	07328	D 07741 07763 3
2172		A	@38@, NOFCHR	AREAS INIC	11	07340	A 07667 07542
2173		ZA	NOFCHR, X9	THE FORMAT	11	07351	M 07542 00069
2174	LODFCH	MLCA	DATAFD@63, DATAFD@63@X9	FIELD	12	07362	D 07763 07PH3 I
2175		S	@1@, NOFREC		11	07374	S 07590 07538
2176		BZ	*@19	BRCH IF ALL REC DUN	7	07385	J 07410 V
2177		A	NOFCHR, X9		11	07392	A 07542 00069
2178		B	LOLFOR		7	07403	J 07362
2179		MLCWS	@M@, DATAFD@31@X9	TERMINATING NMGM	12	07410	D 07588 07PT1 7
2180		B	LOCP@1C		7	07422	J 01023

END TEST AND PROGRAM CONSTANTS

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCCD	CPERAND	CT	ADDR	INSTRUCTION
2182			DA01C END TEST ROUTINE			
2183		***	END TEST ROUTINE ***			
2184	ENDTSF	BCE	2000,TAD3,1	12	07429	H 02000 01003 1
2185		BW	SWCFF,CEHAD	12	07441	V 05897 07472 1
2186		B	TYPI	7	07453	J 01593
2187		DCW	APASS@,G	4	07463	
2188	TOP	H	40C	6	07465	. 00400
2189		H		1	07471	.
2190			GO TO LOADER			
2191	CEHAD	DC	@ @	1	07472	
2192	LIPIT	DCW	@ @	4	07476	
2193	NUMODE	DCW	@7654321@	7	07483	
2194	CPINSH	DC	@ @	1	07484	
2195	HAAREA	DCW	@4443333333333333333333333333334@	24	07508	
2196	TSIHIT	DCW	@ @	1	07509	
2197	IRKCNT	DCW	@00@	2	07511	
2198	LGEND	DCW	@0000@	4	07515	
2199	SAVFLG	DCW	@00000@	5	07520	
2200	SAVAUD	DCW	@0000@	4	07524	
2201	LPDATA	DCW	@ @	1	07525	
2202		DCW	@ @	1	07526	
2203	XCITI	DCW	@ @	1	07527	
2204		DC	@ @	1	07528	
2205	BOSIC	DCW	@ @	1	07529	
2206	TKHD	DCW	@ @	4	07533	
2207	FAZ	DC	@ @	2	07535	
2208	NOFREC	DCW	@ @	3	07538	
2209	NOFCHR	DCW	@ @	4	07542	
2210		DC	@ @	1	07543	
2211	RECADD	DCW	@ @	6	07549	
2212	SPECCO	DCW	@76521@	5	07554	
2213	WCRKI	DCW	@000@	3	07557	
2214	WORK2	DC	@00000@	5	07562	
2215	ACDRI	DCW	DATAFDE2233	5	07567	09933
221	IR2	DC	P AFDE 74	5	07572	09904
2217	CODE2	DCW	@...@	:	7757	

289

END TEST AND PROGRAM CONSTANTS

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDR	INSTRUCTION
2218		DCW	20X22	3	07578	
2219		DCW	20M332	3	07581	
2220		DCW	20.142	3	07584	
2221		LTORG			07585	
2221			20Na	1	07585	
2221			20t2	1	07586	
2221			20D	1	07587	
2221			20L2	1	07587	
2221			20G	1	07588	
2221			20Mc	1	07588	
2221			204	1	07589	
2221			2012	1	07590	
2221			2002092	5	07595	
2221			2032	1	07596	
2221			2072	1	07597	
2221			2002372	5	07602	
2221			2022	1	07603	
2221			2002	2	07605	
2221			200002	4	07609	
2221			2013082	4	07613	
2221			20572	2	07615	
2221			20402	2	07617	
2221			2042	1	07618	
2221			2082	1	07619	
2221			20V2	1	07620	
2221			222042	4	07624	
2221			202	1	07625	
2221			N01	5	07630	03888
2221			N03	5	07635	04162
2221			209#002	4	07639	
2221			20202	2	07641	
2221			221632	4	07645	
2221			N10	5	07650	06127
2221			2888A2	4	07654	
2221			N04	5	07659	04348
2221			202	1	07660	
2221			2000002	5	07665	
2221			2032	2	07667	

090

END TEST AND PROGRAM CONSTANTS

DA01 INSTRUCTION

CT

ADDRS

#

PGLIN	LABEL	OPCCD	OPERAND	BRCH IF USING CE	CY1	CY2	LIMIT-2, #	INSTRUCTION	ADDRS	#
2222	CY1	BCE	CY2, LIMIT-2, #		12	07668	8	09941	07474	
2223		B	CYL		7	07680	J	03803		
2224		ORG	7691			07691				
2225	FILE	DCW	00000088a, G		8	07691				
2226	DATAFD	DC	a a		1	07700				
2227		DS	2240			09940				
2228	CY2	SW	FILE84, LIMIT-1	SET WMS	11	09941	,	07695	07475	
2229		B	CYL		7	09952	J	03803		
2230		H			1	09959	.			
2231		END								

END OF ASSEMBLY

6.03.00.0 DA03 RELIABILITY TEST DESCRIPTION

APR 15 1964

This is an update to DA03C.. It incorporates improved and more thorough methods of testing the reliability of the 7631-1301.

The program tests every available module on every channel in an automatic or manual mode. The automatic mode requires no manual intervention and can be run from a load-and-go maintenance tape. The manual mode does require intervention and can not be run unattended.

The normal sequence of the program starts by testing the Error Detection Ckts in the 7631. This is followed by 100 random seeks and verification that the access arrived at the correct location. At the CE cylinder (253) Read, Write, and Write Format are tested in 6 and 8 bit mode, the Read-Write test being performed on each of the 40 heads. The specific file operation: home address, full track with address, full track without addresses, single record, and cylinder, are tested for both read and write in the 8 bit mode. The cylinder op is tested only when in manual mode so that its availability can be checked. If the priority feature is available, a quick check of the seek complete line is made.

This is performed on every channel for every ready 1301 module. When all modules have been tested, the test ends, if in automatic mode. If it is in manual mode, the program runs an overlap test where files and tapes on any channel are overlapped. When the overlap routine is completed, the test in manual mode is over.

6.03.01.0 OPERATING PROCEDURE

The standard procedures outlined in the package write-up apply to this program, in addition the following procedures are used to run this program.

01.1 SWITCH SETTINGS PREVIOUS TO RUNNING PROGRAM

- a. Write Format Switch On (on all 1301 mods to be tested)
- b. HAO Switch ON (on all 7631's to be tested)
- c. All 1301 modules not to be tested are set inoperative.
- d. All other 7631-1301 switches OFF.

6.03.01.0 OPERATING PROCEDURE (continued)

01.2 SPECIAL REQUESTS (Made Only in the Manual Mode)

- a. "CYO Available"
CE enters 1 if it is, $\bar{1}$ if it is not. ($\bar{1}$ = any other character but 1.)
- b. "CE-HAO ON"
CE turns on CE-HAO switch and presses start. This request is made when during the random seek test the access does not arrive at the correct location. With the CE-HAO switch on the HAI is read into memory and displayed on the typewriter.
- c. "Addr Read, 0000000, CE-HAO OFF"
The CE now turns off the CE-HAO switch and presses start to continue.

01.3 SPECIAL TADS

There is one special TAD for this program (memory location 01004).

If this TAD is set to a 1, the program will run in the manual mode. This TAD is set to a 1 when the program is loaded.

01.4 STANDARD OPTIONS

All the standard program options are available in this program.

01.5 MANUAL MODE

When running in the manual mode all channels which have tapes, but do not have files should have a scratch tape loaded and ready on Drive "1". This is required for proper operation of the overlap test.

01.6 SUMMARY TYPEOUT

The summary typeout as described in the package write-up is given at the end of this test.

6.03.02.0 OPERATING HINTS

02.1 SELECTING MANUAL MODE (Alter Special TAD)

Use program option code 2 (alter memory) to alter the special TAD to a 1 or $\bar{1}$. Special TAD location is 01004.

02.2 RELIABILITY RUN

To run the program in a reliability mode:

1. Run program in automatic mode.
2. Alter TADS (select option code 3) to repeat test.
3. Terminate program when desired (select option code blank).

02.3 ALTER ROUTINE SEQUENCE

If this program option is selected, care should be used to insure that the format required by certain routines is available when the routine is run in the altered sequence.

6.03.03.0 PROGRAM STOPS

03.1 ERROR STOPS

None

03.2 NORMAL STOPS - Manual Mode Only

Mem LocReason

5530

Wait for CE to turn on CE-HAO switch, press start.

5614

Wait for CE to turn off CE-HAO switch, press start.

6.03.04.0 TYPEOUTS (Other Than Request or Standard Typeouts)

04.1 "HAO AND FORMAT SWS ON"

This is to remind the CE that this program runs in automatic mode when loaded and that the HAO and Write Format switches must be ON.

094
DA03

Page 083

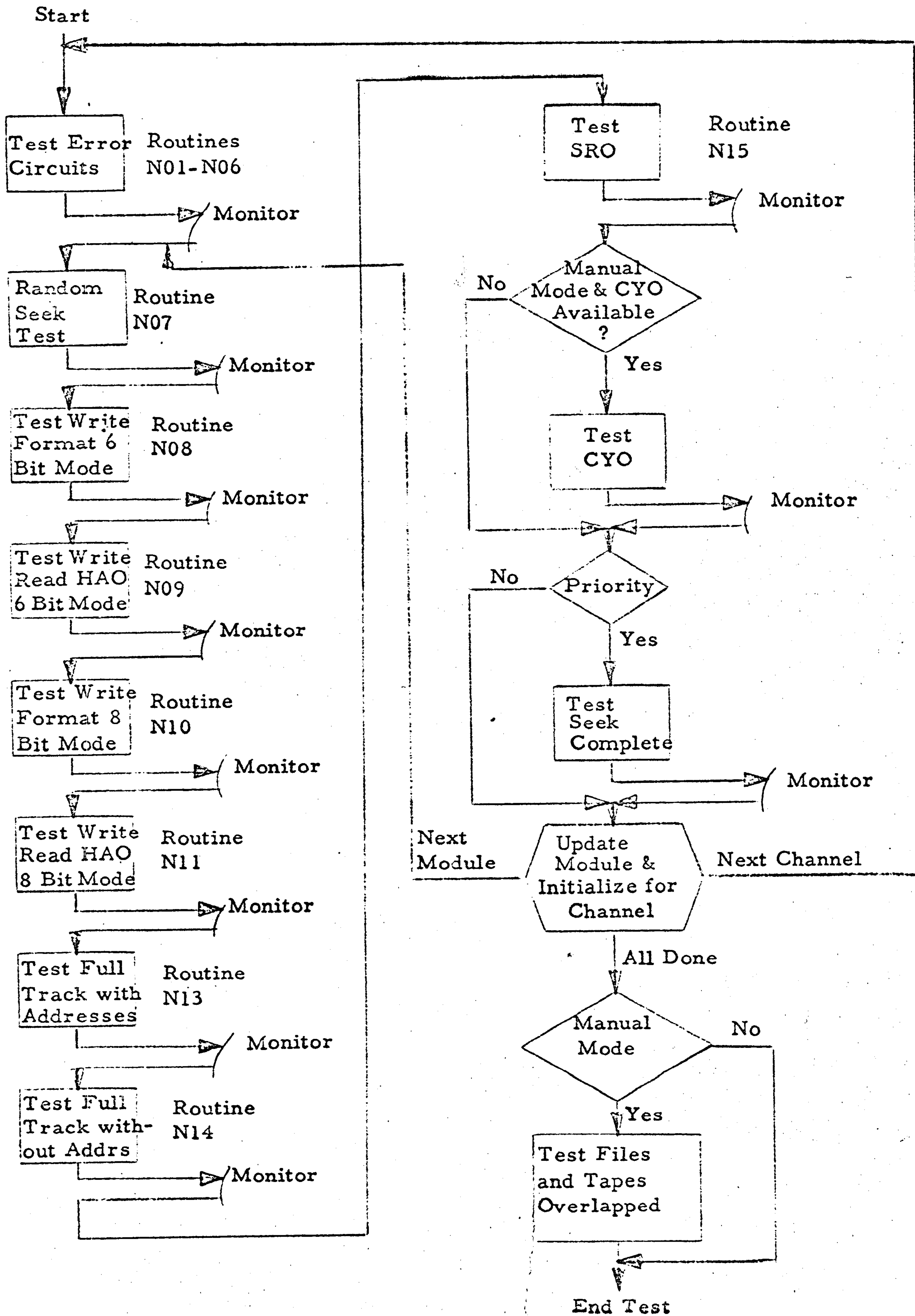
6.03.04.0 TYPEOUTS (continued)

04.2 "TST MOD CH"

This tells the CE which module on which channel is being tested at present.

6.03.05.0 FLOW CHART

The following flow chart is designed to give a general picture of the test routine's relationship to one another.



096

DA03

Page 085

6.03.06.0 ROUTINE/ERROR INDEX DA03

To locate routines and errors in the program listing.

<u>Routine Number</u>	<u>Error Number</u>	<u>Page</u>
N01	02	108
N02	04	109
N03	05	110, 111
	06	111
	07	111
	08	111
N04	09	113
	10	114
	11	114
N05	12	115
	13	116
	14	116
	15	116
N06	16	117
	17	117
N07	01	118
N08	18	120, 121
N09	19	122,
	20	123
N10	21	124, 125
N11	22	126,
	23	127
	24	127

6.03.06.0 ROUTINE/ERROR INDEX DA03 (continued)

<u>Routine Number</u>	<u>Error Number</u>	<u>Page</u>
N13	25	128.
N14	26	130.
N15	27	132.
	28	133
	29	133
N16	30	134, 135
N17	31	136
N18		137
N19	32	139, 140
	33	141
	34	142
	35	142

098

L/O DICOST DEFINE TADS
PGLIN LABEL ORCOD OPERAND CT ADDR INSTRUCTION

```

1002          CTL      2
1003
1004          DEFINE STANDARD TADS
1005
1006          ORG      1000
1007          TADO    @ @
1008          TADI    @ @
1009          TAD2    @ @
1010          TAD3
1011          **
1012
1013          **
1014          SPTADO  @ @
1015          SPTADI  @ @
1016          SPTAD2  @ @
1017          SPTAD3  @ @
1018          SPTAD4  @ @
1019          SPTAD5  @ @
1020          SPTAD7  @ @
1021          SPTAD8  @ @
1022          SPTAD9  @ @
1023
1000          01000
101000      1 01000
101001      1 01001
101002      1 01002
101003      1 01003

```

```

DEFINE SPECIAL TADS
101004      1 01004
101005      1 01005
101006      1 01006
101007      1 01007
101008      1 01008
101009      1 01009
101010      1 01010
101011      1 01011
101012      1 01012

```

I/O DICOST ONE INSTRUCTION LOOP

DA03

CT ADDR INSTRUCTION

PGLIN LABEL OPCODE OPERAND

```

1025      *** I/O DICOST PROGRAM ***
1026      *** ONE INSTRUCTION LOOP ROUTINE ***
1027      WHEN THE CB SELECTS A ONE INSTRUCTION LOOP THE I/O INSTRUCTION
1028      IN THIS ROUTINE IS ALTERED AND THE LOOP IS ENTERED. NOTE THAT THE
1029      BRANCH ON INQUIRY INSTRUCTION IS THE ONLY EXIT FROM THE LOOP.
1030      LOOP      MU      811.0.R      I/O INST BEING LUP D
1031      8A1      8C1
1032      8NQ      PRGCTL      BRCH ON INQ TO PRGCL
1033      8        LOOP      CONTINUE TO LOOP
1034      H
1035
10      01013      M      811 00000 R
7      01023      R      01030 M
7      01030      J      02250 Q
7      01037      J      01013
1      01044      .

```

1017

I/O DICOST CHANNEL ALTER

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1038			*** I/O DICOST PROGRAM ***			
1039			*** CHANNEL ALTER ROUTINE ***			
1040			THIS ROUTINE ALTERS ALL I/O INSTRUCTIONS, BRANCH-ON-STATUS-			
1041			INDICATOR-ON INSTRUCTIONS, AND BRANCH ON CHANNEL OVERLAP IN PRO-			
1042			CESS INSTRUCTIONS ACCORDING TO THE CHANNEL INDICATED. THIS IS DONE			
1043			BY SCANNING A DEFINED AREA OF MEMORY AND ALTERING THESE INSTRUCTIONS.			
1044						
1045						
1046	CHALTR	SHR	X5	7	01045	G 00049 B
1047		MLCA	9&X5, X7	12	01052	D 00+19 00059 I
1048	SCAN	SCNLA	0&X6, 0&X6	12	01064	D 00+.0 00+.0 B
1049		SAR	X6	7	01076	G 00054 A
1050		C	X6, X7	11	01083	C 00054 00059
1051		BH	13&X5	7	01094	J 00+73 U
1052		MLCS	1&X6, *612	12	01101	D 00+.1 01124 3
1053		BCE	MLCRU, CODES,	12	01113	B 01149 02750
1054		BCE		1	01125	B
1055		BCE		1	01126	B
1056		BCE	RX30R1	6	01127	B 01168
1057		BCE		1	01133	B
1058		BCE		1	01134	B
1059		BCE		1	01135	B
1060		BCE	JAY	6	01136	B 01187
1061		B	SCAN	7	01142	J 01064
1062	MLORU	MLCS	10&X5, 2&X6	12	01149	D 00+70 00+.2 3
1063		B	SCAN	7	01161	J 01064
1064	RX30R1	MLCS	11&X5, 1&X6	12	01168	D 00+71 00+.1 3
1065		B	SCAN	7	01180	J 01064
1066	JAY	MLCS	7&X6, *612	12	01187	D 00+.7 01210 3
1067		BCE	ONE234, MODS,	12	01199	B 01221 02754
1068		BCE		1	01211	B
1069		BCE		1	01212	B
1070		BCE		1	01213	B
1071		B	SCAN	7	01214	J 01064
1072	ONE234	MLCS	12&X5, 7&X6	12	01221	D 00+72 00+.7 3
1073		B	SCAN	7	01233	J 01064

1 01240 .

DEFINE SYSTEM & CHANNEL CONTROL CARDS

01233
17 01249

**

DEFINE PROGRAM TITLE

**

01250
5 01254

LOCATE THE SYSTEM & CHANNEL CARDS

01256

50 01256

7 01312

01289

50 01289

7 01345

01346

50 01346

7 01402

01403

50 01403

7 01459

01460

50 01460

7 01516

PGLIN	LABEL	OPCOD	OPERAND	H
1074				
1075				
1076				
1077				
1078				
1079		ORG	1233	
1080		DCW	@FN2FJRFJZFJI301#9@	
1081				
1082				
1083				
1084		ORG	1250	
1085		DCW	@DA030@,G	
1086				
1087				
1088				
1089		ORG	1256	
1090		DC	@	
1091		DC	@	
1092		ORG	1289	
1093		DC	@	
1094		DC	@	
1095		ORG	1346	
1096		DC	@	
1097		DC	@	
1098		ORG	1403	
1099		DC	@	
1100		DC	@	
1101		ORG	1460	
1102		DC	@	
1103		DC	@	
1104				

PGLIN LABEL I/O DICOST TYPE OPCOD OPERAND

1105 *** I/O DICOST PROGRAM ***
 1106 *** TYPE AND REQUEST FOR INTERVENTION ***
 1107 THIS ROUTINE IS USED TO TYPE ALL MESSAGES AND REQUESTS FOR
 1108 MANUAL INTERVENTION. THE ROUTINE WILL TYPE A MESSAGE FROM A COMMON
 1109 DATA FIELD, OR THE MESSAGE MAY BE LOCATED IMMEDIATELY AFTER THE
 1110 BRANCH INSTRUCTION TO THIS ROUTINE. IF A REPLY IS REQUIRED A READ
 1111 CONSOLE PRINTER OPERATION IS ISSUED. THIS ROUTINE IS USED TO TYPE
 1112 ALL MESSAGES IN THIS PROGRAM.

PGLIN	LABEL	I/O DICOST TYPE	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1113					7	01517	G 01591 B
1114					10	01524	M ZTO 00201 W
1115					7	01534	R 01524 Z
1116					7	01541	R 01548 M
1117					1	01548	N
1118	SW11				10	01549	M ZTO 00000 R
1119	LAS60				7	01559	R 01549 H
1120					7	01566	R 01573 M
1121					6	01573	R 01549
1122					6	01579	/ 00330
1123					1	01585	/
1124					7	01586	J 00000
1125	TYPXIT	B	0		7	01593	G 00029 B
1126	TYP1	SBR	X1		7	01600	J 01620
1127		B	*E14		7	01607	G 00029 B
1128	TYP2	SBR	X1		6	01614	* 01652
1129		SW	REPLYE1		10	01620	M ZTO 000+0 W
1130		WCP	OEX1		7	01630	G 00029 B
1131		SBR	X1		7	01637	R 01620 Z
1132		BCB1	*-23		7	01644	R 01651 M
1133		BA1	*E1		1	01651	N
1134	REPLY	NOPWM			7	01652	J 01666
1135		B	RDCON		7	01659	J 000+0
1136		B	OEX1		10	01666	M ZTO 000+0 R
1137	RDCON	RCP	OEX1		7	01676	G 00029 B
1138		SBR	X1		7	01683	R 01666 M
1139		BEX1	*-23, H		7	01690	R 01697 M
1140		BA1	*E1				

STORE RETURN ADDR
 TYPE MESSAGE
 BRCH BUSY
 READ CONSOLE PRINTER
 BRCH ON ANY BUT WLR
 TURN OFF SWITCH 11
 CLEAR PRINT AREA
 RETURN TO DICOST
 STORE ADDR OF MESSG
 STORE ADDR OF MESSG
 TURN ON REPLY SW
 TYPE MESSAGE
 STORE RETURN ADDR
 BRCH
 IF REPLY REQUIRED
 RETURN
 REPLY TO MESSG
 STORE RETURN ADDR
 BRCH ON ANY BUT WLR

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1141		CH	REPLYG1	6	01697	01652
1142		B	0&X1	7	01703	J 000#0
1143	DATA	MLCWS	2N2,PASS1	12	01710	D 09572 01944 7
1144		BCE	*&13,1264,1	12	01722	B 01746 01264 1
1145		MLCWS	2N2,MONITR&7	12	01734	D 09572 02073 7
1146		MRCWG	*&9,1230	12	01746	D 01766 01230 L
1147		B	PASS1&7	7	01758	J 01951
1148		H		1	01765	.
1149		DC	2.732	3	01768	
1150		DCW	2JA	1	01769	
1151		DC	SCAN	5	01774	01064
1152		DC	2 2	1	01775	
1153		DCH	2.a.G	1	01776	
1154		DS	12		01789	

*** ERROR TABLES THESE ARE USED FOR ERROR ***

*** SUMMARIES AND ERROR IDENTIFICATION ***

1158		ORG	*&X00		01800	
1159		ORG	*&1		01801	
1160		DCW	2La	1	01801	
1161	STPTAB	DC	2 2	1	01802	
1162	E1	DC	2 2	1	01803	
1163	E2	DC	2 2	1	01804	
1164	E3	DC	2 2	1	01805	
1165	E4	DC	2 2	1	01806	
1166	E5	DC	2 2	1	01807	
1167	E6	DC	2 2	1	01808	
1168	E7	DC	2 2	1	01809	
1169	E8	DC	2 2	1	01810	
1170	E9	DC	2 2	1	01811	
1171	E10	DC	2 2	1	01812	
1172	E11	DC	2 2	1	01813	
1173	E12	DC	2 2	1	01814	
1174	E13	DC	2 2	1	01815	
1175	E14	DC	2 2	1	01816	
1176	E15	DC	2 2	1	01816	

105

CT ADDR INSTRUCTION

I/O DICO ST TYPE
OPCOD OPERAND

PGLIN LABEL

PGLIN	LABEL	I/O DICO ST TYPE	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1177	E16			a a	1	01817	
1178	E17			a a	1	01818	
1179	E18			a a	1	01819	
1180	E19			a a	1	01820	
1181	E20			a a	1	01821	
1182	E21			a a	1	01822	
1183	E22			a a	1	01823	
1184	E23			a a	1	01824	
1185	E24			a a	1	01825	
1186	E25		DC	a a	1	01826	
1187	E26		DC	a a	1	01827	
1188	E27			a a	1	01828	
1189	E28			a a	1	01829	
1190	E29			a a	1	01830	
1191	E30			a a	1	01831	
1192	E31			a a	1	01832	
1193	E32			a a	1	01833	
1194	E33			a a	1	01834	
1195	E34			a a	1	01835	
1196	E35			a a	1	01836	
1197	E36			a a	1	01837	
1198	E37			a a	1	01838	
1199	E38			a a	1	01839	
1200	E39			a a	1	01840	
1201	E40			a a	1	01841	
1202	E41			a a	1	01842	
1203	E42			a a	1	01843	
1204	E43			a a	1	01844	
1205	E44			a a	1	01845	
1206	E45			a a	1	01846	
1207	E46			a a	1	01847	
1208	E47			a a	1	01848	
1209	E48			a a	1	01849	
1210	E49			a a	1	01850	
1211	E50			a a	1	01851	
1212	E51		DC	a a	1	01852	

106

I/O DICOSY TYPE

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1213	E52		2 2	1	01853	
1214	E53		2 2	1	01854	
1215	E54		2 2	1	01855	
1216	E55		2 2	1	01856	
1217	E56		2 2	1	01857	
1218	ERRTAB	DC	0*2	1	01858	
1219		DC	2 2	1	01859	
1220						

I/O DICOST MONITOR

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1255			*** I/O DICOST PROGRAM ***			
1256		***	MONITOR ROUTINE			***
1257			THE MONITOR IS ENTERED AFTER EVERY TEST ROUTINE IS COMPLETED, OR			
1258			A STATUS ERROR HAS BEEN DETECTED AND INDICATED. IN THE CASE OF A			
1259			STATUS ERROR MONITOR SIMPLY BRANCHES BACK TO THE POINT AT WHICH			
1260			THE STATUS ERROR WAS DETECTED. WHEN ENTERED FROM THE END OF A			
1261			TEST ROUTINE MONITOR CHECKS TO SEE IF THE CE PRESSED INQUIRY, THE			
1262			ROUTINE IS BEING LOOPEL, ANY ERRORS OCCURED ALTER ROUTINE SEQUENCE			
1263			IS SELECTED, OR THE NEXT SEQUENTIAL ROUTINE SHOULD BE RUN.			
1264						
1265	MONITR	SDR	X2	7	02066	G 00034 B
1266		BXPA	*E1	7	02073	Y 02080 X
1267		BNQ	PRGCTL	7	02080	J 02250 Q
1268	MONIT1	BW	0EX3,LPRT	12	02087	V 000H0 02764 1
1269	MONIT2	MLCWS	2M2,224	12	02099	D 09575 00224 7
1270		B	ERRCIL	7	02111	J 02841
1271	MONIT3	NOP		1	02118	N
1272		OPT1	BW SEQCTL,SEQSW	12	02119	V 03646 02763 1
1273		MLCHA	X2,X3	12	02131	D 00034 00039 X
1274		MLCWS	2 2,224	12	02143	D 09576 00224 7
1275		B	0EX2	7	02155	J 000.0
1276	WHERE2	MLCWS	2 2,224	12	02162	D 09576 00224 7
1277		BCE	*E8,0EX2,N	12	02174	B 02193 000.0 N
1278		B	0EX2	7	02186	J 000.0
1279		BZN	*E8,1EX2,2	12	02193	V 02212 000.1 2
1280		B	0EX2	7	02205	J 000.0
1281		BZN	*E8,2EX2,2	12	02212	V 02231 000.2 2
1282		B	0EX2	7	02224	J 000.0
1283		BW	MONIT3,3EX2	12	02231	V 02118 000.3 1
1284		B	0EX2	7	02243	J 000.0
1285						

I/O DICOST PROGRAM CONTROL

CT ADORS INSTRUCTION

1287 *** I/O DICOST PROGRAM ***
 1288 *** PROGRAM CONTROL ***
 1289 WHEN THE CE PRESSES INQUIRY TO SELECT A STANDARD PROGRAM OPTION
 1290 THIS ROUTINE IS ENTERED. THE CE ENTERS ON THE TYPEWRITER THE
 1291 OPTION CODE DESIRED, ALONG WITH THE DATA NEEDED BY THE OPTION. THE
 1292 ROUTINE DETERMINES WHICH OPTION HAS BEEN SELECTED AND INITIATES
 1293 THE OPTION.

PGLIN	LABEL	OPCOD	OPERAND	CT	ADORS	INSTRUCTION
1294				10	02250	L XTO 00201 R
1295	PRGCTL	RCPW	CTLFLD	7	02260	G 00029 B
1296		SBR	X1	7	02267	R 02250 M
1297		BEXI	PRGCTL, M	6	02274	R 00202 G
1298		SW	CTLFLD&1	7	02280	R 02287 M
1299		BAI	*&1	6	02287	D 02763
1300		OPTI	CW	11	02293	D 02764 02765
1301		CW	LPRT, LPINST	12	02304	D 02315 01802 4
1302		MLWS	*E1	12	02316	D 01802 01803 2
1303		MRWR	E1, E2	12	02328	D 00201 02351 3
1304		MLCS	CTLFLD, *E12	12	02340	B 08392 02762
1305		DCE	ENDTST, CTLCOD,	6	02352	B 02401
1306		BCE	ALTADS	6	02358	B 02424
1307		BCE	ALTHEM	6	02364	B 02471
1308		OPTI	BCE	6	02370	B 02524
1309		BCE	LUPRT	6	02376	B 02553
1310		BCE	ONELUP	6	02382	B 02587
1311		BCE	RSTART	6	02388	B 02610
1312		BCE	CONT	7	02394	J 02250
1313		B	PRGCTL	12	02401	D 00205 01003 T
1314	ALTADS	MLCA	CTLFLD&4, 1003	11	02413	/ 02087 00299
1315		CS	MONIT1, 299	12	02424	D 00206 02444 T
1316	ALTHEM	MLCA	CTLFLD&5, *E9	10	02436	L XTO 00000 R
1317		RCPW	0	7	02446	R 02436 M
1318		BEXI	*-16, M	7	02453	R 02460 M
1319		BAI	*E1	11	02460	/ 02087 00299
1320		CS	MONIT1, 299	12	02471	D 09575 00040 7
1321	ALTSEQ	MLCWS	2M&, 0&X1	12	02483	D 00202 02633 L
1322		OPTI	MRCWG			

I/O DICOST PROGRAM CONTROL

PGLIN	LABEL	OPCD	OPERAND	OPT1	SW	SEQSW	TURN ON SEQ SWITCH	CT	ADDRS	INSTRUCTION
1323				OPT1	SW	SEQSW	TURN ON SEQ SWITCH	6	02495	02763
1324				OPT1	MLNA	SQCON1,X4	LOAD IND REG4	12	02501	D 02738 00044 /
1325				OPT1	CS	MONIT2,299	CLEAR CNTRL FLD	11	02513	/ 02099 00299
1326	LUPRT				SW	LPRT	TURN ON LOOP SWITCH	6	02524	02764
1327					MLNA	CTLFLD65,X2	LOAD IND REG2	12	02530	D 00206 00034 /
1328					CS	MONIT2,299	CLEAR CNTRL FLD	11	02542	/ 02099 00299
1329	ONELUP				SW	LPINST	TURN ON LOOP INST SW	6	02553	02765
1330	LUPINT				NOPWM		THIS SW IS TURNED ON	1	02559	N
1331					B	*88	BY ERRCTL	7	02560	J 02574
1332					B	PREP	GO TO PREPARE ROUT	7	02567	J 08435
1333					CW	LUPINT&1	TURN OFF SW	6	02574	02560
1334					B	LOOP		7	02580	J 01013
1335	RSTART				MLNA	CTLFLD65,X2	LOAD IND REG2	12	02587	D 00206 00034 /
1336					CS	MONIT2,299	CLEAR CNTRL FLD	11	02599	/ 02099 00299
1337	CONT				CS	WHERE2,299	CLR CNTRL FLD	11	02610	/ 02162 00299

I/O DICOST CONSTANTS

1338								2	02622	
1339								2	02624	
1340	STACNTOPT2	DCH				0000		2	02626	
1341						0000		2	02628	
1342						0000		2	02630	
1343						0000		2	02632	
1344						0000		1	02633	
1345						0000		37	02670	
1346	SEQFLDOPT1	DCH				0 0		37	02707	
1347						0		25	02732	
1348						0		5	02738	02633
1349						0		4	02742	
1350						0		8	02750	
1351	SQCONIOPT1	DCH				SEQFLD		4	02754	
1352						0N 0		1	02755	
1353	CMPFLDOPT1	DCH				0J13XRULM0		1	02756	
1354						043210		1	02757	
1355	CODES	DCW				070		1	02758	
1356						060		1	02759	
1357						050				
1358						040				
1359						030				

I/O DICOST PROGRAM CONTROL

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1359			@2@	1	02760	
1360			@1@	1	02761	
1361	CTLCD		@ @	1	02762	
1362	SEQSH OPT1	DC	@ @	1	02763	
1363	LPRT	DC	@ @	1	02764	
1364	LPINST	DC	@ @	1	02765	
1365	ADDR02	DCW	ERRTAB	5	02770	01858
1366	ADDR03OPT2	DCW	STACNT	5	02775	02622
1367	ERR	DCW	@*ERROR@	6	02781	
1368	ACTION	DC	@REQ ERROR ACTION@.G	16	02782	
1369	ERCODE	DCW	@547P@	4	02802	
1370	SAVIND	DCW	@1 2 4 8 A B@.G	11	02803	
1371	STIND	DC	@1 2 4 8 A B@.G	11	02815	
1372	STACD0OPT2	DCW	@NR@	2	02828	
1373	OPT2	DCW	@DY@	2	02830	
1374	OPT2	DCW	@DC@	2	02832	
1375	OPT2	DCW	@EC@	2	02834	
1376	OPT2	DCW	@NT@	2	02836	
1377	OPT2	DCW	@HL@	2	02838	
1378	NDERSH	DC	@ @	2	02839	
1379						

ADDR OF ERR TABLE

ADDR OF STATUS TABLE

I/O DICOSY ERROR CONTROL

CT ADDR INSTRUCTION

PGLIN LABEL

OPCOD OPERAND

1301 *** I/O DICOSY PROGRAM ***

1302 *** ERROR CONTROL ***

1303 THIS ROUTINE DETERMINES IF ANY STATUS ERRORS OR PROGRAM DETECT-

1304 ED ERRORS HAVE TO BE INDICATED. IF THERE ARE THIS ROUTINE BUILDS

1305 THE ERROR MESSAGE AND HAS IF TYPED OUT. THIS ROUTINE ALSO CHECKS

1306 TAD 1 TO SEE IF A REQUEST FOR ERROR ACTION SHOULD BE MADE.

LOCATE FAILING INST

PGLIN	ERRCTL	MLCA	X2,X5	LOAD IND REG 5	CT	ADDR	INSTRUCTION
1389					12	02841	D 00034 00049 T
1390	S		010,X5		11	02853	S 09577 00049 S
1391	SCNLA	00X5,00X5		SCAN THE ROUTINE	12	02864	D 00*+0 00*+0 B
1392	SAR	X5		STORE CHAR ADDR	7	02876	G 00049 A
1393	HLCS	10X5,*012		MOVE CHAR TO BE CHKD	12	02883	D 00*+1 02906 3
1394	BCE	GOTONE,CODES,		IS OP CODE M	12	02895	B 02939 02750
1395	BCE			IS OP CODE L	1	02907	B
1396	BCE			IS OP CODE U	6	02908	B 02958
1397	C	X3,X5		HAS ROUTINE BEEN	11	02914	C 00039 00049
1398	BL	LODFLD		SEARCHED	7	02925	J 02982 T
1399	B	ERRCTL&12		GO CONTINUE THE SRCH	7	02932	J 02853
1400	MLCWA	100X5,LOOP&9		LOAD THE LOOP INST	12	02939	D 00*/0 01022 X
1401	B	LODFLD			7	02951	J 02982
1402	MLCWA	50X5,LOOP&9		LOAD THE LOOP INST	12	02958	D 00*+5 01022 X
1403	MLCS	000,X5,LOOP		SET NO-OP FOR SHORT	12	02970	D 09572 01013 3
1404				INSTRUCTION			
1405	MLCA	LOOP&9,234		MOVE FAILING OPER	12	02982	D 01022 00234 T
1406	MLNA	X3,223		MOVE ADDR OF ROUT	12	02994	D 00039 00223 /
1407	OPT2 SW	NOERSW&1		TURN OFF NO ERR SW	6	03006	Q 02840
1408	ZA	ADDR02,X1		LOAD NO REG 1	11	03012	H 02770 00029
1409	ZA	0002090,X5		LOAD IND REG 5	11	03023	H 09582 00049
1410				SCAN ERROR TABLE & UPDATA ERROR COUNT			
1411	ERSCAN	SCNLA 00X1,00X1		SCAN THE ERROR TABLE	12	03034	D 000*0 000*0 B
1412	SAR	X1		STORE ADDR	7	03046	G 00029 A
1413	BCE	AFTSRH,10X1,L		HAS TABLE BEEN COMP.	12	03053	B 03135 000*1 L
1414	SW	X1-1		DEFINE ERROR	6	03065	, 00028
1415	MLNWA	X1,00X5		MOVE ERROR CODE NO.	12	03071	D 00029 00*+0 V
1416							

I/O DICOST ERROR CONTROL

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1417	OPT2 A	212,1&X1	UPDATE ERROR COUNT	11	03083	A 09577 000+1
1418	A	232,X5	UPDATE IND REG 5	11	03094	A 09583 00049
1419	OPT2 BCE	SUMARY,1&X1,9	BRCH IF ERROR OCCURED	12	03105	B 04043 000+1 9
1420			NINE TIMES			
1421	CW	1&X1,X1-1	CLEAR WM S	11	03117	H 000+1 00028
1422	B	ERSCAN		7	03128	J 03034
1423			LOAD PRINT FIELD WITH ERROR MESSG			
1424	AFTSRH	BCE	WHERE2,1000,1	12	03135	B 02162 01000 1
1425	ERROSW	NOP		1	03147	N
1426	BCE	WHERE2,209	BRCH IF NO ERRORS	12	03148	B 02162 00209
1427	SW	ERROSH&1	RESET ERROR SW	6	03160	, 03148
1428	MLCA	ERR,206	MOVE ERROR	12	03166	D 02781 00206 T
1429	MLCA	2&X3,ROUTID	MOVE ROUTINE IDENT	12	03178	D 000H2 03207 T
1430	B	TYP1	GO TYPE ROUTINE ID	7	03190	J 01593
1431	DCW	ROUTINE @		8	03204	
1432	DC	@ @,G		3	03207	
1433	B	TYPES		7	03209	J 01517
1434			TYPE ADDITIONAL ERROR INFORMATION			
1435	EXTRA	NOPHM		1	03216	N
1436	WCP	DATA	PRINT EXTRA DATA	10	03217	M 210 01710 W
1437	BCB1	*-16		7	03227	R 03217 2
1438	BA1	*81		7	03234	R 03241 H
1439	CW	EXTRA&1		6	03241	H 03217
1440	ACT	*88,1001,1	LOOP ACTION REQUIRED	12	03247	B 03266 01001 1
1441	B	WHERE2		7	03259	J 02162
1442	SW	LUPINT&1	TURN ON SWITCH	6	03266	, 02560
1443	MRCWG	ACTION,201	MOVE ACTION MESSG	12	03272	D 02782 00201 L
1444	B	TYPES		7	03284	J 01517
1445	B	PRGCTL		7	03291	J 02250

PC/MN	LABEL	OP/CD	OPERAND	CT	ADDRS	INSTRUCTION
1447			*** I/O DICOST PROGRAM ***			
1448			*** DETERMINE WHICH STATUS INDICATORS ARE ON ***			
1449			THIS ROUTINE DETERMINES WHICH STATUS INDICATORS ARE ON ON THE			
1450			CHANNEL BEING USED. THE INDICATORS FOUND ON ARE STORED IN THE			
1451			PRINT FIELD AND THE PROGRAM BRANCHES TO ERROR CONTROL.			
1452	STACK	SBR	X5 STORE ADDR IN IND 5	7	03298	G 00049 B
1453		SBR	X2	7	03305	G 00034 B
1454		BW	0&X2,LPR1	12	03312	V 000.0 02764 I
1455		S	272,X5 REDUCE ADDR BY 7	11	03324	S 09584 00049
1456		MLCS	0&X5,LOOP&10	12	03335	D 00*+0 01023 3
1457		MRCWG	STIND,237 MOVE STATUS CODES	12	03347	D 02815 00237 L
1458		ORT2 MLCA	ADDR03,X1 LOAD IND REG 1	12	03359	D 02775 00029 T
1459		MLCS	0&X5,NUOPCO STORE CHNL CODE	12	03371	D 00*+0 03401 3
1460		B	CHALTR	7	03383	J 01045
1461		DCW	CNTERR HIGH LIMIT	5	03394	03556
1462		DC	NOTRDY LOW LIMIT	5	03399	03414
1463		DCW	@ @	1	03400	
1464	NUOPCO	DC	@ @	1	03401	
1465		DC	@ @	1	03402	
1466		ZA	2002372,X5 LOAD IX 5	11	03403	Q M 09589 00049
1467	NOTRDY	NOP		1	03414	N
1468		BNR1	CNTERR CHECK FOR NOT READY	7	03415	R 03556 1
1469		B	UPIX GO UPDATE IND REG	7	03422	J 03598
1470	BUSY	NOP		1	03429	N
1471		BCB1	CNTERR CHECK FOR BUSY	7	03430	R 03556 2
1472		B	UPIX GO UPDATE IND REG	7	03437	J 03598
1473	DATAACK	NOP		1	03444	N
1474		BER1	CNTERR CHECK DATA CNK	7	03445	R 03556 4
1475		B	UPIX GO UPDATE IND REG	7	03452	J 03598
1476	EXTEND	NOP		1	03459	N
1477		BEF1	CNTERR CHECK FOR EXT COND	7	03460	R 03556 8
1478		B	UPIX GO UPDATE IND REG	7	03467	J 03598
1479	NOTRNS	NOP		1	03474	N
1480		BNT1	CNTERR CHECK FOR NO TRANS	7	03475	R 03556 8
1481		B	UPIX GO UPDATE IND REG	7	03482	J 03598
1482	MLR	NOP		1	03489	N

ERROR CONTROL-CHECK STATUS INDICATORS

DA03 INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1483		BWLI	CNTERR	7	03490	R 03556 -
1484		B	UPIX	7	03497	J 03598
1485		SW	NOTRDY&1,BUSY&1	11	03504	, 03415 03430
1486		SW	DATA&1,EXTCND&1	11	03515	, 03445 03460
1487		SH	NOTRNS&1,HLR&1	11	03526	, 03475 03490
1488		MRCG	237,SAVIND	12	03537	D 00237 02803 \$
1489		B	ERRCTL	7	03549	J 02841
1490	CNTERR	SBR	X6	7	03556	G 00054 B
1491	OPT2 A	A	@1@,0&X1	11	03563	A 09577 000#0
1492		A	@7@,X6	11	03574	A 09584 00054
1493		CW	ERROSH&1	6	03585	D 03148
1494		B	UPIX&19	7	03591	J 03617
1495	UPIX	SBR	X6	7	03598	G 00054 B
1496		MLCS	@ @,0&X5	12	03605	D 09576 00#0 3
1497	OPT2 A	A	@2@,X1	11	03617	A 09590 00029
1498		A	@2@,X5	11	03628	A 09590 00049
1499		B	0&X6	7	03639	J 00#0.0
1500						

CHECK FOR WLR

GO UPDATE IND REG

RESET INSTRUCTIONS

SAVE IND

RETURN

STORE RETURN ADDR

UPDATE STATUS COUNT

UPDATE RETURN ADDR

TURN OFF ERROR SW

STORE RETURN ADDR

REMOVE STATUS CHAR

UPDATE IND REG 1

UPDATE IND REG 5

RETURN TO PROGRAM

I/O DICOST SEQUENCE CONTROL

BA03

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCD	OPERAND	CT	ADDR	INSTRUCTION
1502		OPT1	*** ALTER ROUTINE SEQUENCE ***			
1503		OPT1	*** I/O DICOST PROGRAM ***			
1504			IF THE ALTER ROUTINE SEQUENCE OPTION HAS BEEN SELECTED, MONITOR			
1505			WILL BRANCH TO THIS ROUTINE. THE LIST OF ROUTINE NUMBERS ENTERED			
1506			BY THE CE IS EXAMINED AND THE ROUTINES ARE MADE TO RUN IN THE			
1507			SEQUENCE SELECTED. WHEN ALL ROUTINES SELECTED HAVE BEEN RUN THE			
1508			PROCESS IS REPEATED OR THE ROUTINE GOES TO PROGRAM CONTROL. THIS			
1509			IS DETERMINED BY THE LAST CHARACTER ENTERED WHEN THIS OPTION HAS			
1510			BEEN SELECTED, IF IT IS L THE PROCESS IS REPEATED, IF IT IS E THE PRO-			
1511			CESS ENDS AFTER ONE PASS.			
1512						
1513	SEQCT	OPT1 BCE	PRGCTL, 06X4, E	12	03646	B 02250 00400 E
1514		OPT1 BCE	*68, 06X4, L	12	03658	B 03677 00400 L
1515		OPT1 B	*613	7	03670	J 03689
1516		OPT1 MLNA	SQCON1, X4	12	03677	D 02738 00044 /
1517		OPT1 MLNS	16X4, CMPFLD-1	12	03689	D 00401 02741 I
1518		OPT1 MLNS		1	03701	D
1519		OPT1 A	232, X4	11	03702	A 09583 00044
1520		OPT1 MLNA	209952, X1	12	03713	D 09595 00029 /
1521	LOCWM	OPT1 SCNLA	16X1, 16X1	12	03725	D 00041 00041 0
1522		OPT1 SAR	X1	7	03737	G 00029 A
1523		OPT1 BCE	*68, 16X1, N	12	03744	B 03763 00041 N
1524		OPT1 B	LOCWM	7	03756	J 03725
1525		OPT1 C	36X1, CMPFLD-1	11	03763	C 00043 02741
1526		OPT1 BE	*68	7	03774	J 03788 S
1527		OPT1 B	LOCWM	7	03781	J 03725
1528		OPT1 BW	*68, 46X1	12	03788	V 03807 00044 I
1529		OPT1 B	LOCWM	7	03800	J 03725
1530		OPT1 ZA	X1, X3	11	03807	H 00029 00039
1531		OPT1 A	212, X3	11	03818	A 09577 00039
1532		OPT1 B	06X3	7	03829	J 00040
1533			GO TO ROUTINE SELECTED			

I/O DICOST SUMMARY ROUTINE

DA03 CT ADDR INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1535			*** I/O DICOST PROGRAM ***			
1536			*** SUMMARY ROUTINE ***			
1537			AFTER A COMPLETE PASS OF THE PROGRAM OR IF THE PROGRAM IS TERM-			
1538			INATED THIS ROUTINE ORGANIZES A SUMMARY OF PROGRAM DETECTED			
1539			ERRORS AND STATUS ERRORS. IT CAUSES THIS SUMMARY TO BE TYPED AND			
1540			BRANCHES TO THE END OF TEST ROUTINES. THIS ROUTINE IS ALSO USED TO			
1541			TYPE OUT THE ERROR COUNT IO MESSAGE WHEN A PROGRAM DETECTED ERROR			
1542			OCCURES FOR THE TENTH TIME.			
1543						
1544	SUMLT	OPT2 B	TYP1	7	03836	J 01593
1545		OPT2 DCW	@ERR CNT@,G	7	03849	
1546		OPT2 MLNWA	@1@,CNTMSG-4	12	03851	D 09597 03912 V
1547		OPT2 ZA	@00001@,X7	11	03863	M 09602 00059
1548	MOV	CNTOPT1 MLNS	STPTAB&X7,CNTMSG	12	03874	D 01YH1 03916 I
1549		OPT2 C	CNTMSG,@1@	11	03886	C 03916 09577
1550		OPT1 BH	*E15	7	03897	J 03918 U
1551		OPT2 B	TYP1	7	03904	J 01593
1552	CNTMSG	OPT2 DCW	@ @,G	6	03916	
1553		OPT2 A	@1@,CNTMSG-4	11	03918	A 09577 03912
1554		OPT2 A	@1@,X7	11	03929	A 09577 00059
1555		OPT2 C	CNTMSG-4,@51@	11	03940	C 03912 09604
1556		OPT2 BE	*E8	7	03951	J 03965 S
1557		OPT2 B	MOV CNT	7	03958	J 03874
1558		OPT2 ZA	@00000@,X7	11	03965	M 09609 00059
1559	MOV	STCOPT2 MLCA	STACODEX7,CMSG2-3	12	03976	D 02YB8 04008 Y
1560		OPT2 MLNA	STACNT&X7,CMSG2	12	03988	D 02WB2 04011 /
1561		OPT2 B	TYP1	7	04000	J 01593
1562	CMSG2	OPT2 DCW	@ @,G	5	04011	
1563		OPT2 A	@2@,X7	11	04013	A 09590 00059
1564		OPT2 BCE	ENDST&12,CNTMSG2-4,W	12	04024	B 08404 04007 H
1565		OPT2 B	MOVSTC	7	04036	J 03976
1566	SUMARY	OPT2 MLNA	X1,MAXMSG-7	12	04043	D 00029 04072 /
1567		OPT2 CW	X1-1	6	04055	H 00028
1568		OPT2 B	TYP1	7	04061	J 01593
1569	MAXMSG	OPT2 DCW	@ERR00 CNT 10@,G	12	04079	
1570	SUMX	ITORT2 B	AFTSRH	7	04081	J 03135

I/O DICOST SUMMARY ROUTINE

DA03

CT ADDR INSTRUCTION

PGLEN LABEL OPCOD DPERAND

1571	CTLFED	EQU	201
1572		PST	

CT ADDR INSTRUCTION

TEST NOT READY
OPCOD OPERAND

PGLIN LABEL

1601 *** TEST ROUTINE DESCRIPTION ***
1602 *** TEST NOT READY ***

1603 THIS TESTS THE ABILITY OF THE 7631-1301 TO GIVE A NOT READY
1604 INDICATION WHEN AN INOPERATIVE ACCESS IS ADDRESSED. EVERY MODULE
1605 AND ACCESS ARE ADDRESSED UNTIL ONE INDICATES NOT READY. IF NONE
1606 GIVE A NOT READY IT IS CONSIDERED AN ERROR. NOTE IF MODULES 0-9
1607 ARE AVAILABLE ON ONE CHANNEL, THE ACCESS ON ONE OF THE MODULES
1608 MUST BE SET INOPERATIVE BEFORE RUNNING THIS PROGRAM.
1609

ONLY THE SEEK OPERATION IS USED IN THIS ROUTINE

1610
1611
1612
1613
1614
1615
1616
1617
1618
1619
1620
1621
1622
1623
1624
1625
1626
1627
1628

1 04267 N
2 04269
12 04270 D 09626 09696 T
10 04282 M 8FO 09691 R
7 04292 R 04299 M
7 04299 R 04337 L
11 04306 A 09577 09692
7 04317 J 04331 V
7 04324 J 04282
6 04331 , 01803

NOI NOP
DC 0010 ROUTINE ID
MLCA 00000,FILE05 LOAD FILE ADDR
SD 1,FILE TRY A MOD
BAL *01 BRCH NOT READY
BNRL NOTRDE ADD 1 TO MOD ADDR
A 010,FILE01 BRCH ON TENTH MOD
BZ *08
B TSTRDY
SW E2
NO ACCESS OR MODULE WAS FOUND

NOT READY. ERROR 2 IS INDICATED BECAUSE OF THIS. INSURE THAT ONE
ACCESS IS INOPERATIVE OR SOME MODULE 0-9 IS OFF LINE.
NOTRDE MLNS R0YMSG08,FILE01 MOVE MOD ADDR
NOIXIT B MONITR

12 04337 D 07523 09692 I
7 04349 J 02066

TEST DATA CHECK & EXT CONDITION

LINE	LABEL	OPCODE	OPERAND	THE DATA FLD	CT	ADDRS	INSTRUCTION
1698	MLCA	HAAREA,DATAFD&23			12	04516	D 09347 09723 T
1699	MLCS	@ 2,DATAFD&30		SET ILLEGAL FORMAT	12	04528	D 09576 09730 3
1700	MU	%F7,FILE,W		WRITE FORMAT	10	04540	M %F7 09691 W
1701	DCBI	*-16			7	04550	R 04540 Z
1702	BAI	*G1			7	04557	R 04564 M
1703	BER1	FURCHK		BRCH ON DATA CHECK	7	04564	R 04577 4
1704		*** SET ERROR 5 ON ***					
1705	SW	E5			6	04571	. 01806
1706		ILLEGAL FORMAT CHAR DIDN T CAUSE DATA CHECK					
1707	FORCHK	MLCS @23,DATAFD&30		RESTORE BAD CHAR	12	04577	D 09590 09730 3
1708	MLCA	GAP6,DATAFD&63		FIELD FOR	12	04589	D 09381 09763 T
1709	MRCMG	GAP6,DATAFD&78		A SHDRT FORMAT	12	04601	D 09381 09778 L
1710	MU	%F7,FILE,W		WRITE FORMAT	10	04613	M %F7 09691 W
1711	BAI	STACHK		BRCH ON ANY ERROR	7	04623	R 03298 M
1712	MLCS	@43,DATAFD&24		INCREASE GAP LENGTH	12	04630	D 09631 09724 3
1713	WDC	1,FILE		WRITE DISK CHK WITH	10	04642	M %F3 09691 W
1714	BAI	*G1		LONG GAP	7	04652	R 04659 M
1715	BEF1	GAPCK		BRCH ON EXT COND	7	04659	R 04672 8
1716		*** SET ERROR 6 ON ***					
1717	SW	E6		TURN ON ERROR IND	6	04666	. 01807
1718		LONG GAP DIDN T CAUSE EXT. CONDITION					
1719	GAPCK	MLCA @313,DATAFD&24		REMOVE GAP COMPLETELY	12	04672	D 09633 09724 T
1720	WDC	1,FILE		WDC WITH A GAP	10	04684	M %F3 09691 W
1721	BAI	*G1		MISSING	7	04694	R 04701 M
1722	BEF1	TSTWFO		BRCH ON EXT COND	7	04701	R 04714 8
1723		*** SET ERROR 7 ON ***					
1724	SW	E7		TURN ON ERROR IND	6	04708	. 01800
1725		MISSING GAP DIDN T CAUSE EXT. CONDITION					
1726	TSTWFO	MLCS @43,DATAFD&23		RESTORE GAP	12	04714	D 09631 09723 3
1727	WDC	1,FILE		WDC FORMAT	10	04726	M %F3 09691 W
1728	BER1	N03XIT-6		BRCH ON DATA CHK	7	04736	R 04757 4
1729	BAI	STACHK		BRCH ON ANY ERROR	7	04743	R 03298 M
1730	B	N03XIT			7	04750	J 04763
1731		*** SET ERROR 8 ON ***					
1732	SW	E8		SET ERROR IND	6	04757	. 01809
1733		PROPERLY WRITTEN FORMAT.CAUSES DATA CHECK WHEN WRITE CHECKED					

124

PAGE 112

DA03

CT ADDR INSTRUCTION

7 04763 J 02066

TEST DATA CHECK & EXT CONDITION

OPCOD OPERAND

NOBIT

B

10M11R

1724

1725

TEST DATA CHECK

OPCOD OPERAND

LABEL

PGLIN

1737 ***TEST ROUTINE DESCRIPTION ***
 1738 ***TEST DATA CHECK CAUSED BY PARITY,CHAR CODE CHK ***
 1739 *** WRITE DISK CHECK ***
 1740 A RECORD IS WRITTEN IN 6 BIT MODE USING THE HAO OP,THIS IS
 1741 IS FOLLOWED BY A READ HAO OPERATION,8 BIT MODE,CAUSING PARITY OR
 1742 CHAR CODE CHECK IN THE 7631.THE DATA CHECK INDICATOR IS TESTED
 1743 AND IF IT IS NOT ON ERROR 9 IS INDICATED.A WRITE 8 BIT MODE HAO
 1744 IS ISSUED,AND AGAIN THE DATA CHECK IS TESTED,IF IT ISN T ON,ERROR
 1745 10 IS INDICATED.THE RECORD IS REWRITTEN IN THE 6 BIT MODE BUT
 1746 BEFORE IT IS WRITE CHECKED THE DATA FIELD IN MEMORY IS ALTERED.
 1747 THE RECORD IS WRITE CHECKED USING THE ALTERED DATA FIELD AND THE
 1748 DATA CHECK IND IS TESTED IF IT ISN T ON ERROR 11 IS INDICATED.
 1749

1750 FORMAT REQUIRED IS IN SIX BIT MODE ON CYLINDER 253
 1751 44433333333333333333334111112222222222111111112111111111121
 1752 11111111111112

DATA FIELD ORGANIZATION

HAZ 2 CHAR-REC ADDR 6 CHAR-RECORD 10 CHAR

DATA FIELD USED

88ADDR01***---666

PGLIN	NO4	NOP	ROUTINE ID	CT	ADDR	INSTRUCTION
1760				1	04770	N
1761		DC 2042		2	04772	
1762		CS DATAFD&225	CLEAR	6	04773	/ 09925
1763		CS	DATA	1	04779	/
1764		CS	FIELD	1	04780	/
1765		MRCNG HAOP,DATAFD	LOAD THE	12	04781	D 09383 09700 L
1766		MLCNS 2MA,DATAFD&18	DATA FIELD	12	04793	D 09575 09718 7
1767		MU %F5,FILE,W	WRITE A RECORD	10	04805	M %F5 09691 W
1768		BA1 %E1		7	04815	R 04822 H
1769		LU %F5,FILE,R	READ RECORD IN	10	04822	L %F5 09691 R
1770		BA1 %E1	WRONG MODE	7	04832	R 04839 H
1771		BER1 WRTMOD	BRCH ON DATA CHK	7	04839	R 04852 4

*** SET ERROR 9 ON ***

DA03 INSTRUCTION

TEST DATA CHECK

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1773		SW	E9	6	04844	SET ERROR IND , 01810
1774			8 BIT MODE READ OF 6 BIT MODE DATA DOESN T CAUSE DATA CHECK			
1775	WRINOD	HRCNG	HAOP,DATAFD	12	04852	D 09383 09700 L ^D
1776		MLCNS	2ND,DATAF0618	12	04864	D 09575 09718 7
1777		LU	XF5,FILE,W	10	04876	L XF5 09691 W
1778		BA1	0&1	7	04886	R 04893 M ^G
1779		BEX1	REWRT,Y	7	04893	R 04906 Y
1780			*** SET ERROR 10 ON ***			
1781		SW	E10	6	04900	TURN ON ERROR IND , 01811
1782			8 BIT MODE WRITE WITH 6 BIT MODE FORMAT DOESN T CAUSE DATA CHECK			
1783	REWRT	MU	XF5,FILE,W	10	04906	M XF5 09691 W
1784		BA1	SYCHK	7	04916	R 03298 M ^G
1785		MLCA	2,DATAF068	12	04923	D 09576 09700 Y
1786		WDC	1,FILE	10	04935	M XF3 09691 M
1787		BA1	0&1	7	04945	R 04952 M ^G
1788		BER1	N04XIT	7	04952	R 04965 4
1789			*** SET ERROR 11 ON ***			
1790		SW	E11	6	04959	SET ERROR IND , 01812
1791			WRITE CHECK WITH ALTERED DATA FIELD DOESN T CAUSE DATA CHECK			
1792		N04XIT	B	7	04965	J 02066
1793						

PGLIN LABEL OPCOD OPERAND CT ADDR INSTRUCTION

1031		MU	%F5,FILE,R	READ USING INCOR	10	05132	M %F5 09691 R
1032		BCB1	*-16	RECT TKHD ADDR	7	05142	R 05132 2
1033		BAL	*E1		7	05149	R 05156 H
1034		BEF1	*E7	BRCH ON EXT COND	7	05156	R 05169 8
1035			*** SET ERROR 13 ON ***				
1036		SW	E13	SET ERROR IND	6	05163	, 01814
1037			NO RECORD FOUND NOT SETTING EXT CONDITION				
1038		BNT1	*E7	BRCH ON NO TRANS.	7	05169	R 05182 S
1039			*** SET ERROR 14 ON ***				
1040		SW	E14	SET ERROR IND	6	05176	, 01815
1041			NO RECORD FOUND NOT SETTING NO TRANSFER				
1042		SD	1,FILE	POSITION ACCESS	10	05182	M %F0 09691 R
1043		BAL	*E1		7	05192	R 05199 H
1044		WDC	1,FILE	WRT DISK CHK WITH	10	05199	M %F3 09691 W
1045		BCB1	*-16	IMPROPER MODE SET	7	05209	R 05199 2
1046		BAL	*E1		7	05216	R 05223 H
1047		BEF1	NOEXIT	BRCH ON EXT COND	7	05223	R 05236 8
1048			*** SET ERROR 15 ON ***				
1049		SW	E15	SET ERROR IND	6	05230	, 01816
1050			IMPROPER MODE SETTING DOESN T CAUSE EXT CONDITION				
1051		NOEXIT	B	MONTR	7	05236	J 02066
1052							

DA03 INSTRUCTION

TEST. WRONG LENGTH RECORD

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1854			*** TEST ROUTINE DESCRIPTION ***			
1855			*** TEST WRONG LENGTH RECORD LONG AND SHORT ***			
1856			A READ HAD WITH A DATA FIELD OF ONE CHARACTER IS ISSUED, THE			
1857			WRONG LENGTH RECORD IND. IS CHECKED IF IT IS NOT ON ERROR 16 IS			
1858			INDICATED. A READ HAD WITH A DATA FIELD THAT HAS NO TERMINATING			
1859			WORD MARK GROUP MARK IS ISSUED, THE WLR INDICATOR IS CHECKED AND			
1860			IF IT IS NOT ON ERROR 17 IS INDICATED.			
1861						
1862			FORMAT REQUIRED IS IN SIX BIT MODE ON CYLINDER 253			
1863			44433333333333333333411111222 6 CHAR REC ADDR&10 CHAR REC			
1864			DATA FIELD USED FOR SHORT RECORD 8			
1865						
1866			DATA FIELD USED FOR LONG RECORD, FROM START OF DATA FIELD TO THE			
1867			END OF MEMORY			
1868	N06	NOP		1	05243	N
1869		DC	206a	2	05245	
1870		MLCWS	2ND, DATAFD&1	12	05246	D 09575 09701 7
1871		MU	3F5, FILE, R	10	05258	H 3F5 09691 R
1872		BCBL	*-16	7	05268	R 05258 Z
1873		BA1	*&1	7	05275	R 05282 M
1874		BWL1	*&7	7	05282	R 05295 -
1875			*** SET ERROR 16 ON ***			
1876		SH	E16	6	05289	, 01817
1877			SET ERROR IND.			
1878			SHORT DATA FIELD DOESN T CAUSE WRONG LENGTH RECORD			
1879		CS	DATAFD&225	6	05295	/ 09925
1880		CS		1	05301	/
1881		CS	FIELD	1	05302	/
1882		MU	3F5, FILE, 0	10	05303	M 3F5 09691 0
1883		BA1	*&1	7	05313	R 05320 M
1884		BWL1	*&7	7	05320	R 05333 -
1885			*** SET ERROR 17 ON ***			
1886		SM	E17	6	05327	, 01818
1887			SET ERROR IND.			
1888			LONG DATA FIELD DOESN T CAUSE WRONG LENGTH RECORD			
1889		N06X1T	B MONITR	7	05333	J 02066
1890						

RANDOM SEEK CHECK

PC/LIN	LABL	OPCD	OPERAND	CT	ADDRS	INSTRUCTION
1890			*** TEST ROUTINE DESCRIPTION ***			
1891			*** RANDOM SEEK TEST ***			
1892			USING A FOUR DIGIT NUMBER DEVELOPED FROM THE TIME TAKEN FOR THE			
1893			CARRIAGE ON THE TYPEWRITER TO RETURN, RANDOM ADDRESSES ARE GENER-			
1894			ATED FOR THE FILE. A SEEK IS ISSUED FOR EACH ADDRESS AND ARRIVAL			
1895			OF THE ACCESS IS VERIFIED BY A READ HAO OP. IF THE READ OP RESULTS			
1896			IN A NO RECORD FOUND, ERROR 1 IS INDICATED FOLLOWED BY THE FILE			
1897			ADDRESS BEING USED. ANY STATUS INDICATORS ENCOUNTERED BY THE SEEK			
1898			OR READ OPS WILL ALSO BE INDICATED. IF THE PROGRAM IS IN THE MAN-			
1899			UAL MODE, A NO RECORD FOUND ON THE READ OP WILL CAUSE A REQUEST T			
1900			URN ON THE CE-HAO SO THAT THE ADDRESS AT WHICH THE ACCESS			
1901			ACTUALLY ARRIVED AT CAN BE DISPLAYED FOR ANALYSIS. 100 SEEKS ARE			
1902			MADE IN THE ROUTINE, AFTER WHICH THE ACCESS IS POSITIONED AT THE			
1903			DIAGNOSTIC CYL. 253.			
1904						
1905		NOP		1	05340	N
1906		DC	2072	2	05342	
1907		SW	FILE&2	6	05343	, 09693
1908		MLNWA	TOTIME, FILE&5	12	05349	D 09323 09696 V
1909		SD	1, FILE	10	05361	M &F0 09691 R
1910		BCDL	*-16	7	05371	R 05361 Z
1911		BAI	STACHK	7	05378	R 03298 M
1912		MU	&F5, FILE, R	10	05385	M &F5 09691 R
1913		BCDL	*-16	7	05395	R 05385 2
1914		BEXI	VERROR, Y	7	05402	R 05463 Y
1915		BAI	&E1	7	05409	R 05416 M
1916	RANDOM	A	&2000, TOTIME	11	05416	A 09644 09323
1917		A	TOTIME, FILE&5	11	05427	A 09323 09696
1918		A	&1&, COUNT	11	05438	A 09577 09528
1919		BZ	ENDSKS	7	05449	J 05614 V
1920		B	SEEKS	7	05456	J 05361
1921			*** SET ERROR 1 ON ***			
1922	VERROR	SW	E1, EXTRA&1	11	05463	, 01802 03217
1923			ON A RANDOM SEEK ACCESS POSITION RESULTED IN A NO RECORD FOUND			
1924		MRCWG	FILE, DATA	12	05474	D 09691 01710 L
1925		RAI	STACHK	7	05486	R 03298 M

PGLIN	LABEL	RANDOM SEEK CHECK OPCOD OPERAND	CT	ADDRS	INSTRUCTION	DA03
1926		BCE 068,SPTADO,1	12	05493	B 05512 01004 1	
1927		B RANDOM	7	05505	J 05416	
1928		B TYP1	7	05512	J 01593	
1929		DCW 0CE-HAO ON0,6	9	05527		
1930		H	1	05529	.	
1931		MU 0FS,FILE,R	10	05530	M 0F5 09691 R	
1932		BCBL 0-16	7	05540	R 05530 Z	
1933		BA1 061	7	05547	R 05554 M	
1934		SM DATAFD	6	05554	, 09700	
1935		MLCA DATAFD06,ADRMSG616	12	05560	D 09706 05595 T	
1936		B TYP1	7	05572	J 01593	
1937	ADRMSG	DCW 0ADDR READ	28	05579		
1938		H RANDOM	6	05608	. 05416	
1939	ENDSKS	MLNA 090200,FILE05	12	05614	D 09630 09696 /	
1940		SD 1,FILE	10	05626	M 0F0 09691 R	
1941		BCBL 0-16	7	05636	R 05626 Z	
1942		BA1 061	7	05643	R 05650 M	
1943	NOTXIT	B MONITR	7	05650	J 02066	
1944						

BRCH IF IN MANUAL MD
GO TRY NEXT SEEK
GO REQUEST THAT CE-HAO
BE TURNED ON
WAIT FOR ACTION
READ IN TKMD ADDR
MOVE ADDR READ BACK
GO TYPE ADDR
,CE-HAO OFF0,6
WAIT FOR ACTION
RESET ADDR TO CE TK
POSITION ACCESS
GO TO MONITOR

TEST WRITE FORMAT 6 BIT MODE

CT ADDR INSTRUCTION

PC	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1946	***	TEST ROUTINE DESCRIPTION ***			
1947	***	TEST WRITE 6 BIT MODE FORMAT ***			
1948		THIS ROUTINE WRITES A SHORT FORMAT FOR CYL. 253 IN THE 6 BIT			
1949		MODE. THE FORMAT IS WRITE CHECKED AND IF A DATA CHECK RESULTS,			
1950		ERR 18 IS INDICATED. IN ADDITION ANY STATUS INDICATORS ENCOUNTER-			
1951		ED BY THE WRITE FORMAT, OR THE WRITE CHECK, WILL BE DISPLAYED IN			
1952		THE ERROR TYPEOUT.			
1953					
1954		FORMAT WRITTEN ON CYL 253 IN 6 BIT MODE			
1955	444333333333333333333333411111222222222221111111121111111111121				
1956	11111111111122222222221111111111211111111111111111112222				
1957	2222222211111111111121111111111111111111111111111111111				
1958	112				
1959					
1960		ORGANIZATION OF FORMAT			
1961	GAP1--HA1--GAP2--HA2 9CHARS--X GAP--REC ADDR 10CHAR--Y GAP--REC				
1962	AREA 14CHARS--X GAP--REC ADDR 10CHARS--Y GAP--REC AREA 14CHARS--				
1963	REC ADDR 10CHARS--X GAP--REC AREA 64CHARS--GAP3				
1964	NOO	NOP	1	05657	N
1965	DC	308a	2	05659	
1966	CS	DATAFD&225	6	05660	/ 09925
1967	CS		1	05666	/
1968	CS		1	05667	/
1969	MLCS	013,DATAFD	12	05668	D 09577 09700 3
1970	MLCA	090200,FILE65	12	05680	D 09630 09696 T
1971	SW	DATAFD&225	6	05692	, 09925
1972	MRN	DATAFD,DATAFD&1	12	05698	D 09700 09701 9
1973	MLNA	HAAREA,DATAFD&23	12	05710	D 09347 09723 /
1974	MLNA	GAP6,DATAFD&63	12	05722	D 09381 09763 /
1975	MLNA	GAP6,DATAFD&111	12	05734	D 09381 09811 /
1976	MLNA	GAP6,DATAFD&159	12	05746	D 09381 09859 /
1977	MRCWG	GAP6,DATAFD&224	12	05758	D 09381 09924 L
1978	MU	8F7,FILE,W	10	05770	M 8F7 09691 M
1979	BCB1	--16	7	05780	R 05770 2
1980	BAL	STACHK	7	05787	R 03298 M
1981	WDC	1,FILE	10	05794	M 8F3 09691 M

1946 *** TEST ROUTINE DESCRIPTION ***

1947 *** TEST WRITE 6 BIT MODE FORMAT ***

1948 THIS ROUTINE WRITES A SHORT FORMAT FOR CYL. 253 IN THE 6 BIT

1949 MODE. THE FORMAT IS WRITE CHECKED AND IF A DATA CHECK RESULTS,

1950 ERR 18 IS INDICATED. IN ADDITION ANY STATUS INDICATORS ENCOUNTER-

1951 ED BY THE WRITE FORMAT, OR THE WRITE CHECK, WILL BE DISPLAYED IN

1952 THE ERROR TYPEOUT.

1953

1954 FORMAT WRITTEN ON CYL 253 IN 6 BIT MODE

1955 444333333333333333333333411111222222222221111111121111111111121

1956 1111111111112222222222111111111121111111111111111111112222

1957 2222222211111111111121111111111111111111111111111111111

1958 112

1959

1960 ORGANIZATION OF FORMAT

1961 GAP1--HA1--GAP2--HA2 9CHARS--X GAP--REC ADDR 10CHAR--Y GAP--REC

1962 AREA 14CHARS--X GAP--REC ADDR 10CHARS--Y GAP--REC AREA 14CHARS--

1963 REC ADDR 10CHARS--X GAP--REC AREA 64CHARS--GAP3

NOO	NOO	ROUTINE ID	CLEAR	DATA	FIELD
1964	NOP				
1965	DC	308a			
1966	CS	DATAFD&225			
1967	CS				
1968	CS				
1969	MLCS	013,DATAFD			LOAD
1970	MLCA	090200,FILE65			SET TKHD ADDR
1971	SW	DATAFD&225			THE
1972	MRN	DATAFD,DATAFD&1			FORMAT
1973	MLNA	HAAREA,DATAFD&23			SIX
1974	MLNA	GAP6,DATAFD&63			MODE
1975	MLNA	GAP6,DATAFD&111			THREE
1976	MLNA	GAP6,DATAFD&159			AND
1977	MRCWG	GAP6,DATAFD&224			REC ADDR
1978	MU	8F7,FILE,W			WRITE THE FORMAT
1979	BCB1	--16			
1980	BAL	STACHK			BRCH ON ANY ERROR
1981	WDC	1,FILE			WRT DISK CHK

TEST WRITE FORMAT 6 BIT MODE

PGLIN LABEL OPCODE OPERAND CT ADDR INSTRUCTION

1982		BA1	*C1	7	05804	R 05811 H
1983		BER1	*C8	7	05811	R 05825 4
1984		B	N08XIT	7	05818	J 05831

BRCH ON DATA CHK

1985			*** SET ERROR 10 ON ***	6	05825	, 01819
------	--	--	-------------------------	---	-------	---------

1986		SW	E18	6	05825	, 01819
------	--	----	-----	---	-------	---------

WRITE CHECK OF THE FORMAT RESULTS IN A DATA CHECK

1988		N08XIT	B	MONITR	7	05831	J 02066
------	--	--------	---	--------	---	-------	---------

1989

TEST READ & WRITE IN 6 BIT MODE
OPCOD OPERAND

PCLEN LABEL

1991 *** TEST ROUTINE DESCRIPTION ***
 1992 *** TEST READ&WRITE IN 6 BIT MODE ***
 1993 A TRACK OF 100 CHARACTERS IS WRITTEN.THE TRACK IS WDC,READ INTO
 1994 MEMORY AND COMPARED TO THE ORIGINAL DATA THAT WAS WRITTEN.IF THE
 1995 WRITE CHECK TURNS ON DATA CHECK ERROR 19 IS INDICATED,IF THE READ
 1996 DATA DOES NOT COMPARE WITH THE WRITE DATA,ERROR 20 IS INDICATED.
 1997 ANY STATUS INDICATORS ENCOUNTERED WILL BE DISPLAYED.THE TEST IS
 1998 REPEATED 40 TIMES,ONCE FOR EACH HEAD ON THE ACCESS. USES CYL 253

1999 FORMAT REQUIRED SAME AS THE FORMAT DESCRIBED IN ROUTINE N08

2000
 2001
 2002 DATA FIELD ORGANIZATION
 2003 MAZ 2CHARS---REC ADDR 6CHARS---RECORD 10CHARS---REC ADDR 6CHARS--
 2004 RECORD 10CHARS---REC ADDR 6CHARS---RECORD 60CHARS

2005 DATA FIELD USED
 2006 86ADDR01#*#*---666 ADDR0212488421 ADDR03.0 \$0 -/02 400 6ADC
 2007 DEFGHL-JKLMNOPQR*STUVWXYZ025679

NO9	NO9	NO9	ROUTINE ID	CT	ADDR	INSTRUCTION
2008	NOP	0092		1	05838	N
2009	DC	09#202	SET TKHD ADDR	2	05840	
2010	MLCA	09#202	FILE65	12	05841	0 09630 09696 Y
2011	B	6630		7	05853	J 05889
2012	SH	FILE64		6	05860	, 09695
2013	A	212	FILE65	11	05866	A 09577 09696
2014	BCE	N09XIT	FILE64,6	12	05877	B 06036 09695 6
2015	CS	DATAFD&225		6	05889	/ 09925
2016	CS			1	05895	/
2017	CS			1	05896	/
2018	MRCNG	HAOP	DATAFD	12	05897	D 09383 09700 L
2019	MU	\$F5	FILE,W	10	05909	M \$F5 09691 W
2020	BA1	STACHK		7	05919	R 03298 H
2021	WDC	1,FILE		10	05926	M \$F3 09691 W
2022	BER1	*615		7	05936	R 05957 4
2023	BA1	STACHK		7	05943	R 03298 M
2024	B	RDCHK6		7	05950	J 05963

*** SET ERROR 19 ON ***

DA03

CT ADDR INSTRUCTION

TEST READ & WRITE IN 6 BIT MODE

OPCODE OPERAND

PGLIN LABEL

PGLIN	OPCODE	OPERAND	SET ERROR IND	CT	ADDR	INSTRUCTION
2027	SW	E19	SET ERROR IND	6	05957	01820
2028	WRITE CHECK OF RECORD RESULTS IN DATA CHECK					
2029	NRCC	DATAFD,DATAFD&101	SAVE DATA WRITTEN	12	05963	D 09760 09801 0
2030	CS	DATAFD&99	CLEAR DATA FIELD	6	05975	/ 09799
2031	HU	BF5,FILE,R	READ DATA BACK	10	05981	H BF5 09691 R
2032	BAI	STACK	BRCH ON ANY ERROR	7	05991	R 03290 H
2033	C	DATAFD&200,DATAFD&99	CHECK DATA READ	11	05998	C 09900 09799
2034	BE	CHKHDS	IF IT IS GOOD BRCH	7	06009	J 05000 S

*** SET ERROR 20 ON ***

SET ERROR IND

READ DATA DOES NOT COMPARE WITH ORIGINAL WRITE DATA

GO REPORT ERROR RETURN HERE

SW E20

PGLIN	OPCODE	OPERAND	SET ERROR IND	CT	ADDR	INSTRUCTION
2036	SW	E20	SET ERROR IND	6	06016	01021
2037	B	HONTR	GO REPORT ERROR	7	06022	J 02033
2038	D	CHKHDS	RETURN HERE	7	06029	J 05000
2040	D	HONTR		7	06036	J 02033
2041						

137

DA03

CT ADDR INSTRUCTION

TEST WRITE FORMAT 8 BIT MODE

OPCOD OPERAND

PGLIN LABEL

*** SET ERROR 21 ON ***

2079

SH

E21

SET ERROR IND

2080

WRITE CHECK OF THE FORMAT RESULTS IN A DATA CHECK

2081

B

MONITR

NIOXLT

2082

2083

6 06204 , 01822

7 06210 J 02066

TEST READ & WRITE IN 8 BIT MODE

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
2085			*** TEST ROUTINE DESCRIPTION ***			
2086			*** TEST READ&WRITE IN 8 BIT MODE ***			
2087			A RECORD OF 100 CHARACTERS,HAZ & 3 RECORDS & 3 RECORD ADDRESSES			
2088			.IS WRITTEN USING HAD IN 8 BIT MODE.IT IS WRITE CHECKED,READ BACK			
2089			INTO MEMORY,AND COMPARED AGAINST THE ORIGINAL DATA WRITTEN,IF			
2090			THE WRITE CHECK RESULTS IN DATA CHECK,ERROR 22 IS INDICATED,IF			
2091			THE READ DATA DOES NOT COMPARE TO THE WRITE DATA ERROR 24 IS			
2092			INDICATED.SINCE THE RECORD IS WRITTEN AND READ IN 8 BIT MODE THE			
2093			READ DATA IS CHECKED FOR A WORD MARK IN A FIXED LOCATION. IF THE			
2094			WORD MARK IS NOT THERE ERROR 23 WILL BE INDICATED.ANY STATUS			
2095			ERROR WILL ALSO BE INDICATED.THE TEST IS REPEATED 40 TIMES,ONCE			
2096			FOR EACH HEAD ON THE ACCESS. USES CYL 253			
2097						
2098			FORMAT REQUIRED SAME AS THE FORMAT DESCRIBE IN ROUTINE N10			
2099						
2100			DATA FIELD ORGANIZATION			
2101			HAZ 2CHARS---REC ADDR 6CHARS---RECORD 10CHARS---REC ADDR 6CHARS---			
2102			RECORD 10CHARS---REC ADDR 6CHARS---RECORD 60CHARS			
2103			DATA FIELD USED			
2104			88ADDR010***---888 ADDR0212488421 ADDR03.0 \$* -/,% #*2 &ABC			
2105			DEFCHI-JKLMNOPQRSSTUVWXYZ035679			
2106						
2107	N11	NOP			06217	N
2108		DC	0110		06219	
2109		MLCA	09#200,FILE55		06220	D 09630 09696 T
2110		CS	DATAFD&225		06232	/ 09925
2111		CS			06238	/
2112		CS			06239	/
2113		MRCWG	HAOP,DATAFD		06240	D 09383 09700 L
2114		LU	8F5,FILE,M		06252	L 8F5 09691 H
2115		BAI	STACHK		06262	R 03298 H
2116		LU	8F3,FILE,M		06269	L 8F3 09691 H
2117		BERI	0&15		06279	R 06300 4
2118		BAI	STACHK		06286	R 03298 H
2119		B	RDCHK8		06293	J 06306

*** SET ERROR 22 ON ***

TEST READ & WRITE IN 8 BIT MODE

PGM LN LABEL DPCOD OPERAND CT ADDR INSTRUCTION

2121	SW	E22	SET ERROR IND	6	06300	01823
2122	WRITE CHECK OF RECORD RESULTS IN A DATA CHECK					
2123	RDCBK8	MRCG	DATAFD,DATAFD&101	SAVE DATA WRITTEN	12	06306 D 09700 09801 \$
2124	CS	DATAFD&99	CLEAR DATA FIELD	6	06318	/ 09799
2125	LU	%F5,FILE,R	READ DATA BACK	10	06324	L %F5 09691 R
2126	BA1	STACK	BRCH ON ANY ERROR	7	06334	R 03298 M
2127	CHKWN	%G7,DATAFD&2	CHECK WORD MARKS	12	06341	V 06359 09702 1
2128	*** SET ERROR 23 ON ***					
2129	SW	E23	SET ERROR IND	6	06353	01824
2130	WORD MARK MISSING FROM READ DATA					
2131	DATCK8	C	DATAFD&200,DATAFD&99	CHECK DATA READ	11	06359 C 09900 09799
2132	BE	%G7	IF IT IS GOOD BRCH	7	06370	J 06383 S
2133	*** SET ERROR 24 ON ***					
2134	SW	E24	SET ERROR IND	6	06377	01825
2135	READ DATA DOES NOT COMPARE TO WRITE DATA					
2136	NIXIT	B	MONITR	7	06383	J 02066
2137	ALTER ADDRESS BY 1 UNTIL EVERY HEAD					
2138	IS SELECTED AND TESTED IN 8 BIT MODE					
2139	N12	NOP		1	06390	N
2140	DC	%120	ROUTINE ID	2	06392	
2141	SH	FILE&4		6	06393	09695
2142	A	%13,FILE&5	UPDATE TKHD ADDR	11	06399	A 09577 09696
2143	BCE	N12XIT,FILE&6	BRCH IF CYL COMPLETE	12	06410	B 06440 09695 6
2144	ZA	%N11,X3	LOAD IX 3	11	06422	M 09649 00039
2145	B	N11&15		7	06433	J 06232
2146	N12XIT	B	MONITR	7	06440	J 02066
2147						

TEST FULL TRACK WITH ADDRESSES

DA03 CT ADDR INSTRUCTION

PGIN LABEL OPCOD OPERAND

2105 READ DATA DOES NOT COMPARE WITH DATA WRITTEN
2106 N10X1T B H0H1R 7 06564 J 02066
2107

PCB LABEL

OPERAND

INSTRUCTIONS

2199 *** TEST ROUTINE DESCRIPTION ***
 2199 *** TEST FULL TRACK WITHOUT ADDRESSES OPERATION ***
 2191 A DATA FIELD OF J RECORDS IS WRITTEN IN 0 BIT MODE USING THE
 2192 NOT OP ON CYL 253 ADDR 9420 .THE DATA IS READ BACK USING THE RDT
 2193 DR AND THE DATA READ IS COMPARED AGAINST THAT WHICH WAS WRITTEN.
 2194 IF THE DATA DOES NOT COMPARE ERROR 26 IS INDICATED.ALL STATUS
 2195 ERRORS ENCOUNTERED ARE ALSO INDICATED.

2196 FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE N10

2198 DATA FIELD ORGANIZATION

2199 RECORD 10CHARS--RECORD 10CHARS--RECORD 60CHARS

2200 DATA FIELD USED

2201 #*#*--*#*# 12480421 .# #* -/,% #*# #ABCDEFGHI-JKLMNOPQRSTU
 2202 MNXYZ035679

PCB	PCB LABEL	OPERAND	INSTRUCTIONS	PCB LABEL	OPERAND	INSTRUCTIONS
2204						
2205	N16	NOP		1	06571	N
2206	DC	2143	ROUTINE ID	2	06573	
2207	CS	DATAFD&225	CLEAR	6	06574	/ 09925
2208	CS		DATA	1	06580	/
2209	CS		FIELD	1	06581	/
2210	MRCG	ADDR1&1,DATAFD	LOAD DATA FIELD	12	06582	D 09391 09700 \$
2211	MRCG	ADDR2&6,DATAFD&10	LOAD	12	06594	D 09407 09710 \$
2212	MRCUG	ADDR3&6,DATAFD&20	DATA FIELD	12	06606	D 09423 09720 L
2213	MLCM	090202,FILE&5	SET TKHD ADDR	12	06618	D 09630 09696 T
2214	LU	SF2,FILE,W	WRITE FULL TRACK	10	06630	L SF2 09691 W
2215	BAI	STACHK	BRCH ON ANY ERROR	7	06640	R 03298 H
2216	MRCG	DATAFD,DATAFD&81	SAVE DATA	12	06647	D 09700 09701 \$
2217	CS	DATAFD&79	CLEAR STORAGE	6	06659	/ 09779
2218	LU	SF2,FILE,R	READ TRACK	10	06665	L SF2 09691 R
2219	BAI	STACHK		7	06675	R 03298 H
2220	C	DATAFD&79,DATAFD&160	CHECK DATA READ	11	06682	C 09779 09860
2221	BE	*67	IF IT IS GOOD BRCH	7	06693	J 06706 S
2222		*** SET ERROR 26 ON ***				
2223	SW	E26		6	06700	. 01827
2224		READ DATA DOES NOT COMPARE WITH DATA WRITTEN				

143

DA03 PAGE 131

TEST FULL TRACK WITHOUT ADDRESSES

CT ADDR INSTRUCTION

7 06706 J 02066

PCLIN LABEL

OPCOD OPERAND

0025

HEXIT

0

HONITR

TEST SINGLE RECORD OP

OPCOD OPERAND

LABEL

PCBIN

2227 *** TEST ROUTINE DESCRIPTION ***
 2228 *** TEST SINGLE RECORD OPERATION ***
 2229 IN THE EIGHT BIT MODE A SINGLE RECORD OF 10 CHARACTERS IS WRIT-
 2230 TEN, ADDRESS-ADDR01. IF NO RECORD FOUND RESULTS, ERROR 27 IS
 2231 INDICATED. A READ SINGLE RECORD RECORD ADDRESS ADDR03 IS ISSUED
 2232 AND IF A NO RECORD FOUND RESULTS ERROR 28 IS INDICATED. THE DATA
 2233 READ BACK IS CHECKED TO INSURE THE PROPER RECORD WAS READ. IF IT
 2234 IS NOT THE CORRECT DATA, ERROR 29 IS INDICATED. ALL STATUS ERRORS
 2235 WILL BE INDICATED.

FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE N10

2236
 2237
 2238 RECORD ADDRESS & DATA FIELD USED IN WRITE SINGLE RECORD. THE REC-
 2239 ORD ADDRESS WAS WRITTEN IN ROUTINE I3
 2240
 2241 ADDR01 3333333334

2242 RECORD ADDRESS USED AND RECORD EXPECTED IN READ SINGLE RECORD
 2243
 2244 ADDR03 00 00 -/08 0#8 8ABCDEFGHI-JKLMNOPQR+STUVWXYZ025679

PCBIN	OPCOD	OPERAND	INSTR	ADDR	CY
2245	NOP				1 06713 N
2246	DC	2150			2 06715
2247	CS	DATAFD&225			6 06716 / 09925
2248	CS				1 06722 /
2249	CS				1 06723 /
2250	CS				12 06724 D 09390 09699 T
2251	MLCA	ADDR1, FILE&7			12 06736 D 09508 09700 L
2252	HRCNG	GAP0-9, DATAFD			10 06748 L 2F1 09691 W
2253	LU	BF1, FILE&N			7 06758 R 06779 B
2254	BNT1	0615			7 06765 R 03298 M
2255	BAI	STACHK			7 06772 J 06705
2256	B	SRORD			
2257		*** SET ERROR 27 ON ***			6 06779 0 01028
2258	SH	E27			
2259		WRITE SINGLE RECORD RESULTS IN NO RECORD FOUND			6 06785 / 09799
2260	SRORD	CS DATAFD&99			12 06791 D 09422 09698 T
2261	MLCA	ADDR3&5, FILE&7			
2262		SET RECORD ADDR			

TEST CYLINDER OPERATION

OPCODE OPERAND

PGLINE LABEL

2201 *** TEST ROUTINE DESCRIPTION ***
 2202 *** TEST CYLINDER OPERATION ***
 2203 WITH A DATA FIELD OF 9 RECORDS 240 CHARS 3 TRACKS ARE WRITTEN
 2204 USING THE CYLINDER OPTION. THIS IS DONE ON EVERY 3 TRACKS UNTIL
 2205 THE ENTIRE CYLINDER IS COMPLETED. CYL 253 THE ADDRESS IS RESET
 2206 AND A READ CYLINDER OP OF 3 TRACKS IS PERFORMED. THE READ DATA IS
 2207 COMPARED TO THE ORIGINAL WRITE DATA AND IF THEY DO NOT COMPARE
 2208 ERROR 30 IS INDICATED. THE READ IS REPEATED FOR EVERY 3 TRACKS
 2209 ALSO. THIS TEST IS RUN ONLY IF CYO IS AVAILABLE.

FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE N10.

DATA FIELD ORGANIZATION
 RECORD 10CHARS--RECORDS 10CHARS--RECORD 60CHARS REPEAT 2 TIMES

DATA FIELD USED TO WRITE 3 TRACKS
 YYY-3 RECORDS OF 80 Y EACH-VVYY

PGLINE	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
2201	***	TEST ROUTINE DESCRIPTION ***			
2202	***	TEST CYLINDER OPERATION ***			
2203		WITH A DATA FIELD OF 9 RECORDS 240 CHARS 3 TRACKS ARE WRITTEN			
2204		USING THE CYLINDER OPTION. THIS IS DONE ON EVERY 3 TRACKS UNTIL			
2205		THE ENTIRE CYLINDER IS COMPLETED. CYL 253 THE ADDRESS IS RESET			
2206		AND A READ CYLINDER OP OF 3 TRACKS IS PERFORMED. THE READ DATA IS			
2207		COMPARED TO THE ORIGINAL WRITE DATA AND IF THEY DO NOT COMPARE			
2208		ERROR 30 IS INDICATED. THE READ IS REPEATED FOR EVERY 3 TRACKS			
2209		ALSO. THIS TEST IS RUN ONLY IF CYO IS AVAILABLE.			
2290		FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE N10.			
2291		DATA FIELD ORGANIZATION			
2292		RECORD 10CHARS--RECORDS 10CHARS--RECORD 60CHARS REPEAT 2 TIMES			
2293		DATA FIELD USED TO WRITE 3 TRACKS			
2294		YYY-3 RECORDS OF 80 Y EACH-VVYY			
2295					
2296					
2297					
2298					
2299					
2300					
2301					
2302					
2303					
2304					
2305					
2306					
2307					
2308					
2309					
2310					
2311					
2312					
2313					
2314					
2315					
2316					

PGM LN	LABEL	TEST CYLINDER OPERATION	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2317	CYORD	WRITE CYO	LU	BF0, FILE, M	10	07034	L XFA 09691 M
2318		BRCH ON ANY ERROR	BAI	STACHK	7	07044	R 03298 M
2319		UPDATE TRK ADDR BY 3	A	232, FILE65	11	07051	A 09583 09696
2320		IS THIS HEAD 39	O	FILE65, 0592	11	07062	C 09696 09652
2321		IF SO BRCH	BE	068	7	07073	J 07087 S
2322			B	CYORD	7	07080	J 07034
2323		RESET HAI	HLCA	29#202, FILE65	12	07087	D 09630 09696 Y
2324	CYORD	CLEAR	CS	DATAFD6239	6	07099	/ 09939
2325		DATA	CS		1	07105	/
2326		FIELD	CS		1	07106	/
2327		READ CYO	LU	BF0, FILE, M	10	07107	L XFA 09691 R
2328		BRCH ON ANY BUY HLR	BEXI	STACHK, M	7	07117	R 03298 M
2329			BAI	061	7	07124	R 07131 M
2330			SH	DATAFD	6	07131	, 09700
2331		CHECK DATA READ	C	DATAFD6239, DATAFD6238	11	07137	C 09939 09938
2332		IF IT IS GOOD BRCH	BE	0614	7	07148	J 07160 S
2333		*** SET ERROR 30 ON ***			6	07155	, 01631
2334			SH	E30			
2335		READ DATA DOES NOT COMPARE WITH DATA WRITTEN					
2336			B	N16XIT	7	07161	J 07204
2337		UPDATE ADDR BY 3	A	232, FILE65	11	07168	A 09583 09696
2338		IS THIS HEAD 39	C	FILE65, 0592	11	07179	C 09696 09652
2339		IF IT IS BRCH	BE	068	7	07190	J 07204 S
2340			B	CYORD	7	07197	J 07099
2341	N16XIT		B	MONITR	7	07204	J 02066

CT ADDR INSTRUCTION

LABEL OPCODE OPERAND

2343 *** TEST ROUTINE DESCRIPTION ***
 2344 *** TEST INTERRUPT FROM 7631-1301 ***
 2345 THIS TEST IS RUN WHEN THE PRIORITY FEATURE IS AVAILABLE. A SEEK
 2346 CYL 000 IS ISSUED. THE PROGRAM ENTERS THE ALERT MODE AND WAITS IN
 2347 A LOOP FOR THE INTERRUPT. AFTER CERTAIN TIME, AN INTERRUPT OCCURS
 2348 ERROR 31 IS INDICATED. STATUS ERRORS ARE ALSO INDICATED.

PC	Label	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
2343	N17	NOP		1	07211	N
2344	DC	0170		2	07213	
2352	BCE	068,1264,1		12	07214	B 07233 01264 1
2353	B	N17XIT		7	07226	J 07313
2354	SD	1, FILE		10	07233	H 8F0 09691 R
2355	BCDL	0-16		7	07243	R 07233 2
2356	BAL	STACKK		7	07250	R 03298 H
2357	BEPA	061		7	07257	Y 07264 E
2358	S	X7		6	07264	S 00059
2359	INFLUP	A 010,X7		11	07270	A 05577 00059
2360	BCE	N17XIT,X7-3,4		12	07281	B 07313 00056 4
2361	B	INTLUP		7	07293	J 07270
2362	DXPA	061		7	07300	Y 07307 X
2363		*** SET ERROR 31 ON ***				
2364	SW	031		6	07307	0 01832
2365		NO INTERRUPT AT THE COMPLETION OF THE SEEK OP				
2366	N17XIT	B	MONITR	7	07313	J 02066

CT ADDR INSTRUCTION

UPDATE ROUTINE
OPCOD OPERAND

PGLIN LABEL

2368 *** CHANNEL AND MODULE ADDRESS UPDATE ROUTINE ***
 2369 THIS ROUTINE LOCATES CHANNELS WITH 7631 ON THEM AND CAUSES
 2370 THE PROGRAM TO BE INITIALIZED ACCORDINGLY AND LOCATES READY
 2371 MODULES ON THE CHANNEL. AS LONG AS THERE ARE UNTESTED READY MODULE
 2372 AVAILABLE THIS ROUTINE WILL LOOP BACK TO ROUTINE N01 OR N07. WHEN
 2373 THERE NO FURTHER UNTESTED MODULES ON ANY CHANNEL THIS ROUTINE
 2374 FALLS THROUGH TO MONITOR. THE UPDATE ROUTINE STARTS WITH CHANNEL 1
 2375 MODULE 0 AND PROGRESSES THROUGH CHANNEL 4 MODULE 9.

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
2376	N10	NOP		1	07320	N
2377	DC	0180		2	07322	
2378	B	TOP&7		7	07323	J 07418
2379	BCE	00,0&X10,F		12	07330	B 07349 00:00 F
2380	B	UPCHNL		7	07342	J 07443
2381	MLCA	CODE&X15,INCODE		12	07349	D 09EC7 07380 T
2382	B	CHALTR		7	07361	J 01045
2383	DCW	TOP		5	07372	07411
2384	DC	BOTTOM		5	07377	04270
2385	DCW	0 0		1	07378	
2386	DC	0 0		1	07379	
2387	DC	0 0		1	07380	
2388	SH	CHNL&E1		6	07381	, 07530
2389	SD	1,FILE		10	07387	M &FO 09691 R
2390	BHRI	0&15		7	07397	R 07418 1 G
2391	BAI	0&1		7	07404	R 07411 H
2392	B	GOTIT		7	07411	J 07484
2393	A	010,FILE&1		11	07418	A 09577 09692
2394	BZ	0&0		7	07429	J 07443 V
2395	B	RDYFIL		7	07436	J 07387
2396	A	0570,X10		11	07443	A 09654 00074
2397	A	032,X15		11	07454	A 09583 00099
2398	DCE	N10XIT,X10,F		12	07465	B 07579 00074 F
2399	B	N10&10		7	07477	J 07330
2400	MLNS	FILE&1,RDYMSG&0		12	07484	D 09692 07523 1
2401	MLNS	INCODE,RDYMSG&12		12	07496	D 07380 07527 1
2402	B	TYP1		7	07508	J 01593

INSTRUCTION

CT

ADDR

INSTRUCTION

CT

ADDR

INSTRUCTION

PC	OPCODE	OPERAND	CH	OP	ADDR	INSTRUCTION
2406	RDYHSG	DCW		DTST	07515	
2409	CHNL SW	NDPUN			07529	N
2406		B		NUCHNL	07530	J 07555
2407		ZA		SN07,X3	07537	Q M 09659 00039
2408		B		0EX3	07548	J 000H0
2409	NUCHNL	CH		CHNLSW61	07555	B 07530
2410		ZA		SN01,X3	07561	Q M 09664 00039
2411		B		0EX3	07572	J 000H0
2412	N18X17	B		MONITR	07579	J 02066
2413				GO TO MONITOR		

PGLIN	TEST OVERLAP FILES AND TAPES	CT	ADDR	INSTRUCTIONS
2416	*** TEST ROUTINE DESCRIPTION ***			
2417	*** TEST FILES & TAPES OVERLAPPED ***			
2418	THIS ROUTINE USES FILES ON EVERY CHANNEL WHICH HAS THEM, ON			
2419	CHANNELS WHICH DO NOT HAVE FILES, TAPES ARE USED. IF NEITHER FILES			
2420	OR TAPES ARE AVAILABLE THE CHANNEL IS BY-PASSED. STARTING WITH			
2421	CHANNEL 1 AN OVERLAPPED WRITE OP IS GIVEN TO FILES OR TAPE. THEN			
2422	CHANNEL 2 IS STARTED AND THEN 3 AND 4. CHANNEL 1 IS CHECKED AGAIN			
2423	IF IT IS IN OVERLAP CHANNEL 2 IS CHECKED AND SO ON, WHEN A CHANNEL			
2424	IS FOUND TO BE OUT OF OVERLAP ANOTHER WRITE IS INITIATED ON THE			
2425	CHANNEL. AFTER 500 WRITES HAVE BEEN ISSUED THE FILES ARE ISSUED			
2426	READ OPS, WHEN 500 READS HAVE BEEN INITIATED THE OVERLAP OP-			
2427	ERATIONS ARE STOPPED. THE PROGRAM DELAYS FOR 1.5 SECONDS AND THEN			
2428	EVERY CHANNEL THAT WAS USED IS CHECKED FOR OVERLAP IN PROCESS. IF			
2429	ANY ARE FOUND TO BE IN PROCESS AN ERROR IS INDICATED, FOR CH1			
2430	ERROR 32, FOR CH2 ERROR 33, FOR CH3 ERROR 34, FOR CH4 ERROR 35. ALL			
2431	STATUS ERRORS WILL BE INDICATED ALSO.			
2432	FORMAT REQUIRED IS THE SAME AS DESCRIBED IN ROUTINE N10			
2433	DATA FIELD USED FOR FILES ON CYL 253 ADDRESS 9#20			
2434				
2435	DATA FIELD USED FOR TAPES TAPE UNIT 1			
2436	N19 NCP	1	07586	N
2437	DC @19@	2	07588	
2438	BCE *68,1263,1	12	07589	B 07608 01263 1
2439	B N19XIT	7	07601	J 08385
2440	BCE OVLRST,SPTADO,1	12	07608	B 09946 01004 1
2441	B N19XIT	7	07620	J 08385
2442	CW RORWF&1,ERRONF&1	11	07627	H 07833 07060
2443	CW ERRONT&1,CKCHL1&1	11	07638	H 08033 07891
2444	CW CKCH11&1,CKCH12&1	11	07649	H 07974 08064
2445	MLNA @00@,FILE&1	12	07660	D 09666 09692 /
2446	RESETX ZA @1308@,X10	11	07672	M 09670 00074
2447	ZA @1291@,X11	11	07683	M 09674 00079
2448	ZA @0000@,X12	11	07694	M 09609 00084
2449	FILE1 BCE MOVCOD,0&X10,F	12	07705	B 07781 00000 F
2450	TAPE1 BCE MOVCOD,0&X11,1	12	07717	B 07781 00000 1
2451	UPINUX A @57@,X10	11	07729	A 09654 00074

152

TEST OVERLAP FILES AND TAPES

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDRS	INSTRUCTION
2452		A	257D,X11	11	07740	A 09656 00079
2453		A	232,X12	11	07751	A 09583 00084
2454		BCE	RESEIX,X10,F	12	07762	B 07672 00074 F
2455		B	FILEI	7	07774	J 07705
2456	MOVCCD	MLCA	0C0DE3&X12,INITLI	12	07781	D 09E49 07812 I
2457		B	CHALTR	7	07793	J 01045
2458		DCW	FRCH	5	07804	08102
2459		DC	TO	5	07809	07840
2460		DCW	28@	1	07810	
2461		DC	2R@	1	07811	
2462	INITLI	DC	21@	1	07812	
2463		BCE	*80,0&X10,F	12	07813	B 07832 00000 F
2464		B	TAPEOP	7	07825	J 08001
2465	RORWF	NCPWM		1	07832	N
2466		B	RDFILE	7	07833	J 07918
2467	TO	MRCWG	HACP,DATAFD	12	07840	D 09383 09700 L
2468		BCLI	UPINDX	7	07852	J 07729 I
2469	ERRONF	NCPWM		1	07859	N
2470		BAI	FILERW	7	07860	R 07884 M
2471		LU	2F5,FILE,W	10	07867	L 2F5 09691 W
2472		B	WRTCNT	7	07877	J 08116
2473	FILERW	SW	CKCHL1&1	6	07884	, 07891
2474	CKCHL1	NCPWM		1	07890	N
2475		BAI	*G1	7	07891	R 07898 M
2476		CW	CKCHL1&1	6	07898	0 07891 G
2477		BAI	STACHK	7	07904	R 03298 M
2478		B	FILERW-17	7	07911	J 07867
2479	RDFILE	CS	DATAFD&99	6	07918	/ 09799
2480		MLCHS	2M@,DATAFD&100	12	07924	D 09575 09800 7
2481		BCLI	UPINDX	7	07936	J 07729 I
2482		BAI	FILERR	7	07943	R 07967 M
2483		LU	2F5,FILE,R	10	07950	L 2F5 09691 R
2484		B	RDCNT	7	07960	J 08091
2485	FILERR	SW	CKCHL1&1	6	07967	, 07974
2486	CKCHL1	NCPWM		1	07973	N
2487		BAI	*E1	7	07974	R 07981 M

TEST OVERLAP FILES AND TAPES

DA03
INSTRUCTION

PGM IN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2487		CW	CKCH1161	6	07981	H 07974
2488		BAI	STACHK	7	07987	R 03298 H
2489		B	FILERR-17	7	07994	J 07950
2490	TAPROP	MLCNS	ORC,DATAFD6244	12	08001	D 09575 09944 7
2491		BOLI	UPINDX	7	08013	J 07729 I
2492		MRCHG	ADDR1,DATAFD610E	12	08020	D 09390 09801 P
2493	ERRONT	NOPWA		1	08032	N
2494		BAI	TAPERW	7	08033	R 08057 H
2495		LU	001,DATAFD6101,H	10	08040	L 081 09801 H
2496		B	HRTCNT	7	08050	J 08116
2497	TAPERW	SW	CKCH1261	6	08057	, 08064
2498	CKCH12	NOPWA		1	08063	N
2499		BAI	061	7	08064	R 08071 H
2500		CW	CKCH1261	6	08071	H 08064
2501		BAI	STACHK	7	08077	R 03250 H
2502		B	TAPERW-17	7	08084	J 08040
2503	ROBNH	A	010,OVLCNT	11	08091	A 09577 09521
2504	FROM	BZ	CKKOVL	7	08102	J 08170 V
2505		B	UPINDX	7	08109	J 07729
2506	HRTCNT	A	010,OVLCNT	11	08116	A 09577 09521
2507		SW	ERRONF61,ERRONT61	11	08127	, 07860 00033
2508		BCE	SETRDF,OVLCNT-2,5	12	08138	B 08157 09519 5
2509		B	UPINDX	7	08150	J 07729
2510	SETRDF	SH	RORWF61	6	08157	, 07633
2511		B	UPINDX	7	08163	J 07729
2512	CKKOVL	S	DELAY	6	08170	S 09526
2513	HAIT	A	010,DELAY	11	08176	A 09577 09526
2514		BZ	068	7	08187	J 08201 V
2515		B	HAIT	7	08194	J 08176
2516		BCE	068,1260,1	12	08201	B 08220 01260 1
2517		B	CKOVL2	7	08213	J 08247
2518		BOLI	068	7	08220	J 08234 1
2519		B	067	7	08227	J 08240
2520			*** SET ERROR 32 ON ***			
2521		SW	E32	6	08234	, 01033
2522			CHANNEL 1 HUNG IN OVERLAP IN PROCESS			

CHANNEL 1 HUNG IN OVERLAP IN PROCESS

TEST OVERLAP FILES AND TAPES

PCLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION	
2523		BA1	*61	7	00240	R 08247 R	
2524	CKOVL2	DCE	*00,1269,1	12	08247	B 08266 01269 1	
2525		B	CKOVL3	7	08259	J 08293	
2526		BOL2	*60	7	08266	J 08266 2	
2527		B	*67	7	08273	J 08286	
2528		*** SET ERROR 33 ON ***			6	08200	* 01036
2529		SW	E33			SET ERROR IND	
2530		CHANNEL 2 HUNG IN OVERLAP IN PROCESS					
2531		BA2	*61	7	08286	X 08293 R	
2532	CKOVL3	BCE	*68,1270,1	12	08293	B 08312 01270 1	
2533		B	CKOVL4	7	08305	J 08339	
2534		DCW	0J2	1	08312		
2535		DC	CKOVL4-6	5	08317	08333	
2536		DC	032	1	08318		
2537		B	*67	7	08319	J 08332	
2538		*** SET ERROR 34 ON ***			6	08326	* 01035
2539		SW	E34			SET ERROR IND	
2540		CHANNEL 3 HUNG IN OVERLAP IN PROCESS					
2541		DCH	032	1	08332		
2542		DC	CKOVL4	5	08337	08339	
2543		DC	0H2	1	08338		
2544	CKOVL4	BCE	*68,1271,1	12	08339	B 00350 01271 1	
2545		B	N19XIT	7	08351	J 08305	
2546		DCH	0J2	1	08358		
2547		DC	N19XIT-6	5	08363	08379	
2548		DC	042	1	08364		
2549		B	N19XIT	7	08365	J 08305	
2550		*** SET ERROR 35 ON ***			6	08372	* 01036
2551		SW	E35			SET ERROR IND	
2552		CHANNEL 4 HANG IN OVERLAP IN PROCESS					
2553		DCH	012	1	08378		
2554		DC	N19XIT	5	08383	08385	
2555		DC	2H2	1	08384		
2556	N19XIT	B	MONTR	7	08385	J 02066	
2557							

1581

DAO3

END TEST ROUTINE
OPCODE OPERAND

CT ADDR INSTRUCTION

PGLIN LABEL

2560	*** END TEST ROUTINE ***		
2561	BW	SUMIT,NOERSM&I	12 06392 V 03836 02840 I
2562	B	TYPI	7 08404 J 01593
2563	DCW	@PASS@,G	4 08414
2564	BCE	02000,TAD3,1	12 08416 B 02000 01003 I
2565	B	400	7 08428 J 00400
2566			

BRCH IF REPEATING
GO TO LOADER

156

PREPARE 1 INST LOOP & DATA FIELD

CPCCD OPERAND

LABEL

PGLIN

2568 *** PREPARE ONE INSTRUCTION LOOP AND DATA FIELD ***
 2569 *** ACCORDING TO CE REQUEST ***
 2570 WHEN THE CE SELECTS THE PROGRAM OPTION FOR ONE INSTRUCTION LOOP
 2571 ING, THIS ROUTINE TAKES THE DATA ENTERED BY THE CE AND BUILDS THE
 2572 DATA FIELD AND LOOP INSTRUCTION FROM IT. WHEN IT HAS COMPLETED
 2573 THIS IT POSITIONS THE ACCESS TO THE ADDRESS ENTERED AND BRANCHES
 2574 TO THE LOOP ROUTINE.
 2575

PGLIN	LABEL	CPCCD	OPERAND	CT	ADDRS	INSTRUCTION
2576	PREP	MLCA	226, RECADD	12	08435	D 00226 09301 I
2577		CS	299	6	08447	/ 00299
2578		ZA	ADR1, X10	11	08453	M 09319 00074
2579		SW	DATAFD	6	08464	, 09700
2580	CLEAN7	CS	0EX10	6	08470	/ 00...0
2581		SBR	X10	7	08476	G 00074 B
2582		BW	CLEAN7, DATAFD	12	08483	V 08470 09700 I
2583		MLCB	XCTLI-1, LOOP&1	12	08495	D 09278 01014 L
2584		MLCS	XCTLI, LOOP&3	12	08507	D 09279 01016 3
2585		MLCS	XCTLI&1, LOOP&9	12	08519	D 09280 01022 3
2586		ZA	NOFCHR, X8	11	08531	M 09294 00064
2587		ZA	NOFREC, WORK1	11	08542	M 09290 09304
2588		A	262, NOFCHR	11	08553	A 09675 09294
2589		M	NOFCHR, WORK2	11	08564	2 09294 09309
2590		ZA	WORK2, X9	11	08575	M 09309 00069
2591		MLCS	NOFCHR&1, DATAFD	12	08586	D 09295 09700 3
2592		MLCS	BOSIO, LOOP&10	12	08598	D 09281 01023 3
2593		MLCA	HA2, FILE&7	12	08610	D 09287 09698 I
2594		S	WORK2	6	08622	S 09309
2595		MLCS	LOOP&1, *&2	12	08628	D 01014 08641 3
2596		SD	1, FILE	10	08640	M 2FO 09691 H
2597		BCBI	*-16	7	08650	R 08640 2
2598		BAL	*&1	7	08657	R 08664 M
2599		MLCS	LOOP&3, *&12	12	08664	D 01016 08607 3
2600		BCE	SRO, SPECOD,	12	08676	B 08718 09314
2601		BCE	TR0	6	08688	B 08767
2602		BCE	HA0	6	08694	B 08848
2603		BCE	TWA	6	08700	B 08971

DA03 INSTRUCTION

PREPARE 1 INST LOOP & DATA FIELD

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDRS	INSTRUCTION
2604		BCE	WFC	6	08706	B 09071
2605		H	PRGCTL	6	08712	• 02250
2606	SRO	MLCA	RECADD,FILEE7	12	08718	D 09301 09698 I
2607		SW	DATAF0&X8	6	08730	• 09P00 I
2608		MRCW	DATAFD,DATAF0&1	12	08736	D 09700 09701 H
2609		MLCWS	2M&,DATAF0&X8	12	08748	D 09575 09P00 7
2610		B	LOOP&10	7	08760	J 01023
2611	TRO	ZA	NOFREC,WORK1	11	08767	M 09290 09304
2612		S	26&,NOFCHR	11	08778	S 09675 09294
2613		M	NOFCHR,WORK2	11	08789	2 09294 09309
2614		ZA	WORK2,X9	11	08800	M 09303 00069
2615		SW	DATAF0&X9	6	08811	• 09P+0 I
2616		MRCW	DATAFD,DATAF0&1	12	08817	D 09700 09701 H
2617		MLCWS	2M&,DATAF0&X9	12	08829	D 09575 09P+0 7
2618		B	LOOP&10	7	08841	J 01023
2619	HAO	A	22&,X9	11	08848	A 09590 00069
2620		ZA	200000&,X8	11	08859	M 09609 00064
2621		SW	DATAF0&X9	6	08870	• 09P+0 I
2622		MRCW	DATAFD,DATAF0&1	12	08876	D 09700 09701 H
2623		MLCWS	2M&,DATAF0&X9	12	08888	D 09575 09P+0 7
2624		MRC	HA2-1,DATAFD	12	08900	D 09286 09700 H
2625	LOADDR	MLCA	RECADD,DATAF0&7&X8	12	08912	D 09301 09P07 I
2626		S	21&,NOFREC	11	08924	S 09577 09290
2627		BZ	LOOP&10	7	08935	J 01023 V
2628		A	NOFCHR,X8	11	08942	A 09294 00064
2629		A	21&,RECADD	11	08953	A 09577 09301
2630		B	LOADDR	7	08964	J 08912
2631	THA	SW	DATAF0&X9	6	08971	• 09P+0 I
2632		MRCW	DATAFD,DATAF0&1	12	08977	D 09700 09701 M
2633		MLCWS	2M&,DATAF0&X9	12	08989	D 09575 09P+0 7
2634		ZA	200000&,X8	11	09001	M 09609 00064
2635	LOADDR	MLCA	RECADD,DATAF0&5&X8	12	09012	D 09301 09P05 I
2636		S	21&,NOFREC	11	09024	S 09577 09290
2637		BZ	LOOP&10	7	09035	J 01023 V
2638		A	NOFCHR,X8	11	09042	A 09294 00064
2639		A	21&,RECADD	11	09053	A 09577 09301

IS THE OP CODE 7
 SPECIFIC OP INCORRECT
 LOAD REC ADDR
 LOAD
 DATA
 FIELD
 ADD NO. OF RECCRDS
 RESET NOFCHR CCUNT
 RECORDS X CHARS
 LOAD RESULT INTO IX9
 THE
 DATA
 FIELD
 RESEY IND REG 8
 LOAD
 DATA
 FIELD
 LOAD HA2 ADDR
 THE
 ADDR
 IN
 THE DATA FLD
 LOAD
 DATA
 FIELD
 LOAD
 THE
 RECORD
 INTO
 THE

PREPARE I INST LOOP & DATA FIELD

CT ADDR INSTRUCTION

PGLIN LABEL

PGLIN	LABEL	OPCCD	OPERAND	DATA FIELD	CT	ADDR	INSTRUCTION
2640		B	LOCADD		7	09064	J 09012
2641	WFO	SW	DATAFD&2205	LOAD DATA	6	09071	, 11965
2642		MRC	DATAFD, DATAFD&1	FIELD	12	09077	D 09700 09701 W
2643		MLCA	HAAREA, DATAFD&23	LOAD THE	12	09089	D 09347 09723 T
2644		S	@6@, NOFCHR	RESET NO. OF CHAR	11	09101	S 09675 09294
2645		ZA	NOFREC, WORK1	DETERMINE THE END	11	09112	M 09290 09304
2646		A	@1@, NOFCHR&1	ADDRESS AREAS	11	09123	A 09577 09295
2647		SW	DATAFD&30	AND	6	09134	, 09730
2648		MLCS	NOFCHR&1, DATAFD&41		12	09140	D 09295 09741 3
2649		MLCB	DATAFD&41, DATAFD&40	GAP	12	09152	D 09741 09740 L
2650		MLCS	DATAFD&41, DATAFD&52	LOAD	12	09164	D 09741 09752 3
2651		MLCS	DATAFD&41, DATAFD&63	SHORT GAPS	12	09176	D 09741 09763 3
2652		A	@38@, NOFCHR	AREAS INTO	11	09188	A 09677 09294
2653		ZA	NOFCHR, X9	THE FORMAT	11	09199	M 09294 00069
2654	LODFOR	MLCA	DATAFD&63, DATAFD&63&X9	FIELD	12	09210	D 09763 09PH3 T
2655		S	@1@, NOFREC	REDUCE REC COUNT BY 1	11	09222	S 09577 09290
2656		BZ	@619		7	09233	J 09258 V
2657		A	NOFCHR, X9		11	09240	A 09294 00069
2658		B	LODFOR		7	09251	J 09210
2659		MLCNS	@M@, DATAFD&31&X9	TERMINATING WMGK	12	09258	D 09575 09P11 7
2660		B	LOOP&10		7	09270	J 01023

PGM	LABEL	CONSTANTS	OPERAND	ADDRS	CT	INSTRUCTION
2698		DCW	05330	09555	3	
2699		DCW	04140	09550	3	
2700	BLANK	DCW	0 0.0	09559	4	
2701	ENERGY	B	N17XIV	09564	7	J 07313
2702		DCW	00000	09571	1	
2703		UTORG	0	09572	1	
2703		000	000	09572	1	
2703		000	000	09573	1	
2703		000	000	09574	1	
2703		000	000	09575	1	
2703		000	000	09576	1	
2703		000	000	09577	1	
2703		0002090	0002090	09582	5	
2703		000	000	09583	1	
2703		000	000	09584	1	
2703		0002370	0002370	09589	5	
2703		000	000	09590	1	
2703		0009950	0009950	09595	5	
2703		000	000	09597	2	
2703		0000010	0000010	09602	5	
2703		000	000	09604	2	
2703		0000000	0000000	09609	5	
2703		00170	00170	09612	3	
2703		0013000	0013000	09617	5	
2703		N10	N10	09622	5	07320
2703		0000000	0000000	09626	4	
2703		0002000	0002000	09630	4	
2703		000	000	09631	1	
2703		0010	0010	09633	2	
2703		0000000	0000000	09637	4	
2703		0000000	0000000	09641	4	
2703		00000	00000	09644	3	
2703		N11	N11	09649	5	06217
2703		000	000	09650	1	
2703		00500	00500	09652	2	
2703		00570	00570	09654	2	

161

APR 15 1964

CT ADDR INSTRUCTION

CONSTANTS

OPCCD OPERAND

PGLIN LABEL

2703					5	09659	05340
2703					5	09664	04267
2703					2	09666	
2703					4	09670	
2703					4	09674	
2703					1	09675	
2703					2	09677	
2703						09691	
2704					8	09691	
2705	FILE				1	09700	
2706	DATAFD					09945	
2707					1	09946	N
2708	OVLRS1				7	09947	J 09985
2709					6	09954	• 09947
2710					7	09960	J 01593
2711					16	09982	
2712					1	09984	•
2713					6	09985	□ 09947
2714	PASS2				7	09991	J 07627
2715					1	09998	•
2716							•
2717	END						J

BLOW OUT PATCH 1 APRIL 64

END OF ASSEMBLY

6.04.00.0 7631 ELECTRONIC TEST DESCRIPTION

This is an update to DA04D. It is enlarged to test flagging and flag detection abilities and to test more thoroughly the HAO, Write Inhibit and Write Format switches. In addition, the new level incorporates the standard features previously described in this package.

Beginning with a reset of the machine, the program starts with as simple an operation as possible and builds upward to more complex operations and tests. The program runs through 26 test routines in either the manual or automatic mode. Although both modes require manual intervention, the automatic requires far less than the manual mode, but the manual mode is a more thorough test. The program uses only 1301 module 0, all other modules are bypassed and must be set inoperative. Every 7631 available on every channel will be tested starting with channel 1 through 4.

The program does not require that the home addresses be present or correct, and data on the customer's tracks is not disturbed.

6.04.01.1 OPERATING PROCEDURE

The standard procedures outlined in the package write-up apply to this program. In addition, the following procedures are used to run this program.

01.1 SWITCH SETTINGS PREVIOUS TO RUNNING PROGRAM

- A. Write format on (1301 module 0 on each channel to be tested)
- B. HAO switch on (on all 7631's to be tested)
- C. CE-HAO switch on (on all 7631's to be tested)
- D. 1301 modules 1-9 are set inoperative (all channels being tested)
- E. All other 7631-1301 switches are off.
- F. Check control switch to reset and restart (1410 console).

01.2 SPECIAL REQUESTS

- A. "HAO, CE-HAO, WRT FMT ON, SEL MODE"

This reminds the CE to insure the switches are on and requests that the mode be selected. If the CE enters a "1," manual mode is run; if a "I" is entered, automatic mode is run.

6.04.01.0 OPERATING PROCEDURE (continued)

B. "COMP RESET, CHK 7631"

The CE presses Computer Reset, checks the lights on the 7631 to insure that it is reset, and then presses Start.

C. "ACC TO CYL 000" (Manual mode only)

The CE manually sets the access on 1301 module 0 to cylinder 000. Press Start.

D. "ACC TO CYL 110" (Manual mode only)

The CE manually sets the access to cylinder 110. Press Start.

E. "ACC TO CYL 194" (Manual mode only)

The CE sets the access to cylinder 194. Press Start.

F. "ACC TO CYL 253"

The CE checks the access to insure it has positioned itself properly at cylinder 253, then presses Start.

G. "# OF SPARE HEADS"

The CE enters the number of spare heads available for writing on alternate surfaces (should enter 2, 4 or 6).

H. "CE-HAO OFF"

CE turns off CE-HAO switch and presses Start.

I. "CYO"

CE enters 1 if Cyo feature is available.

J. "MOD 3"

CE enters 1 if 7631 is a model III.

K. "HAO & WRT FMT SWS OFF" (Manual mode only)

CE turns off HAO and write format switches on 7631 being tested.

6.04.01.1 OPERATING PROCEDURE (continued)

L. "WRITE INHIBIT AND HAO SWS ON" (Manual mode only)

CE turns on write inhibit and HAO switches on 7631 being tested.

M. "WRT INHIBIT OFF, HAO & CE-HAO SWS ON"

CE turns off write inhibit, turns on HAO and CE-HAO switches on 7631 being tested.

N. "PASS, SWS OFF"

When test is complete, this reminds the CE to turn off 7631 switches before continuing.

01.3 SPECIAL TAD'S

There is one special TAD for this program (memory location 01005). This TAD is set when the mode is selected; if it is set to 1, manual mode is run, if it is set to $\bar{1}$ automatic mode is run. This TAD is set to $\bar{1}$ when the program is loaded.

01.4 STANDARD OPTIONS

Two of the standard options are not available with this program, they are:

- A. Alter Routine Sequence - Code 3
- B. One Instruction Loop - Code 5

01.5 MANUAL MODE

When running in the manual mode, the following tests are run which are not run in the automatic mode.

- A. Test 7631 Track Register
Routines N06, N07, and N08
- B. Test HAO, Write Format, and Write Inhibit Switches
Routine N24

01.6 SUMMARY TYPEOUT

The summary of errors typeout is not available with this program.

6.04.02.0 OPERATING HINTS

02.1 SELECTING MANUAL MODE (ALTER SPECIAL TAD)

If the mode selected when the program is first loaded must be changed, use program option code 2 (alter memory) to change memory location 01005 to a 1 or 1.

02.2 LOOPING ROUTINES

Certain routines make requests during their operation for switch settings. These requests must be honored for valid operation.

6.04.03.0 PROGRAM STOPS

03.1 ERROR STOPS

None

03.2 NORMAL STOPS

<u>Memory Location</u>	<u>Reason</u>
03554	Wait for CE to press Computer Reset and Start.
04509	Wait for CE to position ACC at cycle 000 (manual mode only).
04651	Wait for CE to position ACC at cycle 110 (manual mode only)
04793	Wait for CE to position ACC at cycle 194 (manual mode only)
04971	Wait for CE to insure ACC is at cycle 253.
07166	Wait for CE to turn off CE-HAO (manual mode)
08640	Turn off write format and HAO switches (manual mode)
08843	Turn on write inhibit and HAO switches (manual mode)
09056	Turn off write inhibit, turn on CE-HAO
09321	Reset all switches

6.04.04.0 TYPEOUTS (OTHER THAN REQUESTS AND STANDARD TYPE-OUTS)

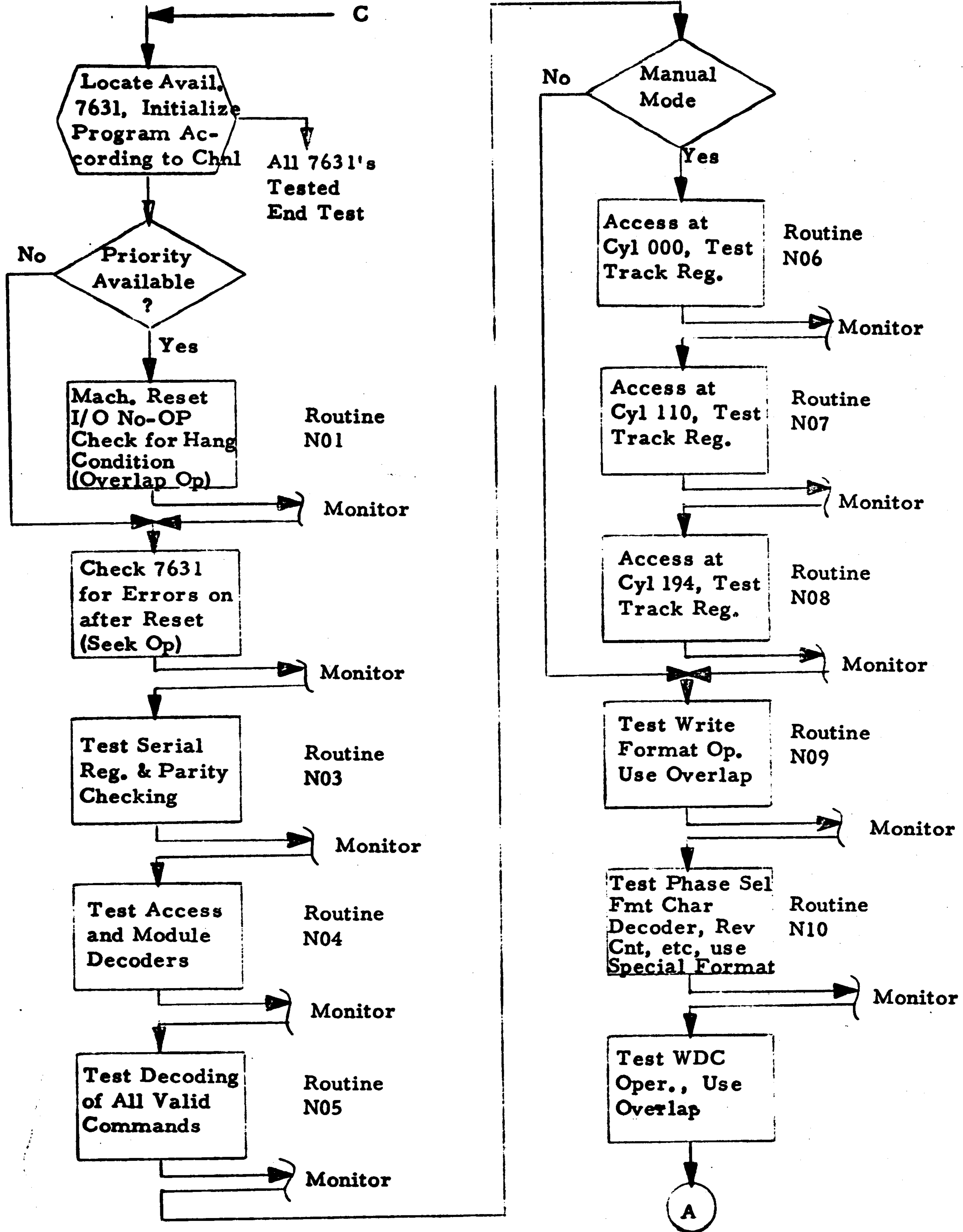
04.2 "TST CH0"

This tells the CE which channel is being tested.

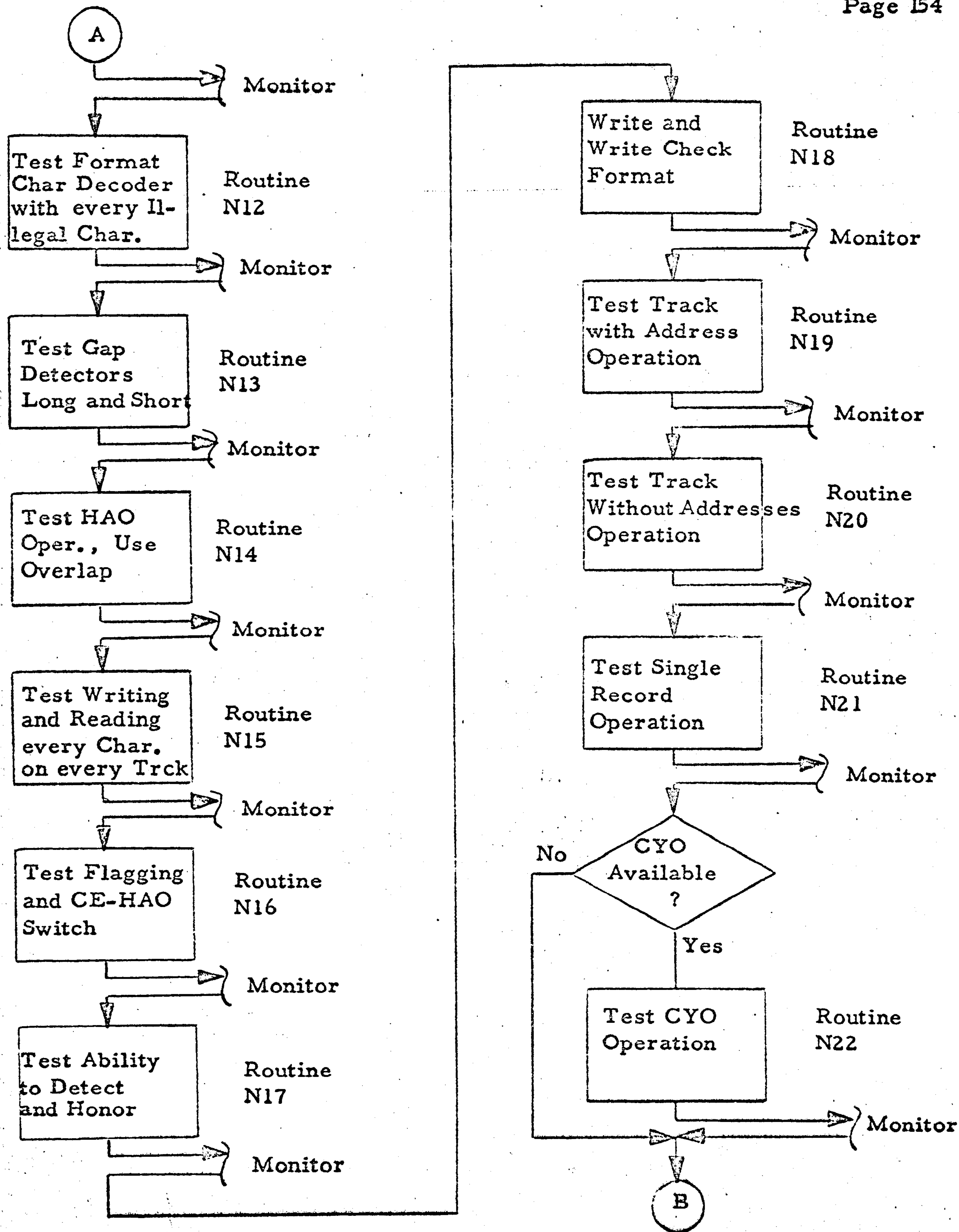
04.2 Following the standard error message a third line of data, pertinent to the error, will be given with some errors. This will be the setting of the E or B register after the file op or the file address being used. Refer to the individual test routines for details.

6.04.05.0 FLOW CHART

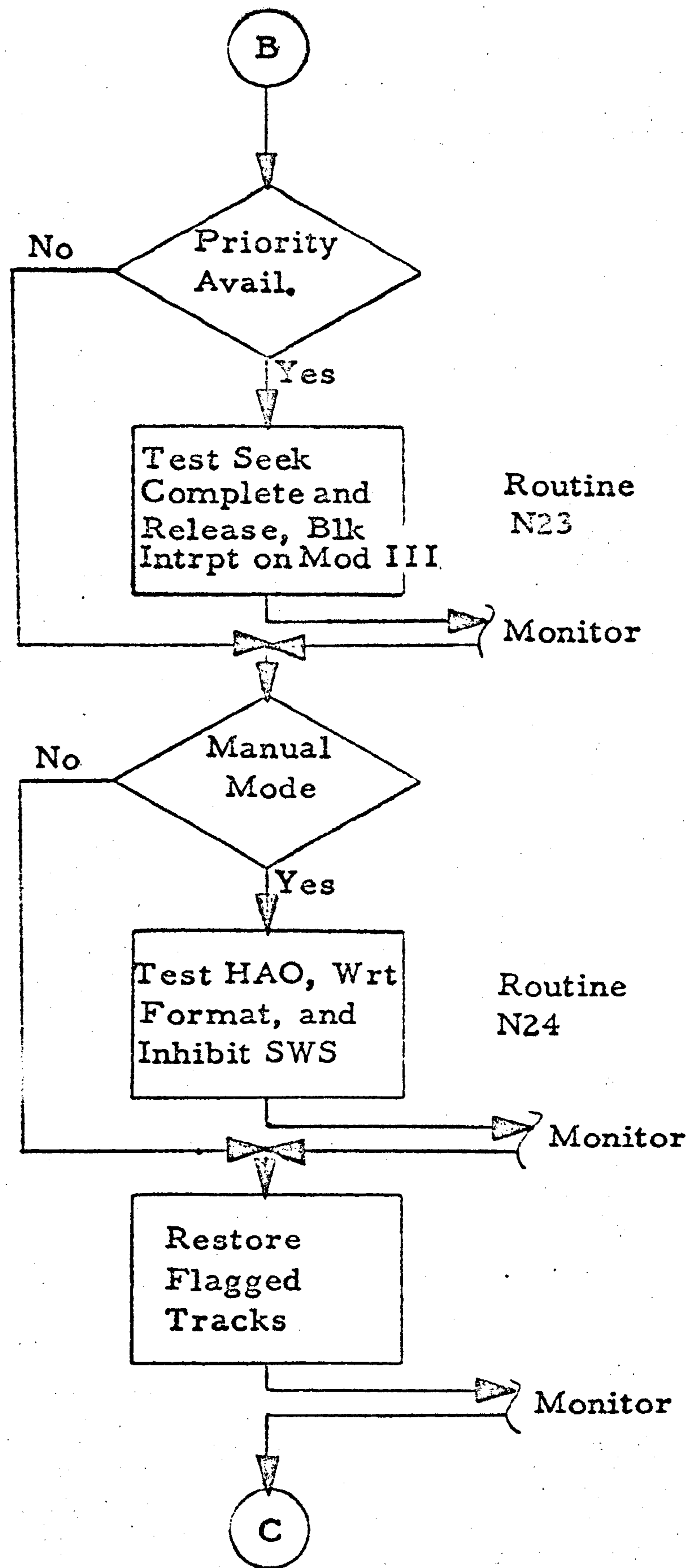
The following flow chart is designed to give a general picture of the test routine's relationship to one another.



169



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20



Go Find and Test
Next 7631

6.04.06.0 ROUTINE/ERROR INDEX DA04

This index should be used to locate routines and errors in the program listing.

<u>Routine Number</u>	<u>Error Number</u>	<u>Page</u>
N01	01	177, 178
N02	02	179,
N03	03	180
N04	04	181
	05	181
	06	182
	07	182
N05	08	183
	09	184
	10	184
	11	184
	12	184
	13	184
N06	14	186
N07	15	187
N08	16	188
N09	18	189, 190
N10	19	191, 192
	20	192
	21	192
	22	192
	23	192
N11	25	194, 195
	26	195
	27	195
N12	28	196
	29	197

6.04.06.0 ROUTINE/ERROR INDEX DA04 (continued)

<u>Routine Number</u>	<u>Error Number</u>	<u>Page</u>
N13	30	198
	31	199
	32	199
	33	199
N14	35	200, 201
N15	36	202, 203
	37	203
	38	202
	39	204
	40	204
N16	41	205, 206
	42	206
N17	43	208
N18	44	209
	45	209
N19	46	210
N20	47	211
N21	48	212
N22	49	213, 214
N23	51	215
	52	216
	53	216
N24	54	218, 219
	55	219
	56	219

142

DA04

Page 158

NOTES

174

175-

DA04

I/O DICOST DEFINE TADS

PCLIN LABEL CT ADDR INSTRUCTION

PCLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1002	CIL	2				
1003	LINES	36				
1004	DEFINE STANDARD TADS					
1005						
1006	ORG	1000			01000	
1007	TADO	2 2		1	01000	
1008	TADI	2 2		1	01001	
1009	TAD2	2 2		1	01002	
1010	TAD3			1	01003	

DEFINE SPECIAL TADS

PCLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1011						
1012						
1013						
1014	SPIADO	2 2		1	01004	
1015	SPIADI	2 2		1	01005	
1016	SPIAD2	2 2		1	01006	
1017	SPIAC3	2 2		1	01007	
1018	SPIAU4	2 2		1	01008	
1019	SPIAD5	2 2		1	01009	
1020	SPIAD7	2 2		1	01010	
1021	SPIAD8	2 2		1	01011	
1022	SPIAD9	2 2		1	01012	
1023						

176

I/O DICOST ONE INSTRUCTION LOOP

DA04 PAGE 160

CT ADDR INSTRUCTION

```

1025      *** I/O DICOST PROGRAM ***
1026      *** ONE INSTRUCTION LOOP ROUTINE ***
1027      WHEN THE CE SELECTS A ONE INSTRUCTION LOOP THE I/O INSTRUCTION
1028      IN THIS ROUTINE IS ALTERED AND THE LOOP IS ENTERED. NOTE THAT THE
1029      BRANCH ON INQUIRY INSTRUCTION IS THE ONLY EXIT FROM THE LOOP.
1030      LOOP      MU      $11,0,R      I/O INST BEING LUP N
1031      BA1      *$1
1032      BNQ      PRGCTL      BRCH ON INQ TO PRGCL
1033      B        LOOP      CONTINUE TO LOOP
1034      H
1035

```

```

10 01013 M $11 00000 R
7 01023 R 01030 M
7 01030 J 02238 Q
7 01037 J 01013
1 01044 .

```


178

I/O OICOST CHANNEL ALTER
OPCOD OPERAND
CT ADDR INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1073		H		1	01240	.

DEFINE SYSTEM & CHANNEL CONTROL CARDS

1074		ORG	1233		01233	
1075		DCW	@FN2FJRFJZFJ1309+9@	17	01249	

**

DEFINE PROGRAM TITLE

**

1076		ORG	1250		01250	.
1077		DCW	@DA04E@,G	5	01254	

LOCATE THE SYSTEM & CHANNEL CARDS

1078		ORG	1256		01256	
1079	SYSTEM	DC	@	50	01256	
1080		DC	@	7	01312	
1081		ORG	1289		01289	
1082	CHNL1	DC	@	50	01289	
1083		DC	@	7	01345	
1084		ORG	1346		01346	
1085	CHNL2	DC	@	50	01346	
1086		DC	@	7	01402	
1087		ORG	1403		01403	
1088	CHNL3	DC	@	50	01403	
1089		DC	@	7	01459	
1090		ORG	1460		01460	
1091	CHNL4	DC	@	50	01460	
1092		DC	@	7	01516	

1.9

PGLIN LABEL I/O DICOST TYPE OPCCD OPERAND

CI ADDR INSTRUCTION

1105 *** I/O DICOST PROGRAM ***

1106 *** TYPE AND REQUEST FOR INTERVENTION ***

1107 THIS ROUTINE IS USED TO TYPE ALL MESSAGES AND REQUESTS FOR

1108 MANUAL INTERVENTION. THE ROUTINE WILL TYPE A MESSAGE FROM A COMMON

1109 DATA FIELD, OR THE MESSAGE MAY BE LOCATED IMMEDIATELY AFTER THE

1110 BRANCH INSTRUCTION TO THIS ROUTINE. IF A REPLY IS REQUIRED A READ

1111 CONSOLE PRINTER OPERATION IS ISSUED. THIS ROUTINE IS USED TO TYPE

1112 ALL MESSAGES IN THIS PROGRAM.

1113

PGLIN	LABEL	I/O DICOST TYPE	OPCCD OPERAND	CI ADDR	INSTRUCTION
1114	IYMS	SBR	TYPXITC5	7 01517	G 01591 B
1115	TYPE	WCP	201	10 01524	M XTO 00201 H
1116		BCBI	TYPE	7 01534	R 01524 Z
1117		BAL	*E1	7 01541	R 01548 M
1118	SW11	NCPHM		1 01548	N
1119	LAH60	RCP	0	10 01549	M XTO 00000 R
1120		BEX1	*-16,M	7 01559	R 01549 M
1121		BAL	*E1	7 01566	R 01573 M
1122		CW	SW11E1	6 01573	0 01549
1123		CS	330	6 01579	/ 00330
1124		CS		1 01585	/
1125	IYPXIT	B	0	7 01586	J 00000
1126	TYPI	SHR	X1	7 01593	G 00029 B
1127		B	*E14	7 01600	J 01620
1128	TYP2	SBR	X1	7 01607	G 00029 B
1129		SW	REPLYE1	6 01614	, 01652
1130		WCP	0EX1	10 01620	M XTO 000+0 H
1131		SBR	X1	7 01630	G 00029 B
1132		BCBI	*-23	7 01637	R 01620 Z
1133		BAL	*E1	7 01644	R 01651 M
1134	REPLY	NCPHM		1 01651	N
1135		B	RDCON	7 01652	J 01666
1136		B	0EX1	7 01659	J 000+0
1137	RDCON	RCP	0EX1	10 01666	M XTO 000+0 R
1138		SBR	X1	7 01676	G 00029 B
1139		BEX1	*-23,M	7 01683	R 01666 M
1140		BAL	*E1	7 01690	R 01697 M

I/O DICOST TYPE
OPCCD OPERAND

LABEL

PGLIN

PGLIN	LABEL	I/O DICOST TYPE	OPCCD OPERAND	CT	ADDRS	INSTRUCTION
1141		CH	REPLY&I	6	01697	01652
1142		B	O&X1	7	01703	J 000+0
1143	DATA	DCW	a	12	01710	
1144		BCE	*E13,1264,1	12	01722	B 01746 01264 1
1145		MLCWS	aNa,MONITR&7	12	01734	D 09804 02073 7
1146		MLCWS	aNa,PASS1	12	01746	D 09804 01944 7
1147		MRCWG	*E9,1230	12	01758	D 01778 01230 L
1148		B	PASS1&7	7	01770	J 01951
1149		H		1	01777	.
1150		DC	a.73a	3	01780	
1151		DCW	aJa	1	01781	
1152		DC	SCAN	5	01786	01064
1153		DC	a a	1	01787	
1154		DCW	a.a,G	1	01788	

*** ERROR TABLES THESE ARE USED FOR ERROR ***
 *** SUMMARIES AND ERROR IDENTIFICATION ***

PGLIN	LABEL	I/O DICOST TYPE	OPCCD OPERAND	CT	ADDRS	INSTRUCTION
1156		ORG	*EX00		01800	
1157		ORG	*E1		01801	
1158		DCW	aLa	1	01801	
1159		DC	a a	1	01802	
1160		DC	a a	1	01803	
1161	SIPTAB	DCW	aLa	1	01804	
1162	E1	DC	a a	1	01805	
1163	E2	DC	a a	1	01806	
1164	E3	DC	a a	1	01807	
1165	E4	DC	a a	1	01808	
1166	E5	DC	a a	1	01809	
1167	E6	DC	a a	1	01810	
1168	E7	DC	a a	1	01811	
1169	E8	DC	a a	1	01812	
1170	E9	DC	a a	1	01813	
1171	E10	DC	a a	1	01814	
1172	E11	DC	a a	1	01815	
1173	E12	DC	a a	1	01816	
1174	E13	DC	a a			
1175	E14	DC	a a			
1176	E15	DC	a a			

181

I/O DICOST TYPE
OPCCD OPERAND

CT ADDR INSTRUCTION

PG LN	LABEL	I/O DICOST TYPE	OPCCD	OPERAND	CT	ADDR	INSTRUCTION
1177	E16			0 0	1	01817	
1178	E17			0 0	1	01818	
1179	E18			0 0	1	01819	
1180	E19			0 0	1	01820	
1181	E20			0 0	1	01821	
1182	E21			0 0	1	01822	
1183	E22			0 0	1	01823	
1184	E23			0 0	1	01824	
1185	E24			0 0	1	01825	
1186	E25		DC	0 0	1	01826	
1187	E26		DC	0 0	1	01827	
1188	E27			0 0	1	01828	
1189	E28			0 0	1	01829	
1190	E29			0 0	1	01830	
1191	E30			0 0	1	01831	
1192	E31			0 0	1	01832	
1193	E32			0 0	1	01833	
1194	E33			0 0	1	01834	
1195	E34			0 0	1	01835	
1196	E35			0 0	1	01836	
1197	E36			0 0	1	01837	
1198	E37			0 0	1	01838	
1199	E38			0 0	1	01839	
1200	E39			0 0	1	01840	
1201	E40			0 0	1	01841	
1202	E41			0 0	1	01842	
1203	E42			0 0	1	01843	
1204	E43			0 0	1	01844	
1205	E44			0 0	1	01845	
1206	E45			0 0	1	01846	
1207	E46			0 0	1	01847	
1208	E47			0 0	1	01848	
1209	E48			0 0	1	01849	
1210	E49			0 0	1	01850	
1211	E50			0 0	1	01851	
1212	E51		DC	0 0	1	01852	

I/O DDCOST TYPE

CT ADDR INSTRUCTION

OPCOD OPERAND

LABEL

PGLIN

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1213	E52		a a	1	01853	
1214	E53		a a	1	01854	
1215	E54		a a	1	01855	
1216	E55		a a	1	01856	
1217	E56		a a	1	01857	
1218	ERRTAB	DC	a+a	1	01858	
1219		DC	a a	1	01859	
1220						

183

APR 16 1954

DA04 PAGE 167

I/O DICOST INITIALIZE ROUTINE

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDR	INSTRUCTION
1222			*** INITIALIZE ROUTINE FOR THE DICOST PROGRAM ***			
1223	INITLE	WCP	1250	10	01860	M %TO 01250 M
1224		BC81	*-16	7	01870	R 01860 Z
1225		BA1	*61	7	01877	R 01884 M
1226		CS	99	6	01884	/ 00099
1227		SW	25	6	01890	, 00025
1228		MLCS	@+@,100	12	01896	D 09805 00100 3
1229		MRWR	25,30	12	01908	D 00025 00030 3
1230		MRCWG	RESUME,1	12	01920	D 02015 00001 L
1231		MRCWG	INTR,101	12	01932	D 02007 00101 L
1232	PASS1	B	DATA612	7	01944	J 01722
1233		CW	LPRT,SW11&1	11	01951	D 02563 01549
1234		CS	E56	6	01962	/ 01857
1235		MLCWS	@L@,STPIAB	12	01968	D 09806 01801 7
1236		B	START	7	01980	J 03365
1237		H		1	01987	.
1238		ORG	2000		02000	
1239		B	INITLE	7	02000	J 01860
1240			*** RESET & INTERRUPT ROUTINES, THESE ROUTINES ***			
1241			*** ARE MOVED TO LOCATIONS 1 & 101			
1242			RETURN TO PROG CNTRL.			
1243	INTR	BNQ	PRGCTL	7	02007	J 02238 Q
1244		DCW	@M@	1	02014	
1245	RESUME	B	CKLUP	7	02015	J 02023
1246		DCW	@M@	1	02022	
1247	CKLUP	BH	MONITR,LPRT	12	02023	V 02066 02563 I
1248		BH	LOOP,LPINST	12	02035	V 01013 02564 I
1249		MLNA	X3,X2	12	02047	D 00039 00034 /
1250		B	MONITR&7	7	02059	J 02073
1251						

PRINT TITLE

RESET IND REG S

SET WM IN IND REG 1

PREPARE TO LOAD 2-15

LOAD IND REG 2-15

MOVE RESET PROCEDURE

MOVE INTERRUPT PROC

CLEAR AND RESET

ERROR TABLE

GO TO ROUTINE INIT.

RETURN TO PROG CNTRL.

CHECK FOR LOOP ROUT

CHECK INST LOOP SW

LOAD IX 2

GO TO MONITR

I/O DICOST MONITOR

CT ADDRS INSTRUCTION

1253 *** I/O DICOST PROGRAM ***

1254 *** MONITOR ROUTINE ***

1255 THE MONITOR IS ENTERED AFTER EVERY TEST ROUTINE IS COMPLETED, OR

1256 A STATUS ERROR HAS BEEN DETECTED AND INDICATED. IN THE CASE OF A

1257 STATUS ERROR MONITOR SIMPLY BRANCHES BACK TO THE POINT AT WHICH

1258 THE STATUS ERROR WAS DETECTED. WHEN ENTERED FROM THE END OF A

1259 TEST ROUTINE MONITOR CHECKS TO SEE IF THE CE PRESSED INQUIRY, THE

1260 ROUTINE IS BEING LOOPEL, ANY ERRORS OCCURED, ALTER ROUTINE SEQUENCE

1261 IS SELECTED, OR THE NEXT SEQUENTIAL ROUTINE SHOULD BE RUN.

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1262						
1263	MONITR	SBR	X2	7	02066	G 00034 B
1264		BXPA	*E1	7	02073	Y 02080 X
1265		BNQ	PRGCTL	7	02080	J 02238 Q
1266	MONIT1	BW	0EX3,LPRT	12	02087	V 000M0 02563 I
1267	MONIT2	MLCWS	0M0,224	12	02099	D 09807 00224 7
1268		B	ERRCFL	7	02111	J 02623
1269	MONIT3	NOP		1	02118	N
1270		MLCHA	X2,X3	12	02119	D 00034 00039 X
1271		MLCWS	0,224	12	02131	D 09808 00224 7
1272		B	0EX2	7	02143	J 000.0
1273	WHERE2	MLCWS	0,224	12	02150	D 09808 00224 7
1274		BCE	*E8,0EX2,N	12	02162	B 02181 000.0 N
1275		B	0EX2	7	02174	J 000.0
1276		BZN	*E8,1EX2,2	12	02181	V 02200 000.1 2
1277		B	0EX2	7	02193	J 000.0
1278		BZN	*E8,2EX2,2	12	02200	V 02219 000.2 2
1279		B	0EX2	7	02212	J 000.0
1280		BW	MONIT3,3EX2	12	02219	V 02118 000.3 1
1281		B	0EX2	7	02231	J 000.0
1282						

I/O DICOST PROGRAM CONTROL

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1284			*** I/C DICOST PROGRAM ***			
1285			*** PROGRAM CONTROL ***			
1286			WHEN THE CE PRESSES INQUIRY TO SELECT A STANDARD PROGRAM OPTION			
1287			THIS ROUTINE IS ENTERED. THE CE ENTERS ON THE TYPEWRITER THE			
1288			OPTION CODE DESIRED, ALONG WITH THE DATA NEEDED BY THE OPTION. THE			
1289			ROUTINE DETERMINES WHICH OPTION HAS BEEN SELECTED AND INITIATES			
1290			THE OPTION.			
1291						
1292	PRGCTL	RCPW	CTLFLD	10	02238	L %TO 00201 R
1293		SBR	XI	7	02248	G 00029 H
1294		BEXI	PRGCTL, M	7	02255	R 02238 M
1295		SW	CTLFLD&I	6	02262	, 00202 G
1296		BAI	*&I	7	02268	R 02275 M
1297		CH	LPRT, LPINST	11	02275	□ 02563 02564
1298		MLWS	*,E1	12	02286	0 02297 01802 4
1299		MRWR	E1, E2	12	02298	0 01802 01803 %
1300		MLCS	CTLFLD, *&I2	12	02310	0 00201 02333 3
1301		BCE	ENDTST, CTLCOD,	12	02322	B 09294 02562
1302		BCE	ALTAUS	6	02334	B 02377
1303		BCE	ALTMEM	6	02340	B 02400
1304		BCE	LUPRT	6	02346	B 02447
1305		BCE	ONELUP	6	02352	B 02476
1306		HCE	RSTART	6	02358	B 02510
1307		BCE	CONT	6	02364	B 02533
1308		B	PRGCTL	7	02370	J 02238
1309	ALTAUS	MLCA	CTLFLD&4, 1003	12	02377	D 00205 01003 I
1310		CS	MONIT1, 299	11	02389	/ 02087 00299
1311	ALTMEM	MLCA	CTLFLD&5, *&9	12	02400	D 00206 02420 I
1312		RCPW	0	10	02412	L %TO 00000 R
1313		BEXI	*--16, M	7	02422	R 02412 M
1314		BAI	*&I	7	02429	R 02436 M
1315		CS	MONIT1, 299	11	02436	/ 02087 00299
1316	LUPRT	SH	LPRT	6	02447	, 02563
1317		MLNA	CTLFLD&5, X2	12	02453	D 00206 00034 /
1318		CS	MONIT2, 299	11	02465	/ 02099 00299
1319	ONELUP	SW	LPINST	6	02476	, 02564

READ THE CONSOLE PRT

BRCH ON ANY BUT WLR

TURN OFF LOOP SMS

CLEAR WM IN ERROR

TABLE

MOVE CTL CODE ENTERD

IS CTL CODE BLANK

IS CTL CODE 1

IS CTL CODE 2

IS CTL CODE 4

IS CTL CODE 5

IS CTL CODE 6

IS CTL CODE 7

MOVE IN NEW TADS

CLEAR OUT CTL FLD

MOVE ADDR TO BE ALTR

ALTER MEMORY

CHECK ALL BUT WLR

CLEAR THE CNTRL FLD

TURN ON LOOP SWITCH

LOAD IND REG2

CLEAR CNTRL FLD

TURN ON LOOP INST SW

I/O DICOST PROGRAM CONTROL

CT ADDR INSTRUCTION

OPCOD OPERAND

LABEL

PGLIN

1320	LUPINT	NGPHM		THIS SW IS TURNED ON	1	02482	N
1321		B	*E8	BY ERRCIL	7	02483	J 02497
1322		B	PREP	GO TO PREPARE ROUT	7	02490	J 09334
1323		CH	LUPINT&1	TURN OFF SW	6	02497	D 02483
1324		B	LOCP		7	02503	J 01013
1325	RSTART	MLNA	CTLFLD&5,X2	LOAD IND REG2	12	02510	D 00206 00034 /
1326		CS	MONIT2,299	CLEAR CNTRL FLD	11	02522	/ 02099 00299
1327	CUNT	CS	WHERE2,299	CLR CNTRL FLD	11	02533	/ 02150 00299
1328							
1329							
1330	CODES	DCW	@J13XRULM@		8	02551	
1331	MOOS	DCW	@4321@		4	02555	
1332		DCW	@7@		1	02556	
1333		DC	@6@		1	02557	
1334			@5@		1	02558	
1335			@4@		1	02559	
1336			@2@		1	02560	
1337			@1@		1	02561	
1338	CTLCCD		@ @		1	02562	
1339	LPRT	DC	@ @		1	02563	
1340	LPINST	DC	@ @		1	02564	
1341	ADDR02	DCW	ERRTAB	ADDR OF ERR TABLE	5	02569	01858
1342	ERR	DCW	@*ERROR@		6	02575	
1343	ACTION	DC	@REQ ERROR ACTION@,G		16	02576	
1344	ERCODE	DCW	@547P@		4	02596	
1345	SAVIND	DCW	@1 2 4 8 A B@,G		11	02597	
1346	STIND	DC	@1 2 4 8 A B@,G		11	02609	
1347	NOERSW	DC	@ @		2	02621	
1348							

187

I/O DICOST ERROR CONTROL
OPCCD OPERAND

CT ADDR INSTRUCTION

1350 *** I/O DICOST PROGRAM ***

1351 *** ERROR CONTROL ***

1352 THIS ROUTINE DETERMINES IF ANY STATUS ERRORS OR PROGRAM DETECT-

1353 ED ERRORS HAVE TO BE INDICATED, IF THERE ARE THIS ROUTINE BUILDS

1354 THE ERROR MESSAGE AND HAS IF TYPED OUT. THIS ROUTINE ALSO CHECKS

1355 TAD 1 TO SEE IF A REQUEST FOR ERROR ACTION SHOULD BE MADE.

LOCATE FAILING INST

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDR	INSTRUCTION
1359	ERRCIL	MLCA	X2,X5	12	02623	D 00034 00049 T
1360		S	21,X5	11	02635	S 09809 00049 S
1361		SCNLA	0&X5,0&X5	12	02646	D 00+0 00+0 B
1362		SAR	X5	7	02658	G 00049 A
1363		MLCS	1&X5,*&I2	12	02665	D 00+1 02688 3
1364		BCE	GOTONE, CODES,	12	02677	B 02721 02551
1365		BCE		1	02689	B
1366		BCE	SHORT1	6	02690	B 02740
1367		C	X3,X5	11	02696	C 00039 00049
1368		BL	LODFLD	7	02707	J 02764 T
1369		B	ERRCTL&I2	7	02714	J 02635
1370	GOTONE	MLCWA	10&X5, LOOPE9	12	02721	D 00+0 01022 X
1371		B	LODFLD	7	02733	J 02764
1372	SHORT1	MLCWA	5&X5, LOOPE9	12	02740	D 00+5 01022 X
1373		MLCS	2&2, LOOP	12	02752	D 09804 01013 3
1374						INSTRUCTION
1375	LODFLD	MLCA	LOCP&9,234	12	02764	D 01022 00234 T
1376		MLNA	X3,223	12	02776	D 00039 00223 /
1377		ZA	ADDR02,X1	11	02788	M 02569 00029
1378		ZA	2002092,X5	11	02799	M 09814 00049
1379			SCAN ERROR TABLE & UPDATA ERROR COUNT			
1380	ERSCAN	SCNLA	0&X1,0&X1	12	02810	D 000+0 000+0 S
1381		SAR	X1	7	02822	G 00029 A
1382		BCE	AFTSRH,16X1,L	12	02829	B 02888 000+1 L
1383		SH	X1-1	6	02841	+ 00028
1384		MLNWA	X1,0&X5	12	02847	D 00029 00+0 V
1385		A	232,X5	11	02859	A 09815 00049

I/O DICOST ERROR CONTROL

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDRS	INSTRUCTION
1386						
1387		CW	1&X1,X1-1	11	02870	□ 000+1 00028
1388		B	ERSCAN	7	02881	J 02810
1389						
1390	AFTSRH	BCE	WHERE2,1000,1	12	02888	B 02150 01000 1
1391	ERROSW	NCP		1	02900	N
1392		BCE	WHERE2,209	12	02901	B 02150 00209
1393		SW	ERROSW&1	6	02913	, 02901
1394		MLCA	ERR,206	12	02919	D 02575 00206 1
1395		MLCA	2&X3,ROUTID	12	02931	D 000M2 02960 1
1396		B	TYPI	7	02943	J 01593
1397		DCH	@ROUTINE @	8	02957	
1398	ROUTID	DC	@ @,G	3	02960	
1399		B	TYPES	7	02962	J 01517
1400						
1401	EXTRA	NCPHM		1	02969	N
1402		WCP	DATA	10	02970	M %10 01710 W
1403		BCB1	*-16	7	02980	R 02970 2
1404		BA1	*&1	7	02987	R 02994 M
1405		CH	EXTRA&1	6	02994	□ 02970
1406	ACT	BCE	*&8,1001,1	12	03000	B 03019 01001 1
1407		B	WHERE2	7	03012	J 02150
1408		SW	LUPINT&1	6	03019	, 02483
1409		MRCWG	ACTION,201	12	03025	D 02576 00201 1
1410		B	TYPES	7	03037	J 01517
1411		B	PRGCTL	7	03044	J 02238
1412						
1413						
1414						
1415						
1416						
1417						
1418	STACHK	SBR	X5	7	03051	G 00049 B
1419		SBR	X2	7	03058	G 00034 B
1420		BH	0&X2,LPR1	12	03065	V 000.0 02563 1
1421		S	@7&,X5	11	03077	S 09816 00049

*** I/O DICOST PROGRAM ***

*** DETERMINE WHICH STATUS INDICATORS ARE ON ***

THIS ROUTINE DETERMINES WHICH STATUS INDICATORS ARE ON, ON THE

CHANNEL BEING USED. THE INDICATORS FOUND ON ARE STORED IN THE

PRINT FIELD AND THE PROGRAM BRANCHES TO ERROR CONTROL.

STACHK SBR X5 STORE ADDR IN IND 5

SBR X2

BH 0&X2,LPR1

S @7&,X5 REDUCE ADDR BY 7

189

I/O DICOST ERROR CONTROL

PGLIN	LABEL	OPCGO	OPERAND	CT	ADDRS	INSTRUCTION
1422		MLCS	0&X5,LOOP&10	12	03088	D 00+0 01023 3
1423		MRCWG	STIND,237	12	03100	D 02609 00237 L
1424		MLCS	0&X5,NUOPCO	12	03112	D 00+0 03142 3
1425		B	CHALTR	7	03124	J 01045
1426		DCW	CNTERR	5	03135	03297
1427		DC	NOIROY	5	03140	03155
1428		DCW	a a	1	03141	
1429		DC	a a	1	03142	
1430	NUOPCO	DC	a a	1	03143	
1431		ZA	200237a,X5	11	03144	Q M 09821 00049
1432	NOIROY	NCP		1	03155	N
1433		BKRI	CNTERR	7	03156	R 03297 1
1434		B	UPIX	7	03163	J 03328
1435	BUSY	NCP		1	03170	N
1436		BCBI	CNTERR	7	03171	R 03297 2
1437		B	UPIX	7	03178	J 03328
1438	DAIACK	NCP		1	03185	N
1439		BERI	CNTERR	7	03186	R 03297 4
1440		B	UPIX	7	03193	J 03328
1441	EXTCND	NCP		1	03200	N
1442		BEFI	CNTERR	7	03201	R 03297 8
1443		B	UPIX	7	03208	J 03328
1444	NOTRNS	NCP		1	03215	N S
1445		BNTI	CNTERR	7	03216	R 03297 8
1446		B	UPIX	7	03223	J 03328
1447	WLR	NCP		1	03230	N
1448		BWLI	CNTERR	7	03231	R 03297 -
1449		B	UPIX	7	03238	J 03328
1450		SW	NOIROY&1,BUSY&1	11	03245	, 03156 03171
1451		SW	DAIACK&1,EXTCND&1	11	03256	, 03186 03201
1452		SW	NOTRNS&1,WLR&1	11	03267	, 03216 03231
1453		MRCG	237,SAVIND	12	03278	D 00237 02597 3
1454		B	ERRCTL	7	03290	J 02623
1455	CNTERR	SBR	X6	7	03297	G 00054 H
1456		A	27a,X6	11	03304	A 09816 00054
1457		CW	ERROSW&1	6	03315	D 02901

MOVE STATUS CODES
STORE CHNL CODE
HIGH LIMIT
LOW LIMIT
LOAD IX 5
CHECK FOR NOT READY
GO UPDATE IND REG
CHECK FOR BUSY
GO UPDATE IND REG
CHECK DATA CNK
GO UPDATE IND REG
CHECK FOR EXT CCND
GO UPDATE IND REG
CHECK FOR NO TRANS
GO UPDATE IND REG
CHECK FOR WLR
GO UPDATE IND REG
RESET INSTRUCTIONS
SAVE IND
RETURN
STORE RETURN ADDR
UPDATE RETURN ADDR
TURN OFF ERROR SW

I/O DICOST ERROR CONTROL

APR 15 1964

PGLIN	LABEL	OPCOD	OPERAND	CT	ADRS	INSTRUCTION
1458		B	UPIX&19	7	03321	J 03347
1459	UPIX	SBR	X6	7	03328	G 00054 B
1460		MLCS	@ @,0&X5	12	03335	D 09808 00*#0 3
1461		A	@@,X5	11	03347	A 09822 00049
1462		B	0&X6	7	03358	J 00*0
1463						

STORE RETURN ADDR
 REMOVE STATUS CHAR
 UPDATE IND REG 5
 RETURN TO PROGRAM

191

DA04

CT ADDR INSTRUCTION

I/O DICOST SEQUENCE CONTROL

OPCOD OPERAND

PGLIN LABEL

1465	CTLFLD	ECU	201
1466		PST	

INITIALIZE FOR DA04
OPCCD OPERAND

CT ADDR INSTRUCTION

*** INITIALIZE COUNTERS, SWITCHES, AND INDEX REG ***

*** SELECT MODE ***

PGLIN	LABEL	OPCCD	OPERAND	CH	START	CT	ADDR	INSTRUCTION
1468						11	03365	05185 05280
1469						6	03376	S 09454
1470			ONE3SWG1,THREE1C1	CW		6	03382	S 09341
1471			LNGCNT	S		11	03388	M 09826 00094
1472			TENCNT	S		11	03399	M 09826 00099
1473			@0C00@,X14	ZA		12	03410	B 03429 01256 X
1474			@0C00@,X15	ZA		7	03422	J 03441
1475			*@8,1256,X	BCE		12	03429	D 09828 09491 I
1476			*@13	B		7	03441	J 01607
1477			@30@,CONZ	MLCA		30	03477	
1478			TYP2	B		1	03479	
1479			@HAO,CE-HAO,WRT FMT ON,SEL MCODE@,G	DCW		12	03481	D 03479 01005 3
1480			@ @,G	DCW		11	03493	M 09833 00039
1481			*-13,SPTADI	MLCS		7	03504	J 09136
1482			@N26,X3	ZA				
1483			N26	B				

MOVE MODE CODE SEL

LOAD IX 3

193

CT ADDR\$ INSTRUCTION

NOI OPCOD OPERAND

LABEL

PGLIN

1485
1486
1487
1488
1489
1490
1491
1492
1493
1494
1495
1496
1497
1498
1499
1500
1501
1502
1503
1504
1505
1506
1507
1508
1509
1510
1511
1512
1513
1514
1515
1516
1517
1518
1519
1520

*** TEST ROUTINE DESCRIPTION ***
 *** RESET 7631, TEST CONTROL TRIGGER & END CP ***
 THIS TEST REQUESTS A MACHINE RESET TO RESET ALL LATCHES IN THE
 7631. THEN IF PRIORITY IS AVAILABLE AN OVERLAP I/O NO-OP IS
 ISSUED, FOLLOWING A SHORT DELAY THE OVERLAP IN PROCESS IS TESTED.
 IF OVERLAP IN PROCESS IS ON IT INDICATES THAT THE 7631 HAS HUNG
 UP AND THE MACHINE IS RESET BY ISSUING AN ILLEGAL INSTRUCTION. IF
 THIS HAPPENS ERROR 01 IS INDICATED, INCLUDED IN THE ERROR MESSAGE
 WILL BE THE CONTENTS OF THE E REGISTER. SHOWING HOW MANY CHARACTER
 WERE TRANSFERRED BEFORE THE 7631 HUNG UP.

PGLIN	LABEL	NOI	OPCOD	OPERAND	ROUTINE ID	MOVE RESET BRCH INST	CT	ADDR\$	INSTRUCTION
1497	NOI	NCP					1	03511	N
1498		DC	2012				2	03513	
1499		MRCWG	BRCHO,1				12	03514	D 09354 00001 D
1500		B	TYPI				7	03526	J 01593
1501		DCW	2COMP RESET,CHK 76312,G				19	03551	
1502		H		WAIT FOR ACTION			1	03553	.
1503	RESET1	MRCWG	RESUME,1	RESTORE LOC 1			12	03554	D 02015 00001 L
1504		BCE	*E8,1264,1	BRCH IF PRIORITY AVA			12	03566	B 03585 01264 1
1505	BOTTOM	B	NOEXIT				7	03578	J 03720
1506		MLCA	244002,FILEE5	SET FILE ADDR			12	03585	D 09837 09896 T
1507		MLCS	OVR LAP&X14,*E2	MOVE OVER LAP CODE			12	03597	D 09GRI 03610 3
1508		MU	2FO,FILE,V	I/O NO-OP OVERLAPEN			10	03609	M 2FO 09891 V
1509	DELAY1	A	216,TENCNT	WAIT FOR OVERLAP			11	03619	A 09809 09341
1510		BZ	*E8	TO DROP ON 7010			7	03630	J 03644 V
1511		B	DELAY1				7	03637	J 03619
1512		BOLI	*E15	BRCH OVERLAP IN PROC			7	03644	J 03665 I
1513		BAI	*E1				7	03651	R 03658 M
1514		B	NOEXIT				7	03658	J 03720
1515		SER	DATA&4	STORE ADDR REG			7	03665	G 01714 E
1516		MRCWG	EREG,DATA&18	MOVE E REG MESSAGE			12	03672	D 09342 01728 L
1517		MRCWG	BRCH1,1	MOVE BRCH INST TO 1			12	03684	D 09362 00001 L
1518		DCW	2M2				1	03696	
1519	HANG1	MRCWG	RESUME,1	RESTORE LOCATION 1			12	03697	D 02015 00001 L
1520				*** SET ERROR 01 ON ***					

199 000

DA04

PAGE 176

APR 15 1958

CT ADDR INSTRUCTION

11 03709 , 01802 02970

1521 SW E1,EXTRA&1 TURN ON ERROR IND

1522 7631 HAS HUNG IF OVERLAP,POSSIBLE CAUSE,CONTROL TRIGGER OR END OP

1523 FAILING. CHECK 6 REG CONTENTS FOR POSSIBLE CLUE.-E REG SETTING

1524 TYPED IN ERROR MESSAGE-

1525 NOEXIT 6 MONTR 7 03720 J 02066



195

APR 15 1968

PAGE 179

DA04

CT ADDR INSTRUCTION

NO2

OPCCD OPERAND

LABEL

PGLIN

```

1527 *** TEST ROUTINE DESCRIPTION ***
1528 *** TEST ERROR CONDITICNS ON 7631 AFTER MACHINE RESET ***
1529
1530 THIS ROUTINE CHECKS FOR ANY STATUS INDICATORS TURNED ON BY THE
1531 I/O NO-OP ISSUED IN ROUTINE NO1.-A SEEK OP IS USED IF PRIORITY IS
1532 NOT AVAILABLE-IF ANY INDICATORS ARE FOUND ON ERROR 02 IS
1533 INDICATED.
1534 NO2 NCP
1535 DC @02@
1536 BA1 SETE2
1537 MRCG CEADDR,FILE
1538 SD 1,FILE
1539 BA1 *E8
1540 B NO2X11
1541 *** SET ERROR 02 ON ***
1542 SH E2
1543 STATUS INDICATOR TURNED ON BY 7631 AFTER A MACHINE RESET,POSSIBLE
1544 TROUBLES WITH ERROR LATCHES IN 7631-IF BUSY WAS ON IT IS POSSIBLE
1545 THAT THE 7631 TREATED THE I/O NO-OP IN ROUT 1 LIKE A NORMAL SEEK.
1546 NO2X11 B MONIIR

```

```

1 03727 N
2 03729 G
7 03730 R 03773 M
12 03737 D 09662 09891 *
10 03749 M %F0 09891 R
7 03759 R 03773 M
7 03766 J 03779
6 03773 , 01803
7 03779 J 02066

```

196

NO3

ORCED OPERAND

LABEL

PGLIN

PGLIN	LABEL	ORCED OPERAND	NO3	DESCRIPTION	CT	ADDRS	INSTRUCTION
1548							
1549				*** TEST ROUTINE DESCRIPTION ***			
1550				*** TEST SERIAL REG AND PARITY TRIGGER ***			
1551				USING A SEEK OP ALL 64 CHARS ARE SHIPPED TO THE 7631 IN THE HA2			
1552				PORTION OF THE FILE ADDRESS, ONE CHARACTER AT A TIME. WHEN EVER A			
1553				DATA CHECK OCCURES THE CHARACTER BEING USED IS STORED AND THE			
1554				ROUTINE CONTINUES UNTIL ALL 64 CHARACTERS HAVE BEEN TESTED. IF ANY			
1555				ONE OR MORE CHARACTERS CAUSED A DATA CHECK ERROR 03 IS INDICATED			
1556				AND THE FAILING CHARACTERS ARE TYPED OUT. IF MORE THAN ONE CHAR.			
1557				FAILED ANALYSIS OF THE BIT MAKE UP WILL AID IN LOCATING THE BUG.			
1558					1	03786	N
1559					2	03788	
1560				ROUTINE ID	12	03789	D 09375 09898
1561				LOAD FILE ADDR	11	03801	Q 09826 00074
1562				LOAD IX 10	11	03812	Q 09826 00079
1563				LOAD IX 11	10	03823	M %FO 09891 R
1564				SEEK ACC	7	03833	R 03840 M
1565					7	03840	R 03901 4
1566				BRCH ON DATA CHECK	11	03847	A 09809 00074
1567				UP DATE X10	12	03858	D 09LP6 09898 3
1568				MOVE TEST CHAR	6	03870	D 09LP6
1569					11	03876	C 00074 09839
1570				HAVE ALL CHAR BEEN	7	03887	J 03942 S
1571				CHECKED	7	03894	J 03823
1572					12	03901	D 09898 01PA0 3
1573				*** SET ERROR 03 ON ***			
1574				TURN ON ERROR IND	11	03913	, 02970 01804
1575				ONE OR MORE CHARACTERS CAUSED PARITY ERROR ON A SEEK OP. FAILING			
1576				CHARACTERS APPEAR AS 3RD LINE OF ERROR MESSAGE.			
1577				UPDATE X 11	11	03924	A 09809 00079
1578					7	03935	J 03847
1579				MONITR	7	03942	J 02066

191

APR 15 1963

PAGE 181

DA04

CT ADDR INSTRUCTION

N04

PGLIN LABEL OPERAND

1581 *** TEST ROUTINE DESCRIPTION ***

1582 *** TEST ACCESS AND MODULE DECODER ***

1583

1584 THE ACCESS AND MODULE ADDRESS IS SET TO 11 AND A SEEK OP IS

1585 ISSUED, NOT READY IS CHECKED. ERROR 4 WILL BE INDICATED IF THE

1586 NOT READY IS NOT ON. THE ADDRESS IS SET TO 00 AND ANOTHER SEEK IS

1587 ISSUED THIS TIME NOT READY SHOULD BE DOWN AND ERROR 05 IS GIVEN

1588 IF IT IS ON. THE ACCESS ADDRESS IS NOW STEPPED FROM 1 TO 9 WITH A

1589 SEEK AND CHECK FOR NOT READY ON EACH COUNT. IF NOT READY IS OFF

1590 THE TEST IS TERMINATED AND ERROR 06 IS GIVEN, THIS LEAVES THE

1591 FAILING ACCESS ADDRESS STILL AVAILABLE IN THE FILE ADDRESS. IF THE

1592 ACCESS TEST IS SUCCESSFUL THE MODULE ADDRESS IS STEPPED FROM 1-9

1593 AND A SEEK OP WITH CHECK FOR NOT READY IS ISSUED EACH TIME. IF THE

1594 NOT READY IS EVER OFF ERROR 07 IS INDICATED AND THE TEST IS TERM-

1595 INATED, LEAVING THE FAILING MODULE ADDRESS IN THE FILE ADDRESS. IT

1596 IS IMPORTANT THAT ALL MODULES HAVE BEEN SET INOPERATIVE EXCEPT

1597 MODULE 0 IN ORDER FOR THIS TEST TO BE VALID.

PGLIN	N04	OPERAND	ROUTINE ID	CT	ADDR	INSTRUCTION
1598	NOP			1	03949	N
1599	DC	2042	LOAD FILE ADDR	2	03951	
1600	MLCA	29#202, FILE&5	LOAD ACC&MOD ADDR	12	03952	D 09843 09896 T
1601	MLCA	2112	SEEK	6	03964	D 09845
1602	SB	1, FILE		10	03970	M %FO 09891 R
1603	B01	*E1		7	03980	R 03987 M
1604	B01	*E7	BRCH NOT READY	7	03987	R 04000 I
1605						
1606	***	SET ERROR 04 ON ***		6	03994	, 01805
1607	SN	E4	SET ERROR IND ON			
1608			ACCESS & MODULE ADDRESS OF 11 DIDNOT BRING UP NOT READY ON A SEEK			
1609			OP. POSSIBLE CAUSE--ACCESS INOP LATCH OR NOT READY LATCH FROZEN OFF			
1610	MLCA	2002, FILE&1	RESET ACCESS AND MOD	12	04000	D 09847 09892 T
1611	SB	1, FILE	SEEK DISK	10	04012	M %FO 09891 R
1612	B01	*E1		7	04022	R 04029 M
1613	B01	*E8	BRCH NOT READY	7	04029	R 04043 I
1614	B	*E7		7	04036	J 04049
1615	***	SET ERROR 05 ON ***				
1616	SN	E5	SET ERROR IND ON	6	04043	, 01806

198

APR 15 1964

CT ADDR INSTRUCTION

NG4 OPCCD OPERAND

PGLIN

1617 AFTER SETTING NOT READY ON A SEEK OP WITH ACCESS MODULF SET TO 00
 1618 DOES NOT RESET THE NOT READY. POSSIBLE CAUSE ACCESS INOP LATCH
 1619 CANNOT BE RESET.

1620	NEXACC	A	212, FILE	ADD 1 ACCESS ADDR	11	04049	A	09809	09891
1621		BZ	NEXMOD-6		7	04060	J	04104	V
1622		SC	1, FILE	SEEK DISK	10	04067	M	2FO 09891	R
1623		BA1	*E1		7	04077	R	04084	M
1624		BNRI	NEXACC	BRCH NOT READY	7	04084	R	04049	I

1625 *** SET ERROR 06 ON ***
 1626 SH E6 SET ERROR IND ON

1627 AN ACCESS ADDRESS 1-9 DID NOT TURN ON NOT READY ON A SEEK OP. THE
 1628 FAILING ADDRESS MAY BE SEEN BY DISPLAYING THE FILE ADDRESS.
 1629 POSSIBLE CAUSE ACCESS DECODER FAILING.

1630		B	N04XIT		7	04097	J	04158	
1631		SH	FILEG1		6	04104	,	09892	
1632	NEXMOD	A	212, FILEG1	ADD 1 TO MOD ADDR	11	04110	A	09809	09892
1633		BZ	N04XIT		7	04121	J	04158	V
1634		SD	1, FILE	SEEK ACCESS	10	04128	M	2FO 09891	R
1635		BA1	*E1		7	04138	R	04145	M
1636		BNRI	NEXMOD	BRCH NOT READY	7	04145	R	04110	I

1637 *** SET ERROR 07 ON ***
 1638 SH E7 SET ERROR IND ON

1639 A MODULE ADDRESS 1-9 DID NOT TURN ON NOT READY ON A SFEK OP. THE
 1640 FAILING ADDRESS MAY BE SEEN BY DISPLAYING THE FILE ADDRESS.
 1641 POSSIBLE CAUSE MODULE DECODER FAILING.

1642	N04XIT	B	MONTR		7	04158	J	02066	
------	--------	---	-------	--	---	-------	---	-------	--

199-000

DA04

PAGE 183

CT ADDR INSTRUCTION

NOS

PGLIN LABEL OPCODE OPERAND

1644
 1645
 1646
 1647
 1648
 1649
 1650
 1651
 1652
 1653
 1654
 1655
 1656
 1657
 1658
 1659

*** TEST ROUTINE DESCRIPTION ***
 *** TEST 7631 OP CODE DECODER ***

THIS ROUTINE TESTS THE OP CODE DECODERS ABILITY TO DECODE PROPERLY 7 OF THE 11 SPECIFIC OPERATIONS POSSIBLE. THE CODES TESTED ARE DONE IN A NO-OP MODE SO THAT NO OPERATIONS ARE PERFORMED, BECAUSE PRIORITY IS REQUIRED FOR THE NO-OP THIS TEST IS NOT RUN IF PRIORITY IS NOT AVAILABLE. THE ERRORS INDICATED WHEN INVALID COMMAND IS SENSED ARE.

SEEK OP CODE 0 ERROR 07
 SRO CP CODE 1 ERROR 08
 TRO UP CODE 2 ERROR 09
 WDC CP CODE 3 ERROR 10
 HAO OP CODE 5 ERROR 11
 TWA OP CODE 6 ERROR 12
 WFT OP CODE 7 ERROR 13

THE REMAINING OP CODES ARE OPTIONAL FEATURES AND ONE SETS THE ACCESS INOP. THEY MAY BE TESTED LATER IN THE PROGRAM.

1660
 1661
 1662
 1663
 1664
 1665
 1666
 1667
 1668
 1669
 1670
 1671
 1672
 1673
 1674
 1675
 1676
 1677
 1678
 1679

NCP
 DC 2050 ROUTINE ID
 MRCC CEADDR, FILE LOAD FILE
 SD 1, FILE SEEK DISK
 BAI *E1 CHECK FOR INVALID CD
 BEFI *E8
 B *E7

*** SET ERROR 07 ON ***
 SW E7 SET ERROR IND ON

A SEEK OP CAUSES EXT. COND-INVALID COMMAND-, CHECK CP DECODER
 BCE NOSXIT, 1264, BRCH IF PRI NOT AVL
 MU %F1, FILE, Q SRO OP
 BAI *E1
 BEFI *E8 CHECK INVALID CODE
 B *E7

*** SET ERROR 08 ON ***
 SW EB TURN ON ERROR IND

A SINGLE RECORD OP CAUSES EXT COND-INVALID COMMAND-CHECK OP DECODER

1 04165 N
 2 04167
 12 04168 D 09662 09891 \$
 10 04180 M %FO 09891 R
 7 04190 R 04197 M
 7 04197 R 04211 8
 7 04204 J 04217
 6 04211 , 01808
 12 04217 B 04451 01264
 10 04229 M %F1 09891 Q
 7 04239 R 04246 M
 7 04246 R 04260 8
 7 04253 J 04266
 6 04260 , 01809

200237

APR 15 1964

PAGE 184

DA04

NC5

CT ADDR INSTRUCTION

OPCCD OPERAND

LABEL

PGLIN

1680	MU	%F2,FILE,Q	TRO OP	10	04266	M %F2 09891 Q
1681	BAI	*E1		7	04276	R 04283 M
1682	BEF1	*E8	CHECK INVALID CMD	7	04283	R 04297 B
1683	B	*E7		7	04290	J 04303
1684	***	SET ERROR 09 ON ***				
1685	SW	E9	SET ERROR IND ON	6	04297	, 01810
1686	A TRACK WITHOUT ADDRESSES OP CAUSES EXT COND-INVALID COMMAND-					
1687	CHECK OP DECODER					
1688	MU	%F3,FILE,V	WDC OP	10	04303	M %F3 09891 V
1689	BAI	*E1		7	04313	R 04320 M
1690	BEF1	*E8	CHECK FOR INVALID CO	7	04320	R 04334 B
1691	B	*E7		7	04327	J 04340
1692	***	SET ERROR 10 ON ***				
1693	SW	E10	SET ERROR IND ON	6	04334	, 01811
1694	A WDC OP CAUSES EXT COND-INVALID COMMAND-CHECK OP DECODER					
1695	MU	%F5,FILE,Q	HAO OP	10	04340	M %F5 09891 Q
1696	BAI	*E1		7	04350	R 04357 M
1697	BEF1	*E8	CHECK INVALID CODE	7	04357	R 04371 B
1698	B	*E7		7	04364	J 04377
1699	***	SET ERROR 11 ON ***				
1700	SW	E11	SET ERROR IND ON	6	04371	, 01812
1701	A HOME ADDRESS OP CAUSES EXT COND-INVALID COMMAND-CHECK OP DECDR					
1702	MU	%F6,FILE,Q	TWA OP	10	04377	M %F6 09891 Q
1703	BAI	*E1		7	04387	R 04394 M
1704	BEF1	*E8	CHECK INVALID CODE	7	04394	R 04408 B
1705	B	*E7		7	04401	J 04414
1706	***	SET ERROR 12 ON ***				
1707	SW	E12	SET ERROR IND ON	6	04408	, 01813
1708	A TRACK WITH ADDRESS OP CAUSES EXT COND-INVALID COMMAND-CHECK					
1709	OP DECODER					
1710	MU	%F7,FILE,Q	FMT OP	10	04414	M %F7 09891 Q
1711	BAI	*E1		7	04424	R 04431 M
1712	BEF1	*E8	CHECK INVALID CODE	7	04431	R 04445 B
1713	B	*E7		7	04438	J 04451
1714	***	SET ERROR 13 ON ***				
1715	SW	E13	SET ERROR IND ON	6	04445	, 01814

201

PAGE 185 APR 15 1964

DA04

CT ADDR INSTRUCTION

N05

OPCOD OPERAND

1716 A WRITE FORMAT OP CAUSES EXT CCND-INVALID COMMAND-CHECK OP DECOR

1717 N05XIT 8 MONITR

7 04451 J 02066

202

PGLIN	LABEL	NO6	OPCOD	OPERAND	NO6	CT	ADDR	INSTRUCTION
1719								
1720				*** TEST ROUTINE DESCRIPTION ***				
1721				*** TEST HI ORDER POSITIONS OF TRACK REGISTER ***				
1722				*** ACCESS POSITIONED AT CYLINDER 000 ***				
1723				THIS TEST IS RUN ONLY WHEN MANUAL MODE HAS BEEN SELECTED. THE				
1724				ACCESS IS FIRST POSITIONED MANUALLY TO CYL 000 BY THE CE, THEN A				
1725				SEEK IS ISSUED TO EACH TRACK POSITION IN CYL 000. EACH SEEK IS				
1726				FOLLOWED BY A SEEK TO THE SAME ADDRESS AND BUSY IS CHECKED. IF				
1727				BUSY COMES ON THE ACCESS HAS MOVED INDICATING THE TRACK REGISTER				
1728				IMPROPERLY DECODED THE ADDRESS. IF THIS HAPPENS ERROR 14 IS IND-				
1729				ICATED AND THE FAILING ADDRESS IS STILL PRESENT AT THIS TIME.				
1730		NO6	NCP			1	04458	N
1731		DC	2062	ROUTINE ID		2	04460	
1732		BCE	028,SPTAD1,1	BRCH IF IN MANUAL		12	04461	B 04480 01005 I
1733		B	N08XIT			7	04473	J 04896
1734		B	TYP1			7	04480	J 01593
1735		DCH	2ACC TO CYL 0002,G			14	04500	
1736		H		WAIT FOR ACTION		1	04502	.
1737		MLCA	200002,FILE55	LOAD FILE ADDR		12	04503	D 09826 09896 I
1738		MLCA	2002			6	04515	D 09847
1739		SD	1,FILE	SEEK ACCESS		10	04521	M %FO 09891 R
1740		BA1	*E1			7	04531	R 04538 M
1741		SC	1,FILE	SEEK ACCESS AGAIN		10	04538	M %FO 09891 R
1742		BA1	*E1			7	04548	R 04555 M
1743		BCB1	ZEROCK	CHECK FOR BUSY		7	04555	R 04592 2
1744		A	212,FILE55	UPDATE TRACK ADDR		11	04562	A 09809 09896
1745		BCE	N06XIT,FILE54,4	CYLINDER COMPLETE		12	04573	B 04612 09895 4
1746		B	CYL000			7	04585	J 04521
1747				*** SET ERROR 14 ON ***				
1748		SW	E14	SET ERROR IND ON		6	04592	, 01815
1749				A SEEK TO ONE OF THE TRACKS IN CYL 000 CAUSED ACCESS TO MOVE.				
1750		BA1	STACHK	BRCH TO STATUS CHK		7	04598	R 03051 M
1751		B	NEXTRK	RETURN HERE		7	04605	J 04562
1752		B	MONITR			7	04612	J 02066

203

APR 15 1963

DA04 PAGE 187

N07

CT ADDR INSTRUCTION

PGLIN LABEL OPCCD OPERAND

1754
 1755 *** TEST ROUTINE DESCRIPTION ***
 1756 *** TEST HI ORDER POSITION OF TRACK REGISTER ***
 1757 THIS IS THE SAME AS ROUTINE NC6
 1758 THIS IS THE SAME AS ROUTINE N06 EXCEPT THAT THE ACCESS IS
 1759 POSITIONED AT CYLINDER 110 AND SEEKS ARE ISSUED FOR EACH TRACK
 1760 IN THE CYLINDER. IF THE ACCESS MOVES ERROR 15 IS INDICATED. FOR
 1761 MORE DETAIL REFER TO ROUTINE N06.

PGLIN	Label	OPCCD	Operand	CT	ADDR	INSTRUCTION
1762						
1763	N07	NCP		1	04619	N
1764		DC	0070	2	04621	
1765		B	TYPI	7	04622	J 01593
1766		DCW	0ACC TO CYL 1100,G	14	04642	
1767		H		1	04644	.
1768		MLCA	044000,FILE05	12	04645	D 09837 09896 T
1769		MLCA	0000	6	04657	D 09847
1770	CYL110	SD	1,FILE	10	04663	M 0FO 09891 R
1771		BAI	001	7	04673	R 04680 M
1772		SD	1,FILE	10	04680	M 0FO 09891 R
1773		BAI	001	7	04690	R 04697 M
1774		BCB1	ONETEN	7	04697	R 04734 2
1775	UPITRK	A	010,FILE05	11	04704	A 09809 09896
1776		BCE	N07XIT,FILE04,4	12	04715	B 04754 09895 A
1777		B	CYL110	7	04727	J 04663

1778 *** SET ERROR 15 ON ***
 1779 ONETEN SH E15 SET ERROR IND ON
 1780 A SEEK TO ONE OF THE TRACKS IN CYL 110 CAUSED ACCESS TO MOVE
 1781 BAI STACHK GO TO ERROR ROUTINE
 1782 B UPITRK RETURN HERE
 1783 N07XIT B MONITR

204

INSTRUCTION

N08

OPCED OPERAND

LABEL

PGLIN

PGLIN	LABEL	OPCED	OPERAND	DESCRIPTION	CT	ADDRS	INSTRUCTION
1785		***	TEST ROUTINE DESCRIPTION ***				
1786		***	TEST HI ORDER POSITION OF TRACK REGISTER ***				
1787		***	ACCESS POSITIONED AT CYL 194 ***				
1788							
1789				THIS IS THE SAME AS ROUTINE N06 & N07 EXCEPT THAT THE ACCESS IS			
1790				POSITIONED AT CYLINDER 194. ERRCR 16 IS INDICATED IF THE ACCESS			
1791				MOVES. REFER TO ROUTINE N06 DESCRIPTION FOR MORE DETAIL.			
1792	N08	NCP			1	04761	N
1793		DC	2082	ROUTINE ID	2	04763	
1794		B	TYPI		7	04764	J 01593
1795		DCH	2ACC TO CYL 1942.G		14	04784	
1796		H		WAIT FOR ACTION	1	04786	.
1797		MLCA	277602, FILEE5	LOAD FILE	12	04787	D 09851 09896 T
1798		MLCA	2002	ADDRESS	6	04799	D 09847
1799	CYL194	SD	1, FILE	SEEK ACCESS	10	04805	M 2FO 09891 R
1800		BA1	*E1		7	04815	R 04822 M
1801		SD	1, FILE	SEEK ACCESS AGAIN	10	04822	M 2FO 09891 R
1802		BA1	*E1		7	04832	R 04839 M
1803		BCB1	ONE94	BRCH BUSY	7	04839	R 04876 2
1804	TRKUP1	A	212, FILEE5	UPDATE TRACK ADDR	11	04846	A 09809 09896
1805		BCE	N08XIT, FILEE4, 0	BRCH IF CYL COMPLETE	12	04857	B 04896 09895 0
1806		B	CYL194		7	04869	J 04805
1807		***	SET ERROR 16 ON ***				
1808	ONE94	SW	E16	SET ERROR IND ON	6	04876	. 01817
1809				A SEEK TO ONE OF THE TRACKS IN CYL 194 CAUSED ACCESS TO MOVE			
1810		BA1	STACHK	GO TO ERROR ROUTINE	7	04882	R 03051 M
1811		B	TRKUP1	RETURN HERE	7	04889	J 04846
1812	N08XIT	B	MONTR		7	04896	J 02066

206

CT ADDR INSTRUCTION

7 05055 J 05143
12 05062 B 05081 09451 Z
7 05074 J 05030
7 05081 G 01714 E

11 05088 . , 01819 02970

12 05099 D 09342 01670 D
12 05111 D 09455 00001 D
1 05123 B
12 05124 D 02015 00001 L
7 05136 J 05168
11 05143 A 09809 09341
7 05154 J 05168 V
7 05161 J 04984
7 05168 J 02066

PGLIN LABEL NO9 OPCOD OPERAND

1850 B PASS9
1851 BCE *E8,LNGCNT-3,2 IS DELAY OVER
1852 B DELAY2
1853 SER DATA64 STORE E REG

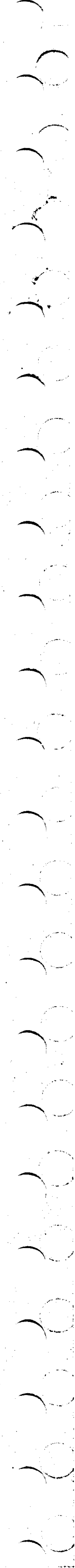
1854 *** SET ERROR 18 CN ***
1855 SW E18,EXTRA&1 SET ERROR IND CN

1856 A WRITE FORMAT OPERATION CAUSES 7631 TO HANG UP, THE CONTENTS OF
1857 THE E REG AFTER THE WRITE FORMAT ARE DISPLAYED IN THE FROR MESS-
1858 AGE. IF THE E REG SETTING INDICATES ONLY THE ADDRESS WAS TRANS-
1859 FERRED, POSSIBLE FAILURE OF PREP READ-WRITE OR WRITE LINE. IF THE
1860 E REG SETTING INDICATES SOME PART OF THE DATA FIELD WAS TRANS-
1861 FERRED, POSSIBLE FAILURE IN THE REVOLUTION COUNTER.

1862 MRCWG EREG,DATA&M MOVE MESSAGE
1863 MRCWG BRCH2,1 MOVE BRCH INST
1864 DCW G&M RESET COMPUTER
1865 MRCWG RESUME,1 RESTORE LOCATION 1
1866 B N09XIT

1867 A @16,TENCNT ADD 1 TO PASS CCUNT
1868 BZ N09XIT BRCH ON ZERO RESULT
1869 B TST9

1870 B MONITR



208

DA04 INSTRUCTION

CT ADDR

INSTRUCTION

CT ADDR

INSTRUCTION

CT ADDR

INSTRUCTION

CT ADDR

INSTRUCTION

CT ADDR

PGLIN	LABEL	NIO	OPCD	OPRAND	CT	ADDR	INSTRUCTION
1908		BA1	*E1		7	05240	R 05247 M
1909		BEF1	CHKWLR	CHECK EXT COND	7	05247	R 05323 8
1910		BER1	SETE19	CHECK DATA CHECK	7	05254	R 05407 4
1911		A	212,TECNT	ADD 1 TO PASS CNT	11	05261	A 09809 09341
1912		BZ	NIOXIT	BRCH ON ZERO RESULT	7	05272	J 05413 V
1913	THREE1	NCPWM			1	05279	N
1914		B	*E19		7	05280	J 05305
1915		SW	THREE1E1,ONE3SW&1	TURN ON SWITCHES FOR	11	05287	, 05280 05185
1916		B	ONE3SW	6 BIT MODE FCHMAT	7	05298	J 05184
1917		CM	THREE1E1,ONE3SW&1	TURN OFF SWITCHES	11	05305	0 05280 05185
1918		B	ONE3SW		7	05316	J 05184
1919	CHKWLR	BWLI	CHKNOT	CHECK WRONG L IN	7	05323	R 05374 -
1920		C	DATA&4,CON1	WAS DATA TRANSFERED	11	05330	C 01714 09467
1921		BE	*E14	IF SO	7	05341	J 05361 S
1922		***	SET ERROR 20 ON ***		6	05348	, 01821
1923		SW	E2C	SET ERROR IND ON			
1924				WRITE FORMAT CAUSES EXT COND AND NOT ALL THE DATA IS TRANSFERRED,			
1925				POSSIBLE FAILURE IN PHASE SELECT CKTS ASSOCIATED WITH WRITE.			
1926		B	NIOXIT		7	05354	J 05413
1927		***	SET ERROR 21 ON ***		6	05361	, 01822
1928		SW	E21	SET ERRCR IND ON			
1929				WRITE FORMAT CAUSES EXT COND WITH ALL DATA BEING TRANSFERRED			
1930				POSSIBLE CAUSE,DISCONNECT NOT RECOGNIZED.			
1931		B	NIOXIT		7	05367	J 05413
1932	CHKNOT	BNT1	*E14	CHECK NC TRANSFER	7	05374	R 05394 B
1933		***	SET ERROR 22 ON ***		6	05381	, 01823
1934		SW	E22	SET ERROR IND ON			
1935				WRITE FORMAT CAUSES EXT COND,&WLR,ALL DATA WAS TRANSFERRED,			
1936				POSSIBLE 1301 CKT CHECK			
1937		B	NIOXIT		7	05387	J 05413
1938		***	SET ERROR 23 ON ***		6	05394	, 01824
1939		SW	E23	SET ERROR IND ON			
1940				WRITE FORMAT CAUSES EXT COND,WLR,& NO TRANSFER,POSSIBLE FAILURE			
1941				OF CE-HAD SWITCH ON OR THE ASSOCIATED CKTS.			
1942		B	NIOXIT		7	05400	J 05413
1003		***	SET ERROR 19 ON ***				

Handwritten scribbles and markings on the right margin of the page.

211

APR 15 1964

PAGE 195

DA04

CT ADDR INSTRUCTION

N11

PGLIN LABEL OPCCD OPERAND

1985		*** SET ERROR 25 ON ***			
1986	SW	E25,EXTRAG1	SET ERROR IND ON	11	05552 , 01826 02970
1987		WRITE DISK CHECK CAUSES 7631 TC HANG UP,CPU STAYS IN OVERLAP.			
1988	DCW	AM		1	05563
1989	HANG3	MRCNG RESUME,1.	RESTORE LOC 1	12	05564 D 02015 00001
1990	B	N11XIT		7	05576 J 05658
1991	WDCNGV	WDC 1,FILE	WDC NON-OVERLAP	10	05583 M XF3 09891 M
1992	BAL	*E1		7	05593 R 05600 M
1993	BEF1	WLRCHK	CHECK FOR EXT CCND	7	05600 R 05632 B
1994	A	A12,TENCNT	ADD 1 TO PASS COUNT	11	05607 A 09809 09341
1995	BZ	N11XIT	BRCH ON ZERO RESULT	7	05618 J 05658 V
1996	B	N11		7	05625 J 05420
1997	WLRCHK	BWL1 *E14	CHECK WLR	7	05632 R 05652 -
1998		*** SET ERROR 26 ON ***			
1999	SW	E26	SET ERROR IND ON	6	05639 , 01827
2000		WRITE DISK CHECK CAUSES EXT COND,POSSIBLE FAILURE OF GAP DETECTOR			
2001	B	N11XIT		7	05645 J 05658
2002		*** SET ERROR 27 ON ***			
2003	SW	E27	SET ERROR IND ON	6	05652 , 01828
2004		WRITE DISK CHECK CAUSES EXT COND AND WLR,POSSIBLE FAILURE OF			
2005		WRITE FORMAT CKTS,OR PHASE SELECT CKTS ASSOCIATED WITH READ.			
2006	N11XIT	B MONITR		7	05658 J 02066

213

APR 15 1964

DA04 PAGE 197

PGLIN	LABEL	OPCGD	OPERAND	CT	ADDRS	INSTRUCTION
2044		B	N12XIT	7	05763	J 05836
2045	CHKLOC	C	DATA&4,CON2	11	05770	C 01714 09491
2046		BE	GETCHR	7	05781	J 05806 S
2047		***	SET ERROR 29 ON ***			
2048		SW	E29,EXTRA&1	11	05788	J 01830 02970
2049			WRITE FORMAT USING AN ILLEGAL CHARACTER IN DATA FIELD, THE WRONG			
2050			CHARACTER CAUSES DATA CHECK.B REG CONTENTS EQUALS 2 CHARACTERS			
2051			ABOVE ONE THAT CAUSED DATA CHECK.POSSIBLE FAILURE OF FORMAT CHAR			
2052			DECODER,DECODING LEGAL CHARACTER AS ILLEGAL.			
2053		B	N12XIT	7	05799	J 05836
2054	GETCHR	A	212,X10	11	05806	A 09809 00074
2055		BCE	N12XIT,X10-1,5	12	05817	B 05836 00073 S
2056		B	SETBAD	7	05829	J 05697
2057	N12XIT	B	MONIIR	7	05836	J 02066

214

CT ADDR INSTRUCTION

N13 OPCOD OPERAND

LABEL

PGLIN

2059 *** TEST ROUTINE DESCRIPTION ***

2060 *** TEST GAP DETECTORS ***

2061

2062 A NORMAL 6 BIT MODE FORMAT IS WRITTEN, THIS IS FOLLOWED BY FOUR

2063 WRITE DISK CHECKS IN WHICH THE GAPS IN DATA FIELD ARE VARIED AND

2064 EXTERNAL CONDITION IS CHECKED, IF IT IS NOT ON AN ERROR IS INDI-

2065 CATED.

2066 1ST WDC LENGTHEN LONG X GAP NO EXT COND ERROR 30

2067 2ND WDC SHORTEN LONG X GAP NO EXT COND ERROR 31

2068 3RD WDC LENGTHEN SHORT GAP 2 NO EXT COND ERROR 32

2069 4TH WDC SHORTEN SHORT GAP 2 NO EXT COND ERROR 33

2070 AFTER THESE A WDC WITH ALL GAPS NORMAL CHECKS TO INSURE FORMAT

2071 WAS RECORDED CORRECTLY. TEN PASSES ARE MADE THROUGH THE ROUTINE.

2072

2073 FORMAT ORGANIZATION

2074 GAPI--HA1--GAP2--HA2 6 CHARS--X GAP--REC ADDR 10 CHARS--Y GAP--

2075 RECORD AREA 6 CHARS--GAP3

2076

2077 FORMAT DATA FIELD USED

2078 44433333333333333333333341111122222222211111111111111111111111121

2079 111112

PGLIN	N13	OPCD	OPERAND	ROUTINE ID	CT	ADDR	INSTRUCTION
2081	NCP				1	05843	N
2082	DC	2133			2	05845	
2083	S	TENCNT			6	05846	S 09341
2084	CS	DATAFD69			6	05852	/ 09909
2085	MRCNG	HA1-23, DATAFD			12	05858	D 09492 09900 L
2086	MU	%F7, FILE, W			10	05870	M %F7 09891 W
2087	BA1	*61			7	05880	R 05887 M
2088	MLCS	326, DATAFD642			12	05887	D 09822 09942 3
2089	WDC	1, FILE			10	05899	M %F3 09891 W
2090	BA1	*61			7	05909	R 05916 M
2091	BEF1	*67			7	05916	R 05929 8
2092	***	SET ERROR 30	***				
2093	SW	E30			6	05923	, 01831

2094 WRIT DISK ECK FOR T WIT X GA INCR SED P. 1 CH' DOES

215 ~~578~~

APR 15 1964

DA04 PAGE 199

CT ADDR INSTRUCTION

N13 OPCOD OPERAND

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
2095	NOT CAUSE EXT COND, POSSIBLE FAILURE OF GAP DETECTOR			12	05929	D 09845 09942 T
2096	MLCA @11@, DATAFD@42		SHORTEN LONG GAP	10	05941	M %F3 09891 M
2097	WCC 1, FILE		WRIT DISK CHECK	7	05951	R 05959 M
2098	BAI *@1			7	05958	R 05971 B
2099	BEFI *@7		CHECK EXT CCND			
2100	*** SET ERROR 31 ON ***			6	05965	, 01832
2101	SW E31		SET ERROR IND ON			
2102	WRITE DISK CHECK OF FORMAT WITH X GAP SHORTENED BY 1 CHAR DOES					
2103	NOT TURN ON EXT COND, POSSIBLE FAILURE OF GAP DETECTOR			12	05971	D 09853 09942 T
2104	MLCA @21@, DATAFD@42		RESTORE LONG GAP	12	05983	Q 09855 09924 I
2105	MLCA @22@, DATAFD@24		LENGTHEN SHORT GAP	10	05995	M %F3 09891 M
2106	WDC 1, FILE		WRITE DISK CHECK	7	06005	R 06012 M
2107	BAI *@1			7	06012	R 06025 B
2108	BEFI *@7		CHECK FOR EXT CCND			
2109	*** SET ERROR 32 ON ***			6	06019	, 01833
2110	SW E32		SET ERROR IND ON			
2111	WRITE DISK CHECK OF FORMAT WITH GAP2 INCREASED BY 1 CHAR DOES NOT					
2112	CAUSE EXT COND, POSSIBLE FAILURE OF GAP DETECTORS			12	06025	D 09845 09924 T
2113	MLCA @11@, DATAFD@24		SHORTEN SHORT GAP	10	06037	M %F3 09891 M
2114	WDC 1, FILE		WRITE DISK CHECK	7	06047	R 06054 M
2115	BAI *@1			7	06054	R 06067 B
2116	BEFI *@7		CHECK EXT CCND			
2117	*** SET ERROR 33 ON ***			6	06061	, 01834
2118	SW E33		SET ERROR IND ON			
2119	WRITE DISK CHECK OF FORMAT WITH GAP2 SHORTENED BY 1 CHAR DOES NOT					
2120	CAUSE EXT COND, POSSIBLE FAILURE OF GAP DETECTORS			12	06067	Q 09856 09923 T
2121	MLCA @4@, DATAFD@23		RESTORE SHORT GAP	10	06079	M %F3 09891 M
2122	WDC 1, FILE		WRITE DISK CHECK	7	06089	R 03051 M
2123	BAI STACHK		GO CHECK STATUS IND	11	06096	Q 09809 09341
2124	A @1@, TENCNT		RETURN HERE	7	06107	J 06121 V
2125	BZ N13XIT		TEN PASSES AND BRCH	7	06114	J 05852
2126	B TST13			7	06121	J 02066
2127	N13XIT B MONITR					

216

APR 15 1964

PAGE 200

DA04

CT ADDR INSTRUCTION

N14

PGLIN LABEL OPCOD OPERAND

2129 *** TEST ROUTINE DESCRIPTION ***
 2130 *** TEST HAO OPERATION ***
 2131
 2132 THE PROGRAM PERFORMS AN OVERLAPPED WRITE HAO OPERATION AND THEN
 2133 DELAYS LONG ENOUGH FOR THE OPERATION TO BE COMPLETED. AT THE END
 2134 OF THE DELAY IF OVERLAP IS STILL IN PROCESS ERROR 35 IS INDICATED
 2135 THE CONTENTS OF THE E REG AFTER THE WRITE HAO IS ALSO DISPLAYED
 2136 WITH THE ERROR MESSAGE. TEN PASS ARE MADE IF NO ERRORS OCCURE.

2137
 2138 FORMAT REQUIRED
 2139 SAME AS FORMAT WRITTEN BY ROUTINE N13

2140
 2141 DATA FIELD ORGANIZATION
 2142 HAI 5 CHARS--HAZ 2 CHARS--REC ADDR 6 CHARS--RECORD 2 CHARS
 2143

2144 DATA FIELD ORGANIZATION
 2145 9#2088123456+

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
2146						
2147	N14	NCP		1	06128	N
2148		DC	2142	2	06130	
2149		BCE	*E8,1263,1	12	06131	B 06150 01263 I
2150		B	N14XIT	7	06143	J 06382
2151		CS	DATAFD0E99	6	06150	/ 09999
2152		MRCG	CEADDR,FILE	12	06156	D 09662 09891 \$
2153		SW	FILEE2	6	06168	, 09893
2154		MLCA	FILEE5,DATAFD0E3	12	06174	D 09896 09903 I
2155		MLCA	28882,DATAFD0E6	12	06186	D 09859 09906 I
2156		MRCWG	ALLBIT,DATAFD0E7	12	06198	D 09640 09907 L
2157		S	TENCNT	6	06210	S 09341
2158		MLCS	OVRAP&X14,*E2	12	06216	D 09GRI 06229 3
2159	TST14	MU	2F5,FILE,H	10	06228	M 2F5 09891 M
2160		S	LNGCNT	6	06238	S 09454
2161	DELAY4	A	212,LNGCNT	11	06244	A 09809 09454
2162		BCLI	*E15	7	06255	J 06276 I
2163		BAI	STACHK	7	06262	R 03051 M
2...				7	06269	J 06351

APR 15 1964

217

DA04 PAGE 201

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
2165		BCE	*E8,LNGCNT-3,2	12	06276	B 06295 09451 2
2166		B	DELAY4	7	06288	J 06244
2167		***	SET ERROR 35 ON ***	11	06295	, 01836 02970
2168		SW	E35,EXTRA&1			
2169			WRITE HAC OVERLAPPED CAUSES 7631 TO HANG UP			
2170		SER	DATA&4	7	06306	G 01714 E
2171		MRCWG	EREG,DATA&7	12	06313	D 09342 01717 L
2172		MRCWG	BRCH4,1	12	06325	D 09649 00001 L
2173		OCW	AM2	1	06337	
2174	HANG4	MRCWG	RESUME,1	12	06338	D 02015 00001 L
2175		B	N14XIT	7	06350	J 06382
2176	PASS14	A	212,TENCNT	11	06357	A 09809 09341
2177		BZ	N14XIT	7	06368	J 06382 V
2178		B	TST14	7	06375	J 06228
2179	N14XIT	B	MONITR	7	06382	J 02066

Handwritten notes and markings on the right side of the page, including a large 'X' and some illegible scribbles.

PGLIN	LABEL	N15	OPCCD	OPERAND	CT	ADRS	INSTRUCTION
2217		MKCHG	ALLBIT,DATAF067	LOAD DATA FIELD	12	06427	D 09640 09907 L
2218		MLCS	ALLCHR&X10,DATAF0614	WITH REC ADDR AND	12	06439	D 09LP6 09914 3
2219		MLCS	ALLCHR&X10	TEST CHAR	6	06451	D 09LP6
2220	WRTHAO	MRCG	FILE&2,DATAFD	LOAD ADDRESS	12	06457	D 09893 09900 \$
2221		MLCA	08880,DATAF066	IN FIELD	12	06469	D 09859 09906 I
2222		MU	XF5,FILE,M	WRITE HAO	10	06481	M XF5 09891 W
2223		SR	DATA&4	STORE B ADDR REG	7	06491	G 01714 B
2224		BAI	STACHK	BRCH ON ANY IND	7	06498	R 03051 M
2225		C	DATA&4,CON3	RETURN HERE	11	06505	C 01714 09661
2226		BE	*E14	WAS ALL DATA TRANS	7	06516	J 06536 S
2227		***	SET ERROR 36 ON ***				
2228		SW	E36	SET ERROR IND ON	6	06523	, 01837
2229				WRITE HAO CP THE ENTIRE DATA FIELD WAS NOT TRANSFERRED,POSSIBLE			
2230				FAILURE OF FORMAT RECOGNITION CKTS.			
2231		B	N15XIT		7	06529	J 06811
2232		A	010,FILE&5	ADD 1 TO TKHD ADK	11	06536	A 09809 09896
2233		BCE	*E8,FILE&4,6	IS CYL COMPLETE	12	06547	B 06566 09895 6
2234		B	WRTHAO		7	06559	J 06457
2235		MLCS	DATAF0614,DATAF0631	SAVE TEST CHAR	12	06566	D 09914 09931 3
2236		MLCS			1	06578	D
2237		MRCG	CEADDR,FILE	RESET FILE ADDR	12	06579	D 09662 09891 \$
2238		CS	DATAF0614		6	06591	/ 09914
2239	RDHAO	MU	XF5,FILE,R	READ HAO	10	06597	M XF5 09891 R
2240		BEF1	SETE39	CHECK EXTERNAL COND	7	06607	R 06792 8
2241		BER1	SETE40	CHECK DATA CHECK	7	06614	R 06805 4
2242		BAI	STACHK	GO CHECK STATUS ERR	7	06621	R 03051 M
2243		SW	DATAF0630		6	06628	, 09930
2244		C	DATAF0614,DATAF0631	CHECK DATA READ	11	06634	C 09914 09931
2245		BE	*E8	IF IT IS GOOD BRCH	7	06645	J 06659 S
2246		B	SETE37		7	06652	J 06707
2247		CH	FILE&4		6	06659	D 09895
2248		SW	FILE&2,DATAFD		11	06665	, 09893 09900
2249		C	DATAF065,FILE&7	CHECK ADDRESS READ	11	06676	C 09905 09898
2250		BE	RDNXTK	BRCH IF ADDR CORRECT	7	06687	J 06720 S
2251		***	SET ERROR 38 ON ***				
2252		SW	E38	SET ERROR IND ON	6	06694	, 01839

220

CT ADDR INSTRUCTION

N15

LABEL OPCCD OPERAND

PGLIN

2253 HOME ADDR 1 WRITTEN BY HAD OP DOES NOT COMPARE TO HCME ADDRESS
 2254 READ BACK ADDRESS READ BACK IS IN DATA FIELD AT TIME ERROR IS IND
 2255 POSSIBLE FAILURE IN THE LO-ORDER POSITIONS OF THE TRACK REGISTER.

7 06700 J 06811

2256 8 N15XIT
 2257 *** SET ERROR 37 ON ***

6 06707 , 01838

2258 SETE37 SW E37 SET ERROR IND ON
 2259 DATA RECORD READ BACK DOES NOT COMPARE TO DATA RECORD WRITTEN.
 2260 POSSIBLE FAILURE IN READ-WRITE PATHS. DATA RECORD READ TS IN DATA
 2261 FIELD WHEN ERROR IS INDICATED.

7 06713 J 06811

2262 B N15XIT
 2263 RDNXTK SW FILE64

6 06720 , 09895

2264 A 212,FILE65 ADD 1 TO TKHD ADDR
 2265 BCE *68,FILE64,4 IS CYL COMPLETE

11 06726 A 09809 09896

12 06737 B 06756 09895

2266 B R0HA0
 2267 A 212,X10 ADD 1 TO CHAR COUNT

7 06749 J 06597

11 06756 A 09809 00074

2268 C X10,26C2 ALL CHARACTERS CHKD
 2269 BE N15XIT IF SO BRCK

11 06767 C 00074 09839

7 06778 J 06811 S

2270 B TST15
 2271 *** SET ERROR 39 ON ***

7 06785 J 06403

2272 SETE39 SW E39 SET ERROR IND ON
 2273 READ HAD CAUSES EXT COND, POSSIBLE FAILURE OF PHASE SELECT CKTS

6 06792 , 01840

2274 ASSOCIATED WITH READ
 2275 B N15XIT

7 06798 J 06811

2276 *** SET ERROR 40 ON ***
 2277 SETE40 SW E40 SET ERROR IND ON

6 06805 , 01841

2278 READ HAD CAUSES DATA CHECK, POSSIBLE FAILURE OF PHASE SELECT CKTS
 2279 OR READ DATA PATHS.

2280 N15XIT B MONITR

7 06811 J 02066

221 285

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCCO	OPERAND	CT	ADDR	INSTRUCTION
2282						
2283		***	TEST ROUTINE DESCRIPTION ***			
2284		***	TEST FLAGGING CAPABILITIES ***			
2285			THE ROUTINE REQUESTS THE NUMBER OF SPARE HEADS AVAILABLE FOR			
2286			FLAGGING, USING THIS INFO THE PROGRAM WRITES A FLAG CHARACTER FOR			
2287			HEAD AVAILABLE ON TRACKS 9#20-9#25 OR LESS, AND WRITES HOME ADDR-			
2288			ESSES ON THE AVAILABLE ALTERNATES ALONG WITH A CODE CHARACTER.			
2289			A REQUEST IS THEN MADE TO TURN OFF THE CE-HAD SWITCH, AND A READ			
2290			HAC IS ISSUED TO AN UN-FLAGGED TRACK. IF THIS RESULTS IN EXT COND,			
2291			ERRROR #1 IS INDICATED, THE TRACK ADDRESS IS RESET TO ZERO AND AN-			
2292			OTHER READ HAD IS ISSUED IF THIS DOES NOT CAUSE EXT COND ERROR 42			
2293			IS INDICATED.			
2294						
2295			FORMAT REQUIRED			
2296			SAME AS WRITTEN IN ROUTINE N13			
2297						
2298			DATA FIELD ORGANIZATION			
2299			HAI 4 CHARS--FLAG CHAR--AA2 2 CHARS--CCODE CHARACTER			
2300						
2301			DATA FIELD USED--HAI UPDATED UP TO 9#25-			
2302			9#20X88#			
2303						
2304	N16	NCP		1	06818	N
2305		DC	216a	2	06820	
2306		ZA	20000a,X10	11	06821	M 09826 00074
2307		B	TYP2	7	06832	J 01607
2308		DCH	a# OF SPARE HEADS a,G	16	06854	
2309	AVALTR	DCW	a a,G	1	06856	
2310		MLNS	AVALTR,CKALT1E11	12	06858	D 06856 07016 I
2311		MLNS	AVALTR,CKALT2E11	12	06870	D 06856 07133 I
2312		MLNS	AVALTR,CKALT3E11	12	06882	D 06856 07349 I
2313		MRCWG	CEADDR,FILE	12	06894	D 09662 09891 L
2314		CS	DATAFDE99	6	06906	/ 09999
2315	TST16	MRCG	FILEE2,DATAFD	12	06912	D 09893 09900 S
2316		MLCWS	aM a,DATAFDE8	12	06924	D 09807 09908 7
2317		MLCA	2888a a,DATAFDE7	12	06936	D 09863 09907 I

222

222

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDRS	INSTRUCTION
2318		MLCS	FLAGSEX10,FILEE6	12	06948	D 090P1 09897 3
2319		MU	%F5,FILE,W	10	06960	M %F5 09891 W
2320		BA1	*E1	7	06970	R 06977 M
2321		A	010,X10	11	06977	A 09809 00074
2322		SW	FILEE4	6	06988	, 09895
2323		A	010,FILEE5	11	06994	A 09807 09896
2324	CKAL11	BCE	*E8,X10,F	12	07005	B 07024 00074 F
2325		B	TST16	7	07017	J 06912
2326		MRCG	CEADDR,FILE	12	07024	D 09662 09891 \$
2327		ZA	00000,X10	11	07036	M 09826 00074
2328	TST165	MRCG	FILEE2,DATAFD	12	07047	D 09893 09900 \$
2329		MLCA	0N0,DATAFD07	12	07059	D 09804 09907 T
2330		MLCS	FLAGSEX10,DATAFD04	12	07071	D 090P1 09904 3
2331		MU	%F5,FILE,W	10	07083	M %F5 09891 W
2332		BA1	*E1	7	07093	R 07100 M
2333		A	010,X10	11	07100	A 09809 00074
2334		A	010,FILEE5	11	07111	A 09809 09896
2335	CKAL12	BCE	*E8,X10,F	12	07122	B 07141 00074 F
2336		B	TST165	7	07134	J 07047
2337		B	1YPI	7	07141	J 01593
2338		DCW	0CE-HAO OFF0,G	10	07157	
2339		H		1	07159	.
2340		CS	DATAFD099	6	07160	/ 09999
2341		MU	%F5,FILE,R	10	07166	M %F5 09891 R
2342		BA1	*E1	7	07176	R 07183 M
2343		BEF1	*E8	7	07183	R 07197 8
2344		B	*E7	7	07190	J 07203
2345		***	SET ERROR 41 ON ***			
2346		SW	E41	6	07197	, 01842
2347			READ HAO FOLLOWING TURNING OFF CE-HAO SWITCH CAUSES EXTERNAL COND			
2348			POSSIBLY DID NOT WRITE HOME ADDRESSES CORRECTLY IN ROUTINE N15			
2349		MLCA	0000,FILEE3	12	07203	D 09847 09894 T
2350		MU	%F5,FILE,R	10	07215	M %F5 09891 R
2351		BA1	*E1	7	07225	R 07232 M
2352		BEF1	N16XIT	7	07232	R 07245 8
2353			*** SET ERROR 42 ON ***			



223

APR 15 1964

PAGE 207

DA04

CT ADDR INSTRUCTION

N16

OPCOD OPERAND

6 07239 , 01843

7 07245 J 02066

2354

LABEL

OPCOD OPERAND

2355

SW E42

SET ERROR IND ON

2356

READ HAD USING ADDRESS OF CYL 000 WHEN ACCESS IS AT CYL 253 DOES

2357

NOT CAUSE EXT COND. POSSIBLE FAILURE OF CE-HAO SWITCH OFF OR ITS ASSOCIATED CKTS.

2358

NI6XII 8 MONITR

DA04

CT ADDR INSTRUCTION

N17

OPCCD OPERAND

LABEL

GLIN

```

:360 *** TEST ROUTINE DESCRIPTION ***
:361 *** TEST FLAG DETECTION AND SWITCHING ***
:362
:363 THIS ROUTINE ADDRESSES EACH CF THE TRACRS FLAGGED IN ROUTINE 16
:364 WITH A READ HAD INSTRUCTION.THE DATA READ BACK IS CHECKED FOR THE
:365 CODE CHARACTER WRITTEN ON THE ALTERNATE TRACKS,IF THE CHARACTER
:366 IS NOT PRESENT ERROR 43 IS INDICATED.
:367
:368 FORMAT REQUIRED
:369 SAME AS WRITTEN IN ROUTINE N13

```

```

:370
:371 N17 NCP ROUTINE ID
:372 DC @17@ LOAD ADDR
:373 MRCG CEADDR,FILE CLEAR DATA FIELD
:374 TST17 CS DATAFDE99 SET TERMINATING WMGM
:375 MLCWS @M@,DATAFDE18 READ HAO
:376 MU %F5,FILE,R
:377 BAI *E1
:378 BCE CHKFLG,DATAFDE2,A WAS ALTERNATE READ
:379 *** SET ERROR 43 ON ***
:380 SW E43 SET ERROR IND ON
:381 READ HAO OF A FLAGGED TRACK DOES NOT READ ALTERNATE TRACK.

```

```

:382 B MONITR
:383 CHKFLG A @1@,FILEE5 ADD 1 TO TKHD ADDR
:384 CKALT3 BCE N17XIT,FILEE5,6 CYL COMPLETE
:385 B TST17 CHECKED
:386 N17XIT B MONITR

```

```

1 07252 N
2 07254
12 07255 D 09662 09891 S
6 07267 / 09999
12 07273 D 09807 09918 7
10 07285 M %F5 09891 R
7 07295 R 07302 M
12 07302 B 07327 09902 A
6 07314 , 01844
7 07320 J 02066
11 07327 A 09809 09896
12 07338 B 07357 09896 6
7 07350 J 07267
7 07357 J 02066

```


232

APR 15 1964

DA04 INSTRUCTION

PSLIN	LABEL	OPCCD	OPERAND	N19	CT	ADDRS	INSTRUCTION
2123							
2124							
2125							
2126							
2127							
2128							
2129							
2130							
2131							
2132							
2133							
2134							
2135							
2136							
2137							
2138							
2139							
2140							
2141							
2142							
2143							
2144							
2145							
2146							
2147							
2148							
2149							
2150							
2151							
2152							
2153							
2154							
2155							
2156							
2157							

*** TEST ROUTINE DESCRIPTION ***
 *** TEST WRITE TRACK WITH ADDRESSES OPER ***
 THIS ROUTINE WRITES A RECORD AND READS IT BACK, IT COMPARES THE
 DATA READ WITH THE DATA WRITTEN. IF IT DOES NOT COMPARE EQUAL
 ERROR 46 IS INDICATED. ALL STATUS ERRORS ARE ALSO INDICATED.

FORMAT REQUIRED
 SAME AS WRITTEN BY ROUTINE N18

DATA FIELD ORGANIZATION
 REC ADDR 6 CHARS--RECORD 2 CHARS

DATA FIELD USED
 123456+-

N19	NOP	ROUTINE ID
DC	2192	LOAD ADDR
MRCG	CEADDR, FILE	CLEAR DATA FIELD
CS	DATAFD099	LOAD DATA FIELD
MRCWG	ALLBITS, DATAFD	SET ADDR ABOVE TRCKS
MLCS	262, FILEES	THAT ARE FLAGGED
MU	2F6, FILE, W	WRITE TRCK WITH ADDR
BAI	STACHK	BRCH ON ANY IND
CS	DATAFD07	RETURN HERE
MU	2F6, FILE, R	READ TRCK WITH ADDR
BAI	STACHK	BRCH ON ANY IND
C	DATAFD07, ALLBIT07	RETURN HERE
BE	N19XIT	COMPARE DATA READ TO DATA WRITTEN

*** SET ERROR 46 ON ***
 SW E46 SET ERROR IND ON
 DATA READ DOES NOT COMPARE TO DATA WRITTEN
 N19XIT B MONITR

1	07478	N			
2	07480				
12	07481	D	09662	09891	\$
6	07493	/	09999		
12	07499	D	09640	09900	L
12	07511	D	09864	09896	3
10	07523	M	2F6	09891	W
7	07533	R	03051		M
6	07540	/	09907		
10	07546	M	2F6	09891	R
7	07556	R	03051		M
11	07563	C	09907	09647	
7	07574	J	07587		S
6	07581	,	01847		
7	07587	J	02066		

CT ADDR INSTRUCTION

N20

PSLIN LABEL OPCCO OPERAND

159
 160 *** TEST ROUTINE DESCRIPTION ***
 161 *** TEST TRACK WITHOUT ADDRESSES OP ***
 162 THIS ROUTINE PERFORMS A TRACK WITHOUT ADDRESSES WRITE AND READ,
 163 THE DATA READ IS COMPARED TO THE DATA WRITTEN AND IF IT DOES NOT
 164 COMPARE EQUAL ERROR 47 IS INDICATED. ALL STATUS ERRORS ARE ALSO
 165 INDICATED.

167 FORMAT REQUIRED
 168 SAME AS WRITTEN BY ROUTINE N18

170 DATA FIELD ORGANIZATION
 171 RECORD 2 CHARS

173 DATA FIELD USED
 174

LINE	ROUTINE ID	DC	CEADDR, FILE	LOAD ADDR
1	07594 N			
2	07596			
12	07597 D 09662 0989			
6	07609 / 09999			
12	07615 D 09646 09900			
12	07627 D 09864 09899			

TAHT ARE FLAGGED

LINE	ROUTINE ID	MU	2F2, FILE, M	WRITE TRACK NO ADDR
10	07639 M 2F2 09891			
7	07649 R 03051 M			
6	07656 / 09901			
10	07662 M 2F2 09891			
7	07672 R 03051 M			
6	07679 , 09900			
11	07685 C 09647 09901			
7	07696 J 07709 S			

*** SET ERROR 47 ON ***

SW E47 SET ERROR IND ON

DATA READ DOES NOT COMPARE WITH DATA READ

N20XIT B MONIT

CT ADDR INSTRUCTION

LINE	N21	OPCODE	OPERAND
195			
196			
197			
198			
199			
200			
201			
202			
203			
204			
205			
206			
207			
208			
209	N21	NCP	
210		DC	221a
211		CS	DATAFD699
212		MLCA	ALLBIT65,FILE67
213		MRCWG	ALLBIT66,DATAFC
214		MU	%FI,FILE,W
215		BAL	STACHK
216		CS	DATAFD61
217		MU	%FI,FILE,R
218		BAL	STACHK
219		SW	DATAFD
220		C	ALLBIT67,DATAFD61
221		BE	N21XIT
222		***	SET ERROR 48 ON ***
223		SW	E48
224		31141	DATA READ DOES NOT COMPARE TO DATA WRITTEN
225		N21XIT	B MONITR

*** TEST ROUTINE DESCRIPTION ***
 *** TEST SINGLE RECORD OP ***

THIS ROUTINE PERFORMS A SINGLE RECORD WRITE AND READ, USING THE RECORD ADDRESS WRITTEN IN ROUTINE N19. THE READ DATA IS COMPARED TO THE WRITE DATA AND IF IT DOES NOT COMPARE ERROR 48 IS INDICATED. ALL STATUS ERRORS ARE ALSO INDICATED.

FORMAT REQUIRED
 SAME AS WRITTEN BY ROUTINE N18

DATA FIELD USED

+-

LINE	CT	ADDR	INSTRUCTION	ROUTINE ID
1	07716	N		
2	07718			
6	07719	/	09999	
12	07725	D	09645 09898	I D
12	07737	D	09646 09900	L
10	07749	M	%F1 09891	W
7	07759	R	03051	M
6	07766	/	09901	
10	07772	M	%F1 09891	R
7	07782	R	03051	M
6	07789	,	09900	
11	07795	C	09647 09901	
7	07806	J	07819 S	
6	07813	,	01849	
7	07819	J	02066	

229

APR 15 1964

DA04 PAGE 213

N22

CT ADDR5 INSTRUCTION

OPCCD OPERAND

PGLIN LABEL

```

2.27 *** TEST ROUTINE DESCRIPTION ***
2.28 *** TEST CYO OPERATION ***
2.29
.30 IF CYO IS AVAILABLE A TRACK WITHOUT ADDR OP IS USED TO WRITE A
2.31 2 CHAR RECORC CN EACH TRACK IN CYL 253,THE WRITTEN IS CO ON TRACK
2.32 0.01 ON TRACK 1,AND SO ON THRU 39 ON TRACK 39.A READ CYO IS
2.33 ISSUED,ADDRESSING THE BOTTOM TRACK ON CYL 253,AND THE DATA READ
.34 IS COMPARED TO THE 40 RECORDS WRITTEN.IF THE DATA READ DOES NOT
.35 COMPARE ERROR 49 IS INDICATED.THE 40 RECORDS ARE REWRITTEN USING
.36 A WRITE CYC AND THE PROGRAM BRANCHES BACK TO THE READ CYO.THE
.37 READ-WRITE CYO ARE REPEATED 10 TIMES.
.38
.39 FORMAT REQUIRED
.40 SAME AS WRITTEN BY ROUTINE N18
.41
.42 DATA FIELD ORGANIZATION
2.43 40 Z CHARACTER RECCRDS
.44
.45 DATA FIELD USED
2.46 000102030405C6070809101112131415161718192021222324252627282930313
2.47 233343536373839
.48 N22 NCP
2.49 DC 2222
.50 B TYP2 ROUTINE 10
2.51 DCW 2CYO2,G
2.52 DCW 2 G,G
2.53 BCE *28,-13,1 BRCH IF CYO AVAIL
.54 B N22XIT
2.55 S TENCNT
.56 MRGG CEADDR,FILE LOAD ADDR
2.57 CS DATAFD099 CLEAR DATA FIELD
.58 MLC A 2002,DATAFC21 LOAD
.59 MLCWS 2M2,DATAFD22 DATA FIELD
2.60 TST22 MU 2F2,FILE,W WRITE TRCK NO ADDR5
.61 BAI STACHK BRCH ON ANY ERROR
2.62 SW DATAFD,FILE24 09900 09895

```

```

1 07826 N
2 07828
7 07829 J 01607
3 07838
1 07840
12 07842 B 07861 07840 I
7 07854 J 08146
6 07861 S 09341
12 07867 D 09662 09891 $
6 07879 / 09999
12 07885 D 09847 09901 T
12 07897 D 09807 09902 T
10 07909 M 2F2 09891 M
7 07919 R 03051 M
11 07926 , 09900 09895

```

230

DA04 PAGE 214

APR 15 1964

NZZ P:LIN LABEL OPCODE OPERAND CT ADDR INSTRUCTION

2563	A		212,DATAFD&1	UPDATE RECORD	11	07937	A	09809	09901
2564	A		213,FILE&5	UPDATE TRACK ADDR	11	07948	A	09809	09896
2565	BCE		2&8,FILE&4,6	IS CYL COMPLETE	12	07959	B	07978	09895 6
2566	B		TST22		7	07971	J		07909
2567	CS		DATAFD&99	CLEAR DATA FIELD	6	07978	/		09999
2568	MLCWS		2&12,DATAFD&80	SET TERMINATING WMGM	12	07984	D	09807	09980 7
2569	MRCG		CEADDR,FILE	RELOAD FILE ADDR	12	07996	D	09662	09891 8
2570	MU	RDCYO	2&2,FILE,R	READ CYO CYL 253	10	08008	M	2&2	09891 R
2571	SBR		DATA&4	STORE BAR AFTER READ	7	08018	G	01714	B
2572	BAI		STACHK	GO TO STATUS CHECK	7	08025	R	03051	M
2573	SW		DATAFD	ROUTINE,RETURN HERE	6	08032	,		09900
2574	C		CYOFD,DATAFD&79	CHECK DATA READ	11	08038	C	09756	09979
2575	BE		PASS22	IF IT IS GOOD BRCH	7	08049	J		08086 S
2576	***		SET ERROR 49 ON ***						
2577	SW		E49,EXTRA&1	SET ERROR IND ON	11	08056	,	01850	02970
2578			DATA READ DOES NOT COMPARE TO DATA WRITTEN						
2579	MRCWG		8REG,DATA&7	MOVE MESSAGE	12	08067	D	09348	01717 L
2580	B		N22XIT		7	08079	J		08146
2581	A	PASS22	2&12,TENCNT	ADD 1 TO PASS COUNT	11	08086	A	09809	09341
2582	BZ		N22XIT	BRCH AFTER 10TH PASS	7	08097	J		08146 V
2583	MLCA	WRTCYO	CYCFD,DATAFD&79	LOAD DATA FIELD	12	08104	D	09756	09979 F
2584	MU		2&2,FILE,W	WRITE CYO CYL 253	10	08116	M	2&2	09891 M
2585	BAI		STACHK	GO TO STATUS CHECK	7	08126	R	03051	M
2586	CS		DATAFD&79	ROUTINE RETURN HERE	6	08133	/		09979
2587	B		RDCYO		7	08139	J		08008
2588	B	N22XIT	MONITR		7	08146	J		02066

Handwritten scribbles and marks along the right edge of the page.

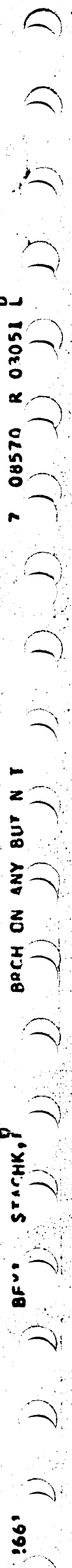
232

APR 15 1964

DA04 PAGE 216

N23

PGLIN	LABEL	OPCCD	OPERAND	CT	ADDRS	INSTRUCTION
2626	GOTINT	MU	XF0,FILE,V	10	08313	M XF0 09891 V
2627		MRCWG	INTR,101	12	08323	D 02007 00101 L
2628		BA1	*E1	7	08335	R 08342 M
2629		BCB1	*E8	7	08342	R 08356 2
2630		B	PREVNT	7	08349	J 08369
631		***	SET ERROR 52 ON ***	6	08356	, 01853
2632		SW	E52			
2633		A	SEEK CAUSES AN INTERRUPT WHEN IT IS COMPLETE,BUT A NO-OP INDI-			
634		C	ATES THE ACCESS IS STILL BUSY			
2635		B	N23XIT	7	08362	J 08577
2636	PREVNT	BCE	*E8,MODNUM,1	12	08369	B 08388 08189
637		B	N23XIT	7	08381	J 08577
638		MRCWG	BLKST,108	12	08388	D 09766 00108
2639		MLCA	39#200,FILEE5	12	08400	D 09843 09896
2640		SD	I,FILE	10	08412	M XF0 09891 R
2641		BA1	*E1	7	08422	R 08429 M
2642		MU	*F4,FILE,W	10	08429	M *F4 09891 W
643		BA1	*E1	7	08439	R 08446 M
644		BEX1	STACHK,L	7	08446	R 03051 L
2645		BEPA	*E1	7	08453	Y 08460 E
646		S	LNGCNT	6	08460	S 09454
647	DELAY6	A	312,LNGCNT	11	08466	A 09809 09454
2648		C	LNGCNT,332000	11	08477	C 09454 09868
649		BE	*E8	7	08488	J 08502 S
650		B	DELAY6	7	08495	J 08466
651		BXPA	*E1	7	08502	Y 08509 X
2652		B	RELEASE	7	08509	J 08541
653		***	SET ERROR 53 ON ***	6	08516	, 01854
654	BADINT	SW	E53			
655		A	SEEK OP FOLLOWED BY A SET BLCK INTERRUPT DOES NOT BLOCK INTERPT			
656		MRCWG	INTR,101	12	08522	D 02007 00101 P
657		B	N23XIT	7	08534	J 08577
658	RELEASE	MRCWG	INTR,101	12	08541	D 02007 00101 D
659		MU	3F9,FILE,W	10	08553	M 3F9 09891 H
660		BA1	*E1	7	08563	R 08570 M
661		BF	STACHK,L	7	08570	R 03051 L



APR 15 1964

PAGE 217

DA04

CT ADDR INSTRUCTION

7 08577 J 02066

N23

OPCGO OPERAND

MONITR

ROUTINE, RETURN

LABEL

N23XIT

0662

233

234

CT ADDR INSTRUCTION

N24 OPCCO OPERAND

GLIN

2664
 2665
 2666
 2667
 2668
 2669
 2670
 2671
 2672
 2673
 2674
 2675
 2676
 2677
 2678

*** TEST ROUTINE DESCRIPTION ***
 *** TEST WRITE INHIBIT, HAO, WRITE FORMAT SWITCHES ***
 THIS IS RUN ONLY IN THE MANUAL MODE, IT BEGINS BY REQUESTING THAT
 THE HAO, AND WRITE FORMAT SWITCHES BE TURNED OFF. WITH THESE
 SWITCHES OFF A WRITE HAO IS ISSUED AND NOT READY IS CHECKED, IF IT
 IS NOW ON ERROR 54 IS INDICATED. A WRITE FORMAT WITH WDC OP IS
 ISSUED AND EXT COND IS CHECKED, IF IT IS NOT ON ERROR 55 IS INDI-
 CATED. THE ROUTINE REQUESTS THAT THE HAO AND WRITE INHIBIT
 SWITCHES BE TURNED ON. A WRITE CP TRYS TO RE-WRITE A RECORD AND
 READ IT BACK, IF THE RECORD IS WRITTEN ERROR 56 IS INDICATED.

RECORD USED WHEN ATTEMPTING HAO WRITE - HAO SWITCH OFF-
 88123456+

2679
 2680
 2681

FORMAT USED WHEN ATTEMPTING WRITE FORMAT - WRT FMT SWITCH OFF-
 4443333333343333333333341111112

2682
 2683
 2684

RECORD USED WHEN ATTEMPTING WRITE - WRITE INHIBIT SWITCH ON-
 99

2685	N24	NCP	1	08584	N
2686		DC	2	08586	
2687		BCE	12	08587	B 08606 01005 1
2688		B	7	08599	J 08938
2689		B	7	08606	J 01593
2690		DCW	19	08631	
2691		H	1	08633	.
2692		MRCWG	12	08634	D 09662 09891 L
2693		MLCA	12	08646	D 09870 09901 I
2694		MRCWG	12	08658	D 09640 09902 L
2695		SD	10	08670	M 2FO 09891 K
2696		BCB1	7	08680	R 08670 2
2697		BAL	7	08687	R 08694 M
2698		MU	10	08694	M 2F5 09891 W
2699		BCB1	7	08704	R 08694 2

WAIT FOR ACTION
 LOAD FILE ADDR
 LOAD
 DATA FIELD
 POSITION ACCESS
 --16
 *21
 2F5, FILE, W
 --16



238

APR 15 1964

DA04 PAGE 222

N26

CT ADDR INSTRUCTION

OPCOO CPERAND

LABEL

PGLIN

PGLIN	LABEL	OPCOO	CPERAND	CT	ADDR	INSTRUCTION
2800						
2801		***	TEST ROUTINE DESCRIPTION ***			
2802		***	DA04 CONSTANTS ***			
2803	TENCNT	DCW	202	1	09341	
2804	EREG	DCW	2E REG2,G	5	09342	
2805	BREG	DCW	2B REG2,G	5	09348	
2806	BRCHO	B	RESET1	7	09354	J 03554
2807		DCW	2Ma	1	09361	
2808	BRCH1	B	HANG1	7	09362	J 03697
2809		DCW	2Ma	1	09369	
2810	ZERO	DCW	20000002	6	09375	
2811	ALLCHR	DCW	2 R.D HBSS -GTQ LLG 2 .0BTH\$0,L-/.2SSMB#2.TP#ABCDEFGHI.JKLMNOPQR+STUV2	50	09376	
2812		DC	2WXYZ05678912342,G	14	09439	
2813	ACCPES	DC	2ACDR F1D2,G	8	09441	
2814	LNGCNT	DCW	20000002	5	09454	
2815	BRCH2	B	HANG2	7	09455	J 05124
2816		DCW	2Ma	1	09462	
2817	CON1	DCW	DATAFD018	5	09467	09938
2818	BRCH3	B	HANG3	7	09468	J 05564
2819		DCW	2Ma	1	09475	
2820	CHRPES	DCW	2ILLGL CHA2,G	10	09476	
2821	CON2	DCW	DATAFD028	5	09491	09928
2822	HA1	DCW	24443333333333333333333333333342	24	09515	
2823	HA2	DC	21111112	6	09521	
2824	LONGAP	DCW	2222222222222222	12	09533	
2825	RECADR	DC	21111111111111111111111111111122,G	29	09562	
2826	TSTFMT	DCW	244433333333333333333333333333333342,G	37	09564	
2827	TSTFT6	DCW	244411111111111111111111111111111122,G	37	09602	
2828	ALLBIT	DCW	21234568-2,G	8	09640	
2829	BRCH4	B	HANG4	7	09649	J 06338
2830		DCW	2Ma	1	09656	
2831	CON3	DCW	DATAFD016	5	09661	09916
2832	CEADDR	DCW	2009#20882,G	8	09662	
2833	FLAGS	DCW	21245672	6	09671	
2834		DCW	2000102030405060708091011121314151617181920212223242	50	09726	
2835		DC	22 272 303: 334 637 22,G	30	09750	

Handwritten scribbles and markings at the bottom of the page, including a large '3' and various circular patterns.

239

APR 15 1964

DA04 PAGE 223

CT ADDR INSTRUCTION

N26

PGLIN LABEL OPCCO OPERAND

PGLIN	LABEL	OPCCO	OPERAND	CT	ADDR	INSTRUCTION
2836	PRTST	B	GOINT	7	09758	J 08313
2837		DCW	AMG	1	09765	
2838	BLKST	B	BACINT	7	09766	J 08516
2839		DCW	AMG	1	09773	
2840	CODE3	DCW	a a	3	09776	
2841		DCW	23R12	3	09779	
2842		DCW	20X22	3	09782	
2843		DCW	2M332	3	09785	
2844		DCW	2.142	3	09788	
2845	CVRLAP	DCW	a a	3	09791	
2846			22222	3	09794	
2847			22222	3	09797	
2848			22222	3	09800	
2849			22222	3	09803	
2850			LTORG		09804	
2850			222	1	09804	
2850			222	1	09805	
2850			222	1	09806	
2850			222	1	09807	
2850			222	1	09808	
2850			222	1	09809	
2850			20C2092	5	09814	
2850			232	1	09815	
2850			272	1	09816	
2850			20C2372	5	09821	
2850			222	1	09822	
2850			200002	4	09826	
2850			23C2	2	09828	
2850			N26	5	09833	09136
2850			244002	4	09837	
2850			26C2	2	09839	
2850			29#202	4	09843	
2850			2112	2	09845	
2850			2002	2	09847	
2850			277602	4	09851	
2850			2212	2	09853	

240 124

M26

DA04

PAGE 224

APR 15 1964

PGLIN LABEL OPCCO OPERAND

CT ADDR INSTRUCTION

2850			322a	2	09855	
2850			34a	1	09856	
2850			3888a	3	09859	
2850			3888a2	4	09863	
2850			36a	1	09864	
2850			33200a	4	09868	
2850			388a	2	09870	
2850			399a	2	09872	
2850			357a	2	09874	
2850			N01	5	09879	03511
2851		ORG	9891		09891	
2852	FILE	DCW	2009#2088a.G	8	09891	
2853	DATAFD	DCW	a 6	1	09900	
2854		DS	98		09998	
2855		END				

END OF ASSEMBLY

J

6.05.00.0 DA05 MECHANICAL AND HYDRAULIC TEST DESCRIPTION

This test obsoletes DA05 . This test uses an oil warm-up routine before beginning the testing of the access.

The program tests every available module on every channel in an automatic or manual mode. The automatic mode requires no manual intervention and can be run from a Load-and-Go maintenance tape. The manual mode does require intervention and cannot be run unattended.

The program starts by running a five-minute oil warm-up routine; if in manual mode, an additional 20 minutes is run, and then proceeds to test the piston, Lo Glob, and Hi Glob Adders. Ten passes through a worse case seek routine are made, followed by 100 passes through a random seek test. The program now times the three basic seek times with the access being moved from the outside portion of the disk inward to the center. The three basic seek times are checked again with the access being moved from the center of the disk outward toward the edge of the disk. The results of the timing tests are printed on the console and the next available module is tested.

6.05.01.0 OPERATING PROCEDURE

The standard procedures outlined in the package write-up apply to this program. In addition, the following procedures are used to run this program.

01.1 SWITCH SETTINGS PREVIOUS TO RUNNING PROGRAM

- A. Write HAO switch on (on all 7631's to be tested).
- B. *Write Inhibit switch on (on all 7631's to be tested).
- C. All 1301 modules not to be tested are set inoperative.

*NOTE: Write Inhibit switch need only be turned on when running in manual mode.

01.2 SPECIAL REQUESTS (MADE ONLY IN THE MANUAL MODE)**A. "CE-HAO ON"**

CE turns on CE HAO switch and presses start. This request is made if during the random seek test the access fails to position correctly. With the CE-HAO switch on, the HAI is read into memory and displayed on the typewriter.

6.05.01.0 OPERATING PROCEDURE (continued)**B. "ADDR READ, 0000000, CE-HAO OFF"**

The CE turns off the CE-HAO switch and presses start to continue.

01.3 SPECIAL TAD'S

There is one special TAD for this program (memory location 01004). IF THIS TAD IS SET TO "1," the program will run in the manual mode. This TAD is set to "1" when the program is loaded.

01.4 STANDARD OPTIONS

Two of the standard options are not available with this program, they are:

- A. Alter Routine Sequence - option code 3
- B. One Instruction Loop - option code 5

01.5 MANUAL MODE

When the manual mode has been selected, the program:

- A. Runs the oil warm-up routine for a total of 25 minutes.
- B. Requests intervention when access fails to position correctly in the random seek test.

01.6 SUMMARY TYPEOUT

The summary of errors typeout is not available with this program.

6.05.02.0 OPERATING HINTS**02.1 SELECTING MANUAL MODE (ALTER SPECIAL TAD)**

Use program option code 2 (alter memory) to alter special TAD 1 to a 1 or 1. Manual mode should normally be selected during the first five minute warm-up period. Special TAD memory location 01004.

6.05.02.0 OPERATING HINTS (continued)**02.2 POWER ON WARM-UP**

If power has just been brought up, the additional 20 minute warm-up must be run for valid results. To run the extra 20 minute warm-up, select manual mode during the first five minute warm-up.

6.05.03.0 PROGRAM STOPS**03.1 ERROR STOPS**

None

03.2 NORMAL STOPS (MANUAL MODE ONLY)**Memory Loc.****Reason**

5071
53

Wait for CE to turn on CE-HAO switch and press start.

5148
56

Wait for CE to turn off CE-HAO switch and press start.

6.05.04.0 TYPEOUTS (OTHER THAN REQUEST OR STANDARD TYPEOUTS)**04.1 "AUTO MODE, HAO SWITCH ON"**

This is to remind the CE that this program runs in automatic mode when loaded and that the HAO switch on the 7631 must be on.

04.2 "TST MOD 0 CH 0"

This tells the CE which module on which channel is being tested at present.

04.3 "BEGINNING 5 MINUTE WARM-UP"

"BEGIN 20 MINUTE WARM-UP"*

"WARM-UP COMPLETE TEST BEGINNING"

These typeouts are simply reference points to let the CE know where he is at.

*NOTE: The 20 minute message is given only when running in manual mode.

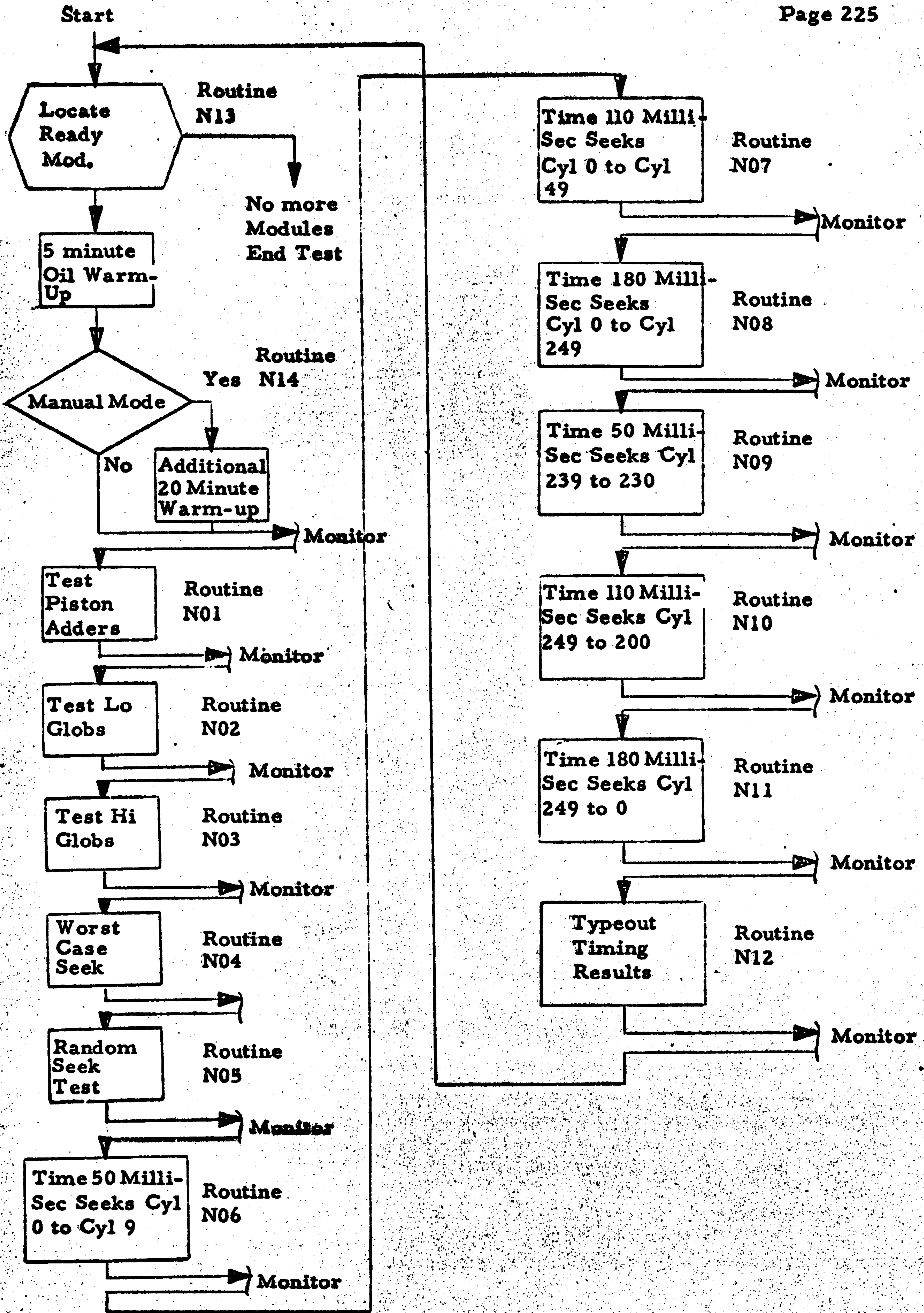
6.05.04.0 TYPEOUTS (continued)

04.4 Seek time results are typed in the following table after all the timings have been made.

Seek -	<u>From</u>	<u>To</u>	Time - <u>Was</u>	<u>Should be</u>	In MSEC
	0000	0360		50	
	0000	1960		110	
	0000	9960		185	
	8760	8400		50	
	9960	8000		110	
	9960	0000		185	

6.05.05.0 FLOW CHART

The following flow chart is designed to give a general picture of the test routine's relationship to one another.



6.05.06.0 ROUTINE/ERROR INDEX DA05

This index should be used to locate routines and errors in the program listing.

<u>Routine Number</u>	<u>Error Number</u>	<u>Page</u>
N01	02	248
	04	249
N02	06	250
	08	251
N03	10	252
	12	252
N04	14	254
N05	16	255
N06		257
N07		258
N08		259
N09		260
N10		261
N11		262
N12		263
N13		264
N14		266

DAOP

CT ADDR INSTRUCTION

L/D DICOST DEFINE TADS

OPCOD OPERAND

PGLIN LABEL

1002 CTL 2

1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1015
1016
1017
1018
1019
1020
1021
1022
1023

ORG 1000

DCW 2 2

2 2

2 2

2 2

DEFINE STANDARD TADS

TAD0
TAD1
TAD2
TAD3

DEFINE SPECIAL TADS

SPTAD0
SPTAD1
SPTAD2
SPTAD3
SPTAD4
SPTAD5
SPTAD7
SPTAD8
SPTAD9

DCW 2 2
2 2
2 2
2 2
2 2
2 2
2 2
2 2
2 2

01000
1 01000
1 01001
1 01002
1 01003

1 01004
1 01005
1 01006
1 01007
1 01008
1 01009
1 01010
1 01011
1 01012

I/O DICOST ONE INSTRUCTION LOOP

CT ADDR INSTRUCTION

PGLIN LABEL

OPCOD OPERAND

```

1025      *** I/O DICOST PROGRAM ***
1026      *** ONE INSTRUCTION LOOP ROUTINE ***
1027      WHEN THE CB SELECTS A ONE INSTRUCTION LOOP THE I/O INSTRUCTION
1028      IN THIS ROUTINE IS ALTERED AND THE LOOP IS ENTERED. NOTE THAT THE
1029      BRANCH ON INQUIRY INSTRUCTION IS THE ONLY EXIT FROM THE LOOP.
1030      LOOP      MU      X11,0,R      I/O INST BEING LUP D      20 01013 M X11 00000 R
1031      6A1      *61
1032      BNQ      PRGCTL      BRCH ON INQ TO PRGCL
1033      B        LOOP      CONTINUE TO LOOP
1034      H
1035

```

```

7 01023 R 01030 M
7 01030 J 02238 Q
7 01037 J 01013
1 01044 .

```


I/O DICOST CHANNEL ALTER

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1037			*** I/O DICOST PROGRAM ***			
1038			*** CHANNEL ALTER ROUTINE ***			
1039			THIS ROUTINE ALTERS ALL I/O INSTRUCTIONS, BRANCH-ON-STATUS-			
1040			INDICATOR-ON INSTRUCTIONS, AND BRANCH ON CHANNEL OVERLAP IN PRO-			
1041			CESS INSTRUCTIONS ACCORDING TO THE CHANNEL INDICATED. THIS IS DONE			
1042			BY SCANNING A DEFINED AREA OF MEMORY AND ALTERING THESE INSTRU-			
1043			CTIONS.			
1044						
1045	CHALTR	SBR	X5	7	01045	G 00049 B
1046		MLCA	06X5, X7	12	01052	D 00409 00059 I
1047	SCAN	SCNLA	06X6, 06X6	12	01064	D 00400 00400 B
1048		SAR	X6	7	01076	G 00054 A
1049		C	X6, X7	11	01083	C 00054 00059
1050		BH	136X5	7	01094	J 00403 U
1051		MLCS	16X6, *612	12	01101	D 00401 01124 3
1052		BCE	MLORU, CODES,	12	01113	B 01149 02563
1053		BCE		1	01125	B
1054		BCE		1	01126	B
1055		BCE	RX30R1	6	01127	B 01168
1056		BCE		1	01133	B
1057		BCE		1	01134	B
1058		BCE		1	01135	B
1059		BCE	JAY	6	01136	B 01187
1060		B	SCAN	7	01142	J 01064
1061	MLORU	MLCS	106X5, 26X6	12	01149	D 00400 00402 3
1062		B	SCAN	7	01161	J 01064
1063	RX30R1	MLCS	116X5, 16X6	12	01168	D 00401 00401 3
1064		B	SCAN	7	01180	J 01064
1065	JAY	MLCS	76X6, *612	12	01187	D 00407 01210 3
1066		BCE	ONE234, MODS,	12	01199	B 01221 02567
1067		BCE		1	01211	B
1068		BCE		1	01212	B
1069		BCE		1	01213	B
1070		B	SCAN	7	01214	J 01064
1071	ONE234	MLCS	126X5, 76X6	12	01221	D 00402 00407 3
1072		B	SCAN	7	01233	J 01064

*** I/O DICOST PROGRAM ***

*** CHANNEL ALTER ROUTINE ***

THIS ROUTINE ALTERS ALL I/O INSTRUCTIONS, BRANCH-ON-STATUS-INDICATOR-ON INSTRUCTIONS, AND BRANCH ON CHANNEL OVERLAP IN PRO-CESS INSTRUCTIONS ACCORDING TO THE CHANNEL INDICATED. THIS IS DONE BY SCANNING A DEFINED AREA OF MEMORY AND ALTERING THESE INSTRUCTIONS.

I/O DICOST CHANNEL ALTER

CT ADDR INSTRUCTION

PGLIN LABEL

OPCOD OPERAND

H 1 01240 .

DEFINE SYSTEM & CHANNEL CONTROL CARDS

1073
1074
1075
1076
1077
1078
1079
1080

ORG 1233
DCM @FN2FJRFJZFI305+9@

DEFINE PROGRAM TITLE

1081
1082
1083
1084
1085

ORG 1250
DCM @DA05Ca.G

LOCATE THE SYSTEM & CHANNEL CARDS

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1086						
1087						
1088	SYSTEM	ORG	1256			01256
1089		DC	@	@	50	01256
1090			@	@	7	01312
1091		ORG	1289			01289
1092	CHNL1	DC	@	@	50	01289
1093			@	@	7	01345
1094		ORG	1346			01346
1095		DC	@	@	50	01346
1096			@	@	7	01402
1097		ORG	1403			01403
1098	CHNL3	DC	@	@	50	01403
1099			@	@	7	01459
1100		ORG	1460			01460
1101	CHNL4	DC	@	@	50	01460
1102			@	@	7	01516
1103						

PT ADDR INSTRUCTION

L/O DICOST TYPE
OPCOD OPERAND

PGLIN LABEL

1105 *** L/O DICOST PROGRAM ***
 1106 *** TYPE AND REQUEST FOR INTERVENTION ***
 1107 THIS ROUTINE IS USED TO TYPE ALL MESSAGES AND REQUESTS FOR
 1108 MANUAL INTERVENTION.THE ROUTINE WILL TYPE A MESSAGE FROM A COMMON
 1109 DATA FIELD,OR THE MESSAGE MAY BE LOCATED IMMEDIATELY AFTER THE
 1110 BRANCH INSTRUCTION TO THIS ROUTINE.IF A REPLY IS REQUIRED A READ
 1111 CONSOLE PRINTER OPERATION IS ISSUED.THIS ROUTINE IS USED TO TYPE
 1112 ALL MESSAGES IN THIS PROGRAM.

PGLIN	LABEL	OPCOD	OPERAND	L/O DICOST TYPE	PT	ADDR	INSTRUCTION
1105				*** L/O DICOST PROGRAM ***			
1106				*** TYPE AND REQUEST FOR INTERVENTION ***			
1107				THIS ROUTINE IS USED TO TYPE ALL MESSAGES AND REQUESTS FOR			
1108				MANUAL INTERVENTION.THE ROUTINE WILL TYPE A MESSAGE FROM A COMMON			
1109				DATA FIELD,OR THE MESSAGE MAY BE LOCATED IMMEDIATELY AFTER THE			
1110				BRANCH INSTRUCTION TO THIS ROUTINE.IF A REPLY IS REQUIRED A READ			
1111				CONSOLE PRINTER OPERATION IS ISSUED.THIS ROUTINE IS USED TO TYPE			
1112				ALL MESSAGES IN THIS PROGRAM.			
1113							
1114		SBR	TYPXIT63	STORE RETURN ADDR	7	01517	G 01591 B
1115		WCP	Z01	TYPE MESSAGE	10	01524	M ZT0 00201 M
1116		BCB1	TYPE	BRCH BUSY	7	01534	R 01524 Z G
1117		BA1	061		7	01541	R 01548 M
1118	SW11	NOPMH			1	01548	M
1119	LAB60	RCP	0	READ CONSOLE PRINTER	10	01549	M ZT0 00000 R
1120		BEX1	0-16,M	BRCH ON ANY BUT WLR	7	01559	R 01549 M G
1121		BA1	061		7	01566	R 01573 M
1122		CN	SW1161	TURN OFF SWITCH 11	6	01573	M 01549
1123		CS	330	CLEAR PRINT AREA	6	01579	/ 00330
1124		CS			1	01585	/
1125		B	0	RETURN TO DICOST	7	01586	J 00000
1126		SBR	X1	STORE ADDR OF MESSG	7	01593	G 00029 B
1127		B	0614		7	01600	J 01620
1128		SBR	X1	STORE ADDR OF MESSG	7	01607	G 00029 B
1129		SM	REPLY61	TURN ON REPLY SW	6	01614	, 01652
1130		WCP	06X1	TYPE MESSAGE	10	01620	M ZT0 00040 M
1131		SBR	X1	STORE RETURN ADDR	7	01630	Q 00029 B
1132		BCB1	0-23		7	01637	R 01620 Z G
1133		BA1	061		7	01644	R 01651 M
1134		NOPMH		BRCH	1	01651	N
1135		B	RDCON	IF REPLY REQUIRED	7	01652	J 01666
1136		B	06X1	RETURN	7	01659	J 00040
1137		RCP	06X1	REPLY TO MESSG	10	01666	M ZT0 00040 R
1138		SBR	X1	STORE RETURN ADDR	7	01676	G 00029 B S
1139		BEX1	0-23,M	BRCH ON ANY BUT WLR	7	01683	R 01666 M G
1140		BA1	061		7	01690	R 01697 M

L/O DICOST TYPE

OPCODE OPERAND

PGLIN LABEL

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1141		CW	REPLY61	6	01697	01652
1142		B	06X1	7	01703	J 00000
1143	DATA	MLCWS	2NA,PASS1	12	01710	D 06868 01944 7
1144		BCE	0E13,1264,1	12	01722	B 01746 01264 1
1145		MLCWS	2NA,MONITR67	12	01734	D 06868 02073 7
1146		MRCWG	0E9,1230	12	01746	D 01766 01230 L
1147		B	PASS167	7	01758	J 01951
1148		H		1	01765	.
1149		DG	0.732	3	01768	
1150		DCW	0J2	1	01769	
1151		DC	SCAN	5	01774	01964
1152		DC	0 2	1	01775	
1153		DCW	0.2.G	1	01776	
1154		DS	12		01789	

RETURN

RESET FIRST PASS INST

BRCH IF PRIORITY AVAILABLE

ALTER PRIORITY INST TO NO-OP

RESTORE CHANNEL ALTER ROUTINE

*** ERROR TABLES THESE ARE USED FOR ERROR ***

*** SUMMARIES AND ERROR IDENTIFICATION ***

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1156		ORG	06X00		01800	
1157		ORG	061		01801	
1158	STPTAB	DCW	0L2	1	01801	
1159	E1	DC	0 2	1	01802	
1160	E2		0 2	1	01803	
1161	E3		0 2	1	01804	
1162	E4		0 2	1	01805	
1163	E5		0 2	1	01806	
1164	E6		0 2	1	01807	
1165	E7		0 2	1	01808	
1166	E8		0 2	1	01809	
1167	E9		0 2	1	01810	
1168	E10		0 2	1	01811	
1169	E11		0 2	1	01812	
1170	E12		0 2	1	01813	
1171	E13		0 2	1	01814	
1172	E14		0 2	1	01815	
1173	E15		0 2	1	01816	

DA05

CT ADDR\$ INSTRUCTION

L/O DICOST TYPE

DPCOD OPERAND

PGLIN LABEL

PGLIN	LABEL	DPCOD	OPERAND	CT	ADDR\$	INSTRUCTION
1177	E16		2 2	1	01817	
1178	E17		2 2	1	01818	
1179	E18		2 2	1	01819	
1180	E19		0 2	1	01820	
1181	E20		2 2	1	01821	
1182	E21		2 2	1	01822	
1183	E22		2 2	1	01823	
1184	E23		2 2	1	01824	
1185	E24		2 2	1	01825	
1186	E25	DC	2 2	1	01826	
1187	E26	DC	2 2	1	01827	
1188	E27		2 2	1	01828	
1189	E28		2 2	1	01829	
1190	E29		2 2	1	01830	
1191	E30		2 2	1	01831	
1192	E31		2 2	1	01832	
1193	E32		2 2	1	01833	
1194	E33		2 2	1	01834	
1195	E34		2 2	1	01835	
1196	E35		2 2	1	01836	
1197	E36		2 2	1	01837	
1198	E37		2 2	1	01838	
1199	E38		0 2	1	01839	
1200	E39		2 2	1	01840	
1201	E40		2 2	1	01841	
1202	E41		0 2	1	01842	
1203	E42		2 2	1	01843	
1204	E43		2 2	1	01844	
1205	E44		2 2	1	01845	
1206	E45		0 2	1	01846	
1207	E46		2 2	1	01847	
1208	E47		2 2	1	01848	
1209	E48		2 2	1	01849	
1210	E49		2 2	1	01850	
1211	E50		2 2	1	01851	
1212	E51	DC	2 2	1	01852	

DA01 INSTRUCTION

I/O DICO ST TYPE

OPCOD OPERAND

LABEL

PGLIN

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1213	E52		B 2	1	01853	
1214	E53		B 2	1	01854	
1215	E54		B 2	1	01855	
1216	E55		B 2	1	01856	
1217	E56		B 2	1	01857	
1218	ERRTAB	DC	B+2	1	01858	
1219		DC	B 2	1	01859	
1220						

L/O DICOST INITIALIZE ROUTINE

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1222			*** INITIALIZE ROUTINE FOR THE DICOST PROGRAM ***			
1223	INITLE	WCP	1250	10	01860	M XTO 01250 M
1224		BCBL	0-16	7	01870	R 01860 Z
1225		BAI	061	7	01877	R 01884 M
1226		CS	09	6	01884	/ 00099
1227		SM	25	6	01890	. 00025
1228		MLCS	0+0,100	12	01896	D 06869 00100
1229		HRWR	25,30	12	01908	D 00025 00030
1230		HRCWG	RESUME,1	12	01920	D 02015 00001
1231		HRCWG	INTR,101	12	01932	D 02007 00101
1232	PASS1	B	DATA	7	01944	J 01710
1233		CW	LPRT,SW1161	11	01951	D 02575 01549
1234		CS	E56	6	01962	/ 01857
1235		MLCWS	0L0,STPTAB	12	01968	D 06870 01801
1236		B	START	7	01980	J 03377
1237		H		1	01987	.
1238		ORG	2000		02000	
1239		B	INITLE	7	02000	J 01860
1241			*** RESET & INTERRUPT ROUTINES, THESE ROUTINES ***			
1242			*** ARE MOVED TO LOCATIONS 1 & 101			
1243	INTR	BNQ	PRGCTL	7	02007	J 02238 Q
1244		DCW	0M0	1	02014	
1245	RESUME	B	CKLUP	7	02015	J 02023
1246		DCW	0M0	1	02022	
1247	CKLUP	BN	MONITR,LPRT	12	02023	V 02066 02575 1
1248		BN	LOOP,LPINST	12	02035	V 01013 02576 1
1249		MLNA	X3,X2	12	02047	D 00039 00034 /
1250		B	MONITR07	7	02059	J 02073
1251						

PRINT TITLE

RESET IND REG S

SET WM IN IND REG 1

PREPARE TO LOAD 2-15

LOAD IND REG 2-15

MOVE RESET PROCEDURE

MOVE INTERRUPT PROC

GO DO MORE INITIALIZING

CLEAR AND RESET

ERROR TABLE

GO TO ROUTINE INIT.

RETURN TO PROG CNTRL

CHECK FOR LOOP ROUT

CHECK INST LOOP SM

LOAD IX 2

GO TO MONITR

L/O DICOST MONITOR

CT ADDR INSTRUCTION

1253 *** I/O DICOST PROGRAM ***

1254 *** MONITOR ROUTINE ***

1255 THE MONITOR IS ENTERED AFTER EVERY TEST ROUTINE IS COMPLETED, OR
1256 A STATUS ERROR HAS BEEN DETECTED AND INDICATED. IN THE CASE OF A
1257 STATUS ERROR MONITOR SIMPLY BRANCHES BACK TO THE POINT AT WHICH
1258 THE STATUS ERROR WAS DETECTED. WHEN ENTERED FROM THE END OF A
1259 TEST ROUTINE MONITOR CHECKS TO SEE IF THE CE PRESSED INQUIRY, THE
1260 ROUTINE IS BEING LOOPEL, ANY ERRORS OCCURED, ALTER ROUTINE SEQUENCE
1261 IS SELECTED, OR THE NEXT SEQUENTIAL ROUTINE SHOULD BE RUN.

1262 MONITR SBR X2 STORE ADDR

1263 BXPA *61 EXIT ALERT MODE

1264 BNQ PRGCTL WAS THERE AN INQ

1265 BW 06X3,LPRT RETURN IF LOOPING RT

1266 MLCWS 2M2,224 SET WMGM SHORT MMSG

1267 B ERRCTL

1268 NOP

1269 MLCWA X2,X3 LOAD IX3

1270 MLCWS 0 2,224 CLEAR WMGM

1271 B 06X2 GO TO NEXT ROUTINE

1272 MLCWS 2 2,224 CLEAR WMGM

1273 BCE *68,06X2,N BRCH IF ROUT COMP

1274 B 06X2 RETURN TO ROUTINE

1275 BZN *68,16X2,2 BRCH IF CHAR IS NUMR

1276 B 06X2 RETURN TO ROUTINE

1277 BZN *68,26X2,2 BRCH IF CHAR IS NUMR

1278 B 06X2 RETURN TO ROUTINE

1279 BW MONIT3,36X2 BRCH IF CHAR HAS WH

1280 B 06X2 RETURN TO ROUTINE

7 02066 G 00034 B
7 02073 Y 02080 X
7 02080 J 02238 Q
12 02087 V 000M0 02575 I
12 02099 D 06871 00224 7
7 02111 J 02635
1 02118 N
12 02119 D 00034 00039 X
12 02131 D 06872 00224 7
7 02143 J 000.0
12 02150 D 06872 00224 7
12 02162 B 02181 000.0 N
7 02174 J 000.0
12 02181 V 02200 000.1 2
7 02193 J 000.0
12 02200 V 02219 000.2 2
7 02212 J 000.0
12 02219 V 02118 000.3 1
7 02231 J 000.0

I/O DICOST PROGRAM CONTROL

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

1284 *** I/O DICOST PROGRAM ***
 1285 *** PROGRAM CONTROL ***
 1286 WHEN THE CB PRESSES INQUIRY TO SELECT A STANDARD PROGRAM OPTION
 1287 THIS ROUTINE IS ENTERED. THE CE ENTERS ON THE TYPEWRITER THE
 1288 OPTION CODE DESIRED, ALONG WITH THE DATA NEEDED BY THE OPTION. THE
 1289 ROUTINE DETERMINES WHICH OPTION HAS BEEN SELECTED AND INITIATES
 1290 THE OPTION.

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1291						
1292	PRGCTL	RCPW	CTFLD	10	02238	L XTO 00201 R
1293		SBR	XI	7	02248	G 00029 B
1294		BEX1	PRGCTL, S	7	02255	R 02238 M
1295		SM	CTFLD&1	6	02262	0 00202 G
1296		BAL	&E1	7	02268	R 02275 M
1297		CH	LPRT, LPINST	11	02275	B 02575 02576
1298		MLWS	&E1	12	02286	D 02297 01802 A
1299		MRWR	E1, E2	12	02298	D 01802 01803 X
1300		MLCS	CTFLD, &E12	12	02310	D 00201 02333 3
1301		BCE	ENDTST, CTLCOD,	12	02322	B 06576 02574
1302		BCE	ALTADS	6	02334	B 02377
1303		BCE	ALTMEM	6	02340	B 02400
1304		BCE	LUPRT	6	02346	B 02459
1305		BCE	ONELUP	6	02352	B 02488
1306		BCE	RSTART	6	02358	B 02522
1307		BCE	CONT	6	02364	B 02545
1308		B	PRGCTL	7	02370	J 02238
1309	ALTADS	MLCA	CTFLD&4, 1003	12	02377	D 00205 01003 T
1310		CS	MONIT1, 299	11	02389	/ 02087 00299
1311	ALTMEM	MLCA	CTFLD&5, &E9	12	02400	D 00206 02420 T
1312		RCPW	0	10	02412	L XTO 00000 R
1313		BEX1	&E16, M	7	02422	R 02412 M
1314		BAL	&E1	7	02429	R 02436 M
1315		CS	MONIT1, 299	11	02436	/ 02087 00299
1316	ALTSEQ	MLCWS	&M&, &E&X1	12	02447	D 06871 00040 7
1317	LUPRT	SW	LPRT	6	02459	0 02575
1318		MLNA	CTFLD&5, X2	12	02465	D 00206 00034 /
1319		CS	MONIT2, 299	11	02477	/ 02099 00299

READ THE CONSOLE PRT

BRCH ON ANY BUT WLR

TURN OFF LOOP SMS

CLEAR WM IN ERROR

TABLE

MOVE CTL CODE ENTERD

IS CTL CODE BLANK

IS CTL CODE 1

IS CTL CODE 2

IS CTL CODE 4

IS CTL CODE 5

IS CTL CODE 6

IS CTL CODE 7

MOVE IN NEW TADS

CLEAR OUT CTL FLD

MOVE ADDR TO BE ALTR

ALTER MEMORY

CHECK ALL BUT WLR

CLEAR THE CNTRL FLD

SET WMGH AT END

TURN ON LOOP SWITCH

LOAD IND REG2

CLEAR CNTRL FLD

I/O DICOST PROGRAM CONTROL

PGLIN	LABEL	DPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1320	QNELUP	SW	LPINST	6	02488	02576
1321	LUPINT	NOPWM		1	02494	N
1322		B	068	7	02495	J 02509
1323		B	PREP	7	02502	J 06607
1324		CH	LUPINT&1	6	02509	02495
1325		B	LOOP	7	02515	J 01013
1326	RSTART	MLNA	CTLFLD&5,X2	12	02522	D 00206 00034 /
1327		CS	MONIT2,299	11	02534	/ 02099 00299
1328	CONT	CS	WHERE2,299	11	02545	/ 02150 00299
1329						
1330						

I/O DICOST CONSTANTS

PGLIN	LABEL	DPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1331	CODES	DCW	0J13XRULM0	8	02563	
1332	MOOS	DCW	043210	4	02567	
1333		DCW	070	1	02568	
1334		DC	060	1	02569	
1335			050	1	02570	
1336			040	1	02571	
1337			020	1	02572	
1338			010	1	02573	
1339	CTLCOO		0 0	1	02574	
1340	LPRT	DC	0 0	1	02575	
1341	LPINST	DC	0 0	1	02576	
1342	ADDR02	DCW	ERRTAB	5	02581	01858
1343	ERR	DCW	0+ERROR0	6	02587	
1344	ACTION	DC	0REQ ERROR ACTION0,G	16	02588	
1345	ERCODE	DCW	0347P0	4	02600	
1346	SAVIND	DCW	01 2 4 8 A B0,G	11	02609	
1347	STIND	DC	01 2 4 8 A B0,G	11	02621	
1348	MBERSW	DC	0 0	2	02633	
1349						



PGM LN	LABEL	L/O DICOST ERROR CONTROL	OPCOD	OPERAND	CT	ADDR\$	INSTRUCTION
--------	-------	--------------------------	-------	---------	----	--------	-------------

1351 *** I/O DICOST PROGRAM ***

1352 *** ERROR CONTROL ***

1353 THIS ROUTINE DETERMINES IF ANY STATUS ERRORS OR PROGRAM DETECT-
 1354 ED ERRORS HAVE TO BE INDICATED, IF THERE ARE THIS ROUTINE BUILDS
 1355 THE ERROR MESSAGE AND HAS IF TYPED OUT. THIS ROUTINE ALSO CHECKS
 1356 TAD I TO SEE IF A REQUEST FOR ERROR ACTION SHOULD BE MADE.

LOCATE FAILING INST

1360	ERRCTL	MLCA	X2,X5	LOAD IND REG 5	12	02635	D 00034 00049 T
1361		S	010,X5		11	02647	S 06873 00049 S
1362		SCNLA	00X5,00X5	SCAN THE ROUTINE	12	02658	D 00+00 00+00 B
1363		SAR	X5	STORE CHAR ADDR	7	02670	G 00049 A
1364		MLCS	10X5,0012	MOVE CHAR TO BE CHKD	12	02677	D 00+01 02700 3
1365		BCE	GOTONE, CODES,	IS OP CODE M	12	02689	B 02733 02563
1366		BCE		IS OP CODE L	1	02701	B
1367		BCE	SHORT1	IS OP CODE U	6	02702	B 02752
1368		C	X3,X5	HAS ROUTINE BEEN	11	02708	C 00039 00049
1369		BL	LODFLO	SEARCHED	7	02719	J 02776 T
1370		B	ERRCTL012	GO CONTINUE THE SRCH	7	02726	J 02647
1371	GOTONE	MLCWA	100X5, LOOP09	LOAD THE LOOP INST	12	02733	D 00+00 01022 X
1372		B	LODFLO		7	02745	J 02776
1373	SHORT1	MLCWA	50X5, LOOP09	LOAD THE LOOP INST	12	02752	D 00+05 01022 X
1374		MCS	0002, LOOP	SET NO-OP FOR SHORT	12	02764	D 06868 01013 3

INSTRUCTION

1375							
1376	LODFLO	MLCA	00009,234	MOVE FAILING OPER	12	02776	D 01022 00234 T
1377		MLNA	X3,223	MOVE ADDR OF ROUT	12	02788	D 00039 00223 /
1378		ZA	ADDR02,X1	LOAD IND REG 1	11	02800	H 02581 00029
1379		ZA	0002090,X5	LOAD IND REG 5	11	02811	H 06878 00049
1380				SCAN ERROR TABLE 6 UPDATA ERROR COUNT			
1381	ERSCAN	SCNLA	00X1,00X1	SCAN THE ERROR TABLE	12	02822	D 00000 000+0 B
1382		SAR	X1	STORE ADDR	7	02834	G 00029 A
1383		BCE	AFTSRH,10X1,L	HAS TABLE BEEN COMP.	12	02841	B 02900 000+1 L
1384		SN	X1-1	DEFINE ERROR	6	02853	, 00028
1385		MLNWA	X1,00X5	MOVE ERROR CODE NO.	12	02859	D 00029 00+00 V
1386		A	000,X5	UPDATE IND REG 5	11	02871	A 06879 00049

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1387						NINE TIMES
1388		CW	1&X1,X1-1	11	02882	00041 00028
1389		B	ERSCAN	7	02893	J 02822
1390			LOAD PRINT FIELD WITH ERROR MSG			
1391	AFISRH	BCE	WHERE2,1000,1	12	02900	B 02150 01000 1
1392	ERROSH	NOP		1	02912	N
1393		BCE	WHERE2,209	12	02913	B 02150 00209
1394		SW	BRROSWE1	6	02925	, 02913
1395		MLCA	ERR,206	12	02931	D 02587 00206 T
1396		MLCA	2&X3,ROUTID	12	02943	D 000M2 02972 T
1397		B	TYPI	7	02955	J 01593
1398		DCW	ROUTINE @	8	02969	
1399		DC	B @.G	3	02972	
1400		B	TYMES	7	02974	J 01517
1401			TYPE ADDITIONAL ERROR INFORMATION			
1402	EXTRA	NOPWM		1	02981	N
1403		WCP	DATA	10	02982	M 370 01710 W
1404		BCB1	P-16	7	02992	R 02982 2
1405		BA1	061	7	02999	R 03006 M
1406		CW	EXTRA&1	6	03006	02982
1407	ACT	BCE	068,1001,1	12	03012	B 03031 01001 1
1408		B	WHEREZ	7	03024	J 02150
1409		SW	LUPINT&1	6	03031	, 02495
1410		MRCWG	ACTION,201	12	03037	D 02586 00201 0
1411		B	TYMES	7	03049	J 01517
1412		B	PRGCTL	7	03056	J 02238

*** I/O DICOST PROGRAM ***

*** DETERMINE WHICH STATUS INDICATORS ARE ON ***

THIS ROUTINE DETERMINES WHICH STATUS INDICATORS ARE ON, ON THE CHANNEL BEING USED. THE INDICATORS FOUND ON ARE STORED IN THE PRINT FIELD AND THE PROGRAM BRANCHES TO ERROR CONTROL.

STACHK SBR X5 STORE ADDR IN IND 5

SBR X2

BW 06X2,LPRT

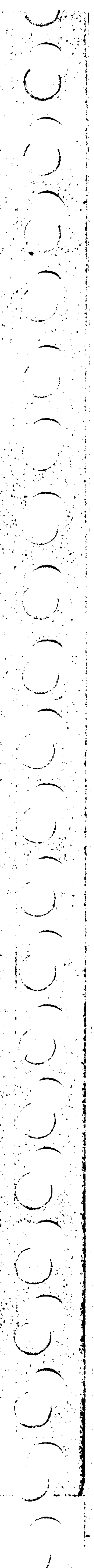
S 070,X5 REDUCE ADDR BY 7

7 03063 G 00049 B

7 03070 G 00034 B

12 03077 V 00050 02575 1

11 03089 S 06880 00049



I/O DICOST ERROR CONTROL

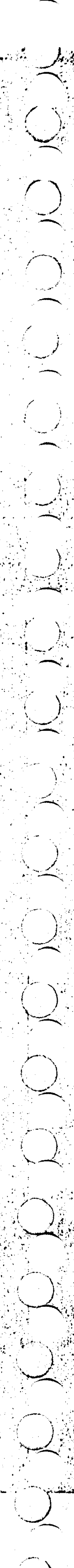
PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1423		MLCS	0EX5,LC0P610	12	03100	D 00+0 01023 3
1424		MRCNG	STIND,237	12	03112	D 02621 00237 L
1425		MLCS	0EX5,NUOPCO	12	03124	D 00+0 03154 3
1426		B	CHALTR	7	03136	J 01045
1427		DCM	CNTERR	5	03147	03309
1428		DC	NOTRDY	5	03152	03167
1429		OGW	B B	1	03153	
1430	NUOPCO	DC	B B	1	03154	
1431		DC	B B	1	03155	
1432		ZA	2002372,X5	11	03156	H 06885 00049
1433	NOTRDY	NOP		1	03167	N
1434		BNR1	CNTERR	7	03168	R 03309 1
1435		B	UPIX	7	03175	J 03340
1436	BUSY	NOP		1	03182	N
1437		BCB1	CNTERR	7	03183	R 03309 2
1438		B	UPIX	7	03190	J 03340
1439	BATAOK	NOP		1	03197	N
1440		BER1	CNTERR	7	03198	R 03309 4
1441		B	UPIX	7	03205	J 03340
1442	EXTCND	NOP		1	03212	N
1443		BEF1	CNTERR	7	03213	R 03309 8
1444		B	UPIX	7	03220	J 03340
1445	NOTRNS	NOP		1	03227	N
1446		BNT1	CNTERR	7	03228	R 03309 8
1447		B	UPIX	7	03235	J 03340
1448	MLR	NOP		1	03242	N
1449		BML1	CNTERR	7	03243	R 03309 -
1450		B	UPIX	7	03250	J 03340
1451		SW	NOTRDY&1,BUSY&1	11	03257	, 03168 03183
1452		SW	DATACK&1,EXTCND&1	11	03268	, 03198 03213
1453		SW	NOTRNS&1,MLR&1	11	03279	, 03228 03243
1454		MRCG	237,SAVIND	12	03290	D 00237 02609 8
1455		B	ERRCTL	7	03302	J 02635
1456	CNTERR	SBR	X6	7	03309	G 00054 B
1457		A	072,X6	11	03316	A 06880 00054
1458		CW	BRROSH&1	6	03327	P 02913

241

I/O DICOST ERROR CONTROL

PCLLN	LABEL	ORCOD	OPERAND	CT	ADDRS	INSTRUCTION	DAYS
1459		B	UPIXC19	7	03333	J 03359	
1460	UPIK	SBR	X6	7	03340	G 00054 B	
1461		MLCS	B 0.06X5	12	03347	D 06872 00+0 3	
1462		A	020.X5	11	03359	A 06886 00049	
1463		B	06X6	7	03370	J 000.0	
1464							

STORE RETURN ADDR
 REMOVE STATUS CHAR
 UPDATE IND REG 5
 RETURN TO PROGRAM



263

PAGE 243

DA05

BT ADDR5 INSTRUCTION

I/O DICOST SEQUENCE CONTROL

OPCOD OPERAND

LABEL

PCLIN

1406	CILFLO	EQU	201
1407		PST	

INITIALIZE FOR DA05

CT ADDR INSTRUCTION

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDR	INSTRUCTION
1469			*** TEST ROUTINE DESCRIPTION ***			
1470			*** INITIALIZE COUNTERS & DELAY CONSTANTS ***			
1471	START	SH	ADDR00E1	6	03377	S 06677
1472		CH	COLD5W61	6	03383	R 03878
1473		S	LNGCHT	6	03389	S 04840
1474		S	WARMCT	6	03395	S 06839
1475		S	TIMCNT	6	03401	S 04834
1476		S	LOOPTI	6	03407	S 04828
1477		S	CORR	6	03413	S 06836
1478		S	COUNT	6	03419	S 06825
1479		S	RUTCNT	6	03425	S 06814
1480		ZA	2013082,X10	11	03431	M 06891 00074
1481		ZA	2000002,X15	11	03442	M 06896 00099
1482		BCE	C1410,1256,0	12	03453	B 03539 01256 0
1483		BCE	C14101,1256,1	12	03465	B 03508 01256 1
1484	C7010	MLCA	LOOPX,LOOPTI	12	03477	D 06855 06828 T
1485		MLCA	CORRX,CORR	12	03489	D 06857 06836 T
1486		B	GETSET	7	03501	J 03563
1487	C14101	MLCA	CORRI,CORR	12	03508	D 06862 06836 T
1488		MLCA	LOOPTI,LOOPTI	12	03520	D 06860 06828 T
1489		B	GETSET	7	03532	J 03563
1490	C1410	MLCA	CORRO,CORR	12	03539	D 06867 06836 T
1491		MLCA	LOOPTI,LOOPTI	12	03551	D 06865 06828 T
1492	GETSET	B	TYPE1	7	03563	J 01593
1493		DCV	2AUTO MODE,HAO SWITCH ON2,G	23	03592	
1494		WCP	BLANK	10	03594	M 210 06818 W
1495		BAL	0E1	7	03604	R 03611 M
1496	TIMBIT	WCP	BLANK	10	03611	M 210 06818 W
1497		BAL	0E1	7	03621	R 03628 M
1498		BCBI	0E8	7	03628	R 03642 2
1499		B	GETEST	7	03635	J 03660
1500		A	203152,TOTIME	11	03642	A 06900 06823
1501		B	TIMEIT	7	03653	J 03611
1502	GETEST	ZA	M13,X3	11	03660	M 06348 00039
1503		B	M13610	7	03671	J 06358
1504						



WARM UP HYDRAULIC OIL

CT ADDR INSTRUCTION

PGLIN

LABEL

OPCOD OPERAND

1506 *** TEST ROUTINE DESCRIPTION ***

1507 *** WARM UP HYDRAULIC OIL ***

1508 THIS ROUTINE OPERATES THE ACCESS FOR 5 MINUTES IN ORDER TO
1509 INSURE THAT THE OIL IS AT 105 DEGREES TEMPERATURE SO THAT THE SEEK
1510 TIMINGS MAY BE MADE USING THE FAST OSCILATOR.A MESSAGE INDICATES
1511 THE BEGINING AND END OF THE WARMUP PERIOD,IF POWER HAS JUST BEEN
1512 BROUGHT UP ON THE 1301 AN ADDITIONAL 20 MINUTE WARMUP PERIOD
1513 SHOULD BE TAKEN.THIS ADDITIONAL WARM-UP MAY BE SELECTED BY ALTER-
1514 ENG SPECIAL TAD 0,LOC 1004 TO A 1,USE OPTION CODE 2 TO ALTER
1515 THE TAD WHILE IN THE FIRST 5 MINUTE WARM-UP PERIOD.

1516 NOP

1517 DC 0140

1518 B TYP1

1519 DCW @BEGINING 5 MINUTE WARMUP@,G

1520 S WARMCT

1521 S LNGCNT

1522 HLNS ADDR0061,ADR24961 SET MOD ADDR

1523 HLNS ADDR0061,ADR12561 SET MOD ADDR

1524 SD 1,ADDR00 SEEK CYL 0

1525 BCBL 0-16

1526 BAI 061

1527 SD 1,ADR125 SEEK CYL 125

1528 BCBL 0-16

1529 BAI 061

1530 SD 1,ADR249 SEEK CYL 249

1531 BCBL 0-16

1532 BAI 061

1533 A 210,WARMCT ADD 1 TO PASS COUNT

1534 BCE #815,WARMCT-2,5 BRCH ON 500TH PASS

1535 B MONITR

1536 B STAR16

1537 BCE 068,SPTAD0,1 BRCH IF IN MANUAL MD

1538 B WARM

1539 COLDSW NOPWM

1540 B NOMSG

1541 BY PASS MESSAGE

1	03678	N
2	03680	
7	03681	J 01593
24	03711	
6	03713	S 06839
6	03719	S 06840
12	03725	D 06677 06743
12	03737	D 06677 06787
10	03749	M XF0 06676 R
7	03759	R 03749 Z
7	03766	R 03773 H
10	03773	M XF0 06786 R
7	03783	R 03773 Z
7	03790	R 03797 H
10	03797	M XF0 06742 R
7	03807	R 03797 Z
7	03814	R 03821 H
11	03821	A 06673 06839
12	03832	B 03858 06837 5
7	03844	J 02066
7	03851	J 03749
12	03858	B 03877 01004 1
7	03870	J 03954
1	03877	N
7	03878	J 03912



WARM UP HYDRAULIC OIL

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1542		B	TYP1	7	03885	J 01593
1543		DCW	2BEGIN 20 MIN WARMUP2.G	19	03910	
1544	NONSG	SW	COLDSM61	6	03912	0 03078
1545		S	WARMCT	6	03918	S 06839
1546		A	012,UNGCNT ADD 1 TO LONG COUNT	11	03924	A 06873 06840
1547		BCE	WARM,LNGCNT,5	12	03935	B 03954 06840
1548		B	STAR16	7	03947	J 03749
1549	WARM	B	TYP1	7	03954	J 01593
1550		DCW	2WARMUP COMPLETE,TEST BEGINING2.G	29	03989	
1551	MLXIT	B	MONITR	7	03991	J 02066
1552						

TEST PISTON ADDRS

CT ADDR INSTRUCTION

*** TEST ROUTINE DESCRIPTION ***
 *** TEST PISTON ADDRS ***
 THE ACCESS IS POSITIONED AT CYLINDER ZERO, IT IS THEN SEEKED TO
 CYLINDER 9, ACTUATING PISTONS S, 5, 4, 1, THE POSITION IS CHECKED BY A
 READ OP AND A NO RECORD FOUND RESULTS IN SETTING ERROR 2 ON THE
 ACCESS IS RESET TO CYL ZERO AND THEN SEEKED TO CYL 2, ACTUATING
 PISTON 2. THE ACCESS POSITION IS VERIFIED BY A READ AND A NO REC-
 ORD FOUND CAUSES ERROR 4. THE ROUTINE IS REPEATED TEN TIMES.

PGLIN	LABEL	OPCODE	OPERAND	ROUTINE ID	CT	ADDR	INSTRUCTION
1554		NOP			1	03998	N
1555		DC	0012	RESET ACCESS	2	04000	
1556		SD	L, ADDR00		10	04001	M 3F0 06676 R
1557		BCBI	0-16		7	04011	R 04001 Z
1558		BAI	STACHK	BRNCH ON ANY ERROR	7	04018	R 03063 M
1559		MLNS	ADDR0001, ADDR961	SET MOD ADDR	12	04025	D 04677 06688 I
1560		SD	L, ADDR9	SEEK TO CYL 9 FROM 0	10	04037	M 3F0 06687 R
1561		BCBI	0-16		7	04047	R 04037 Z
1562		BAI	STACHK	BRCH ON ANY ERROR	7	04054	R 03063 M
1563		MU	3F5, ADDR9, R	CHECK ARRIVAL	10	04061	M 3F5 06687 R
1564		BCBI	0-16		7	04071	R 04061 Z
1565		BEX1	ERROR2, Y	BRCH ON NO REC FOUND	7	04078	R 04190 Y
1566		BAI	061	RESET ACCESS	7	04085	R 04092 M
1567		SD	L, ADDR00		10	04092	M 3F0 06676 R
1568		BCBI	0-16		7	04102	R 04092 Z
1569		BAI	STACHK	BRCH ON ANY ERROR	7	04109	R 03063 M
1570		MLNS	ADDR0001, ADDR201	SET MOD ADDR	12	04116	D 06677 06699 I
1571		SD	L, ADDR2	SEEK TO CYL 2 FROM 0	10	04128	M 3F0 06698 R
1572		BCBI	0-16		7	04138	R 04128 Z
1573		BAI	STACHK	BRCH ON ANY ERROR	7	04145	R 03063 M
1574		MU	3F5, ADDR2, R	CHECK ARRIVAL	10	04152	M 3F5 06698 R
1575		BCBI	0-16		7	04162	R 04152 Z
1576		BEX1	ERROR4, Y	BRCH ON NO REC FOUND	7	04169	R 04203 Y
1577		BAI	061	RESET ACCESS	7	04176	R 04183 M
1578		SD	L, ADDR00		10	04183	J 04209
1579		BCBI	0-16		6	04190	0 01803
1580		BAI	STACHK	TURN ON ERROR IND			



269

TEST PISTON ADDERS

PGLIN LABEL OPCOD OPERAND

1590 ACCESS DID NOT ARRIVE AT CYLINDER 9, READ OP RESULTS IN EXT.COND.
 1591 B NINE20
 1592 *** SET ERROR 4 ON ***
 1593 SH E4 TURN ON ERROR IND
 1594 ACCESS DID NOT ARRIVE AT CYLINDER 2, READ OP RESULTS IN EXT.COND.
 1595 NO1CNT A @12, RUTCNT UPDATE PASS COUNT
 1596 BCE NO1XIT, RUTCNT, 0 BRCH WHEN CNT IS 10
 1597 B START1
 1598 B MONITR
 1599

7 04196 J 04092

6 04203 . 01805

11 04209 A 06873 06814

12 04220 B 04239 06814 P

7 04232 J 04001

7 04239 J 02066

TEST. LO GLOBS

OPCOD OPERAND

LABEL

PGLIN

*** TEST ROUTINE DESCRIPTION ***

*** TEST LO GLOB ADDRS ***

THE ACCESS IS POSITIONED AT CYLINDER ZERO, IT IS THEN SEEKED TO
 CYLINDER 10, ACTUATING GLOB 10, A READ OP VERIFIES THAT THE ACCESS
 ARRIVED AT CYL 10. ERROR 6 IS INDICATED IF THE READ OP RESULTS IN
 A NO RECORD FOUND. THE ACCESS IS RESET TO CYL ZERO AND SEEKED TO
 CYL 45. THE ACCESS ARRIVAL IS CHECKED BY A READ OP, A NO RECORD
 FOUND RESULTS IN ERROR 8 BEING INDICATED. THE ROUTINE IS REPEATED
 TEN TIMES.

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
1601				1	04246	N
1602				2	04248	
1603				10	04249	M ZFO 06676 R
1604				7	04259	R Q4249 Z
1605				7	04266	R 03063 M
1606				12	04273	D 06677 06710 L
1607				10	04285	M ZFO 06709 R
1608				7	04295	R 04285 Z
1609				7	04302	R 03063 M
1610				10	04309	M ZF5 06709 R
1611				7	04319	R 04309 Z
1612				7	04326	R 04438 Y
1613				7	04333	R 04340 M
1614				10	04340	M ZFO 06676 R
1615				7	04350	R 04340 Z
1616				7	04357	R 03063 M
1617				12	04364	D 06677 06721 H
1618				10	04376	M ZFO 06720 R
1619				7	04386	R 04376 Z
1620				7	04393	R 03063 M
1621				10	04400	M ZF5 06720 R
1622				7	04410	R 04400 Z
1623				7	04417	R 04451 Y
1624				7	04424	R 04431 M
1625				7	04431	J 04457

*** SET ERROR 6 ON ***



271

TEST. LO GLOBS

DA05

CT ADDR INSTRUCTION

PGLIN LABEL OPCOD OPERAND

1637	ERROR6	SW	B6	TURN ON ERROR IND	6	04438	01807
1638	ACCESS DID NOT ARRIVE AT CYL 10, READ RESULTS IN NO RECORD FOUND						
1639		B	TEN20		7	04444	J 04360
1640	*** SET ERROR 8 QN ***						
1641	ERROR8	SW	B8	TURN ON ERROR IND	6	04451	01809
1642	ACCESS DID NOT ARRIVE AT CYL 45, READ RESULTS IN NO RECORD FOUND						
1643	NOZCNT	A	812, RUTCNT	UPDATE PASS COUNT	11	04457	A 04873 06814
1644		BCE	NOZXIT, RUTCNT, 0	BRCH WHEN COUNT IS 0	12	04468	B 04487 06814 0
1645		B	START2		7	04480	J 04249
1646	NOZXIT	B	MONTR		7	04487	J 02066
1647							

TEST HI GLOBS

TEST HI GLOBS

TEST HI GLOBS

PGLIN	LABEL	OPCOD	OPERAND	TEST HI GLOBS	CT	ADDRS	INSTRUCTION
1649				*** TEST ROUTINE DESCRIPTION ***			
1650				*** TEST HI GLOB ADDRS ***			
1651				THE ACCESS IS POSITIONED AT CYL 0 AND THEN SEEKED TO CYL 200,			
1652				ACTUATING GLOBS 100,50,50 .A READ OP VERIFIES THAT THE ACCESS HAS			
1653				ARRIVED AT CYL 200,IF A NO-RECORD-FOUND RESULTS ERROR 10 IS IND-			
1654				ICATED.FROM CYL 200 THE ACCESS IS SEEKED TO CYL 0,AND AGAIN A			
1655				READ OP VERIFIES THE ARRIVAL,IF THE ACCESS DID NOT ARRIVE AT CYL			
1656				0 ERROR 12 IS INDICATED.THE ROUTINE IS REPEATED 10 TIMES.			
1657							
1658	NO3	NQP			1	04494	N
1659		DC	3032	ROUTINE 10	2	04496	
1660	START3	SD	1,ADDR00	RESET ACCESS	10	04497	M ZF0 06676 R
1661		BCB1	--16		7	04507	R 04497 Z
1662		BAL	STACHK	BRCH ON ANY ERROR	7	04514	R 03063 M
1663		MLNS	ADDR0061,ADR20061	SET MOD ADDR	12	04521	D 06677 06732 X
1664		SD	1,ADR200	SEEK CYL 200 FROM 0	10	04533	M ZF0 06731 R
1665		BCB1	--16		7	04543	R 04533 Z
1666		BAL	STACHK	BRCH ON ANY ERROR	7	04550	R 03063 M
1667		MU	ZF5,ADR200,R	CHECK ARRIVAL	10	04557	M ZF5 06731 R
1668		BCB1	--16		7	04567	R 04557 Z
1669	TWO00	BEX1	EROR10,Y	BRCH ON NO REC FOUND	7	04574	R 04650 Y
1670		BAL	6E1		7	04581	R 04588 M
1671	TOZERO	SD	1,ADDR00	SEEK CYL 0 FROM 200	10	04588	M ZF0 06676 R
1672		BCB1	--16		7	04598	R 04588 Z
1673		BAL	STACHK	BRCH ON ANY ERROR	7	04605	R 03063 M
1674		MU	ZF5,ADDR00,R	CHECK ARRIVAL	10	04612	M ZF5 06676 R
1675		BCB1	--16		7	04622	R 04612 Z
1676	ZERO	BEX1	EROR12,Y	BRCH ON NO REC FOUND	7	04629	R 04663 Y
1677		BAL	6E1		7	04636	R 04643 M
1678		B	NO3CNT		7	04643	J 04669
1679				*** SET ERROR 10 ON ***			
1680	EROR10	SW	E10	TURN ON ERROR IND	6	04650	0 01011
1681				ACCESS DID NOT ARRIVE AT CYL 200,READ RESULTS IN NO RECORD FOUND			
1682		B	TOZERO		7	04656	J 04588
1683				*** SET ERROR 12 ON ***			
1684	EROR12	SW	E12	TURN ON ERROR IND.	6	04663	0 01013



243

TEST HI 6LOBS

PT ADDR INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	PT	ADDR	INSTRUCTION
1685			ACCESS DID NOT ARRIVE AT CYL 0, READ RESULTS IN NO RECORD FOUND			
1686	N03CNT	A	R12, RUTCNT	11	04669	A 06873 06814
1687		BCE	N03XIT, RUTCNT, 0	12	04680	B 04699 06814 0
1688		B	START3	7	04692	J 04497
1689	N03XIT	B	MONITR	7	04699	J 02066
1690						

PGLLN LABEL OPCODE OPERAND RANDOM SEEK TEST QT ADDR INSTRUCTION

1724		*** RANDOM SEEK TEST ***			
1725		THE SPEED OF THE CARRIAGE RETURN IS USED TO DEVELOPE A RANDOM			
1726		NUMBER WHICH IS USED TO DEVELOPE A RANDOM ADDRESS FOR THE FILE.			
1727		ONE HUNDRED SEEKS USING RANDOM ADDRESSES ARE ISSUED,EACH SEEK IS			
1728		CHECKED FOR CORRECT ACCESS POSITION WITH A READ OP.IF THE ACCESS			
1729		WAS REZEROED ERROR 15 IS INDICATED.IF THE ACCESS HAS POSITIONED			
1730		INCORRECTLY ERROR 16 IS INDICATED.IN THE CASE OF ERROR 16 IF THE			
1731		PROGRAM IS IN MANUAL MODE,--SPECIAL TAD 0 IS 1--THE HAI ON THE FILE			
1732		WILL BE READ OFF AND DISPLAYED ON THE CONSOLE FOR ANALYSIS.			
1733					
1734	NOS	NOP		1 04857	N
1735		DC 2052	ROUTINE ID	2 04859	
1736	STARTS	MLNWA TOTIME,VARIAD&S	MOVE IN RANDOM ADDR	12 04860	D 06823 06802 V
1737		MLNS ADDR00&1,VARIAD&1		12 04872	D 06677 06798 1
1738		\$D I,VARIAD	SEEK ACCESS	10 04884	M 3F0 06797 R
1739		BCB1 0-16		7 04894	R 04884 2
1740		BA1 STACHK	BRCH ON ANY ERROR	7 04901	R 03063 M
1741		MU BFS,VARIAD,R	CHECK ARRIVAL	10 04908	M 3F5 06797 R
1742		BCB1 0-16		7 04910	R 04908 2
1743		BEX1 EROR16,Y	BRCH ON NO REC FOUND	7 04925	R 04992 Y
1744		BA1 0&1		7 04932	R 04939 M
1745	RANDOM	A 23002,TOTIME	INCREASE VARIABLE	11 04939	A 06903 06823
1746		\$M VARIAD&2	BY 300 AND ADD	6 04950	, 05799
1747		A TOTIME,VARIAD&S	RESULT TO TKHD ADR	11 04956	A 06823 06802
1748		A 212,COUNT	ADD 1 TO PASS COUNT	11 04967	A 06873 06825
1749		BZ NOSXIT	BRCH AFTER 100 PASS	7 04978	J 05136 Y
1750		B STARTS		7 04985	J 04860
1751		*** SET ERROR 16 ON ***			
1752	EROR16	SW E16,EXTRA&1	TURN ON ERROR IND	11 04992	, 01017 02982
1753		ACCESS DID NOT POSITION CORRECTLY,READ RESULTS IN NO RECORD FOUND			
1754		MRCWG VARIAD,DATA	MOVE FAILING ADDR	12 05003	D 06797 01710 L
1755		BA1 STACHK	GO TO STATUS CHECK	7 05015	R 03063 M
1756		BCE 068,SPTAD0,1	BRCH IF IN MANUAL MD	12 05022	B 05041 01004 1
1757		B RANDOM		7 05034	J 04939
1758		B TYPI	GO REQUEST THAT	7 05041	J 01593
1759		DCW BCE-HAO ON2,G	CE-HAO BE TURNED ON	9 05056	

CT ADDR INSTRUCTION

PGLLN LABEL OPCOD OPERAND

1801 *** TEST ROUTINE DESCRIPTION ***

1802 *** TIME 110 MILLI SEC SEEKS,CYL 0 TO CYL 49 ***

1803 WITH THE ACCESS POSITIONED AT CYL 0,A SEEK TO CYL 49 IS ISSUED

1804 FOLLOWED BY A 2ND SEEK TO CYL 49.THE PROGRAM TIMES THE DURATION

1805 OF THE BUSY FROM THE 1ST SEEK TO CYL 49,WHEN BUSY DROPS THE PROG-

1806 RAM STORES THE TIME AND CONTINUES TO THE NEXT ROUTINE.ANY STATUS

1807 INDICATORS WHICH ARE TURNED ON WILL BE INDICATED.

PGLLN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1807	NOP			1	05291	N
1810	DC	2072		2	05293	
1811	MUNS	ADDR0061,ADDR4961	SET MOD ADDR	12	05294	D 06677 06754 1
1812	S	TIMCNT	RESET TIME COUNT	6	05306	S 06834
1813	SD	1,ADDR00	RESET ACCESS	10	05312	M 060 06676 R
1814	BCB1	*-16		7	05322	R 05312 Z
1815	BAL	STACHK	BRCH ON ANY ERROR	7	05329	R 03063 M
1816	SD	1,ADDR49	SEEK TO CYL 49	10	05336	M 060 06753 R
1817	BCB1	*-16		7	05346	R 05336 Z
1818	BAL	STACHK	BRCH ON ANY ERROR	7	05353	R 03063 M
1819	MEDIUM	1,ADDR49		10	05360	M 060 06753 R
1820	BCB1	0615	BRCH BUSY	7	05370	R 05391 Z
1821	BAL	STACHK	BRCH ON ANY ERROR	7	05377	R 03063 M
1822	B	ONE10		7	05384	J 05409
1823	A	ROOPTI,TIMCNT	ADD LOOP TIME TO	11	05391	A 06828 06834
1824	B	MEDIUM	TOTAL SEEK TIME	7	05402	J 05360
1825	A	CORR,TIMCNT	ADD CORRECTION	11	05409	A 06836 06834
1826	MLNA	TIMCNT-3,OUT50620	MOVE TIME	12	05420	D 06831 06173 /
1827	NOEXIT	B	MONITR	7	05432	J 02066
1828						



279

TIME 185 MILLI SEC SEEK CYL 0 TO 249

CT ADDR INSTRUCTION

OPCOD OPERAND

PGLIN LABEL

1830 *** TEST ROUTINE DESCRIPTION ***

1831 *** TEST 185 MILLI SEC SEEKS,CYL 0 TO CYL 249 ***

1832 THE ACCESS IS POSITIONED AT CYL 0,IT IS THEN SEEKED TO CYL 249.

1833 THIS IS FOLLOWED BY A SECOND SEEK TO CYL 249.THE BUSY LINE IS

1834 FLMED AND WHEN IT FALLS THE PROGRAM STORES THE TOTAL TIME BUSY

1835 WAS UP AND GOES ON TO THE NEXT ROUTINE.ALL STATUS INDICATORS

1836 WHICH MAY COME ON WILL BE INDICATED.

PGLIN	NOB	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1837		NOP		1	05439	N
1838		DC	0080	2	05441	
1839		MLNS	ADDR0001,ADR24901	12	05442	D 06677 06763 I
1840		S	TIMCNT	6	05454	S 06834
1841		SD	1,ADDR00	10	05460	M ZFO 06676 R
1842		BCBL	0-16	7	05470	R 05460 Z
1843		BAL	STACHK	7	05477	R 03063 R
1844		SD	1,ADR249	10	05484	M ZFO 06742 R
1845		BCBL	0-16	7	05494	R 05484 Z
1846		BAL	STACHK	7	05501	R 03063 R
1847		SD	1,ADR249	10	05508	M ZFO 06742 R
1848		BCBL	0015	7	05518	R 05539 Z
1849		BAL	STACHK	7	05525	R 03063 R
1850		B	ONE85	7	05532	J 05557
1851		A	LOOPTI,TIMCNT	11	05539	A 06828 06834
1852		B	LONG	7	05550	J 05508
1853		A	CORR,TIMCNT	11	05557	A 06836 06834
1854		MLNA	TIMCNT-3,OUT249020	12	05568	D 06831 06212 /
1855		B	MONITR	7	05580	J 02066

CT ADDR INSTRUCTION

PGLIN

OPCOD OPERAND

LABEL

1659 *** TEST ROUTINE DESCRIPTION ***
 1660 *** TEST 50 MILLI SEC SEEKS,CYL 239 TO CYL 230 ***
 1661 THIS ROUTINE TIMES THE ACCESS ON A SEEK WHICH MOVES IT FROM AN
 1662 INNER TRACK TO A TRACK FURTHER OUT ON THE DISK.THE ACCESS IS
 1663 6BT AT CYL 239 AND ISSUED A SEEK TO CYL 230.BY TESTING THE BUSY
 1664 LINE THE PROGRAM TIMES THE SEEK,WHEN BUSY DROPS THE PROGRAM
 1665 STORES THE TOTAL TIME AND CONTINUES TO THE NEXT ROUTINE.ANY
 1666 STATUS INDICATORS THAT ARE TURNED ON WILL BE INDICATED.
 1667

NO	OP	OPERAND	ROUTINE ID	CT	ADDR	INSTRUCTION
1659	NOP			1	05587	N
1660	OC	8092		2	05589	
1670	MLNS	ADDR0021,ADR219&1	SET MOD ADDR	12	05590	D 06677 06765 1
1671	MLNS	ADDR0061,ADR210&1	SET MOD ADDR	12	05602	D 06677 06776 1
1672	S	TIMCNT	RESET TIME COUNT	6	05614	S 06834
1673	SD	I,ADR219	POSITION ACCESS	10	05620	H 2F0 06764 R
1674	BCBL	P-16		7	05630	R 05620 2
1675	BAL	STACHK	BRCH ON ANY ERROR	7	05637	R 03063 M
1676	SD	I,ADR210	SEEK TO CYL 210	10	05644	M 2F0 06775 R
1677	BCBL	P-16		7	05654	R 05644 2
1678	BAL	STACHK	BRCH ON ANY ERROR	7	05661	R 03063 M
1679	SD	I,ADR210	TIME THE SEEK	10	05668	M 2F0 06775 R
1680	BCBL	P&15		7	05678	R 05699 2
1681	BAL	STACHK	BRCH ON ANY ERROR	7	05685	R 03063 M
1682	B	FIVEO		7	05692	J 05717
1683	A	LOOPTI,TIMCNT	ADD LOOP TIME TO	11	05699	A 06828 06834
1684	B	SMALL	TOTAL SEEK TIME	7	05710	J 05668
1685	A	CORR,TIMCNT	ADD CORRECTION	11	05717	A 06836 06834
1686	MLNA	TIMCNT-3,OFF10&20	MOVE TIME	12	05728	D 06831 06251 /
1687	B	MONITR		7	05740	J 02066
1688						



CT ADDR INSTRUCTION

PGLIN LABEL

OPCOD OPERAND

1921 *** TEST ROUTINE DESCRIPTION ***

1922 *** TIME 185 MILLI SEC SEEKS,CYL 249 TO CYL 0

1923 THIS ROUTINE TIMES A 185 MILLI SEC SEEK WITH THE ACCESS MOVING

1924 FROM THE CENTER OF DISK TO THE OUTER TRACKS ON THE DISK.THE ACC-

1925 ESS IS SET AT CYL 249 AND IS ISSUED 2 SEEKS TO CYL 0.THE FIRST

1926 SEEK STARTS THE ACCESS MOVING THE SECOND BRINGS UP BUSY.THE DURA-

1927 TION OF THE BUSY IS TIMED AND THE

1928 TION OF THE BUSY IS TIMED AND THIS TIME IS STORED BEFORE THE

1929 PROGRAM CONTINUES..ALL STATUS ERRORS WILL BE INDICATED.

1930

WIR	NOP	ROUTINE ID	CT	ADDR	INSTRUCTION
1931	DC	2112	1	05907	N
1932	MLNS	ADDR00E1,ADR249E1	2	05909	
1933	S	TIMCNT	12	05910	D 06677 06743 I
1934	SD	L,ADR249	6	05922	S 06834
1935	BCBL	--16	10	05928	M ZFO 06742 R
1936	BA1	STACHK	7	05938	R 05928 Z
1937	SD	L,ADDR00	7	05945	R 03063 M
1938	BCBL	--16	10	05952	M ZFO 06676 R
1939	BA1	STACHK	7	05962	R 05952 Z
1940	SD	L,ADDR00	7	05969	R 03063 M
1941	BCBL	--16	10	05976	M ZFO 06676 R
1942	BA1	STACHK	7	05986	R 06007 Z
1943	B	ONE80	7	05993	R 03063 M
1944	A	LOPTI,TIMCNT	7	06000	J 06025
1945	B	LARGE	11	06007	A 06828 06834
1946	A	CORR,TIMCNT	7	06018	J 05976
1947	MLNA	TIMCNT-3,OFF249E20	11	06025	A 06836 06834
1948	B	MONITR	12	06036	D 06831 06329 /
1949	B	MONITR	7	06048	J 02066
1950					

CT ADDR INSTRUCTION

TYPE SEEK TIME RESULTS

OPCOD OPERAND

LABEL

PGLIN

1952 *** TEST ROUTINE DESCRIPTION ***
 1953 *** TYPE SEEK TIME RESULTS ***
 1954 USING THE RESULTS STORED BY THE SIX TIMING ROUTINES.A TABLE IS
 1955 COMPILED AND TYPED OUT.

PGLIN	LABEL	OPCOD	OPERAND	ROUTINE ID	CT	ADDR	INSTRUCTION
1957	M12	NOP			1	06055	N
1958		DC	0120		2	06057	
1959		B	TYPI		7	06058	J 01593
1960		DCW	0SEEK FROM TO TIME WAS.SHOULD BE $\frac{1}{2}$ IN MSEC02.G		41	06105	
1961		B	TYPI		7	06107	J 01593
1962	OUT10	DCW	0 0000 0360	502.G	31	06114	
1963		B	TYPI		7	06146	J 01593
1964	OUT50	DCW	0 0000 1960	1102.G	31	06153	
1965		B	TYPI		7	06185	J 01593
1966	OUT249	DCW	0 0000 9960	1852.G	31	06192	
1967		B	TYPI		7	06224	J 01593
1968	OFF10	DCW	0 8760 8400	502.G	31	06231	
1969		B	TYPI		7	06263	J 01593
1970	OFF50	DCW	0 9960 8000	1102.G	31	06270	
1971		B	TYPI		7	06302	J 01593
1972	OFF249	DCW	0 9960 0000	1852.G	31	06309	
1973	M12XIT	B	MONITR		7	06341	J 02066
1974							

1976 *** TEST ROUTINE DESCRIPTION ***
 1977 *** UPDATE CHANNEL & MODULE ROUTINE ***
 1978 THIS ROUTINE STARTS WITH MODULE 0 ON CHANNEL 1 AND TESTS FOR A
 1979 READY FILE, WHEN A READY FILE IS LOCATED THE PROGRAM IS ALTERED
 1980 ACCORDING TO THE CHANNEL THE FILE IS ON. THE ROUTINE TYPES OUT THE
 1981 MODULE AND CHANNEL NUMBER FOR EACH FILE FOUND READY.

PGLIN	LABEL	OPCOD	OPERAND	ROUTINE ID	CT	ADDR	INSTRUCTION
1976	NIS	NOP			1	05348	N
1977		DC	2132		2	05350	
1978		B	TOP27		7	05351	J 06440
1979		BCE	*68,06X10,F	FILES ON THIS CHNL	12	06358	B 06377 00220 F
1980		B	UPCHNL	GO UPDATE FOR NEXT	7	06370	J 06465
1981		MLCA	CODE36X15,INCODE	MOVE CHANNEL CODES	12	06377	D 06HD3 06408 T
1982		B	CHALTR	GO TO CHANNEL ALTER	7	06389	J 01045
1983		DCW	TOP	HIGH LIMIT	5	06400	06433
1984		DC	BOTTOM	LOW LIMIT	5	06405	03737
1985		OGW	2 2		1	06406	
1986		DC	0 2		1	06407	
1987		DC	2 2		1	06408	
1988	INCODE	SD	1,ADDR00	SEEK THE ACCESS	10	06409	M 2F0 06676 R
1989	RDYFIL	BNRL	*615	BRCH NOT READY	7	06419	R 06440 L
1990		BAL	*61		7	06426	R 06433 M
1991	TOP	B	GOTIT	BRCH FOUND A RDY MOD	7	06433	J 06506
1992		A	212,ADDR0061	UPDATE MOD ADDR	11	06440	A 06873 06677
1993		BZ	*68	BRCH IF TEN MOD TRID	7	06451	J 06465 V
1994		B	RDYFIL		7	06458	J 06409
1995	UPCHNL	A	2572,X10	UPDATE	11	06465	A 06905 00074
1996		A	232,X15	IND REG 10615	11	06476	A 06879 00099
1997		BCE	ENDTST,X10,F	BRCH IF ALL CHL CHK	12	06487	B 06576 00074 F
1998		B	N13610	GO SEARCH FOR RDY MD	7	06499	J 06358
1999	GOTIT	MLNS	ADDR0061,RDYMSEG8	MOVE MOD ADDR	12	06506	D 06677 06545 L
2000		MLNS	INCODE,RDYMSEG12	MOVE CHANNEL NUMBER	12	06518	D 06408 06549 L
2001		B	TYP1		7	06530	J 01593
2002	RDYMSEG	BCW	2TST MOD CH 2,C		13	06537	
2003		ZA	2N14,X3	LOAD IX 3	11	06551	H 06910 00039
2004		B	06X3		7	06562	J 000HC



285

UPDATE CHANNEL & MODULE ROUTINE

DA05 PAGE 265

PCLIN LABEL OPCOD OPERAND

CT ADDR INSTRUCTION

2012 N19XLT B MONTR

7 06569 J 02066

CT ADDR INSTRUCTION

END TEST ROUTINE
OPCOD OPERAND

LABEL

PGLIN

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
2014		***	END TEST ROUTINE			
2015	ENDTST	B	TYP1	7	06576	J 01593
2016		DCN	BPASS2.G	4	06586	
2017		BCE	2000.TA03.1	12	06588	B 02000 01003 1
2018		B	400	7	06600	J 00400
2019						

BRCH IF REPEATING
GO TO LOADER

284

PREPARE 1 INST LOOP & DATA FIELD

CT ADDR INSTRUCTION

OPCOD OPERAND

PGLIN LABEL

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
2021		***	PREPARE ONE INSTRUCTION LOOP ***			
2022	PREP	B	TYPI	7	06607	J 01593
2023		DCH	ZONE INST. LOOP OPTION NOT AVAILABLE3	35	06648	
2024		DC	3.TRY ANOTHER OPTION2.G	19	06667	
2025		B	PRGCTL	7	06669	J 02238
2026						

DA05 INSTRUCTION

LT ADDR

CONSTANTS
OPCOD OPERAND

LABEL

PGLIN

2064		DCW	2M332	3	06849	
2065		DCW	2114	3	06854	
2066	LOOPX	DCW	22012	3	06855	
2067	CORRX	DCW	2242	2	06857	
2068	LOOP1	DCW	23162	3	06860	
2069	CORR1	DCW	2682	2	06862	
2070	LOOP0	DCW	23552	3	06865	
2071	CORR0	DCW	2762	2	06867	
2072		END				J
2072			2M3	1	06868	
2072			242	1	06869	
2072			212	1	06870	
2072			2M2	1	06871	
2072			22	1	06872	
2072			212	1	06873	
2072			2002092	3	06878	
2072			232	1	06879	
2072			272	1	06880	
2072			2002372	5	06885	
2072			222	1	06886	
2072			2013082	5	06891	
2072			2000002	5	06896	
2072			203152	4	06900	
2072			23002	3	06903	
2072			2572	2	06905	
2072			M14	5	06910	03678

END OF ASSEMBLY

291

DA01, DA03
DA04, DA05

Page 269A

6.06.00 7631-1301 PACKAGE SUMMARY

The following few pages have been laid out so that information on them may be cut out and pasted onto IBM cards. In this way the CE may carry with him some of the important data required for the successful use of the programs in this package.

In concluding this package it is important to stress the fact that the programs are only as useful as the CE wants them to be. These programs and this package are a tool and a good knowledge of how to use this tool, and how it works will add to its usefulness. This knowledge is available in the write-ups and comments in the program listings, READ THEM CAREFULLY.

DA01, DA03
DA04, DA05

Page 269B

NOTES



Cut along dotted lines and paste on IBM cards.

<p>DA01, DA03 DA04, DA05</p> <p><u>System and Channel Cards</u></p> <p>System Card No. 009 Channel 1 Card No. 010 Channel 2 Card No. 011 Channel 3 Card No. 012 Channel 4 Card No. 013</p> <p>Insure the proper data is punched in these cards.</p>	<p><u>Standard TADS 0-3</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Loc.</th> <th style="text-align: center; border-bottom: 1px solid black;">Not 1</th> <th style="text-align: center; border-bottom: 1px solid black;">1</th> </tr> </thead> <tbody> <tr> <td>1000 TAD 0</td> <td>Allow Error Typeout</td> <td>Bypass Errors</td> </tr> <tr> <td>1001 TAD 1</td> <td>Do not Req Loop after Error</td> <td>Request Loop</td> </tr> <tr> <td>1002 TAD 2</td> <td>Not Used</td> <td></td> </tr> <tr> <td>1003 TAD 3</td> <td>Single Prog. Pass</td> <td>Repeat Prog.</td> </tr> </tbody> </table> <p>* These TADs are set to 1 when the programs are loaded.</p> <p><u>Special TADS</u></p> <p>Memory locations 1004-1012 are set aside for special TADs and are set to 1 when the programs are loaded. Refer to individual write-ups for details.</p>	Loc.	Not 1	1	1000 TAD 0	Allow Error Typeout	Bypass Errors	1001 TAD 1	Do not Req Loop after Error	Request Loop	1002 TAD 2	Not Used		1003 TAD 3	Single Prog. Pass	Repeat Prog.
Loc.	Not 1	1														
1000 TAD 0	Allow Error Typeout	Bypass Errors														
1001 TAD 1	Do not Req Loop after Error	Request Loop														
1002 TAD 2	Not Used															
1003 TAD 3	Single Prog. Pass	Repeat Prog.														

<p>DA01, DA03 DA04, DA05</p> <p><u>Program Control Options</u></p> <p>These options are available through use of the console.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Enter</th> <th style="text-align: left; border-bottom: 1px solid black;">To</th> <th style="text-align: left; border-bottom: 1px solid black;">Additional Data Entered</th> </tr> </thead> <tbody> <tr> <td>b</td> <td>Terminate Test</td> <td>None</td> </tr> <tr> <td>1</td> <td>Reset All Standard TADS</td> <td>Four New TAD Settings 1 or 1</td> </tr> <tr> <td>2</td> <td>Alter Memory</td> <td>Five Digit Memory Addr.</td> </tr> <tr> <td>3</td> <td>Alter Routine Seq.</td> <td>Routine Numbers in Order Desired</td> </tr> <tr> <td>4</td> <td>Loop a Routine</td> <td>Starting Address of Routine</td> </tr> <tr> <td>5</td> <td>Loop an Inst.</td> <td>Inst. Code, Data for Desired Field</td> </tr> <tr> <td>6</td> <td>Restart at Desired Location</td> <td>Five Digit Mem Addr to Start at</td> </tr> <tr> <td>7</td> <td>Continue from Point of Interruption</td> <td>None</td> </tr> </tbody> </table> <p>* Read package write-up for details on control options.</p>	Enter	To	Additional Data Entered	b	Terminate Test	None	1	Reset All Standard TADS	Four New TAD Settings 1 or 1	2	Alter Memory	Five Digit Memory Addr.	3	Alter Routine Seq.	Routine Numbers in Order Desired	4	Loop a Routine	Starting Address of Routine	5	Loop an Inst.	Inst. Code, Data for Desired Field	6	Restart at Desired Location	Five Digit Mem Addr to Start at	7	Continue from Point of Interruption	None	<p>READ THE PROGRAM WRITE-UPS</p>
Enter	To	Additional Data Entered																										
b	Terminate Test	None																										
1	Reset All Standard TADS	Four New TAD Settings 1 or 1																										
2	Alter Memory	Five Digit Memory Addr.																										
3	Alter Routine Seq.	Routine Numbers in Order Desired																										
4	Loop a Routine	Starting Address of Routine																										
5	Loop an Inst.	Inst. Code, Data for Desired Field																										
6	Restart at Desired Location	Five Digit Mem Addr to Start at																										
7	Continue from Point of Interruption	None																										

<p>DA01, DA03 DA04, DA05</p> <p><u>Automatic Restart</u></p> <p>If the check control switch is set to reset and restart, the programs will automatically continue after a machine alarm condition.</p> <p><u>Manual Restart</u></p> <p>If the check control switch is not used, pressing Computer Reset and Start will get the program running after an alarm.</p>	<p><u>Loading Procedure</u></p> <p>Use Universal Loaders and procedure with all "DA" programs.</p> <p><u>Error Typeout Standard Format</u></p> <ol style="list-style-type: none"> 1. "Routine N00" Routine number in which error occurred. 2. "*Error 00 0000 M% F0 0000 W 1248AB" <table style="width: 100%; border-collapse: collapse; margin-left: 20px;"> <tr> <td style="text-align: center; border-right: 1px solid black;">Error Flag</td> <td style="text-align: center; border-right: 1px solid black;">Starting Addr of Routine</td> <td style="text-align: center;">Status Ind. is Found on</td> </tr> <tr> <td style="text-align: center; border-right: 1px solid black;">Error No.</td> <td style="text-align: center; border-right: 1px solid black;">Failing Inst.</td> <td></td> </tr> </table> <ol style="list-style-type: none"> 3. "Pertinent Data" Failing Addr, sample of data field, etc. 4. "Req Error Action" Given if TAD 1=1 CE now requests any one of the program control options. 	Error Flag	Starting Addr of Routine	Status Ind. is Found on	Error No.	Failing Inst.	
Error Flag	Starting Addr of Routine	Status Ind. is Found on					
Error No.	Failing Inst.						

294

DA01, DA03
DA04, DA05

Page 270



Cut along lines and past on IBM cards.

DA01 CAUTION: This Prog. destroys customer data. <u>Switch Settings Previous to Running Program</u> 1. Write Format On (on every 1301 to be tested) 2. Write HAO On 3. All 1301 not to be tested set inop.	<u>Special Requests</u> 1. "Sel. Mode" Enter X 0000 Mode-Test Code _____ ↑ Start Test at this HAI Addr. _____																																						
	Mode-Test Codes <table border="1"> <thead> <tr> <th>Test</th> <th>Mode</th> <th>Entire Mod.</th> <th>One Cyl.</th> <th>One Track</th> <th>One Sur</th> </tr> </thead> <tbody> <tr> <td>Write HAI's and Verify Addr.</td> <td></td> <td>1</td> <td>A</td> <td>J</td> <td>/</td> </tr> <tr> <td>Verify Addr</td> <td></td> <td>2</td> <td>B</td> <td>K</td> <td>S</td> </tr> <tr> <td>Analyze Surface</td> <td></td> <td>3</td> <td>C</td> <td>L</td> <td>T</td> </tr> <tr> <td>Write HAI's, Analyze Surface, Verify Addr.</td> <td></td> <td>4</td> <td>D</td> <td>M</td> <td>U</td> </tr> <tr> <td>Analyze Surface and Verify Addr</td> <td></td> <td>5</td> <td>E</td> <td>N</td> <td>V</td> </tr> </tbody> </table>				Test	Mode	Entire Mod.	One Cyl.	One Track	One Sur	Write HAI's and Verify Addr.		1	A	J	/	Verify Addr		2	B	K	S	Analyze Surface		3	C	L	T	Write HAI's, Analyze Surface, Verify Addr.		4	D	M	U	Analyze Surface and Verify Addr		5	E	N
Test	Mode	Entire Mod.	One Cyl.	One Track	One Sur																																		
Write HAI's and Verify Addr.		1	A	J	/																																		
Verify Addr		2	B	K	S																																		
Analyze Surface		3	C	L	T																																		
Write HAI's, Analyze Surface, Verify Addr.		4	D	M	U																																		
Analyze Surface and Verify Addr		5	E	N	V																																		
<u>Special TAD 0 (Location 1004)</u> 1̄ Do not display failing addr. 1 Display failing addr. * Set to 1̄ when program is loaded.																																							

DA01 <u>Special Requests (continued)</u> 2. "Test Mod X CHX" Enter 1 if correct Enter 1̄ if incorrect 3. "Turn On CE-HAO" "Turn Off CE-HAO" Turn switch On or Off press start 4. "Trck Flgd OK" Select next desired program option (Only given if track is flagged)	<u>Special Option Flag-A-Track</u> The program will flag a track only at the CE's request. To Flag-A-Track Press Inquiry Enter 8 0000 1 Press Release _____ Flag-A-Track option code (HAI of the track to be Flgd) Flagging is complete Flag Char to be used when "Trck Flgd OK" is typed. CE must now select next option desired.
---	---

DA03 <u>Switch Settings Previous to Running Program</u> 1. Write Format On (on all 1301 to be tested) 2. Write HAO On (on all 7631 to be tested) 3. All 1301 not being tested are set inop.	<u>Special TAD 0 (Location 1004)</u> 1̄ Program is not run in manual mode 1 Program is run in manual mode * TAD 0 set to 1̄ when program is loaded.
	<u>Special Request (Manual Mode Only)</u> "CYO Avail" Enter 1 if it is available Enter 1̄ if it is not available "CE-HAO ON" "Addr Read, 0000000, CE-HAO OFF" Turn switch on or off Press start to continue
Files - Tapes Overlapped Run program in manual mode with tape drive "1" ready on all channels that don't have files.	<u>Standard Options</u> All standard options are available in this program.

DA01, DA03
DA04, DA05

Page 272

<p>DA03</p> <p><u>Reliability Run</u></p> <p>Load program Alter normal TAD 0 (Loc 1000) to 1 - Bypass timeouts Alter normal TAD 3 (Loc 1003) to 1 - Repeat test</p> <p>Summary of errors will be given after each pass of the program.</p> <p>Terminate test by altering normal TAD 3 (Loc 1003) to 1</p>	<p><u>Alter Routine Sequence</u></p> <p>The sequence in which the test routines run may be altered by selecting program control option Code 3.</p> <p>Read package write-up for details.</p>
--	--

<p>DA04</p> <p><u>Switch Settings Previous to Running Program</u></p> <ol style="list-style-type: none"> 1301 Mod 0 ready on each channel being tested (Wrt Fmt On) HAO and CE-HAO On (on every 7631 being tested) 1301 Mod 1-9 set inop on all channels being tested Check Control Switch set to reset and restart (1410) 	<p><u>Special Requests</u></p> <ol style="list-style-type: none"> "HAO, Wrt Fmt On, Sel Mode" Enter 1 to run manual mode Enter 1̄ to run automatic mode "Comp Reset, Chk 7631" Press Computer Reset Check condition of 7631, press start if 7631 is OK. "ACC to Cyl 000" "ACC to Cyl 110" "ACC to Cyl 194") Manual Mode Only Manually position access to cylinder specified, press start.
---	---

<p>DA04</p> <p><u>Special Requests (continued)</u></p> <ol style="list-style-type: none"> "ACC to Cyl 253" Insure access is positioned at cylinder 253, press start. "# of Spare Heads" Enter number of heads available for alter. tracks "CE-HAO Off" Turn off CE-HAO switch, press start "CYO" Enter 1 if it is Enter 1̄ if it is not 	<ol style="list-style-type: none"> "MOD 3" Enter 1 if 7631 is a model 3 Enter 1̄ if 7631 is not "HAO and Wrt Fmt Sws Off" (Manual Mode only) Turn switches off, press start "Write Inhibit and HAO Sws On" (Manual Mode Only) Turn switches on, press start "Wrt Inhibit Off, HAO and CE-HAO On" Turn switches off and on, press start. "Pass, SWS OFF" Test is complete, reset all switches, press start.
--	---

DA01, DA03
DA04, DA05

Page 274

Cut along lines and paste on IBM cards.

DA05

Switch Settings Previous to Running Program

- 1. Write HAO On (on all 1301 being used)
- 2. Write Inhibit On (Only if in manual mode)
- 3. All 1301 not being tested are set inop.

Special TAD 0 (Location 1004)

- 1 Do not display failing Addr
Do not take additional 20 min warm up
- 1 Display failing Addr, take) Manual
additional 20 min warm up) Mode

Special Requests (Made in Manual Mode only)

- 1. "CE-HAO On"
Turn on switch, press start
- 2. "Addr Read, 000000, CE-HAO Off"
Turn off switch, press start

Standard Options

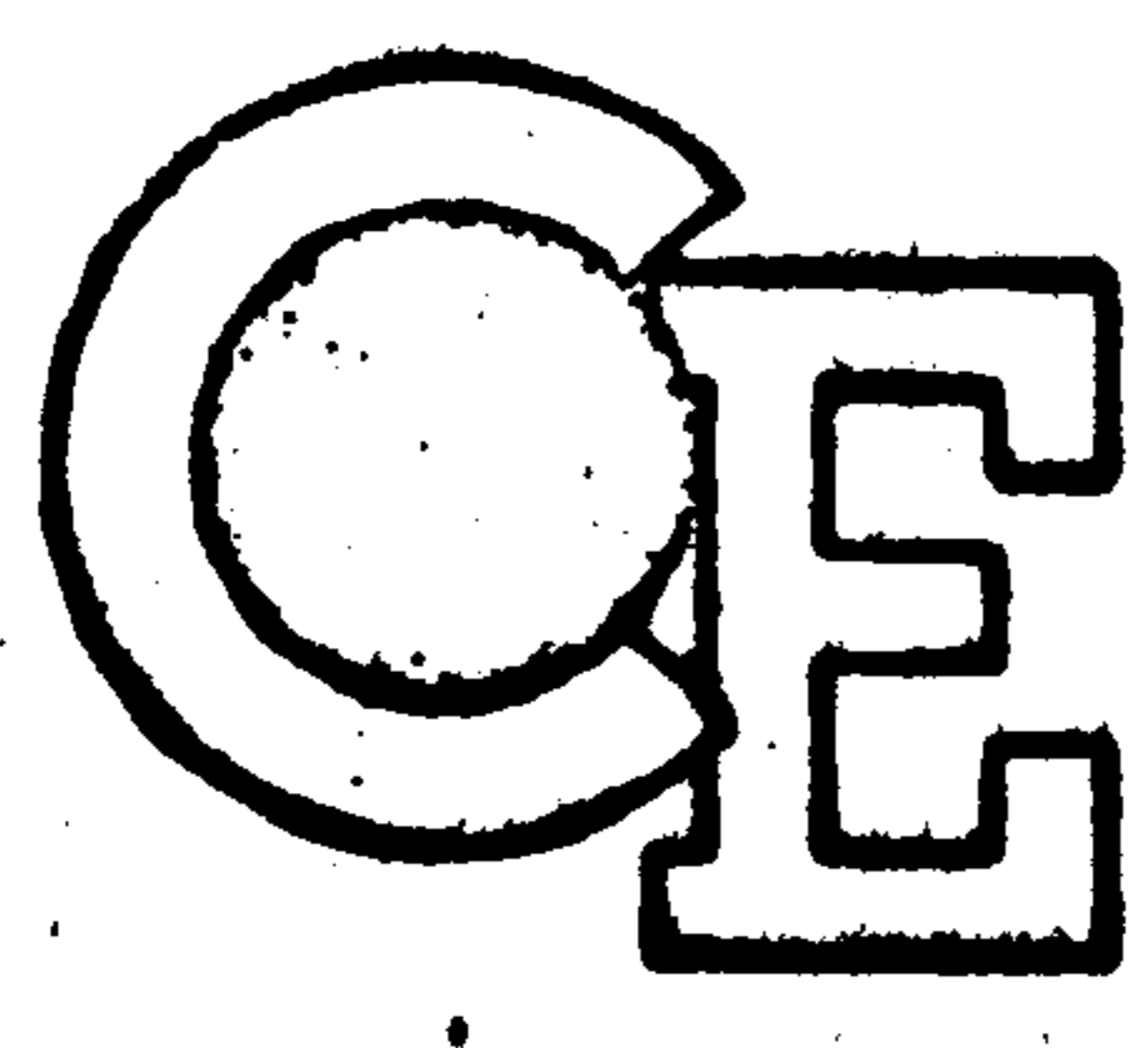
Two standard options are not available in this program.

- Alter routine sequence Code 3
- One instruction loop Code 5

300



IBM POUGHKEEPSIE
April 15, 1964



Diagnostic Engineering Publications

1410/7010

Subject: Diagnostic Program SF01B - Shared File Program

Sequence Number 555
Replaces SF01A

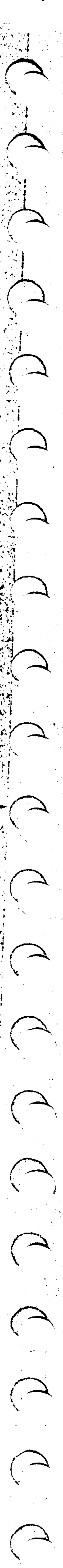
- I This Update corrects: The errors which prevented this program from being placed on the edited TC50 Tape**
- II System & Channel Control Cards numbered 001-005**

Enclosures: 024 Pages

- Card Deck for CARD ONLY SYSTEMS (as punched by UP51)**
- 8 Cards - Card Loader and Core Clear**
- 35 Cards No. 001-035 Data Cards**
- 1 Card Execute Card**

Distribution: 1410
7010

Other 1410/7010 Installations with 1301 - 7631 shared with another system



003

4/15/64
SF01
Page 001

APR 15 1964

SF01B

1410 Share File Program

April 15, 1964

**This Program has been altered with this Up Date.
This Program uses System & Channel Control Cards.
Read the Write Up Carefully.**

TABLE OF CONTENTS

6.06.00.0	Test Description	Page 003
6.06.01.0	Loading Procedures	Page 004
6.06.02.0	Operating Procedures	Page 005
6.06.03.0	Operating Hints, Comments	Page 005
6.06.04.0	Program Stops and Restarts	Page 006
6.06.05.0	Typeouts	Page 007
6.06.06.0	Flow Charts	Page 008
6.06.07.0	Appendices	
6.06.08.0	Listing	
	Summary	Page 017

SHARE FILE PROGRAM

6.06.00.0 TEST DESCRIPTION

The purpose of this test is to check those circuits associated with "Shared System Operation" that are not checked by other 7631 Disk/Drum programs. This test attempts no data transfers and uses only "Seek" and release orders along with the I/O no-op. For purposes of clarification, the term "System A," will be used to denote that computer which has control of the 7631, and "System B" to denote that computer which will attempt to gain control. In conjunction with an equivalent program in the other computer of this "Shared System," the test will be run in two parts.

1. As "System A"
2. As "System B"

While running as "System A," this program will retain control of the 7631 by performing "seeks." While running as "System B," this program will attempt to gain control of the 7631 by using "release;" this attempt should be unsuccessful.

When "System B" has completed its test it will halt (1000 passes). At this point "System A" is stopped, releasing the 7631. "System B" may be started now as "System A"; it will test and reset the attention caused by first "System A" and then begin the seek routine.

Note: The 1410 must always be started as System "A" first and the Sharing System as "B."

00.1 EQUIPMENT

- A. 1411 with 10K memory
- B. Card Reader or Tapes
- C. 1301 (addressed as Mod 0)
- D. 7631 Model III

6.06.00.0 TEST DESCRIPTION (continued)

00.2 CARD DECK

- A. 1 Execute card, Core clear.
- B. 34 Data cards
- C. 1 Execute card, branch to start of program.

00.3 EC LEVEL OF MACHINE

6.06.01.0 LOADING PROCEDURES

01.1 FROM CARDS (Load Program L1A preceding Card Deck)

A. 7010/1410 without Load Button

- 1. Display Memory Location 00000
- 2. Alter to

^{v v}
RL%1100011\$.
^v
X

} Enter according to channel location of the card reader.

- 3. Set to Run, Computer Reset and Start.

B. 7010 with Load Button

- 1. Computer Reset
- 2. Depress Load Button

01.2 FROM TAPE (80 Character Master or Memory Dump Tape)

A. 7010/1410 without Load Button

- 1. Display Memory Location 00000
- 2. Alter to

^{v v}
RL%B000011\$.
^v
X

} Enter according to channel location of the tape drive.

- 3. Set to Run, press Computer Reset.

B. 7010 with Load Button

- 1. Computer Reset
- 2. Depress Load Button

6.06.02.0 OPERATING PROCEDURES

After loading an equivalent program into both computers of the "Shared System," both systems will halt.

The program in that computer which will be "System A" should be started first (1410 must be started first), using the "seek" routine. The program in that computer which will be "System B" should be started second, using the "release" routine.

After "System B" has tested the availability of the 7631, the program will halt. "System A" should now be stopped, releasing the 7631. The computer that was "System B" is now started and run as "System A" and "System A" is run as "System B."

02.1 1410 AS "SYSTEM A" AT START OF THE TEST

- A. Load program in the 1410 and load the "Sharing System."
- B. When the 1410 stops (location 02119) and the "Sharing System" stops, press Computer Reset and Start on the 1410. The 1410 will take control of 7631 with "seek" ops.
- C. After the "Sharing System" has completed its test as "System B," the 1410 (System A) is stopped by pressing Inquiry Request and Release. The 1410 will stop at location 02428.
- D. The "Sharing System" is now started as "System A." After the Sharing System has been started, the 1410 is started as "System B"; this is done by pressing Start.
- E. When the 1410 stops (location 02183), the test is complete and the Sharing System may be stopped.
- F. The procedure may be repeated as often as is necessary by pressing Start; the 1410 will now be System "A" (step B). Continue from step C.

6.06.03.0 OPERATING HINTS, COMMENTS

- A. Insure that the channel cards, cards numbered 3, 4, 5 and 6, are correctly punched. (Refer to Introductory Material.) These cards will reflect the location of the 1301 module 0 attached to model III 7631.
- B. Scoping loops may be entered, after an error has occurred, by entering a 1 on the typewriter. A scoping loop may be terminated by pressing Inquiry Request and Release.
- C. There are no TAD's (1000-1003) or Special TAD's used in this program; error messages will be given and error halts will be executed.

6.06.04.0 PROGRAM STOPS AND RESTARTS

The following is a list in sequential order of the stops which can occur in this program. An "N" on the far left side indicates a normal halt.

	<u>Memory Location</u>	<u>Purpose</u>
N	2119	Program stops after initializing; the decision is now made whether the 1410 will be "System A or B." To start as "System A" press Computer Reset and Start. To start as "System B" press Start.
N	2183	If the 1410 is "System B" this halt occurs when the "release routine" is complete. By pressing Start the 1410 starts running as "System A."
N	2428	This stop occurs when the 1410 is "System A" and the Inquiry Request and Release have been pushed to terminate the "System A" test. Press Start and the 1410 becomes "System B."
	2610	<u>Error halt</u> occurs when "System B" receives no attention from the "System A" seeks, and the loop option was not taken. Press Start and the 1410 will be started as "System A."
	2629	<u>Error halt</u> occurs when "System A" does not get interrupted from the seek completes. By pressing Start the "System A" routine is restarted.
	2660	<u>Error halt</u> occurs when the 7631 is not initially available to "System A." By pressing Start the "System A" routine is restarted.
	2744	<u>Error halt</u> occurs when "System A" releases the 7631 and "System B" fails to gain control. By pressing Start "System B" will again try to get control of the 7631.

7631 TYPEOUTSA. Normal Typeouts

1. "SF01B" Title

B. Error Typeouts

1. "ER1, Enter 1 to Loop"

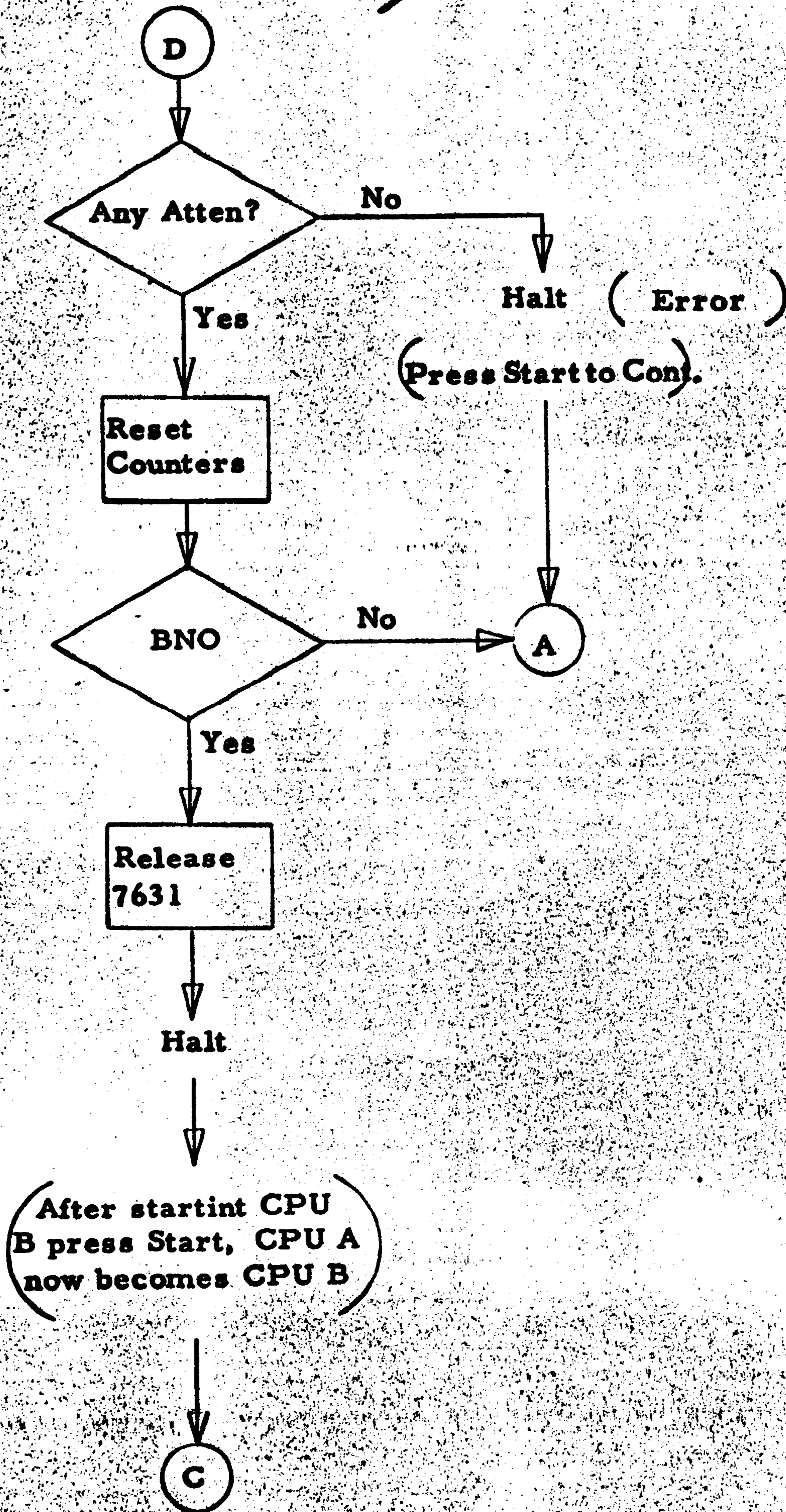
This typeout occurs when the 7631 does not lock out "System B" while system A has control. If a loop is desired, enter 1 on the typewriter; if not, enter a blank.

2. "ER2, Enter 1 to Loop"

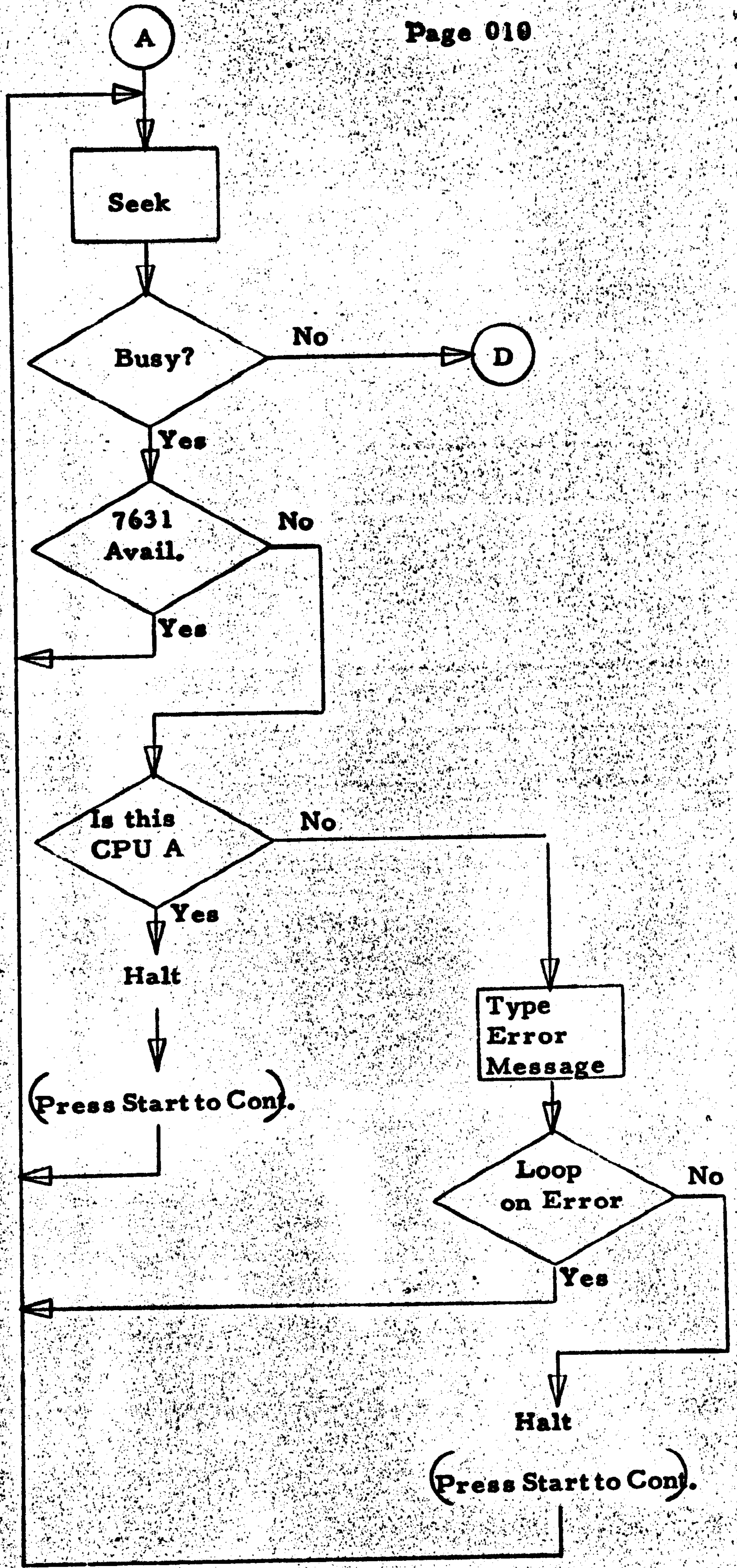
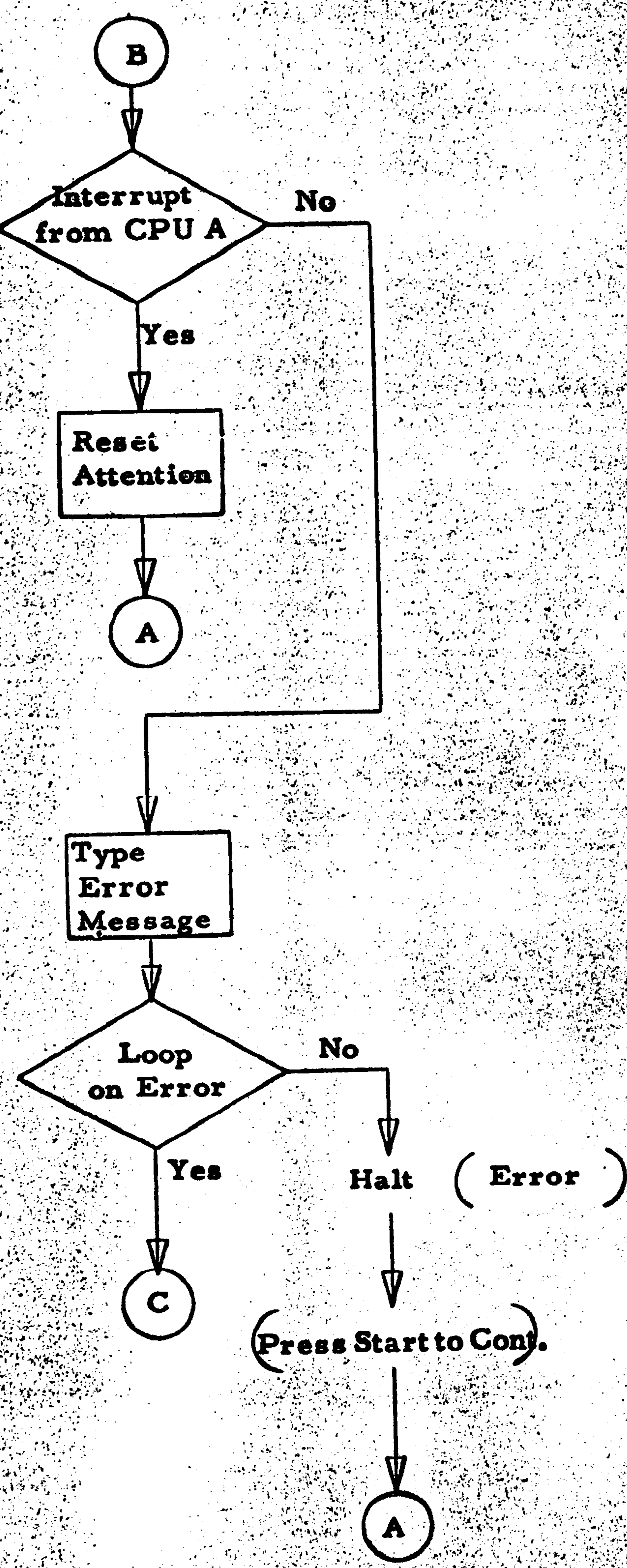
This typeout occurs when "System B" has received no attention from the 7631 due to the seeks given by "System A." If a loop is desired enter a 1, if not, enter a blank.

3. "ER3, Enter 1 to Loop"

This typeout occurs when "System B" tries to get control of the 7631 after "System A" has issued a release to it. The error indicates that "System B" could not get control of the 7631. If a loop is desired enter a 1, if not, enter a blank.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20



SUMMARY

This program runs on the 1410 while a similar program runs on the system that is sharing the 7631. If the 1410 has control of the 7631, the sharing system should be locked out and it tests this to insure that it is. When the sharing system has control of the 7631, the 1410 is locked out and the program verifies this.

In order to synchronize the program in the 1410 with the program in the sharing system, program stops and manual intervention are used. According to which system is started first determines who has control of the 7631 and who is locked out. The system in control is considered "System A," the locked out system is "System B." The 1410 must always be started first as System "A."

1410 As System A, then B

1. Load program in 1410, load the sharing system's program.
2. When program stops (in both systems), press Computer Reset and Start. Then start the sharing system.
3. When sharing system stops again, stop the 1410 by pressing Inquiry Request and Release.
4. Start the sharing system, then start the 1410 by pressing Start.
5. The 1410 will STOP; the test is now complete.

0141



APR 15 1964

SF01 MULT SYSTEM SHARED FILE TEST

SF01 CT ADDR INSTRUCTION

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDR	INSTRUCTION
1002		ORG	1242		01242	
1003		DCW	2102	2	01243	
1004		DCW	22555+32	6	01249	
1005		ORG	1250		01250	
1006	TITLE	DCW	2SF0182.G	5	01250	

LOCATE CHANNEL CARDS

1007						
1008						
1009						
1010		ORG	1289		01289	CHANNEL ONE CRD
1011		DC	2	37	01325	
1012		ORG	1346		01346	CHANNEL TWO CRD
1013		DC	2	37	01382	
1014		ORG	1403		01403	CHANNEL THREE CRD
1015		DC	2	37	01439	
1016		ORG	1460		01460	CHANNEL FOUR CRD
1017		DC	2	37	01496	

INITIALIZE SF01

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
1019		ORG	2000		02000	
1020		HCP	TITLE	10	02000	M XTO 01250 M
1021		BAL	*61	7	02010	R 02017 M
1022		S	FIRST	6	02017	S 02763
1023		CW	SKSW61,AVAIL61	11	02023	M 02409 02316
1024		CW	RELSW61	6	02034	M 02886
1025		BCE	START,1308,F	12	02040	0 02088 01308 F
1026		BCE	INIT2,1365,F	12	02052	0 02937 01365 F
1027		BCE	INIT3,1422,F	12	02064	0 02956 01422 F
1028		BCE	INIT4,1479,F	12	02076	0 02975 01479 F
1029	START	MRCWG	RESET,1	12	02088	0 02744 00001 L
1030		MRCWG	INTER,101	12	02100	0 02765 00101 L
1031		SW	FILE62	6	02112	, 03286
1032		M		1	02110	.

PRINT TITLE

RESET

SWITCHES

BRCH IF FILE ON CH 1

BRCH IF FILE ON CH 2

BRCH IF FILE ON CH 3

BRCH IF FILE ON CH 4

MOVE RESET TO LOC 1

MOVE INTERRUPT RCUT

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
00370	CPUB	MU	SF9,FILECP,R	10	02119	M SF9 038H4 R
03800	A	BA1	*C1	7	02129	R 02136 M
00390	B	BCB1	*C8	7	02136	R 02150 Z
00400	B	ERROR1		7	02143	J 02428
00410	A	212,COUNT3		11	02150	A 03303 03196
420	BZ	*C8		7	02161	J 02175 V
00430	B	CPUB		7	02168	J 02119
00440	BEPA	*C1		7	02175	Y 02182 E
00450	STORI	M		1	02182	-
00460	DELAY	M	212,COUNT	11	02183	A 03303 03183
00470	BZ	ERROR2		7	02194	J 02513 V
00480	B	DELAY		7	02201	J 02183

RELEASE

BRCH BUSY

BRCH ON ERROR

ADD 1 TO PASS COUNT

BRCH IF 1000 PASSES

ENTER ALERT MODE

HACT END TST1

DELAY FOR INTERRUPT

1410/7010 AS SYSTEM 1

PGLIN	LABEL	OPCODE	OPERAND	CT	ADDRS	INSTRUCTION
501	CPUA	NOPWM		1	02208	N
502		B	60LONG	7	02209	J 02235
503		S	FILE65	6	02216	S 03289
504		SW	CPUA61	6	02222	, 02209
505		B	SEEK	7	02228	J 02252
506	COLONG	A	003600,FILE65	11	02235	A 03307 03289
507		CH	CPUA61	6	02246	B 02209
00510	SEEK	SD	I,FILE	10	02252	M 8F0 03284 R
00530	D	BA1	061	7	02262	R 02269 M
5311		BEPA	061	7	02269	Y 02276 E
00520	C	BCBI	AVAIL	7	02276	R 02315 2
00540	DELAY2	A	012,COUNT2	11	02283	A 03303 03193
00550		BZ	ERROR3	7	02294	J 02610 V
00560		B	DELAY2	7	02301	J 02283
00570		BXPA	061	7	02308	Y 02315 X
00580	AVAIL	NOPWM		1	02315	N
00590		B	TOLONG	7	02316	J 02629
00600	TINDEL	A	012,COUNT4	11	02323	A 03303 03207
00610		BZ	068	7	02334	J 02348 V
00620		B	TINDEL	7	02341	J 02323
00630		SM	AVAIL61	6	02348	, 02316
00640		S	COUNT4	6	02354	S 03207
00650		B	SEEK	7	02360	J 02252
00680	RELBI	MU	8F9,FILE66,R	10	02367	M 8F9 03292 R
00690	E	BCB1	0-16	7	02377	R 02367 2
00700	F	BA1	061	7	02384	R 02391 M
5	00660	RELES	RCP 0	10	02391	M 3T0 00000 R
00670		BA1	061	7	02401	R 02408 M
00710	SKSE	NOPWM		1	02408	N
00720		B	ENDTST	7	02409	J 02906
00730		SW	RELSW61	6	02416	, 02886
00740	STEP2	M	CPUB	6	02422	, 02119

RESET FILE ADDR

TURN ON LONG SK SW

GO SEEK ACCESS

INCREASE FILE ADDR

TURN OFF LONG SK SW

SEEK FILE

CLEAR I/O INTERLOCK

ENTER ALERT MODE

BRCH ON BUSY

DELAY FOR INTERRUPT

EXIT ALERT MODE

ADD 1 TO DELAY COUNT

BRCH IF DELAY COMP.

TURN ON AVAIL SWITCH

RESET DELAY COUNTER

RELEASE 7631

RESET INQ

GO TO END TEST

TURN ON RELEASE SW

HALT WAIT TO START

SFOI

CT ADDR INSTRUCTION

ERROR ROUTINES
OPCOD OPERAND

LABEL

PGLIN

PGLIN	LABEL	OPCOD	OPERAND	ERROR ROUTINES	CT	ADDR	INSTRUCTION
00760	ERROR1	BNQ	EXIT1		7	02428	J 02500 Q
00770		BCE	CPUB,199,1		12	02435	B 02119 00199 I
00780		WCP	MSG1		10	02447	M XTO 03209 M
00810		BAI	*E1		7	02457	R 02464 M
00820		RCP	199	READ CONSOLE	10	02464	M XTO 00199 R
00830		BEX1	*-16,M	BRCH ANY BUT WLR	7	02474	R 02464 M
00840		BAI	*E1		7	02481	R 02488 M
00850		BCE	CPUB,199,1	BRCH TO LOOP	12	02488	B 02119 00199 I
00860	EXIT1	S	199	RESET LOOP SWITCH	6	02500	S 00199
00870		B	STOPI		7	02506	J 02182
00880	ERROR2	BXPA	*E1	EXIT ALERT MODE	7	02513	Y 02520 X
00890		S	COUNT	RESET COUNTER	6	02520	S 03183
00900		BNQ	EXIT2	CHECK FOR INQ	7	02526	J 02598 Q
00910		BCE	CPUB,199,1	BRCH TO LOOP	12	02533	B 02119 00199 I
00920		WCP	MSG2		10	02545	M XTO 03229 M
00930		BAI	*E1		7	02555	R 02562 M
00940		RCP	199	READ CONSOLE	10	02562	M XTO 00199 R
00970		BEX1	*-16,M	BRCH ON ANY BUT WLR	7	02572	R 02562 M
00980		BAI	*E1		7	02579	R 02586 M
00990		BCE	CPUB,199,1	BRCH TO LOOP	12	02586	B 02119 00199 I
01000	EXIT2	S	199	RESET LOOP SWITCH	6	02598	S 00199
01010		H	CPUA		6	02604	- 02208
01020	ERROR3	S	COUNT2	RESET COUNTER	6	02610	S 03193
01030		BXPA	*E1	EXIT ALERT MODE	7	02616	Y 02623 X
01040		H	CPUA	ERROR HALT NO INTERRUPTS	6	02623	- 02208
01050	TOLONG	CW	AVAIL*E1	TURN OFF AVAIL SWITCH	6	02629	0 02316
01060	ERROR4	BCE	STOP3,FIRST,1	CHECK IF THIS CPUA	12	02635	B 02654 02763 I
01070		B	*E7		7	02647	J 02660
01080	STOP3	H	CPUA	ERROR 7631 NOT AVIAL	6	02654	- 02208
01090		BNQ	EXIT3		7	02660	J 02732 Q
01100		BCE	CPUA,199,1	BRCH TO A LOOP	12	02667	B 02208 00199 I
01110		WCP	MSG3		10	02679	M XTO 03250 M
01140		BAI	*E1		7	02689	R 02696 M
01150		RCP	199	READ CONSOLE	10	02696	M XTO 00199 R
01160		BEX1	*-16,M	BRCH ON ANY BUT WLR	7	02706	R 02696 M
01170		BAI	*E1		7	02713	R 02720 M

SFOI INSTRUCTION

ERROR ROUTINES
OPCOD OPERAND

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
01180		BCE	CPUA,199,1	12	02720	B 02208 00199 1
01190	EXIT3	S	199	6	02732	S 00199
01200		H	CPUA	6	02738	. 02208
01210	RESET	A	012,FIRST	11	02744	A 03303 02763
01220		B	CPUA	7	02755	J 02208
01230		H		1	02762	.
01240	FIRST	DCW	0 2	1	02763	
01250		DGW	0A2	1	02764	

BRCH TO LOOP

RESET LOOP SWITCH

SET CPUA INDICATOR

PCLIN	LABEL	RESTART AND INT OPCOD OPERAND	SF01	CT	ADDRS	INSTRUCTION
01260		JOB SF01A RESTART AND INTERRUPT ROUTINES				
12601	INTER	BAL *81		7	02765	R 02772 M ^G
1270		S COUNT		6	02772	S 03183
01280		S COUNT2		6	02778	S 03193
01290		S COUNT3		6	02784	S 03196
01300		S COUNT4		6	02790	S 03207
01310		S 199		6	02796	S 00199
01320		BXPA *81		7	02802	Y 02809 X
01330		BCE SKTST,FIRST,1		12	02809	B 02830 02763 I
01340		B LOCK		7	02821	J 02868
01360		H		1	02828	.
01370		BCW *81		1	02829	.
01380	SKTST	MU SF0,FILE,0		10	02830	M SF0 03284 Q
13801		BCBL *-16		7	02840	R 02830 Z
01390	G	BAL *81		7	02847	R 02854 M
13901		BNQ REL31		7	02854	J 02367 Q
01410		B CPUA		7	02861	J 02208
01420	LOCK	MU SF0,FILE,0		10	02868	M SF0 03284 Q
01430	H	BAL *81		7	02878	R 02885 M
01440	RELSM	NOPHM		1	02885	M
01450		B ENDTST		7	02886	J 02906
01460		SM SKSM61		6	02893	. 02409
01470		B CPUA		7	02899	J 02208
01480	ENDTST	MCP MSG4		10	02906	M SF0 03270 M
01490		BCBL *-16		7	02916	R 02906 Z
01500		BAL *81		7	02923	R 02930 M
01530		H *00		6	02930	. 00400
01540		M		1	02936	.

RESET COUNTER

EXIT ALERT MODE

BRANCH IF IN SK TEST

NO-OP TO RESET SEEK

BRCH BUSY

BRCH ON INQ

NO-OP TO RESET SEEK

GO TO END TEST

TURN ON SEEK SWITCH

TYPE PUT END MESSG

CALL IN NEXT TEST

CHANNEL INITIALIZE AND PROGRAM CONSTANTS

PGLIN	LABEL	OPCOD	OPERAND	CT	ADDRS	INSTRUCTION
01560	INIT2	MLCA	CH2,CHCODE	12	02937	D 03298 03296 T
01570		B	INITS	7	02949	J 02987
01580	INIT3	MLCA	CH3,CHCODE	12	02956	D 03300 03296 T
01590		B	INITS	7	02968	J 02987
01600	INIT4	MLCA	CH4,CHCODE	12	02975	D 03302 03296 T
01610	INIT5	MLCS	CHCODE-1,CPU8&1	12	02987	D 03295 02120 3
01620		MLCS	CHCODE-1,SEEK&1	12	02999	D 03295 02253 3
01630		MLCS	CHCODE-1,REL31&1	12	03011	D 03295 02368 3
01640		MLCS	CHCODE-1,SKTST&1	12	03023	D 03295 02831 3
01650		MLCS	CHCODE-1,LOCK&1	12	03035	D 03295 02869 3
01660		MLCS	CHCODE,A	12	03047	D 03296 02129 3
01670		MLCS	CHCODE,B	12	03059	D 03296 02136 3
01680		MLCS	CHCODE,C	12	03071	D 03296 02276 3
01690		MLCS	CHCODE,D	12	03083	D 03296 02262 3
01700		MLCS	CHCODE,E	12	03095	D 03296 02377 3
01710		MLCS	CHCODE,F	12	03107	D 03296 02384 3
01720		MLCS	CHCODE,G	12	03119	D 03296 02847 3
S 1721		MLCS	CHCODE,G-7	12	03131	D 03296 02840 3
01730		MLCS	CHCODE,H	12	03143	D 03296 02878 3
17301		MLCS	CHCODE,INTER	12	03155	D 03296 02765 3
S 01740		B	START	7	03167	J 02088
01750	COUNT	DCW	000000000000	10	03183	
01760	COUNT2	DCW	000000000000	10	03193	
S 1770	COUNT3	DCW	0	3	03196	
01780	COUNT4	DCW	000000000000	11	03207	
S 00800	MSG1	DC	0ER1,ENTER 1 TO LOOP2,G	19	03209	
00940	MSG2	DC	0ER 2,ENTER 1 TO LOOP2,G	20	03229	
01E30	MSG3	DC	0ER3,ENTER 1 TO LOOP2,G	19	03250	
01E20	MSG4	DC	0TEST COMPLETE2,G	13	03270	
01790	FILE	DCW	0000000880,G	6	03284	
01800		DC	0	1	03293	
01810		DCW	0	1	03294	
01820	CHCODE	DCW	0	2	03296	
01830	CH2	DCW	00X0	2	03298	
01840	CH3	DCW	0'30	2	03300	
01850	CH4	DCW	0'10	2	03302	

SFO1

CT ADDR INSTRUCTION

CHANNEL INITIALIZE AND PROGRAM CONSTANTS

PGLIN LABEL OPCOD OPERAND

01860 END 2000

01860 812

01860 803602

J02000

1 03303

4 03307

END OF ASSEMBLY

024