



ERROR DISPLAY AND ANALYSIS

1. Press 'Stop'
2. Press 'Mode Select'
3. Select the entire Log Picture
4. After the Log Informations are kept, reset Log
5. Press 'Cancel'
6. Press 'Start' (Program continues)

CTM SECTIONS

Section	Section
0 Front matter	9 3504
1 Introduction	10 2560
2 IPU - 125	11 DDA - 3330
3 IOP - 125	12 MTA
3 IOP/MIP - 115	13 5425
4 MPX	15 3203
5 MSC - MS	16 5203
6 Console System	17 DDA - 3340
7 1403	21 I/O Exerciser
8 3525	23 ASCP
	24 Test Programs (TOD + Meter)

MICRO DIAGNOSTIC TEST'S : The tests are loaded into the WCS and perform the functions as explained in the corresponding CTM section

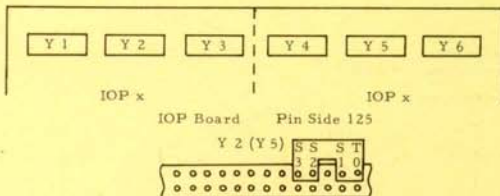
Test	Mach.	CS	Automatic Reload	
SVP	115, 125	SVP	NO	IMPL
CRT/KB	115, 125	SVP	NO	IMPL
MIP	115	IOP E	not required	exec. in Wait
IPU	125	SVP	NO	IMPL
MSC/MS	115, 125	SVP	NO	IMPL
IOP **	115, 125	SVP	YES	restart
IOP 'E'	115	SVP	NO	IMPL
MPX	115, 125	IOP - 9	YES	restart
DDA	115	IOP'E'	NO	IMPL
DDA	125	IOP'A'	YES	restart
ICA	115, 125	IOP'B'	YES	restart
5213	115, 125	SVP	not required	restart
1403	125	IOP'8'	YES	restart
2560	115, 125	IOP'8'	YES	restart
3203	115	IOP'8'	YES	restart
5203	115	IOP'8'	YES	restart
3504	125	IOP'8'	YES	restart
3525	125	IOP'8'	YES	restart
5425	115	IOP'8'	YES	restart

** All, except IOP'E' on 115 !

LOG AND MICROPROGRAM SELECTION

		CTM Section
SVP	MAA System Overall Log	
SVP	MBB SVP Bus 0 Log	6
IPU	MBC IPU Log Analysis	2
	MBD IPU Log Display	
	MJC IPU Micro Test	
MSC	MBE MSC Log Analysis	5
	MBF MSC Log Display	
	MJA MSC Micro Test	
MS	MJB MS Micro Test	5
IOP	MBG IOP Log Analysis	3
	MBH IOP Log Display	
	MJD IOP Control Test	
MIP	MBI MIP Log Display	3
MTA	MBK MTA Log Display	12
MSCI	MBL MSCI Log Analysis	5
	MBM MSCI Log Display	
	MJF System Interface Test	
	Make sure . IOP 9 is running errorfree	
MPX	MBN MPX Log Analysis	4
	MBO MPX Log Display	
	MJG MPX Micro Test (FE)	
5213	MJH 5213 Test	
	Make sure . IOP 8 is running errorfree	
3504	MCB 3504 Log Display	9
	MMA 3504 Read/Stacker/OMR Test	
	MMB 3504 Sensor Timing Test	
	MMC 3504 Interface Control Test	
3525	MCD 3525 Log Display	8
	MME 3525 Print Feature Test	
	MMF 3525 Ripple Read/Punch Test	
	MMG 3525 Read/Punch any Test	
	MMH 3525 Attachment Test	
	MMI 3525 Interface Control Test	
	MMJ 3525 Read Timing Test	
	MMK 3525 Sensor Timing	
2560	MCF 2560 Log Display	10
	MLA 2560 Ripple Read/punch Test	
	MLB 2560 Print Feature Test	
	MLC 2560 Read/Punch any Test	
	Feed Oscillation Test	
	MLD 2560 Stacker Select Test	
	MLE 2560 Attachment, Feed Cells	
	MLF 2560 Read Adjustment Test	
	MLG 2560 Feed Diagnostic Test	
5425	MCH 5425 Log Display	13
	MLJ 5425 Ripple/Read/Punch Test	
	MLK 5425 Read/Punch any Test	
	MLL 5425 Print Feature Test	
	MLM 5425 Read Adjustment Test	
	MLN 5425 Attachment Test	
	MLO 5425 Stacker Select Test	
	MLP 5425 TAP	
	MLH RPQ	

1403	MCK	1403 Log Display	7
	MKA	1403 Ripple Print Test	
	MKB	1403 Matrix Print Test	
	MKC	1403 Carriage Test 1	
	MKD	1403 Carriage Test 2	
	MKE	1403 Chain Cleaning (P/N 451529)	
	MKF	1403 Manual Buffer Routines	
	MKG	1403 Attachment Test	
	MKH	1403 Scoping Routines	
3203	MCO	3203 Log Display	15
		Test's same as 1403	
5203	MCM	5203 Log Display	16
		Test's same as 1403	
Make sure , IOP A is running errorfree			
DDA	MDA	DDA Log Analysis	11
	MDB	DDA Log Display	
	MNA	DDA Micro Test	
3330	MDD	3330 Log Display	11
	MDF	3330 Volume Statistic	
	MDH	3330 Last 38 Logs	
3340	MDM	3340 Log Display	17
	MDO	3340 Volume Statistic	
	MDQ	3340 Last 38 Logs	
3330/3340 are tested with ILT's/OLT's. See F 15			
Make sure , IOP B is running errorfree			
ICA	MEA	ICA Log Analysis	
	MEB	ICA Log Display	
	MOA	ICA Front End Logic Test	
	MOB	ICA Interface Wrap Test	
	MOC	ICA Interface Exerciser	
	MOD	ICA External Bus Test	
	MU	Digital Scope	
	MV	I/O Exerciser	

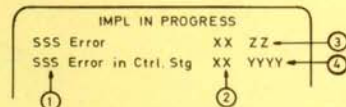


MODELL 115

MODELL 125

	IOP 8	IOP 9	IOP B	IOP 8	IOP 9	IOP A	IOP B
	01A-C1	01A-C2	01A-B2	01A-B2	01B-A2	01A-B2	01B-A2
Trigger T0	D1E11	P1E11	P1E11	P1E11	D1E11	D1E11	P1E11
Signal S1	E1A11	Q1A11	Q1A11	Q1A11	E1A11	E1A11	Q1A11
Signal S2	E1C11	Q1C11	Q1C11	Q1C11	E1C11	E1C11	Q1C11
Signal S3	E1D11	Q1D11	Q1D11	Q1D11	E1D11	E1D11	Q1D11

IMPL MESSAGES



- ① Satellite
- ② Error Code
- ③ Sub Code
- ④ Hex. CS - Addr.

ERROR CODES

IPU/MIP		IOP		
DESCRIPTION	ACTION	DESCRIPTION	ACTION	
01 Any Check	Log Anal.	Access PTR not 7	Log Anal.	
02 Value mismatch	Micro Test	Mismatch ACR - CSAR	Micro Test	
04 ---	not 115	MIAR 7 not 0000		
08 ---		Index DIN ALS is not FF		
10	More than 1bit at indicated address in Ctrl. Stg. is in error. Most probably Ctrl. Stg. Error. Swap Cards. Initialisation not possible. See Table below.			
20	Error occurred when reading from indicated address. Can be control storage failure. Use Log. Anal. and Micro Test's.			
30	After IPU started			
Clock Error	Log Anal.	125 only		
31 Any Check	Micro Test			
32 800 ms	Suspect MSC			
33 IDR 0-7 = 00 ?	Suspect MS			
34 Backup CSAR high = 0C ?	Error On			
35 Backup CSAR low = FE ?	New μ-Prgr (EC)			
	Subcode			
	00=Check Over			
	01=Stop On			
	02= Ride Mode			
	03= Error			
40	Carry propagation for address register failed. Use Log Anal. and run Micro Test's.			
60	Error during writing into indicated addr. Any check not parity, not PFCN Check. Log Anal. Micro Test. 125 only			
80	Error occurred at indicated address while reading the whole μ-Program from control storage (Hash Total Calculation). Use Log Anal. , run Micro Test's (Can be control storage error.)			
FF	Mismatch between hash total during writing into, and reading from control storage. Use Log Anal. , run Micro Test's			
ERROR ON DISKETTE				
A1	Error during search of identifier		Diskette defective	
A2	Error while reading from diskette		IGAR unreliable	
A3	Error while reading patch record		Error in new Microprogram (EC)	
A4	Wrang patch record			
Ctrl. Stg. Table (Error 10)	INDICATED ADDRESS 125	PLUG POS 01A-A2	INDICATED ADDR.	PLUG POSITION Left Right
	0000 - 0FFF	S D	0000 - 1F7F	K L
	1000 - 1FFF	R E	2000 - 3F7F	J M
	2000 - 2FFF	Q F		
	3000 - 3FFF	P G		
	C000 - FF7F			
			For CS Positions in 115 IOP's see CTM 3-3045	

IOP MANOPS

ON 115 2additional:

A = IOP ALTER
F = IOP FILL
D = IOP DUMP

L = MSC LS DISPL.
X = IOP FE MATRIX

SET CODE: AND ENTER

SAT STATUS	IPU	MSC	63:60	IOP:8	9	A	B	C	D	E	F	
SENSE	40:40	61:01	IDLE:83	90	00	00	C1	00	00	00		③
SENSE	43:00	62:00	CHK:AF	FF	00	00	00	00	00	00		④
ID: C064		M: X0B7F.6E.										

①

②

if IOP not attached
Satelit C = Tape Adapter

IPU NOT 115

	0	1	2	3	4	5	6	7
SENSE 40	0	1	0	0	0	NOT DATA BUS CHK	IPU CHK	0
	see Note							
SENSE 43	NOT IPU STOPPED	SVP SELECT	NOT LS ADDR CHK	NOT MSC CHK	FCN/OPR CHK	BACKUP	CSAR	COUNT
						0	1	2

MSC ON 115 ONLY SENSE 63

	0	1	1	0	ADDR BUS CHK	NOT DATA BUS CHK	SVP CALL	1
	see Note							
SENSE 61	PRE BUS IN CHK	LS OR IO CHK	BUS IN CHK RING BUS	BUS IN CHK BCA	BUS IN CHK IPU	BUS OUT CHK	IOP CONTR CHK	ECC IN STALLED
SENSE 62	SAR CHK BCA	SAR CHK IOP/IPU	KS PARITY CHK	BCA KEY CHK	MEMORY ADDR CHK	MEMORY DATA IN CHK	STORAGE CHK 1	STORAGE CHK 0

IOP's and Tape Adapter

	0	1	2	3	4	5	6	7
SENSE 0	0	IOP ADDRESS			ADDR BUS CHK	NOT DATA BUS CHK	IOP HALT	NOT PCR FL
		1	2	3				

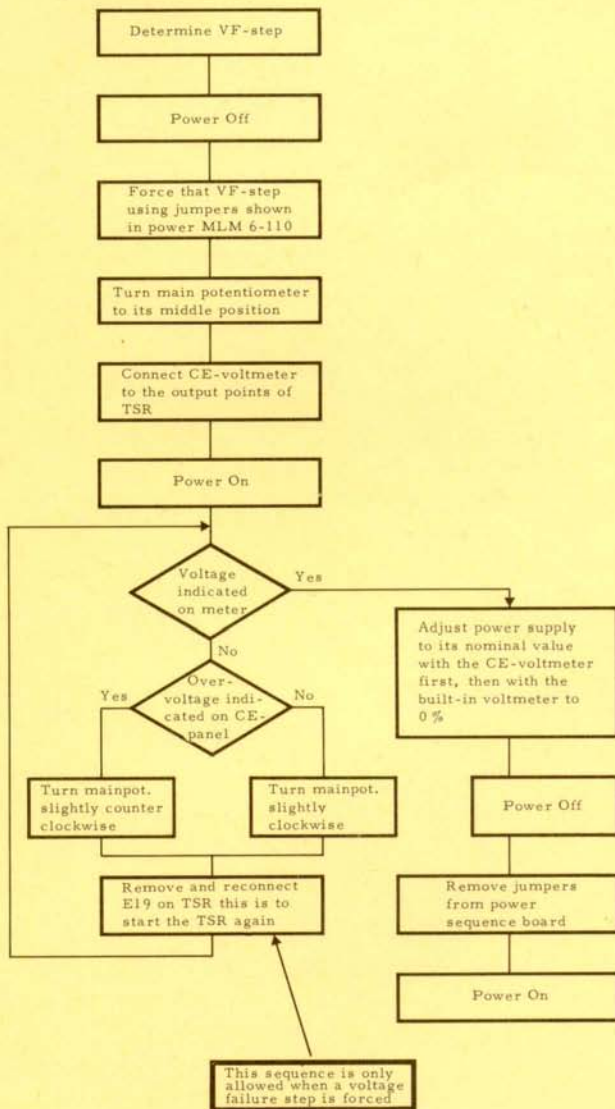
IOPs

SENSE 1	NOT CLOCK CHK	NOT OPR CHK	NOT ZLS CHK	NOT EXT ADDR CHK	NOT BREG CHK	NOT DREG CHK	NOT CSAR CHK	NOT XREG CHK
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Tape Adapter (C)

MSC PARITY ERROR	DISABLE	PAGE BOUNDARY	MSC CHK 2 FL	IPU SELECT	MSC CHK 1 FL	SYSTEM RESET FL	REQUEST MSC FL
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TSR ADJUSTMENT PROCEDURE



SVP BUS TEST (Select MZ)

For further details go to CTM 6-3020

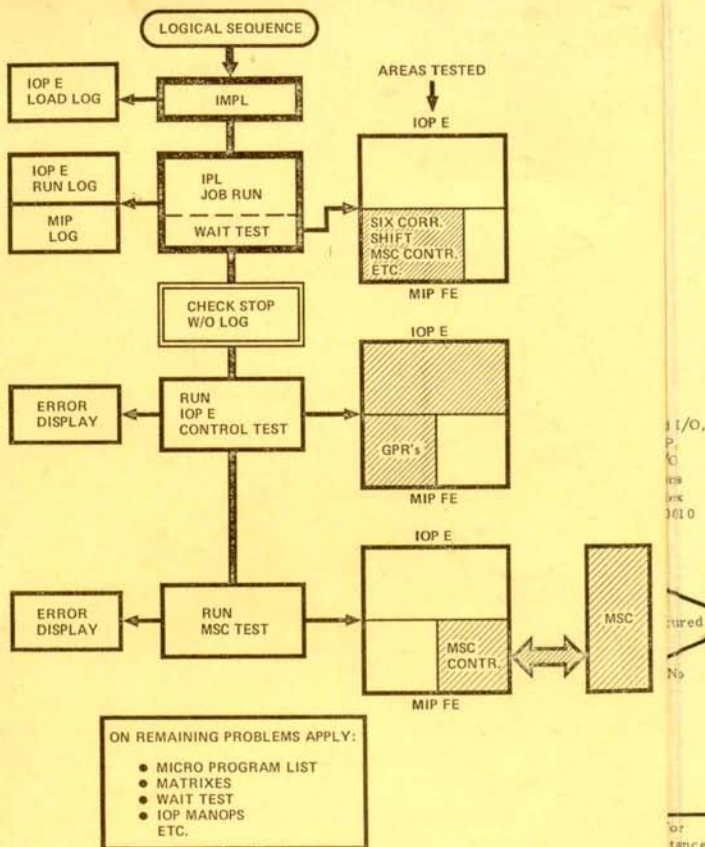
SVP BUS CONTROL 1											
XY 0	1	2	3	4	5	6	7	8	9		
0	C 4901	C 4F01	S 43	C 4F02	S 43	X	X	X	X	X	For SVP - IPU
1	C 72AA	S 72	C 7255	S 72	X	X	X	X	X	X	For SVP - MSC
2	C 8BAA	S 8F	C 8B55	S 8F	X	X	X	X	X	X	For SVP - first IOP
3	C 8BAA	S 8F	C 8B55	S 8F	X	X	X	X	X	X	
4	C 9BAA	S 9F	C 9B55	S 9F	X	X	X	X	X	X	For SVP - last IOP
5	X	X	X	X	X	X	X	X	X	X	
6	X	X	X	X	X	X	X	X	X	X	
7	X	X	X	X	X	X	X	X	X	X	
XY 00	LC 50	MODE									Format of control and senses for IOP's, CX8AA, CX855, SXF X = high order IOP ADR

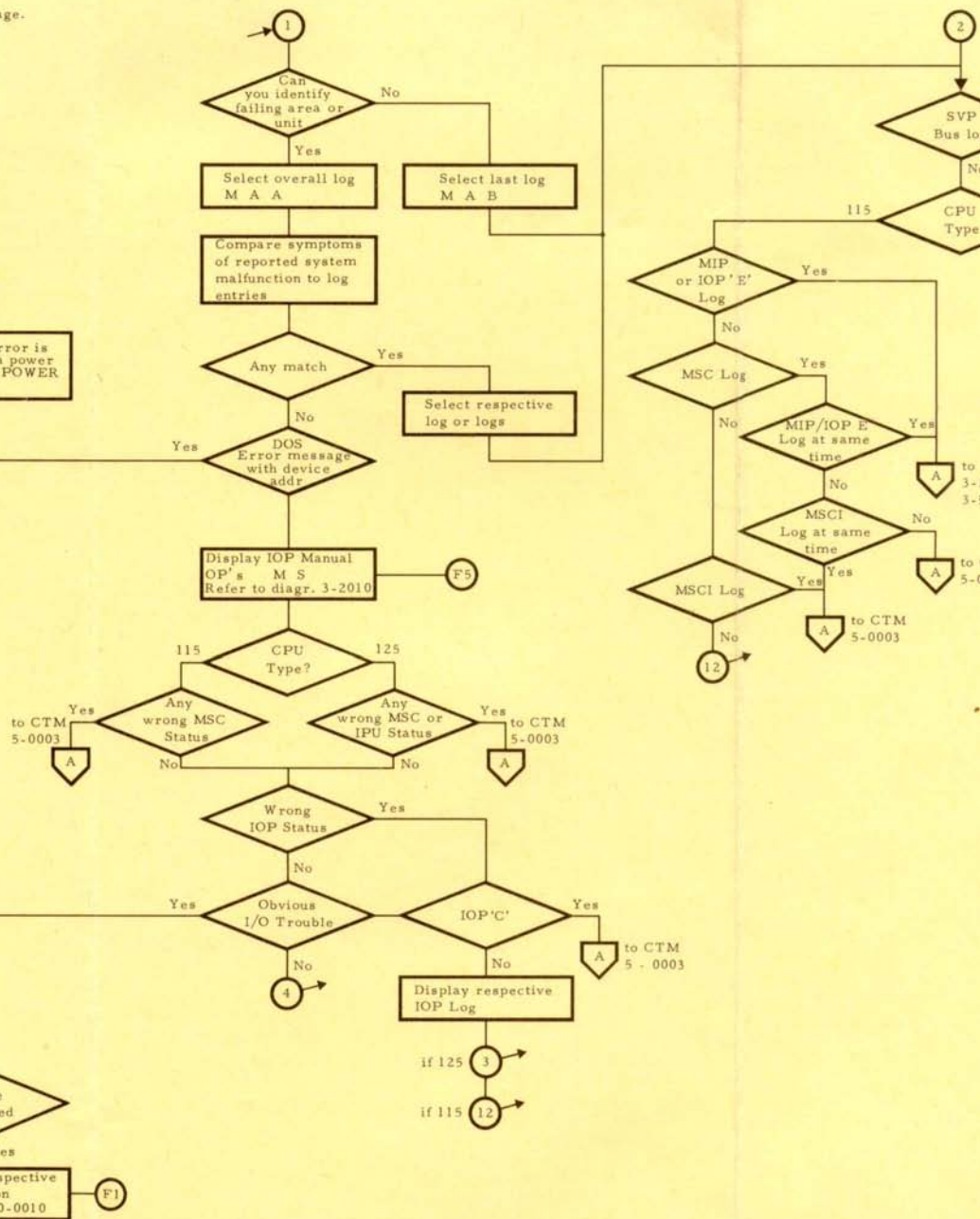
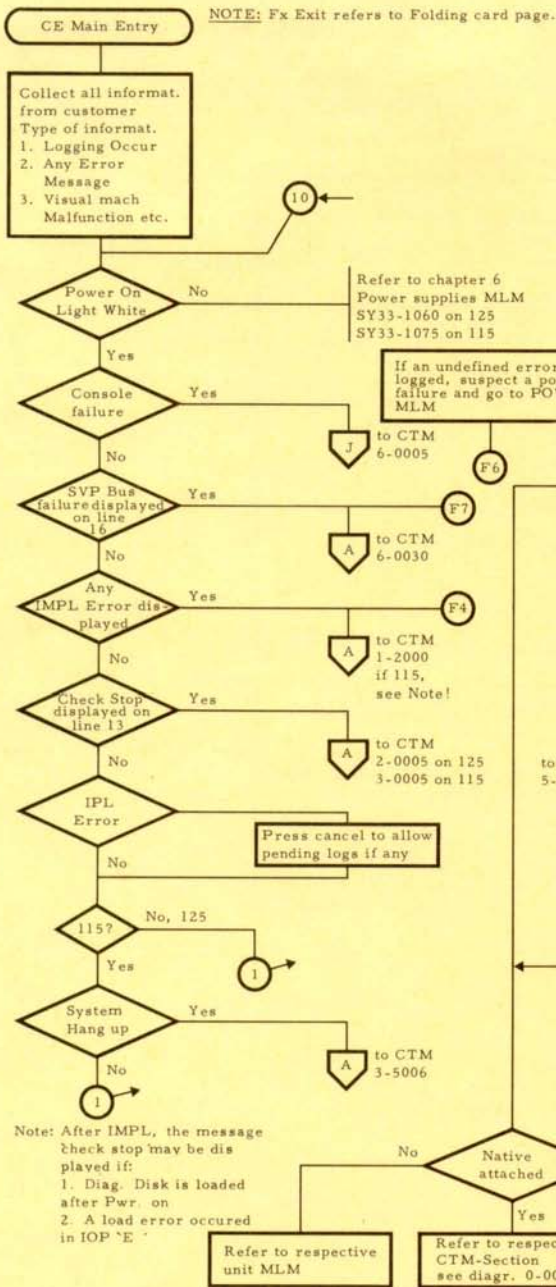
SVP BUS CONTROL 1											
XY 0	1	2	3	4	5	6	7	8	9		
0	C 4901	C 4F01	S 43	C 4F02	S 43	X	X	X	X	X	Note 1
1	C 72AA	S 72AA	C 7255	S 7255	X	X	X	X	X	X	Note 2
2	C 8BAA	S 8FAA	C 8B55	S 8F55	X	X	X	X	X	X	
3	C 8BAA	S 8FAA	C 8B55	S 8F55	X	X	X	X	X	X	
4	C 9BAA	S 9FAA	C 9B55	S 9F55	X	X	X	X	X	X	
5	X	X	X	X	X	X	X	X	X	X	
6	X	X	X	X	X	X	X	X	X	X	
7	X	X	X	X	X	X	X	X	X	X	
XY 00	LC 50	MODE									

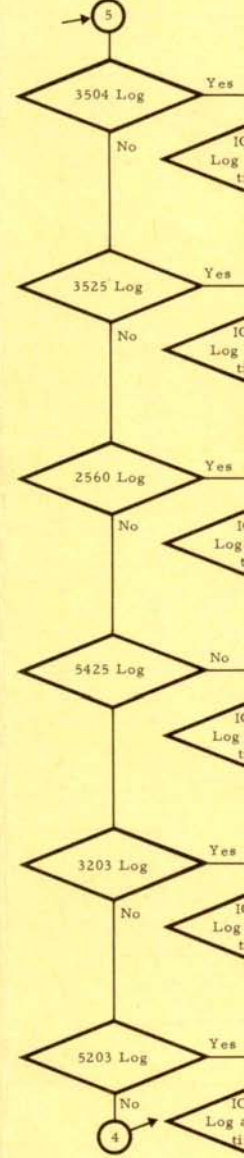
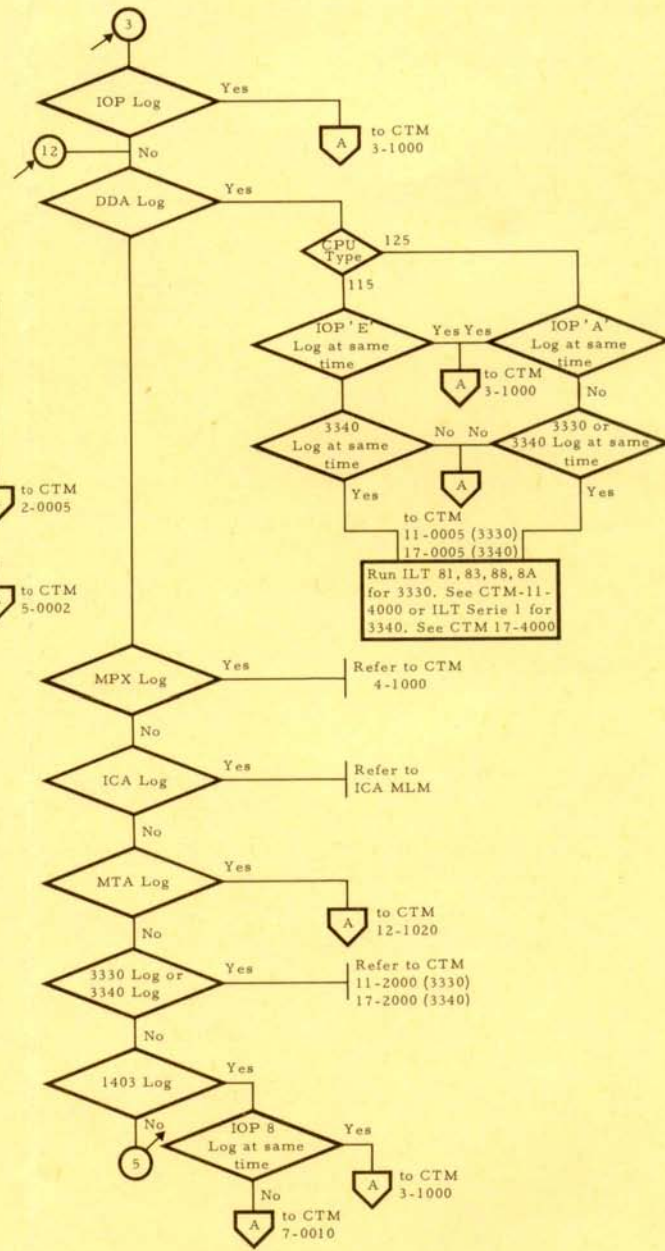
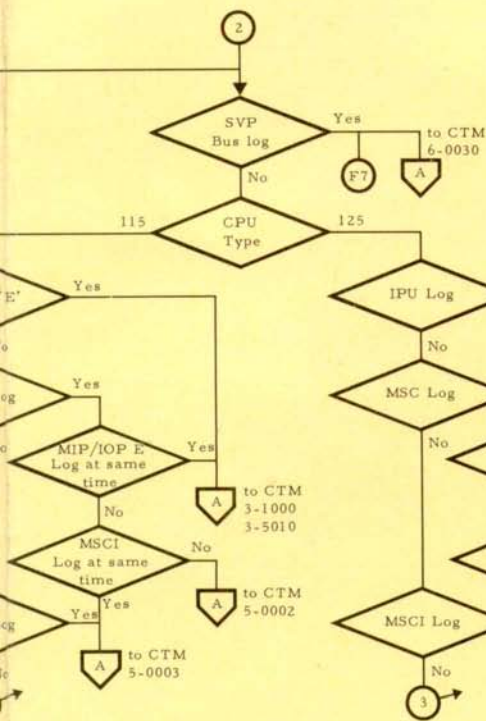
Note 1 Bit 5, 6, 7 of the received pattern must match with the transmitted or

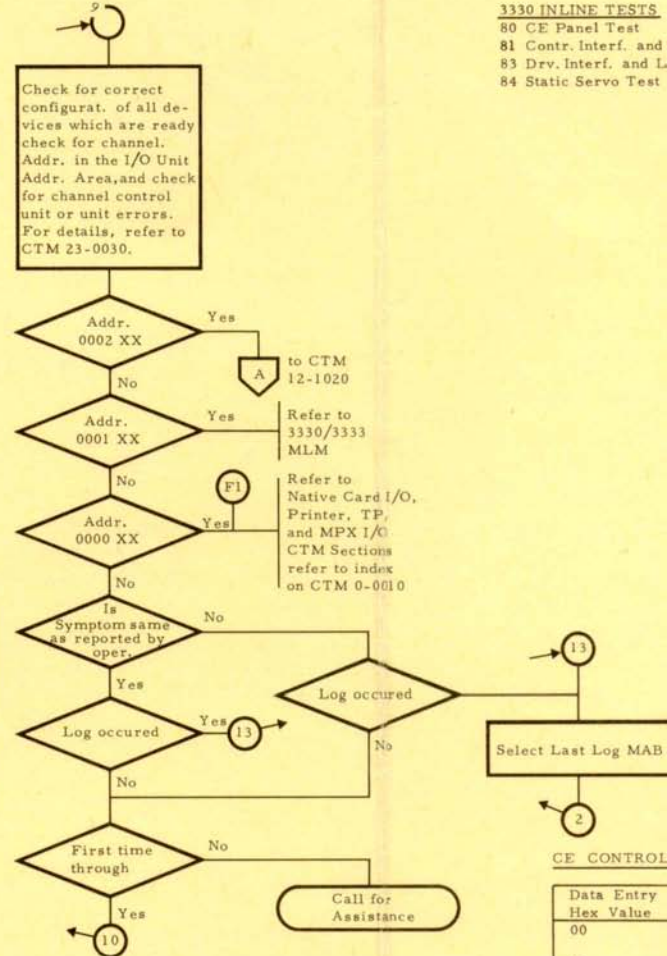
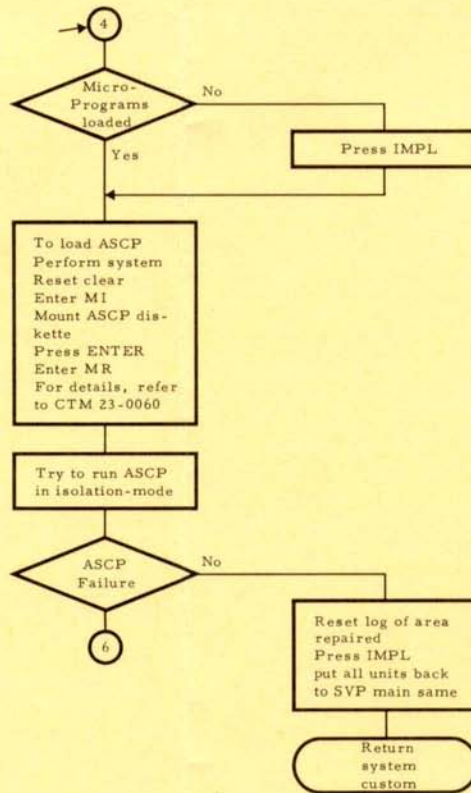
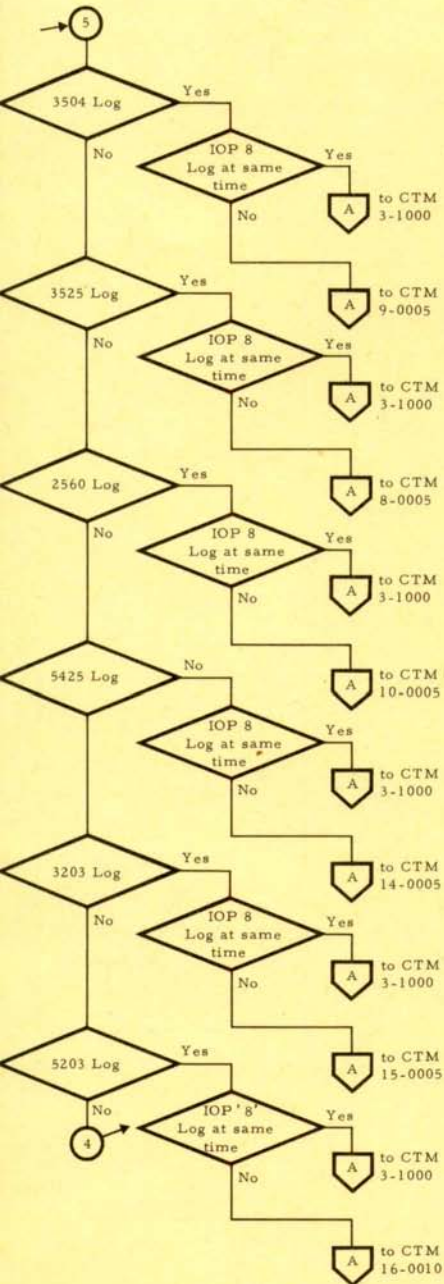
Note 2 The received pattern must match with the transmitted ones.

MIP TROUBLE ANALYSIS









3330 INLINE TESTS
 80 CE Panel Test
 81 Contr. Interf. and
 83 Drv. Interf. and L
 84 Static Servo Test

CE CONTROL

Data Entry Hex Value
00
01
02
03
04
05
06
07
08
10
20
30

3330
2X
02
0C
0D
0A
0E
0F
00
1X
CX

3330 INLINE TESTS

80 CE Panel Test
81 Contr. Interf. and Logic Test
83 Drv. Interf. and LOG. Test I
84 Static Servo Test

86 Dynamic Servo Test I
88 Drv. Interf. and Log. Test II
89 Index/Sector Test
8A Drv. Interf. and Log. Test III
8B Dynamic Servo Test III
8C Cylinder Pulse Test
8D Gap Cntr. and Data X-fer Test I
8E INcremental Seek Test
8F Random Seek Test
90 CE Modes
92 Error Correction Code Test
94 Read Test
95 Write Test
96 Sense Display Routine
99 Write HA Routine
9A Cylinder Seek Test
9C Head Alignment Test
9D Tach Gain Adj.
9E Vibration Tolerance Test

3340 INLINE TESTS

Serie 1
A1 Contr. Interf. and LOGIC Test
A2 Dev. Interf. and Logic Test
A3 DM Control Logic Test
A5 Index/Sector Test
AD Gap Cntr. and Data X-fer Test
AF Format Read/Write Test
A4 Dynamic Servo Test I
AE Error Correction Code Test

Serie 2
A6 Dynamic Servo Test II
A8 Dynamic Servo Test III

Standalone Tests

A7 Dynamic Servo Adj. Progr.
A9 Incremental Seek Test
AB Random Seek Test
AA Cylinder Seek Test
AC DM State Analysis
B1 Read Test
B2 Write Test
B3 Device Status Display
B4 Tag Cycle Utility
B7 Carriage Go Home Scope
BF Hardcore Interf. Bring up

CE CONTROLS, RUN OPTIONS, PARAMETERS

Data Entry Hex Value	Description
00	Start/Stop. Routine run control. Routines can be started or stopped with this entry.
01	Bypass error stop(dynamic error display)
02	Loop routine
03	Bypass error stop and loop routine
04	Inhibit routine link
05	Inhibit link and bypass error stop
06	Loop single routine
07	Loop single routine and bypass error
08	Reset run options
10	Parameter entry required
20	Advance error display
30	Diagnostic System reset

3330	3340	Description
2X	E1	Error stop
02	82	Routine is loading
0C	8C	Routine is running
0D	8D	Error display with bypass error stop
0A	CA	Routine is ready for execution
0E	CE	Routine has stopped
0F	CF	Normal routine end
00	C0	Invalid routine number was set
1X	DX	Parameter entry required
CX	FX	Error detected by Storage Control

3330 Head Alignment /125

Set File Test Unit

Meter Range - Transit
Function - Hd. Alignm.
Enable/Inhibit - Enable
Timer - Operate
Check Status - Operate

Plug FTU Cable, make Drive ready with CE Pack and S-Plug. Start ILT's from Keyboard.
On 3333 CE-Panel set Data Entry Sw. to 9C - Execute.

A Head Verification

Set Data Entry to $\theta\theta$ - Execute
Display High: $\theta\theta\theta\theta$ XXXX successful
Display Low: 1111 1111 seek
Execute 2 times $\theta\theta$
Display High: $\theta\theta\theta\theta$ 1111. This means all Heads are o.k. ($\pm 150 \mu$ -inch)
Display High: $\theta\theta\theta\theta$ XXXX. Error
Display on FTU the HAR, the failing Head is indicated.
Go to B.

3410/3411 Online Tests, listed by Section

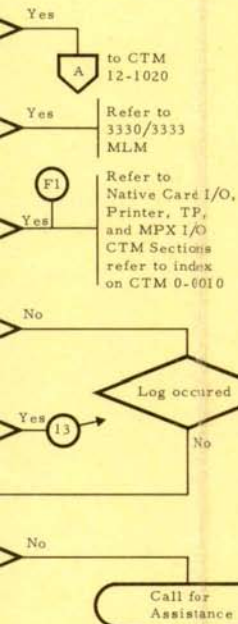
Section	Test Focus	Test Mode	Test Type	Run Time			Notes
				M1	M2	M3	
A: Control Unit	Control Unit	PE and NRZI	Functional	0.24	0.15	0.09	
B: PE and NRZI Control Unit	Control Unit	PE and NRZI	Functional	0.56	0.35	0.21	
C: NRZI Control Unit	Control Unit	NRZI Only	Functional	0.48	0.30	0.18	
D: Control Unit Fault Locator	Control Unit	PE	Diagnostic	0.56	0.35	0.21	EXT Used
E: Tach. Asymmetry	Tape Unit	PE and NRZI	Diagnostic	0.08	0.05	0.04	EXT Used
F: Tach. Parameters	Tape Unit	PE and NRZI	Diagnostic	0.16	0.10	0.04	EXT Used
G: Start/Stop	Tape Unit	PE and NRZI	Functional	1.33	1.05	0.38	
H: IBG and Creep	Tape Unit	PE Only	Functional	13.35	8.30	5.00	
I: Basic Read and Write	Subsystem	PE and NRZI	Functional	2.30	1.35	0.54	EXT Used
J: PE Diagnostic Mode (Part 1)	Control Unit	PE Only	Functional	1.12	0.45	0.27	
K: PE Diagnostic Mode (Part 2)	Control Unit	PE Only	Functional	1.12	0.45	0.27	
L: PE Diagnostic Mode (Part 3)	Control Unit	PE Only	Functional	0.56	0.35	0.21	
M: Write Reliability	Subsystem	PE and NRZI	Reliability	1.35	1.00	0.35	EXT Used
N: Read Reliability	Subsystem	PE and NRZI	Reliability	6.20	4.00	2.25	EXT Used
O: Data Transfer	Subsystem	PE and NRZI	Functional	11.52	7.30	4.23	EXT Used
P: Skew and Tracking Adjustments	Tape Unit	PE and NRZI	Utility	6.20	4.00	2.20	EXT Used

B

Set 1 θ for param. entry.
Execute $\theta\theta$ 4 times.
Display High: $\theta\theta\theta\theta$ XXXX successful
Display Low: 1111 1111 seek
Execute $\theta\theta$ twice
Test now running
Reset HAR
Check Status Sw. to Check Status.
Set Meter to proper value.
Read Meter difference between + and - Polarity.
Adjust head to $\pm 75 \mu$ -inches.

- Advance HAR to next head.
- Check Status Sw. to Operate, then back to Check Status.
Check Meter reading.
Continue with 1 and 2 for all heads to be adjusted.

For more detailed information go to [DRV 204](#).



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