

SNK1 ***** SNEAK-ON DUMP *****

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2 DUMPOO START X'0000'
          3 *****
          4 *
          5 *TITLE:  SNEAK - ON DUMP.
          6 *
          7 *STATUS:  CHANGE LEVEL 0100.
          8 *
          9 *FUNCTION/OPERATION:  SNEAK-ON DUMP IS USED TO PRINT OUT, IN HEX, THE
         10 * CONTENTS OF CORE STORAGE.  IT IS LOADED IN IPL MODE BY PLACING THE
         11 * DECK IN THE PRIMARY HOPPER OF THE MFCU AND DEPRESSING THE PROGRAM
         12 * LOAD KEY.  ALL CARDS HAVE BEEN CONVERTED TO IPL FORMAT.  THIS PRO-
         13 * GRAM WILL OVERLAY THE FIRST 256 BYTES OF CORE, BUT WILL FIRST
         14 * PRINT THE AREA FROM X'007C' TO X'00FF'.  THE LSR DISPLAY ROUTINE
         15 * WILL BE RESTORED AT THE COMPLETION OF THE DUMP.
         16 *
         17 *ENTRY POINTS:  ADPAA1 - INITIAL ENTRY TO THE PHASE.
         18 *
         19 *INPUT:  CONTENTS OF CORE STORAGE.
         20 *
         21 *OUTPUT:  FORMATTED PRINT OF THE CONTENTS OF CORE, 32 BYTES ARE PRINT-
         22 * ED ON EACH LINE, WITH AN ADDRESS.
         23 *
         24 *EXTERNAL ROUTINES  N/A
         25 *
         26 *EXITS-NORMAL:  EJ DISPLAY AT NORMAL END OF JOB.
         27 *
         28 *      -ERROR:  N/A
         29 *
         30 *TABLES/WORK AREAS:  THE PRINT BUFFER (X'007C - X'00FF') IS USED TO
         31 * CONSTRUCT THE PRINT LINE.
         32 *
         33 *ATTRIBUTES:  STAND ALONE.
         34 *
         35 *NOTES:  ANY ERROR ON THE PRINTER WILL RESULT IN A 'PO' BEING DISPLAY-
         36 * ED.  TO PROCEED, CORRECT PRINTER PROBLEM AND PRESS HALT RESTART &
         37 * START ON THE SYSTEM CONSOLE.  ALSO, THE PRINTER CHAIN IMAGE MUST
         38 * BE RESIDENT IN CORE AT X'0100'.
         39 *
         40 *****

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SNK1 ***** SNEAK-ON DUMP (CARD #1) *****

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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          42
          42
          42
          43 ***** STORES REGISTERS AND SETS UP IPL READ ROUTINE.
          44
          44
          44
          45 ADPAA1 ST  SAVPR1,PSR      SAVE PROGRAM STATUS REGISTER
          46      SNS  LPLCR1,X'E0'    SAVE LINE COUNTER
          47      SIO  X'02',X'E2'    PRINT OUT PRINT BUFFER
          48      TIO  *,X'E2'        WAIT UNTIL PRINT IS FINISHED
          49      ST   SAVR11,XR1      SAVE INDEX REGISTER 1
          50 AAA010 LA  DUMPOO,XR1    SET UP XR1 AS BASE
          51      USING DUMPOO,XR1
          52      MVC  255(12,XR1),AAA030+2(XR1) MVE READ RTN TO END OF BUFFER
          53      SNS  MFPNT1(XR1),X'F4' SAVE MFCU PRINT DAR
          54      SNS  MFPCH1(XR1),X'F6' SAVE MFCU PUNCH DAR
          55      SNS  LPIAR1(XR1),X'E4' SAVE THE IMAGE ADDRESS REGISTER
          56      BC   AAA020(XR1),X'00' BRANCH TO READ NEXT CARD
          57 AAA020 EQU X'F4'      ADDRESS IF READ ROUTINE
          58      ORG  X'0028'
          59      LIO  255(XR1),X'F5'   LOAD I/O
          60      SIO  X'40',X'F1'     START I/O
          61      TIO  250(XR1),X'F1'   WAIT UNTIL READ IS FINISHED
          62 AAA030 BC  DUMPOO(XR1),X'00' BRANCH TO EXECUTE NEXT CARD
          63      ORG  X'0028'
          64      DC   CL5'SNK01'     CARD ID - END OF SECOND TIER
          0000 0017 5C 08 FF 33
          0004 0018 70 F4 6A
          0008 001E 70 F6 6C
          000B 0021 70 E4 72
          000F 0024 D0 00 F4
          0028
          002B 0028 71 F5 FF
          002E 002B F3 F1 40
          0031 002E D1 F1 FA
          003B 0031 D0 00 00
          003F 003B E2D5D2F0F1

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IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 2

SNK1 ***** SNEAK-ON DUMP (CARD #2) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		66		DRG	DUMPOO
		67			
		67			
		68		*****	SAVE NDRE DATA.
		69			
		69			
0000	70 E6 70	70	AAB000	SNS	LPDAR1(,XR1),X'E6'
0003	74 02 68	71		ST	SAVR21(,XR1),XR2
0006	02 02 00	72		LA	0(,XR1),XR2
0009	71 E4 10	73		LIO	AAB010(,XR1),X'F4'
000C	00 00 F4	74		BC	AAB020(,XR1),X'00'
000F	0100	75	AAB010	DC	XL2'0100'
		76	AAB020	EDU	X'F4'
003B		77		DRG	X'003B'
003B	E2D502F0F2	78		DC	CL5'SNK02'

SAVE PRINTER DATA ADDR.REGISTER
 SAVE XR2
 LOAD XR2 TO START OF READ BUFER
 LIO PRINT IMAGE
 BRANCH TO READ NEXT CARD
 PRINT IMAGE ADDRESS
 DISPLACEMENT TO READ ROUTINE
 DRG TO END OF TIER
 CARD IDENTIFIER

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 2A

SNK1 ***** SNEAK-ON DUMP (CARD #3) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		80		DRG	DUMPOO
		81			
		81			
		82		*****	MOVE IN HEADINGS TO PRINT.
		83			
		83			
0000	5C 27 A3 2E	84	AAC000	MVC	163(40,XR1),HEAD21(,XR1)
0004	00 00 F4	85		BC	AAC010(,XR1),X'00'
		86	AAC010	EQU	X'F4'
0007	D7E2D94040404040	87	HEAD11	DC	CL8*PSR
000F	E7D9F14040404040	88	HEAD21	DC	CL32*XR1 XR2
0017	E7D9F24040404040	88			MFCU PRINT DAR
001F	D4C6C3E44007D9C9	88			
0027	D5E340C4C1D94040	88			
003B		89		DRG	X'003B'
003B	E2D502F0F3	90		DC	CL5'SNK03'

CARD IDENTIFIER

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 3

SNK1 ***** SNEAK-ON DUMP (CARD #4) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000			92	ORG	DUMPOO
			93		
			93		
			93		
			94	*****	MOVE IN MORE HEADINGS.
			95		
			95		
			95		
0000	5C 2E D2 35		96	AAD000 MVC	210(47,XR1),HEAD41(XR1) MOVE IN HEADINGS
0004	D0 00 F4		97	BC	AAD010(XR1),X'00' BRANCH TO READ NEXT CARD
		00F4	98	AAD010 EQU	X'F4' ADDRESS OF IPL READ ROUTINE
0007	404040D4C6C3E440	0016	99	HEAD31 DC	CL16' MFCU PUNCH DA'
000F	D7E4D5C3C840C4C1		99		
0017	D54040404040D3D7	0035	100	HEAD41 DC	CL31'R LPLCR LPDAR LPIAR'
001F	D3C3D94040404040		100		
0027	D3D7C4C1D9404040		100		
002F	4040D3D7C9C1D9		100		
003B			101	ORG	X'003B'
003B	E2D5D2F0F4	003F	102	DC	CL5'SNK04'

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OSNK-2
PAGE 3

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 3A

SNK1 ***** SNEAK-ON DUMP (CARD #5) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000			104	ORG	DUMPOO
			105		
			105		
			105		
			105		
			106	*****	PRINT THE HEADING LINES.
			107		
			107		
			107		
0000	71 E6 15		108	AAE000 LIO	PTADR1(XR1),X'E6' LOAD PRINT DATA ADDRESS
0003	5F 0B FF FF		109	SLC	255(12,XR1),255(XR1) CLEAR OUT PRINT ROUTINE
0007	F3 E2 02		110	SIO	X'02',X'E2' PRINT THE HEADING LINES
000A	D1 E2 0A		111	AAE010 TIO	AAE010(XR1),X'E2' WAIT UNTIL PRINT IS COMPLETE
000D	5C 08 FF 2B		112	MVC	255(12,XR1),AAE030+2(XR1) MVE READ ROUTINE BACK TO BUFFER
0011	D0 00 F4		113	BC	AAE020(XR1),X'00' BRANCH TO READ NEXT CARD
		00F4	114	AAE020 EQU	X'F4' ADDRESS OF READ ROUTINE
0014	007C	0015	115	PTADR1 DC	XL2'C07C' ADDRESS OF PRINT AREA
0020			116	ORG	X'20'
0020	71 F5 FF		117	LIO	255(XR1),X'F5' LOAD THE READ ADDRESS
0027	F3 F1 40		118	SIO	X'40',X'F1' START IPL READ
0026	D1 F1 FA		119	TIO	250(XR1),X'F1' WAIT UNTIL READ IS COMPLETE
0029	D0 00 00		120	AAE030 BC	0(XR1),X'00' BRANCH TO EXECUTE THE CARD
003B			121	ORG	X'003B'
003B	E2D5D2F0F5	003F	122	DC	CL5'SNK05' CARD ID

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OSNK-2
PAGE 3A

SNK1 ***** SNEAK-ON DUMP (CARD #6) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		124	ORG	DUMPOO	
		125			
		125			
		126	*****	MOVE PART OF CONVERT ROUTINE IN CORE	
		127			
		127			
0000 5C 1F F3 26		128	AAF000 MVC	X'F3'(32,XR1),X'26'(:,XR1)	STORE PART OF CONVERT ROUTINE
0004 D0 00 F4		129	BC	AAF030(:,XR1),X'00'	READ NEXT CARD
	00F4	130	AAF030 EQU	X'F4'	IPL READ ROUTINE LOCATION
	00D4	131	AAG020 EQU	X'D4'	
0007 5C 11 44 F3		132	MVC	X'44'(18,XR1),X'F3'(:,XR1)	MOVE END OF CONVERT ROUTINE INT
0008 D2 02 D3		133	LA	X'D3'(:,XPI),XR2	GET PTR TO CONVERTED AREA
000E D2 01 63		134	LA	X'63'(:,XR1),XR1	GET PTR TO AREA TO BE CONVERTED.
		135	*		
0011 C0 87 0003		136	B	AAX010	BRANCH TO CONVERT ROUTINE
0015 C0 01 0003		137	BNZ	AAX010	GO CONVERT NEXT BYTE
0019 C2 01 0000		138	LA	X'0000',XR1	RESTORE XR1
001D D2 02 00		139	LA	0(:,XR1),XR2	RESTORE XR2
0020 D0 00 F4		140	BC	AAG030(:,XR1),X'00'	READ NEXT CARD
	00F4	141	AAG030 EQU	X'F4'	IPL READ ROUTINE LOCATION
0023 FF	0023	142	COMP1 DC	XL1'FF'	2'S COMP OF 1
0024 39	0024	143	HEX39 DC	XL1'39'	CONVERSION CONSTANT
0025 B7	0025	144	HEXB7 DC	XL1'B7'	CONVERSION CONSTANT
0026 10	0026	145	LPCT DC	XL1'10'	CONVERSION BYTE COUNT
003R		146	ORG	X'003B'	
003B E2D5D2F0F6	003F	147	DC	CL5'SNK06'	

SNK1 ***** SNEAK-ON DUMP (CARD #7) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		149	ORG	DUMPOO	
		150			
		150			
		150			
		151	*****	CONVERT REGISTERS	
		152			
		152			
0000 D0 87 D4		153	AAG000 B	AAG020(:,XR1)	GO DO INITIALIZATION FOR CONVERSION ROUTINE.
		154	*		SPLIT ONE BYTE INTO TWO BYTES
0003 9C 00 01 00		155	AAX010 MVC	1(:,XR2),0(:,XR1)	*
0007 A8 02 00 01		156	MNZ	0(:,XR2),1(:,XR2)	SET SWITCH TO HANDLE TWO BYTES
0008 3C 80 0026		157	MVI	AAX030+1,X'80'	SET ZONE BITS OFF
000F BB F0 00		158	AAX015 SBF	0(:,XR2),X'F0'	CONVERT HALF BYTE
0012 8D 09 00		159	CLI	0(:,XR2),X'09'	*
0015 F2 84 05		160	JH	AAX020	*
0018 8E 00 00 0024		161	ALC	0(:,XR2),HEX39	*
001D 8E 00 00 0025		162	AAX020 ALC	0(:,XR2),HEXB7	INCREMENT PTR TO CONVERTED AREA
0022 E2 07 01		163	LA	1(:,XR2),XR2	NOP FOR FIRST HALF-BYTE
0025 F2 80 08		164	AAX030 JC	AAX040,X'80'	JUMP FOR SECOND HALF-BYTE
		165	*		SET SWITCH FOR SECOND HALF-BYTE
0028 3C 87 0026		166	MVI	AAX030+1,X'87'	
		167	*		
002C C0 87 000F		168	B	AAX015	
0030 D2 01 01		169	AAX040 LA	1(:,XR1),XR1	INCREMENT PTR TO AREA TO BE CONVERTED
		170	*		TO BE CONVERTED
0033 0E 00 0026 0023		171	ALC	LPCT(1),COMP1	SUBTRACT ONE FROM BYTE COUNT
		172	*		
003B		173	ORG	X'003B'	
003B E2D5D2F0F7	003F	174	DC	CL5'SNK07'	

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 5

SNK1 ***** SNEAK-ON DUMP (CARD #8) *****

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000	176	ORG	DUMP00
	177		
	177		
	177		
	178	*****	MOVE CONVERTED REGISTERS TO PRINT BUFFER
	179		
	179		
0000 5C 03 7F 06	180	AAH000 MVC	X'7F'(4,XR1),X'D6'(,XR1) MOVE PSR
0004 5C 03 87 DA	181	MVC	X'87'(4,XR1),X'DA'(,XR1) MOVE XR1
0008 5C 03 8F DE	182	MVC	X'8F'(4,XR1),X'DE'(,XR1) MOVE XR2
000C 5C 03 97 E2	183	MVC	X'97'(4,XR1),X'E2'(,XR1) MOVE MFCU PRINT DAR
0010 5C 03 AA E6	134	MVC	X'AA'(4,XR1),X'E6'(,XR1) MOVE MFCU PUNCH DAR
0014 5C 03 BC EA	185	MVC	X'BC'(4,XR1),X'EA'(,XR1) MOVE LPCTR
0018 5C 03 C7 EE	186	MVC	X'C7'(4,XR1),X'EE'(,XR1) MOVE LPDAR
001C 5C 03 D1 F2	187	MVC	X'D1'(4,XR1),X'F2'(,XR1) MOVE LPIAR
0020 5F 20 F3 F3	188	SLC	X'F3'(33,XR1),X'F3'(,XR1) ZERO PART OF PRINT BUFFER
0024 D0 00 F4	189	BC	AAH030(,XR1),X'00' READ NEXT CARD
	00F4 190	AAH030 EQU	X'F4' IPL READ ROUTINE LOCATION
0038	191	ORG	X'003B'
0038 E2D5D2F0F8	003F 192	DC	CL5'SNK08'

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 5A

SNK1 ***** SNEAK-ON DUMP (CARD #9) *****

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000	194	ORG	DUMP00
	195		
	195		
	195		
	196	*****	PRINT CONVERTED REGISTERS.
	197		
	197		
0000 71 E6 15	198	AA0000 LIO	AA0025(,XR1),X'E6' LOAD I/O TO PRINT REGISTERS
0003 5F 08 FF FF	199	SLC	255(12,XR1),255(,XR1) CLEAR OUT IPL READ ROUTINE
0007 F3 E2 02	200	SIO	X'02',X'E2' PRINT THE DATA
000A D1 E2 0A	201	AA0010 TIO	AA0010(,XR1),X'E2' WAIT UNTIL PRINT IS FINISHED
000D 5C 09 FF 2B	202	MVC	255(12,XR1),AA0030+2(,XR1) MVE READ ROUTINE BACK TO BUFFER
0011 D0 00 F4	203	BC	AA0020(,XR1),X'00' BRANCH TO READ NEXT CARD
	00F4 204	AA0020 EQU	X'F4' ADDRESS OF READ ROUTINE
0014 007C	0015 205	AA0025 DC	XL2'007C' ADDRESS OF PRINT AREA
0020	206	ORG	X'20'
0020 71 F5 FF	207	LIO	255(,XR1),X'F5' LOAD I/O FOR IPL READ
0023 F3 F1 40	208	SIO	X'40',X'F1' READ NEXT CARD IN IPL MODE
0026 D1 F1 FA	209	TIO	250(,XR1),X'F1' WAIT UNTIL READ IS FINISHED
0029 D0 00 00	210	AA0030 BC	DUMP00(,XR1),X'00' BRANCH TO EXECUTE NEXT CARD
0038	211	ORG	X'003B'
0038 E2D5D2F0F9	003F 212	DC	CL5'SNK09'

SNKI ***** SNEAK-ON DUMP (CARD #10) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		214	ORG	DUMPOO
		215		
		215		
		216		***** MAINLINE ROUTINE FOR DUMP.
		217		
		217		
0000	5C 2F AC 36	218	USING	DUMPOO, XR2
0004	D0 00 F4	219	AAPO00	MVC 172(48, XR1), AAP040(, XR1)
		220	BC	AAP010(, XR1), X'00'
0007	F0 3E 6F	00F4	221	AAPO10 EQU X'F4'
0008	E1 E0 00	222	HPL	X'6F', X'3E'
000D	84 01 DF	223	AAPO11	TID 0(, XR2), X'E0'
0010	8D 0F DE	224	ST	223(, XR2), XR1
0013	F2 84 65	225	AAPO13	CLI 222(, XR2), X'0F'
		226	JH	AAPO15
0016	9C	0065	227	AAPO15 EQU X'65'
0017	1FFF1F	0016	228	AAPO20 DC XL1'9C'
001A	E2 01 DE	0019	229	DC XL3'1FFF1F'
001D	98 02 7D 00	230	LA	222(, XR2), XR1
0021	8A F0 7D	231	AAPO30	MNZ 125(, XR2), 0(, XR1)
0024	8D FA 7D	232	SBN	125(, XR2), X'F0'
0027	F2 82 05	233	CLI	125(, XR2), X'FA'
002A	8F 00 7D 001E	234	JL	5
002F	E2 02 01	235	SLC	125(1, XR2), AAQ030
0032	3D 03 001E	236	LA	1(, XR2), XR2
0036	3C	237	CLI	AAPO30+1, X'03'
003B	E2D5D2F1F0	0036	238	AAPO40 DC XL1'3C'
		239	ORG	X'003B'
		003F	240	DC CL5'SNK10'

SNKI ***** SNEAK-ON DUMP (CARD #11) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		242	ORG	DUMPOO
		243		
		243		
		244		***** MAINLINE ROUTINE FOR DUMP.
		245		
		245		
0000	5C 2F DC 36	246	AAQ000	MVC 220(48, XR1), AAQ050(, XR1)
0004	D0 00 F4	247	BC	AAQ010(, XR1), X'00'
		00F4	248	AAQ010 EQU X'F4'
0007	030027	0009	249	DC XL3'030027'
000A	F2 01 1F	250	JNE	AAQ040
000D	D2 01 01	251	LA	1(, XR1), XR1
0010	34 01 00DD	252	ST	SAVE11, XR1
0014	390300	0016	253	AAQ020 DC XL3'390300'
		00DD	254	SAVE11 EQU X'00DD'
0017	DD	0017	255	DC XL1'0D'
0018	F2 90 03	256	JF	3
001B	E2 02 01	257	LA	1(, XR2), XR2
001E	39 0F 00DD	258	AAQ030	TBF SAVE11, X'0F'
0022	F2 90 03	259	JF	3
0025	E2 02 02	260	LA	2(, XR2), XR2
0028	3D 00 00DD	261	CLI	SAVE11, X'00'
002C	3C 02 001E	262	AAQ040	MVI AAP030+1, X'02'
0030	C0 01 001D	263	BNE	AAPO30
0034	C20200	0036	264	AAQ050 DC XL3'C20200'
0038	E2D5D2F1F1	265	ORG	X'0038'
		003F	266	DC CL5'SNK11'

SNK1 ***** SNEAK-ON DUMP (CARD #12) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		268	ORG	DUMPOO	
		269			
		269			
		269			
		270	*****	MAINLINE ROUTINE FOR DUMP.	
		271			
		271			
0000	5C 0E EB 19	272	AAR000	MVC	235(15,XR1),AAR020(,XR1) MOVE CODE OUT OF BUFFER
0004	5C 0D 7C 27	273		MVC	124(14,XR1),AAR040+2(,XR1) MOVE CODE TO END OF READ BUFFER
0008	00 00 F4	274		BC	AAR005(,XR1),X'00' BRANCH TO READ NEXT CARD
		275	AAR005	EQU	X'F4' ADDRESS OF IPL READ ROUTINE
0008	00	276	AAR010	DC	XL1'00' END OF LA 0000,XR2
000C	B5 01 DF	277		L	223(,XR2),XR1 RELOAD POINTER TO DATA
000F	AF 03 DF DF	278		SLC	223(4,XR2),223(,XR2) CLEAR WORK AREAS
0013	D2 01 20	279		LA	32(,XR1),XR1 MOVE POINTER TO NEXT 32 BYTES
0016	F3 E2 02	280		SIO	X'02',X'E2' PRINT CONVERTED 32 BYTES
0019	E1	281	AAR020	DC	XL1'E1' START OF TIO INSTRUCTION
001A	E26E	282		DC	XL2'E26E' END OF TIO 110(,XR2),X'E2'
001C	E0 00 0A	283		BC	AAP011(,XR2),X'00' LOOP TO CONTINUE DUMP
001F	F3 F1 40	284		SIO	X'40',X'F1' START IPL READ
0022	E1 F1 22	285	AAR030	TIO	AAR030(,XR2),X'F1' WAIT UNTIL READ IS COMPLETED
0025	E0 00 00	286	AAR040	BC	DUMPOO(,XR2),X'00' BRANCH TO PROCESS NEXT CARD
003B		287		ORG	X'003B'
003B	E205D2F1F2	288		DC	CL5'SNK12'

SNK1 ***** SNEAK-ON DUMP (CARD #13) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		290	ORG	DUMPOO	
		291			
		291			
		291			
		292	*****	SET UP LIMITS OF DUMP.	
		293			
		293			
		293			
0000	70 00 1A	294	AAS000	SNS	WORK11(,XR1),X'00' SENSE DATA SWITCHES TO WORK AREA
0003	5D 00 19 1A	295		CLC	WORK11-1(1,XR1),WORK11(,XR1) LIMITS IN RIGHT ORDER?
0007	D0 84 29	296		BH	AAS020(,XR1) BRANCH TO ASSUME OF NOT
000A	4D 00 1A 017E	297		CLC	WORK11(1,XR1),SIZE11 UPPER LIMIT WITHIN CORE?
000F	D0 84 29	298		BH	AAS020(,XR1) BRANCH IF NOT
0012	5C 00 2F 1A	299		MVC	AAS025+1(1,XR1),WORK11(,XR1) MOVE UPPER LIMIT TO MVI
0016	D0 00 20	300		BC	AAS010(,XR1),X'00' BRANCH OVER CONSTANTS
0019	4040	001A	301	WORK11	DC CL2' ' WORK AREA
0020		302		ORG	X'20'
0020	7C 00 1A	303	AAS010	MVI	WORK11(,XR1),X'00' CLEAR NEXT BYTE
0023	75 01 1A	304		L	WORK11(,XR1),XR1 LOAD LOWER LIMIT INTO REG. 1
0026	F2 87 05	305		J	5 JUMP PAST ASSUMPTION
0029	4C 00 2F 017E	306	AAS020	MVC	AAS025+1(1,XR1),SIZE11 SET UPPER LIMIT TO CORE SIZE
002E	BC 00 11	307	AAS025	MVI	AAP013+1(,XR2),X'00' MOVE UPPER LIMIT INTO TEST
0031	81 F5 FF	308		LIO	255(,XR2),X'F5' LOAD I/O FOR NEXT IPL READ
0034	E0 00 74	309		BC	AAS030(,XR2),X'00' BRANCH TO READ NEXT CARD
		0074	310	AAS030	EQU X'0074' ADDRESS IF IPL READ ROUTINE
		017E	311	SIZE11	EQU X'017E' ADDRESS OF CORESIZE
		312		ORG	X'003B'
003B		003F	313		DC CL5'SNK13'
003B	E205D2F1F3				

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 8

SNK1 ***** SNEAK-ON DUMP (CARD #14) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		315	ORG	DUMPO0
		316		
		316		
		316		
		317	*****	MOVE DUMP MAINLINE TO READ BUFFER.
		318		
		318		
0000	AC 0A FF 2A	319	AAT000	MVC 255(11, XR2), AAT020+2(, XR2) MOVE CODE OUT OF BUFFER
0004	31 F5 007C	320	LID	AAT005, X'F5' LOAD ADDRESS OF PRINT AREA
		007C	321	AAT005 EQU X'007C' ADDRESS OF PRINT DATA
		322	BC	AAT010(, XR2), X'00' BRANCH PAST CONSTANTS
0008	E0 00 F5	00F5	323	AAT010 EQU X'F5' ADDRESS OF MOVED CODE
		324	ORG	X'20'
0020	AC 0E 0E E0	325	MVC	110(111, XR2), 235(, XR2) MOVE DUMP CODE TO READ BUFFER
0024	AF 63 ED ED	326	SLC	237(100, XR2), 237(, XR2) CLEAR OUT PRINT BUFFER
0028	E0 00 0A	327	AAT020	BC AAP011(, XR2), X'0C' BRANCH TO EXECUTE DUMP
0038		328	ORG	X'003B'
0038	E2D5D2F1F4	003F	329	DC CL5'SNK14'

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 8A

SNK1 ***** SNEAK-ON DUMP (CARD #15) *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		331	ORG	DUMPO0
		332		
		332		
		332		
		333	*****	REPLACE FE ROUTINE IN CORE.
		334		
		334		
		334		
0000	AC 17 77 37	335	AAU000	MVC 119(24, XR2), AAU010(, XR2) REPLACE FE ROUTINE
0004	F0 7C 63	336	HPL	X'63', X'7C' HALT 'EJ'
0020		337	ORG	X'20'
0020	F00000F00000	0025	338	DC XL6'F00000F00000'
0026	3000006800000062	002D	339	DC XL8'3000006800000062'
002E	0C0000640062C0	0034	340	DC XL7'0C0000640062C0'
0035	000060	0037	341	AAU010 DC XL3'000060'
0038		342	ORG	X'003B'
0038	E2D5D2F1F5	003F	343	DC CL5'SNK15'
		344		
		344		
		344		
		344		
		344		
0062	345	SAVAR1	EQU	X'0062'
0064	346	SAVPR1	EQU	X'0064'
0066	347	SAVR11	EQU	X'0066'
0068	348	SAVR21	EQU	X'0068'
006A	349	MFPNT1	EQU	X'006A'
006C	350	MFPCH1	EQU	X'006C'
006E	351	LPLCR1	EQU	X'006E'
0070	352	LPDAR1	EQU	X'0070'
0072	353	LPIAR1	EQU	X'0072'
0001	354	XR1	EQU	1
0002	355	XR2	EQU	2
0008	356	ARR	EQU	8
0004	357	PSR	EQU	4

ARR SAVE AREA
PSR SAVE AREA
XR1 SAVE AREA
XR2 SAVE AREA
MFCU PRINT DAR SAVE AREA
MFCU PUNCH DAR SAVE AREA
LINE COUNTER SAVE AREA
PRINTER DATA ADDRESS SAVE AREA
PRINTER IMAGE ADDRESS SAVE AREA
INDEX
REGISTERS
ADDRESS RECALL REGISTER
PROGRAM STATUS REGISTER

SNK1 ***** SNEAK-ON DUMP (CARD #15) *****

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

359 *****
360 *
361 * LISTING OF IPL CARDS
362 *
363 * THE FIRST LINE IN EACH PAIR OF LINES CONTAINS THE PRINTABLE
364 * CHARACTERS ON THAT TIER. THE SECOND LINE IS THE INTERNAL HEX
365 * CODES. EACH GROUP OF TWO LINES REPRESENTS ONE TIER OF A CARD
366 * AND THREE GROUPS MAKE UP A COMPLETE CARD.
367 *
368 *****
369 * 4 D U O - > 3 S B A S . 4 A M B A * . " 6 0 4 0 6
370 * F4C440E4F060406EF3E2C2C1E2404BF4C140E6C2C140405C4B7FF6F0F4D0F0F6
371 *
372 * X O U 2 4 1 5 " 3 1 J 1 : SNK 0 1
373 * 6CF0E4F2D040F440404040F1F57FF3F140D1F17AD04040404040E2D5D2F0F1
374 *
375 * @ = 4 : @ 9 4 @ 2 6 4 @ @ 4 8 2 @ 5 5 4 8 @ 8 8 8
376 * 7C7EF47A7CF9F44040407CF240F6F47C7CF4F8F27CF5F540F4F87CF840F8F840
377 *
378 *
379 *
380 * O W O 4 B Y K B 1 U E 4 A
381 * FOE6F0F4C2E8D2C240F1E450D040F4C14040404040404040404040404040
382 *
383 * SNK 0 2
384 * 40404040404040404040404040404040404040404040404040E2D5D2F0F2
385 *
386 * 8 8 8 @ 8 @ 4 8 4 4 @ 4
387 * F840F8F87CF8407CF4F840F440F4407CF44040404040404040404040404040
388 *
389 *
390 *
391 * * X T > 4 P S R X R 1 X R 2 M
392 * 5CE7E36E0040F4D7E2D940404040E7D9F140404040E7D9F240404040404
393 *
394 * F C U P R I N T D A R SNK 0 3
395 * C6C3E440D7D9C9D5E340C4C1D94040404040404040404040E2D5D2F0F3
396 *
397 * @ 4 4 4
398 * 407CF4F440F4404040404040404040404040404040404040404040404040
399 *
400 *
401 *
402 * * > K 5 4 M F C U P U N C H D A R L P L
403 * 5C6ED2F5D040F4404040D4C6C3E440D7E4D5C3C840C4C1D94040404040D3D7D3
404 *
405 * C R L P D A R L P I A R SNK 0 4
406 * C3D940404040D3D7C4C1D94040404040D3D7C9C1D94040404040E2D5D2F0F4
407 *
408 * 4 @ 4
409 * 40F4407C40F4404040404040404040404040404040404040404040404040
410 *
411 *
412 *
413 * 1 W N ~ . " " 3 S B J S * . " . 4 @
414 * F1E6D55F4B7F7FF3E2C2D1E24A5C4B7F68D040F4407C4040404040404040
415 *
416 * 1 5 " 3 1 J 1 : SNK 0 5
417 * F1F57FF3F140D1F17AD0404040404040404040404040404040E2D5D2F0F5
418 *
419 * : = 4 8 8 2 @ 1 1 4 4 8 4 4 4
420 * 7A407E40F4F8F840F27CF1F440F4F8F440F440F440F4404040404040404040
421 *
422 *
423 *
424 * * ~ 3 W 4 * J 3 K B L K A T G C A C B A K E
425 * 5C5FF3E6D040F45CD14AF3D2C2D3D2C1E340C740C340C140C3C2C14040D2C240
426 *

```

SNK1 ***** SNEAK-ON DUMP (CARD #15) *****

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

427 * 4 " 9 7 E SNK 0 6
428 * D040F47FF9F7504040404040404040404040404040404040E2D5D2F0F6
429 *
430 * 5 = 3 5 1 @ @ @ @ 8 4 4 @ 8 @ 4 @ @ 4 4 @ 4
431 * 40F5407EF3F5F1407C4040407C40407CF8F8F4F47CF87CF47C407CF4F4407CF4
432 *
433 *
434 *
435 * M * A Y B A @ W # O * I 2 D E + H +
436 * D040D45C40C140EBC240C17C4040E67BF0407DC940F2C4C54E404040C84E4040
437 *
438 * I S B A 2 H @ G W G I K A A + G SNK 0 7
439 * 40C9E2C2C1F240C87CC740E640C7404F02C1C14E40404A40C74040E2D5D2F0F7
440 *
441 * 1 6 " 7 @ 7 7 " 5 " 7 = 5 " " 7 " " 5 1 4 " = 4 4 4 8 @ 4 4
442 * F1F6407FF77CF7F7DF57DF77EF57D7D40F77F7DF5F1F47D7EF4F4F87CF4F4
443 *
444 *
445 *
446 * * C " O * C G * C I ; * C P S * C E W * C " E * C G > * C J 2
447 * 5CC37FD65CC3C75A5CC34F5E5CC3D7E25CC350E65CC37D505CC3C76E5CC3D1F2
448 *
449 * - 3 3 4 SNK 0 8
450 * 5F60F3F3D040F4404040404040404040404040404040404040E2D5D2F0F8
451 *
452 * ' ' 4 8 @ @ 8 @ ^ @ @ @ @ 8 @ 8 @
453 * 407D4040407DF4F8407C7CF8407CF440407C7C40407C7CF8407C40F8407C4040
454 *
455 *
456 *
457 * 1 W N ~ . " " 3 S B J S * . " . 4 @
458 * F1E6D55F4B7F7FF3E2C2D1E24A5C4B7F68D040F4407C404040404040404040
459 *
460 * 1 5 " 3 1 J 1 : SNK 0 9
461 * F1F57FF3F140D1F17AD0404040404040404040404040404040E2D5D2F0F9
462 *
463 * : = 4 8 8 2 @ 1 1 4 4 8 4 4 4
464 * 7A407E40F4F8F840F27CF1F440F4F8F440F440F440F4404040404040404040
465 *
466 *
467 *
468 * * ? ? 6 4 0 = ? / - 4 A ~ ' | ; 2 D V * ~ " ~ S A ; O B '
469 * 5C6F6CF6D040F4C7E6F616040F4C15F7D4F5EF2C4E55C5F7F5FE2C15ED8C27D
470 *
471 * : 0 ' ' : ' 2 B E | ' G S B A ' C P @ SNK 1 0
472 * 407AF07D7D7A7DF2C2C54F407040C7E2C2C17DC340D77C4040408E2D5D2F1F0
473 *
474 * 1 7 @ @ 3 6 5 3 # 9 4 5 = 8 " 7 9 3 5 # " 4 8 4 @ 8 4 @
475 * F1F77C7CF3F64040F5F378F9F4F57EF87FF7F9F3F57B7DF4F8F4407CF8F47C40
476 *
477 *
478 *
479 * * ? * 6 4 C P 2 A T K A A 4 A J 9 C J 2 C S B A 9 |
480 * 5C6F5CF6D040F4C340D7F2C1E30C2C1C1F4C1405DF9C3405DF2D0C3E2C2C1F94F
481 *
482 * J 2 C S B B ' J @ B P A O B B SNK 1 1
483 * 405DF2D0C3E2C2C27D40405D7CC240D740C140D6C2C24040404040E2D5D2F1F1
484 *
485 * 1 6 8 ' 3 4 3 " 5 ' 1 = ' 3 ' " = " 5 # @ " 5 8 4 @ @ @ @ 4
486 * F1F6F87DF3F4F37FF57DF17E7DF37D7F7E7FF57B7C7FF5F840F47C407C7CF4
487 *
488 *
489 *
490 * * + , R * ( @ _ 4 5 A ~ ? C ~ ~ K A - 3 S B /
491 * 5C4E68D95C4D7C6DD040F440F5C15F6FC35F5FD2C160F3E2C2614040404040
492 *
493 * S > - C 3 1 / 1 7 - SNK 1 2
494 * E26F6040C3F3F14061F1F7604040404040404040404040404040E2D5D2F1F2

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IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 10

SNK1 ***** SNEAK-ON DUMP (CARD #15) *****

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

495 *
496 *
497 *      4 : * 3 4 4 2 4 2 6 5 * 8 @ @ 8 8 @ 4 @ 8
498 *      40F47A7DF3F440F4F2F4F2F6F57DF87C7CF8F8407CF8404040404040
499 *
500 *
501 *      0 ) R P Z I A = D Z * ? -
502 *      F0405A5D40D95AD0C4E94D405AC17ED0C4E95C406F5AD04060404040404040
503 *
504 *      @ 5 A 2 G E < ? A = @ G 1 5 * - 4 SNK 1 3
505 *      7C405AF5C15AF2C7C54C406FC17E7C40C7F1F57F6040F440404040F2D5D2F1F3
506 *
507 *      8 5 5 2 7 * 4 1 7 @ 1 5 7 @ 3 1 5 * 6 6 5 2 4 4
508 *      F8F5F5F2F77DF4F1F77CF1F5F77CF3F1F57D40F6F6F5F2F4F440404040404040
509 *
510 *
511 *
512 *      % * 1 5 @ - 5
513 *      6C4A7FD0F1F5407C6040F5404040404040404040404040404040404040404040404040
514 *
515 *      % > , ? T _ _ _ C SNK 1 4
516 *      6C6E6E6B6FE36D6D6040C34040404040404040404040404040404040E2D5D2F1F4
517 *
518 *      * 4 8 = * 2 6 2 : 5 3
519 *      7FF4F87E7FF2F6F27AF5F3404040404040404040404040404040404040404040404040
520 *
521 *
522 *
523 *      % P 7 7 0 @ T
524 *      6CD7F7F7F07CE3404040404040404040404040404040404040404040404040404040404040
525 *
526 *      0 0 0 , S < U S - SNK 1 5
527 *      F04040F04040F040406B404040E24C4040E440E240404060404040E2D5D2F1F5
528 *
529 *      @ * 9 @ 1 1 # 1 1 1 1 2 1 1 1 2 1 2 2 1 1
530 *      7C7DF97CF1F17BF1F140F1F1F2F1F1F2F1F1F2F1F1F2F1F14040404040404040404040
531 *
532 *
533 *
0000 534      END ADPAA1

```

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OSNK-2
PAGE 10

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2588418
PAGE 10A

SNK1 ***** SNEAK-ON DUMP (CARD #15) *****

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AAA010	A	004	0013	0050	
AAA020	C	001	00F4	0057	0056
AAA030	A	003	0031	0062	0052
AAB000	A	003	0000	0070	
AAB010	A	002	0010	0075	0073
AAB020	C	001	00F4	0076	0074
AAC000	A	004	0000	0084	
AAC010	C	001	00F4	0086	0085
AAD000	A	004	0000	0096	
AAD010	C	001	00F4	0098	0097
AAE000	A	003	0000	0108	
AAE010	A	003	000A	0111	0111
AAE020	C	001	00F4	0114	0113
AAE030	A	003	0029	0120	0112
AAF000	A	004	0000	0128	
AAF030	C	001	00F4	0130	0129
AAG000	A	003	0000	0153	
AAG020	C	001	00L4	0131	0153
AAG030	C	001	00F4	0141	0140
AAH000	A	004	0000	0180	
AAH030	C	001	00F4	0190	0189
AAI000	A	003	0000	0198	
AAI010	A	003	000A	0201	0201
AAI020	C	001	00F4	0204	0203
AAI025	A	002	0015	0205	0198
AAI030	A	003	0029	0210	0202
AAP000	A	004	0000	0219	
AAP010	C	001	00F4	0221	0220
AAP011	A	003	000A	0223	0283 0327
AAP013	A	003	0010	0225	0307*
AAP015	C	001	0065	0227	0226
AAP020	A	001	0016	0228	
AAP030	A	004	001D	0231	0237 0262* 0263
AAP040	A	001	0036	0238	0219
AAQ000	A	004	0000	0246	
AAQ010	C	001	00F4	0248	0247
AAQ020	A	003	0016	0253	
AAQ030	A	004	001E	0258	0235
AAQ040	A	004	002C	0262	0250
AAQ050	A	003	0036	0264	0246
AAR000	A	004	0000	0272	
AAR005	C	001	00F4	0275	0274
AAR010	A	001	000B	0276	
AAR020	A	001	0019	0281	0272
AAR030	A	003	0022	0285	0285
AAR040	A	003	0025	0286	0273
AAS000	A	003	0000	0294	
AAS010	A	003	0020	0303	0300
AAS020	A	005	0029	0306	0296 0298
AAS025	A	003	002E	0307	0299* 0306*
AAS030	C	001	0074	0310	0309
AAT000	A	004	0000	0319	
AAT005	C	001	007C	0321	0320
AAT010	C	001	00F5	0323	0322
AAT020	A	003	0028	0327	0319
AAU000	A	004	0000	0335	
AAU010	A	003	0037	0341	0335
AAX01C	A	004	0003	0155	0136 0137
AAX015	A	003	000F	0158	0168
AAX020	A	005	001D	0162	0160
AAX030	A	003	0025	0164	0157* 0166*
AAX040	A	003	0030	0169	0164
ADPAA1	A	004	0000	0045	0534
ARR	C	001	0008	0356	
COMP1	A	001	0023	0142	0171
DUMP00	A	001	0000	0002	0050 0051 0062 0066 0080 0092 0104 0124 0149 0176 0194 0210

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OSNK-2
PAGE 10A

SNK1 ***** SNEAK-ON DUMP (CARD #15) *****

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
HEAD11	A	008	000E	0087	0214 0218 0242 0268 0286 0290 0315 0331
HEAD21	A	032	002E	0088	0084
HEAD31	A	016	0016	0099	
HEAD41	A	031	0035	0100	0096
HEXB7	A	001	0025	0144	0162
HEX39	A	001	0024	0143	0161
LPCT	A	001	0024	0145	0171*
LPDAR1	C	001	0070	0352	0070*
LPIAR1	C	001	0072	0353	0055*
LPLCR1	C	001	006E	0351	0046*
MFPCH1	C	001	006C	0350	0054*
MFPNT1	C	001	006A	0349	0053*
PSR	C	001	0004	0357	0045
PTADR1	A	002	0015	0115	0108
SAVAR1	C	001	0062	0345	
SAVE11	C	001	00DD	0254	0252* 0258 0261
SAVPR1	C	001	0064	0346	0045*
SAVR11	C	001	0066	0347	0049*
SAVR21	C	001	0068	0348	0071*
SIZE11	C	001	017E	0311	0297 0306
WRK11	A	002	001A	0301	0294* 0295 0295 0297 0299 0303* 0304
XR1	C	001	0001	0354	0049 0050* 0051 0052 0052 0053 0054 0055 0056 0059 0061 0062 0070 0071 0072 0073 0074 0084 0084 0085 0096 0096 0097 0108 0109 0109 0111 0112 0112 0113 0117 0119 0120 0128 0128 0129 0132 0132 0133 0134 0134* 0138* 0139 0140 0153 0155 0169 0169* 0180 0180 0181 0181 0182 0182 0183 0183 0184 0184 0185 0185 0186 0186 0187 0187 0188 0188 0189 0198 0199 0199 0201 0202 0202 0203 0207 0209 0210 0219 0219 0220 0224 0230* 0231 0246 0246 0247 0251 0251* 0252 0272 0272 0273 0273 0274 0277* 0279 0279* 0294 0295 0295 0296 0297 0298 0299 0299 0300 0303 0304 0304* 0306
XR2	C	001	0002	0355	0071 0072* 0133* 0139* 0155 0156 0156 0158 0159 0161 0162 0163 0163* 0218 0223 0224 0225 0230 0231 0232 0233 0235 0236 0236* 0257 0257* 0260 0260* 0277 0278 0278 0283 0285 0286 0307 0308 0309 0319 0319 0322 0325 0325 0326 0326 0327 0335 0335

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

----- LAST PAGE -----



FFA1 DISK BOOTSTRAP ONE SECTOR LOADER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		2	DECK	4
		3	*****	
		4	*	DOLPHIN DCP BOOTSTRAP LOADER
		5		
	0832	6	USING	LOADB,1
		7	START	0
		8	LOADA	J LOAD
		9	B	**4
		10	LOAD	MVC END(END+1-CLEAR),END-CLEAR+LOADAA
		11	B	CLEAR TO BEGIN LOADING
		12	SWITCH	DC XL1*AO* FIXED/REMOVABLE SWITCH
	0011	13	DC	CL3*IPL*
	0014	14	LOADAA	EQU *
	0015	15	ORG	X*0800*
		16	CLEAR	MVI X*1FFF*,C* *
		17	MVC	X*1FFF*(255),X*1FFF*
		18	ZRD	MVC X*1FFF*(256),X*1FFF*
		19	SLC	ZRD+3(2),NUM256
		20	CLI	ZRD+2,09
		21	BH	ZRD
		22	ZRDA	MVC X*07FF*(256),X*1FFF*
		23	SLC	ZRDA+3(2),NUM256
		24	CLI	ZRDA+2,01
		25	BH	ZRDA
		26	LOADB	LA LOADB,XR1 LOAD BASE VALUE
		27	L	DFDR(,XR1),XR2 SET XR2 TO POINT TO INPUT AREA
		28	SNS	STATUS,X*A3* SENSE DEVICE STATUS
		29	TBN	STATUS-1,X*C1* TEST SYSTEM BIT
		30	JF	**11 JUMP IF OFF
		31	MVI	DSKERR+1,X*78*
		32	MVI	DSKERR+2,X*3C*
		33	MZZ	SEKSID+1(,XR1),SWITCH
		34	MZZ	SEKSID+1(,XR1),SWITCH
		35	MZZ	LIDCR+1(,XR1),SWITCH SET FOR CORRECT SPINDLE
		36	MZZ	LIDDR+1(,XR1),SWITCH SET FOR CORRECT SPINDLE
		37	MZZ	SIO+1(,XR1),SWITCH SET FOR CORRECT SPINDLE
		38	MZZ	TIO+1(,XR1),SWITCH SET FOR CORRECT SPINDLE
		39	MZZ	TIO1+1(,XR1),SWITCH SET FOR CORRECT SPINDLE
		40	TBN	SWITCH,X*08* TEST FOR RUN ON FIXED DISK
		41	JF	TSTERR JUMP IF NO
		42	SBN	SIO+1(,XR1),X*08* SET TO LOAD FROM FIXED DISK
		43	SBN	SEKSID+1(,XR1),X*08* SET TO LOAD FROM FIXED DISK
		44	TSTERR	TIO DSKERR(,XR1),NTRDY TEST FOR IPL ERROR
		45	SEKSID	LIO DFCR(,XR1),CTLREG LOAD CONTROL REG FOR SEEK
		46	SEKSID	SIO C,0
		47	LOADC	MVI RDDFC+3(,XR1),0 SET TO READ ONE SECTOR
		48	LIDCR	LIO DFCR(,XR1),CTLREG LOAD COMMAND ADDRESS
		49	LIDDR	LIO DFCR(,XR1),X*A4* LOAD READIN ADDRESS
		50	SIO	SIO X*00*,X*01* HEAD DATA
		51	TIO	*(,XR1),BUSY LOOP WHILE BUSY
		52	TIO1	TIO DSKERR(,XR1),NTRDY BRANCH IF ERROR
		53		
		54	CLI	0(,XR2),C*E* HAS THE END CARD BEEN READ?
		55	BNE	LOADC(,XR1) BRANCH IF NO
		56		
		57	LOADF	MVC BR+3(2,XR1),2(,XR2) PLACE ADDRESS FROM END CARD IN MOVE
		58	BR	B *-* GO TO DCP LOADER
		59		
		60	LOADE	MVC MOVE+3(3,XR1),3(,XR2) SET DESTINATION + COUNT
		61	MVC	MVC MOVE+4(1,XR1),1(,XR2) PLACE DATA LENGTH IN TEXT MOVE
		62	ALC	MVC MOVE+4(1,XR1),ONESEC(,XR1) INCREASE SOURCE DISPLACE
		63	MOVE	MVC *-*(,XR2) MOVE DATA TO CORE
		64	LOADD	ALC RDDFC+2(1,XR1),ONESEC(,XR1) ADD ONE TO SECTOR COUNT
		65	B	LOADC(,XR1)
		66		
		67	DSKERR	HPL X*03*,X*73* LOAD ERROR HALT
		68	B	LOADC(,XR1) LOAD SAME TEST AGAIN.
		69		

FFA1 DISK BOOTSTRAP ONE SECTOR LOADER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		08C3	08CA	08C4 70 DFCR DC AL2(RDDFC)
		08C5	0200	08C6 71 DFDR DC AL2(INPUT)
		08C7	04	08C7 72 ONESEC DC XL1*04*
		08C8	0100	08C9 73 NUM256 DC XL2*100*
		08CA	00	08CA 74 RDDFC DC XL1*00*
		08CB	00	08CB 75 DC XL1*00*
		08CC	C4	08CC 76 DC XL1*C4*
		08CD	00	08CD 77 DC XL1*00*
		08CE	00000000	08D1 78 DC XL4*00*
		08D2	0000	08D3 79 STATUS DC XL2*0*
		0001	80 XR1	EQU 1
		0002	81 XR2	EQU 2
		0200	82 INPUT	EQU X*200*
		00A2	83 BUSY	EQU X*A2*
		00A6	84 CTLREG	EQU X*A6*
		00A0	85 NTRDY	EQU X*AO*
		08D3	86 END	EQU *-1
		0832	87	END LOADB

FLAG
CYLINDER 0
TRACK 1, SECTOR 17
1 SECTORS

EQUATE FOR B LEVEL
EQUATE FOR B LEVEL
EQUATE FOR B LEVEL

FFA1 DISK BOOTSTRAP ONE SECTOR LOADER

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BR	A	004	08A1	0058	0057*
BUSY	C	001	00A2	0083	0051
CLEAR	A	004	0800	0016	0010 0010 0011
CTLREG	C	001	00A6	0084	0045* 0048*
DFCR	A	002	08C4	0070	0045 0048
DFDR	A	002	08C6	0071	0027 0049
DSKERR	A	003	088D	0067	0031* 0032* 0044 0052
END	A	001	08D3	0086	0010 0010 0010*
INPUT	C	001	0200	0082	0071
LIOCR	A	003	0888	0048	0035*
LIODR	A	003	088B	0049	0036*
LOAD	A	006	0007	0010	0008
LOADA	A	003	0000	0008	
LOADAA	A	001	0015	0014	0010
LCADB	A	004	0832	0026	0006 0026 0087
LOADC	A	003	0885	0047	0065 0068
LOADD	A	004	0886	0064	
LOADE	A	004	08A5	0060	0055
LOADF	A	004	089D	0057	
MOVE	A	005	08B1	0063	0060* 0061* 0062*
NTRDY	C	001	00A0	0085	0044 0052
NUM256	A	002	08C9	0073	0019 0023
ONESEC	A	001	08C7	0072	0062 0064
RDDFC	A	001	08CA	0074	0047* 0064* 0070
SEKLI0	A	003	087F	0045	0033*
SEKSI0	A	003	0882	0046	0034* 0043*
SIO	A	003	088E	0050	0037* 0042*
STATUS	A	002	08D3	0079	0028* 0029
SWITCH	A	001	0011	0012	0033 0034 0035 0036 0037 0038 0039 0040
TIO	A	003	0891	0051	0038*
TIO1	A	003	0894	0052	0039*
TSTERR	A	003	087C	0044	0041
XRI	C	001	0001	0080	0026* 0027 0033 0034 0035 0036 0037 0038 0039 0042 0043 0044
					0045 0047 0048 0049 0051 0052 0055 0057 0060 0061 0062 0064
					0064 0064 0065 0068
					0027* 0054 0057 0060 0061 0063
					0019* 0020 0021
					0023* 0024 0025

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

FFA1 DISK BOOTSTRAP ONE SECTOR LOADER

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TE MAY*DOM* A03 LBIC :<BGB B-2)~ L 79QFFA10001

T+--:ID -M03-G*B -M03*G72-M02AB 4 M2L410 3 / -HC12 G*1**CODHMETI1ED HH<BDBA#B E-2)EH M<HC JGFFA10002

T+/-5B(<B &TK2Z HIG-N?T02B.*M D0 DM- MG JK AP AE M EY DM- PC JK A - AEM F< DL-H AG 2U Q S MFFA10003

T+-S0;-/11-/J4EB .*EEK00 - B6*EE K*EKW0D 4FI-4EB .7*H 4 E35 E2 8B G **AZ YHCS BC NB -9M 1T2FFA10004

TH-TL. A: ID N4HJL2G<C4HJL6CY B SA P,-FFA10005

EBCE*E7**DC*PHS =*TMEF| | C * F3 ASC * R A S0 0 08170501700 72870-8<FFA10006

LAST PAGE

FFB4 DIAGNOSTIC LOADER FOR DISK

```

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
0000 2 DECK 4
0015 3 FFB START 0
4 ORG X'015' 5 18 72
5 *****
6 * CONTROL PROGRAM LOADER *
7 *****
8 *
9 * THIS PROGRAM MODULE LOADS THE CONTROL PROGRAM, INCLUDING ITS SEC- *
10 * TION REFERENCE TABLE. A ONE SECTOR BOOTSTRAP LOADER READS THIS *
11 * LOADER INTO CORE & BRANCHES TO IT. LOAD CARDS RECOGNIZED BY THE *
12 * DCP LOADER INCLUDE *
13 *
14 * TEXT *
15 * END *
16 * CPU *
17 * UDT *
18 *
19 * OTHER CARDS ARE IGNORED. *
20 *
21 *****
22
CC18 23 USING BASE1,2
0015 24 ID EC CL4'
0019 25 ENT2 LA BASE1,IR2 LOAD IR2 AS BASE
001D B4 08 63 26 ST NEXIT+3(,XR2),ARR SAVE RETURN ADDRESS FOR 'H' CARDS
0020 C0 87 021E 27 B UNPACK TO UNPACK ROUTINE
0024 02 0024 28 EC XL1'02' LENGTH
0025 01FF 0026 29 SOURCE DC AL2(DTABLE+1) SOURCE ADDRESS
0027 0018 CC28 30 DC AL2(ID) DESTINATION ADDRESS
31
0029 BC 08 A3 32 MVI RDDFC+1(,XR2),08 SET TO BEGIN SCAN AT CYLINDER 8
002C BC 00 A4 33 MVI RDDFC+2(,XR2),0 SET TO BEGIN AT HEAD 0 SECTOR 0.
002F E0 87 C4 34 RDVTOC B STRTIO(,XR2) TO I/O SUBROUTINE TO SEEK
0032 00 0032 35 SEEKF1 DC XL1'00' FUNCTION CODE
0033 38 02 01FD 36 TBN FLAG,BIT6
0037 F2 90 03 37 JF **6
003A B5 10 63 38 L NEXIT+3(,XR2),IAR EXIT AFTER SEEKING TO VTOC
003D E0 87 7E 39 B READ(,XR2) READ A VTOC ENTRY
0040 6D 02 02 AE 40 CLC 2(,XR1),ACTCON(3,IR2)
0044 F2 01 07 41 JNE CKND
0047 6D 02 07 00 42 CLC 7(,XR1),ID(3,IR2)
004B F2 81 1B 43 JE IDPND ID HAS BEEN FOUND
004E BD 0C A3 44 CKND CLI RDDFC+1(,XR2),X'0C' TEST END OF VTOC
0051 F2 81 03 45 JE HD BRANCH IF ALL CYLINDERS ARE DONE
0054 E0 87 17 46 B RDVTOC(,XR2)
0057 38 01 01FD 47 HD TBN FLAG,BIT7
005B F2 10 07 48 JT LDR
005E 35 08 01FF 49 L DTABLE+1,ARR
0062 F0 3B 73 50 HPLHD HPL X'73',X'3B'
0065 C0 87 00C0 51 LDR B *-
0068 52 XREF1 EQU *- 1
53
53
53
0069 9C 01 A4 04 54 IDPND MVI RDDFC+2(2,IR2),4(,XR1) PLACE PGM. ADDR. IN CONTROL PLD,
55
006D E0 87 C4 56 PGNL0D B STRTIO(,XR2) TO I/O SUBROUTINE TO SEEK
0070 C0 0070 57 SEEKF2 DC XL1'00' FUNCTION CODE
0071 F0 87 7E 58 B READ(,XR2) TO READ ROUTINE
59
0074 38 20 01FD 60 TBN FLAG,BIT2
0078 C0 10 007C 61 NEXIT BT **4 EXIT IF BIT 2 IS ON
62
007C 7D E3 00 63 CLI 0(,XR1),C'T' IS THIS A TEXT CARD ?
007F C0 01 0A0B 64 CKCOMA BNE CKCOM1 BR TO NEXT TEST IF NOT. *
65 ** NOTE - BRANCH ADDRESS OF PREVIOUS BRANCH IS ALTERED AFTER DCP *
66 ** LOADING COMPLETE TO PREPARE FOR SECTION LOADING. *

```

FFB4 DIAGNOSTIC LOADER FOR DISK

```

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
0083 9C 02 79 03 67 MVI MOVE+3(3,IR2),3(,XR1) SET DESTINATION ADDRESS IN TEXT MOVE
0087 9C 00 7A 01 68 MVI MOVE+4(1,IR2),1(,XR1) PLACE INSTRUCTION LENGTH IN MOVE
008B D2 01 04 69 LA 4(,XR1),IR1 INCREASE POINTER BY 4.
008E 1C 00 0000 00 70 MOVE MVI *-2(*-2),*-2(,XR1) MOVE TEXT DATA TO CORE
0093 E0 87 55 71 B PGNL0D(,XR2) GO READ-NEXT CARD
72
0096 B4 08 A1 73 READ ST REDEXT+3(,XR2),ARR SAVE EXIT ADDRESS
0099 BC 00 A5 74 MVI RDDFC+3(,XR2),00 SET TO READ ONE SECTOR
009C E0 87 C4 75 B STRTIO(,XR2) TO I/O SUBROUTINE TO READ
009F 01 009F 76 READP DC XL1'01' FUNCTION CODE
00A0 AE 01 A4 AB 77 ALC RDDFC+2(2,IR2),ONESEC(,XR2) STEP SECTOR NUMBER +1
00A4 B8 60 A4 78 TBN RDDFC+2(,XR2),X'60' TEST FOR SECTOR NO'S
79 * 24 TRU 31.
80 BT ALC(,XR2) IF EQUAL, STEP AGAIN
00AA BD 47 A3 81 CLI RDDFC+1(,XR2),71 CYL.COUNT TO 71 ?
00AD F2 01 03 82 JNE SPORT IF YES,
00E0 BC 4C A3 83 MVI RDDFC+1(,XR2),76 SET IT TO 76
00B3 B5 01 A7 84 SPORT L DFDR(,XR2),IR1 LOAD IR1 WITH ADDRESS OF READIN AREA
00B6 C0 87 0000 85 REDEXT B *- EXIT
86
00BA 00 00BA 87 RDDFC DC XL1'00' FLAG
00BB 07 00BB 88 DC IL1'07' CYLINDER
00BC 04 00BC 89 DC XL1'04' TRACK & SECTOR NO.
00BD 00 00BD 90 DC XL1'00' NUMBER OF SECTORS OR TRACKS
00BE 0880 00BF 91 DFDR DC AL2(WORK)
00C0 0000 00C1 92 SENSE DC IL2'0'
00C2 0004 00C3 93 ONESEC DC IL2'4'
00C4 C1C E3 00C6 94 ACTCON DC CL3'ACT'
00C7 0000 00C8 95 EXTSAV DC IL2'0'
00C9 002A 00CA 96 NRHDFC DC AL2(RDDFC)
00CB C0CD 00CC 97 RECAB0 DC AL2(*+2) *****
00CD C00000FF 00CD 98 DC XL4'FF' * MUST BE TOGETHER *
99 * *****
00D1 00D3 00D2 100 ALTDPC DC AL2(ARDDFC)
00D3 00 00D3 101 ARDDFC DC XL1'0'
00D4 00 00D4 102 DC XL1'0'
00D5 00 00D5 103 DC XL1'0'
00D6 00 00D6 104 DC XL1'0'
00D7 00D9 00D8 105 LAST0 DC AL2(*+2) *****
00D9 00 00D9 106 DC XL1'0' * MUST BE TOGETHER *
00DA 00 00DA 107 LASTAD DC XL1'0' *
00DB 00 00DB 108 DC XL1'0' *****

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693609

FFB4 DIAGNOSTIC LOADER FOR DISK

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
			110	*	START I/O SUBROUTINE
			111		
			112	STRTIO EQU *	
			113	L	NRHDFC(,XR2),XR2 LOAD BASE VALUE FOR START I/O
00DC	B5	02	B2		
			114	USING	RDDFC,2
			115	LIO	NRHDFC(,XR2),CTLREG LOAD CONTROL REG.
			116	STPARM ST	SETXR1(,XR2),ARR SAVE ADDRESS RECALL REGISTER
			117	LDPARM L	SETXR1(,XR2),XR1 LOAD XR1 AS PARAMETER POINTER
			118	MVC	SIO+1(,XR2),0(,XR1) SET FUNCTION CODE IN SIO
			119	SWS	SENSE(,XR2),CTLREG SENSE THE CURRENT CTL. PLD. ADDR.
			120	TBP	0(,XR1),X'07' TEST FOR SEEK
			121	L	SENSE(,XR2),XR1 LOAD XR1 AS POINTER
			122	*	TO DISK CONTROL FIELD.
			123	JF	ADREXT NO, SKIP SET ADDRESS.
			124		
			125	LIO	LASTA(,XR2),CTLREG
			126	SIO	1,X'A1' READ ID
			127	TIO	*(,XR2),BUSY
			128	TBP	LASTAD-1(,XR2),03 TEST FOR ALT. OR DEFECT.
			129	JT	OK THE CYL IS OK
			130	LIO	RECALB(,XR2),CTLREG
			131	SIO	0,X'A0' RECALIBRATE
			132	TIO	*(,XR2),BUSY
			133	MVI	LASTAD(,XR2),0
			134	OK	LIO SENSE(,XR2),CTLREG RESTORE CTLREG
			135	MVI	3(,XR1),0 SET SEEK # TO 0
			136	CLC	1(,XR1),LASTAD(1,XR2) COMPARE NEW ADDRESS WITH OLD
			137	JE	ADREXT EQUAL, SEEK NOT NECESSARY
			138	JH	PWDSEK NEW ADDR. HIGHER, DO FORWARD SEEK
			139	MVC	SCRCH(1,XR2),LASTAD(,XR2) PLACE LAST ADDR. IN WORKAREA
			140	SLC	SCRCH(1,XR2),1(,XR1) SUBTRACT NEW ADDR. FROM LAST
			141	J	SETADB PROCEED
			142		
			143	PWDSEK SBN	2(,XR1),01 SET BIT ON FOR FORWARD SEEK
			144	MVC	SCRCH(1,XR2),1(,XR1) PLACE NEW ADDRESS IN WORK AREA
			145	SLC	SCRCH(1,XR2),LASTAD(,XR2) SUBTRACT LAST ADDR. FROM NEW
			146		
			013A	147	SCRCH EQU **1
			148	SETADB MVI	3(,XR1),*-- INSERT NO. OF TRACKS TO CROSS
			013C	149	ADREXT EQU *
			150		
			151	LIO	DPDR(,XR2),X'A4' LOAD DATA REGISTER
			152	SIO	0,0 START I/O OPERATION
			153	WAIT	TIO *(,XR2),BUSY WAIT TILL COMPLETE
			154		
			155	SBF	2(,XR1),01 TURN OFF POR. / REV. BIT
			156		
			157	TSTERR TIO	DSKERR(,XR2),NTRDY BRANCH IF ERROR
			014E	158	SETXR1 EQU **3
			159	LA	**-,XR1 LOAD XR1 AS PARAMETER POINTER
			160	L	RECARD+7(,XR2),XR2 LOAD XR2 AS BASE
			0018	161	USING BASE1,2
			162	B	1(,XR1) EXIT
			163		
			00BA	164	USING RDDFC,2
			0155	165	DSKERR EQU *
			166	LIO	ALTDPC(,XR2),CTLREG LOAD CTL. REG. TO POINT TO ALT.PLD.
			167	ALTSIO SIO	01,X'A1' READ ID SIO
			168	WAIT1 TIO	*(,XR2),BUSY DELAY TILL FINISHED
			169	CLI	ARDDFC(,XR2),02 TEST FOR A DEFECTIVE TRACK
			170	JE	SETALT JUMP IF IT IS.
			171	ERRHLT HPL	H7,HH ERROR HALT
			172	LIO	NRHDFC(,XR2),CTLREG LOAD CONTROL REG.
			173	J	SAVPRM
			174	SETALT MVI	ARDDFC(,XR2),01 SET FLAG BIT TO ALTERNATE
			175	SAVPRM MVC	EXTSAV(2,XR2),SETXR1(,XR2) SAVE OLD PARAMETER PTR.
			176	B	STPARM(,XR2) TO I/O SUBROUTINE TO SEEK ALT. TK.
			0177	177	SEEK3 DC XL1'00' FUNCTION CODE

FFB4 DIAGNOSTIC LOADER FOR DISK

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
			0018	178	USING BASE1,2
			179	L	NRHDFC(,XR2),XR2 LOAD BASE VALUE FOR START I/O
			00BA	180	USING RDDFC,2
			181	MVC	SETXR1(2,XR2),EXTSAV(,XR2) RESTORE PARAMETER PTR.
			182	MVC	ARDDFC+3(3,XR2),RDDFC+3(,XR2) TRANSFER C,S,H NUMBERS
			183	B	LDPARM(,XR2) TO RETRY ORIGINAL OPERATION
			184		
			185	*	COME HERE TO READ A DATA RECORD
			186		
			001A	187	USING BASE1,2
			188	RECARD ST	RECEXT+3,ARR SAVE ADDRESS RECALL REGISTER
			189	LA	BASE1,XR2 LOAD XR2 AS BASE
			190	B	STRTIO(,XR2) TO I/O SUBROUTINE TO SEEK
			0191	191	SEEK3 DC XL1'00' FUNCTION CODE
			192	B	READ(,XR2) TO READ DATA RECORD
			193	RECEXT B	**
			194		EXIT
			195	**	THE FOLLOWING CODING COMPLETES THE SECTION LOADER. IT IS *
			196	**	BYPASSED DURING DCP LOADING. ONCE THE CONTROL PROGRAM IS LOADED, *
			197	**	LINKAGES ARE SET UP SO THAT A BRANCH TO THE END CARD ROUTINE WILL *
			198	**	BE SUBSTITUTED FOR THE DCP LOADER RESIDING AT HEX -A00- *
			199		
			0199	7D	5C 00
			019C	F2	01 0F
			019F	78	01 0208
			01A3	E0	10 55
			01A6	C0	87 021A
			01A8	21	
			01AB	E0	87 55
			01AE	7D	E2 00
			01B1	F2	01 27
			01B4	0F	C3 C20D C20D
			01BA	D2	01 05
			01BD	34	01 01C7
			01C1	C0	87 0226
			01C5	02	
			01C6	0000	
			01C8	0000	
			01CA	C0	87 0000
			01CE	7D	68 01
			01D1	D2	01 03
			01D4	C0	81 01BD
			01DB	E0	87 55
			01EB	7D	C5 00
			01EE	E0	01 55
			01E1	38	04 01FD
			01E5	D0	90 81
			01F8	B5	01 63
			01EB	DC	87 00
			229		
			0018	230	BASE1 EQU ID
			0880	231	WORK EQU X'880'
			01FD	232	FLAG EQU X'1FD'
			01FE	233	DTABLE EQU X'1FE'
			0068	234	LOADTB EQU X'68'

FFB4 DIAGNOSTIC LOADER FOR DISK

Table with columns: ERR LOC OBJPCT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for diagnostic loader, including instructions like ORG, DC, CLC, LD, and comments such as 'BRANCH IF NOT COMMENT CARD' and 'MAKE SURE SYSTEM MODEL IS B,C, OR D'.

FFB4 DIAGNOSTIC LOADER FOR DISK

Table with columns: EPR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for diagnostic loader, including instructions like LA, B, CLC, LD, and comments such as 'CHANGE EBCDIC O-B TO BINARY' and 'INITIALIZE MASK WITH LAST BIT ON SHIFT BIT TO PROPER POSITION TO'.

PPR4 DIAGNOSTIC LOADER FOR DISK

PPR4 DIAGNOSTIC LOADER FOR DISK

APP LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

CROSS-REFERENCE

```

006C 372 HC EQU X'6C'
003B 373 HF EQU X'3B'
0020 374 BIT2 EQU X'20'
0010 375 BIT3 EQU X'10'
0008 376 BIT4 EQU X'08'
0004 377 BIT5 EQU X'04'
0002 378 BIT6 EQU X'02'
0001 379 BIT7 EQU X'01'
00A2 380 BUSY EQU X'A2'
00A6 381 CTLREG EQU X'A6'
00A0 382 WTRDY EQU X'A0'
383
384 *
385 ** EXECUTION ENTRY POINT.
386 *
0B73 3C 40 097F 387 BEGIN NVI X'97F',C'
0B77 0C FE C97E 097F 388 SVC X'97E'(255),X'97F'
0B7D 0C 03 087F 0880 389 SVC X'87F'(4),X'880'
0B83 C2 02 0019 390 LA RASE1,IR2
0B87 30 A3 0C0B 391 SNS SNSARE,X'A3'
0B8E 38 01 0C0A 392 TBN SNSARE-1,X'01'
0B8F E2 90 20 393 JP MODLD
0B92 3C 04 7A8D 394 NVI NEXTR-1,X'04'
0B96 3C 78 CA8C 395 NVI NEXTR-2,X'78'
0B9A 3C 78 0A53 396 NVI CDERR0+1,X'78'
0B9E 3C 04 0A54 397 NVI CDERR0+2,X'04'
0BA2 3C 78 0165 398 NVI ERRHLT+1,X'78'
0BA6 3C 3C 0166 399 NVI ERRHLT+2,X'3C'
0BAA 3C 78 0063 400 NVI HPLHD+1,X'73'
0BAE 3C 6C 0064 401 NVI HPLHD+2,X'6C'
0BB2 0C 00 0C0C 0011 402 MODLD MVC DISKTP(1),X'11'
0BB8 8B 00 1A 0C0C 403 MZZ SEEKP1(,IR2),DISKTP
0BBD 4B 00 58 0C0C 404 MZZ SEEKP2(,IR2),DISKTP
0BC2 0B 00 0177 0C0C 405 MZZ SEEKP3,DISKTP
0BC8 0B 00 0191 0C0C 406 MZZ SEEKP4,DISKTP
0BCE 8B 00 87 0C0C 407 MZZ READP(,IR2),DISKTP
0BD3 0B 00 0159 0C0C 408 MZZ ALTSIO+1,DISKTP
0BD9 39 08 0C0C 409 TFP DISKTP,X'08'
0BDD F2 10 21 410 JT SETENT
0BE0 BA 08 1A 411 SBN SEEKP1(,IR2),X'08'
0BE3 BA 08 58 412 SBN SEEKP2(,IR2),X'08'
0BE6 3A 08 0177 413 SBN SEEKP3,X'08'
0BEA 3A 08 0191 414 SBN SEEKP4,X'08'
0BEE BA 08 87 415 SBN READP(,IR2),X'08'
0BF1 3A 08 0159 416 SBN ALTSIO+1,X'08'
0BF5 3A 08 0143 417 SBN WAIT+1,X'08'
0BF9 3A 08 015C 418 SBN WAIT+1,X'08'
0BFD 3A 08 0149 419 SBN TSTERR+1,X'08'
0C01 0C 03 01FF 0C10 420 SETENT MVC X'1FF'(4),ENTRYS
0CC7 E0 87 55 421 B PGMLOD(,IR2)
0C0A 0000 422 SNSARE DC XL2'0'
0C0C 00 423 DISKTP DC XL1'00'
0C0D 0186 424 DC AL2(RECARD)
0C0F 0019 425 ENTRYS DC AL2(ENT2)
0B73 426 END BEGIN

```

HALT DISPLAY CODE -H-

EQUATE FOR B LEVEL
EQUATE FOR B LEVEL
EQUATE FOR B LEVEL

CLEAR PRINT IMAGE AND DATA FIELDS

LOAD IR2 AS BASE

IS SYSTEM EOD B

SET MOD B HALTS

MOVE SWITCH FROM BOOT TO LOADER

TEST FOR RUN ON REMOVABLE DISK
JUMP IF YES

MOVE ENTRIES POINTS
GO BEGIN LOADING

SYMBOL T LEN VALUE DEPN REFERENCES

```

ACTCON A 003 00C6 0094 0040
ADPFIT A 001 013C 0149 0123 0137
ALC A 004 00A0 0077 0080
ALTDFC A 002 00D2 0100 0166
ALTSIO A 003 0158 0167 0408* 0416*
APDDFC A 001 00D3 0101 0100 0169 0174* 0182*
ARP C 001 0008 0367 0026 0049* 0073 0116 0188
BAS*1 A 004 0018 0230 0023 0025 0161 0178 0187 0189 0287 0334 0390
BEGIN A 004 0B73 0387 0426
BIT2 C 001 0020 0374 0060
BIT3 C 001 0010 0375 0284
BIT4 C 001 0008 0376
BIT5 C 001 0004 0377 0225
BIT6 C 001 0002 0378 0036
BIT7 C 001 0001 0379 0047
BUSY C 001 00A2 0380 0127 0132 0153 0168
CDERR0 A 003 0A52 0267 0264 0396* 0397*
CHAIN A 005 0A0A 0242 0321
CHKSE A 003 01EB 0223 0209
CHKSSW A 003 01AE 0208 0201
CHKSS0 A 004 01BD 0212 0221
CKCHW A 005 0B0B 0321 0271
CKCOM A 003 0199 0200 0345
CKCOMA A 004 007F 0064 0346*
CKCOM1 A 003 0A0B 0244 0264
CKCPD A 003 0A24 0252 0245
CKEND A 003 0B4A 0340 0333
CKND A 003 004E 0044 0041
CKSSW A 003 0B2A 0332 0322
CKUDT A 003 0A58 0270 0253
CPU C 001 0204 0358 0262*
CTLREG C 001 00A6 0381 0115* 0119 0125* 0130* 0134* 0166* 0172*
DPFINE A 004 0B6F 0348 0246 0255 0272
DEV A 001 0A03 0240 0281 0289 0293
DFDP A 002 00FF 0091 0084 0151
DISKTP A 001 0C0C 0423 0402* 0403 0404 0405 0406 0407 0408 0409
DSKERR A 001 0155 0165 0157
DTABLE C 001 01FE 0233 0029 0049
ENTRYS A 002 0C10 0425 0420
ENT2 A 004 0019 0025 0425
FRPHLT A 003 0164 0171 0398* 0399*
FITSAV A 002 00C8 0095 0175* 0181
FFB A 001 0000 0003
FLAG C 001 01FD 0232 0036 0047 0060 0225
FWDSEK A 003 012E 0143 0138
IC C 001 006C 0372
ID A 004 0057 0047 0045
HH C 001 003B 0373 0171 0267 0286
HPLHD A 003 0062 0050 0400* 0401*
H0 C 001 006F 0370 0267 0286
H7 C 001 0007 0371 0171
IAR C 001 0010 0366 0038* 0347* 0348*
ID A 004 0018 0024 0030 0042 0230
IDFND A 004 0069 0054 0043
INPUT C 001 0880 0355 0258 0325
LAST0 A 002 00D8 0105 0125
LASTAD A 001 00DA 0107 0128 0133* 0136 0139 0145
LDPARM A 003 00E5 0117 0183
LDR A 004 0065 0051 0048
LDUDT A 005 0AA4 0293 0290
LOADTB C 001 0068 0234
MASK A 002 0A05 0241 0310* 0313 0313* 0315 0316
NEXIT A 004 0078 0061 0026* 0038 0227
MODLD A 006 0BB2 0402 0393
MOVE A 005 008E 0070 0067* 0068*
NEXTR A 004 0A8F 0287 0266 0268 0301 0330 0341 0394* 0395*

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PPR# DIAGNOSTIC LOADER FOR DISK

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
NINE	A	001	0A02	0239	0308
NRMDPC	A	002	00CA	0096	0113 0115 0172 0179
NTRDY	C	001	00A0	0382	0157
OF	A	003	0113	0134	0129
ONE	A	002	0A01	0238	0310 0311
ONFSEC	A	002	00C3	0093	0077
PACK	C	001	0226	0365	0213 0256 0278 0323
PGMLOD	A	003	006D	0056	0071 0203 0206 0222 0224 0248 0251 0288 0421
PRINT	C	001	021A	0363	0204 0249
PTFDC	A	003	0A6E	0276	0274
RDDPC	A	001	008A	0087	0032* 0033* 0044 0054* 0074* 0077* 0078 0081 0083* 0096 0114 0164
					0180 0182
RDVTOC	A	003	002F	0034	0046
READ	A	003	0096	0073	0039 0058 0192
READY	A	001	009F	0076	0407* 0415*
RECAE0	A	002	00CC	0097	0130
RECAPD	A	004	0186	0188	0160 0424
RECEXT	A	004	0195	0193	0188*
REDEXT	A	004	00R6	0085	0073*
SADDR	A	002	01C7	0215	0212*
SAVPRM	A	004	0170	0175	0173
SBFFEO	C	001	0208	0359	0202 0247
SBYTES	C	001	020D	0207	0210 0210* 0335 0335*
SCRCH	A	001	013A	0147	0139* 0140* 0144* 0145*
SEEK1	A	001	0032	0035	0403* 0411*
SEEK2	A	001	0070	0057	0404* 0412*
SEEK3	A	001	0177	0177	0405* 0413*
SEEK4	A	001	0191	0191	0406* 0414*
SENSE	A	002	00C1	0092	0119* 0121 0134
SETADE	A	003	0139	0148	0141
SETALI	A	003	016D	0174	0170
SETENT	A	006	0C01	0420	0410
SETXR1	A	001	014E	0158	0116* 0117 0175 0181*
STO	A	003	013F	0152	0118*
STZE	C	001	0203	0357	0259
S40D	C	001	0200	0356	0254*
SNSARE	A	002	0C0B	0422	0391* 0392
SOURCE	A	002	0026	0029	
SPOET	A	003	00F3	0084	0082
SSWRD	A	006	01B4	0210	0338
SSWG7	C	001	0001	0360	0202 0247
STPARH	A	003	00E2	0116	0176
STRIO	A	001	00DC	0112	0034 0056 0075 0190
TEST	C	001	0212	0362	
TSTEPR	A	003	0148	0157	0419*
UDTA	A	005	0A95	0289	0285
UDTB	A	003	0ACF	0306	0303
UDTC	A	003	0ADA	0309	0307
UDTD	A	006	0AF5	0315	0312
ULP1	A	004	0A71	0277	0305
ULP2	A	003	0A82	0283	0292
ULP3	A	005	0AE3	0311	0314
ULP4	A	003	0AB8	0299	0319
UNPACK	C	001	021E	0364	0027
UPTR	A	002	0A7B	0280	0277*
USPT1	A	003	0B01	0317	0315*
USPT2	A	003	0B04	0318	0316*
UTAB	C	001	0232	0361	0275 0275* 0282
WAIT	A	003	0142	0153	0417*
WAIT1	A	003	015B	0168	0418*
WORK	C	001	0980	0231	0091
XREP1	A	001	0068	0052	0342*
XREP2	C	001	1FFD	0349	0348
XREP3	C	001	1FFB	0350	0347
XREP4	A	001	01CD	0218	0337* 0343*
XREPS	A	002	01C9	0216	0336* 0344*

PPR# DIAGNOSTIC LOADER FOR DISK

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
IR1	C	001	0001	0368	0040 0042 0054 0063 0067 0068 0069 0069* 0070 0084* 0117* 0118
					0120 0121* 0135 0136 0140 0143 0144 0148 0155 0159* 0162 0200
					0208 0211 0211* 0212 0219 0220 0220* 0223 0226 0227* 0228 0244
					0252 0254 0260 0263 0265 0270 0273 0276 0276* 0277 0296 0296*
					0297 0299 0299* 0300 0302 0304 0304* 0306 0308 0309 0311 0321
					0327 0332 0340 0345* 0346
IR2	C	001	0002	0369	0025* 0026 0032 0033 0034 0034 0039 0040 0042 0044 0046 0054
					0056 0058 0067 0068 0071 0073 0074 0075 0077 0077 0078 0080
					0081 0083 0084 0113 0113* 0115 0116 0117 0118 0119 0121 0125
					0127 0128 0130 0132 0133 0134 0136 0139 0139 0140 0144 0145
					0145 0151 0153 0157 0160 0160* 0166 0168 0169 0172 0174 0175
					0175 0176 0179 0179* 0181 0181 0182 0182 0183 0189* 0190 0192
					0203 0206 0222 0224 0227 0248 0251 0282* 0283 0283* 0284 0287*
					0288 0289 0291 0293 0294 0295 0317 0318 0334* 0390* 0403 0404
					0407 0411 0412 0415 0421

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

533221

633623

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2508457
PAGE 6

FFB4 DIAGNOSTIC LOADER FOR DISK

OBJECT CARD LISTING

THE CHARACTER [·] INDICATES A BLANK COLUMN AND THE CHARACTERS [·] [·] [·] INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-A|EDA < < HPE AS 4BP| /OH; -G* AS 0BH+0 HL-/0E + H A*-HC #H6Q=BG-W# B D02 6) _ - * 0YD S760 = < PFB40001

T+-RHY*HA =PGE3- A ~72D *5B G*0C_ 30H* IOAZ L-/0E 8H)=+B A** 6 G1 '80C' EY.X I9 90 ; -D =: *PFB40002

T+-CEH-DDG C -/504BHP0 HP-/0E A,-FUD0/-Z+ ES.5 GY*HA #1<Y#MAZ0B G **** A0E BH ***** DO+< 61QPFB40003

T+-D 80 .Y 3E . 10 40 6E . .NB%,PMD.EHV.M AVIO /-BOZ-)9A0B 5 6-2UDK1Z/#3Y6G /Y0E 69*PFB40004

T+-D* > < -0/ < EQ K0: 8EIL? -XEQ G- CSE AH|HAG|H DB:0 -BB- H A0Y* .;-DBX B E0 -BA 0 < JACFPB40005

T+-E6EE00 EFH R;CDB8EB50-D .M B4*BG SFP|+ / ; P SYS4BP-HAB- #0F WD|HG #0AFEOACZL -/2- *PFB40006

T+-F1 .NB%DOAV : < /OC8H*, (-AW<H B AT-/0E 8H) =0H* **G5* |HAC3-L -T -DEP /OH0E; BGNP7 S |H 1HDFPB40007

T+-G% K*| 0H (-7 K 0H3 EGG0H*B1-H ***** 0H* G5,)H A 0BA S7-/5N*16C - N0BA G*4IBA_ 6E T4H* 1E-PFB40008

T G_ 2,0PFB40009

T+-Y: DI **** 00T A2)N*P C2 J1 /0_ ?+ DEB+ 6N*BG /Y /8H)N-+< 0-D>G ** B ** L /0_?0H*BI-6 H56H 084PFB40010

T+-Z5 771E*HAACD ** -J*0-L2--R' L 2AC30+6*2/3R*9 C 2 E7 /0_?~H C0-D FC24BPOI-4-DE (D H;0' 00HPFB40011

T+-D0/OHW - B-1 E -H?8-HC>A A0Z H0C_?0-H F+BGHQ4 *** YC0YDG?E 0 D H-YO *** YC>00A? ** B4-D ~/HPFB40012

T+,, P5- |HA *H A P5 <EAEY9'E0C 2 6~K 6. /0Z1~ ~ 0-HEL- ** B-I00 < 6YEB-E| *** H ~H BB-8 'T-PFB40013

T+-W 6YEB-P /0, TC . .-YDC . .A0Y E>- A>- B0H*H>D4 DAOYH0-DPOH*BI? I:0/7~ .0-DD|10 H;< : 1HPFB40014

T+-//0D+~;H 0-D 00-H F 0E -4BC00 A *U~'00A *4~*B G SJ'16C ED+C D EA**C DA3J*9C D A2J0 S,4PFB40015

T+->*0HA R04 6B B(J ~-3H6G*40E V *C|8I~V* C <H-0S 0-H FCBTC 18 60 H0Z -| EHTL18BY0 0: Y 'Y<PFB40016

T+-?PH30DBV60; E V|COART18 F<0\$ A UC **< JS EC 2 H E-<C - P* <C - ** RD<CH- /00<B A0E0 *HPFB40017

T+ 06CC0HC 32DBF :PAD:EE-:B E7+-- A0SYH/3YH NU:B E C+--APCYH HU< 0G *CAC-/5H ***** A/- R **** 0H-PFB40018

EP7(*E7*~DC*PH5 =*7H6r| | C P% ASC R A SO Q 05181012710 60172J-0PFB40019

----- LAST PAGE -----

DATE	20APR70	01AUG70	01OCT70	01APR71	12JUN72	PROG ID	OFFB-4
EC NO.	816682	816730	816760	818948	577050	PAGE	6

FE63 LSR FEATURE TEST

FE63 LSR FEATURE TEST

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

2 *          LAST CHANGE 02NOV72
3   DECK 4
4   SEQ 0
5   UVWXYZ START X'A00'
6   TREP
7   *****
8 *
9 *          LSR FEATURE TEST
10 *
11 *****
12 *          SECTION PREFACE
13 *****
14   DC      XL2'FE63'      PROGRAM ID AND REVISION LEVEL
15   DC      XL1'00'      SECTION FLAGS
16   DC      XL1'00'      CURRENT ROUTINE NUMBER
17   DC      XL2'0'
18   DC      AL2(RT01)     ADDRESS OF FIRST ROUTINE
19   DC      XL2'0'
20 *
21   SPUT1 DC      XL3'100000' 5471 PRINTER KEYBOARD
22   SPUT3 DC      XL3'300000'  SIOC
23   SPUT5 DC      XL3'510000' 1442 CARD READER/PUNCH
24   SPUT8 DC      XL3'800000'  BSCA 1
25   SPUT88 DC     XL3'880000'  BSCA 2
26   SPUTC0 DC     XL3'C00000'  5445 DRIVE 1
27   SPUTC8 DC     XL3'C80000'  5445 DRIVE 2
28   SPUT34 DC     XL3'341000'  3411 TAPE
29   DC      XL9'0'
30 *****
31 *          ROUTINE 1 PREFIX
32 *****
33   RT01 DC      XL1'01'      ROUTINE NUMBER
34   DC      XL1'00'      FLAGS
35   DC      AL2(RT02)     ADDRESS OF NEXT ROUTINE PREFIX
36 *****
37   TBN SPUT1-1,ASSIGN  CK FOR AND BRANCH IF UDT INDICATES
38   BF   LINK          5471 PRINTER KEYBOARD IS NOT ATTACHED
39   HVC PAD,X0000(2)   ZERO THE STORAGE AREA
40   L    XFFFF,X'CO'   LOAD INT LEVEL IAR WITH -FFFF-
41   ST   PAD,X'CO'     STORE INT LEVEL 1 IAR INTO PAD
42   CLC PAD,XFFFF(2)  CONTINUE WITH TEST IF IAR
43   JE   NEXT1        WAS SELECTED CORRECTLY
44 *
45   HALT1 HPL X'03',TENS 61 ERROR HALT
46 *
47   NEXT1 L    X0000,X'CO' FAILURE TO SENSE THE CORRECT
48   ST   PAD,X'CO'     VALUE WILL RESULT IN LSR CHECK
49   B    LINK
50 *
51 *****
52 *          ROUTINE 2 PREFIX
53 *****
54   RT02 DC      XL1'02'      ROUTINE NUMBER
55   DC      XL1'00'      FLAGS
56   DC      AL2(RT03)     ADDRESS OF NEXT ROUTINE PREFIX
57 *****
58   TBN SPUT8-1,ASSIGN  CK FOR AND BRANCH IF UDT INDICATES
59   BF   LINK          BSCA IS NOT ATTACHED
60   HVC PAD,X0000(2)   ZERO THE STORAGE AREA
61   LIO XFFFF,X'84'   LOAD BSCA LSR WITH -FFFF-
62   SMS PAD,X'84'     STORE BSCA LSR INTO PAD
63   CLC PAD,XFFFF(2)  CONTINUE WITH TEST IF LSR
64   JE   NEXT2        WAS SELECTED CORRECTLY
65 *
66   HALT2 HPL X'76',TENS 62 ERROR HALT
67 *
68   NEXT2 LIO X0000,X'84' FAILURE TO SENSE THE CORRECT

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0A87 30 84 0BEB      69   SMS  PAD,X'84'      VALUE WILL RESULT IN LSR CHECK
0A88 C0 87 0216     70   B    LINK

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FE63 LSR FEATURE TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		72	*	*****
		73	*	ROUTINE 3 PREFIX
		74	*	*****
0A8F 03	0A8F	75	RT03 DC	XL1'03' ROUTINE NUMBER
0A90 00	0A90	76	DC	XL1'00' FLAGS
0A91 0AC1	0A92	77	DC	AL2(RT04) ADDRESS OF NEXT ROUTINE PREFIX
		78	*	*****
0A93 38 20 0A0E		79	TBN	SPUT3-1,ASSIGN CK FOR AND BRANCH IF UDT INDICATES
0A97 C0 90 0216		80	BF	LINK SIOC IS NOT ATTACHED
0A9B 0C 01 0BEE 0BED		81	HVC	PAD,X0000(2) ZERO THE STORAGE AREA
0AA1 31 34 0BEF		82	LIO	XFFFF,X'34' LOAD SIOC LSR WITH -FFFF-
0AA5 30 34 0BEB		83	SNS	PAD,X'34' STORE SIOC LSR INTO PAD
0AA9 0D 01 0BEE 0BEF		84	CLC	PAD,XFFFF(2) CONTINUE WITH TEST IF LSR
0AAF F2 81 03		85	JE	NEXT3 WAS SELECTED CORRECTLY
		86	*	*****
0AB2 F0 7D 57		87	HALT3 HPL	X'57',TENS 63 ERROR HALT
		88	*	*****
0AB5 31 34 0BED		89	NEXT3 LIO	X0000,X'34' FAILURE TO SENSE THE CORRECT
0AB9 30 34 0BEB		90	SNS	PAD,X'34' VALUE WILL RESULT IN LSR CHECK
0ABD C0 87 0216		91	B	LINK
		92	*	*****
		93	*	*****
		94	*	ROUTINE 4 PREFIX
		95	*	*****
0AC1 00	0AC1	96	RT04 DC	XL1'04' ROUTINE NUMBER
0AC2 00		97	DC	XL1'00' FLAGS
0AC3 0B0A	0AC4	98	DC	AL2(RT05) ADDRESS OF NEXT ROUTINE PREFIX
		99	*	*****
0AC5 38 20 0A1A		100	TBN	SPUTC0-1,ASSIGN CK FOR AND BRANCH IF UDT INDICATES
0AC8 C0 90 0216		101	BF	LINK S445 DRIVE 1 IS NOT ATTACHED
0ACD 0C 01 0BEE 0BED		102	HVC	PAD,X0000(2) ZERO THE STORAGE AREA
0AD3 31 34 0BEF		103	LIO	XFFFF,X'C4' LOAD LSR WITH -FFFF-
0AD7 30 34 0BEB		104	SNS	PAD,X'C4' STORE LSR INTO PAD
0ADB 0D 01 0BEE 0BEF		105	CLC	PAD,XFFFF(2) CONTINUE WITH TEST IF LSR
0AE1 F2 81 03		106	JE	NEXT4 WAS SELECTED CORRECTLY
		107	*	*****
0AE4 F0 7D 1B		108	HALT4 HPL	X'1B',TENS 64 ERROR HALT
		109	*	*****
0AE7 0C 01 0BEE 0BED		110	NEXT4 HVC	PAD,X0000(2) ZERO THE STORAGE AREA
0AED 31 34 0BEF		111	LIO	XFFFF,X'C6' LOAD LSR WITH -FFFF-
0AF1 30 34 0BEB		112	SNS	PAD,X'C6' STORE LSR INTO PAD
0AF5 0D 01 0BEE 0BEF		113	CLC	PAD,XFFFF(2) BRANCH TO HALT IF LSR
0AFB C0 01 0B03		114	BWE	HALT5 WAS SELECTED INCORRECTLY
0AFF C0 87 0216		115	B	OUT4
		116	*	*****
0B03 F0 7D 5B		117	HALT5 HPL	X'5B',TENS 65 ERROR HALT
		118	*	*****
0B06 C0 87 0216		119	OUT4 B	LINK

FE63 LSR FEATURE TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		121	*	*****
		122	*	ROUTINE 5 PREFIX
		123	*	*****
0B0A 05	0B0A	124	RT05 DC	XL1'05' ROUTINE NUMBER
0B0B 00	0B0B	125	DC	XL1'00' FLAGS
0B0C 0B53	0B0D	126	DC	AL2(RT06) ADDRESS OF NEXT ROUTINE PREFIX
		127	*	*****
0B0E 38 20 0A1D		128	TBN	SPUTC0-1,ASSIGN CK FOR AND BRANCH IF UDT INDICATES
0B12 C0 90 0B4F		129	BF	OUT5 S445 DRIVE 2 IS NOT ATTACHED
0B16 0C 01 0BEE 0BED		130	HVC	PAD,X0000(2) ZERO THE STORAGE AREA
0B1C 31 34 0BEF		131	LIO	XFFFF,X'CC' LOAD LSR WITH -FFFF-
0B20 30 34 0BEB		132	SNS	PAD,X'CC' STORE LSR INTO PAD
0B24 0D 01 0BEE 0BEF		133	CLC	PAD,XFFFF(2) CONTINUE WITH TEST IF LSR
0B2A F2 81 03		134	JE	NEXT5 WAS SELECTED CORRECTLY
		135	*	*****
0B2D F0 7D 1B		136	HALT6 HPL	X'1B',TENS 64 ERROR HALT
		137	*	*****
0B30 0C 01 0BEE 0BED		138	NEXT5 HVC	PAD,X0000(2) ZERO THE STORAGE AREA
0B36 31 34 0BEF		139	LIO	XFFFF,X'CE' LOAD LSR WITH -FFFF-
0B3A 30 34 0BEB		140	SNS	PAD,X'CE' STORE LSR INTO PAD
0B3E 0D 01 0BEE 0BEF		141	CLC	PAD,XFFFF(2) BRANCH TO HALT IF LSR
0B44 C0 01 0B4C		142	BWE	HALT7 WAS SELECTED INCORRECTLY
0B48 C0 87 0B4F		143	B	OUT5
		144	*	*****
0B4C F0 7D 5D		145	HALT7 HPL	X'5D',TENS 65 ERROR HALT
		146	*	*****
0B4F C0 87 0216		147	OUT5 B	LINK
		148	*	*****
		149	*	*****
		150	*	ROUTINE 6 PREFIX
		151	*	*****
0B53 06	0B53	152	RT06 DC	XL1'06' ROUTINE NUMBER
0B54 00	0B54	153	DC	XL1'00' FLAGS
0B55 0B85	0B56	154	DC	AL2(RT07) ADDRESS OF NEXT ROUTINE PREFIX
		155	*	*****
0B57 38 20 0A11		156	TBN	SPUT5-1,ASSIGN CK FOR AND BRANCH IF UDT INDICATES
0B5B C0 90 0216		157	BF	LINK 1442 IS NOT ATTACHED
0B5F 0C 01 0BEE 0BED		158	HVC	PAD,X0000(2) ZERO THE STORAGE AREA
0B65 31 34 0BEF		159	LIO	XFFFF,X'54' LOAD INT LEVEL IAR WITH -FFFF-
0B69 30 34 0BEB		160	SNS	PAD,X'54' STORE 1442 LSR INTO PAD
0B6D 0D 01 0BEE 0BEF		161	CLC	PAD,XFFFF(2) CONTINUE WITH TEST IF LSR
0B73 F2 81 03		162	JE	NEXT6 WAS SELECTED CORRECTLY
		163	*	*****
0B76 F0 7D 7D		164	HALT8 HPL	TENS,TENS 66 ERROR HALT
		165	*	*****
0B79 31 34 0BED		166	NEXT6 LIO	X0000,X'54' FAILURE TO SENSE THE CORRECT
0B7D 30 34 0BEB		167	SNS	PAD,X'54' VALUE WILL RESULT IN LSR CHECK
0B81 C0 87 0216		168	B	LINK

FE63 LSR FEATURE TEST

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

170 *****
171 * ROUTINE 7 PREFIX
172 *****
0B85 07 CB85 173 RT07 DC XL1'07' ROUTINE NUMBER
0B86 00 CB86 174 DC XL1'00' FLAGS
0B87 0BB7 CB88 175 DC AL2(RT08) ADDRESS OF NEXT ROUTINE PREFIX
176 *****
0B89 38 20 0A17 177 TBN SPUT88-1, ASSIGN CK FOR AND BRANCH IF UDT INDICATES
0B8D C0 90 0216 178 BF LINK BSCA 2 IS NOT ATTACHED
0B91 0C 01 0BEB 0BED 179 MVC PAD,X0000(2) ZERO THE STORAGE AREA
0B97 31 8C 0BEF 180 LIO X'FFFF,X'8C' LOAD BSCA LSR WITH -FFFF-
0B9B 30 8C 0BEE 181 SNS PAD,X'8C' STORE BSCA LSR INTO PAD
0B9F 0D 01 0BEB 0BEF 182 CLC PAD,X'FFFF(2) CONTINUE WITH TEST IF IAR
0BA5 F2 81 03 183 JE NEXT7 WAS SELECTED CORRECTLY
184
0BA8 F0 7D 07 185 HALT9 HPL X'07',TENS 67 ERROR HALT
186 *
0BAE 31 8C 0BFD 187 NEXT7 LIO X0000, X'8C' FAILURE TO SENSE THE CORRECT
0BAF 30 8C 0BEE 188 SNS PAD,X'8C' VALUE WILL RESULT IN LSR CHECK
0BB3 C0 87 0216 189 B LINK
190
191 *****
192 * ROUTINE 8 PREFIX
193 *****
0BB7 08 CB87 194 RT08 DC XL1'08' ROUTINE NUMBER
0BB8 00 CB88 195 DC XL1'00' FLAGS
0BB9 FFFF CB8A 196 DC XL2'FFFF' LAST ROUTINE
197 *****
0BBB 38 20 0A20 198 TBN SPUT34-1, ASSIGN CK FOR AND BRANCH IF UDT INDICATES
0BBF C0 90 0216 199 BF LINK 3411 TAPE IS NOT ATTACHED
0BC3 0C 01 0BEB 0BED 200 MVC PAD,X0000(2) ZERO THE STORAGE AREA
0BC9 31 64 0BEF 201 LIO X'FFFF,X'64' LOAD TAPE LSR WITH -FFFF-
0BCD 30 64 0BEE 202 SNS PAD,X'64' STORE TAPE LSR INTO PAD
0BD1 0D 01 0BEB 0BEF 203 CLC PAD,X'FFFF(2) CONTINUE WITH TEST IF IAR
0BD7 F2 81 03 204 JE NEXT8 WAS SELECTED CORRECTLY
205
0BDA F0 7D 7F 206 HALT10 HPL X'7F',TENS 68 ERROR HALT
207 *
0BDD 31 64 0BED 208 NEXT8 LIO X0000, X'64' FAILURE TO SENSE THE CORRECT
0BE1 30 64 0BEB 209 SNS PAD,X'64' VALUE WILL RESULT IN LSR CHECK
0BE5 C0 87 022A 210 B LOAD EXIT THE TEST
0BE9 C0 211 DC XL1'0' 212
0BEA 0000 0BEB 213 PAD DC XL2'0' 214
0BEC 0000 0BED 214 X0000 DC XL2'0' 215
0BEE FFFF 0BEF 215 X'FFFF DC XL2'FFFF' 216
0216 217 LINK EQU X'216' 218
022A 218 LOAD EQU X'22A' 219
0020 219 ASSIGN EQU X'20' 220
007D 220 TENS EQU X'7D' 221
FFFF 222 END

FE63 LSR FEATURE TEST

CROSS-REFERENCE

SYMBOL T LEN VALUE DEPN REFERENCES
ASSIGN C 001 0020 0219 0037 0058 0079 0100 0128 0156 0177 0198
HALT1 A 003 0A0E 0045
HALT10 A 003 0BDA 0206
HALT2 A 003 0A80 0066
HALT3 A 003 0AB2 0087
HALT4 A 003 0AE4 0108
HALT5 A 003 0B03 0117 0114
HALT6 A 003 0B2D 0136
HALT7 A 003 0B4C 0145 0142
HALT8 A 003 0B76 0164
HALT9 A 003 0BA8 0185
LINK C 001 0216 0217 0038 0049 0059 0070 0080 0091 0101 0119 0147 0157 0168 0178
0189 0199
LOAD C 001 022A 0218 0210
NEXT1 A 004 0A51 0047 0043
NEXT2 A 004 0A83 0068 0064
NEXT3 A 004 0AB5 0089 0085
NEXT4 A 006 0AE7 0110 0106
NEXT5 A 006 0B30 0138 0134
NEXT6 A 004 0B79 0166 0162
NEXT7 A 004 0BAB 0187 0183
NEXT8 A 004 0BDD 0208 0204
OUT4 A 004 0B06 0119 0115
OUT5 A 004 0B4F 0147 0129 0143
PAD A 002 0BEB 0213 0039* 0041* 0042 0048* 0060* 0062* 0063 0069* 0081* 0083* 0084 0090*
0102* 0104* 0105 0110* 0112* 0113 0130* 0132* 0133 0138* 0140* 0141
0158* 0160* 0161 0167* 0179* 0181* 0182 0188* 0200* 0202* 0203 0209*
0018
RT01 A 001 0A2B 0033
RT02 A 001 0A5E 0054 0035
RT03 A 001 0A8F 0075 0056
RT04 A 001 0AC1 0096 0077
RT05 A 001 0B0A 0124 0098
RT06 A 001 0B53 0152 0126
RT07 A 001 0BB5 0173 0154
RT08 A 001 0BB7 0194 0175
SPUTC0 A 003 0A1B 0026 0100
SPUTC8 A 003 0A1E 0027 0128
SPUT1 A 003 0A0C 0021 0037
SPUT3 A 003 0A0F 0022 0079
SPUT34 A 003 0A21 0028 0198
SPUT5 A 003 0A12 0023 0156
SPUT8 A 003 0A15 0024 0058
SPUT88 A 003 0A18 0025 0177
TENS C 001 007D 0220 0045 0066 0087 0108 0117 0136 0145 0164 0164 0185 0206
UVWXYZ A 001 0A00 0005
X'FFFF A 002 0BEF 0215 0040 0042 0061 0063 0082 0084 0103 0105 0111 0113 0131 0133
0139 0141 0159 0161 0180 0182 0201 0203
X0000 A 002 0BED 0214 0039 0047 0060 0068 0081 0089 0102 0110 0130 0138 0158 0166
0179 0187 0200 0208

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

FE63 LSR FEATURE TEST

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

GBK GBD PH 25 88467 EC 577073 5422 LSR FEATURE TEST ..... 84000400 ..... 86HFE630000
T+-Y:YK ..... ESX A C ED H H- < <- CG & ..... D BV48H Y.OI BE-0 AB=X 02DFE630001
T+-Z5B=450 ??{< ..:04AB=X.#*HA *A * 3P B=440 ? ,OH* BE-H BY08H YNOI BE-0AB=X.#LYDB=0 0/ X 98<FE630002
T+-D0:04AB=X.#*H A *A*)TFDB=40/ ? ,OH*BE-< B#D8H Y +OI BE-0AB=X.#LD 4B=00{ ? ,CED.:07 78YD =CUFE630003
T+-., *A*N3D4B=4 0{ ? ,OH*BE-8 BOY 8H YEOI BE-0AB=X .#LGDB=001 ? ,CED ..:07?@YDC0G4SC D ..:0X 9K6FE630004
T+-*Y6LGF8=001-? ,CED.:07?0 B. @B GB050-N7 /OH08E .N3--B/7 U _IC D ..:0?_<*0.#3C<B=X { &X =E0FE630005
T+-/_:07?@YDC0G4 SC D.:0?_<*8.#3C +B=X{ &?,B=* &_ <OH*.L*A*P*BG /Q P >E+B HD*BS /Q < &X SR-FE630006
T+->*:0?_<N6.#3A HB=X{ &?,B=*2-8| 0~P41H ?_<E6.:@B G /QG >7+B HE@B & /Q< &?,B=41T ? ?<HO 0-YFE630007
T+-?PB=X{ &?,B=* 2-8|0-8*1T ?_<HO ..:@BG /QH |**+B HH<BE /Q< &?,B=4 1R ??<P6.:04AB=X .#*H =R0FE630008
TE0??-E10-P@1R ? _<P6.:@BG SY ..... ..... ..... ..... ..... 610FE630009
E**+*E7*=-DC*PHS =*7H6P| ..... C ..... FX ASC R A SO ..... ..... 16430927721 10272-Q-FE630010

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----- LAST PAGE -----

NEM2 * * * MNEMONIC DUMP PROGRAM RELOCATING LOADER * * *

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	ALDAA0	START X'00'
		3	***** BEGINNING ADDRESS OF *****	
		4	*****	
		5	***** MNEMONIC DUMP RELOCATING LOADER *****	
		6	*****	
		7	***** THIS LOADER LOAD OBJECT DECKS WITH FORMAT OPTION '1' *****	
		8	***** SPECIFIED ON THE 'DECK' CARD. NO PROGRAM CAN *****	
		9	***** BE LOADED BELOW CORE LOC. X'0300' OF ON ANYTHING *****	
		10	***** BUT A 256-BYTE BOUNDARY. *****	
		11	*****	
		12	***** TEXT CARD: THE INSTRUCTIONS AND CONSTANTS REPRESENTED *****	
		13	***** ON THIS CARD ARE COMPRESSED INTO THE REQUIRED *****	
		14	***** FORMAT AND MOVED INTO THE SPECIFIED CORE *****	
		15	***** LOCATION. *****	
		16	*****	
		17	***** END CARD: THE ABSOLUTE CARD LOADER COMPRESSES THE *****	
		18	***** CONTENTS OF THE END CARD INTO EBCDIC FORMAT *****	
		19	***** AND TRANSFERS CONTROL TO THE INSTRUCTIONS *****	
		20	***** REPRESENTED ON THIS CARD BY BRANCHING TO A *****	
		21	***** GIVEN LOCATION WITHIN THE I/O AREA. THESE *****	
		22	***** INSTRUCTIONS REPRESENTED ON THE END CARD *****	
		23	***** CLEAR THE LOADER FROM CORE AND BRANCH TO *****	
		24	***** THE ENTRY POINT OF THE PROGRAM LOADED. *****	
		25	*****	
		26	***** BEFORE MOVING ANY DATA INTO CORE, THE LOADER CHECKS THE *****	
		27	***** MACHINE CORE CAPACITY TO ENSURE THE AVAILABILITY OF CORE *****	
		28	***** NECESSARY TO EXECUTE THE PROGRAM BEING LOADED. *****	
		29	*****	
		30	*****	
		31	*****	
		32	*****	
0000		33	AAA010	EQU * BASE ADDRESS
		34	*****	
0060		35	ORG	X'60' BEGINNING ADDRESS OF LOADER
		36	*****	
0000		37	USING	AAA010,1 ESTABLISH BASE ADDRESS
		38	*****	
0060	F0 7C 6C	39	AAA030	HPL X'6C',X'7C' THE PROGRAM BEING LOADED
0063	D0 87 60	40	B	AAA030(XR1)
		41	*****	
		42	***** REQUIRES MORE CORE THAN IT *****	
		43	***** HAS AVAILABLE--THE LOAD PROCESS *****	
		44	***** IS TERMINATED AT THIS POINT AND *****	
		45	***** SHOULD NOT BE RESTARTED *****	
0066	57 20 5F 8F	45	AAA050	SZ 95(3,XR1),AAA085(1,XR1) IF PAST FIRST THREE CARDS OF
006A	F2 04 03	46	JNP	AAA060 PHASE, CHANGE HPL TO L1
006D	7C 03 78	47	AAA080	MVI AAA070+2(XR1),X'03'
0070	70 F3 5C	48	AAA060	SNS 92(XR1),X'F3'
0073	79 FF 5C	49	TBF	92(XR1),X'FF'
0076	F2 10 18	50	JT	AAA110 STORE THE CONDITION CODE
0079	F0 68 76	51	AAA070	HPL X'76',X'68' TEST FOR ERROR CONDITION
		52	*****	
		53	*****	
		54	*****	
007C	D2 02 57	55	ALDAA1	LA CDND-1(XR1),XR2 INITIALIZE INDEX REGISTER TWO
		56	*****	
		57	***** SO THAT IT POINTS TO THE RIGHT- *****	
		58	***** MOST BYTE OF THE SECTION OF THE *****	
		59	***** I/O AREA TO BE COMPRESSED *****	
		60	*****	
		61	*****	
		62	*****	
		63	*****	
		64	*****	
		65	*****	
		66	*****	
		67	*****	
007F	7C 59 80	68	MVI	AAA160+2(XR1),AD84+1 INITIALIZE POINTER FOR TESTING
		69	*****	
		69	***** EACH BYTE FOR SPECIAL CHARACTER *****	

NEM2 * * * MNEMONIC DUMP PROGRAM RELOCATING LOADER * * *

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0082	7C 58 CF	70	MVI	LEN3(XR1),AD84 INITIALIZE THE INSTRUCTION
		71	***** WHICH RIGHT ADJUSTS THE *****	
		72	***** COMPRESSED BYTES *****	
0085	71 F5 EE	73	LIO	ZERO(XR1),X'F5' INITIALIZE THE I/O AREA ADDRESS
0088	F3 F1 00	74	AAA085	SIO X'00',X'F1' READ CARD INTO I/O AREA
008C	D1 F1 88	75	AAA090	TIO AAA090(XR1),X'F1' WAIT FOR COMPLETION OF I/C
008E	D0 87 66	76	AAA100	B AAA050(XR1) TEST FOR ERROR AND HALT IF
		77	***** ERROR CONDITION IS PRESENT *****	
0091	7D E3 00	78	AAA110	CLI AAA010(XR1),TEXT IS THIS A TEXT CARD
0094	D0 81 A3	79	BE	AAA130(XR1) YES
0097	7D C5 00	80	CLI	AAA010(XR1),END IS THIS AN END CARD
009A	D0 01 7C	81	BNE	ALDAA1(XR1) NO--EXTRANEIOUS CARD--
009D	79 03 58	82	TBF	91(XR1),X'03'
00A0	D0 90 66	83	TBF	AAA050(XR1)
		84	*****	
00A3	7C 00 8C	85	AAA130	MVI LEN1(XR1),ZER0I READ ANOTHER
		86	***** INITIALIZE THE LENGTH FIELD OF *****	
		87	***** THE FIRST COMPRESSION *****	
00A6	5F 00 80 B2	88	AAA150	SLC AAA160+2(1,XR1),ONEC(XR1) INSTRUCTION
		89	***** DECREMENT POINTER FOR TESTING *****	
00AA	5C 00 C0 BC	90	MVC	LEN2(1,XR1),LEN1(XR1) EACH BYTE FOR X'D0'
		91	***** SET LENGTH FIELD OF SECOND *****	
00AE	7D D0 00	92	AAA160	CLI *-*(XR1),HDO CHECK FOR X'D0'
00B1	D0 01 8B	93	BNE	AAA180(XR1) NOT X'D0'
00B4	5C 00 BA B0	94	MVC	AAA170+2(1,XR1),AAA160+2(XR1) REPLACE X'D0' WITH X'2A'
00B8	7C 2A 00	95	AAA170	MVI *-*(XR1),H2A ENSURE UNIQUENESS OF LOW
		96	***** ORDER SIX BITS *****	
00BB	AE 00 01 01	97	AAA180	ALC 1(1,XR2),1(XR2) FIRST COMPRESSION INSTRUCTION
00BF	AE 00 01 01	98	ALC	1(1,XR2),1(XR2) SECOND COMPRESSION INSTRUCTION
00C3	5E 00 8C B2	99	ALC	LEN1(1,XR1),ONEC(XR1) INCREMENT LENGTH IN THE
		100	***** COMPRESSION INSTRUCTIONS *****	
00C7	7D 04 BC	101	CLI	LEN1(XR1),H04 HAVE FOUR BYTES BEEN COMPRESSED
00CA	D0 82 A6	102	BL	AAA150(XR1) NO--C 'TINUE COMPRESSING
00CD	6C 02 58 00	103	AAA190	MVC AD84(3,XR1),0(XR2) RIGHT ADJUST 3 COMPRESSED BYTES
00D1	5F 00 CF 6E	104	SVC	LEN3(1,XR1),THRE(XR1) DECREMENT RIGHT ADJUSTING
		105	***** INSTRUCTION FOR NEXT 3 BYTES *****	
00D5	76 02 EC	106	A	MINUS4(XR1),XR2 DECREMENT REGISTER FOR
		107	***** COMPRESSION *****	
00D8	D0 02 A3	108	BNI	AAA130(XR1) CONTINUE COMPRESSING CONTENTS
		109	***** OF I/O AREA *****	
00DB	7D C5 00	110	AAA210	CLI AAA010(XR1),END COMPRESSION IS COMPLETE--
		111	***** IS THIS AN END CARD *****	
00DE	C0 01 01E0	112	BNE	AAA240 NO--GO HANDLE TEXT CARD
00E2	5E 01 E9 19	113	ALC	RELADR(2,XR1),LNADDR(XR1) CALC. ENTRY PT. OF PROG.
00E6	C0 87 0000	114	B	*-*
		115	RELADR	EQU *-1 BRANCH TO PROG. ENTRY PT.
		116	***** THIS AREA IS INITIALIZED *****	
		117	***** BY THE ADDRESS/DATA *****	
		118	***** SWITCH SETTINGS AFTER *****	
		119	***** THE 'CU' HALT ON THE LAST *****	
		120	***** CARD OF THE LOADER. *****	
		121	*****	
		122	*****	
00EA	FFFF	00EB	123	MINUS1 DC XL2'FFFF' MINUS ONE
00EC	FC	00EC	124	MINUS4 DC XL1'FC' DECREMENT VALUE FOR RT-ADJUST
00ED	0000	00EE	125	ZERO DC XL2'0000' VALUE FOR LIO
		0055	126	CONDA EQU X'55' RIGHTMOST RLD BYTE AFTER
		127	***** COMPRESSION. *****	
		0058	128	CONDA EQU X'58' POINTER TO RIGHTMOST BYTE
		129	***** TO BE COMPRESSED *****	
		0001	130	XR1 EQU 1 INDEX REGISTER 1
		0002	131	XR2 EQU 2 INDEX REGISTER 2
		00BC	132	LEN1 EQU AAA180+1 LENGTH BYTE OF FIRST COMP INSTR
		00C0	133	LEN2 EQU AAA180+5 LENGTH BYTE OF 2ND COMP INSTR
		00CF	134	LEN3 EQU AAA190+2 POINTERS FOR RIGHT ADJUSTING
		00D0	135	LEN4 EQU AAA190+3 COMPRESSED CODE
		00E3	136	TEXT EQU X'E3' TEXT CARD IDENTIFIER
		00C5	137	END EQU X'C5' END CARD IDENTIFIER

NEM2 * * * NMEMONIC DUMP PROGRAM * * *

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000 2 START X'0000'
3 DECK 1
4 SEQ 010
5 *****
6 *
7 * MNEMONIC DUMP PROGRAM *
8 *
9 *PROGRAM DESCRIPTION *
10 *
11 * THE MNEMONIC DUMP PROGRAM DUMPS CORE, INSTRUCTION BY INSTRUCTION *
12 * WITHIN THE LIMITS WHICH ARE SET BY THE USER. THE PROGRAM SCANS *
13 * CORE BYTE BY BYTE UNTIL IT FINDS A VALID OP-CODE. IF A BYTE OF *
14 * CORE IS NOT A VALID OP-CODE OR PART OF AN INSTRUCTION, IT IS *
15 * DATA AND IS PRINTED IN DATA FORMAT RATHER THAN INSTRUCTION FORMAT. *
16 * FOR BOTH THE FORMATS, THE IAR IS PRINTED ON THE LEFT MARGIN *
17 * AND POINTS TO THE LEFT-MOST BYTE OF EACH LINE OF THE DUMP, *
18 * A MAXIMUM OF 24 BYTES OF DATA ARE PRINTED PER LINE. ON THE SAME *
19 * LINE, A CHARACTER DISPLAY FOR EACH BYTE IS ALSO PRINTED. *
20 * A PERIOD IS PRINTED FOR ALL UNPRINTABLE CHARACTERS. *
21 * ONE INSTRUCTION ALONG WITH THE MNEMONIC OP-CODE AND THE INDEX *
22 * REGISTERS ASSOCIATED WITH AN OPERAND ARE PRINTED PER LINE. *
23 * A DUMP OF ALL THE LSR'S BUT THE IAR IS PRINTED PRIOR TO THE *
24 * CORE DUMP. THESE ARE, ARR, PSR, X'1, X'2, LPCTR, LPIAR, LPDAR, *
25 * MFCU PUNCH DAR, MFCU PRINT DAR, AND MFCU READ DAR. *
26 *
27 *OPERATING PROCEDURE *
28 *
29 * WHEN THE CU HALT IS DISPLAYED THE ADDRESS AT WHICH IT IS TO *
30 * BE LOADED IS DIALED IN THE ADDRESS/DATA SWITCHES AND THE START *
31 * KEY IS PRESSED. WHEN THE AL HALT IS DISPLAYED, THE PROGRAM IS *
32 * LOADED. THIS PROGRAM CANNOT BE LOADED BELOW X'0300' AND MUST BE *
33 * LOADED ON A 256-BYTE BOUNDARY. *
34 * A MANUAL BRANCH TO THE ADDRESS AT WHICH THE DUMP WAS LOADED *
35 * WILL CAUSE THE AL HALT TO BE DISPLAYED. THE LOW CORE LIMIT IS *
36 * SET IN THE ADDRESS/DATA SWITCHES AND THE START KEY IS PRESSED. *
37 * WHEN THE AU HALT IS DISPLAYED, THE UPPER CORE LIMIT IS SET IN *
38 * THE ADDRESS/DATA SWITCHES AND THE SRT KEY IS PRESSED. *
39 * AN EJ HALT INDICATES END OF JOB. PRESSING THE START KEY CAUSES *
40 * THE AL HALT TO BE DISPLAYED. *
41 * A PO HALT INDICATES A PRINTER ERROR. READINGYING THE PRINTER AND *
42 * PRESSING THE START KEY CAUSES DUMPING TO CONTINUE. *
43 *
44 *****

```

NEM2 * * * NMEMONIC DUMP PROGRAM * * *

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0080 46 MO EQU B'10000000'
00C0 47 M01 EQU B'11000000'
0087 48 M0567 EQU B'10000111'
0040 49 M1 EQU B'01000000'
0052 50 M136 EQU B'01010010'
004F 51 M14567 EQU B'01001111'
0020 52 M2 EQU B'00100000'
0030 53 M23 EQU B'00110000'
0010 54 M3 EQU B'00010000'
000F 55 M4567 EQU B'00001111'
00BF 56 M1 EQU B'10111111'
0040 57 BLANK EQU X'40'
005C 58 MINUS EQU X'5C'
006B 59 COMMA EQU X'6B'
00F1 60 R1 EQU X'F1'
00F2 61 R2 EQU X'F2'
004B 62 PERIOD EQU X'4B'
0001 63 XR1 EQU 1
0002 64 XR2 EQU 2
65 RESTRT ST SVAREA+3,1
66 LA SVAREA,1
67 ST 1(,1),4
68 ST 5(,1),2
69 SNS 7(,1),X'E0'
70 SNS 9(,1),X'E4'
71 SNS 11(,1),X'E6'
72 SNS 13(,1),X'F6'
73 SNS 15(,1),X'F4'
74 SNS 17(,1),X'F5'
75 LA PRTREG,2
76 ST PRINT1+3,2
77 MVC LPRDAT+95(96),HEADER
78 SLC CHRPTR(26),CHRPTR
79 HPL X'6B',X'3F'
80 SNS BEGIN,X'00'
81 *
82 HPL X'6B',X'3F'
83 SNS END,X'00'
84 *
85 LIO IMAGE,X'E4'
86 LIO BUFADD,X'E6'
87 B PRINT
004E 88 PRTREG EQU *
89 MVI LPCT,X'12'
90 LA WKAREA,2
91 AAX010 MVC 1(1,XR2),0(1,XR1)
92 MNZ 0(1,XR2),1(1,XR2)
93 MVI AAX030+1,X'80'
94 AAX015 SRF 0(,XR2),X'F0'
95 CLI 0(,XR2),X'09'
96 JH AAX020
97 ALC 0(1,XR2),HEX39
98 AAX020 ALC 0(1,XR2),HEXB7
99 LA 1(,XR2),XR2
100 AAX030 JC AAX040,X'80'
101 *
102 MVI AAX030+1,X'87'
103 *
104 B AAX015
105 AAX040 LA 1(,XR1),XR1
106 *
107 ALC LPCT(1),COMPI
108 *
109 BNZ AAX010
110 LA LPRDAT,1
111 LA WKAREA,2
112 MVC 3(4,1),3(,2)
113 MVC 9(4,1),7(,2)

```

```

INDEX REGISTER 1
INDEX REGISTER 2
SAVE XR1

SAVE PSR
SAVE XR2
SAVE LPCTR
SAVE LPIAR
SAVE LPDAR
SAVE MFCU PUNCH DAR
SAVE MFCU PRINT DAR
SAVE MFCU READ DAR

MOVE HEADER TO PRINT BUF
CLEAR BYTES 0-20
GET HIGH - ORDER
OBTAIN ADDRESS OF FIRST AND LAS
BE DUMPED FROM DATA SWITCHES.
GET LOW - ORDER
OBTAIN ADDRESS OF FIRST AND LAS
BE DUMPED FROM DATA SWITCHES.
LOAD CHAIN IMAGE ADDRESS.
LOAD BUFFER ADDRESS.

SPLIT ONE BYTE INTO TWO BYTES
*
SET SWITCH TO HANDLE TWO BYTES
SET ZONE BITS OFF
CONVERT HALF BYTE
*
*
INCREMENT PTR TO CONVERTED AREA
NOP FOR FIRST HALF-BYTE
JUMP FOR SECOND HALF-BYTE
SET SWITCH FOR SECOND
HALF-BYTE

INCREMENT PTR TO AREA
TO BE CONVERTED
SUBTRACT ONE FROM BYTE
COUNT
GO CONVERT NEXT BYTE

```

NEM2 *** MNEMONIC DUMP PROGRAM ***

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

00A0 6C 03 0F 08 114 MVC 15(4,1),11(,2)
00A4 6C 03 15 0F 115 MVC 21(4,1),15(,2)
00A8 6C 03 1D 13 116 MVC 29(4,1),19(,2)
00AC 6C 03 25 17 117 MVC 37(4,1),23(,2)
00B0 6C 03 2D 1B 118 MVC 45(4,1),27(,2)
00B4 6C 03 3E 1F 119 MVC 62(4,1),31(,2)
00B8 6C 03 4F 23 120 MVC 79(4,1),35(,2)
00BC C2 02 00CE 121 LA INBUF,2
00C0 34 02 0618 122 ST PRINT1+3,2
00C4 0C 05 06DC 06D6 123 MVC STOP(6),END
124 *
00CA C0 87 0600 125 B PRINT
00CE 35 01 03A9 126 INBUF L BUFADD,1
00D2 C2 02 0628 127 LA IFORM,2
00D6 7C 40 57 128 MVI 87(,1),BLANK
00D9 5C 56 56 57 129 MVC 86(87,1),87(,1)
00DD 38 80 06E6 130 TBN SWITCH,MO
00E1 F2 10 0A 131 JT IBF
00E4 7C 5C 3E 132 MVI 62(,1),MINUS
00E7 7C 5C 57 133 MVI 87(,1),MINUS
00EA C2 02 0620 134 LA DFORM,2
00EE 2C 00 06E3 00 135 IBF MVC NUM(1),0(,2)
00F3 36 01 06E3 136 A NUM,1
137 *
00F7 7C A0 00 138 MVI 0(,1),X'A0'
139 *
00FA E2 02 81 140 LA 1(,2),2
00FD BD F0 00 141 CLI 0(,2),X'F0'
0100 F2 81 04 142 JE NUBYTE
0103 C0 87 00EE 143 B IBF
0107 0D 02 06D9 06DC 144 NUBYTE CLC PTR(3),STOP
010D F2 04 2F 145 JNH LOOKUP
0110 0D 02 06D9 06D6 146 CLC PTR(3),END
0116 F2 04 18 147 JNH NEWSTR
0119 0D 02 06D3 06D6 148 CLC BEGIN(3),END
149 *
011F F2 04 52 150 JNH DATA
0122 38 40 06E6 151 TBN SWITCH,M1
0126 C0 10 02ED 152 BT EDIT
012A F0 7C 63 153 HPL X'63',X'7C'
012D C0 87 0000 154 B RESTRT
0131 38 80 06E6 155 NEWSTR SBF SWITCH,MO
0135 0C 02 06DC 06D6 156 MVC STOP(3),END
0138 C0 87 00CE 157 B INBUF
013F 35 02 06D9 158 LOOKUP L PTR,2
0143 28 02 06E1 00 159 MNZ ZONE,0(,2)
0148 28 03 06E3 00 160 MNN NUM,0(,2)
014D 35 01 0634 161 L MNEADD,1
0151 35 02 0634 162 L MNEADD,2
0155 36 01 06E1 163 A ZONE,1
0159 18 03 06DF 00 164 MNN LENGTH,0(,1)
165 *
015E 18 00 06E3 00 166 MZZ NUM,0(,1)
0163 36 02 06E3 167 A NUM,2
0167 38 80 06E6 168 TBN SWITCH,MO
0168 F2 10 65 169 JT IPRINT
016E B9 80 00 170 TBF 0(,2),MO
0171 F2 10 11 171 JT OPCODE
0174 0C 02 06D9 06D3 172 DATA MVC PTR(3),BEGIN
173 *
017A 38 40 06E6 174 TBN SWITCH,M1
017E C0 10 02B5 175 BT LPTR
0182 F2 87 AA 176 J TRANSL
0185 BD 48 00 177 OPCODE CLI 0(,2),X'48'
0188 F2 82 3E 178 JL NOTERM
018B F2 81 1F 179 JE TERM
018E 35 01 06D9 180 L PTR,1
0192 BD 5A 00 181 CLI 0(,2),X'5A'

INITIALIZE PTR AND STOP TO BEG
END.

USE PRINT LINE FORMAT FOR INSTR
REMOVE OLD PRINT LINE PATTERN

INSTRUCTION TO BE PRINTED?
YES > IBF.
NO ; PUT DELIMITER OF CLEAR DI
AREA IN BUFFER.
USE PRINT LINE FORMAT FOR DATA.

ADD INFVEYMENT FROM IFORM RESP.
BUFFER ADDR.
PUTX'AD' IN BUFFER POSITIONS IN
BY IFORM (.)+ RESP. DFORM (.)+

END OF IFORM RESP. DFORM?
YES
NO ; BACK TO IBF.

END OF AN INSTRUCTION STRING?
NO ;
YES ; END OF AREA TO BE PRINTE
NO
YES ; ANYTHING LEFT TO BE PUT
BUFFER.
YES ; TREAT IT AS DATA.
NO ; HAS EVERYTHING BEEN PRIN
NO
YES ; END OF JOB.
GO TO RESTRT. TO PRINT MORE ARE
SET SWITCH TO "CONTANTS".
RESET END OF STRING.

GET ZONE OF BYTE TO BE CHECKED.
GET NUMERIC OF BYTE TO BE CHECK

ASSUMING IT IS AN OP-CODE. GET
OF INSTRUCTION.
DISPLACEMENT FOR TABLE.

ARE INSTRUCTIONS BEING PRINTED?
YES
NO ; IS BYTE AT LOCATION PTR 0
YES

NO , IT IS CONSTANT - GET BACK
BYTE NOT YET PRINTED.
IS PRINT BUFFER EMPTY?
NO ; TRANSLATE BYTE.
YES ; TRANSLATE ADDRESS OF BYT
IS IT TERMINATING OP-CODE.
NO
IT IS HPL.

IS IT BC OR JC?

NEM2 *** MNEMONIC DUMP PROGRAM ***

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0195 F2 02 0F 182 JNL LORA
0198 78 87 01 183 TBN 1(,1),M0567
0198 F2 10 0F 184 JT TERM
019E 79 8F 01 185 TBF 1(,1),CM1
01A1 F2 10 09 186 JT TERM
01A4 F2 87 22 187 J NOTERM
01A7 79 10 01 188 LORA TBF 1(,1),M3
01AA F2 10 1C 189 JT NOTERM
01AD 38 40 06E6 190 TERM TBN SWITCH,M1
01B1 3A 80 06E6 191 SBN SWITCH,MO
192 *
01B5 0C 02 06DC 06D9 193 MVC STOP(3),PTR
01B8 0C 02 06D9 06D3 194 MVC PTR(3),BEGIN
01C1 C0 10 02ED 195 BT EDIT
01C5 C0 87 00CE 196 B INBUF
01C9 0E 02 06D9 06DF 197 NOTERM ALC PTR(3),LENGTH
01CF C0 87 0107 198 B NUBYTE
01D3 2C 00 06E3 00 199 IPRINT MVC NUM(1),0(,2)
200 *
01D8 36 02 06E3 201 A NUM,2
01DC 35 01 03A9 202 L BUFADD,1
01E0 6C 02 09 00 203 MVC 9(3,1),0(,2)
01E4 35 02 06D9 204 L PTR,2
01E8 88 30 00 205 TBN 0(,2),M23
01EB F2 10 18 206 JT BITS01
01EE B9 20 00 207 TBF 0(,2),M2
01F1 F2 10 06 208 JT BIT3
01F4 7C 6B 18 209 MVI 24(,1),COMMA
01F7 7C F2 19 210 MVI 25(,1),R2
01FA B9 10 00 211 BIT3 TBF 0(,2),M3
01FD F2 10 06 212 JT BITS01
0200 7C 6B 18 213 MVI 24(,1),COMMA
0203 7C F1 19 214 MVI 25(,1),R1
0206 88 C0 00 215 BITS01 TBN 0(,2),M01
0209 F2 10 18 216 JT ZF
020C B9 80 00 217 TBF 0(,2),MO
020F F2 10 06 218 JT BIT1
0212 7C 6B 13 219 MVI 19(,1),COMMA
0215 7C F2 14 220 MVI 20(,1),R2
0218 B9 40 00 221 BIT1 TBF 0(,2),M1
021E F2 10 11 222 JT TRANSL
021F 7C 6B 13 223 MVI 19(,1),COMMA
0221 7C F1 14 224 MVI 20(,1),R1
0224 F2 87 08 225 J TRANSL
0227 5C 01 14 19 226 ZF MVC 20(2,1),25(,1)
227 *
0228 5C 01 19 05 228 MVC 25(2,1),5(,1)
229 *
230 *
022F 3A 52 06E6 231 TRANSL SBN SWITCH,M136
232 *
0233 0C 03 06EA 06AB 233 MVC CHRPTR(4),CHRADD
0239 C2 02 06D8 234 LA PTR-1,2
023D C2 01 0398 235 TRL LA ALPHAB,1
0241 28 02 06E1 00 236 MNZ ZONE,0(,2)
237 *
0246 36 01 06E1 238 A ZONE,1
239 *
024A 1C 00 06E4 00 240 MVC AUX-1(1),0(,1)
024F C2 01 0398 241 LA ALPHAB,1
242 *
0253 28 03 06E1 00 243 MNN ZONE,0(,2)
244 *
0258 36 01 06E1 245 A ZONE,1
025C 1C 00 06E5 00 246 MVC AUX(1),0(,1)
0261 35 01 06E8 247 TBLANK L BUFPTR,1
0265 7D 40 00 248 CLI 0(,1),BLANK
0268 F2 81 0A 249 JE MOVE

NO
IS IT B OR J? (MASK # 0)
YES
NO ; IS IT B OR J? (MASK = 0)
YES
NO
IT IS L OR A ; IS IT L OR A?
NO
YES ; TERMINATING INSTR.- TO IA
TEST IF BUFFER EMPTY - SET SWIT
INSTR.
MARK STOP OF INSTR.STRING.
GO BACK TO LAST BYTE NOT YET PR
BUFFER NOT EMPTY ; GO TO PRINT

NO TERMINATING INSTR. - ADVANCE
ADD DISPLACEMENT FROM TABLE TO
MNEMONIC.

MOVE MNEMONIC TO BUFFER
TEST FOR INDEXED OPERANDS
OPERAN

MOVE COMMA AND 2 INTO BUFFER.

MOVE COMMA AND 1 INTO BUFFER.

OPERAN

ERASE COMMA, IF JUST ONE OPERAN
INSTRUCTION.
ERASE COMMA, IF JUST ONE OPERAN
INSTRUCTION.
TRANSLATE AUTO PRINTABLE HEX. C
SET SWITCH TO "BUFFER NOT EMPTY
"ADDRESS IN BUFFER" LENGTH = 2

TRANSLATE ADDRESS FIRST.

FIND HEX. EQUIVALENT OF ZONE PA
BYTE.
FIND HEX. EQUIVALENT OF ZONE PA
BYTE.
MOVE ZONE TO AUXILIARY LOCATION
FIND HEX. EQUIVALENT OF NUMER
BYTE.
FIND HEX. EQUIVALENT OF NUMER
BYTE.

MOVE NUMERIC TO AUXILIARY LOC
FIND FIRST FREE POSITION IN BUF

NEM2 *** MNEMONIC DUMP PROGRAM ***

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
026B OE 01 06E8 0637 250 ALC BUFPTR(2),KON1 ADD 1 TO BUFFER.

NEM2 *** MNEMONIC DUMP PROGRAM ***

FRR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
036B E3C2D5E3C2C6E2C2 0381 316 DC CL23'TBNTBFSBNSBFMVICLIOLA' TABLE OF MNEMONICS.

NEM2 *** NMEMONIC DUMP PROGRAM ***

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Rows include object codes like 0611, 0615, 0619, 061C, 0620, 0625, 062A, 062B, 0628, 0631, 0633, 0635, 0638, 063E, 0641, 0644, 0647, 064A, 064F, 0652, 0657, 065A, 065F, 0662, 066A, 0670, 0673, 067B, 0681, 0684, 068C, 0691, 0697, 0698, 0699, 069A, 069B, 06AD, 06D1, 06D4, 06D7, 06DA, 06DD, 06E0, 06E2, 06E4, 06E6, 06E7, 06E9.

SET SWITCH TO "BUFFER EMPTY" AN = 0"
DESCRIBES PRINT LINE FORMAT FOR
DESCRIBES PRINT LINE FORMAT FOR INSTRUCTIONS.
OF BUFFER.
FIRST BYTE OF TABLE OF MNEMONIC 1
CL14*MFCU PUNCH DAR*
CL14*MFCU PRINT DAR*
CL13*MFCU READ DAR*
6CL1* *
CL1* *
XL1*39*
XL1*87*
XL18
XL36
XL3
XL3
XL3
XL3
XL2
XL2
XL2
XL1
XL2
XL2
0000 404 END RESTRT

LAST BYTE OF CURRENT INSTRUCTIO INSTRUCTION LENGTH.
(SEE MEANING OF BITS OF SWITCH) FIRST FREE BYTE IN PRINT BUFFE FIRST FREE BYTE IN CHARACTER DI POSITION IN PRINT BUFFER.

NEM2 *** NMEMONIC DUMP PROGRAM ***

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEFN, REFERENCES. Rows include symbols like AAX010, AAX015, AAX020, AAX030, AAX040, ADD1, ALPHAB, AUX, BACK, BEGIN, BITS01, BIT1, BIT3, BLANK, BUFADD, BUFPTR, CHARS, CHRADD, CHRPTR, CMI, COMMA, COMP1, DATA, DFORM, DISPL, ED, EDIT, END, GOON, HALT, HEADER, HEXB7, HEX39, IBF, IFORM, IMAGE, INBUF, IPRINT, KON1, LENGTH, LOOKUP, LORA, LPCT, LPRDAT, LPRING, LPTR, MINUS, MNEADD, MNEMTB, MOVE, MO, M01, M0567, M1, M136, M14567, M2, M23, M3, M4567, NEWSTR, NOTERM, NUBYTE, NUM, OPCODE, PERIOD.

NEM2 * * * NMEMONIC DUMP PROGRAM * * *

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
PRINT	A	003	0600	0346	0087 0125 0291 0355
PRINT1	A	004	0615	0353	0076* 0122*
PRTREG	A	001	004E	0088	0075
PTR	A	003	0609	0394	0144 0146 0158 0172* 0180 0193 0194* 0197* 0204 0234 0257* 0269
REPLCE	A	003	020D	0283	0275
RESTR	A	004	0000	0065	0154 0404
R1	C	001	00F1	0060	0214 0224
R2	C	001	00F2	0061	0210 0220
STOP	A	003	060C	0395	0123* 0144 0156* 0193*
SUB1	A	006	0294	0260	0254
SVAREA	A	001	065B	0388	0065* 0066
SWITCH	A	001	06E6	0400	0130 0151 0155* 0168 0174 0190 0191* 0231* 0253 0258 0260* 0263
					0265 0267* 0268* 0351*
TBLANK	A	004	0261	0247	0251
TCHAR	A	003	02C9	0274	0282
TERM	A	004	01AD	0190	0179 0184 0186
TRANSL	A	004	022F	0231	0176 0222 0225
TRL	A	004	023D	0235	0270
WKAREA	A	001	06AD	0390	0090 0111
XR1	C	001	0001	0063	0091 0105 0105*
XR2	C	001	0002	0064	0091 0092 0092 0094 0095 0097 0098 0099 0099*
ZERO	A	001	0500	0331	0287 0288 0289 0290 0292 0294*
ZF	A	004	0227	0226	0216
ZONE	A	002	06E1	0397	0159* 0163 0236* 0238 0243* 0245

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

NEM2 * * * NMEMONIC DUMP PROGRAM * * *

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

T<E I1 DFXZHAAZ_ 4A E4 -N08 109 V 09-0-50' 0'JG B -A+( HFF 1-A)Z FV02RA>Y 1.KZ XH0*CS2HNEM20010
T<EATA>,016-0 $ L0C'< F5TGUAPE 19-+ZOH*F COKAZ, B -E_X A H-B D @- A9>' .2<-F1* LC0-A:J8NEM20011
T<EBN .4I |HDAQB 'EQT- AZXS -G 2- -2/0A90H* Q_H A &B AZYE;* A ES. B &M20-H @a,12M ;F/ .EDQENEM20012
T<EC.AD5Z O<CS < IA60CCO_Z IM|S < ID60CIJ1Z 24$$ < =G60CL2|B -C+( H FF OEA_OF53BG C< 1.KUAB,&NEM20013
T<OC#A- 5 &+Z0-H FH71 N510NV*8- $ W2/ H-E0=-E1P0-H FHBO A>< (-DF872 - +HB $70 'DIKD MB&MAMCDNEM20014
T< DG2YDDOM* #-4 BA_UF7|HD.04BA_U F5?HDF 4BA<F5?H DMT/ A>$ D .@G1 TOH* 'OHKM;GAM LC YFQLUNEM20015
T.-E-+8 F9-0BA_0 F53BG <85 -SRH H FB& Y 0ST CMAATE 5 -Q4(-DF8J-CA_2 F ' BZXH12EEJD (B&C'QONEM20016
T<-FKA>< (-HF83S A>$2DF09- C2DAD < -SRA<8& $WOA B_-HGD,5H |HB|?H AG3MAA_W* CD/GJU PB-0A&BYNEM20017
T<OGFO-C2 -*8/OG 2D *9?OG2D X2/ZI 9D G2DA08& $W+Y F9-0BA_OF6&0BA_U F42 & >7 /0 1.KZ XIKD)NODNEM20018
T<-G9 <8+ -SRA_ /ODG. F80 6 -S T<EDCDO0BB& 5 -S R>C @/ Q>K @/ F-F2Q-|HR B QE @ .AOMA9I4NEM20019
T+&H3>J @/ F-F2 0-|DR>< @/ $>Q @/ F-F2L-|HM>M @/ J-F2L-|DM2Y* HP DMFN0AF&M:M-$ WC 8R 8NEM20020
T.-IS 0SD :?B -$ QO-DCWB-BA>D (-D F8JO A>E 0-DCWB- CA>D (-DF8JO A>M (ED BZXH/8REJ <B EB4R4NEM20021
T.OHKA>/E C2-EY + &$YAT- /OI/L D AA>M8D $W2/ LC-H F40Q7C-HF6&Q7+Q F9?HE B4Z12</F/Q JCE&A#.8NEM20022
T<.CH&2 A>QF(=H B LU|A>$2UAM9D $ W2/AB+1 F9-CA>Q F73MBA_X /OH*(ED F=WO 'HKM/G1Z MC&QD:.YNEM20023
T<O.7 <HBA&B*OC 2-89_ @YDH8-H AOH*B2P1. BAA>Y F(75* * A E-B EM 0-ME G0B;& 0.B- /G1-D0K4NEM20024
T+ <0?=-#OHDF .6 ->*HA #1 >2BG ?M DEJMUEJ&MHIMMEB< 4<3(CYHB-YBH-H2M XY50><CH4(T=-YH : A<F$J4NEM20025
T+(-,OV2->LX*|4E CYHAN&UK-:GZ0;W -B>W-5+PXKC/I+*P DY<XTO*LV02|L02G L0=.L0=.N8_|I5>. TY+< JHDNEM20026
T+>W0_PTOZSSO_P SOZSM9*XC42XT2)$ LOECA5|S2)$LYHC AYHCBO:CH5*|JO:C 02-.3*|P6*TT90*. C1<M OZ<NEM20027
TA +,1-N2ASZ ..... EBL5UNEM20028
T+M:2-.3*|P6*TT 92G_2Q;.T9+PW9=T Z-0_24).L5(P05*T RQE_*0*.C1<PF12T IND_<EDA EDA EDA ED :DYNEM20029
T+NSEDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA EDA ED )B4NEM20030

```


NEM2 * * * MNEMONIC DUMP PROGRAM * * *

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+EO?&DC**OM	EDA EDA EDA EDA	EDA EDA EDA EDA	EDA EDA EDA EDA	EDA EDA EDA EDA	E E5A*NEM20031
T+PD&DA	EDA EDA EDA EDA	EDA EDA EDA EDA	EDA EDA EDA EDA	EDA EDA EDA EDA	ED MK4NEM20032
T(-Q/&DA	EDA EDA EDA EDA	Q;Q O; FF-|S -G	W <G-A/U#LOSMDH*	I =-BGA- D E	4HKM\$LKYNEM20033
T+ER\$	EUIB&UIB&G OA DAA DEA- CC	)-S6MA &+-R3MA	&+-R3UA &(|P4@|	R&DA 4*-IO|V	EDC E50 K#D&NEM20034
T+-EO1<GR&DA	5<\$ C9DCP9(PC2DCD0)V	EDCM1&|UE(-R2)P	TE<LA6MA &(|LFO=J	6*PA1DCD0|V	EDA ED 58UNEM20035
T-ER&CM7	.....	.....	.....	.....	..... \$I4NEM20036
E A+E7*=-DC*PH\$	=*7NEFI | C	F% ASC R A	SO Q	.....	23090501700 604702&UNEM20037

----- LAST PAGE -----

DATE	15JAN70	09MAR70	17APR70	05JUN70
EC NO.	816576	816638	816677	816707

PROG ID	ONEM-2
PAGE	9



00DAA ABSOLUTE LOADER

EPR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000 2 ALDAA0 START X'00' BEGINNING ADDRESS OF
3 *****
4 *
5 * ABSOLUTE CARD LOADER
6 *
7 * THE ABSOLUTE CARD LOADER PERFORMS THE FUNCTION OF
8 * RECOGNIZING THE OBJECT CARD TYPES AND PROCESSING
9 * THEM AS FOLLOWS:
10 *
11 * TEXT CARD: THE INSTRUCTIONS AND CONSTANTS REPRESENTED
12 * ON THIS CARD ARE COMPRESSED INTO THE REQUIRED
13 * FORMAT AND MOVED INTO THE SPECIFIED CORE
14 * LOCATION.
15 *
16 * END CARD: THE ABSOLUTE CARD LOADER COMPRESSES THE
17 * CONTENTS OF THE END CARD INTO EBCDIC FORMAT
18 * AND TRANSFERS CONTROL TO THE INSTRUCTIONS
19 * REPRESENTED ON THIS CARD BY BRANCHING TO A
20 * GIVEN LOCATION WITHIN THE I/O AREA. THESE
21 * INSTRUCTIONS REPRESENTED ON THE END CARD
22 * CLEAR THE LOADER FROM CORE AND BRANCH TO
23 * THE ENTRY POINT OF THE PROGRAM LOADED.
24 *
25 * BEFORE MOVING ANY DATA INTO CORE, THE LOADER CHECKS THE
26 * MACHINE CORE CAPACITY TO ENSURE THE AVAILABILITY OF CORE
27 * NECESSARY TO EXECUTE THE PROGRAM BEING LOADED.
28 *
29 *****
30 *
007C 31 ENTRY ALDAA1 LOADER I/O AREA
32 * BASE ADDRESS
0000 33 AAA010 EQU * BEGINNING ADDRESS OF LOADER
34 *
0060 35 ORG X'60' ESTABLISH BASE ADDRESS
36 *
0000 37 USING AAA010,1 ESTABLISH BASE ADDRESS
0000 38 USING AAA010,2 ESTABLISH BASE ADDRESS
39 *
0060 40 AAA030 HPL X'6C',X'7C' THE PROGRAM BEING LOADED
0063 41 B AAA030(XR1)
42 *
43 * REQUIRES MORE CORE THAN IS
44 * AVAILABLE--THE LOAD PROCESS
45 * IS TERMINATED AT THIS POINT AND
46 * SHOULD NOT BE RESTARTED
0066 46 AAA050 SZ 95(3,XR1),AAA085(1,XR1) IF PAST FIRST THREE CARDS OF
006A 47 JNP AAA060 PHASE, CHANGE HPL TO LI
006D 48 AAA080 MVI AAA070+2(XR1),X'03'
0070 49 AAAC60 SNS 92(XR1),X'F3'
0073 50 TBF 92(XR1),X'FF'
0076 51 JT AAA110 STORE THE CONDITION CODE
0079 52 AAA070 HPL X'76',X'68' TEST FOR ERROR CONDITION
53 * JUMP IF NO ERROR
54 *** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** **^
55 * HALT DUE TO ERROR CONDITION
56 *
007C 56 ALDAA1 LA CDND-1(XR1),XR2 INITIALIZE INDEX REGISTER TWO
57 * SO THAT IT POINTS TO THE RIGHT-
58 * MOST BYTE OF THE SECTION OF THE
59 * I/O AREA TO BE COMPRESSED
60 *
61 *****
62 *****
63 *****
64 ***** NOTICE *****
65 *****
66 *****
67 *****
68 *
007F 69 MVI AAA160+2(XR1),AD94+1 INITIALIZE POINTER FOR TESTING

```

00DAA ABSOLUTE LOADER

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0082 70 58 CF 70 *
71 * MVI LEN3(XR1),AD84 EACH BYTE FOR SPECIAL CHARACTER
72 * INITIALIZE THE INSTRUCTION
73 * WHICH RIGHT ADJUSTS THE
74 * COMPRESSED BYTES
0085 74 LIO ZERO(XR1),X'F5' INITIALIZE THE I/O AREA ADDRESS
0088 75 AAA085 STG X'00',X'F1' READ CARD INTO I/O AREA
008B 76 AAA090 TIO AAA090(XR1),X'F1' WAIT FOR COMPLETION OF I/O
008E 77 AAA100 B AAA050(XR1) TEST FOR ERROR AND HALT IF
78 * ERROR CONDITION IS PRESENT
0091 79 AAA110 CLI AAA010(XR1),TEXT IS THIS A TEXT CARD
0094 80 BE AAA130(XR1) YES
0097 81 CLI AAA010(XR1),END IS THIS AN END CARD
009A 82 BNE ALDAA1(XR1) NO--EXTRANEQUS CARD--
009D 83 TBF 91(XR1),X'03'
00A0 84 BF AAA050(XR1)
85 *
00A3 86 AAA130 MVI LEN1(XR1),ZERO1 READ ANOTHER
87 * INITIALIZE THE LENGTH FIELD OF
88 * THE FIRST COMPRESSION
89 * INSTRUCTION
00A6 89 AAA150 SLC AAA160+2(1,XR1),ONEC(XR1) DECREMENT POINTER FOR TESTING
90 * EACH BYTE FOR X'D0'
00AA 91 MVC LEN2(1,XR1),LEN1(XR1) SET LENGTH FIELD OF SECOND
92 * COMPRESSION
00AE 93 AAA160 CLI *-*(XR1),MDO CHECK FOR X'D0'
00B1 94 BNE AAA180(XR1) NGT X'D0'
00B4 95 MVC AAA170+2(1,XR1),AAA160+2(XR1) REPLACE X'D0' WITH X'2A'
00B8 96 AAA170 MVI *-*(XR1),M2A ENSURE UNIQUENESS OF LOW
97 * ORDER SIX BITS
00BB 98 AAA180 ALC 1(1,XR2),1(XR2) FIRST COMPRESSION INSTRUCTION
00BF 99 ALC 1(1,XR2),1(XR2) SECOND COMPRESSION INSTRUCTION
00C3 100 ALC LEN1(1,XR1),ONEC(XR1) INCREMENT LENGTH IN THE
101 * COMPRESSION INSTRUCTIONS
00C7 102 CLI LEN1(XR1),M04 HAVE FOUR BYTES BEEN COMPRESSED
00CA 103 BL AAA150(XR1) NO--CONTINUE COMPRESSING
00CD 104 AAA190 MVC AD84(3,XR1),0(XR2) RIGHT ADJUST 3 COMPRESSED BYTES
00D1 105 SLC LEN3(1,XR1),THRE(XR1) DECREMENT RIGHT ADJUSTING
106 * INSTRUCTION FOR NEXT 3 BYTES
00D5 107 A MINUS4(XR1),XR2 DECREMENT REGISTER FOR
108 * COMPRESSION
00D8 109 BNL AAA130(XR1) CONTINUE COMPRESSING CONTENTS
110 * OF I/O AREA
00DB 110 AAA210 CLI AAA010(XR1),END COMPRESSION IS COMPLETE--
111 * IS THIS AN END CARD
00DE 112 BE TRANS(XR1) YES--TRANSFER CONTROL TO
113 * INSTRUCTIONS ON END CARD
00E1 114 MVC TOADDR(3,XR1),LNADDR(XR1) SUPPLY 'TO' ADDRESS AND LENGTH
00E5 115 MVI LENGTH-1(XR1),X'00' SUPPLY THE
00E8 116 L LENGTH(XR1),XR2 'FROM' ADDRESS
117 *
118 *
119 *
120 *
121 *
122 * Q BYTE IN FOLLOWING INSTRUCTION
123 * IS SET UP BY THE BOOTSTRAP
00EB 122 CLI CORNSIZ(XR1),*-* LOC X'017E' IS MOVED IN
00EE 123 BH AAA030(XR1) IS CORE AVAILABLE FOR MOVE
124 * NO--HALT
00F1 125 AAA230 MVC *-*(X-),FROM(XR2) MOVE CODE INTO CORE
00F6 126 B ALDAA1(XR1) RETURN TO READ ANOTHER CARD
127 *
128 *
129 * EQUATES AND CONSTANTS
0058 130 CDND EQU X'58'
131 *
0001 132 XR1 EQU 1
0002 133 XR2 EQU 2
00BC 134 LEN1 EQU AAA180+1
00C0 135 LEN2 EQU AAA180+5
00CF 136 LEN3 EQU AAA190+2
00D0 137 LEN4 EQU AAA190+3

```

OODAA ABSOLUTE LOADER

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for OODAA ABSOLUTE LOADER.

OODAA ABSOLUTE LOADER

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for OODAA ABSOLUTE LOADER, including listing of IPL cards.

OODAA ABSOLUTE LOADER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
236 *				BP' Q D-X G a a a T X L 6
237 *				C2D77D40D8DOC4606C4040405ADOC77C7F7C4040404040404040E3E7D3F6
238 *				
239 *				3 * 1 3 2 9 2 1 5 9 * 1 5 = 2 5 * 8 T X L 0 0 0 0 6
240 *				F37F407DF37CF97CF1F5F97DF140F5407EF2F57DF8404040E3E7D3FCFOF0F0F6
241 *				
242 *				
243 *				
007C	244		END	ALDAA1

IBM MAINTENANCE DIAGNOSTIC PROGRAM

OODAA ABSOLUTE LOADER

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AAA010	A	001	0000	0033	0037 0038 0079 0081 0111
AAA030	A	003	0060	0040	0041 0123
AAA050	A	004	0066	0046	0077 0084
AAA060	A	003	0070	0049	0047
AAA070	A	003	0079	0052	0048*
AAA080	A	003	006D	0048	0164
AAA055	A	003	0088	0075	0046
AAA090	A	003	008B	0076	0076 0151
AAA100	A	003	008E	0077	
AAA110	A	003	0091	0079	0051
AAA130	A	003	00A3	0086	0080 0109
AAA150	A	004	00A6	0089	0103
AAA160	A	003	00AE	0093	0065* 0089* 0095 0165
AAA170	A	003	0088	0096	0095*
AAA180	A	004	00BB	0098	0094 0134 0135
AAA190	A	004	00CD	0104	0136 0137
AAA210	A	003	00DB	0111	
AAA230	A	005	00F1	0125	0138 0139
AD83	C	001	0057	0149	
AD84	C	001	0058	0148	0069 0071 0104*
ALDAA0	A	001	0000	0002	
ALDAA1	A	003	007C	0056	0031 0082 0126 0244
B84	C	001	0000	0147	
CDND	C	001	0058	0130	0056 0148 0149
COREND	C	001	017E	0163	
CORSIZ	C	001	0018	0160	0122
END	C	001	00C5	0141	0081 0111
FRADDR	A	005	00F5	0138	
FROM	C	001	001A	0142	0125
H00	C	001	00D0	0144	0093
H04	C	001	0004	0166	0102
H2A	C	001	007A	0145	0096
LENGTH	C	001	0017	0158	0116* 0117
LEN1	A	004	00BC	0134	0086* 0091 0100* 0102
LEN2	A	004	00C0	0135	0091*
LEN3	A	004	00CF	0136	0071* 0105*
LEN4	A	004	00D0	0137	
LNADDR	C	001	0019	0156	0115 0158 0160
MINUS4	A	002	00FA	0150	0107
ONE	C	001	0001	0146	
ONEC	A	003	0082	0165	0089 0100
PROC	A	003	0091	0151	
TEXT	C	001	00E3	0140	0079
THRE	A	003	006E	0164	0105
TOADDR	A	005	00F4	0139	0115*
TRANS	C	001	0019	0153	0113
XR1	C	001	0001	0132	0041 0046 0046 0048 0049 0050 0056 0069 0071 0074 0076 0077 0079 0080 0081 0082 0083 0084 0086 0089 0089 0091 0091 0093 0094 0095 0095 0096 0100 0100 0102 0103 0104 0105 0105 0107 0109 0111 0113 0115 0115 0116 0117 0122 0123 0126
XR2	C	001	0002	0133	0056* 0098 0098 0099 0099 0104 0107* 0117* 0125
ZERO	A	002	00FC	0152	0074
ZEROI	C	001	0000	0143	0086

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

LAST PAGE

TXL1 ***** TEXT TO LIST PROGRAM *****

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2      START X'00'
          3      DECK 4
          4      SEQ 007
          5      *****
          6 *TITLE 'TEXT TO LIST'
          7 *
          8 *STATUS: CHANGE LEVEL 0100
          9 *FUNCTION/OPERATION: TEXT TO LIST GIVES A LISTING OF THE OBJECT
        10 * DECK'S TEXT AND END CARDS. THERE ARE TWO FORMATS, 'A' AND 'B'.
        11 * 'A' FORMAT GIVES A TWO LINE 'HEX' LISTING FOR EACH CARD. 'B'
        12 * FORMAT GIVES A FOUR LINE LISTING FOR EACH CARD: THE 'HEX' LIST AND
        13 * A FORMATTED CHARACTER LIST OF THE CARD ITSELF. THE PROGRAM ACCEPTS
        14 * ONLY TEXT AND END CARDS, IT REJECTS ALL OTHERS. IN THE 'HEX'
        15 * FORMAT, CARD COLS. 2-89 ARE COMPRESSED 4/3 BY THE ABSOLUTE LOADER
        16 * INTO 66 BYTES. THE HIGH ORDER 65 BYTES ARE LISTED AS 130 'HEX'
        17 * CHARACTERS. COL. 1 AND COLS. 89-96 ARE LISTED AS THEY APPEAR ON
        18 * THE CARD. THE 'B' FORMAT GIVES THE TWO 'HEX' LINES AND A CARD
        19 * IMAGE LINE PRECEDING EACH 'HEX' LINE. FOUR CARD COLS. ARE MATCHED
        20 * WITH THREE COMPRESSED BYTES EXCEPT FOR THE LAST GROUP IN LINES
        21 * THREE AND FOUR. HERE, THREE CARD COLS. ARE MATCHED WITH TWO
        22 * COMPRESSED BYTES. THIS IS A STAND ALONE PROGRAM. AT E.O.J., IT
        23 * COMES TO A RESTARTABLE HALT - 'EJ'.
        24 *ENTRY POINTS:
        25 *   AHLAA1 - THIS IS THE FIRST INSTRUCTION OF THE PROGRAM.
        26 *
        27 *INPUT: ANY NUMBER OF OBJECT DECKS. THE LAST CARD MUST HAVE ** IN
        28 * COLS. 1 AND 2.
        29 *
        30 *OUTPUT: FORMATTED LIST OF TEXT AND END CARDS.
        31 *
        32 *EXTERNAL ROUTINES: N/A.
        33 *
        34 *EXITS-NORMAL: AT E.O.J. A RESTARTABLE HALT OCCURS.
        35 *   -ERROR: N/A.
        36 *
        37 *TABLES/WORK AREAS: SAVE1 IS A HOLDING AREA FOR THE 96 BYTE CARD
        38 * IMAGE.
        39 *
        40 *ATTRIBUTES: STAND ALONE.
        41 *
        42 *
        43 *NOTES: IT IS NECESSARY TO COMPRESS CARD COLS. 2-89 TO GET A VALID
        44 * 4/3 COMPRESSION. HOWEVER, COL. 89 IS PART OF THE SEQUENCE DATA.
        45 * SO, ONLY 65 OF THE 66 COMPRESSED BYTES ARE VALID AND LISTED IN
        46 * 'HEX' FORMAT. TO OBTAIN THE 'B' FORMAT, THE RIGHT MOST DIAL
        47 * ON THE CONSOLE SHOULD BE SET TO 1 BEFORE HITTING START AFTER THE
        48 * 'EE' 'EE' HALT. ANY OTHER SETTING WILL DEFAULT TO 'A'PRINT
        49 * FORMAT.
        50 *****

```

TXL1 ***** TEXT TO LIST PROGRAM *****

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

          52
          0000 53 IN EQU * INPUT BUFFER.
          007C 54 PRT EQU X'7C' OUTPUT BUFFER.
          55 ORG X'1AA'
01AA 0000 01AB 56 ADIN DC AL2(IN)
01AC 007C 01AD 57 APRT DC AL2(PRT)
          01AE 58 TAB EQU *
          59 DC CL16'0123456789ABCDEF'
          60
01BE C1 01BE 61 FSW DC CL1'A' FORMAT SWITCH.
01BF 615C 01C0 62 END DC CL2'/' LAST CARD.
01C1 0003 01C2 63 THREE DC XL2'0003'
01C3 000B 01C4 64 GROUP DC XL2'000B'
01C5 0901 01C6 65 ONE DC XL2'0001'
01C7 00 01C7 66 LNSW DC XL1'00'
01C8 007E 01C9 67 ADPRT DC AL2(PRT+2)
01CA 0229 68 SAVE1 DS CL96
022A 000B 022B 69 CNTR DC XL2'000B'
022C 00 022C 70 CHSW DC XL1'00'
022D 00000000 0230 71 HOLD DC XL4'00000000'
          72
          0100 73 IMAG EQU X'100'
          0232 74 AIMAG DC AL2(IMAG)
          0234 75 FORMLG DC XL2'4200'
          0236 76 ADUT DC AL2(PRT)
          0001 77 XR1 EQU 1
          0002 78 XR2 EQU 2
          0008 79 ARR EQU 8
          0231 0100
          0233 4200
          0235 007C

```

TXL1 ***** TEXT TO LIST PROGRAM *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0257	FO 7C 7C	81	AHLAA1	HPL	X'7C',X'7C'
023A	31 E6 0236	82		LIO	AJUT,X'E6'
023E	31 E4 0232	83		LIO	AIMAG,X'E4'
0242	31 E0 0234	84		LIO	FORMLG,X'E0'
0246	30 00 0230	85		SNS	HOLD,X'00'
024A	3A F0 0230	86		SBN	HOLD,X'F0'
024E	3D F1 0230	87		CLI	HOLD,X'F1'
0252	F2 01 04	88		JNE	AA1001
0255	3C C2 01BE	89		MVI	FSW,C'B'
		90			
		91			
0259	C0 87 0458	92	AA1001	B	AAAKEX PEAD SECONDARY
025D	C0 87 045F	93		B	AAAKWT WAIT ON READ
		94			
0261	0D 01 0001 01C0	95		CLC	IN+1(2),END TEST FOR
0267	C0 81 0450	96		BE	AAZ015 LAST CARD.
026B	0C 5F 0229 005F	97		MVC	SAVE1(96),IN+95 SAVE CARD IMAGE
		98			
0271	3D E3 0000	99		CLI	IN,C'T' IF CARD IS NOT A TEXT
0275	F2 81 24	100		JE	AA101A OR END CARD.
0278	3D C5 0000	101		CLI	IN,C'E'
027C	F2 81 1D	102		JE	AA101A
027F	3D D9 0000	103		CLI	IN,C'R'
0283	F2 81 16	104		JE	AA101A
0286	3D D2 0000	105		CLI	IN,C'K'
028A	F2 81 0F	106		JE	AA101A
028D	3D D1 0000	107		CLI	IN,C'J'
0291	F2 81 08	108		JE	AA101A
0294	3D D3 0000	109		CLI	IN,C'L'
0298	C0 01 0259	110		RNE	AA1001 BRANCH TO READ ANOTHER CARD.
		111			
		112			
029C	3D C1 01BE	113	AA101A	CLI	FSW,C'A' IF PRINT FORMAT IS 'B', BRANCH
02A0	C0 01 03AF	114		BNE	AAD007 TO PRINT FIRST LINE B-FORMAT.
		115			
		116			*THIS SECTION COMPRESSES CARD COL 2-89 FROM 4 TO 3 BYTE FORMAT.
		117			
	0000	118		USING	IN,1 USE XR1 AS A BASE REGISTER
	0000	119		USING	IN,2 USE XR1 AS A BASE REGISTER
		120	AAC002	LA	IN,XR1 POINTING TO THE INPUT BUFFER.
02A4	C2 01 0000	121	AA12	LA	A88(,XR1),XR2
02AB	D2 02 58	122		MVI	AA16+2,X'59'
02AB	3C 59 02C9	123		MVI	LEN3,AD84
02AF	3C 58 02EF	124		MVI	LEN4,AD83
02B3	3C 57 02F0	125	AA13	MVI	LEN1,ZERO
02B7	3C 00 02D8	126	AA15	SLC	AA16+2(1),ONEC
02BB	0F 00 02C9 030C	127		MVC	LEN2(1),LEN1
02C1	0C 00 02DC 02D8	128	AA16	CLI	*-*(,XR1),HDO
02C7	7D D0 00	129	*		
		130		BNE	AA18
02CA	C0 01 02D7	131		MVC	AA17+2(1),AA16+2
02CE	0C 00 02D6 02C9	132	AA17	MVI	*-*(,XR1),H2A
02D4	7C 2A 00	133	*		
		134	AA18	ALC	B84(1,XR2),B84(,XR2)
02D7	AE 00 00 00	135	*		
		136		ALC	B84(1,XR2),B84(,XR2)
02DB	AE 00 00 00	137	*		
		138		ALC	LEN1(1),ONEC
02DF	0E 00 02D8 030C	139	*		
		140		CLI	LEN1,H04
02E5	3D 04 02D8	141		BL	AA15
02E9	C0 82 02BB	142	AA19	MVC	AD84(3,XR1),AD83(,XR1)
02ED	5C 02 58 57	143		SLC	LEN3(1),THRE
02F1	0F 00 02EF 030B	144		ALC	LEN4(1),MINUS4
02F7	0E 00 02F0 030A	145		A	MINUS4,XR2
02FD	36 02 030A	146		BNZ	AA13
0301	C0 01 02B7	147		B	AAC02A
0305	C0 87 030D	148	*		

TXL1 ***** TEXT TO LIST PROGRAM *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
		149	*		
0058	150 A88	EQU			88
02D8	151 LEN1	EQU			AA18+1
02DC	152 LEN2	EQU			AA18+5
02EF	153 LEN3	EQU			AA19+2
02F0	154 LEN4	EQU			AA19+3
00D0	155 H00	EQU			X'D0'
002A	156 H2A	EQU			X'2A'
0000	157 B84	EQU			X'00'
0058	158 AD84	EQU			X'58'
0057	159 AD83	EQU			X'57'
0004	160 H04	EQU			4
0000	161 ZERO	EQU			X'00'
030A	162 MINUS4	DC			XL2'FFFC'
030B	163 THRE	DC			XL1'03'
030C	164 GNEC	DC			XL1'01'
0001	165	DROP			1
0002	166	DROP			2
0309	FFFC				
030B	03				
030C	01				

TXL1 * * * * * TEXT TO LIST PROGRAM * * * * *

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

168 * THIS SECTION CONVERTS EACH COMPRESSED BYTE TO TWO HEX BYTES AND
169 * FORMATS THE PRINT AREA.
170
171
030D C0 87 0506      172 AAC02A B   WAIT          WAIT ON PRINT
0311 C0 00 007C 0000 173           MVC     PRT(1),IN    MOVE CARD ID TO PRINT BUFFER.
0317 C2 01 01AE      174           LA      TAB,XR1      SET XR1 AS POINTER TO TRANSLATE TABLE.
031B C2 02 0017      175           LA      IN+23,XR2    SET XR2 AS POINTER TO 1ST COMPRESSED BYTE
176
031F 28 02 0441 00   177 AAD003 MNZ    AAE012+4,0(,XR2)  TRANSLATE 1ST 4 BITS OF COMPRESSED BYTE.
0324 C0 87 0439      178           B          AAE011
0328 28 03 0441 00   179 MNZ     AAE012+4,0(,XR2)  TRANSLATE 2ND 4 BITS OF COMPRESSED BYTE.
032D C0 87 0439      180           B          AAE011
181
0331 E2 02 01       182           LA      1(,XR2),XR2  SET POINTER TO NEXT COMPRESSED BYTE.
0334 0F 01 01C2 01C6 183           SLC     THREE(2),ONE  CHECK TO SEE IF PRINT FORMAT GROUP IS
033A C0 01 031F      184           BNZ     AAD003        COMPLETED.
033E 3C 03 01C2      185           MVI     THREE,X'03'  RESET FORMAT COUNTER.
0342 0F 01 01C4 01C6 186           SLC     GROUP(2),ONE  CHECK TO SEE IF PRINT BUFFER IS FULL.
0348 F2 81 0A       187           JE      AAD004
034E 0E 01 0440 01C6 188           ALC     AAE012+3(2),ONE  ADJUST POINTER IN OUTPUT BUFFER.
0351 0E 07 031F      189           B          AAD003        BRANCH TO CONVERT ANOTHER BYTE.
190
0355 3D 00 01C7     191 AAD004 CLI     LNSW,X'00'      IF LAST LINE OF HEX FORMAT,
0359 C0 01 0427     192           BNE     AAD10A        BRANCH TO INSERT BLANKS.
035D C0 87 050A     193 AAD04A B       EXEC           PRINT
194
0361 C0 87 0506     195           B       WAIT          WAIT ON PRINT
0365 C0 87 050A     196           B       EXEC           PRINT A BLANK LINE
197
0369 3D 00 01C7     198           CLI     LNSW,X'00'      BRANCH IF LAST LINE FOR CARD
036D C0 01 0395     199           BNE     AAD006        HAS BEEN PRINTED.
0371 3C FF 01C7      200           MVI     LNSW,X'FF'    SET SWITCH AND COUNTER FOR FORMATTING
0375 3C 08 01C4      201           MVI     GROUP,X'0B'   LAST PRINT LINE FOR CARD.
0379 0C 01 0440 01C9 202           MVC     AAE012+3(2),ADPRT  SET UP PRINT BUFFER POINTER.
203
037F 3D C1 01BE     204           CLI     FSW,C'A'      IF USING PRINT FORMAT-B, BRANCH TO
0383 C0 01 03FD     205           BNE     AAD009        SET UP 2ND LINE OF CARD IMAGE.
0387 C0 87 0506     206 AAD005 B       WAIT          WAIT BEFORE PRINTING
038B 0C 07 00D2 0229 207           MVC     PRT+86(8),SAVE1  MOVE SEQUENCE DATA TO PRINT BUFFER.
0391 C0 87 031F      208           B       AAD003        BRANCH TO FORMAT 2ND LINE OF HEX LIST.
209
0395 3C 00 01C7     210 AAD006 MVI     LNSW,X'00'      RESET SWITCH AND COUNTER TO
0399 3C 08 01C4     211           MVI     GROUP,X'0B'   FORMAT 1ST LINE OF HEX LIST.
039D 0C 01 0440 01C9 212           MVC     AAE012+3(2),ADPRT  RESET PRINT BUFFER POINTER.
213
03A3 C0 87 0506     214           B       WAIT          WAIT ON PRINT
03A7 C0 87 050A     215           B       EXEC           PRINT A BLANK LINE
216
03AB C0 87 0259     217           B       AA1001        BRANCH TO READ ANOTHER CARD.
218
03AF C0 87 0506     219 AAD007 B       WAIT          WAIT BEFORE PRINTING
03B3 0C 00 007C 0000 220           MVC     PRT(1),IN    MOVE ID TO PRINT BUFFER.
03B9 C2 01 0081      221           LA      PRT+5,XR1    SET XR1 AS POINTER TO PRINT BUFFER.
03BD C2 02 0004      222           LA      IN+4,XR2     SET XR2 AS POINTER TO CARD IMAGE.
03C1 6C 03 00 00    223 AAD008 MVC     0(4,XR1),0(,XR2)  MOVE 4 BYTES OF CARD IMAGE TO PRINT BUFFE
03C5 E2 02 04       224           LA      4(,XR2),XR2  ADJUST CARD IMAGE POINTER BY 4 BYTES.
03C8 D2 01 07       225           LA      7(,XR1),XR1  ADJUST PRINT BUFFER POINTER BY 4 BYTES.
03CB 0F 00 022B 01C6 226           SLC     CNTR(1),ONE   BRANCH IF PRINT BUFFER NOT FULL.
03D1 C0 01 03C1      227           BNZ     AAD008
03D5 3D 00 022C      228           CLI     CHSW,X'00'    BRANCH IF PRINT BUFFER NOT FULL.
03D9 C0 01 0431      229           BNE     AAD10B
230
03DD C0 87 050A     231 AAD08A B       EXEC           PRINT A LINE
232
03E1 C0 87 0506     233           B       WAIT          WAIT BEFORE PRINTING
03E5 C0 87 050A     234           B       EXEC           PRINT A BLANK LINE
235

```

TXL1 * * * * * TEXT TO LIST PROGRAM * * * * *

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

03E9 3D 00 022C      236           CLI     CHSW,X'00'    IF 2ND LINE OF CARD IMAGE HAS BEEN PRINTE
03ED C0 01 0413     237           BNE     AAD010        BRANCH TO RESET ROUTINE.
03F1 3C 09 022B     238           MVI     CNTR,X'0B'    SET COUNTER AND SWITCH FOR 2ND LINE
03F5 3C FF 022C     239           MVI     CHSW,X'FF'    OF CARD IMAGE IN B-FORMAT.
03F9 C0 87 02A4     240           B       AAC002        BRANCH TO CARD-COMPRESSON ROUTINE.
241
03FD C0 87 0506     243 AAD009 B       WAIT          WAIT BEFORE PRINTING
0401 0C 07 06D2 0229 244           MVC     PRT+86(8),SAVE1  MOVE SEQ DATA TO PRINT BUFFER.
0407 C2 01 0081     245           LA      PRT+5,XR1    SET XR1 AS POINTER TO PRINT BUFFER.
040B C2 02 01FA     246           LA      SAVE1-47,XR2  SET XR2 AS POINTER TO CARD IMAGE.
040F C0 87 03C1     247           B       AAD008        BRANCH TO FORMAT 2ND LINE OF CARD IMAGE.
248
0413 3C 00 022C     249 AAD01C MVI     CHSW,X'00'    RESET SWITCH AND COUNTER TO INITIAL
0417 3C 08 022B     250           MVI     CNTR,X'0B'    STATUS FOR B-FORMAT ROUTINE.
041B C2 01 01AE     251           LA      TAB,XR1      SET XR1 AS POINTER TO TRANSLATE TABLE.
041F C2 02 0038     252           LA      IN+56,XR2    SET XR2 AS POINTER TO 34TH COMPRESSED BYT
0423 C0 87 0387     253           B       AAD005        BRANCH TO FORMAT 2ND LINE OF HEX LIST.
0427 0C 01 00C9 007D 254 AAD10A MVC     PRT+77(2),PRT+1  BLANK OUT LAST COMPRESSED BYTE.
042D C0 87 035D     255           B       AAD04A
0431 3C 40 00C7     256 AAD10B MVI     PRT+75,X'40'   BLANK OUT CARD IMAGE OF LAST
0435 C0 87 03DD     257           B       AAD08A        COMPRESSED BYTE.
258
259 * THIS ROUTINE TRANSLATES A 4-BIT BINARY STRING INTO ITS 'HEX' EQUIV.
260
0439 34 08 044B     261 AAE011 ST     AAE013+3,ARR
043D 1C 00 057E 00   262 AAE012 MVC     PRT+2(1),*-(,XR1)
0442 0E 01 0440 01C6 263           ALC     AAE012+3(2),ONE
0448 C0 87 0000     264 AAE013 B       *-*
265
044C C0 87 0259     266 AAF014 B       AA1001        THIS IS A DUMMY BRANCH TO COMPLETE THE
267 * TEST ROUTINE USED IN PLACE OF A CHECK FOR THE CONSOLE SWITCH THAT
268 * SIGNALS 'B' PRINT FORMAT.
269
0450 F0 7C 63       270 AAZ015 HPL     X'63',X'7C'      EDJ HALT.
0453 3C C1 01BE     271           MVI     FSW,C'A'      RE-INITIALIZE FORMAT SWITCH
0457 C0 87 0237     272           B       AHLAA1        GO RESTART PROGRAM.
273
274
045B 3C 80 0471     275 AAAXEX MVI     AAA020+1,AAAK80  SET WAIT EXECUTE CALL SWITCH
045F 34 02 0482     276 AAAXWT ST     AAA050+3,XR2    SAVE XR2
0463 C2 02 0467     277           LA      AAA000,XR2   LOAD BASE
278
0467 B4 08 1F       278 USING     AAA000,1
0467 0467           279 USING     AAA000,2
280
280 AAA000 ST     AAA060+3(,2),ARR  SAVE RETURN
281 AAA010 APL     AAAXF9
282           TIO     AAA070(,2),AAAKF8  TEST FOR NOT READY
283 AAA020 J       AAA040  WAIT/EXEC CALL SWITCH
284 AAA030 LIO     AAAXRD(,2),X'F5'  LOAD FOR SECONDARY READ
285           SIO     X'00',X'F9'    INITIATE READ
286           TIO     AAA070(,2),AAAKF8  TEST FOR NOT READY
287 AAA040 MVI     AAA020+1(,2),AAAK87  RESET EXEC CALL SWITCH
288 AAA050 LA      *-* ,XR2  RESTORE XR2
289 AAA060 B       *-*
RETURN
290 AAA070 MVI     AAA100+2(,2),X'76'  HALT 2 FOR HOPPER CHECK
291           APL     AAAXF9  WAIT FOR ALL I/O TO COMPLETE
292 AAA080 SNS     AAAXSN(,2),AAAXF3  STORE STATUS INDICATORS
293           TBN     AAAXSN(,2),AAAXFC  TEST FOR FEED CHECK
294           JT      AAA120  YES - GO TO FEED CHECK ERP
295           TBN     AAAXSN(,2),AAAK40  TEST FOR HOPPER CHECK
296           JT      AAA100  YES - GO TO HOPPER CHECK ERP
297           TBF     AAAXSN(,2),AAAK07  IS COUNTER ZERO?
298           BF      AAA080  NO LOOP UNTIL CARD MOTION STOPS
299           TBN     AAAXSN(,2),AAAKRC  TEST FOR READ CHECK
300           BF      AAA020(,2)  NO ERROR
301 AAA090 MVI     AAA100+2(,2),X'57'  HALT 3 FOR READ CHECK
302 AAA100 HPL     *-* ,X'3C'  HALT FOR READ OR FEED CHECKS
303 AAA110 LIO     AAAXRD(,2),X'F5'  LOAD FOR SECONDARY READ

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TXL1 ***** TEXT TO LIST PROGRAM *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
04B2	F3 F9 00	304	SIO	X'00',X'F9'	RETRY READ
04B5	E0 87 03	305	B	AAA010(,2)	RETURN
04B8	F0 3C 03	306	AAA120	HPL X'03',X'3C'	DISPLAY F1 FOR FEED CHECK
04BB	BC 76 73	307	MVI	AAA130+1(,2),X'76'	DISPLAY 24
04BE	BC 02 9D	308	MVI	AAAKT(,2),X'02'	SET COUNTER TO 2
04C1	BB 02 9A	309	TBN	AAAKSN-1(,2),X'02'	SEE IF 2 CARDS PAST WAIT
04C4	F2 10 12	310	JT	AAA130	
04C7	BC 01 9D	311	MVI	AAAKT(,2),X'01'	SET COUNTER TO 1
04CA	BC 03 73	312	AAA125	MVI AAA130+1(,2),X'03'	DISPLAY 14
04CD	B8 01 9A	313	TBN	AAAKSN-1(,2),AAAK01	SEE IF 1 CARD IN TRANSPORT
04D0	F2 10 06	314	JT	AAA130	
04D3	F0 6F 6F	315	HPL	X'6F',X'6F'	HALT FOR NO CARDS PAST WAIT
04D6	E0 37 48	316	B	AAA110(,2)	
04D9	F0 00 1B	317	AAA130	HPL X'1B',X'1B'	HALT FOR 1 OR 2 CARDS PAST WAIT
04DC	F3 00 00	318	AAA140	SIO X'00',X'00'	ISSUE FEED ONLY
04DF	B0 43 98	319	AAA150	SNS AAKSN(,2),AAAKF3	
04E2	B9 07 98	320	TBF	AAAKSN(,2),AAAK07	IS COUNTER ZERO?
04E5	F2 10 06	321	JT	AAA160	
04E8	E1 F0 92	322	TIO	AAA170(,2),AAAKF0	TEST FOR F.C. DURING F.C.
04EB	E0 37 78	323	B	AAA150(,2)	
04EE	8F 00 9D	324	AAA160	SLC AAKCT(1,2),AAAONE	SUB 1 FROM SOFTWARE COUNTER
04F3	E0 81 48	325	BZ	AAA110(,2)	IF COUNTER IS ZERO, THEN READ
04F6	E0 87 75	326	B	AAA140(,2)	OTHERWISE DO ANOTHER FEED
04F9	F0 3C 03	327	AAA170	HPL X'03',X'3C'	HALT FOR F.C. DURING F.C.
04FC	E0 87 63	328	B	AAA125(,2)	RETURN TO SECOND HALT AND CONT.
04FF	0000	00F9	329	AAAKF9 EQU X'F9'	
		0007	330	AAAK07 EQU X'07'	
		00F0	331	AAAKF0 EQU X'F0'	
		0500	332	AAAKRD DC AL2(IN)	
		00F8	333	AAAKF8 EQU X'F8'	
		0097	334	AAAK87 EQU X'87'	
		0080	335	AAAK80 EQU X'80'	
0501	0000	0502	336	AAAKSN DC XL2'0000'	
		0001	337	AAAK01 EQU X'01'	
		00F3	338	AAAKF3 EQU X'F3'	
		0002	339	AAAKFC EQU X'02'	
		0080	340	AAAKRC EQU X'80'	
		0040	341	AAAK40 EQU X'40'	
0503	00	0503	342	AAAKSW DC XL1'00'	
0504	00	0504	343	AAAKCT DC XL1'00'	
0505	01	0505	344	AAAONE DC XL1'01'	
		345			
0506	3C 80 0521	346	WAIT	MVI JUMP+1,X'80'	SET WAIT/EXECUTE CALL SWITCH
050A	3C 80 0538	347	EXEC	MVI PAGE+1,X'80'	
050E	F2 87 04	348	J	CONT	
0511	3C 87 0538	349	OVERFL	MVI PAGE+1,X'87'	
0515	34 02 052F	350	CONT	ST RESTOR+6,XR2	SAVE XR2
0519	C2 02 051D	351	LA	AAAAA,XR2	LOAD BASE
		051D	352	USING AAAAA,1	ESTABLISH BASE
		051D	353	USING AAAAA,2	ESTABLISH BASE
051D	B4 08 16	354	AAAAA	ST EXIT+3(,2),ARR	
0520	F2 87 11	355	JUMP	J CONTIN	WAIT/EXECUTE CALL SWITCH
0523	F1 E2 00	356	APL	X'E2'	WAIT ON PRINT BUFFER BUSY
0526	E1 E0 40	357	CHECK	TIO ERROR(,2),X'E0'	
0529	BC 87 04	358	RESTOR	MVI JUMP+1(,2),X'87'	
052C	C2 02 0000	359	LA	*--XR2	RESTORE XR2
0530	C0 87 0000	360	EXIT	B *--	RETURN
0534	F1 E6 00	361	CONTIN	APL X'E6'	WAIT ON PRINTER BUSY
0537	E1 E0 40	362	SENSE	TIO ERROR(,2),X'E0'	
053A	F2 87 0D	363	PAGE	J OVER	
053D	B0 E0 CD	364	SNS	CARRGE(,2),X'E0'	STORE CARRIAGE LINE LOCATION
0540	BD 3C CD	365	CLI	CARRGE-1(,2),X'3C'	SEE IF OVERFLOW CONDITION
0543	AC 01 39 CF	366	MVC	START+2(2,2),DTF(,2)	MOVE IN FUNCTION AND CONTROL
0547	F2 82 0A	367	JL	START	IF NOT OVERFLOW PRINT & SPACE 1
054A	AC 01 39 D1	368	OVER	MVC START+2(2,2),ABC(,2)	MOVE IN SKIP FUNCTION & CONTROL
054E	BC 87 1E	369	MVI	PAGE+1(,2),X'87'	
0551	B0 E0 CD	370	SNS	CARRGE(,2),X'E0'	
0554	F3 00 00	371	START	SIO X'00',X'00'	INITIATE I/O COMMAND

TXL1 ***** TEXT TO LIST PROGRAM *****

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0557	E1 E0 40	372	TIO	ERROR(,2),X'E0'	
055A	E0 87 0C	373	B	RESTOR(,2)	
055D	B4 08 58	374	ERROR	ST RETURN+3(,2),ARR	
0560	B0 E3 CB	375	SNS	STATUS(,2),X'E3'	
0563	B9 E0 CB	376	TBF	STATUS(,2),X'E0'	
0566	B9 F6 CA	377	TBF	STATUS-1(,2),X'F6'	
0569	F2 90 0A	378	JF	LOAD	
056C	BD 87 04	379	CLI	JUMP+1(,2),X'87'	
056F	E0 81 1D	380	BE	PAGE(,2)	
0572	C0 87 0000	381	RETURN	B *--	
0576	BC 08 CB	382	LOAD	L STATUS(,2),ARR	LOAD STATUS INTO ARR
0579	BC 5D C0	383	MVI	HALT1+2(,2),X'5D'	
057C	B9 C0 CB	384	TBF	STATUS(,2),X'CO'	TEST FOR SYNCH CHECK
057F	E2 90 59	385	JF	HALT1	
0582	BC 7D 98	386	MVI	HALT2+2(,2),X'7D'	
0585	B8 10 CA	387	TBN	STATUS-1(,2),X'10'	TEST FOR INCR FAILURE CHECK
0588	F2 10 28	388	JT	HALT2	
058B	BC 7F 98	389	MVI	HALT2+2(,2),X'7F'	
058E	B9 06 CA	390	TBF	STATUS-1(,2),X'06'	TEST FOR PRINT CHECK
0591	F2 90 1F	391	JF	HALT2	
0594	BC 07 C0	392	MVI	HALT1+2(,2),X'07'	
0597	B8 20 CB	393	TBN	STATUS(,2),X'20'	TEST FOR THERMAL CHECK
059A	F2 10 3E	394	JT	HALT1	
059D	B8 02 38	395	SBF	START+1(,2),X'02'	MASK OFF PRINT FUNCTION
05A0	BC 03 98	396	MVI	HALT2+2(,2),X'03'	
05A3	B9 C0 CA	397	TBF	STATUS-1(,2),X'CO'	TEST FOR CARRIAGE CHECK
05A6	F2 90 0A	398	JF	HALT2	
05A9	AC 00 A5 CC	399	MVC	RESIO+2(1,2),CARRGE-1(,2)	MOVE IN CONTROL
05AD	BC E4 A4	400	MVI	RESIO+1(,2),X'E4'	MOVE IN SKIP ONLY FUNCTION
05B0	BC 57 98	401	MVI	HALT2+2(,2),X'57'	
05B3	F0 3E 00	402	HALT2	HPL *--X'3E'	
05B6	B8 20 CA	403	TBN	STATUS-1(,2),X'20'	
05B9	F2 10 04	404	JT	RESIO	
05BC	AC 01 A5 39	405	REPEAT	MVC RESIO+2(2,2),STAR+2(,2)	
05C0	F3 00 00	406	RESIO	SIO X'00',X'00'	
05C3	F1 E6 00	407	APL	X'E6'	
05C6	E1 E0 40	408	TIO	ERROR(,2),X'E0'	
05C9	B8 20 CA	409	TBN	STATUS-1(,2),X'20'	
05CC	B8 20 CA	410	SBF	STATUS-1(,2),X'20'	
05CF	E0 10 9F	411	BT	REPEAT(,2)	
05D2	BD 87 04	412	CLI	JUMP+1(,2),X'87'	TEST FOR EXEC CALL
05D5	E0 81 1D	413	BE	PAGE(,2)	
05D8	E0 87 0C	414	B	RESTOR(,2)	
05DB	F0 3E 00	415	HALT1	HPL *--X'3E'	
05DE	B8 01 CA	416	TBN	STATUS-1(,2),X'01'	
05E1	E0 10 37	417	BT	START(,2)	
05E4	E0 87 55	418	B	RETURN(,2)	
05E7	0000	01AA	419	COMMON EQU X'01AA'	
05E9	0000	05E8	420	STATUS DC XL2'0000'	
05EB	E201	05EA	421	CARRGE DC XL2'0000'	
05ED	E606	05EC	422	DTF DC XL2'E201'	
		05EE	423	ABC DC XL2'E606'	
		424			
		0237	425	END AHLAA1	

TXL1 * * * * TEXT TO LIST PROGRAM * * * *

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AAAA	A	003	0510	0354	0351 0352 0353
AAAKCT	A	001	0504	0343	0308* 0311* 0324*
AAAKEX	A	004	0458	0275	0092
AAAKFC	C	001	0002	0339	0293
AAAKFO	C	001	00F0	0331	0322
AAAKF3	C	001	00F3	0338	0292 0319
AAAKF8	C	001	00F8	0333	0282 0286
AAAKF9	C	001	00F9	0329	0281 0291
AAAKRC	C	001	0080	0340	0299
AAAKRD	A	002	0500	0332	0284 0303
AAAKSN	A	002	0502	0336	0292* 0293 0295 0297 0299 0309 0313 0319* 0320
AAAKSW	A	001	0503	0342	
AAAKWT	A	004	045F	0276	0093
AAAK01	C	001	0001	0337	0313
AAAK07	C	001	0007	0330	0297 0320
AAAK40	C	001	0040	0341	0295
AAAK80	C	001	0080	0335	0275
AAAK87	C	001	0087	0334	0287
AAADNE	A	001	0505	0344	0324
AAA000	A	003	0467	0280	0277 0278 0279
AAA010	A	003	046A	0281	0305
AAA020	A	003	0470	0283	0275* 0287* 0300
AAA030	A	003	0473	0284	
AAA040	A	003	047C	0287	0283
AAA050	A	004	047F	0288	0276*
AAA060	A	004	0483	0289	0280*
AAA070	A	003	0487	0290	0282 0286
AAA080	A	003	048D	0292	0298
AAA090	A	003	04A9	0301	
AAA100	A	003	04AC	0302	0290* 0296 0301*
AAA110	A	003	04AF	0303	0316 0325
AAA120	A	003	0488	0306	0294
AAA125	A	003	04CA	0312	0328
AAA130	A	003	04D9	0317	0307* 0310 0312* 0314
AAA140	A	003	04DC	0318	0326
AAA150	A	003	04DF	0319	0323
AAA160	A	005	04EE	0324	0321
AAA170	A	003	04F9	0327	0322
AAC002	A	004	02A4	0120	0240
AAC02A	A	004	030D	0172	0147
AAD003	A	005	031F	0177	0184 0189 0208
AAD004	A	004	0355	0191	0187
AAD005	A	004	0387	0206	0253
AAD006	A	004	0395	0210	0199
AAD007	A	004	03AF	0219	0114
AAD008	A	004	03C1	0223	0227 0247
AAD009	A	004	03FD	0243	0205
AAD010	A	004	0413	0249	0237
AAD04A	A	004	035D	0193	0255
AAD08A	A	004	03DD	0231	0257
AAD10A	A	006	0427	0254	0192
AAD10B	A	004	0431	0256	0229
AAE011	A	004	0439	0261	0178 0180
AAE012	A	005	043D	0262	0177* 0179* 0188* 0202* 0212* 0263*
AAE013	A	004	0448	0264	0261*
AAF014	A	004	044C	0266	
AAI001	A	004	0259	0092	0088 0110 0217 0266
AAI01A	A	004	029C	0113	0100 0102 0104 0106 0108
AAZ015	A	003	0450	0270	0096
AA12	A	003	02A8	0121	
AA13	A	004	0287	0125	0146
AA15	A	006	028B	0126	0141
AA16	A	003	02C7	0128	0122* 0126* 0131
AA17	A	003	02D4	0132	0131*
AA18	A	004	02D7	0134	0130 0151 0152
AA19	A	004	02ED	0142	0153 0154

TXL1 * * * * TEXT TO LIST PROGRAM * * * *

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ABC	A	002	05EE	0423	0368
ADIN	A	002	01AB	0056	
ADPRT	A	002	01C9	0067	0202 0212
AD83	C	001	0057	0159	0124 0142
AD84	C	001	0058	0158	0123 0142*
AHLAA1	A	003	0237	0081	0272 0425
AIMAG	A	002	0232	0074	0083
ADUT	A	002	0236	0076	0082
APRT	A	002	01AD	0057	
ARR	C	001	0008	0079	0261 0280 0354 0374 0382*
A88	C	001	005E	0150	0121
B84	C	001	0000	0157	0134 0134* 0136 0136*
CARRGE	A	002	05EA	0421	0364* 0365 0370* 0399
CHECK	A	003	0526	0357	
CHSW	A	001	022C	0070	0228 0236 0239* 0249*
CNTR	A	002	022B	0069	0226* 0238* 0250*
COMMON	C	001	01AA	0419	
CONT	A	004	0515	0350	0348
CONTIN	A	003	0534	0361	0355
DTF	A	002	05EC	0422	0366
END	A	002	01C0	00E2	0095
ERROR	A	003	055D	0374	0357 0362 0372 0408
EXEC	A	004	050A	0347	0193 0196 0215 0231 0234
EXIT	A	004	0530	0360	0354*
FORMLG	A	002	J234	0075	0084
FSW	A	001	018E	0061	0089* 0113 0204 0271*
GROUP	A	002	01C4	0064	0186* 0201* 0211*
HALT1	A	003	05DB	0415	0383* 0385 0392* 0394
HALT2	A	003	0583	0402	0386* 0388 0389* 0391 0396* 0398 0401*
H00	C	001	0000	0155	0128
H0LD	A	004	0230	0071	0085* 0086* 0087
H04	C	001	0004	0160	0140
H2A	C	001	002A	0156	0132
IMAG	C	001	0100	0073	0074
IN	A	001	0000	0053	0056 0095 0097 0099 0101 0103 0105 0107 0109 0118 0119 0120
JUMP	A	003	0520	0355	0173 0175 0220 0222 0252 0332
LEN1	A	004	02D8	0151	0346* 0358* 0379 0412
LEN2	A	004	02DC	0152	0125* 0127 0138* 0140
LEN3	A	004	02EF	0153	0123* 0143*
LEN4	A	004	02F0	0154	0124* 0144*
LNSW	A	001	01C7	0066	0191 0198 0200* 0210*
LOAD	A	003	0576	0382	0378
MINUS4	A	002	030A	0162	0144 0145
ONE	A	002	01C6	0065	0183 0186 0188 0226 0263
ONEC	A	001	030C	0164	0126 0138
OVER	A	004	054A	0368	0363
OVERFL	A	004	0511	0349	
PAGE	A	003	053A	0363	0347* 0349* 0369* 0380 0413
PRT	C	001	007C	0054	0057 0067 0076 0173* 0207* 0220* 0221 0244* 0245 0254 0254* 0256*
REPEAT	A	004	05BC	0405	0411
RESID	A	003	05C0	0406	0399* 0400* 0404 0405*
RESTOR	A	003	0529	0358	0350* 0373 0414
RETURN	A	004	0572	0381	0374* 0418
SAVE1	A	006	0229	0368	0097* 0207 0244 0246
SENSE	A	003	0537	0362	
START	A	003	0554	0371	0366* 0367 0368* 0355* 0405 0417
STATUS	A	002	05E8	0420	0375* 0376 0377 0382 0384 0387 0390 0393 0397 0403 0409 0410*
TAB	A	001	01AE	0058	0416
THRE	A	001	0308	0163	0174 0251
THREE	A	002	01C2	0063	0143
WAIT	A	004	0506	0346	0183* 0185*
XRI	C	001	0001	0077	0172 0195 0206 0214 0219 0233 0243
					0120* 0121 0128 0132 0142 0142 0174* 0221* 0223 0225 0225* 0245*
					0251* 0262

TXLI ***** TEXT TO LIST PROGRAM *****

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
XR2	C	001	0002	0078	0121* 0134 0134 0136 0136 0145* 0175* 0177 0179 0182 0182* 0222* 0223 0224 0224* 0246* 0252* 0276 0277* 0288* 0350 0351* 0359*
ZERO	C	001	0000	0161	0125

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

TXLI ***** TEXT TO LIST PROGRAM *****

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

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TGOGI .....-|C12?| 4*-57=|XA0Z|D1*$ AQNO 0 . D GB ..... )E TXL10007
T+IU ..... D &- -|A2-CGM TQ 15 H2<: BIC T :a H0|-DB<|HAAC3 B $# /OJ$OH*DP04 A D EHQTXL10008
T+H- *C -EJ&CE2 BH&A-|;< |HAIC7 E C2-J4*6E ayD 0|]H |HAC37J C 2-E-40 0 DBOL7 A $8 K1 TXL10009
T+.EO DC,2MA C K V-20E.I|E-B#31 P ? a .QCO B2&< <C B7 .Q-) 0 D B500 _QB2POD HB. NJYTXL10010
T+<N,- ..... B _- CCC4D _T -H#P 1 QNO2 >2CB08 ? CBTQB 0, ..E#70H* CC-2 OG /OMFC 6KOTXL10011
T+ (E <HA E#B - PH HD&&C /O&9H < DE&C /O&98-HACOD AO-GFO DCG30C *H [ &GD *$2-EY+ &J *Q ,QTXL10012
T+-.OH*CG34 *.. ..E&XOH*EBZBGA&S /OMH|E A12 A 9M 2*OGG| ZA1 OAAD A2L7A $# &|*OH* EA-0 ]I&TXL10013
T+|FAOCK SX /OK -| A130. *E< &J *X /OMFOH*EBZB G VX /OMFC 0-D -*HB JZ 0 8-H -IUTXL10014
T+-EAA(HAAO2 SZ A1Z A 2D* H&O D D<*BGA&, /OMFOH* EBT4 S3 &E| Z BH33* S3 /OHUOH* EA-0 32ZTXL10015
T+-E2ADOCK SXB &B AO-HA=ZBG 222 H Z| ZSH2HA E#B - 8OH*C/OOA <U -*B G 54&E CGOH*C7LE HADZ *#8TXL10016
T+-J7G -+ &J *$ /O OH*BO-A 2Q33A $# /OH7|H D*L&BAH.B -JX - -2-U 8--2Y*IZ-D R2*U 9:-TXL10017
T+-KZ +G8H.2GBZH B C /O ?GRG2-U Z|+> H&2/ S>DB $2/ E>E;$OI DTSS W=B&E$1PJ* 2.G 5W-< JCUTXL10018
T+-L_=&C-/O|O| + 2|X+2 Z68 Z,2DAH 2 R62 7+8 R,2D $ 0$6*-/4TO A23 B 025>9A972D $/21. -/7- :-HTXL10019
T+-MYTOB)A&P-MT -/7PO| |-/6< ..... A|H EHL2 AL? 2/O&2/OM#( HE.2H BAJ64BA$2/1G18-C /8D *CDTXL10020
T+-NT?H*DO-H <B G C19-C/8DC2/06 0B<6*|<2% LX|2YH H, D94$ZGG,C-3-< +G-E+BGC.EHD.C T2#U 6S*TXL10021
T+-D;B<>9*Z,2U D /OL--J7 /O _&T .?E7 >*C.2AZR?G6 Q>ACH2/ Y?G=Q>E$ H2Z -? ->EC.2/ =>OH ;K4TXL10022
T+-PR+.OCW.X 2?H &BD0 Z*229HK2NST 0|-BBH<,2D KZ EM 920 2;Q B;A >BC H>2CH8AB-?Q*DEHD 18H* #K<TXL10023
TE P>C| =.-A2> &(=BGN& CS ;Q F ..... :J TXL10024
E T)*E7*=-DC*PHS =*7M&F| | C FZ ASC R A SO Q ..... 11360419700 42770R#MTXL10025

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LAST PAGE



000AA ABSOLUTE LOADER

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000 2 ALDAA0 START X'00' BEGINNING ADDRESS OF
3 *****
4 *
5 * ABSOLUTE CARD LOADER
6 *
7 * THE ABSOLUTE CARD LOADER PERFORMS THE FUNCTION OF
8 * RECOGNIZING THE OBJECT CARD TYPES AND PROCESSING
9 * THEM AS FOLLOWS:
10 *
11 * TEXT CARD: THE INSTRUCTIONS AND CONSTANTS REPRESENTED
12 * ON THIS CARD ARE COMPRESSED INTO THE REQUIRED
13 * FORMAT AND MOVED INTO THE SPECIFIED CORE
14 * LOCATION.
15 *
16 * END CARD: THE ABSOLUTE CARD LOADER COMPRESSES THE
17 * CONTENTS OF THE END CARD INTO EBCDIC FORMAT
18 * AND TRANSFERS CONTROL TO THE INSTRUCTIONS
19 * REPRESENTED ON THIS CARD BY BRANCHING TO A
20 * GIVEN LOCATION WITHIN THE I/O AREA. THESE
21 * INSTRUCTIONS REPRESENTED ON THE END CARD
22 * CLEAR THE LOADER FROM CORE AND BRANCH TO
23 * THE ENTRY POINT OF THE PROGRAM LOADED.
24 *
25 * BEFORE MOVING ANY DATA INTO CORE, THE LOADER CHECKS THE
26 * MACHINE CORE CAPACITY TO ENSURE THE AVAILABILITY OF CORE
27 * NECESSARY TO EXECUTE THE PROGRAM BEING LOADED.
28 *
29 *****
30 *
007C 31 ENTRY ALDAA1
32 * LOADER I/O AREA
0000 33 AAA010 EQU * BASE ADDRESS
34 *
0060 35 ORG X'60' BEGINNING ADDRESS OF LOADER
36 *
0000 37 USING AAA010,1 ESTABLISH BASE ADDRESS
0000 38 USING AAA010,2 ESTABLISH BASE ADDRESS
39 *
0060 40 AAA030 HPL X'6C',X'7C' THE PROGRAM BEING LOADED
0063 41 B AAA030(XR1)
42 *
43 * REQUIRES MORE CORE THAN IT
44 * HAS AVAILABLE--THE LOAD PROCESS
45 * IS TERMINATED AT THIS POINT AND
46 * SHOULD NOT BE RESTARTED
47 * IF PAST FIRST THREE CARDS OF
48 * PHASE, CHANGE MPL TO LI
49 *
0066 46 AAA050 SZ 95(3,XR1),AAA085(1,XR1)
006A 47 JNP AAA060
006D 48 AAA080 MVI AAA070+2(XR1),X'03'
0070 49 AAA060 SNS 92(XR1),X'F3'
0073 50 TBF 92(XR1),X'FF'
0076 51 JT AAA110
0079 52 AAA070 HPL X'76',X'68'
53 *
54 *** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** ** **
55 *
007C 56 ALDAA1 LA CDNC-1(XR1),XR2
57 * INITIALIZE INDEX REGISTER TWO
58 * SO THAT IT POINTS TO THE RIGHT-
59 * MOST BYTE OF THE SECTION OF THE
60 * I/O AREA TO BE COMPRESSED
61 *
62 * INDEX REGISTER ONE WAS
63 * INITIALIZED TO ZERO WITHIN
64 * THE BOOTSTRAPPING ROUTINE SO
65 * THAT THE INDEX REGISTER CAN BE
66 * USED IN CONJUNCTION WITH THE
67 * BASE ADDRESS OF ZERO
68 *
007F 69 MVI AAA160+2(XR1),AD84+1 INITIALIZE POINTER FOR TESTING

```

000AA ABSOLUTE LOADER

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0082 70 *
71 * MVI LEN3(XR1),AD84
72 *
73 *
74 * LIO ZERO(XR1),X'F5'
0085 75 AAA085 SIO X'00',X'F1'
0088 76 AAA090 TIO AAA090(XR1),X'F1'
008E 77 AAA100 B AAA050(XR1)
78 *
79 AAA110 CLI AAA010(XR1),TEXT
80 BE AAA130(XR1)
81 CLI AAA010(XR1),END
82 BNE ALDAA1(XR1)
83 TBF 91(XR1),X'03'
84 BF AAA050(XR1)
85 *
86 AAA130 MVI LEN1(XR1),ZEROI
87 *
88 *
89 AAA150 SLC AAA160+2(1,XR1),ONEC(XR1)
90 *
91 MVC LEN2(1,XR1),LEN1(XR1)
92 *
93 AAA160 CLI ++(XR1),HDD
94 BNE AAA180(XR1)
95 MVC AAA170+2(1,XR1),AAA160+2(XR1)
96 AAA170 MVI ++(XR1),H2A
97 *
98 AAA180 ALC 1(1,XR2),1(XR2)
99 ALC 1(1,XR2),1(XR2)
100 ALC LEN1(1,XR1),ONEC(XR1)
101 *
102 CLI LEN1(XR1),H04
103 BL AAA150(XR1)
104 AAA190 MVC AD84(3,XR1),0(XR2)
105 SLC LEN3(1,XR1),THRE(XR1)
106 *
107 A MINUS4(XR1),XR2
108 *
109 BNL AAA130(XR1)
110 *
111 AAA210 CLI AAA010(XR1),END
112 *
113 BE TRANS(XR1)
114 *
115 MVC TOADDR(3,XR1),LNADDR(XR1)
116 MVI LENGTH-1(XR1),X'00'
117 L LENGTH(XR1),XR2
118 *
119 *
120 *
121 *
122 CLI CORSIZ(XR1),**
123 BH AAA030(XR1)
124 *
125 AAA230 MVC ++(**),FROM(XR2)
126 B ALDAA1(XR1)
127 *
128 *
129 * EQUATES AND CONSTANTS
0058 130 CDND EQU X'58'
131 *
0001 132 XR1 EQU 1
0002 133 XR2 EQU 2
008C 134 LEN1 EQU AAA180+1
00C0 135 LEN2 EQU AAA180+5
00CF 136 LEN3 EQU AAA190+2
00D0 137 LEN4 EQU AAA190+3

```

```

EACH BYTE FOR SPECIAL CHARACTER
INITIALIZE THE INSTRUCTION
WHICH RIGHT ADJUSTS THE
COMPRESSED BYTES
INITIALIZE THE I/O AREA ADDRESS
READ CARD INTO I/O AREA
WAIT FOR COMPLETION OF I/O
TEST FOR ERROR AND HALT IF
ERROR CONDITION IS PRESENT
IS THIS A TEXT CARD
YES
IS THIS AN END CARD
NO--EXTRANEIOUS CARD--

READ ANOTHER
INITIALIZE THE LENGTH FIELD OF
THE FIRST COMPRESSION
INSTRUCTION
DECREMENT POINTER FOR TESTING
EACH BYTE FOR X'D0'
SET LENGTH FIELD OF SECOND
COMPRESSION
CHECK FOR X'D0'
NOT X'D0'
REPLACE X'D0' WITH X'2A' T
ENSURE UNIQUENESS OF LOW
ORDER SIX BITS
FIRST COMPRESSION INSTRUCTION
SECOND COMPRESSION INSTRUCTION
INCREMENT LENGTH IN THE
COMPRESSION INSTRUCTIONS
HAVE FOUR BYTES BEEN COMPRESSED
NO--CONTINUE COMPRESSING
RIGHT ADJUST 3 COMPRESSED BYTES
DECREMENT RIGHT ADJUSTING
INSTRUCTION FOR NEXT 3 BYTES
DECREMENT REGISTER FOR
COMPRESSION
CONTINUE COMPRESSING CONTENTS
OF I/O AREA
COMPRESSION IS COMPLETE--
IS THIS AN END CARD
YES-- TRANSFER CONTROL TO
INSTRUCTIONS ON END CARD
SUPPLY 'TO' ADDRESS AND LENGTH
SUPPLY THE
'FROM' ADDRESS

Q BYTE IN FOLLOWING INSTRUCTION
IS SET UP BY THE BOOTSTRAP
LOC X'017E' IS MOVED IN
IS CORE AVAILABLE FOR MOVE
NO--HALT

MOVE CODE INTO CORE
RETURN TO READ ANOTHER CARD

POINTER TO RIGHTMOST BYTE
TO BE COMPRESSED
INDEX REGISTER 1
INDEX REGISTER 2
LENGTH BYTE OF FIRST COMP INSTR
LENGTH BYTE OF 2ND COMP INSTR
POINTERS FOR RIGHT ADJUSTING
COMPRESSED CODE

```


ODDAA ABSOLUTE LOADER

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

236 *   B P ' Q D - 2           G 2 * 2           H X T 6
237 *   C2D77D40D8D0C4606C4040405AD0C77C7F7C4040404040404040C8E7E3F6
238 *
239 *   3 *   ' 3 2 9 2 1 5 9 * 1 5 = 2 5 * 8           H X T 0 0 0 0 6
240 *   F37F407DF37CF97CF1F5F97DF140F5407EF2F57DF8404040C8E7E3F0F0F0F0F6
241 *
242 *
243 *
007C 244           END   ALDAA1

```

ODDAA ABSOLUTE LOADER

CROSS-REFERENCE

```

SYMBOL T LEN VALUE DEFN REFERENCES
AAA010 A 001 0000 0033 0037 0038 0079 0081 0111
AAA030 A 003 0060 0040 0041 0123
AAA050 A 004 0066 0046 0077 0084
AAA060 A 003 0070 0049 0047
AAA070 A 003 0079 0052 0048*
AAA080 A 003 0060 0048 0164
AAA085 A 003 0088 0075 0046
AAA090 A 003 0088 0076 0076 0151
AAA100 A 003 008E 0077
AAA110 A 003 0091 0079 0051
AAA130 A 003 00A3 0086 0080 0109
AAA150 A 004 00A6 0C89 0103
AAA160 A 003 00AE 0093 0069* 0089* 0095 0165
AAA170 A 003 0088 0096 0095*
AAA180 A 004 0088 0098 0094 0134 0135
AAA190 A 004 00CD 0104 0136 0137
AAA210 A 003 00DB 0111
AAA230 A 005 00F1 0125 0138 0139
AD83 C 001 0057 0149
AD84 C 001 0058 0148 0069 0071 0104*
ALDAA0 A 001 0000 0002
ALDAA1 A 003 007C 0056 0031 0082 0126 0244
B84 C 001 0000 0147
CDND C 001 0058 0130 0056 0148 0149
COREND C 001 017E 0163
CORSIZ C 001 0018 0160 0122
END C 001 00C5 0141 0081 0111
FRADDR A 005 00F5 0138
FROM C 001 001A 0142 0125
H00 C 001 00D0 0144 0093
H04 C 001 0004 0166 0102
H2A C 001 002A 0145 0096
LENGTH C 001 0017 0158 0116* 0117
LEN1 A 004 008C 0134 0086* 0091 0100* 0102
LEN2 A 004 00C0 0135 0091*
LEN3 A 004 00CF 0136 0071* 0105*
LEN4 A 004 00D0 0137
LNADDR C 001 0019 0156 0115 0158 0160
MINUS4 A 002 00FA 0150 0107
ONE C 001 0001 0146
CNEC A 003 00B2 0165 0089 0100
PROC A 003 0091 0151
TEXT C 001 00E3 0140 0079
THRE A 003 006E 0164 0105
TCADDR A 005 00F4 0139 0115*
TRANS C 001 0019 0153 0113
XR1 C 001 0001 0132 0041 0046 0046 0048 0049 0050 0056 0069 0071 0074 0076 0077
0079 0080 0081 0082 0083 0084 0086 0089 0089 0091 0091 0093
0094 0095 0096 0100 0100 0102 0103 0104 0105 0105 0107
0109 0111 0113 0115 0115 0116 0117 0122 0123 0126
0056* 0C98 0098 0099 0099 0104 0107* 0117* 0125
XR2 C 001 0002 0133
ZERO A 002 00FC 0152 0074
ZEROI C 001 0000 0143 0086

```

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

----- LAST PAGE -----

HXT1 HEX TO TEXT PATCH CARD GENERATER

```

ERR LOC OBJECT CODE  ADDR STMT SOURCE STATEMENT
0000      2      START X'00'
          3      DECK 4
          4      SEQ 007
          5      *****
          6      *
          7      *           HEX TO TEXT PATCH PROGRAM
          8      *
          9      * PURPOSE: THIS PROGRAM CONVERTS HALF-BYTE PER COLUMN HEXADECIMAL
         10      * PATCH DATA TO THE 4 FOR 3 TEXT CARD FORMAT REQUIRED BY
         11      * THE ABSOLUTE CARD LOADER.
         12      *
         13      * INPUT:  THE CARD FORMAT REQUIRED IS AS FOLLOWS:
         14      * COL 1   : CHARACTER 'P'.
         15      * COL 2-3 : LENGTH OF STORAGE TO BE PATCHED, IN HEX
         16      *           I.E. HALF THE LENGTH OF PATCH DATA FIELD.
         17      *           MAXIMUM LENGTH = X'28'.
         18      * COL 4-7 : STORAGE ADDRESS TO BE PATCHED, IN HEX
         19      * COL 8-87: PATCH DATA, HALF-BYTE PER COLUMN IN HEX
         20      *           E.G. G=C7, *=5C, OP CODES ARE 2 CHARACTERS
         21      * COL 88-96: DISREGARDED
         22      *
         23      * OUTPUT:  OUTPUT CONSISTS OF TEXT CARDS IN THE 4 FOR 3 FORMAT THAT
         24      * IS REQUIRED BY THE ABSOLUTE LOADER; THE OUTPUT DECK IS
         25      * THE SAME SIZE AS THE INPUT DECK.
         26      *
         27      * *****
         28      *
         29      *
         30      * *****
         31      *
         32      * THE FIRST SECTION IS THE COMPRESSION SECTION WHERE COLUMNS 2-87 ARE
         33      * CHECKED FOR ALPHABETIC CHARACTERS, AND IF PRESENT 9 IS LOGICALLY
         34      * ADDED TO THE CHARACTER. COLUMNS 2-87 ARE THEN COMPRESSED 2:1 BY
         35      * USING ALC'S AND IGNORING THE ZONE PORTIONS OF EACH BYTE.
         36      *
         37      * *****
         38      *
         39      * ORG      X'200'
         40      * AAC010 HPL  X'63',X'7C'          NORMAL HALT
         41      * AAC015 SIO  X'00',X'F8'
         42      * AAC020 LA   0,XR1
         43      * AAC030 LA   1,XR2
         44      * LIO      ADDR01,X'F5'
         45      * SIO      X'00',X'F1'
         46      * AAC040 TIO  AAC040,X'F1'
         47      * TIO      AAC042,X'F0'
         48      * J         AAC048
         49      * AAC042 SNS  SNSDA1,X'F3'
         50      * TBF      SNSDA1,X'FF'
         51      * JT         AAC048
         52      * HPL      X'57',X'3C'
         53      * B         AAC030
         54      * AAC048 CLC  CRDID3+1(2,XR1),SLASK1
         55      * BE         AAC010
         56      * CLI      CRDID3(,XR1),PTCID4
         57      * BNE      AAC030
         58      * AAC050 CLI  CDCOL3(,XR2),C' '
         59      * JE         AAC060
         60      * CLI      CDCOL3(,XR2),C'A'
         61      * JL         AAC055
         62      * CLI      CDCOL3(,XR2),C'G'
         63      * JL         AAC057
         64      * CLI      CDCOL3(,XR2),C'O'
         65      * JL         AAC055
         66      * CLI      CDCOL3(,XR2),X'FA'
         67      * JL         AAC060
         68      * AAC055 HPL  X'68',X'6C'
         69      * B         AAC030

```

HXT1 HEX TO TEXT PATCH CARD GENERATER

```

ERR LOC OBJECT CODE  ADDR STMT SOURCE STATEMENT
0267 8E 00 00 0378      70 AAC057 ALC  CDCOL3(1,XR2),ALPCN1  ADD 9 TO ALPHA CHAR
026C 34 02 038F      71 AAC060 ST   STREG1,XR2      STORE XR2
0270 E2 02 01        72      LA      1(,XR2),XR2  INCREMENT XR2
0273 30 57 038F      73      CLI     STREG1,LCEND2  IS XR2 87
0277 C0 82 0242      74      BL     AAC050      BRANCH IF LESS
0278 3C 00 028C      75 AAC065 MVI  LALC12,HEX004  INITIALIZE LENGTH OF ALC'S
027F 3C 00 0290      76      MVI     LALC22,HEX004  INITIALIZE LENGTH OF ALC'S
0283 3C 00 0294      77      MVI     LALC32,HEX004  INITIALIZE LENGTH OF ALC'S
0287 3C 00 0298      78      MVI     LALC42,HEX004  INITIALIZE LENGTH OF ALC'S
0288 5E 00 57 57      79 AAC070 ALC  LCEND2(1,XR1),LCEND2(,XR1) COMPRESS DATA
028F 5E 00 57 57      80      ALC     LCEND2(1,XR1),LCEND2(,XR1) COMPRESS DATA
0293 5E 00 57 57      81      ALC     LCEND2(1,XR1),LCEND2(,XR1) COMPRESS DATA
0297 5E 00 57 57      82      ALC     LCEND2(1,XR1),LCEND2(,XR1) COMPRESS DATA
0298 0E 0C 0298 0385  83      ALC     LALC42(13),ALCI31  INCREMENT LENGTH OF ALC'S
02A1 3D 57 0298      84      CLI     LALC42,LCEND2  IS IT END OF COMPRESSION
02A5 C0 01 0288      85      BNE     AAC070      NO--CONTINUE
02A9 4F 00 01 020D  86      SLC     LNFLD3(1,XR1),ONE2  SET LENGTH FOR LOADER
02AE 7C 00 00        87      MVI     CDCOL3(,XR1),X'00'  SET COL1 TO ZERO
02B1 5E 01 03 01      88      ALC     LNFLD3+2(2,XR1),LNFLD3(,XR1) SET ADDR FOR LOADER
02B5 C2 02 0000      89      LA      CDCOL3,XR2      SET XR2 = TO INPUT/WORK AREA
          90
          91      *****
          92      *
          93      * THE SECOND SECTION IS THE EXPANSION SECTION WHERE COLUMNS 2-66 ARE
          94      * EXPANDED 4 FOR 3 FROM THE COMPRESSION DATA. SIX BITS ARE EXPANDED
          95      * INTO 8 AFTER CHECKING FOR A '/' OR A '(', SINCE UNDER THESE COND-
          96      * ITIONS THE TOP BIT MUST BE CLEARED. THE COMPRESSION AREA IS USED
          97      * FOR A WORK AREA, AND AFTER EXPANSION EACH BYTE IS MOVED TO THE
          98      * PUNCH OUTPUT AREA.
          99      *
         100      *****
         101
         102 AAE080 MVI  PCHPT2,HEX814  SET PTR FOR PUNCH AREA
         103      MVI     ENDPC3(,XR1),X'40'  BLANK PUNCH AREA.
         104      MVC     EDPM13(,XR1),ENDPC3(127,XR1)
         105 AAE090 MVI  FRSTB2(,XR2),HEX034  INIT WORK AREA FOR SHIFTS
         106      ALC     LTXTI2(,XR2),LTXTI2(LSHFT2,XR2)  SHIFT LEFT 1ST BIT
         107      ALC     LTXTI2(,XR2),LTXTI2(LSHFT2,XR2)  SHIFT LEFT 2ND BIT
         108      CLI     SCNDB2(,XR2),HEX104  ARE NEXT 4 BITS 0
         109      JNL    AAE100      NO--JUMP
         110      CLI     FRSTB2(,XR2),HEX0F4  IS PROPER CHARACTER A ZERO
         111      JE      AAE130      YES--FINISH THE CHAR SHIFT
         112      J      AAE120      NO--CLEAR TOP CHAR BIT FIRST
         113 AAE100 CLI  SCNDB2(,XR2),HEXA04  IS CHARACTER IN ALPHA/NUM BLOCK
         114      JNL    AAE110      NO--JUMP
         115      TBN    FRSTB2(,XR2),HEX024  ARE TOP BITS ASSOC WITH / ON
         116      TBN    SCNDB2(,XR2),HEX104  ARE BOT BITS ASSOC WITH / ON
         117      TBF    FRSTB2(,XR2),HEX014  ARE TOP BITS ASSOC WITH / OFF
         118      TBF    SCNDB2(,XR2),HEX04  ARE BOT BITS ASSOC WITH / OFF
         119      JT     AAE120      YES--CLEAR TOP CHARACTER BIT
         120      J      AAE130      NO--FINISH THE CHAR SHIFT
         121 AAE110 TBN  FRSTB2(,XR2),HEX024  ARE TOP BITS ASSOC WITH ( ON
         122      TBN    SCNDB2(,XR2),HEXA04  ARE BOT BITS ASSOC WITH ( ON
         123      TBF    FRSTB2(,XR2),HEX014  ARE TOP BITS ASSOC WITH ( OFF
         124      TBF    SCNDB2(,XR2),HEX504  ARE BOT BITS ASSOC WITH ( OFF
         125      JF     AAE120      NO--CLEAR TOP CHARACTER BIT
         126      MVI     FRSTB2(,XR2),HEX0D4  SET TOP BITS FOR ( CHARACTER
         127      SBF     SCNDB2(,XR2),HEXF04  SET BOT BITS FOR ( CHARACTER
         128      J      AAE130      FINISH SHIFTING CHARACTER
         129 AAE120 SBF  FRSTB2(,XR2),HEX084
         130 AAE130 ALC  LTXTI2(,XR2),LTXTI2(LSHFT2,XR2)  SHIFT LEFT 3RD BIT
         131      ALC     LTXTI2(,XR2),LTXTI2(LSHFT2,XR2)  SHIFT LEFT 4TH BIT
         132      ALC     LTXTI2(,XR2),LTXTI2(LSHFT2,XR2)  SHIFT LEFT 5TH BIT
         133      ALC     LTXTI2(,XR2),LTXTI2(LSHFT2,XR2)  SHIFT LEFT 6TH BIT
         134 AAE140 MVC  *(HEX014),FRSTB2(,XR2)  INSERT THE CHAR IN PUNCH AREA
         135      ALC     PCHPT2(1),ONE2  ADD 1 TO OUTPUT AREA POINTER
         136 AAE150 CLI  PCHPT2,LENDE2  ARE ALL CHARS COMPLETED
         137      BNE     AAE090      NO--LOOP

```


HXT1 HEX TO TEXT PATCH CARD GENERATER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0334	7C E3 80	138	MVI	PCHAD3(,XR1),TXTID4 PUT 'T' IN COLUMN 1 OF TEXT CD
0337	5C 07 DF 5F	139	MVC	PCHAD3+95(8,XR1),CDCOL3+95(,XR1) MOVE ID TO PUNCH AREA
0338	C0 87 0390	140	B	AAFD10
033F	31 F4 0387	141	AAE155	LIO ADDRDI,X'F4' LOAD PRINT BUFFER ADDRESS
0343	31 F6 0389	142	LIO	ADPCH1,X'F6' LOAD PUNCH ADDRESS
0347	F3 FE 80	143	SIO	X'80',X'FE' START PUNCH - PRINT- FEED
034A	C1 FA 034A	144	AAE160	TIO AAE160,X'FA' WAIT ON PUNCH BUSY
034E	30 F3 038D	145	AAE165	SNS SNSDA1,X'F3' WAIT ON PRINT BUSY
0352	39 C0 038C	146	TBF	SNSDA1-1,X'CO' *
0356	C0 90 034E	147	BF	AAE165 *
035A	C1 F8 0362	148	TIO	AAE170,X'F8' BRANCH IF PUNCH ERROR
035E	C0 87 020A	149	B	AAC030 GO TO READ AGAIN
0362	30 F3 038D	150	AAE170	SNS SNSDA1,X'F3' SENSE TO TURNOFF NOP BIT
0366	F0 3C 18	151	HPL	X'18',X'3C' HALT IF PUNCH ERROR
0369	F3 F8 00	152	SIO	X'00',X'F8' PRIME SEC. WAIT
036C	C1 F9 036C	153	AAE180	TIO AAE180,X'F9' WAIT ON BUSY
0370	C1 F8 0362	154	TIO	AAE170,X'F8' BRANCH IF STILL ERROR
0374	C0 87 033F	155	B	AAE155 RETRY THE PUNCH
0378	09	0378	159	ALPCN1 DC XL1'09' STORAGE CONSTANTS
0379	0100000001	0378	160	ALCI11 DC XL5'0100000001' CONSTANT ADDED TO ALPHA CHAR
037E	000000010000	0383	161	ALCI21 DC XL6'000000010000' CHARACTER STRING FOR INCREMENTING ALC'S
0384	0001	0385	162	ALCI31 DC XL2'0001' READ AREA ADCON
0386	0000	0387	163	ADDRDI DC AL2(CRDID3) PUNCH AREA ADCON
0388	0080	0389	164	ADPCH1 DC AL2(PCHAD3) SLASH ASTERISK
038A	615C	0388	165	SLASK1 DC CL2'/*' SENSE DATA FROM MFCU
038C		038D	166	SNSDA1 DS CL2 REGISTER STORE AREA
038E		038F	167	STREG1 DS CL2
0000		172		FRSTB2 EQU 0 LENGTH AND MODIFICATION CONST. *
0001		173		SCNOB2 EQU 1 FIRST RELATIVE BYTE
0041		174		LTXI2 EQU 65 SECOND RELATIVE BYTE
0042		175		LSHFI2 EQU 66 LENGTH OF TEXT CARD IMAGE
00D8		176		LENDE2 EQU 216 SHIFT LENGTH--EXPANSION
0057		177		LCEND2 EQU 87
0209		178		ZERO2 EQU AAC020+3 LENGTH FOR COMPRESSION END
020D		179		ONE2 EQU AAC030+3 ZERO CONSTANT FROM LA OPERAND
028C		180		LALC12 EQU AAC070+1 ONE CONSTANT FROM LA OPERAND
0290		181		LALC22 EQU AAC070+5 LENGTH BYTE OF 1ST COMPR ALC
0294		182		LALC32 EQU AAC070+9 LENGTH BYTE OF 2ND COMPR ALC
0298		183		LALC42 EQU AAC070+13 LENGTH BYTE OF 3RD COMPR ALC
0324		184		PCHPT2 EQU AAE140+3 LENGTH BYTE OF 4TH COMPR ALC
0001		185		XR1 EQU X'01' LOCATION OF PUNCH AREA BYTE
0002		186		XR2 EQU X'02' INDEX REGISTER 1
0000		191		CRDID3 EQU 0 I/O POINTERS
0000		192		CDCOL3 EQU 0 CARD ID POINTER
0001		193		LNFLD3 EQU 1 CARD COLUMN 0 POINTER
0080		194		PCHAD3 EQU 128 LENGTH FIELD POINTER
00FE		195		EDPM13 EQU 254 PUNCH AREA POINTER
00FF		196		ENDPC3 EQU 255
0000		201		HEX004 EQU X'00' HEX CONSTANTS
0001		202		HEX014 EQU X'01' ZERO CONSTANT
0002		203		HEX024 EQU X'02'
0003		204		HEX034 EQU X'03'
0008		205		HEX084 EQU X'08'

HXT1 HEX TO TEXT PATCH CARD GENERATER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
000D	206	HEX0D4	EQU	X'0D'
000F	207	HEX0F4	EQU	X'0F'
0010	208	HEX104	EQU	X'10'
0050	209	HEX504	EQU	X'50'
0081	210	HEX814	EQU	X'81'
00A0	211	HEXA04	EQU	X'A0'
00E0	212	HEXE04	EQU	X'E0'
00F0	213	HEXF04	EQU	X'F0'
00D7	214	PTCID4	EQU	X'D7' PATCH CARD ID
00E3	215	TXTID4	EQU	X'E3'
0390	217		USING	AAFD10,1
0390	218		USING	AAFD10,2
0394	34 02 0455	219	AAF010	ST AAF910+3,XR2
0398	34 08 0459	220	ST	AA'920+3,ARR
039C	34 01 0451	221	ST	AAF900+3,XR1
03A0	C2 01 0080	222	LA	PCHAD3,XR1
03A4	C2 02 0390	223	LA	AAFD10,XR2
03A8	5F 02 57 57	224	SLC	CKSUM(,XR1),CKSUM(3,XR1)
03AC	9C 00 CD 00	225	AAFD20	MVC CKWCRK(,XR2),*-(1,XR1)
03AB	AC 00 21 CE	226	MVC	AAF030+1(,XR2),CHECK(1,XR2)
0380	BB 00 CD	227	AAFD30	SBF CKWCRK(,XR2),*--*
03B3	9C 00 28 00	228	AAFD40	MVC AAF050+1(,XR2),*-(1,XR1)
03B7	BB 00 CE	229	AAFD50	SBF CHECK(,XR2),*--*
03BA	AE 00 CE CD	230	ALC	CHECK(,XR2),CKWCRK(1,XR2)
03BE	AE 00 1B DO	231	ALC	AAF020+3(,XR2),CKTWO(1,XR2)
03C2	AE 00 26 DO	232	ALC	AAF040+3(,XR2),CKTWO(1,XR2)
03C6	BD 60 1B	233	CLI	AAF020+3(,XR2),X'60'
03C9	E0 82 18	234	BL	AAF020(,XR2)
03CC	F2 84 10	235	JH	AAF060
03CF	AC 00 CB CE	236	MVC	CALCK-1(,XR2),CHECK(1,XR2)
0303	BC 01 18	237	MVI	AAF020+3(,XR2),X'01'
03D6	BC 01 26	238	MVI	AAF040+3(,XR2),X'01'
03D9	BC 00 CE	239	MVI	CHECK(,XR2),X'00'
03DC	E0 87 18	240	B	AAF020(,XR2)
03DF	AC 00 CC CE	241	*	
03E3	BC 00 1B	242	AAFD60	MVC CALCK(,XR2),CHECK(1,XR2)
03E6	BC 00 26	243	MVI	AAF020+3(,XR2),X'00'
03E9	BC 00 CE	244	MVI	AAF040+3(,XR2),X'00'
03EC	3C 00 00D7	245	MVI	CHECK(,XR2),X'00'
03F0	AE 02 CC CC	246	*	
03F4	AE 02 CC CC	247	MVI	PCHAD3+87,X'00'
03F8	BA 0C CA	248	AAFD65	ALC CALCK(,XR2),CALCK(3,XR2)
03FB	B9 F0 CB	249	ALC	CALCK(,XR2),CALCK(3,XR2)
03FE	F2 90 09	250	SBN	CALCK-2(,XR2),X'0C'
0401	B8 03 CA	251	TBF	CALCK-1(,XR2),X'F0'
0404	F2 90 15	252	JF	AAF070
0407	F2 87 15	253	TBN	CALCK-2(,XR2),X'03'
040A	BD 9F CB	254	JF	AAF080
040D	F2 84 0C	255	J	AAF090
0410	B9 E0 CB	256	AAFD70	CLI CALCK-1(,XR2),X'9F'
0413	B9 01 CA	257	JH	AAF080
0416	B8 02 CA	258	TBF	CALCK-1(,XR2),X'E0'
0419	F2 90 03	259	TBF	CALCK-2(,XR2),X'01'
041C	BB 08 CA	260	TBN	CALCK-2(,XR2),X'02'
041F	AE 02 CC CC	261	JF	AAF090
0423	AE 02 CC CC	262	AAFD80	SBF CALCK-2(,XR2),X'08'
0427	AE 02 CC CC	263	AAFD90	ALC CALCK(,XR2),CALCK(3,XR2)
042B	AE 02 CC CC	264	ALC	CALCK(,XR2),CALCK(3,XP2)
042F	BD 6A CA	265	ALC	CALCK(,XR2),CALCK(3,XR2)
0432	F2 01 03	266	ALC	CALCK(,XR2),CALCK(3,XR2)
0435	BC D0 CA	267	CLI	CALCK-2(,XR2),X'6A'
0438	2C 00 00D5 CA	268	JNE	AAF100
043D	2E 01 043B D2	269	MVI	CALCK-2(,2),X'D0'
0442	3D 00 00D7	270	AAFD100	MVC PCHAD3+85,CALCK-2(1,XR2)
0446	E0 81 60	271	ALC	AAF100+3,CKONE(2,XR2)
		272	CLI	PCHAD3+87,X'00'
		273	BE	AAF065(,XR2)

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589646
PAGE 6

HXT1 HEX TO TEXT PATCH CARD GENERATER

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0449	2F 01 043B D4	274	SLC	AAF100+3,CK3(2,XR2)
044E	C2 01 0000	275	AAF900 LA	*-*,XR1
0452	C2 02 0000	276	AAF910 LA	*-*,XR2
0456	C0 87 0000	277	AAF920 B	*-*
		0008	278 ARR	EQU X*08*
		0057	279 CKSUM	EQU 87
045A		045C	280 CALCK	DS CL3
045D		045D	281 CKWCRK	DS CL1
045E	00	045E	282 CHECK	DC XL1*00*
045F	0002	0460	283 CKTWO	DC XL2*0002*
0461	0001	0462	284 CKONE	DC XL2*0001*
0463	0003	0464	285 CK3	DC XL2*0003*
		0203	286	END AAC015

DATE 15JAN70 09MAR70 17APR70
EC NO. 816576 816638 816677

PROG ID OHXT-1
PAGE 6

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589646
PAGE 6A

HXT1 HEX TO TEXT PATCH CARD GENERATER

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AAC010	A	003	0200	0040	0055
AAC015	A	003	0203	0041	0286
AAC020	A	004	0206	0042	0178
AAC030	A	004	020A	0043	0053 0057 0069 0149 0179
AAC040	A	004	0215	0046	0046
AAC042	A	004	0220	0049	0047
AAC048	A	005	0232	0054	0048 0051
AAC050	A	003	0242	0058	0074
AAC055	A	003	0260	0068	0061 0065
AAC057	A	005	0267	0070	0063
AAC060	A	004	026C	0071	0059 0067
AAC065	A	004	027B	0075	
AAC070	A	004	028B	0079	0085 0180 0181 0182 0183
AAE080	A	004	02B9	0102	
AAE090	A	003	02C4	0105	0137
AAE100	A	003	02DE	0113	0109
AAE110	A	003	02F6	0121	0114
AAE120	A	003	030E	0129	0112 0119 0125
AAE130	A	004	0311	0130	0111 0120 0128
AAE140	A	005	0321	0134	0184
AAE150	A	004	032C	0136	
AAE155	A	004	033F	0141	0155
AAE160	A	004	034A	0144	0144
AAE165	A	004	034E	0145	0147
AAE170	A	004	03.2	0150	0148 0154
AAE180	A	004	036C	0153	0153
AAF010	A	004	0390	0219	0140 0217 0218 0223
AAF020	A	004	03A8	0225	0231* 0233 0234 0237* 0240 0243*
AAF030	A	003	0380	0227	0226*
AAF040	A	004	03B3	0228	0232* 0238* 0244*
AAF050	A	003	03R7	0229	0228*
AAF060	A	004	03DF	0242	0235
AAF065	A	004	03FO	0248	0273
AAF070	A	003	040A	0256	0252
AAF080	A	003	041C	0262	0254 0257
AAF090	A	004	041F	0263	0255 0261
AAF100	A	005	0438	0270	0268 0271* 0274*
AAF900	A	004	044E	0275	0221*
AAF910	A	004	0452	0276	0219*
AAF920	A	004	0456	0277	0220*
ADDRD1	A	002	0387	0163	0044 0141
ADPCH1	A	002	0389	0164	0142
ALCI11	A	005	037D	0160	
ALCI21	A	006	0383	0161	
ALCI31	A	002	0385	0162	0083
ALPCN1	A	001	0378	0159	0070
ARR	C	001	0008	0278	0220
CALCK	A	003	045C	0280	0236* 0242* 0248 0248* 0249 0249* 0250* 0251 0253 0256 0258 0259 0260 0262* 0263 0263* 0264 0264* 0265 0265* 0266 0266* 0267 0269*
CDCOL3	C	001	0000	0192	0058 0060 0062 0064 0066 0070* 0087* 0089 0139
CHECK	A	001	045E	0282	0226 0229* 0230* 0236 0239* 0242 0245*
CKONE	A	002	0462	0284	0271
CKSUM	C	001	0057	0279	0224 0224*
CKTWO	A	002	0460	0283	0231 0232
CKWORK	A	001	045D	0281	0225* 0227* 0230
CK3	A	002	0464	0285	0274
CRDID3	C	001	0000	0191	0054 0056 0163
EDPM13	C	001	00FE	0195	0104*
ENDPC3	C	001	00FF	0196	0103* 0104
FRSTB2	C	001	0000	0172	0105* 0110 0115 0117 0121 0123 0126* 0129* 0134
HEXA04	C	001	00A0	0211	C113 0122
HEXE04	C	001	00E0	0212	0118
HEXF04	C	001	00F0	0213	0127
HEX0D4	C	001	000D	0206	0126
HEX0F4	C	001	000F	0207	0110

DATE 15JAN70 09MAR70 17APR70
EC NO. 816576 816638 816677

PROG ID OHXT-1
PAGE 6A

HXT1 HEX TO TEXT PATCH CARD GENERATER

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
HEX004	C	001	0000	0201	0075 0076 0077 0078
HEX014	C	001	0001	0202	0117 0123 0134
HEX024	C	001	0002	0203	0115 0121
HEX034	C	001	0003	0204	0105
HEX084	C	001	0008	0205	0129
HEX104	C	001	0010	0208	0108 0116
HEX504	C	001	0050	0209	0124
HEX814	C	001	0081	0210	0102
LALC12	A	004	028C	0180	0075*
LALC22	A	004	0290	0181	0076*
LALC32	A	004	0294	0182	0077*
LALC42	A	004	0298	0183	0078* 0083* 0084
LCEND2	C	001	0057	0177	0073 0079 0079* 0080 0080* 0081 0081* 0082 0082* 0084
LENDE2	C	001	0008	0176	0136
LNFLD3	C	001	0001	0193	0086* 0088 0088*
LSHFT2	C	001	0042	0175	0106 0107 0130 0131 0132 0133
LTXT12	C	001	0041	0174	0106 0106* 0107 0107* 0130 0130* 0131 0131* 0132 0132* 0133 0133*
ONE2	A	004	0200	0179	0086 0135
PCHAD3	C	001	0080	0194	0138* 0139* 0164 0222 0247* 0270* 0272
PCHPT2	A	005	0324	0184	0102* 0135* 0136
PTCID4	C	001	0007	0214	0056
SCNDB2	C	001	0001	0173	0108 0113 0116 0118 0122 0124 0127*
SLASK1	A	002	0388	0165	0054
SNSDA1	A	002	038D	0166	0049* 0050 0145* 0146 0150*
STREG1	A	002	038F	0167	0071* 0073
TXTID4	C	001	00E3	0215	0138
XR1	C	001	0001	0185	0042* 0054 0056 0079 0079 0080 0080 0081 0081 0082 0082 0086
					0087 0088 0088 0103 0104 0104 0138 0139 0139 0221 0222* 0224
					0224 0225 0228 0275*
XR2	C	001	0002	0186	0043* 0058 0060 0062 0064 0066 0070 0071 0072 0072* 0089* 0105
					0106 0106 0107 0107 0108 0110 0113 0115 0116 0117 0118 0121
					0122 0123 0124 0126 0127 0129 0130 0130 0131 0131 0132 0132
					0133 0133 0134 0219 0223* 0225 0226 0226 0227 0228 0229 0230
					0230 0231 0231 0232 0232 0233 0234 0236 0236 0237 0238 0239
					0240 0242 0242 0243 0244 0245 0248 0248 0249 0249 0250 0251
					0253 0256 0258 0259 0260 0262 0263 0263 0264 0264 0265 0265
					0266 0266 0267 0270 0271 0273 0274 0276*

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

HXT1 HEX TO TEXT PATCH CARD GENERATER

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+H:2G1T2- 0-D <HB D1'&+G2'D 0-DBE*GO SC2/1H 020+(+2CT-H&A" 2N2BG -Z(&DCS2B A - :1UHXT10007

T+-15-)* 0 DBB,5 [HAI.7A [HBD,7 G [HBD#70 [HBA,7 : [HBC]4Z<BG -D + C:CEB 8*5 -D *NO< E.4HXT10008

T+-HOT2BB UH2 H <[BUCO Z&2 H QP-APN58 N5); E) PP-APN08< Z-C/L5 P ZT &H.LO A -5 2 -1*HXT10009

T+.,P-DC *HB 2-<U-DC*PG#=#0 C H9A&MF>&HEA?J A2-HI?&2 2YD62Y* 07E A2-HK> H >A A>ED -0-HXT10010

T+<W .X- H&F H GF#-B .S- \$UA .V & -H&B\$0(.70 -H G #ZH H9A&MF>&ME A,UEAE&E9A&MDZ B E1<HXT10011

T+(/ <U -4'6 < U0 DB1G3T-E0G75 /0+&<-&C/3G6 8X 3MYCA=-[H<|<CTLX 83 U (+0-CQ2B G -Y K#YHXT10012

THE+.<|<CT- 2F#| B <G9 63A= (S0H* C|0UA & D A -FE* :1YHXT10013

T+-[H HDNRHAEU 4 &JJO-D -<HB 9A -V)PX C(HO H*: # <6* B- >OC+, -C +3E8 F'B> B\$&70 \$8HH K/UHXT10014

T+&EF|HDDHO 22: 2 J>2 KE2 <#-/1S 2 <3+? \$? W? C +| 5:8B3<2> 23 <>-3H>-C.2Z I> | H22 :&2HXT10015

T+J E-HGE\$6-2MH DC.X-2#UA2,-B27H & #ZH2D8B3<2> 23 <,-<3H8B3<2'E2, 2 &+24<Y2 CN258 AAC2 OBYHXT10016

TF JR4T4 (---0 ? &<HA CB - OH* :32HXT10017

TA-JU B D. 0 :8YHXT10018

E-[*E7*--DC*PH\$ =*7M&F| | C F2 ASC R A SO Q 11360419700 42770*HUXHXT10019



TRA2 *** TRACE PROGRAM RELOCATING LOADER ***

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	ALDAAO	START X'00' BEGINNING ADDRESS OF
		3	*****	*****
		4	*	*
		5	*	TRACE PROGRAM RELOCATING LOADER
		6	*	*
		7	*	THIS LOADER LOAD OBJECT DECKS WITH FORMAT OPTION '1'
		8	*	SPECIFIED ON THE 'DECK' CARD. NO PROGRAM CAN
		9	*	BE LOADED BELOW CORE LOC. X'0300' OF ON ANYTHING
		10	*	BUT A 256-BYTE BONDARY.
		11	*	*
		12	*	TEXT CARD: THE INSTRUCTIONS AND CONSTANTS REPRESENTED
		13	*	ON THIS CARD ARE COMPRESSED INTO THE REQUIRED
		14	*	FORMAT AND MOVED INTO THE SPECIFIED COPE
		15	*	LOCATION.
		16	*	*
		17	*	END CARD: THE ABSOLUTE CAPD LOADER COMPRESSES THE
		18	*	CONTENTS OF THE END CARD INTO EBCDIC FORMAT
		19	*	AND TRANSFERS CONTROL TO THE INSTRUCTIONS
		20	*	REPRESENTED ON THIS CARD BY BRANCHING TO A
		21	*	GIVEN LOCATION WITHIN THE I/O AREA. THESE
		22	*	INSTRUCTIONS REPRESENTED ON THE END CARD
		23	*	CLEAR THE LOADER FROM CORE AND BRANCH TO
		24	*	THE ENTRY POINT OF THE PROGRAM LOADED.
		25	*	*
		26	*	BEFORE MOVING ANY DATA INTO CORE, THE LOADER CHECKS THE
		27	*	MACHINE CORE CAPACITY TO ENSURE THE AVAILABILITY OF CORE
		28	*	NECESSARY TO EXECUTE THE PROGRAM BEING LOADED.
		29	*	*
		30	*****	*****
		31	*	*
		32	*	LOADER I/O AREA
		33	AAA010	EQU * BASE ADDRESS
0060		34	*	*
		35	ORG	X'60' BEGINNING ADDRESS OF LOADER
		36	*	*
		37	USING	AAA010,1 ESTABLISH BASE ADDRESS
		38	*	*
0060	F0 7C 6C	39	AAA030	HPL X'6C',X'7C' THE PROGRAM BEING LOADED
0063	D0 87 60	40	B	AAA030(XR1)
		41	*	*
		42	*	REQUIRES MORE CORE THAN IT
		43	*	HAS AVAILABLE--THE LOAD PROCESS
		44	*	IS TERMINATED AT THIS POINT AND
		45	AAA050	SZ 95(3,XR1),AAA085(1,XR1) IF PAST FIRST THREE CARDS OF
0066	57 20 5F 88	46	JNP	AAA060 PHASE, CHANGE HPL TO L1
006A	F2 04 03	47	AAA080	MVI AAA070+2(XR1),X'03'
0070	70 F3 5C	48	AAA060	SNS 92(XR1),X'F3'
0073	79 FF 5C	49	TBF	92(XR1),X'FF'
0076	F2 10 18	50	JT	AAA110
0079	F0 68 76	51	AAA070	HPL X'76',X'68'
		52	*	*
		53	***	*** **
		54	*	*
007C	D2 02 57	55	ALDAA1	LA CDND-1(XR1),XR2 INITIALIZE INDEX REGISTER TWO
		56	*	SO THAT IT POINTS TO THE RIGHT-
		57	*	MOST BYTE OF THE SECTION OF THE
		58	*	I/O AREA TO BE COMPRESSED
		59	*	*
		60	*****	*****
		61	*****	*****
		62	*****	*****
		63	*****	*****
		64	*****	*****
		65	*****	*****
		66	*****	*****
		67	*	*
007F	7C 59 80	68	MVI	AAA160+2(XR1),AD84+1 INITIALIZE POINTER FOR TESTING
		69	*	EACH BYTE FOR SPECIAL CHARACTER

TRA2 *** TRACE PROGRAM PELOCATING LOADER ***

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0082	7C 58 CF	70	MVI	LEN3(XR1),AD94 INITIALIZE THE INSTRUCTION
		71	*	WHICH RIGHT ADJUSTS THE
		72	*	COMPRESSED BYTES
		73	LIO	ZERO(XR1),X'F5' INITIALIZE THE I/O AREA ADDRESS
0085	71 F5 EE	74	AAA095	SIO X'00',X'F1' READ CAPD INTO I/O AREA
0088	F3 F1 00	75	AAA090	TIO AAA090(XR1),X'F1' WAIT FOR COMPLETION OF I/O
008P	D1 F1 8B	76	AAA100	B AAA050(XR1) TEST FOR ERROR AND HALT IF
008E	D0 87 66	77	*	ERROR CONDITION IS PRESENT
		78	AAA110	CLI AAA010(XR1),TEXT IS THIS A TEXT CARD
		79	BE	AAA130(XR1) YES
		80	CLI	AAA010(XR1),END IS THIS AN END CARD
		81	BNE	ALDAA1(XR1) NO--EXTRANEIOUS CARD--
		82	TBF	91(XR1),X'03'
		83	BF	AAA050(XR1)
		84	*	*
		85	AAA130	MVI LEN1(XR1),ZEROI READ ANOTHER
		86	*	INITIALIZE THE LENGTH FIELD OF
		87	*	THE FIRST COMPRESSION
		88	AAA150	SLC AAA160+2(1,XR1),ONEC(XR1) INSTRUCTION
		89	*	DECREMENT POINTER FOR TESTING
		90	MVC	LEN2(1,XP1),LEN1(XR1) EACH BYTE FOR X'D0'
		91	*	SET LENGTH FIELD OF SECOND
		92	AAA160	CLI *-*(XR1),HDO COMPRESSION
		93	BNE	AAA180(XR1) CHECK FOR X'D0'
		94	MVC	AAA170+2(1,XR1),AAA160+2(XR1) NOT X'D0'
		95	AAA170	MVI *-*(XR1),H2A REPLACE X'D0' WITH X'2A'
		96	*	ENSURE UNIQUENESS OF LOW
		97	AAA180	ALC 1(1,XR2),1(XR2) ORDER SIX BITS
		98	ALC	1(1,XR2),1(XR2) FIRST COMPRESSION INSTRUCTION
		99	ALC	LEN1(1,XR1),ONEC(XR1) SECOND COMPRESSION INSTRUCTION
		100	*	INCREMENT LENGTH IN THE
		101	CLI	LEN1(XR1),H04 COMPRESSION INSTRUCTIONS
		102	BL	AAA150(XR1) HAVE FOUR BYTES BEEN COMPRESSED
		103	AAA190	MVC AD84(3,XR1),0(XR2) NO--CONTINUE COMPRESSING
		104	SLC	LEN3(1,XR1),THRE(XR1) RIGHT ADJUST 3 COMPRESSED BYTES
		105	*	DECREMENT RIGHT ADJUSTING
		106	A	MINUS4(XR1),XR2 INSTRUCTION FOR NEXT 3 BYTES
		107	*	DECREMENT REGISTER FOR
		108	BNE	AAA130(XR1) COMPRESSION
		109	*	CONTINUE COMPRESSING CONTENTS
		110	AAA210	CLI AAA010(XR1),END OF I/O AREA
		111	*	COMPRESSION IS COMPLETE--
		112	BNE	AAA240 IS THIS AN END CARD
		113	ALC	PELADR(2,XR1),LNADDR(XR1) NO--GO HANDLE TEXT CARD
		114	B	*-1 CALC. ENTRY PT. OF PROG.
		115	RELADR	EQU *-1 BRANCH TO PROG. ENTRY PT.
		116	*	THIS AREA IS INITIALIZED
		117	*	BY THE ADDRESS/DATA
		118	*	SWITCH SETTINGS AFTER
		119	*	THE 'CU' HALT ON THE LAST
		120	*	CARD OF THE LOADER.
		121	*	*
		122	*	EQUATES AND CONSTANTS
00EA	FFFF	00ER	123	MINUS1 DC XL2'FFFF' MINUS ONE
00EC	FC	00EC	124	MINUS4 DC XL1'FC' DECREMENT VALUE FOR RT-ADJUST
00ED	0000	00EE	125	ZERO DC XL2'0000' VALUE FOR LIO
		0055	126	CONDA EQU X'55' RIGHTMOST RLD BYTE AFTER
		127	*	COMPRESSION.
		0058	128	CDND EQU X'58' POINTER TO RIGHTMOST BYTE
		129	*	TO BE COMPRESSED
		0001	130	XR1 EQU 1 INDEX REGISTER 1
		0002	131	XR2 EQU 2 INDEX REGISTER 2
		00PC	132	LEN1 EQU AAA180+1 LENGTH BYTE OF FIRST COMP INSTR
		00CO	133	LEN2 EQU AAA180+5 LENGTH BYTE OF 2ND COMP INSTR
		00CF	134	LEN3 EQU AAA190-2 POINTERS FOR RIGHT ADJUSTING
		00DO	135	LEN4 EQU AAA190+3 COMPRESSED CODE
		00E3	136	TEXT EQU X'E3' TEXT CARD IDENTIFIER
		00C5	137	END EQU X'C5' END CARD IDENTIFIER

TRA2 *** TRACE PROGRAM ***

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2      START X'0000'
          3      DECK 1
          4      SEQ 010
          5      *****
          6      *
          7      *
          8      *
          9      *PROGRAM DESCRIPTION:
         10      *
         11      * THE TRACE PROGRAM GIVES A LISTING IN HEX OF THE FOLLOWING INFOR-
         12      * MATION AS EACH INSTRUCTION OF THE PROGRAM BEING TRACED IS EXECUTED*
         13      * INSTRUCTION ADDRESS (IAR), OP CODE, QUEUE CODE, OPERAND1 ADDRESS, *
         14      * OPERAND2 ADDRESS, CONTENTS OF XR1 AND XR2, CONDITION CODE *
         15      * AFTER TRACED INSTRUCTION HAS BEEN EXECUTED, CONTENTS OF ADDRESS *
         16      * RECALL REGISTER (ARR) AFTER TRACED INSTRUCTION HAS BEEN EXECU- *
         17      * TED, CONTENTS OF OPERAND1 BEFORE AND AFTER INSTRUCTION HAS BEEN *
         18      * EXECUTED, AND CONTENTS OF OPERAND2. THE TRACE PROGRAM MUST BE *
         19      * LOADED ON A 256 BYTE BOUNDARY. *
         20      *
         21      *OPERATING PROCEDURE:
         22      *
         23      * PLACE THE TRACE PROGRAM IN PRIMARY HOPPER OF MFCU AND READY *
         24      * MFCU. PRESS START KEY ON CPU CONSOLE. A 'CU' WILL BE DISPLAYED *
         25      * IN THE HALT DISPLAY LIGHTS. DIAL THE ADDRESS AT WHICH TRACE IS TO *
         26      * BE LOADED INTO THE ADDRESS/DATA SWITCHES AND PRESS START. WHEN *
         27      * TRACE HAS BEEN SUCCESSFULLY LOADED AN 'AA' HALT WILL BE DISPLAYED.*
         28      * PLACE PROGRAM TO BE TRACED IN PRIMARY HOPPER OF MFCU AND LOAD PRO- *
         29      * GRAM, STOPPING EXECUTION OF PROGRAM MANUALLY. THIS CAN BE DONE *
         30      * EITHER BY SETTING ADDRESS COMPARE ON OR BY PRESSING STOP KEY ON *
         31      * CPU CONSOLE. WHEN THE PROGRAM TO BE TRACED HAS BEEN STOPPED, *
         32      * INSTRUCTION ADDRESS SHOULD BE NOTED. A MANUAL BRANCH TO THE *
         33      * ADDRESS WHERE THE TRACE PROGRAM WAS LOADED CAUSES THE 'AA' HALT *
         34      * TO BE DISPLAYED. THE INSTRUCTION ADDRESS IS DIALED IN THE *
         35      * ADDRESS/DATA SWITCHES AND THE START KEY IS PRESSED. THIS GIVES *
         36      * THE TRACE PROGRAM THE ADDRESS AT WHICH TRACING IS TO BEGIN. AN *
         37      * 'AL' HALT IS THEN DISPLAYED. THE HIGH-ORDER ADDRESS FOR WHICH *
         38      * PRINTING OF THE TRACED INSTRUCTIONS IS DESIRED IS DIALED IN THE *
         39      * ADDRESS/DATA SWITCHES AND THE START KEY IS PRESSED. A HALT 'AU' *
         40      * IS DISPLAYED AND THE HIGH ORDER ADDRESS FOR WHICH PRINTING OF *
         41      * THE TRACED INSTRUCTIONS IS DESIRED IS DIALED ON THE ADDRESS/DATA *
         42      * SWITCHES AND THE START KEY IS PRESSED AND TRACING BEGINS. SETTING*
         43      * THE LEFTMOST ADDRESS/DATA SWITCH TO 'F' CAUSES TRACE TO TURN CON- *
         44      * TROL OVER TO THE PROGRAM BEING TRACED. THE TRACE PROGRAM CAN BE *
         45      * RE-ENTERED BY REPEATING THE ABOVE PROCEDURE BEGINNING WITH THE *
         46      * MANUAL STOPPING OF THE PROGRAM TO BE TRACED. A 'PP' HALT INDI- *
         47      * CATES A PRINTER ERROR. READYING THE PRINTER AND PRESSING START *
         48      * ON CPU CONSOLE WILL CAUSE CONTINUATION OF EXECUTION. *
         49      *
         50      *****

```

TRA2 *** TRACE PROGRAM ***

EPR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000 F0 3F 3F      52 START HPL X'3F',X'3F'      SET START TRACE ADDRESS
0003 30 00 0028    53 SNS START0+3,X'00'      GET START TRACE ADDRESS
0007 34 04 0737    54 ST CNCD,CGNCD          STORE CONDITION CODE.
000B 34 08 0735    55 ST SVARR,APR           STORE USER ARR.
000F F0 3F 68      56 HPL X'68',X'3F'        GET HIGH - ORDER
0012 30 00 072E    57 SNS FRAD,X'00'         ADDRESS.
0016 F0 3F 68      58 HPL X'68',X'3F'        GET LOW - ORDER
0019 30 00 0730    59 SNS TOAD,X'00'         ADDRESS.
001D 34 01 03AB    60 ST USXR1+3,XR1        SAVE INDEX REGISTER 1.
0021 34 02 03AF    61 ST USXR2+3,XR2        SAVE INDEX REGISTER 2.
0025 C2 02 0000    62 START0 LA #,XR2      INITIALIZE SIM IAR
          63      * ADDRESS.
          64      * STORE INITIAL SIM IAR
          65 BEGIN SLC INSTR+5(6),INSTR+5 RE-INITIALIZATION.
          66 SLC LENO2(3),LENOP2     ZERO AREAS STARR, LENOP1,
          67      * AND LENOP2.
          68 MVI CP1000+1,X'87'      SET TO PRINT
          69 CLC TPC050+3(2),FRAD   IS THIS INSTRUCTION TO BE
          70      * PRINTED?
          71 JL BEGINO                *
          72 CLC TRC050+3(2),TOAD   *
          73 JH BEGINO                *
          74 MVI SWITCH+1,X'80'     SET TO PRINT.
          75 J BEGIN1                *
          76 BEGINO MVI SWITCH+1,X'87' SET NOT TO PRINT.
          77 BEGIN1 SNS INSTR+5,X'00' IS TRACE TO GIVE UP
          78      * CONTROL?
          79 TBN INSTR+4,X'F0'       *
          80 JT NTRACE                YES - JUMP.
          81 MVI INSLN,X'01'       SET INSTRUCTION LENGTH
          82      * TO ONE.
          83 TBN 0(XR2),X'CO'        INSTRUCTION TYPE Z OR F?
          84 JT OPZF                    YES - JUMP.
          85 TBN 0(XR2),X'30'        INSTRUCTION TYPE Y?
          86 JT OPY000                YES - JUMP.
          87 J OPX000                *

```


IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589648
PAGE 5

TRA2 *** TRACE PROGRAM ***

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
89	*****			*****
90	*			*
91	*			TRACE PROGRAM CONSTANTS & PRINT BUFFER
92	*			*
93	*****			*****
0078	FFFF	0078	94	ONE DC XL2'FFFF'
007A	0030	0078	95	HEX30 DC XL2'0030'
007C	40	007C	96	LPBF DC XL1'40'
007D	4040404040404040	00FF	97	DC 131XL1'40'
0085	4040404040404040		97	
008D	4040404040404040		97	
0095	4040404040404040		97	
009D	4040404040404040		97	
00A5	4040404040404040		97	
00AD	4040404040404040		97	
00B5	4040404040404040		97	
00BD	4040404040404040		97	
00C5	4040404040404040		97	
00CD	4040404040404040		97	
00D5	4040404040404040		97	
00DD	4040404040404040		97	
00E5	4040404040404040		97	
00ED	4040404040404040		97	
00F5	4040404040404040		97	
00FD	404040		97	
0100	39	0100	98	HEX39 DC XL1'39'
0101	0006	0102	99	HEX06 DC XL2'0006'
0103	007C	0104	100	PRDATA DC AL2(LPBF)

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589648
PAGE 5A

TRA2 *** TRACE PROGRAM ***

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0105	34 02 0114		102	NTRACE ST TRANS+3,XR2
0109	35 01 03AB		103	L USXP1+3,XR1
010D	35 02 03AF		104	L USXR2+3,XR2
0111	C0 87 0000		105	TRANS B #
0115	3C 00 0161		106	OPX000 MVI OPTYP0+2,X'00'
0119	C0 87 0541		107	B LN0P1
011D	F2 87 22		108	J OPXZ00
0120	B8 F0 00		109	OPZF TBN 0(,XR2),X'F0'
0123	F2 90 18		110	JF OPZ000
0126	3C 0A 0161		111	MVI OPTYP0+2,X'0A'
012A	0F 00 0731 0079		112	SLC INSLN(1),ONE
0130	F2 87 13		113	J TRC000
0133	3C 04 0161		114	OPY000 MVI OPTYP0+2,X'04'
0137	C0 87 0541		115	B LN0P1
013B	F2 87 08		116	*
013E	3C 07 0161		117	J TRC000
0142	C0 87 0548		118	OPZ000 MVI OPTYP0+2,X'07'
0146	C2 01 071A		119	OPXZ00 B LN0P2
014A	74 02 01		120	*
014D	6C 01 03 01		121	TRC000 LA SVAREA,XR1
0151	5F 03 07 07		122	ST 1(,XR1),XR2
0155	4C 01 09 03AB		123	MVC 3(2,XR1),1(,XR2)
015A	4C 01 08 03AF		124	SLC 7(4,XR1),7(,XR1)
015F	F2 87 00		125	MVC 9(2,XR1),USXR1+3
0162	C0 87 02E5		126	MVC 11(2,XR1),USXR2+3
0166	F2 87 85		127	OPTYP0 J #
0169	F2 87 3D		128	B OPX010
016C	6C 00 04 02		129	J OPY010
0170	2C 02 03BC 02		130	J OPZ010
0175	8D F2 00		131	MVC 4(1,XR1),2(,XR2)
0178	F2 81 08		132	MVC INSTR+5(3),2(,XR2)
017B	3C 03 03R6		133	*
017F	C0 87 03A0		134	CLI 0(,XR2),X'F2'
0183	2C 00 0199 01		135	JE JMP000
0188	3C 0A 03B6		136	MVI JUMP+2,X'03'
018C	2C 00 01A0 02		137	B TRC030
0191	E2 02 03		138	JMP000 MVC JMP010+1(1),1(,XR2)
0194	35 04 0737		139	MVI JUMP+2,X'0A'
0198	F2 00 03		140	MVC JMP030+2(1),2(,XR2)
019B	F2 87 03		141	LA 3(,XR2),XR2
019E	E2 02 00		142	L CNCD,CNCCD
01A1	34 04 0737		143	JMP010 JC JMP030,#
01A5	C0 87 03A0		144	J JMP040
01A9	B8 10 00		145	JMP030 LA #(,XR2),XR2
01AC	F2 10 0D		146	JMP040 ST CNCD,CNCCD
01AF	B8 20 00		147	B TRC030
01B2	F2 10 0F		148	OPZ010 TBN 0(,XR2),X'10'
01B5	6C 01 07 03		149	JT OPZ070
01B9	F2 87 17		150	TBN 0(,XR2),X'20'
01BC	4C 01 07 03AB		151	JT OPZ080
01C1	F2 87 05		152	MVC 7(2,XR1),3(,XR2)
01C4	4C 01 07 03AF		153	J OPZ012
01C9	2C 00 0388 02		154	OPZ070 MVC 7(2,XR1),USXR1+3
01CE	4E 01 07 03B8		155	J OPZ090
01D3	B9 0F 00		156	OPZ080 MVC 7(2,XR1),USXR2+3
01D6	F2 10 0D		157	OPZ090 MVC INSTR+1(1),2(,XR2)
01D9	B8 01 00		158	ALC 7(2,XR1),INSTR+1
01DC	F2 90 E7		159	OPZ012 TRF 0(,XR2),X'0F'
01DF	3C C1 0203		160	JT BC000
01E3	F2 87 04		161	TBN 0(,XR2),X'01'
01E6	3C C0 0203		162	JF OPY040
01EA	3C 0A 03B6		163	TI0000 MVI OPZ040,X'C1'
01EE	2C 00 0204 01		164	J OPZ030
01F3	0C 00 01FB 0731		165	BC000 MVI OPZ040,X'CO'
			166	OPZ030 MVI JUMP+2,X'0A'
			167	*
			168	MVC OPZ040+1(1),1(,XR2)
			169	MVC OPZ045+2(1),INSLN

RETURN CONTROL TO
PROBLEM PROGRAM.
*
*
*
TYPE X INSTRUCTION.
GO CALCULATE LENGTH

INSTRUCTION TYPE Z?
YES - JUMP.
TYPE F INSTRUCTION.
ADD ONE TO INSTR LENGTH.

TYPE Y INSTRUCTION.
CALCULATE INSTRUCTION
LENGTH.

TYPE Z INSTRUCTION.
CALCULATE INSTRUCTION
LENGTH.

STORE IAR.
SAVE OP & Q CODES
ZERO OPERAND ADDRESSES
MOVE INDEX REGISTER TO
SAVE AREA.

TWO OPERAND INSTRUCTION?
FIRST OPERAND INSTRUCTION?
SECOND OPERAND INSTRUCTION
MOVE R-BYTE
MOVE INSTRUCTION INTO
TRACE EXECUTION AREA.
JUMP INSTRUCTION.
YES - JUMP.
SET TO EXECUTE INSTRUCTION

GET JUMP MASK.
SET TO NOT EXECUTE INSTR.
INCREMENT IAR BY JUMP
INCREMENT SIMULATED IAR.
RESTORE CONDITION CODE.
SIMULATE JUMP INSTRUCTION.

VALUE.
STORE CONDITION CODE.

IS XR1 USED AS INDEX.
YES - JUMP.
IS XR2 USED AS INDEX?

NO INDEX USED

CALCULATE ADDRESS TO BE
BRANCHED TO.
*
*
*
BRANCH INSTRUCTION?
YES - JUMP.
TID INSTRUCTION?
NO-JUMP.
SET UP FOR TEST I/O.

SET UP FOR BRANCH.
SET UP TO NO EXECUTE
INSTRUCTION.
SIMULATE
INCREMENT SIMULATED IAR.

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OTRA-2
PAGE 5

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OTRA-2
PAGE 5A

TRA2 *** TRACE PROGRAM ***

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

01F9 E2 02 00 170 OPZ045 LA #(.XR2),XR2
01FC E2 02 01 171 LA 1(.XR2),XR2
01FF 35 04 0737 172 L CNCD,CONCOD
0203 C0 00 020F 173 OPZ040 BC OPZ050,#
0207 34 04 0737 174 ST CNCD,CONCOD
0208 C0 87 03A0 175 B TRC030
020F 34 04 0737 176 OPZ050 ST CNCD,CONCOD
0213 34 02 0735 177 ST SVARR,XR2
0217 75 02 07 178 L 7(.XR1),XR2
021A C0 87 03A0 179 B TRC030
021E 3C 00 0739 180 OPY010 MVI LENOPI,X'00'
0222 3C 00 02C2 181 MVI OPY030+1,X'00'
0226 C0 87 05ED 182 B CALOPI
022A B8 08 00 183 TBN 0(.XR2),X'08'
184 *
022D F2 10 8C 185 JT OPY020
0230 3C 01 0739 186 MVI LENOPI,X'01'
0234 3C 01 02C2 187 MVI OPY030+1,X'01'
0238 B8 04 00 188 TBN 0(.XR2),X'04'
023B F2 90 7E 189 JF OPY020
023E B9 18 01 190 TRF 1(.XR2),X'18'
0241 F2 10 78 191 JT OPY020
0244 3C 0A 03B6 192 MVI JUMP+2,X'0A'
0248 34 01 02B8 193 ST RESXR1+3,XR1
024C 75 01 05 194 L 5(.XR1),XR1
024F 1C 01 0719 00 195 MVC SVOP1C(2),0(.XR1)
0254 B8 05 00 196 TBN 0(.XR2),X'05'
0257 F2 10 46 197 JT LOAD
025A B8 02 00 198 TBN 0(.XR2),X'02'
025D F2 10 20 199 JT ADD
0260 B8 10 01 200 TBN 1(.XR2),X'10'
0263 F2 10 08 201 JT STIAR
0266 4C 01 00 0735 202 MVC 0(2,XR1),SVARR
0268 F2 87 3D 203 J OPY015
026E 0C 00 0276 0731 204 STIAR MVC STIARO+2(1),INSLN
0274 E2 02 00 205 STIARO LA #(.XR2),XR2
0277 E2 02 01 206 LA 1(.XR2),XR2
027A 74 02 00 207 ST 0(.XR1),XR2
027D F2 87 35 208 J RESXR1
0280 B8 10 01 209 ADD TBN 1(.XR2),X'10'
0283 F2 10 08 210 JT ADIAR
0286 1E 01 0735 00 211 ALC SVARR(2),0(.XR1)
0288 F2 87 1D 212 J OPY015
028E 0C 00 0296 0731 213 ADIAR MVC ADIARO+2(1),INSLN
0294 E2 02 00 214 ADIARO LA #(.XR2),XR2
0297 E2 02 01 215 LA 1(.XR2),XR2
029A 76 02 00 216 A 0(.XR1),XR2
029D F2 87 15 217 J RESXR1
02A0 B8 10 01 218 LOAD TBN 1(.XR2),X'10'
02A3 F2 0 0C 219 JT LDIAAR
02A6 1C 01 0735 00 220 MVC SVARR(2),0(.XR1)
02AB 3A C1 0738 221 OPY015 SBN STARR,X'01'
02AF F2 87 03 222 J RESXR1
02B2 75 02 00 223 LDIAAR L 0(.XR1),XR2
02B5 C2 01 0000 224 RESXR1 LA #,XR1
02B9 F2 87 E4 225 J TRC030
02BC 1C 01 02C5 05 226 OPY020 MVC OPY030+4(2),5(.XR1)
02C1 4C 00 10 0000 227 OPY030 MVC 16(.XR1),#
02C6 3D 03 0731 228 OPY040 CLI INSLN,X'03'
02CA F2 81 0C 229 JE OPY050
02CD 2C 02 03BC 02 230 MVC INSTR+5(3),2(.XR2)
02D2 3C 03 03B6 231 MVI JUMP+2,X'03'
232 *
02D6 F2 87 C7 233 J TRC030
02D9 2C 03 03BC 03 234 OPY050 MVC INSTR+5(4),3(.XR2)
02DE 3C 02 03B6 235 MVI JUMP+2,X'02'
02E2 F2 87 B8 236 J TRC030
02E5 B8 08 00 237 OPX010 TBN 0(.XR2),X'08'

*
*
RESTORE CONDITION CODE.
BRANCH OR TEST I/O.
STORE CONDITION CODE.
STORE CONDITION CODE.
SAVE ARR.
INCREMENT IAR
SET UP FOR ONE BYTE
OPERAND.
CALCULATE OPERAND 1 ADDR.
DOES INSTRUCTION HAVE A
1-BYTE OPERAND?
YES - JUMP.
SET UP FOR 2-BYTE
OPERAND.
SNS OR LTD INSTRUCTION?
YES - JUMP.
ARR OR IAR INSTR?
NO - JUMP.
SET TO NO EXEC INSTRUCTION
SAVE XR1.
GET OPERAND 1 ADDRESS.
SAVE OPERAND 1 CONTENTS.
IS INSTRUCTION A LOAD?
YES - JUMP.
ADD INSTR?
YES-JUMP
STORE I/R INSTR?
YES-JUMP
STORE SIMULATED ARR.
INCREMENT IAR.
*
SIM. STORE IAR
ADD IAR INSTR?
YES-JUMP
SIMULATE ADD TO ARR.
INCREMENT IAR.
*
SIM. ADD IAR
IS IT A LOAD IAR?
YES - JUMP.
SIMULATE LOAD ARR.
SET TO UPDATE SIMULATED
LOAD IAR.
RESTORE XR1.
SAVE OPERAND 1 CONTENTS
BEFORE EXECUTION.
INSTRUCTION LENGTH 4?
YES - JUMP.
MOVE INSTRUCTION INTO
TRACE AND SET UP TO
EXECUTE IT.
MOVE INSTRUCTION INTO
TRACE AND SET UP TO
IS THIS A 1 LENGTH

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OTRA-2
PAGE 6

TRA2 *** TRACE PROGRAM ***

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

02E8 F2 10 17 238 *
02EB 28 03 073A 01 239 JT OPX020
02F0 28 02 0739 01 240 MNN LENOPI,1(.XR2)
02F5 0E 00 0739 073A 241 MNZ LENOPI,1(.XR2)
02FB 3A 80 0738 242 ALC LENOPI(1),LENOP2
243 SBN STARR,X'80'
244 *
02FF F2 87 1B 245 J OPX030
0302 B9 07 00 246 OPX020 TBF 0(.XR2),X'07'
0305 F2 10 0D 247 JT OPX025
0308 2C 00 0739 01 248 MVC LENOPI(1),1(.XR2)
030D 2C 00 073A 01 249 MVC LENOPI(1),1(.XR2)
0312 F2 87 08 250 J OPX030
0315 3C 00 0739 251 OPX025 MVI LENOPI,X'00'
0319 3C 00 073A 252 MVI LENOPI,X'00'
031D 3C 80 0487 253 OPX030 MVI OP1000+1,X'80'
0321 0C 00 034A 0739 254 MVC OPX060+1(1),LENOPI
0327 C0 87 05ED 255 B CALOPI
032B 1C 01 034E 05 256 MVC OPX060+5(2),5(.XR1)
0330 B8 08 00 257 TBN 0(.XR2),X'08'
0333 B9 04 00 258 TBF 0(.XR2),X'04'
0336 F2 90 10 259 JF OPX060
0339 0C 00 03B8 0739 260 MVC INSTR+1(1),LENOPI
034F 0E 01 034E 03B8 261 ALC OPX060+5(2),INSTR+1
0345 3A C0 0738 262 SBN STARR,X'CO'
263 *
0349 0C 00 0719 0000 264 OPX060 MVC SVOP1C(#),#
034F 3D 04 0731 265 CLI INSLN,X'04'
0353 F2 82 0F 266 JL OPX070
0356 F2 81 18 267 JE OPX080
0359 2C 05 03BC 05 268 MVC INSTR+5(6),5(.XR2)
269 *
035E 3C 00 03B6 270 MVI JUMP+2,X'00'
0362 F2 87 15 271 J OPX090
0365 2C 03 03BC 03 272 OPX070 MVC INSTR+5(4),3(.XR2)
273 *
036A 3C 02 03B6 274 MVI JUMP+2,X'02'
036E F2 87 09 275 J OPX090
0371 2C 04 03BC 04 276 OPX080 MVC INSTR+5(5),4(.XR2)
277 *
0376 3C 01 03B6 278 MVI JUMP+2,X'01'
037A 4C 00 07 03BC 279 OPX090 MVC 7(1,XR1),INSTR+5
037F B8 10 00 280 TBN 0(.XR2),X'10'
0382 F2 10 0E 281 JT OPX100
0385 B8 20 00 282 TBN 0(.XR2),X'20'
0388 F2 10 10 283 JT OPX110
038B 4C 01 07 03BC 284 MVC 7(2,XR1),INSTR+5
0390 F2 87 0D 285 J TRC030
0393 4E 01 07 03AB 286 OPX100 ALC 7(2,XR1),USXR1+3
0398 F2 87 05 287 J TRC030
039B 4E 01 07 03AF 288 OPX110 ALC 7(2,XR1),USXR2+3
03A0 34 01 03D0 289 TRC030 ST TRC040+3,XR1
03A4 34 02 03D4 290 ST TRC050+3,XR2
03A8 C2 01 0000 291 USXR1 LA #,XR1
03AC C2 02 0000 292 USXR2 LA #,XR2
03B0 35 04 0737 293 L CNCD,CONCOD
03B4 F2 87 00 294 JUMP J #
03B7 00 03B7 295 INSTR DC XL1'00'
03B8 0000000000 03BC 296 DC XL5'0000000000'
03BD 34 04 0737 297 ST CNCD,CONCOD
03C1 31 F6 0104 298 LIO PRDATA,X'E6'
03C5 34 01 03AB 299 ST USXR1+3,XR1
03C9 34 02 03AF 300 ST USXR2+3,XR2
03CD C2 01 0000 301 TRC040 LA #,XR1
03D1 C2 02 0000 302 TRC050 LA #,XR2
03D5 38 80 0738 303 TBN STARR,X'80'
03D9 F2 90 04 304 JF TRC060
03DC 34 08 0735 305 ST SVARR,ARR

INSTRUCTION?
YES - JUMP.
GET OPERAND 2 LENGTH.
SET LENGTH OF
FIRST OPERAND.
SET TO STORE ARR AFTER
INSTRUCTION IS EXECUTED.
MVX INSTRUCTION?
YES - JUMP.
GET LENGTH OF
OPERANDS.
SET OPERAND LENGTHS TO
ONE.
SET TO PRINT
CALCULATE 1ST OPERAND ADDP
ITC INSTRUCTION?
*
NO - JUMP.
CALCULATE RIGHTMOST BYTE
OF OPERAND.
SET TO STORE ARR AFTER ITC
INSTRUCTION IS EXECUTED.
SAVE OPERAND 1 CONTENTS.
CHECK INSTRUCTION LENGTH.
4-BYTES - JUMP.
5-BYTES - JUMP.
MOVE INSTRUCTION TO EXECU-
TION AREA.
MOVE INSTRUCTION TO EXECU-
TION AREA.
MOVE INSTRUCTION TO EXECU-
TION AREA.
MOVE RIGHT BYTE OF ADR
IS XR1 USED AS INDEX.
YES-JUMP
IS XR2 USED AS INDEX?
NO INDEX USED
CALCULATE ADDRESS TO BE
*
*
STORE TRACE INDEX
REGISTERS.
LOAD PROBLEM PROGRAM
INDEX REGISTERS.
LOAD CONDITION CODE.
TRACE EXECUTION AREA
AREA.
STORE CONDITION CODE.
LOAD TRACE PRINT BUFFER.
STORE PROBLEM PROGRAM
INDEX REGISTERS.
LOAD TRACE INDEX
REGISTERS.
IS ARR TO BE STORED?
NO - JUMP.
STORE ARR.

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OTRA-2
PAGE 6A

TRA2 *** TRACE PROGRAM ***

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
05A1	BE 00 00 0619	442	AAX020	ALC 0(1, XR2), HEXB7
05A6	E2 02 01	443	LA	1(, XR2), XR2
05A9	F2 80 08	444	AAX030	JC AAX040, X'80'
05AC	3C 87 05AA	445	MVI	AAX030+1, X'87'
05B0	C0 87 0593	446	B	AAX015
05B4	D2 01 01	447	AAX040	LA 1(, XR1), XR1
05B7	OE 01 0733 0079	448	ALC	LPCT(2), ONE
05B0	C0 01 0587	449	BNZ	AAX010
05C1	C2 01 0000	450	AAXBK1	LA #, XR1
05C5	C2 02 0000	451	AAXBK2	LA #, XR2
05C9	C0 87 0000	452	AAXBK3	B #
453	*****			*****
454	*			*
455	*		PRINT ROUTINE	*
456	*			*
457	*****			*****
05D1	F1 E6 00	458	PRINT	ST RETURN+3, ARR
05D4	C1 E0 05E6	459	PRINT1	APL X'E6'
05D8	F3 E2 01	460	TIO	HALT, X'E0'
05DB	F1 E6 00	461	STO	X'01', X'E2'
05DE	C1 E0 05E6	462	APL	X'E6'
05E2	C0 87 0000	463	TIO	HALT, X'E0'
05E6	F0 3E 6F	464	RETURN	B #
05E9	C0 87 05D1	465	HALT	HPL X'6F', X'3E'
466	*		B	PRINT1
467	*****			*****
468	*			*
469	*		CALCULATE OPERAND 1 ADDRESS	*
470	*			*
471	*****			*****
05ED	34 08 0618	472	CALOP1	ST CALOPB+3, ARR
05F1	6C 00 05 02	473	MVC	5(1, XR1), 2(, XR2)
05F5	B8 40 00	474	TBN	0(, XR2), X'40' IS XR1 USED AS INDEX?
05F8	F2 10 0D	475	JT	STARR1
05FB	B8 80 00	476	TBN	0(, XR2), X'80' IS XR1 USED AS INDEX?
05FE	F2 10 0F	477	JT	STARR2
0601	6C 01 05 03	478	MVC	5(2, XR1), 3(, XR2)
0605	F2 87 0D	479	J	CALOPB
0608	4E 01 05 03AB	480	STARR1	ALC 5(2, XR1), USXR1+3
060D	F2 87 05	481	J	CALOPB
0610	4E 01 05 03AF	482	STARR2	ALC 5(2, XR1), USXR2+3
0615	C0 87 0000	483	CALOPB	B #

TRA2 *** TRACE PROGRAM ***

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
485	*****			*****
486	*			*
487	*		TRACE PROGRAM EQUATES SDS'S	*
488	*			*
489	*****			*****
0000	490 #	EQU	0	TEMPORARY VALUE FOR INSTRS
0001	491 XR1	EQU	1	INDEX REGISTER 1.
0002	492 XR2	EQU	2	INDEX REGISTER 2.
0008	493 ARR	EQU	8	ADDRESS RECALL REGISTER.
0004	494 CONCOD	EQU	4	
00BD	495 WKAREA	EQU	LPBF+65	
0619	496 HEXB7	DC	XL1'B7'	
0719	497 SVOPI	DS	4XL64	
071A	498 SVAREA	DS	XL1	
072C	499	DS	XL18	
072E	500 FRAD	DS	XL2	
072D	501 TOAD	DS	XL2	
072F	502 INSLEN	DS	XL1	
0731	503 LPCT	DS	XL2	
0732	504 SVARR	DS	XL2	
0734	505 CNCD	DS	XL2	
0736	506 STARR	DS	XL1	
0738	507 LENOP1	DS	XL1	
0739	508 LENOP2	DS	XL1	
073A	509	END	START	
0000	509	END	START	

0619 B7
061A
071A
071B
071D
072D
072F
0731
0732
0734
0736
0738
0739
073A

TRA2 *** TRACE PROGRAM ***

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEFN, REFERENCES. Contains cross-reference data for symbols like XR2 and various numeric references.

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707

PROG ID OTRA-2
PAGE 10

TRA2 *** TRACE PROGRAM ***

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.
CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96
T< 02C2K HCE DA3*4B *52C*Y< G.? *E3 A3 4 &+ v(HC,PHB 4 -| MCOMC? <RDUHAO NC-YF4A2TRA20010

DATE 15JAN70 09MAR70 17APR70 05JUN70
EC NO. 816576 816638 816677 816707
PROG ID OTRA-2
PAGE 10A

TRA2 * * * TRACE PROGRAM * * *

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+&J# 1U|@Y*;*X < M834 A3X2-ε>* 3ε /X <9I-MGB10A(BF * LUVX <-D9OCIA; * K-RX <>GE0VRW~ /O (8\$HTRA20031

T.OX,A*4@- L*0-D GF?H V-OAA<*CLC2 A(9< DG+PO A@ AA<*ALODA GUK &L E G%@ BB%HBH\$E/H εBE MA*B\$TRA20032

T.-LÉ/OLEL&DA G? 2/ U@- LÉG D1&G /ONW A@OH* E3M@A &A#C-DD10A #0 %HSQ/GJ* KC-*B-CXTRA20033

T< M.AH*2 A8@/OL ;C DD10*~+D G+<B &AII<< DG+PO <B GANC2 A8@/OL*L AA3Y< ε >HKH\$E/H +C -A9QDTRA20034

T< M@A<*GHL/ A3T U KQ~ OH*DYCM B *ε8 ε*?@/ G|&Y C_7HAC O ALUG<M B +HB & DHBDEE/H .A0<A*\$4TRA20035

T< N_OH* .L3 ANG 2/0ε@< NJI -ERSU **|H&A-@ A3D ;ε@ A3D ;*BG 4B P <(DE1 O.BCS?/O KC-*COQUTRA20036

T<OD/(HE2CMAA*0 * ε*3 PMBAPMA 08 AA*0A ZO εBY - A|H ED,?0 .4I |H DAQB D T- 2IA- 0B0*C6KMTRA20037

T<OPN FF;MB ~H BC2GAE, /OOL4-D AC-DG<0A90 DE/3H A CB - OH* CE HA;P19-CAB >G/Y QD&4COOHTRA20038

T(QHA;ε38-G19-C AB PWOH* | =ε@B GA)D4B QQS E ,/ |H&C\$S |H&C60 AA&|2/05+ εM EE-εA*KHTRA20039

TC-QR :72/ON+ εM C, @BG B7 UAN. TRA20040

E **A*E7*=-DC*PH\$ =*7M&F| | C F% ASC R A SO Q 23090501700 604705J<TRA20041

----- LAST PAGE -----

DATE	15JAN70	09MAR70	17APR70	05JUN70
EC NO.	816576	816638	816677	816707

PROG ID	OTRA-2
PAGE	11



FOA1 ONE CARD READ CHECK TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	
0000		2		DECK 4		
		3	FOA1	START X'0'		
		4	*****			
		5	*		*	
		6	*	ONE CARD READ CHECK TEST	*	
		7	*		*	
		8	*****			
	0000	9		USING GD.1		
0000	C2 01 0000	10	GO	LA 0,XR1	LOAD BASE REGISTER	
0004	F3 F8 00	11	START	SIO X'00',X'F8'	FEED CARD FROM SECD	
0007	3C 40 02E0	12	BFOUR	MVI 736,X'40'	*CLEAR RD DATA AND	
0008	0C DE 02DF 02E0	13		MVC 735,736(223)	*RD CK AREAS TO -40-	
0011	71 FD 39	14		LIO FIRST(XR1),X'FD'	DIAG. READ	
0014	F3 F1 00	15		SIO X'00',X'F1'	READ CARD FROM PRIM INTO 1	
0017	04 F3 17	16		TIO *(,XR1),X'F3'	LOOP UNTIL ALL BUSY BITS DROP	
001A	70 F3 3D	17		SNS ID(XR1),X'F3'	*CK FOR AND BRANCH	
001D	78 80 3D	18		TBN ID(XR1),X'80'	*BACK TO CONTINUE	
0020	00 90 07	19		BF BFOUR(XR1)	*IF NO DATA CHECK	
0023	71 F6 39	20	NEXT1	LIO FIRST(XR1),X'F6'	PUNCH AREA	
0026	F3 FA 06	21		SIO X'D6',X'FA'	PUNCH CARD FROM READ AREA INTO 2	
0029	71 F6 3B	22		LIO LAST1(XR1),X'F6'	PUNCH DIAG AREA	
002C	F3 FA 07	23		SIO X'07',X'FA'	PUNCH CARD FROM READ DIAG AREA IN 3	
002F	F3 F0 00	24		SIO X'00',X'F0'	FEED A CARD FROM PRIM INTO 1	
0032	F0 03 03	25		HPL X'03',X'03'	HALT	
0035	00 87 04	26		B STAKT(XR1)	BRANCH BACK TO CONTINUE	
0038	0200	27	FIRST	DC 1XL2'0200'		
003A	0280	28	LAST1	DC 1XL2'0280'		
		29	XR1	EQU X'01'		
		30	ID	EQU X'3D'		
		31		END		

FOA1 ONE CARD READ CHECK TEST

CROSS-REFERENCE					
SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BFOUR	A	004	0007	0012	0019
FIRST	A	002	0039	0027	0014 0020
FOA1	A	001	0000	0003	
GO	A	004	0000	0010	0009
ID	C	001	003D	0030	0017* 0018
LAST1	A	002	003B	0028	0022
NEXT1	A	003	0023	0020	
START	A	003	0004	0011	0026
XR1	C	001	0001	0029	0010* 0014 0016 0017 0018 0019 0020 0022 0024

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589725
PAGE 2

FOA1 ONE CARD READ CHECK TEST

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E M INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :0-D 118 C1 > <7- >A1*LK 32ECJ*1102358-C7 6U 11*TX3--R1*1? 3--32 CD 01E/0E B M 0J8FOA10001

T # 72<FOA10002

E***E7*--DC*PHS =*7M&F| | C ** F& ASC R A SO Q 19301102701 1197015UFOA10003

LAST PAGE

DATE 03NOV69 15NOV70
EC NO. 816523 818905

PROG ID OFOA-1
PAGE 2

FOBI ONE CARD READ ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2      DECK 4
          3 FOBI  START X'0'
          4 *****
          5 *
          6 *      ONE CARD READ ANALYSIS PROGRAM
          7 *
          8 *****
          9 *
         10 *      CLEAR COR2 TO HEX 40 BEFORE LOADING THE PROGRAM.
         11 *      JUMPER +PTX1 (A3L2S03) TO (A3L2S13). S13 IS SPARE PROBE.
         12 *      ANY OTHER CELL (2-17 OR 19-24) MAY BE WIRED TO S13 AS DESIRED.
         13 *
         14 *      THIS PROGRAM PRINTS 1 LINE PER CARD.
         15 *      DATA IS FOR COLUMNS 1-6 FOR MOD 2 AND 1-3 FOR MOD 1.
         16 *      EACH CHARACTER IN THE PRINTOUT REPRESENTS 38 MICROSECONDS.
         17 *
         18 *      PRINTOUT LEGEND - WITH PTX1 PLUGGED TO SPARE PROBE.
         19 *
         20 *      A = CELL PLUGGED TO A3L2S13 IS LIGHT.
         21 *      B = CELL 18 AND CELL PLUGGED TO A3L2S13 ARE BOTH LIGHT.
         22 *      C = CELL 18 IS LIGHT.
         23 *      THE BLANK AREAS ARE WHERE THE CARD COVERS THE CELLS.
         24 *
         25 *****
0000      26      USING START,2
          27 START LA 0,XK2      INITIALIZE INDEX REG 2 TO 0000
          28 L NAME2+2(,XR2),XR1 INITIALIZE INDEX REG 1 TO 017C
          29 LIO START+2(,XR2),X'E4' LOAD PRINT IMAGE LSR -0200-
          30 LIO NAME2+2(,XR2),X'E6' LOAD PRINT DATA LSR -017C-
          31 MVC 170(,XR1),PRINT(3,XR2) SETUP PRINT IMAGE
          32 SIO X'00',X'F0' FEED PRIMARY
          33 SYNC SNS 1(,XR1),X'F0' *LOOP UNTIL
          34 TBN 1(,XR1),X'04' *ALLOW READ
          35 BF SYNC(,XR2) *COMES UP
          36 START1 SNS 1(,XR1),X'F0' SENSE DATA
          37 SBN 1(,XR1),X'F0' SET LEFT FOUR BITS ON
          38 MVC 0(,XR1),1(,XR1) PACK DATA TO THE LEFT 1 BYTE
          39 LA 1(,XR1),XR1 INCREMENT XR1 BY 1
          40 CLI 71(,XR1),X'FC' *LOOP UNTIL ALL
          41 BNE START1(,XR2) *SAMPLES TAKEN
          42 SIG X'03',X'E2' PRINT THE DATA FOUND
          43 NAME2 HPL X'7C',X'01' HALT
          44 B START+4(,XR2) BRANCH BACK TO RESTART
          45 PRINT DC 1XL3'F5DFC' DATA FOR PRINT IMAGE SETUP
          46 XR1 EQU X'01'
          47 XR2 EQU X'02'
          48 END
    
```

FOBI ONE CARD READ ANALYSIS PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
FOBI	A	001	0000	0003	
NAME2	A	003	0033	0043	0028 0030
PRINT	A	003	003B	0045	0031
START	A	004	0000	0027	0026 0029 0044
START1	A	003	001D	0036	0041
SYNC	A	003	0014	0033	0035
XR1	C	001	0001	0046	0028* 0031 0033 0034 0036 0037 0038 0038 0039 0039* 0040
XR2	C	001	0002	0047	0027* 0028 0029 0030 0031 0035 0041 0044

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589726
PAGE 2

FOBI ONE CARD READ ANALYSIS PROGRAM

OBJECT CARD LISTING

THE CHARACTER . INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

← :0-H .MA(SG U ,GW(O0BD1?3@ A 0@ E8A G-UAJO@ E :@ E* A4-DA~1 G8 D)a=Hca E@8H* D*~4 EJ-FOB10001

T 7C0F0B10002

E***E7*=-DC*PH\$ =7M&F| | C F% ASC R A SO Q 19301102701 119701,UF0B10003

----- LAST PAGE -----

DATE 03NOV69 15NOV70
EC NO. 816523 818905

PROG ID OF0B-1
PAGE 2

F014 MFCU FUNCTION TESTS

```

ERR LOC OBJECT CODE  ADDR STMT SOURCE STATEMENT
      2          DECK 4
      3 F01  START X'A00'
      4 *****
      5 *
      6 *   SYSTEM/3 MFCU FUNCTION TESTS
      7 *
      8 *****
      9 *   SECTION 1 - ROUTINES 1 THRU 7
     10 *****
OA00 F014          OA01 11  DC  XL2'F014'   PROGRAM IDENTIFICATION AND LEVEL
OA02 00          OA02 12  DC  XL1'0'     FLAGS
OA03 00          OA03 13  RNUM DC  XL1'0'     CURRENT ROUTINE NUMBER
OA04 0000        OA05 14  DC  XL2'0'     RESERVED
OA06 0A0D        OA07 15  DC  AL2(RT01)  ADDRESS OF FIRST ROUTINE PREFIX
OA08 0000        OA09 16  DC  XL2'0'     RESERVED
OA0A F05000      OA0C 17  DC  XL3'F05000'  UNIT DEFINITION TABLE - MFCU
     18 *****
     19 *
     20 *   ROUTINE 1 - CHECK FOR PROPER TIO RESPONSE FROM A NOT RDY DEVICE*
     21 *
     22 *****
OA0D 01          OA0D 23  RT01 DC  XL1'01'   ROUTINE NUMBER
OA0E 80          OA0E 24  DC  XL1'80'   FLAGS - MANUAL INTERVENTION
OA0F 0A84        OA10 25  DC  AL2(RT02)  ADDRESS OF NEXT ROUTINE PREFIX
     26 *****
OA11 CO 87 021A  OA15 27  B      PRINT      *PRINT
OA15 46          OA15 28  DC  XL1'46'   *MAKE MFCU NOT RDY AND NPRO
OA16 25          OA16 29  DC  IL1'37'   *
OA17 1815        OA18 30  DC  AL2(INS1+15)  *
OA19 F0F1        OA1A 31  DC  XL2'F0F1'  *
OA1B CO 87 0222  OA20 32  B      HALT
OA1F F0F1        OA20 33  DC  XL2'F0F1'  *
OA21 30 F3 1C05  OA21 34  AGAIN SNS  WORK,X'F3'  *BRANCH TO CHECK TIO'S IF THERE ARE
OA25 39 FF 1C05  OA25 35  TBF   WORK,X'FF'  *NO ERRORS INDICATED IN STATUS BYTE
OA29 F2 10 18    OA29 36  JT    CKPRIM
OA2C CO 87 156C  OA29 37  B      STAT2
OA30 CO 87 021A  OA29 38  B      PRINT
OA34 C6          OA34 39  DC  XL1'C6'   *PRINT
OA35 1D          OA35 40  DC  IL1'29'   *ELIMINATE ERRORS AND CONTINUE
OA36 1888        OA37 41  DC  AL2(ELIM)  *
OA38 F003        OA39 42  DC  XL2'F003'  *
OA3A CO 87 0222  OA39 43  B      HALT
OA3E F003        OA3F 44  DC  XL2'F003'  *
OA40 CO 87 0A21  OA3F 45  B      AGAIN
OA44 C1 F0 0A62  OA46 46  CKPRIM TIO CKSEC,X'F0'
OA48 0C 03 18CA  OA48 47  MVC   TIOERR-8,ACTUAL-10(4)  INSERT -PRIM-
OA4E 3C E6 18CE  OA48 48  MVI   TIOERR-4,X'E6'  INSERT -W-
OA52 CO 87 021A  OA48 49  B      PRINT
OA56 C6          OA56 50  DC  XL1'C6'   *TIO INDICATES PRIM NOW RDY
OA57 1A          OA57 51  DC  IL1'26'   *
OA58 18D2        OA59 52  DC  AL2(TIOERR)  *
OA5A F001        OA5B 53  DC  XL2'F001'  *
OA5C CO 87 0222  OA5B 54  B      HALT
OA60 F001        OA61 55  DC  XL2'F001'  *HALT UNLESS BYPASS ERROR
OA62 C1 F8 0A80  OA61 56  CKSEC TIO LEAVE1,X'F8'  *HALT SWITCH IS ON
OA66 0C 03 18CA  OA66 57  MVC   TIOERR-8,INS3-13(4)  INSERT -SECD-
OA6C 3C E6 18CE  OA66 58  MVI   TIOERR-4,X'E6'  INSERT -W-
OA70 CO 87 021A  OA66 59  B      PRINT
OA74 C6          OA74 60  DC  XL1'C6'   *TIO INDICATES SECD NOW RDY
OA75 1A          OA75 61  DC  IL1'26'   *
OA76 18D2        OA77 62  DC  AL2(TIOERR)  *
OA78 F002        OA79 63  DC  XL2'F002'  *
OA7A CO 87 0222  OA79 64  B      HALT
OA7E F002        OA7F 65  DC  XL2'F002'  *HALT UNLESS BYPASS ERROR
OA80 CO 87 0216  OA7F 66  LEAVE1 B  LINK  *HALT SWITCH IS ON

```

F014 MFCU FUNCTION TESTS

```

ERR LOC OBJECT CODE  ADDR STMT SOURCE STATEMENT
      68 *****
      69 *
      70 *   ROUTINE 2 - CHECK FOR PROPER TIO RESPONSE FROM A READY DEVICE *
      71 *
      72 *****
OA84 02          OA84 73  RT02 DC  XL1'02'   ROUTINE NUMBER
OA85 80          OA85 74  DC  XL1'80'   FLAGS - MANUAL INTERVENTION
OA86 0AE2        OA87 75  DC  AL2(RT03)  ADDRESS OF NEXT ROUTINE PREFIX
     76 *****
OA88 CO 87 021A  OA88 77  B      PRINT      *PRINT
OA8C 46          OA8C 78  DC  XL1'46'   *MAKE BOTH MFCU FEEDS READY
OA8D 2B          OA8D 79  DC  IL1'43'   *WITH BLANK CARDS
OA8E 1841        OA8F 80  DC  AL2(INS2)  *
OA90 F0F2        OA91 81  DC  XL2'F0F2'  *
OA92 CO 87 0222  OA97 82  B      HALT
OA96 F0F2        OA97 83  DC  XL2'F0F2'  *
OA98 C1 F0 0AA3  OA97 84  TIO   READY1,X'F0'  BRANCH IF PRIM NOT RDY OR ERROR
OA9C C1 F8 0AC4  OA97 85  TIO   READY2,X'F8'  BRANCH IF SECD NOT RDY OR ERROR
OAA0 F2 87 3B    OA97 86  J      LEAVE2      EXIT ROUTINE IF AS EXPECTED
OAA3 0C 03 18CA  IA00 87  READY1 MVC TIOERR-8,ACTUAL-10(4)  INSERT -PRIM-
OAA9 3C E3 18CE  IA00 88  MVI   TIOERR-4,X'E3'  INSERT -T-
OAB0 CO 87 021A  OA97 89  B      PRINT      *PRINT
OAB1 C6          OA97 90  DC  XL1'C6'   *TIO INDICATES PRIM NOT RDY
OAB2 1A          OA97 91  DC  IL1'26'   *
OAB3 18D2        OA97 92  DC  AL2(TIOERR)  *
OAB5 F004        OA97 93  DC  XL2'F004'  *
OAB7 CO 87 0222  OA97 94  B      HALT
OABB F004        OA97 95  DC  XL2'F004'  *HALT UNLESS BYPASS ERROR
OABD C1 F8 0AC4  OA97 96  TIO   READY2,X'F8'  *HALT SWITCH IS ON
OAC1 F2 87 1A    OA97 97  J      LEAVE2      BRANCH IF SECD NOT RDY OR ERROR
OAC4 0C 03 18CA  IA78 98  READY2 MVC TIOERR-8,INS3-13(4)  EXIT ROUTINE IF AS EXPECTED
OACA 3C E3 18CE  IA78 99  MVI   TIOERR-4,X'E3'  INSERT -SECD-
OACE CO 87 021A  IA78 100 B      PRINT      INSERT -T-
OAD2 C6          OAD2 101 DC  XL1'C6'   *PRINT
OAD3 1A          OAD3 102 DC  IL1'26'   *TIO INDICATES SECD NOT RDY
O/D4 18D2        OAD5 103 DC  AL2(TIOERR)  *
OAD6 F005        OAD7 104 DC  XL2'F005'  *
OAD8 CO 87 0222  OAD7 105 B      HALT
OADC F005        OADD 106 DC  XL2'F005'  *HALT UNLESS BYPASS ERROR
OADE CO 87 0216  OADD 107 LEAVE2 B  LINK  *HALT SWITCH IS ON
     108 *****
     109 *
     110 *
     111 *   ROUTINE 3 - CHECK CORRECTNESS OF STATUS AND SPECIAL INDICATORS *
     112 *
     113 *****
OAE2 03          OAE2 114 RT03 DC  XL1'03'   ROUTINE NUMBER
OAE3 80          OAE3 115 DC  XL1'80'   FLAGS - MANUAL INTERVENTION
OAE4 0B6D        OAE5 116 DC  AL2(RT04)  ADDRESS OF NEXT ROUTINE PREFIX
     117 *****
OAEA CO 87 021A  OAEA 118 B      PRINT      *PRINT
OAEA 46          OAEA 119 DC  XL1'46'   *MAKE MFCU NOT RDY AND NPRO
OAE8 25          OAE8 120 DC  IL1'37'   *
OAE8 1815        OAE8 121 DC  AL2(INS1+15)  *
OAE8 F0F8        OAEF 122 DC  XL2'F0F8'  *
OAF0 CO 87 0222  OAF5 123 B      HALT
OAF4 F0F8        OAF5 124 DC  XL2'F0F8'  *
OAF6 30 F3 1C05  OAF5 125 SNS  WORK,X'F3'  *TEST FOR ALL STATUS
OAF7 39 FF 1C05  OAF5 126 TBF   WORK,X'FF'  *BITS BEING OFF
OAF8 39 F7 1C04  OAF5 127 TBF   WORK-1,X'F7'  *AND BRANCH
OB02 F2 10 16    OAF5 128 JT    CKFO      *IF SO
OB05 3C 33 16FE  OAF5 129 MVI   HALTID,X'33'  *SETUP TO
OB09 3C F3 1AFB  OAF5 130 MVI   NOTALL-2,X'F3'  *PRINT -F3-
OB0D 0C 03 180A  IACD 131 MVC   EXP,F3STAT(4)  *ERROR
OB13 3C 33 1714  OAF5 132 MVI   HALTEM,X'33'  *MSG
OB17 CO 87 16E8  OAF5 133 B      BADBIT
OB18 30 F0 1C05  OAF5 134 CKFO SNS  WORK,X'F0'  *TEST FOR ALL SPECIAL
OB1F 3B 20 1C04  OAF5 135 SBF   WORK-1,X'20'

```

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for MFCU function tests, including routines for indicator bits, commands test, and stacker select test.

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for MFCU function tests, including a detailed table of MFCU commands and stacker identification.

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Rows include assembly instructions like JF READIT, MVC CMND(2),READPU, MVI PUST+95,X*40, etc., with associated comments such as '*TO PUNCH STACKER NUMBER INTO CARD' and '*CHECK FOR AND BRANCH IF OPTION TO READ'.

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Rows include assembly instructions like SBN FLAGS,FLAG3, TBN FLAGS,FLAG0, BFB GETOUT, etc., with comments such as '*TURN ON -1D OR 1E WERE ON- FLAG' and '*CHECK FOR AND BRANCH IF BOTH SENSE'.

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and comments for MFCU function tests.

DATE 28JUL69 24NOV69 10FEB70 14APR70 15MAR71 30AUG71 PROG ID OF01-4 EC NO. 816444 816562 816592 816678 818962 818667 PAGE 4

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and comments for MFCU function tests.

DATE 28JUL69 24NOV69 10FEB70 14APR70 15MAR71 30AUG71 PROG ID OF01-4 EC NO. 816444 816562 816592 816678 818962 818667 PAGE 4A

F014 MFCU FUNCTION TESTS

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for MFCU function tests, including instructions like DC, HALT, WORK, and comments such as '*HOPPER 2', '*MAGNET', and '*CK FOR AND BRANCH'.

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for MFCU function tests, including instructions like SIO, L, WAIT, SNS, and comments such as '*PUNCH/PRINT SECD', '*LOOP WAITING FOR', and '*CK FOR AND BRANCH'.

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for MFCU function tests, including UNPACK, PRINT, and branch instructions.

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for MFCU function tests, including STORE, MVI, and branch instructions.

F014 MFCU FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1318	38 02 1C05	816	CK3	TBN WORK,X'02'
1319	F2 90 18	817	JF	NOTRDY
131F	39 04 18FB	818	TBF	FLAGS,FLAG5
1323	F2 10 07	819	JT	INC
1326	38 04 18FB	820	SBF	FLAGS,FLAG5
132A	F2 87 0D	821	J	NOTRDY
132D	C0 87 021A	822	INC	B PRINT
1331	C1	1331	823	DC XL1'C1'
1332	0A	1332	824	DC IL1'10'
1333	179F	1334	825	DC AL2(FCCT-3)
1335	F010	1336	826	DC XL2'F010'
1337	F2 87 2C	827	J	NOTGO
133A	3A 80 18FB	828	NOTRDY	SBN FLAGS,FLAG0
133E	3D 05 0A03	829	CLI	RNUM,X'05'
1342	F2 01 21	830	JNE	NOTGO
1345	38 20 18FB	831	TBN	FLAGS,FLAG2
1349	F2 90 1A	832	JF	NOTGO
134C	39 FF 1C05	833	TBF	WORK,X'FF'
1350	F2 90 13	834	JF	NOTGO
1353	38 40 18FB	835	TBN	FLAGS,FLAG1
1357	C0 10 0E6F	836	BT	STACK4
135B	C0 87 021A	837	B	PRINT
135F	06	135F	838	DC XL1'06'
1360	46	1360	839	DC IL1'70'
1361	19E8	1362	840	DC AL2(LDNEXT)
1363	F2 87 15	841	J	CK4
1366	C0 87 021A	842	NOTGO	B PRINT
136A	06	136A	843	DC XL1'06'
136B	0C	136B	844	DC IL1'12'
136C	1801	136D	845	DC AL2(INS1-5)
136E	C0 87 0222	846	B	HALT
1372	F010	1373	847	DC XL2'F010'
1374	F2 87 04	848	J	CK4
1377	34 08 1390	849	RDY2	ST OUT2+3,ARR
137B	38 08 148C	850	CK4	TBN CMND-1,X'08'
137F	F2 10 07	851	JT	CK42
1382	C1 F0 1382	852	TIO	*,X'F0'
1386	F2 87 04	853	J	OUT2
1389	C1 F8 1389	854	CK42	TIO *,X'F8'
138D	C0 87 0000	855	OUT2	B *-*
856				
857				*****
858	*		EXIO	*
859	*			
860	*			SUBROUTINE TO ISSUE COMMANDS AND CHECK FOR SUBSEQUENT FAILURES.*
861				*****
1391	34 08 14F8	862	EXIO	ST OUT8+3,ARR
1395	F2 80 0A	863	JC	*+13,X'80'
1398	0C 5F 1DFF 1D7F	864	MVC	PRFD2+127,PRFD2-1(96) SETUP BUFF2 FROM BUFF1--FIRST PASS--
139E	3C 87 139E	865	MVI	*-8,X'87'
13A2	0C 01 1C02 148D	866	MVC	SAVIT,CMND(2)
13A8	C0 87 0212	867	B	TEST
13AC	38 01 18FB	868	SBF	FLAGS,FLAG7
13B0	39 F0 148C	869	TBF	CMND-1,X'F0'
13B4	F2 90 1A	870	JF	CKPU
13B7	C2 01 0042	871	DLY	LA 66,XR1
13BB	36 01 1F7F	872	DLY1	A ALLF,XR1
13BF	C0 84 13BB	873	BH	DLY1
13C3	0F 01 148D 1FF5	874	SLC	CMND,ONE(2)
13C9	C0 81 14F5	875	BE	OUT8
13CD	C0 87 13B7	876	B	DLY
13D1	0C 10 18E7 18E8	877	CKPU	MVC PTCMND-1,PTCMND(17)
13D7	38 01 148C	878	TBN	CMND-1,X'01'
13DB	F2 90 09	879	JF	FDONLY
13DE	0C 04 18DB 17E7	880	MVC	PTCMND-13,RCCT-9(5)
13E4	F2 87 06	881	J	CKPR
13E7	0C 04 18DB 1799	882	FDONLY	MVC PTCMND-13,FCCT-9(5)
13ED	38 04 148C	883	CKPR	TBN CMND-1,X'04'

F014 MFCU FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
13F1	F2 90 38	884	JF	DXIO2
13F4	38 80 148D	885	TBN	CMND,X'80'
13F8	F2 90 1D	886	JF	PRNTB1
13FB	38 80 1C0F	887	TBN	CMNDB4,X'80'
13FF	F2 10 07	888	JT	BSYBUF
1402	3A 01 18FB	889	SETBUF	SBN FLAGS,FLAG7
1406	F2 87 23	890	J	DXIO2
1409	30 F3 1C05	891	BSYBUF	SNS WORK,X'F3'
140D	38 40 1C04	892	T&N	WORK-1,X'40'
1411	C0 10 1409	893	BT	BSYBUF
1415	F2 87 14	894	J	DXIO2
1418	38 80 1C0F	895	PRNTBI	TBN CMNDB4,X'80'
141C	C0 10 1402	896	BT	SETBUF
1420	30 F3 1C05	897	PB1	SNS WORK,X'F3'
1424	38 80 1C04	898	TBN	WORK-1,X'80'
1428	C0 10 1420	899	BT	PB1
142C	38 40 020A	900	DXIO2	TBN SBYTE2,SNSW11
1430	F2 90 06	901	JF	DX1
1433	C0 87 0222	902	B	HALT
1437	F0F0	903	DC	XL2'F0F0'
1439	38 20 020A	904	DX1	TBN SBYTE2,SNSW12
143D	F2 90 22	905	JF	EX1
1440	30 00 1C0D	906	SNS	MSEC,X'00'
1444	3A 01 1C0D	907	SBN	MSEC,X'01'
1448	38 F0 1C0C	908	SBF	MSEC-1,X'F0'
144C	C2 01 0042	909	WT	LA 66,XR1
1450	36 01 1F7F	910	WT1	A ALLF,XR1
1454	C0 84 1450	911	BH	WT1
1458	0F 01 1C0D 1FF5	912	SLC	MSEC(2),ONE
145E	C0 01 144C	913	BNE	WT
1462	C0 87 12F4	914	EX1	R RDY
1466	38 04 18FB	915	SBF	FLAGS,FLAG5
146A	38 08 18FC	916	SBF	FLAG51,FLAG14
146E	30 F3 1C05	917	SNS	WORK,X'F3'
1472	38 30 1C04	918	TBN	WORK-1,X'30'
1476	F2 10 2F	919	JT	XECUTE
1479	39 06 148C	920	TBF	CMND-1,X'0A'
147D	F2 10 28	921	JT	XECUTE
1480	38 08 148C	922	TBN	CMND-1,X'08'
1484	F2 10 10	923	JT	HOP2
1487	38 20 1C04	924	TBN	WORK-1,X'20'
148B	F2 10 1A	925	JT	XECUTE
148E	0C 01 148D 1FE8	926	MVC	CMND,FIRST1+1(2)
1494	F2 87 0D	927	J	PRIMIT
1497	38 10 1C04	928	HOP2	TBN WORK-1,X'10'
149B	F2 10 0A	929	JT	XECUTE
149F	0C 01 148D 1FE9	930	MVC	CMND,FIRST2(2)
14A4	3A 08 18FC	931	PRIMIT	SBN FLAG51,FLAG14
14A8	31 F6 1C00	932	XECUTE	LIO LDPU,X'F6'
14AC	3D 05 0A03	933	CLI	RNUM,X'05'
14B0	F2 01 04	934	JNE	GOGO
14B3	31 F6 1FF9	935	LIO	LDPT,X'F6'
14B7	31 F5 1FFD	936	GOGO	LIO LDRD,X'F5'
14BB	F3 00 00	937	EX2	SIO 0,0
14BE	C1 F7 14D6	938	TIO	DX22,X'F7'
14C2	38 02 1C05	939	TBN	WORK,X'02'
14C6	C0 10 1462	940	BT	EX1
14CA	C0 87 12F4	941	B	RDY
14CE	C0 87 156C	942	B	STAT2
14D2	C0 87 1462	943	B	EX1
14D6	C0 87 14FB	944	DX22	B STATUS
14DA	C0 87 12F4	945	B	RDY
14DE	38 08 18FC	946	TBN	FLAG51,FLAG14
14E2	F2 90 0A	947	JF	GOON
14E5	0C 01 148D 1C02	948	MVC	CMND,SAVIT(2)
14EB	C0 87 1462	949	B	EX1
14EF	0C 01 1C0F 14BD	950	GOON	MVC CMNDB4(2),CMND
14F5	C0 87 0000	951	OUT8	B *-*

F014 MFCU FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
952				*****
953				*****
954	*			STATUS
955	*			*****
956	*			SUBROUTINE TO CHECK FOR PROPER STATUS.
957	*			*****
14F9	8000	14FA	958	WAT DC XL2'8000'
14FB	34 08 1642		959	STATUS ST OUT9+3,ARR
14FF	38 F0 1BFC		960	SBF FLAGS1,X'F0'
1503	C1 F1 150B		961	TIO PUCMND,X'F1'
1507	3A 80 1BFC		962	SBN FLAGS1,FLAG10
1508	38 02 14BC		963	PUCMND TBN CMND-1,X'02'
150F	F2 90 0E		964	JF CKPRNT
1512	C1 F2 151A		965	TIO SETPU,X'F2'
1516	3A 40 1BFC		966	SBN FLAGS1,FLAG11
151A	0C 05 18E1 1907		967	SETPU MVC PTCMND-7,BUSY2-10(6)
1520	38 04 14BC		968	CKPRNT TBN CMND-1,X'04'
1524	F2 90 0E		969	JF FLAGCK
1527	C1 F4 152F		970	TIO SETPT,X'F4'
1528	3A 20 1BFC		971	SBN FLAGS1,FLAG12
152F	0C 05 18E7 1919		972	SETPT MVC PTCMND-1,BUSY3-10(6)
1535	38 E0 1BFC		973	FLAGCK TBN FLAGS1,X'E0'
1539	F2 90 34		974	JF STORE1
153C	38 80 1BFC		975	TBN FLAGS1,FLAG10
1540	F2 90 08		976	JF CK11
1543	C0 87 021A		977	B PRINT
1547	01	1547	978	DC XL1'01'
1548	12	1548	979	DC IL1'18'
1549	18FF	154A	980	DC AL2(BUSY1)
154B	38 40 1BFC		981	CK11 TBN FLAGS1,FLAG11
154F	F2 90 08		982	JF CK12
1552	C0 87 021A		983	B PRINT
1556	01	1556	984	DC XL1'01'
1557	12	1557	985	DC IL1'18'
1558	1911	1559	986	DC AL2(BUSY2)
155A	38 20 1BFC		987	CK12 TBN FLAGS1,FLAG12
155E	F2 90 0F		988	JF STORE1
1561	C0 87 021A		989	B PRINT
1565	01	1565	990	DC XL1'01'
1566	12	1566	991	DC IL1'18'
1567	1923	1568	992	DC AL2(BUSY3)
1569	F2 87 04		993	J STORE1
156C	34 08 1642		994	STAT2 ST OUT9+3,ARR
1570	38 40 020B		995	STORE1 TBN SBYTE3,SNSW19
1574	F2 10 61		996	JT CKIT
1577	0C 01 1C05 14FA		997	MVC WORK(2),WAT
157D	C1 F7 1584		998	ANY TIO DECT,X'F7'
1581	F2 87 1F		999	J STORE
1584	0D 01 1C05 1FF3		1000	DECT CLC WORK(2),ZERO
158A	F2 81 0A		1001	JE BBIT
158D	0F 01 1C05 1FF5		1002	SLC WORK(2),ONE
1593	C0 87 157D		1003	B ANY
1597	C0 87 021A		1004	BBIT B PRINT
1598	01	159B	1005	DC XL1'01'
159C	11	159C	1006	DC IL1'17'
159D	1934	159E	1007	DC AL2(NODROP)
159F	3A 10 1BFC		1008	SBN FLAGS1,FLAG13
15A3	38 04 14BC		1009	STORE TBN CMND-1,X'04'
15A7	F2 90 2E		1010	JF CKIT
15AA	30 F3 1C05		1011	STORE2 SNS WORK,X'F3'
15AE	38 06 1C05		1012	TBN WORK,X'06'
15B2	F2 10 25		1013	JT CKIT
15B5	39 C0 1C04		1014	TBF WORK-1,X'CO'
15B9	C0 90 15AA		1015	BF STORE2
15BD	0C 01 1C0B 1C01		1016	MVC WAIT,LDPW+1(2)
15C3	30 F1 1C05		1017	INJECT SNS WORK,X'F1'
15C7	0F 01 1C0B 1FF5		1018	SLC WAIT(2),ONE
15CD	F2 81 08		1019	JZ CKIT

F014 MFCU FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
15D0	38 10 1C04		1020	TBN WORK-1,X'10'
15D4	C0 90 15C3		1021	BF INJECT
15D8	0C 01 15FB 1BFE		1022	CKIT MVC MSGADD,AREAD(2)
15DE	3C 01 15EE		1023	MVI CHECK1+1,X'01'
15E2	30 F3 1C05		1024	SNS WORK,X'F3'
15E6	39 FF 1C05		1025	TBF WORK,X'FF'
15EA	F2 10 32		1026	JT SPACE
15ED	38 00 1C05		1027	CHECK1 TBN WORK,*-*
15F1	F2 90 0C		1028	JF UPDATE
15F4	C0 87 021A		1029	B PRINT
15F8	01	15F8	1030	DC XL1'01'
15F9	0D	15F9	1031	DC IL1'13'
15FA	1795	15FB	1032	MSGADD DC AL2(NOOP)
15FC	3A 10 1BFC		1033	SBN FLAGS1,FLAG13
1600	0E 01 15FB 1FF7		1034	UPDATE ALC MSGADD,DEC18(2)
1606	0E 00 15EE 15EE		1035	ALC CHECK1+1(1),CHECK1+1
160C	39 FF 15EE		1036	TBF CHECK1+1,X'FF'
1610	C0 90 15ED		1037	BF CHECK1
1614	38 02 1C05		1038	TBN WORK,X'02'
1618	F2 90 04		1039	JF SPACE
161B	3A 08 1BFB		1040	SBN FLAGS,FLAG4
161F	38 10 1BFC		1041	SPACE TBN FLAGS1,FLAG13
1623	F2 90 19		1042	JF GUT9
1626	C0 87 021E		1043	B UNPACK
162A	02	162A	1044	DC IL1'2'
162B	14BD	162C	1045	DC AL2(CMND)
162D	18ED	162E	1046	DC AL2(INHEX)
162F	C0 87 021A		1047	B PRINT
1633	C6	1633	1048	DC XL1'C6'
1634	1B	1634	1049	DC IL1'27'
1635	18ED	1636	1050	DC AL2(INHEX)
1637	F011	1638	1051	DC XL2'F011'
1639	C0 87 0222		1052	B HALT
163D	F011	163E	1053	DC XL2'F011'
163F	C0 87 0000		1054	CUT9 B *-*
1055			1055	*****
1056			1056	COUNTM *****
1057			1057	* COUNTM *
1058			1058	*****
1643	34 08 1694		1059	COUNTM ST CTOUT+3,ARR
1647	3D 06 14BD		1060	CLI CMND,X'06'
1648	F2 81 19		1061	JE SS2
164E	F2 84 25		1062	JH SS3
1651	38 01 14BD		1063	TBN CMND,X'01'
1655	F2 10 2D		1064	JT SS1
1658	06 30 19A2 1FD9		1065	AZ SS4CT(4),D1(1)
165E	0C 03 1E03 1FE2		1066	MVC PUST+3(4),SSNO-3
1664	F2 87 2A		1067	J CTOUT
1667	06 30 198E 1FD9		1068	SS2 AZ SS2CT(4),D1(1)
166D	0C 03 1E03 1FE4		1069	MVC PUST+3(4),SSNO-1
1673	F2 87 18		1070	J CTOUT
1676	06 30 1998 1FD9		1071	SS3 AZ SS3CT(4),D1(1)
167C	0C 03 1E03 1FE3		1072	MVC PUST+3(4),SSNO-2
1682	F2 87 0C		1073	J CTOUT
1685	06 30 1984 1FD9		1074	SS1 AZ SS1CT(4),D1(1)
1688	0C 03 1E03 1FE5		1075	MVC PUST+3(4),SSNO
1691	C0 87 0000		1076	CTOUT B *-*
1077			1077	*****
1078			1078	LIST *****
1079			1079	* LIST *
1080			1080	* *****
1081			1081	* SUBROUTINE TO LIST STACKER COUNTS. *
1082			1082	*****
1695	34 08 16E7		1083	LIST ST LST+3,ARR
1699	0C 01 1684 1FFF		1084	MVC APT2,A1CT(2)
169F	C0 87 021A		1085	B PRINT
16A3	42	16A3	1086	DC XL1'42'
16A4	15	16A4	1087	DC IL1'21'

F014 MFCU FUNCTION TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
16A5 1788 16A6 1088 DC AL2(SUM) *SUMMARY
16A7 F0F4 16A8 1089 DC XL2'F0F4' *HEADING
16A9 C2 01 0004 1090 LA 4,XR1 LOAD THE PRINT LINE COUNT
16AD CO 87 021A 1091 B PRINT *PRINT ONE
16B1 C1 16B1 1092 DC XL1'01' *LINE OF
16B2 OA 16B2 1093 DC IL1'10' *SUMMARY
16B3 1984 16B4 1094 APT2 DC AL2(SS1CT) *PRINTOUT
16B5 36 01 1F7F 1095 A ALLF,XR1 SUBTRACT 1 FROM PRINT LINE COUNT
16B9 F2 81 0E 1096 JE FINK2 BRANCH AFTER FOUR LINES ARE PRINTED
16BC OE 01 16B4 1FER 1097 ALL APT2,TEN(2) ADD TEN TO PRINT ADDRESS
16C2 CO 87 16AD 1098 B PINT2 BRANCH BACK TO PRINT NEXT LINE
1099
1100 *****
1101 * SUB-SUBROUTINE TO CLEAR STACKER COUNTS *
1102 *****
1103 CLEAR ST LST+3,ARR SAVE ARR FOR EXIT FROM SUBROUTINE
1104 FINK2 MVI WOKR,X'04' *CLEAR
1105 LA SS1CT,XR1 *STACKER
1106 CLCT2 MVC O(4,XR1),BLANKS *COUNTERS
1107 LA 10(XR1),XR1 *
1108 SLC WOKR(1),ONE *
1109 BNE CLCT2
1110 LST B *-*

F014 MFCU FUNCTION TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
175C CO 87 021A 1156 B PRINT
1760 C6 1760 1157 DC XL1'06'
1761 2C 1761 1158 DC IL1'44'
1762 1B92 1763 1159 DC AL2(PRTARE)
1764 F030 1765 1160 HALT1 DC XL2'F030'
1766 3C C6 1B92 1161 MVI PRTARE,X'06'
176A CO 87 0222 1162 B HALT
176E F030 176F 1163 HALT2 DC XL2'F030'
1770 CO 87 0000 1164 UPIOUT B *-*

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic test data for MFCU function tests, including error codes like 18E9, 18EE, 18F6, etc., and their corresponding source statements.

F014 MFCU FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic test data for MFCU function tests, including error codes like 1AB5, 1ABD, 1AC5, etc., and their corresponding source statements. Includes a section for PROGRAM INDICATOR FLAGS.

F014 MFCU FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
		1241	*	FLAG14	BIT 4-PRIME REQUIRED
		1242	*	FLAG15	BIT 5-
		1243	*	FLAG16	BIT 6-
		1244	*	FLAG17	BIT 7-
		1245			
		1246	*****		
		1247	*	CONSTANTS	*
		1248	*****		
18FD	1795	18FE	1249	AREAD	DC AL2(NOOP)
18FF	1F80	1C00	1250	LDPU	DC AL2(PUFD)
1C01		1C02	1251	SAVIT	DS CL2
1C03		1C03	1252	COUNT	DS CL1
1C04		1C05	1253	WORK	DS CL2
1C06		1C07	1254	CMD	DS CL2
1C08		1C09	1255	SAVE1	DS CL2
1C0A		1C0B	1256	WAIT	DS CL2
1C0C		1C0D	1257	MSEC	DS CL2
1C0E		1C0F	1258	CMNDB4	DS CL2
			1259		
			1259		
1D00			1260	ORG	X*1D00*
		1D00	1261	PRFD	EQU * THIS MUST BE LOCATED AT 1F00
1D00	5C40F5F4F2F440D4	1D1F	1262	DC	CL32** 5424 MULTI FUNCTION CARD UNIT**
1D08	E4D3E3C940C6E4D5		1262		
1D10	C3E3C9D6D540C3C1		1262		
1D18	D9C44CE4D5C9E35C		1262		
1D20	E3C8C540E261F340	1D3F	1263	DC	CL32*THE S/3 DOUBLES THE FUNCTION FOR*
1D28	C4D6E4C2D3C5E240		1263		
1D30	E3C8C540C6E4D5C3		1263		
1D38	E3C9D6D540C6D6D9		1263		
1D40	C8C1D3C640E3C8C5	1D5F	1264	DC	CL32*HALF THE COST AND THAT'S NOT BAD*
1D48	40C3D6E2E340C1D5		1264		
1D50	C440E3C8C1E37DE2		1264		
1D58	40D5D6E340C2C1C4		1264		
1D60	C140F240D3C9D5C5	1D7F	1265	DC	CL32*A 3 LINE PRINT LEAVES ME IN CORE*
1D68	40D7D9C9D5E340D3		1265		
1D70	C5C1E5C5E240D4C5		1265		
1D78	40C9D540C3D6D9C5		1265		
		1D80	1266	PRFD2	EQU *
1D80	5CE3C8C9E240D709	1D9F	1267	DC	CL32*THIS PRINTOUT IS FROM BUFFER 2*
1D88	C9D5E3D6E4E340C9		1267		
1D90	E240C6D9D6D440C2		1267		
1D98	E4C6C6C5D940F25C		1267		
1DA0		1DFF	1268	DS	CL96
		1E00	1269	PUST	EQU *
1E00		1E7F	1270	DS	CL128
		1E80	1271	RDFD	EQU *
1E80		1EFF	1272	DS	CL128
		1F00	1273	CTABLE	EQU *
1F00		1F7D	1274	DS	CL126
1F7E	FFFF	1F7F	1275	ALLF	DC XL2*FFFF*
		1F80	1276	PUFD	EQU *
1F80	4C406F4FC1C1	1F85	1277	DC	XL6*40406F4FC1C1*
1F86	C1C1D0D06040	1F8B	1278	DC	XL6*C1C1D0D06040*
1F8C	40404040F1F3	1F91	1279	DC	XL6*40404040F1F3*
1F92	F67CE8D06040	1F97	1280	DC	XL6*F67CE8D06040*
1F98	61C1C1C1C14F	1F9D	1281	DC	XL6*61C1C1C1C14F*
1F9E	6E40F1F3F3D3	1FA3	1282	DC	XL6*6E40F1F3F3D3*
1FA4	D3D3D34F4E40	1FA9	1283	DC	XL6*D3D3D34F4E40*
1FAA	F1F3F67CE8D0	1FAF	1284	DC	XL6*F1F3F67CE8D0*
1FB0	6040404040F1	1FB5	1285	DC	XL6*6040404040F1*
1FB6	F3D3D3D3D3D3	1FB8	1286	DC	XL6*F3D3D3D3D3D3*
1FBC	D34F6E404040	1FC1	1287	DC	XL6*D34F6E404040*
1FC2	406FF8F4F86F	1FC7	1288	DC	XL6*406FF8F4F86F*
1FC8	40406FE4E4E4	1FCD	1289	DC	XL6*40406FE4E4E4*
1FCE	F040407E6161	1FD3	1290	DC	XL6*F040407E6161*
1FD4	616140406EF1	1FD9	1291	D1	DC XL6*616140406EF1*
1FDA	F1F16E404040	1FDF	1292	DC	XL6*F1F16E404040*

F014 MFCU FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
1FE0	4040	1FE1	1293	PLANKS	DC XL2*4040*
1FE2	4F404040	1FE5	1294	SSNO	DC XL4*4F404040*
1FE6	F000	1FE7	1295	FIRST1	DC XL2*F000*
1FE8	F800	1FE9	1296	FIRST2	DC XL2*F800*
1FEA	000A	1FEB	1297	TEN	DC IL2*10*
1FEC	F105	1FED	1298	READ1	DC XL2*F105*
1FEE	F805	1FEF	1299	READPU	DC XL2*F805*
1FF0	F905	1FF1	1300	READCD	DC XL2*F905*
1FF2	0000	1FF3	1301	ZERO	DC XL2*0000*
1FF4	0001	1FF5	1302	ONE	DC XL2*0001*
1FF6	0000	1FF7	1303	DEC18	DC IL2*13*
1FF8	1E00	1FF9	1304	LDPT	DC AL2(PUST)
1FFA	1D00	1FFB	1305	LDPR	DC AL2(PRFD)
1FFC	1E80	1FFD	1306	LDRD	DC AL2(RDFD)
1FFE	1984	1FFF	1307	AICT	DC AL2(SSICT)
		1308	*****		
		1309	*	EQUATES	*
		1310	*****		
0001	1311	XR1	EQU	X*01*	
0002	1312	XR2	EQU	X*02*	
0008	1313	ARR	EQU	X*08*	
020A	1314	SBYTE2	EQU	X*20A*	
020B	1315	SBYTE3	EQU	X*20B*	
0212	1316	TEST	EQU	X*212*	
0216	1317	LINK	EQU	X*216*	
021A	1318	PRINT	EQU	X*21A*	
021E	1319	UNPACK	EQU	X*21E*	
0222	1320	HALT	EQU	X*222*	
022A	1321	LOAD	EQU	X*22A*	
148D	1322	CMND	EQU	EX2+2	
0040	1323	SNSW11	EQU	X*40*	*
0020	1324	SNSW12	EQU	X*20*	*
0080	1325	SNSW18	EQU	X*80*	*
0040	1326	SNSW19	EQU	X*40*	*
0020	1327	SNSW1A	EQU	X*20*	*
0010	1328	SNSW1B	EQU	X*10*	* SBYTE3
0004	1329	SNSW1D	EQU	X*04*	*
0002	1330	SNSW1E	EQU	X*02*	*
00C1	1331	SNSW1F	EQU	X*01*	*
0080	1332	FLAG0	EQU	X*80*	
0040	1333	FLAG1	EQU	X*40*	
0020	1334	FLAG2	EQU	X*20*	
0010	1335	FLAG3	EQU	X*10*	
0008	1336	FLAG4	EQU	X*08*	
0004	1337	FLAG5	EQU	X*04*	
0001	1338	FLAG7	EQU	X*01*	
0080	1339	FLAG10	EQU	X*80*	
0040	1340	FLAG11	EQU	X*40*	
0020	1341	FLAG12	EQU	X*20*	
0010	1342	FLAG13	EQU	X*10*	
0008	1343	FLAG14	EQU	X*08*	
00A0	1344	FLG02	EQU	X*A0*	FLAGS 0 AND 2
FFFF	1345		END		

F014 MFCU FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
HALT1	A	002	1765	1160	1152* 1153
HALT2	A	002	176F	1163	1153*
MMAGON	A	004	0FB6	0532	0521
HOPCYC	A	025	1830	1215	0478
HOPMAG	A	015	183F	1216	0493* 0494 0508* 0510 0541* 0542 0557* 0558
HOP2	A	004	1497	0928	0923
HOPZOM	A	004	1012	0550	0538
HPROFF	A	004	0F74	0502	0490
HPRDN	A	004	0F3F	0486	0476
INC	A	004	132D	0822	0619
INMEX	A	005	18ED	118E	1046 1058
INITAL	A	004	0C64	0268	0261
INJECT	A	004	15C3	1017	1021
INS1	A	022	1806	1178	0039 0121 0845
INS2	A	017	1841	1181	0080 0171 0455
INS3	A	027	1A85	1206	0057 0098 0255* 0264 0264* 0265 0282
INS3A	A	024	1A6A	1205	0270* 0277*
INS4	A	029	188A	1183	0742
INS5	A	048	197A	1194	0363
INS6	A	021	1AC9	1208	0347
INVC	A	017	189B	1184	0190 0194 0765 0769 0777 0781
INWAIT	A	014	184D	1217	0523* 0524 0570* 0572
ISIT2	A	004	0D1C	0316	0313
ISIT3	A	004	0D2A	0320	0317
ISIT4	A	004	0D38	0324	0321
ITSNOT	A	004	0D46	0328	0325
LDNEXT	A	031	19E8	1200	0376 0840
LDPR	A	002	1FFB	1305	0167 0591 0737
LBPT	A	002	1FF9	1304	0935
LDPU	A	002	1C00	1250	0592 0610 0659 0932 1016
LDRD	A	002	1FFD	1306	0472 0532 0593 0611 0660 0936
LEAVE1	A	004	0A80	0066	0056
LEAVE2	A	004	0ADE	0107	0086 0097
LINK	C	001	0216	1317	0066 0107 0153 0202 0428
LIST	A	004	1695	1083	0359 0423
LISTCT	A	004	0DA7	0359	0339 0356
LOAD	C	001	022A	1321	0717 0797
LST	A	004	16E4	1110	1083* 1103*
MORE	A	004	0DFF	0385	0383
MORE1	A	004	0E2A	0395	0393
MORE2	A	004	0E55	0405	0403
MSEC	A	002	1COD	1257	0906* 0907* 0908* 0912*
MSGADD	A	002	15FB	1032	1022* 1034*
NEXT	A	003	127A	0760	0755
NODROP	A	017	1934	1192	1007
NOMORE	A	004	0E80	0415	0413
NOOP	A	013	1795	1170	0464 1032 1249
NOSTAK	A	022	194A	1193	0256* 0265* 0331 1144
NOTALL	A	040	1AFD	1212	0130* 0141* 0150* 1124
NOTGD	A	004	1366	0842	0827 0830 0832 0834
NOTRDY	A	004	133A	0828	0817 0821
NOTUP	A	025	18FA	1223	0679* 0687 0697* 0705
ONE	A	002	1FF5	1302	0196 0303 0874 0912 1002 1018 1108 1155
UNEDFF	A	004	110F	0626	0623
OUT2	A	004	138D	0855	0806* 0809 0813 0815 0849* 0853
OUT8	A	004	14F5	0951	0862* 0875
OUT9	A	004	163F	1054	0559* 0994* 1042
PBI	A	004	1420	0897	0899
PCMNDS	A	004	1296	0771	0753
PICK	A	005	12C6	0787	0794
PINT2	A	004	16AD	1091	1098
PRFD	A	001	1D00	1261	1305
PRFD2	A	001	1D80	1266	0864 0864* 1150
PRIMIT	A	004	1444	0931	0927
PRINT	C	001	021A	1318	0027 0038 0049 0559 0077 0089 0100 0118 0168 0191 0279 0328 0344 0360 0373 0416 0424 0452 0465 0479 0495 0511 0525 0543

DATE	28JUL69	24NOV69	10FEB70	14APR70	15MAR71	30AUG71	PROG ID	OF01-4
EC NO.	816444	816562	816592	816678	818962	818667	PAGE	13

F014 MFCU FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
PRNTB1	A	004	1418	0895	0559 0573 0583 0684 0689 0702 0707 0739 0766 0778 0784 0822 0837 0842 0977 0983 0989 1004 1029 1047 1085 1091 1121 1126 1130 1156
PRTARE	A	044	1892	1219	0886 0463* 0464* 0468 0477* 0478* 0482 0492* 0494* 0498 0505* 0510* 0514 0522* 0524* 0528 0540* 0542* 0546 0556* 0558* 0562 0571* 0572* 0576 0594* 1141* 1143* 1144* 1147* 1149* 1150* 1159 1161*
PTCHND	A	022	18E8	1187	0877 0877* 0880* 0882* 0967* 0972*
PUCMND	A	004	150B	0963	0961
PUFD	A	001	1F80	1276	1250
PUNCHD	A	018	1A1C	1202	0277
PUST	A	001	1E00	1269	0274* 0275 0275* 1066* 1069* 1072* 1075* 1304
RCCT	A	013	17F0	1177	0880
RDFD	A	001	1E80	1271	0312 0316 0320 0324 1306
RDSWS	A	003	123E	0744	0745 0747* 0749* 0761 0770
RDY	A	004	12F4	0806	0914 0941 0945
RDY2	A	004	1377	0849	0378
READCD	A	002	1FF1	1300	0257* 0262* 0278
READIT	A	006	0C91	0278	0272
READPU	A	002	1FEF	1299	0258* 0263* 0273
READY1	A	006	0AA3	0087	0084
READY2	A	006	0AC4	0098	0085 0096
READ1	A	002	1FED	1298	0369
RERUN	A	004	0CC5	0294	0292 0306
RNUM	A	001	0A03	0013	0829 0933
RT01	A	001	0A0D	0023	0015
RT02	A	001	0A84	0073	0025
RT03	A	001	0AE2	0114	0075
RT04	A	001	0B6D	0163	0116
RT05	A	001	0C16	0247	0165
RT06	A	001	0ED7	0448	0249
RT07	A	001	1228	0733	0450
R3L	A	004	0BA1	0182	0201
SAVE1	A	002	1C09	1255	0788* 0792
SAVIT	A	002	1C02	1251	0866* 0948
SBYTE2	C	001	020A	1314	0900 0904
SBYTE3	C	001	020B	1315	0185 0200 0253 0268 0271 0289 0291 0305 0338 0352 0795 0995
SCAT	A	004	1715	1136	1116*
SECOND	A	004	0E15	0390	0394
SELECT	A	006	0C8B	0277	0269
SETBUF	A	004	1402	0889	0896
SETH4	A	004	124F	0749	0746
SETPT	A	006	152F	0972	0970
SETPU	A	006	151A	0967	0965
SNSW1A	C	001	0020	1327	0795
SNSW1B	C	001	0010	1328	0200 0305
SNSW1D	C	001	0004	1329	0271 0291
SNSW1E	C	001	0002	1330	0268 0289
SNSW1F	C	001	0001	1331	0185
SNSW11	C	001	0040	1323	0900
SNSW12	C	001	0020	1324	0904
SNSW18	C	001	0080	1325	0253
SNSW19	C	001	0040	1326	0995
SPACE	A	004	161F	1041	1026 1039
SPEC	A	004	0CFF	0308	0290 0337
SPEC1	A	004	0D5D	0337	0315 0319 0323 0327
SSBITS	A	001	0EAB	0433	0294
SSND	A	004	1FE5	1294	1066 1069 1072 1075
SS1	A	006	1685	1074	1064
SS1CT	A	010	1984	1195	0407* 0411* 1074* 1094 1105 1307
SS2	A	006	1667	1068	1061
SS2CT	A	010	198E	1196	0398* 0401* 1068*
SS3	A	006	1676	1071	1062
SS3CT	A	010	1998	1197	0388* 0391* 1071*
SS4CT	A	010	19A2	1198	0380* 1065*
STACK1	A	005	0CCD	0296	0304

DATE	28JUL69	24NOV69	10FEB70	14APR70	15MAR71	30AUG71	PROG ID	OF01-4
EC NO.	816444	816562	816592	816678	818962	818667	PAGE	13A

F014 MFCU FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
STACK4	A	006	0E6F	0411	0836
STAND	A	039	19C9	1199	0372* 0381* 0387* 0397*
STATUS	A	004	14FB	0959	0944
STAT2	A	004	156C	0994	0037 0942
STORE	A	004	15A3	1009	0999
STORE1	A	004	1570	0995	0974 0988 0993
STORE2	A	004	15AA	1011	1015
STORE3	A	004	1253	0750	0748
SUB2	A	004	1142	0641	0637
SUM	A	021	1788	1169	1088
TELL	A	004	0C97	0279	0276
TELL1	A	004	0CA7	0286	0259* 0266*
TELL2	A	004	0CAF	0288	0260* 0267*
TEMP	A	002	121D	0713	0662* 0663 0665 0667* 0668 0670
TEN	A	002	1FEB	1297	1097
TEST	C	001	0212	1316	0181 0351 0867
TEST1	A	004	0CB3	0289	0354
THIRD	A	004	0E40	0400	0404
TIDERR	A	026	18D2	1186	0047* 0048* 0052 0057* 0058* 0062 0087* 0088* 0092 0098* 0099* 0103
TOZERO	A	004	1161	0650	0645
TRANS	A	025	1866	1218	0594
TWOOFF	A	004	112F	0635	0630
UNPACK	C	001	021E	1319	0187 0680 0698 0762 0774 1043 1117
UPDATE	A	006	1600	1034	1028
UPDOWN	A	027	18AD	1220	0586
UP1	A	004	1719	1141	0602 0632
UP1OUT	A	004	1770	1164	1154* 1155*
UP2	A	004	1720	1143	0619
UP3	A	006	1724	1144	1142
WAIT	A	002	1C0B	1256	1016* 1018*
WAIT1	A	004	0F43	0487	0491
WAIT2	A	004	0F78	0503	0507
WAIT3	A	004	0FE1	0535	0539
WAIT4	A	004	1016	0551	0555
WAIT5	A	004	10AC	0597	0601
WAIT6	A	004	10E7	0614	0618
WAIT7	A	004	1113	0627	0631
WAIT8	A	004	1146	0642	0646
WAT	A	002	14FA	0958	0997
WHICH	A	006	1746	1152	1145* 1146 1151*
WORK	A	002	1C05	1253	0034* 0035 0125* 0126 0127 0134* 0135* 0136 0137 0144* 0145 0146 0366* 0367 0420* 0421 0460* 0461 0474* 0475 0488* 0489 0504* 0505 0519* 0520 0536* 0537 0552* 0553 0567* 0568 0581 0598* 0599 0605 0615* 0616 0622 0628* 0629 0635* 0636 0643* 0644 0650* 0651 0672* 0673 0772* 0776 0782 0807* 0808 0816 0833 0891* 0892 0897* 0898 0917* 0918 0924 0926 0939 0997* 1000 1002* 1011* 1012 1014 1017* 1020 1024* 1025 1027 1038 1104* 1108* 1119
WT	A	004	144C	0909	0913
WT1	A	004	1450	0910	0911
XECUTE	A	004	14A8	0932	0919 0921 0925 0929
XR1	C	001	0001	1311	0486* 0487* 0502* 0503* 0534* 0535* 0550* 0551* 0596* 0597* 0613* 0614* 0626* 0627* 0641* 0642* 0657* 0658 0662 0663 0663 0664 0665 0665 0666 0667 0668 0668 0669 0670 0670 0671 0716 0738* 0751 0760 0760* 0771* 0772 0773 0773* 0786* 0787 0788 0792* 0793 0793* 0871* 0872* 0909* 0910* 1090* 1095* 1105* 1106 1107 1107* 0183* 0184 0198 0198* 0294* 0296 0299 0302 0302* 0656* 0675*
XR2	C	001	0002	1312	0752 0782 0789 1000
ZERO	A	002	1FF3	1301	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

F014 MFCU FUNCTION TESTS

OBJECT CARD LISTING

THE CHARACTER * INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+-Y:2AG	B-4	IAE F BYL /OH	EJSMQE=C10H*BH7C	1< <*ALX*G P2DAT	/INXOH*BFZQJF.T 0 2 79 F0140001
T+-Z5/OHSA	/OY	/O- HQ-OCF<YE C3	WF<# /OHE1/YQ4?	AOH*BH? AO--H- 0	CF<YE;C3WF<# /OH E1/Y *HEF0140002
T+-DOF(.O ZBG S.	0 ZBG /QB-	,SOH*	BFUQ,FDG0ZBG S.	0ZG0BD|A= ,D2Y*	#C <O2/Y |+<Q3ZB G /Y 7QOF0140003
T+.,1/YQ4? DOH*	BH? D3--H1|HGf-0	CF<YE;C3TF<# /OH	E1/YQ4? EOH*BH?	EOH*BE-- B67 /OH	EJSM 9JDF0140004
T+-ZWFAPD<BG S.	0=CC3G M9*10E+-*	*A|HGET03E78221,	#C <\$B/,|C<PE<B	GE>-02A0E+2 *ACX	WG M E9 F0140005
T+_/+;8*A|HGET0	OE782A*A*H| E=00	CFCYE4+BGE>-02JO	E+-8*ALX2G L2DAQ	2<J>=|CDPEC31F7Z	< 1Z =HHF0140006
T+>*B/,NOH*D:<B	G /QD- 00<-E-==2B	G /ZF+1/A2H| /OH	S2H|A2 >(OH*./*G	8B9P /O>(0-.V*G	8B9U QD2F0140007
T+-?POH*BTD00G |	B -?X. DM?E 8 CH	.2Z JOH*BG-HM?JS	SOH*BF-DIFI? /1+	JCO * 1*52YDGB-H	BOH* 69-F0140008
T+-OKB:U9D H.OI	.Y*BG /\$0A|DD2-P	3A-EF'E\$E6A**C+ L	9A|YE=OP2A?4F--	"A*KH'E\$6Z";X*H\$	'Z78 JJ<F0140009
T+-1(Z*=XAQ +53>	-F? /1\$F+H 2B*H	EG0OCFX-E OCFMM	E C*HG* #BA">+0-	<DCXHC.C2/10:BA"	0+-- *90F0140010
T+-2HG=8< 1Z8FX-	< 1VEFX-=B 2Y+--	<XC-B -?2DB <DJZ	DFS88A H.2Z RC D	M7J*?|D ;P01:GV8	;P*H R0ZF0140011
T+-3C/00<DJZDF/O	< JK*G*G /OHEJV*	E/-BUOH*BH?BUO-	<,2BGCH-A= 27+ H	BB*H2JL-D -?2D L	/1< 38<F0140012
T+-3=U*HBCDZ2.A0	CH HM?E< /1RCOH*	LUK-CE.4 OH*DE2B	GD*GS -D| AOCG*P	63|+A BB2 &C<P	2/6H 6ZQF0140013
T+-49+OHM?BGD9D	8-A?2/AL|M2;-|H	AA30EE-72/4D*L1:	A2-DG| QM?-HG<35	|GY.2 E*2A1K'2Y*	V|M2 #IEF0140014
T+-54GY|2 E*2AAK	'2Y*POH*BFZQJFM,	0AZBG S.OATS F*?	2D L /O3*+EQBB2	ECE*:DA?#*H \$=2B	ECD* *0-F0140015
T+-67+8 \$=2BG /Z	FJA, I2|| /OHS2||	/OHK+EQBB*H2A<B	GC.<BDA?#2Z H+1	\$=2BGC2- /IENOH*	BF-Q 3CZF0140016
T+-7DXAV:OH*BH?C	4< *AL /KG P2 ;<	< JK'G=4#-A?#+S	\$=334F*X /OHEAUQ	R:CODE.7 /1(7OH*	LU&Q K2YF0140017
T+-8V<AWSG'U22IX	I+H \$=*HEA<2GC;\$	/1+J| =M?L32F*U	F<AWQ*U#-A?#OH*	LU&QOFR--6LS F*?	2D E :Z F0140018
T+-9-OH*+E*RGD9D	2A/K' || DR2EQOFQ8	-6L> F*? /1+JAT	RT/*R+H \$=*HEA<B	GCUC /1+J| MM?EO	0FQE 2\$ F0140019
T+-:\$G'U:EA?#*8	\$=2BGD9DF<AWDQ'U	8-A?2/ DOH*+E3?	-F*? /OHEASH2BTC	3G M8HAOD0A +T<B	GEZM 4A8F0140020
T+-#OOH*BF/\$ /OH	S2|P /OHON6NGRM)	VJ6NGRNR4NXJ0)ER	4NXJONXR41GJ4)XR	ONNUJJDJNNWRW) 7)	4JDM 9:<F0140021

F014 MFCU FUNCTION TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-2JAY KKBG/Z F+1/A2/. /OHS2|. 3* 0210E+ D*A-H 8FT3NF9<AA_*E87 /OM1/*SU 20H* BH7 :-4F0140022

T+-1<<TG5G*732E 0210E+ 8*A|H&FT3 NF9D<FA_*F3C /OH E1S2SU 40H*BH7 4(EB-3QAG7002A0 E+H 9THF0140023

T+-GG P2DB. / C|(MSUL31F3-<C/_ *F3* /OH E1SDSU 50H*BH7 5(ED-3Q AG7002A0E+H *A-H 8HZ JHOF0140024

T+-B/ '8|B5+C3 FF9D<C/_*F3* /OH E1SHSU7 60H*BH7 60*|BLC3G M8MA0 D2/ ;|(MSUL31F44 <CJ% *:0F0140025

T+-1_1(OH*BF3Q -F9G0J2BG S.OJ3E 5G*73=8 5 J*(-D --3COG M8-A0E2/ 50HE|8L3NF9D22/Z 8C 8 3D*F0140026

T+/ 8F72\$|2BG /, FHJ>J2CT /OHS2C- 5 J*(-D--3COG M 8-A0E2Z 50H&E2T3 FF9D22/Z8C 8S-1Z *OH* OKYF0140027

T+/A3 /,FH/>K2CX /OHS2CXA'1AG<|< *AL-EG L2CBH22/_ ((MSUE0(F72\$|*B 6 /,FHA>J2C, /OH S2CY 7C F0140028

T+/B>OH*J*LUCC L 2DAL /OH E1/Z\$, - #OH*BH7 #OH*J*LG 4G*21'/0 <-M-*E0 OF72\$R7|6 CMAG72 6 J2 '9E F0140029

T+/CZ-3C3G M8 JO D2/ (OH&E, <BGE1U 20H*J*L-BG L2U X /1*8|XBGDPD1'/0 <-M-*E0 CMAG72 6 J2 #H<F0140030

T+/DU-3C3G M8 /O D2/ (OH&E92BGE2 *OH*J*L-AG L2U P /1*1E CMAG726 J' *H<|*AL-AG L2D 7 /AD =3UF0140031

T+/E-D2BGE1VA0H* J*LC3G M8 /OD2Z HOH*P+D.2/225 J' "(D-3C3G M8 JO D2Z <OH&JJ2BGE3E C2Y* =Z*F0140032

T+/FEDCC3G M8 /O D2Z EOH*P+D6< 1H /DS.B -D<O-DJ-3G 6G 1'J'2*Q *|B ;P LXPY X50 FZ9 : H KRDF0140033

T+/GN*|F:P UXPY YMO H99: HM0210 E+H *A< EDOY6 /' *OH&JS-4AD/2--H AIL 20F#L /OH; /H -F1* QCMF0140034

T+/H&OH*BF2E(F*, OJ*BG /DFCJ3POH* BH7AEC&DKHJ**2YD 2|D\$<BG /8BDSO \$E2BG /,ALJ?:2D\$ /OH *Q&F0140035

T+/I.FYQ(F1- /OH S2DQ OH* BH- G-|**<-E-22H AGOC /OH EJUUS7C 62C1*|P4K&|HAA30 GDU J\$8F0140036

T+/HF2Y*D|G4K&C G)< ED*A04AG * -2*HA<LXOG \$2D 8 9FA0G2Z ++| *A7H 8A'HA 2BGMT# /OH ; /O 1H<F0140037

T+/AA1S\$OH*BF-0 JFI? /1H=O-D- AO AG MA4-DBOH*BG-H *AJS\$OH*BF-DIF1Z (JOEG*| JHEOH* BF/Q \$C%F0140038

T+/20-D- A0AE.4 A(D*B&4AE.4-2*H AC2BGD9D5 JOI4-D BOH*KIT-- ? UA. ROH*BH- 4BA+&<|< *ALU QCQF0140039

T+/K78A0E2ZBH+ - M?|H&A2GOD1T2/73 A=A<Q2Y)5+ H*A-H &F3UDF*72D *#AA? #2Y*(OH*BF2DHE9* OD|H *ADF0140040

T+/I2/20=-A7#|&M H *HAHL--F*72UAY 9*10E2Z L+D \$=2 &CW* /OH EAUQR:|H GE*BG /YFCA-AOH* BH? 3/DF0140041

T+/+_D|HGAC&HD9 BBAK22/ GO- L-7H GACG8DBX /O (- M=|H B-1-G-2)-32 GD9Q< JOBE.7 /OH K+OD *H8F0140042

T+/|YF*22AK22Z E0-D ETQAG7* /A+ #CODM?J*50HDM*#B GD#*<DATXF+-8 JK 22Z IC 8Q51-X2Y* FC 8 4#*F0140043

F014 MFCU FUNCTION TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+/ETP(ZPWL-DE.3 2UC-8-AK*2Z)+H *C*H&A3YAF*72/2< 0210E+D *A< 8E X 2/1&8-A0|0A H TC 3G M 400F0140044

T+/J;+H *A< 8EB 8E HH2Z FOM*BH7C O+B BB7HEHT G 4 : JO(+* *C<HA DH 6 J*'OH&M 2AG 4 -* ;:0F0140045

T+/KR JJ<OH*K'CX DF*2#BA72<|<*AL- OG L2DB29A/K22/ Y+ -M?|HEDC--G L 2DAY< JK'G=T2/04 8DAO OZMF0140046

T+/LMA|H&B-OAE.4 -LYHF*01'/O |&M H *HAACG6G*U1'J' 20 O-*M5T-BG P DAJSOH*K'<BGE03 /1E J94F0140047

T+/M|Q2BGE|? /1. 4+ -S*|H&B-OAE.4 * 2BGEFH< JO|E.7 /O - 4BARB* *G1E&Z:-A72+ H M?|H 23HF0140048

T+/NHU #A2/M&E+U \$* OEF+DRA3-DE.3 2U #A'AM?+S \$* O EF+*RFLT-F*32UC 8-A722Z HOH*BF-D KF|2 2A%F0140049

T+/DE+D \$*|HEB<B G /YAD/UJ+B \$*|H 8C2BG /YAD/UT2Y* DI (-DE7/ -72DFD JOEE|,A'10D2Y* -C&D ;A0F0140050

T+/P G M-2*HAB-2 AG M-*BGEPT /OH E JDR(CY&F*08AAK 22Z ><|<*AL-FG P 2DB<90A0DOI ND=0 AG 2 O YF0140051

T+/P#G DO2JOECOD *B1*52YDH+A *A<B 8E* << JP#F*82 JP >>|<*ALX*G P2DCH 8 AOE2Z <OH*BF-D (E9M EEDF0140052

T+/Q6+/ \$* 8AE-X -'08 E;8N#TX*E;# UAP_+ H*A-H&ACY HF*28DA722Z ROH* 8G-HM7JT_OH*BF2D \$F+4 2:8F0140053

T+/R12AG /OHS2AG /O (-OV'4FE.7 2-JX2/8M8 JK'2/ _AT RY/'RC <; 1' S2Y*DAT RT/'RC < ; 12 :DMF0140054

T+/E2X|HGFOQDFR- -6&OCG-<-8*HGC Q OFQ&-6&OCG-<-9*8 G 4BA\$XC DO_A *OH*RFUHNE8TO'<H A 8 O,*F0140055

T+/SXOH*BF-DHFQ& 6 J'2YD+C-DO_A ,OH*O,LEHE>*2AAO EO-DR/DOC A*/4-D HCO *AJ*50 DO42B G 71MF0140056

T+/*S(-PF<BG /8 BG M\$E2BG /,AHA, 2CC /OH E-84\$2B G /DFCJ3POH*BH? 00H* C31F7*2/0& 22/Z *Y F0140057

T+/|)-00AF9HRE& HE472/1M22J_*2Y* DI|H\$-00AF9H)MT& HE4Z< A|V < A) ?E6M48A)3C-DP*1' 50H* *E2F0140058

T+/;Q /,F.A>K2C 21/>KOH*8H? 00H* +.TO*|K1|V O'S U5;(8>LM5<GR:(P OQ(\$PEDA EDA &DC F1*M J YF0140059

T+/L1DCC2<PC4UA <T05'-E6MCC2<P C4UCP6;(O'|U82| HE<|K5'X15;(1<G TOMCC4_-U5*|HE<X N9*D 8ZDF0140060

T+/+42XD5=LN02/ 02TEO'I E(XEO*J 02TEO'I EDCMO). E&(LFO=J 5)\$T&(X D:DCA5*J 5)-R5UL 85>< 6LHF0140061

T+/I2DCF1*PD8WC MO).E&<.082/ 5<\$ C9DCF1*PD8UCR1*G D:DCW2;|HE<.LO)P KE<|A6*LS1)PT1)V O'E NJ<F0140062

T+/SD5*J 2)N O*L D6MCS9X7SQFCP9+. HE+.TO)XTQFCR1)~ EO;(1_\$RE(L06*M O*LN1+I-Q<PN1DC W2;< 4H2F0140063

T+/S*2DC02|C021P VO)|I1DCC5(PD&+ X9=-E42XM2)PA82M 1)XR5_XS&<GN1DC C5_PT2)PU1;|I5UC 15*E =9DF0140064

T+/T:2*|A82PSE+ X9=) 5)\$XE(XD:<| M5*J EDA EDA EDA EDA EDA EDA EDA EDA E(POE(XEO*J-Q<\$ E1*E 5C2F0140065

F014 MFCU FUNCTION TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+/U5&<.U8>TN5UC P9(PC2DCD0;|A&<. U8>TN5UCP6*[•]XN84C 00;|A&<.U8>T89+. Y&<LI1DCN5>| 1(X 05[•]M 31DF0140066

T+/V05_N 8>I 02J -2)N 9=-X94CM0*X T8XPTE<LAB2E 8>\$ I82|H1;I 8'R 02(8'R 0'SU5;| 02G R1+H NSUF0140067

T+/W,ε+8182/ 5<\$ C9+.S2*|T&|C02|C S87.C84C02|C08>. 30=(2|C02+.S'<| T&|C02|C05UA-5)\$ TQD 9-F0140068

T+/XW5)~R5W_ 5=L T&<|A6+L5&<R5_J 8>|A0'.E6MCX&<X N8'R 5'XI5<GR:DC A5*J 5<GK1MC184C R1*D E#UF0140069

T+/Y/1+TD5UCS2)P G42N 5)~R5UCF6)\$ M&(-R2)LA6;/ 2(\$ P52PR8>|A0'.E6MC I1DCP9(PC2<PDO;| 42M 0/0F0140070

T+/Z*0;.T&|G02DC B42GN4_PP6)R 0_\$ T2DCF1*PD8W_ 1)L P8=/ 0)|L&+.T0*| K1)XSE4CL5ZGDE<G T&(< 7&DF0140071

T+/DP1*GS84C12|A 0_|A5)I 02GR1+I 2)N 8XP1DCA5*J 5<GK1MCR1+TL5ZG D&|LG6*N 02GR1+I 8'Q 51MF0140072

T+/K&<|05;|I5;L EE4C06MCT9(XN&(\$ F1UC05=|I5_N 8XP L1*|T1*J 8'R 1)P D&+|E8>|0=|C02-G 1=- 9QF0140073

T+/Z(2*10ZXT8UC A6*N 5)\$T&<GSE<P X52PC82PDE<806MC S1)PS1MA-1>)-K2P X52PC82PDE+~X9=) 0*[•]< 1\$YF0140074

T+/_H8=LA44A 9=- X92T05'~E6MCC<| L1MNC5>| 0'SM5' | E82PH5_~P1)V 94C M0*~N1;|C0)XDE<X N&+Q RK<F0140075

T+/>C0*XT&|GC1DC I5MCT6*GN8WGC5>L N82PRE<.I84C1&DA 8DA 8DA 8DA 8DA 8DA 8DA 8DA 8DC B2;< MD0F0140076

T+/>=ε(P084CT9(X N1*J 5Z\$F9(1)-1(\$ W5MCC5>LN82PRE(P 084CA84CZ1)X00)| L&FCF96A 8_-E02X A44 8.2F0140077

T+/792)PD2*|A8'\$ R&<.I8=I 8XT09(| D&<TA9*N 0'SM1MC 05MCD9(XI5*) 0'S M5<GN1DCE92PC9+| I5_M 'εMF0140078

TA/O KO E9M-- 912FC140079

T+/4:PDC5'|.4ε(L U4=|I&<8U5*|T2)\$ N&<|A6*J 9(P1853 T2<N 8WG3&<L09<. L1;I 82TE&<8U5*| T2)Q ~T F0140080

T+/555MCF5_XH0)| F&+|H1MCC5>.T&<G N1DCT2<GT~;I 5)\$ T&<.A1E 24CL2)P E&(-R2)PT&(|E0;P E8U E-DF0140081

THJ6~5<N 2)N 0'S R1N3T2<XSE(-R2)P T5>LT&<XSE<R5_J 0>LF17PRE|I* 0 UF0140082

T+/=8*** εF'|0*G A0)CE0DA 8DA 2~| 6~+TEQDA/0*GAOM' >ε|G32'|L4'(|LUC 12**R2:(A-εDA ε|G 34'< KAMF0140083

T+/'34'|L44'>εDA εF*8' |7εDA79+L U2DA ~WE/QOE εF# 12~E>εDA εDA|εDA 2 C8 H2CP#A-U E' =/MF0140084

TB1** D CJ8 GE ;-AWD 2 HF0140085

E***E7*~DC*PH\$ =*7MSF| I C FZ ASC R A S0 Q 18010804710 81871=,YF0140086

----- LAST PAGE -----

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
			2		DECK 4
			3	F02	START X'400'
			4		*****
			5		*
			6	*	SYSTEM/3 5424 MFCU FUNCTION TESTS
			7	*	*
			8	*	*****
			9	*	SECTION 2 - ROUTINES 1 THRU 9
			10		*****
			11	DC	XL2'F026' PROGRAM IDENTIFICATION AND LEVEL
			12	DC	XL1'0' FLAGS
			13	RNUM	XL1'0' CURRENT ROUTINE NUMBER
			14	DC	XL2'0' RESERVED
			15	DC	AL2(RT01) ADDRESS OF FIRST ROUTINE PREFIX
			16	DC	XL2'0' RESERVED
			17	SPUDT	DC XL3'F05000' UNIT DEFINITION TABLE - MFCU
			18		*****
			19	*	*
			20	*	ROUTINE 1 - PUNCH TEST
			21	*	*
			22		*****
			23	RT01	DC XL1'01' ROUTINE NUMBER
			24	DC	XL1'80' FLAGS - MANUAL INTERVENTION
			25	DC	AL2(RT02) ADDRESS OF NEXT ROUTINE PREFIX
			26		*****
			27	MVI	PUFD+1,X'40' ZERO FIRST BYTE OF READ AREA
			28	MVC	INST1-22(9),PRIMRY PUT PRIM INTO INSTRUCTION MSG
			29	TBN	SBYTE3,SNSW18 *CK FOR AND BRANCH IF FEED
			30	JT	*+9 *FROM PRIM HOPPER IS ON
			31	MVC	INST1-22(9),SECOND PUT SECD INTO INSTRUCTION MSG
			32	MVC	INST1-41(7),INS9-5 PUT BLANK INTO INSTRUCTION MSG
			33	B	PRINT *PRINT
			34	DC	XL1'46' *INSTRUCTIONS
			35	DC	IL1'68' *
			36	DC	AL2(INST1) *
			37	DC	XL2'FOCC' *
			38	B	HALT
			39	DC	XL2'FOCC' *
			40	TBN	SBYTE3,SNSW18 *CK FOR AND BRANCH IF FEED
			41	JF	F02 *FROM PRIM HOPPER IS OFF
			42	SBF	READCD-1,X'08' TURN OFF M BIT IN READ COMMAND
			43	SBF	READPU-1,X'08' TURN OFF M BIT IN READ/PUNCH COMMAND
			44	SBF	RDP22-1,X'08' TURN OFF M BIT
			45	TIO	*+8,X'FO'
			46	B	*-4
			47	TIO	*+X'FO'
			48	J	CK8BIT
			49	FD2	SBN READCD-1,X'08' TURN ON M BIT IN READ COMMAND
			50	SBN	READPU-1,X'08' TURN ON M BIT IN READ/PUNCH COMMAND
			51	SBN	RDP22-1,X'08' TURN ON M BIT
			52	TIO	*+8,X'F8'
			53	B	*-4
			54	TIO	*+X'F8'
			55	CK8BIT	MVC CMND(2),READCD
			56	TBN	SPUDT,X'01'
			57	JT	INITAL
			58	MVI	LAST,X'4F'
			59	MVI	RESTR1+1,X'40'
			60	MVC	STABLE+127(64),STABLE+63
			61	MVC	STABLE+191(64),STABLE+63
			62	J	XECU
			63	INITAL	MVI LAST,X'FF'
			64	MVI	PUFD+1,X'80'
			65	MVI	RESTR1+1,X'80'
			66	XECU	B EXIO
			67	CKNEXT	LA RDPD,XR1
			68	MVI	STEP,X'60' SETUP THE COLUMN COUNT
			69	CLEAR	CLI OI,XR1,X'40' *CHECK FOR AND BRANCH

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
			70	JNE	CK09 *IF COLUMN IS NOT BLANK
			71	LA	I(,XR1),XR1
			72	SLC	STEP(1),ONE *CHECK FOR AND BRANCH IF ALL COLUMNS
			73	BNZ	CLEAR *HAVE NOT BEEN CHECKED
			74	TBN	SBYTE4,SNSW22 *CK FOR AND BRANCH IF OPTION TO LOOP
			75	JF	GENPU *ON PUNCHING CARD READ IS NOT ON
			76	MVC	CMND,RDP22(2) MOVE IN COMMAND
			77	J	DUPIT GO TO EXECUTE COMMAND
			78	CK09	TBN SBYTE4,SNSW21 *CK FOR AND BRANCH IF LOOP ON
			79	JF	DUP *PUNCHING RIPPLE CARD IS NOT ON
			80	MVC	WORD(1),RDPD MOVE SECD BYTE OF RDPD INTO WORK
			81	FDONLY	MVI CMND,X'06' ALTER CMND TO SELECT STACKER 2
			82	J	SET2RD
			83	DUP	TBN SBYTE4,SNSW22 *CK FOR AND BRANCH IF OPTION TO LOOP
			84	JF	UNBLNK *ON PUNCHING CARD READ IS OFF
			85	MVC	PUFD+95(96),RDPD+95 MOVE DATA READ INTO PUNCH FIELD
			86	B	FDONLY
			87	UNBLNK	MVI CMND,X'07' ALTER CMND TO SELECT STACKER 3
			88	SET2RD	SBF CMND-1,X'06' SETUP TO READ ONLY
			89	B	XECU GO READ THE NEXT CARD
			90	GENPU	TBN SBYTE4,SNSW21 *CK FOR AND BRANCH IF LOOP ON
			91	JT	*+9 *PUNCHING RIPPLE CARD IS ON
			92	MVC	WORD(1),PUFD+1 MOVE SECD BYTE OF PREV CD INTO WORD
			93	LA	STABLE,XR1 LOAD ADDR OF TABLE INTO XR1
			94	NEXT1	CLC O(1,XR1),WORD *CK FOR AND BRANCH IF FIRST
			95	JE	NEXTCD *CHAR READ EQUALS CHAR IN TABLE
			96	LA	I(,XR1),XR1 ADD 1 FOR INDEXING THRU TABLE
			97	B	NEXT1 BR BACK TO CHECK NEXT CHAR IN TABLE
			98	NEXTCD	MVC PUFD+95(96),95(,XR1) MOVE 96 CHAR TO BE PUNCHED INTO PUFD
			99	MVC	CMND(2),READPU MOVE IN READ/PUNCH COMMAND
			100	DUPIT	MVI BUFD+95,X'40'
			101	MVC	BUFD+94,BUFD+95(95)
			102	B	UNPACK
			103	DC	IL1'1' *INSTRUCTIONS
			104	DC	AL2(PUFD)
			105	DC	AL2(BUFD+1)
			106	SNS	WORK,X'00' READ DATA SWITCHES
			107	CLI	WORK,X'00' *CK FOR AND BRANCH IF CARDS ARE
			108	JNE	*+7 *NOT TO BE PRINTED ON
			109	SBN	CMND-1,X'07' TURN ON PRINT BIT
			110	B	EXIO
			111	TBN	SBYTE4,SNSW21 *CK FOR AND BRANCH IF LOOP ON
			112	JT	CK *PUNCHING RIPPLE CARD IS ON
			113	TBN	SBYTE4,SNSW22 *CK FOR AND BRANCH IF OPTION TO LOOP
			114	JT	CK *ON PUNCHING CARD READ IS ON
			115	CLC	PUFD(1),LAST *CK FOR AND BRANCH IF ALL THE
			116	JNE	CK *CARDS HAVE NOT BEEN PUNCHED
			117	TBN	SBYTE4,SNSW20 *CK FOR AND BRANCH IF LOOP ON
			118	BF	LINK *PUNCHING SAME DECK IS NOT ON
			119	RESTR1	MVI PUFD+1,*- *INITIALIZE TO RESTART RIPPLE DECK
			120	CK	B CKNEXT BR BACK TO PUNCH ANOTHER DECK
			121		
			122		*****
			123	*	*
			124	*	ROUTINE 2 - RIPPLE READ TEST
			125	*	*
			126		*****
			127	RT02	DC XL1'02' ROUTINE NUMBER
			128	DC	XL1'80' FLAGS - MANUAL INTERVENTION
			129	DC	AL2(RT03) ADDRESS OF NEXT ROUTINE PREFIX
			130		*****
			131	MVC	INST1-22(9),PRIMRY PUT PRIM INTO INSTRUCTION MSG
			132	TBN	SBYTE3,SNSW18 *CK FOR AND BRANCH IF FEED
			133	JT	RIPCD *FROM PRIM HOPPER IS ON
			134	MVC	INST1-22(9),SECOND PUT SECD INTO INSTRUCTION MSG
			135	RIPCD	MVC INST1-41(7),PUNCHD PUT RIPPLE INTO INSTRUCTION MSG
			136	B	PRINT *PRINT
			137	DC	XL1'46' *INSTRUCTIONS

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OBA2	44	OBA2	138	DC	IL1'68'
OBA3	17F4	OBA4	139	DC	AL2(INST1)
OBA5	FOC1	OBA6	140	DC	XL2'FOC1'
OBA7	CO 87 0222		141	B	HALT
OBA8	FOC1	OBA8	142	DC	XL2'FOC1'
OBA9	OC 01 1202 1AC3		143	MVC	CMND(2),READCD
OBB3	38 CO 1A98		144	SBF	FLAGS,FLAG01
OBB7	OC 01 1C77 1AAC		145	READ11 MVC	COUNT,ZERO(2)
OBB8	38 01 0A0C		146	TBN	SPOUT,X'01'
OBC1	F2 90 07		147	JF	TABLE
OBC4	C2 01 1883		148	LA	TAB+11,XR1
OBC5	F2 87 10		149	J	TABADD
OBC8	C2 01 1863		150	TABLE LA	STABLE,XR1
OBCF	OC 3F 18E2 1BA2		151	MVC	STABLE+127(64),STABLE+63
OBD5	OC 3F 1C22 1BA2		152	MVC	STABLE+191(64),STABLE+63
OBD8	38 40 1A98		153	TABADD TBN	FLAGS,FLAG1
OBD9	F2 10 31		154	JT	READ1
OBE2	38 80 0208		155	TBN	SBYTE3,SNSW18
OBE6	F2 90 1A		156	JF	FEED2
OBE9	38 08 1201		157	SBF	CMND-1,X'08'
OBE8	C1 F0 0BF5		158	TIO	**B,X'FO'
OBFI	CO 87 0BED		159	B	**4
OBF5	C1 F0 0BF5		160	TIO	*,X'FO'
OB99	F2 87 17		161	J	READ1
OBFC	3A 80 1A98		162	SETIND SBN	FLAGS,FLAG0
OC00	F2 87 10		163	J	READ1
OC03	3A 08 1201		164	FEED2 SBN	CMND-1,X'08'
OC07	C1 F8 0C0F		165	TIO	**B,X'F8'
OC08	CO 87 0C07		166	B	**4
OC0F	C1 F8 0C0F		167	TIO	*,X'F8'
OC13	CO 87 10DB		168	READ1 B	EXIO
OC17	OE 01 1C77 1AAE		169	ALC	COUNT,ONE(2)
OC1D	38 79 1A98		170	SBF	FLAGS,X'79'
			171	*	
			172	*	
OC21	30 F3 1C75		173	SNS	WORK,X'F3'
OC25	38 02 1C75		174	TBN	WORK,X'02'
OC29	CO 10 1588		175	BT	STAT2
OC2D	38 04 020C		176	TBN	SBYTE4,SNSW25
OC31	CO 10 0BFC		177	BT	SETIND
OC35	38 10 020C		178	TBN	SBYTE4,SNSW23
OC39	F2 10 2F		179	JT	RDCOMP
OC3C	38 02 020C		180	TBN	SBYTE4,SNSW26
OC40	F2 10 11		181	JT	STRAIT
OC43	38 08 020C		182	TBN	SBYTE4,SNSW24
OC47	F2 10 5D		183	JT	DOESIT
OC4A	38 80 1A98		184	TBN	FLAGS,FLAG0
OC4E	F2 10 A9		185	JT	END6
OC51	F2 87 53		186	J	DOESIT
OC54	C2 01 1863		187	STRAIT LA	STABLE,XR1
OC58	3A 80 1A98		188	SBN	FLAGS,FLAG0
OC5C	4D 00 00 1E00		189	LOADAD CLC	O(1,XR1),RDFD
OC61	F2 81 43		190	JE	DOESIT
OC64	D2 01 01		191	LA	1(,XR1),XR1
OC67	CO 87 0C5C		192	B	LOADAD
OC68	3A 80 1A98		193	RDCOMP SBN	FLAGS,FLAG0
OC6F	OD 5F 1F5F 1E5F		194	CLC	PUFD+95(96),RDFD+95
OC75	F2 81 07		195	JE	SAME1
OC78	38 02 1A98		196	TBN	FLAGS,FLAG6
OC7C	F2 10 0D		197	JT	BADCD
OC7F	3A 02 1A98		198	SAME1 SBN	FLAGS,FLAG6
OC83	OC 5F 1F5F 1E5F		199	MVC	PUFD+95(96),RDFD+95
OC89	F2 87 6A		200	J	READ1A
OC8C	CO 87 021A		201	BADCD B	PRINT
OC90	C1	OC90	202	DC	XL1'C1'
OC91	60	OC91	203	DC	IL1'96'
OC92	IF5F	OC93	204	DC	AL2(PUFD+95)
OC94	F025	OC95	205	DC	XL2'F025'

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OC96	CO 87 021A		206	B	PRINT
OC9A	82	OC9A	207	DC	XL1'82'
OC9B	60	OC9B	208	DC	IL1'96'
OC9C	1E5F	OC9D	209	DC	AL2(RDFD+95)
OC9E	CO 87 0222		210	B	HALT
OCA2	F025	OCA3	211	DC	XL2'F025'
OCA4	F2 87 4F		212	J	READ1A
OCA7	4D 5F 5F 1E5F		213	DOESIT CLC	95(96,XR1),RDFD+95
OCAC	F2 81 25		214	JE	LIMIT
OCAF	CO 87 021E		215	B	UNPACK
OCB3	01	OCB3	216	DC	IL1'1'
OCB4	1E00	OCB5	217	DC	AL2(RDFD)
OCB6	1816	OCB7	218	DC	AL2(HEADNG)
OCB8	CO 87 021A		219	B	PRINT
OCBC	C1	OCBC	220	DC	XL1'C1'
OCBD	22	OCBD	221	DC	IL1'34'
OCBE	1816	OCBF	222	DC	AL2(HEADNG)
OCCE	F025	OCC1	223	DC	XL2'F025'
OCC2	06 30 1ACD 1AB3		224	AZ	ERRCT(4),D1(1)
OCC8	C2 02 1E00		225	LA	RDFD,XR2
OCCC	3C 25 10CA		226	MVI	TURN2+0,X'25'
OCCD	CO 87 0FE1		227	B	CKEACH
OCDA	38 02 020C		228	LIMIT TBN	SBYTE4,SNSW26
OCDB	F2 10 1B		229	JT	READ1A
OCDB	OD 01 1C77 1AB8		230	CLC	COUNT,SIXTY4(2)
OCE1	F2 01 0F		231	JNE	READIT
OCE4	38 08 020C		232	TBN	SBYTE4,SNSW24
OCE8	F2 90 0F		233	JF	FND6
OCEB	3A CO 1A98		234	SBN	FLAGS,FLAG01
OCEF	CO 87 0BB7		235	B	READ11
OCF3	D2 01 01		236	READIT LA	1(,XR1),XR1
OCF6	CO 87 0C13		237	READ1A B	READ1
OCFA	CO 87 0216		238	END6 B	LINK
			239		
			240	*****	
			241	*	
			242	*	ROUTINE 3 - RIPPLE PRINT TEST
			243	*	
			244	*****	
OCFE	03	OCFE	245	RT03 DC	XL1'03'
OCFF	80	OCFF	246	DC	XL1'80'
OD00	OD8C	OD01	247	DC	AL2(RT04)
			248	*****	
OD02	CO 87 021A		249	B	PRINT
OD06	41	OD06	250	DC	XL1'41'
OD07	47	OD07	251	DC	IL1'71'
OD08	190C	OD09	252	DC	AL2(INS9)
OD0A	FOC2	OD0B	253	DC	XL2'FOC2'
OD0C	CO 87 021A		254	B	PRINT
OD10	06	OD10	255	DC	XL1'06'
OD11	2C	OD11	256	DC	IL1'44'
OD12	1A9A	OD13	257	DC	AL2(SET43)
OD14	CO 87 0222		258	B	HALT
OD18	FOC2	OD19	259	DC	XL2'FOC2'
OD1A	C1 F0 0D22		260	TIO	**B,X'FO'
OD1E	CO 87 0D1A		261	B	**4
OD22	C1 F8 0D2A		262	TIO	**B,X'F8'
OD26	CO 87 0D22		263	B	**4
OD2A	C1 F0 0D2A		264	TIO	*,X'FO'
OD2E	C1 F8 0D2E		265	TIO	*,X'F8'
OD32	OC 7F 1D7F 1B51		266	MVC	BUFD+127(128),TABLE1
OD38	04 01 1B5F 1B62		267	ZAZ	CDTNT(2),PLUS32(2)
OD3E	OC 01 1202 1B53		268	MVC	CMND(2),PRTFD1
OD44	30 00 1C6F		269	SNS	SWITCH,X'00'
OD48	3D 03 1C6F		270	CLI	SWITCH,X'03'
OD4C	F2 01 17		271	JNE	PRTBF1+16
OD4F	3B 20 1202		272	SBF	CMND,X'20'
OD53	F2 87 1C		273	J	PRTBF1+16

F026 5424 MFCU READ-PUNCH-PRINT TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for routines 4, 5, 6, and 7, including instructions like MVC, SBF, EXIO, and CMND.

F026 5424 MFCU READ-PUNCH-PRINT TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for routines 8 and 9, including instructions like CLI, JE, MVC, STAYIN, and LOOP5.

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
OEC9 OC 01 1202 1B57 410 MVC CMND(2),PRTFD3 SET COMMAND
OECF F2 87 12 411 J DOIT
OED2 38 80 1202 412 TESTIT TBN CMND,X'80' TEST WHICH BUFFER
OED6 F2 10 07 413 JT SETB1 BR IF BUFFER 2
OED9 3A 80 1202 414 SBN CMND,X'80' SET TO BUFFER 2
OEDD F2 87 04 415 J DOIT
OEE0 3P 80 1202 416 SETB1 SBF CMND,X'80' SET TO BUFFER 1
OEE4 C0 87 10DB 417 DOIT B EXIO
OEE8 C0 87 0212 418 B TEST
OEEC 30 00 1C6F 419 SNS SWITCH,X'00' SENSE CONSOLE SWITCHES
OEF0 3D 00 1C6F 420 CLI SWITCH,X'00' SWITCHES EQUAL 00
OEF4 C0 81 0ED2 421 BE TESTIT BR IF YES
OEF8 C0 87 0E1E 422 B PASS3
423
424 *****
425 *
426 * ROUTINE 9 - PRINT CHARACTERS ENTERED BY DATA CARD *
427 *
428 *****
OEF9 C0 87 021A 429 RTO DC XL1'09' ROUTINE NUMBER
OEFD 80 430 DC XL1'80' FLAGS - MANUAL INTERVENTION
OEF0 FFFF 431 DC XL2'FFFF' LAST ROUTINE PREFIX
432 *****
OF00 C0 87 021A 433 B PRINT
OF04 46 434 DC XL1'46' *
OF05 31 435 DC IL1'49' *
OF06 1A24 436 DC AL2(INST9) *
OF08 F0C3 437 DC XL2'F0C3' *
OF0A C0 87 0222 438 B HALT *
OF0E F0C3 439 DC XL2'F0C3' *
OF10 C1 F0 OF18 440 TIO *-8,X'F0' *
OF14 C0 87 OF10 441 B *-4 *
OF18 C1 F8 OF20 442 TIO *-8,X'F8' *
OF1C C0 87 OF18 443 B *-4 *
OF20 C1 F0 OF20 444 TIO *-X'F0' *
OF24 C1 F8 OF24 445 TIO *-X'F8' *
OF28 OC 01 1202 1B5D 446 MVC CMND(2),ONLYRD LOAD READ ONLY SECD INTO SS1
OF2E C0 87 10DB 447 B EXIO *
OF32 OC 01 1202 1B5R 448 MVC CMND(2),FEEDCD LOAD FEED ONLY PRIM INTO SS1
OF38 C0 87 10DB 449 B EXIO *
OF3C OC 5F 1D5F 1E5F 450 MVC BUFF+95,RDFD+95(96) MOVE DATA CARD INFO. INTO PRINT BUFF
OF42 3C 40 1D7F 451 MVI BUFF+127,X'40' *
OF46 OC 1E 1D7E 1D7F 452 MVC BUFF+126,BUFF+127(31) *
OF4C OC 7F 1DFF 1D7F 453 MVC BUFF+255(128),BUFF+127 MOVE BUFFER 1 INTO BUFFER 2
OF52 OC 01 1202 1B57 454 MVC CMND(2),PRTFD3 *
OF58 38 80 1202 455 WHICH TBN CMND,X'80' *
OF5C F2 10 07 456 JT TURNB1 *
OF5F 3A 80 1202 457 SBN CMND,X'80' *
OF63 F2 87 04 458 J GO *
OF66 38 80 1202 459 TURNB1 SBF CMND,X'80' *
OF6A C0 87 10DB 460 GO B EXIO *
OF6E C0 87 0212 461 B TEST *
OF72 C0 87 0F58 462 B WHICH *
463
464 *****
465 * RDY *
466 *
467 * SUBROUTINE TO DETERMINE IF THE PROPER FEED IS READY, PRINT AN *
468 * ERROR MESSAGE IF IT IS NOT, AND LOOP UNTIL IT IS MADE READY. *
469 *****
OF76 34 08 OFE0 470 RDY ST OUT2+3,ARR SAVE ARR FOR EXIT FROM SUBROUTINE
OF7A 30 F3 1C75 471 SNS WORK,X'F3' STORE THE STATUS INDICATORS
OF7E 39 E0 1C75 472 TBF WORK,X'E0' *CK FOR AND BRANCH IF
OF82 F2 90 58 473 JF OUT2 *FD CD, PU CK OR PU INVALID ERROR
OF85 38 08 1201 474 TBN CMND-1,X'08' *CK FOR AND BRANCH
OF89 F2 10 07 475 JT CK2 *IF SECONDARY FD CMND
OF8C C1 F0 OF9A 476 TIO CK3,X'F0' BR IF PRIM FD NOT RDY OR ERROR
OF90 F2 87 4A 477 J OUT2

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
OF93 C1 F8 OF9A 478 CK2 TIO CK3,X'F8' BR IF SECD FD NOT RDY OR ERROR
OF97 F2 87 43 479 J OUT2
OF9A 38 02 1C75 480 CK3 TBN WORK,X'02' *CK FOR AND BRANCH IF PREVIOUS
OF9E F2 90 18 481 JF NOTRDY *FD CK INDICATOR IS NOT ON
OFA1 39 04 1A9B 482 TBF FLAGS,FLAGS *TURN OFF PREVIOUS FD CK INDICATOR
OFA5 F2 10 07 483 JT INC *AND GO
OFA8 3B 04 1A9B 484 SBF FLAGS,FLAGS *PRINT
OFAC F2 87 0A 485 J NOTRDY *FEED
OFAF C0 87 021A 486 INC B PRINT *MSG
OFB3 C1 487 DC XL1'C1'
OFB4 0A 488 DC IL1'10'
OFB5 175F 489 DC AL2(FCCT-3)
OFB7 F010 490 DC XL2'F010'
OFB9 3B 02 1A9B 491 NOTRDY SBF FLAGS,FLAG6 *PRINT
OFBD C0 87 021A 492 B PRINT *NOT
OFC1 06 493 DC XL1'06' *RDY
OFC2 OC 494 DC IL1'12' *MSG
OFC3 189A 495 DC AL2(INS1) *HALT UNLESS BYPASS ERROR
OFC5 C0 87 0222 496 CKRY B HALT *HALT SWITCH IS ON
OFC9 F010 497 OFCA DC XL2'F010' *CK FOR AND BRANCH IF
OFCB 38 08 1201 498 TBN CMND-1,X'08' *SECONDARY FD CMND
OFCF C1 F0 07 499 JT CK42 BR IF PRIM FD NOT RDY OR ERROR
OFD2 C1 F0 OFC5 500 TIO CKRY,X'F0'
OFD4 F2 87 04 501 J OUT2
OFD9 C1 F8 OFC5 502 CK42 TIO CKRY,X'F8' BR IF SECD FD NOT RDY OR ERROR
OFDD C0 87 0000 503 OUT2 B *- *EXIT SUBROUTINE
504
505 *****
506 * CKEACH *
507 *
508 * SUBROUTINE TO CHECK DATA ONE BYTE AT A TIME. *
509 *****
OFE1 34 08 10D6 510 CKEACH ST XIT+3,ARR *
OFE5 34 01 10CE 511 ST RESTR1+3,XR1 *SAVE BOTH REGISTERS UNTIL
OFE9 34 02 10D2 512 ST RESTR2+3,XR2 *EXIT FROM SUBROUTINE
OFED C0 87 021A 513 B PRINT *PRINT
OFF1 81 514 DC XL1'81' *DCBA8421
OFF2 1A 515 DC IL1'26' *
OFF3 1874 516 DC AL2(HOLES) *
OFF5 OC 01 1877 1860 517 MVC DATA-23(2),BLANKS INITIALIZE COLUMN PRINTOUT COUNT
OFFB 06 10 1877 1A83 518 CONT ALZ DATA-23(2),DI(1) ADD DECIMAL 1 TO COLUMN COUNT
1001 6D 00 00 00 519 CLC O(1,XR1),O(,XR2) *CK FOR AND BRANCH IF THIS
1005 F2 01 13 520 JNE BADONE *COLUMN IS INCORRECT
1008 0D 01 1877 1AC1 521 ADDONE CLC DATA-23(2),F9F6 *CK FOR AND BRANCH IF ALL 96
100E F2 81 AB 522 JE TURN *COLUMNS HAVE BEEN CHECKED
1011 D2 01 01 523 LA 1(,XR1),XR1
1014 E2 02 01 524 LA 1(,XR2),XR2
1017 C0 87 OFFB 525 P CONT BRANCH BACK TO CK NEXT COLUMN
526
527 *****
528 * FIND AND PRINT ACTUAL CARD HOLE CONFIGURATION FOR THE *
529 * TWO BYTES WHICH WERE COMPARED AND FOUND TO BE DIFFERENT. *
530 *****
101B 34 01 10B3 531 BADONE ST REST1+3,XR1 *SAVE BOTH REGISTERS UNTIL EXIT FROM
101F 34 02 10B7 532 ST REST2+3,XR2 *PRINTING ACTUAL HOLE CONFIGURATION
1023 C2 01 1B63 533 CKEXP LA STABLE,XR1 LOAD ADDR OF COMP TABLE INTO XR1
1027 3C 00 1C66 534 MVI PLACE,X'00' INITIALIZE TABLE SEARCH COUNT
102B 6D 00 00 00 535 NEXT2 CLC O(1,XR1),O(,XR2) *CK FOR AND BRANCH IF CHAR IN TABLE
102F F2 81 0D 536 JE BITSON *EQUALS CHARACTER READ
1032 D2 01 01 537 LA 1(,XR1),XR1 ADD 1 FOR INDEXING THRU TABLE
1035 0E 00 1C66 1AAE 538 ALC PLACE(1),ONE ADD 1 TO TABLE SEARCH COUNT
103B C0 87 102B 539 B NEXT2 BRANCH BACK TO CK NEXT CHAR IN TABLE
103F 38 01 1A9B 540 BITSON TBN FLAGS,FLAG7 *CK FOR AND BRANCH IF
1043 F2 10 0C 541 JT LDTAB *SECOND TIME THRU FLAG IS ON
1046 OC 01 1063 1A9E 542 MVC PERIOD+3(2),ADATA ADDR OF DATA PRINTOUT INTO MVI INSTR
104C OC 01 106A 1A9E 543 MVC ITSONE+3(2),ADATA ADDR OF DATA PRINTOUT INTO MVI INSTR
1052 C2 01 1C66 544 LDTAB LA PLACE,XR1 ADDR OF TABLE SEARCH COUNT INTO XR1
1056 3C 01 105R 545 MVI CK4ONE+1,X'01' CHECKING BIT INTO TBN INSTR

F026 5424 MFCU READ-PUNCH-PRINT TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for diagnostic tests, including instructions like CK4ONE, PERIOD, and MVI, along with comments explaining branch conditions and print area management.

F026 5424 MFCU READ-PUNCH-PRINT TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for diagnostic tests, including instructions like BSYBUF, PRNTB1, and SENS, along with comments explaining buffer management and loop conditions.

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
681					*****
682	*				STATUS
683	*				*****
684	*				SUBROUTINE TO CHECK FOR PROPER STATUS.
685					*****
1252	8000	1253	686	WAT DC	XL2'8000'
1254	34 08		687	STATUS ST	OUT9+7,ARR STORE RETURN ADDRESS
1258	34 01		688	ST	OUT9+3,XR1 STORE INDEX REGISTER 1
125C	38 F4		689	SBF	FLAGS1,X'F4' TURN OFF FLAGS 10,11,12,13 AND 15
1260	C1 F1		690	TID	PUCMND,X'F1' IS READ GR FEED BUSY
1264	3A 80		691	SBN	FLAGS1,FLAG10 TURN ON NO READ-FEED BUSY FLAG
1268	38 02		692	PUCMND TBN	CMND-1,X'02' *CK FOR AND BRANCH IF
126E	F2 90		693	JF	SETPU+6 *NOT PUNCH COMMAND
126F	C1 F2		694	TIO	SETPU,X'F2' IS PUNCH DATA BUSY
1273	3A 40		695	SBN	FLAGS1,FLAG11 TURN ON NO PUNCH BUSY FLAG
1277	0C 05	178E	696	SETPU MVC	PTCMND-7,PICT-8(6) PUT -PUNCH INTO COMMAND MESSAGE
127D	38 04		697	TBN	CMND-1,X'04' *CK FOR AND BRANCH IF
1281	F2 90		698	JF	SETPT+6 *NOT PRINT COMMAND
1284	C1 F4		699	TIO	SETPT,X'F4' IS PRINT DATA BUSY
1288	3A 20		700	SBN	FLAGS1,FLAG12 TURN ON NO PRINT BUSY FLAG
128C	0C 05	1781	701	SETPT MVC	PTCMND-1,PTDATA-8(6) PUT -PRINT INTO COMMAND MESSAGE
1292	30 F3		702	SNS	WORK,X'F3' *CK FOR AND
1296	38 02		703	TBN	WORK,X'02' *BRANCH IF
129A	C0 10		704	BT	CKIT *FD CK
129E	38 E0		705	TBN	FLAGS1,X'E0' *CK FOR AND BRANCH IF
12A2	F2 90		706	JF	STEAL *NO TID ERROR FLAGS ON
12A5	38 80		707	TBN	FLAGS1,FLAG10 *CK FOR AND BRANCH IF NOT A
12A9	F2 90		708	JF	CKI1 *READ--FEED BUSY ERROR
12AC	C0 87		709	B	PRINT *PRINT
12B0	01	1280	710	DC	XL1'01' *NO READ--FEED BUSY
12B1	12	1281	711	DC	IL1'18' *
12B2	191E	1283	712	DC	AL2(BUSY1) *
12B4	38 40		713	CKI1 TBN	FLAGS1,FLAG11 *CK FOR AND BRANCH IF NOT A
12B8	F2 90		714	JF	CKI2 *PUNCH DATA BUSY ERROR
12BB	C0 87		715	B	PRINT *PRINT
12BF	01	128F	716	DC	XL1'01' *NO PUNCH DATA BUSY
12C0	12	12C0	717	DC	IL1'18' *
12C1	1930	12C2	718	DC	AL2(BUSY2) *
12C3	38 70		719	CKI2 TBN	FLAGS1,FLAG12 *CK FOR AND BRANCH IF NOT A
12C7	C0 90		720	BF	STORE4 *PRINT DATA BUSY ERROR
12CB	C0 87		721	B	PRINT *PRINT
12CF	01	12CF	722	DC	XL1'01' *NO PRINT DATA BUSY
12D0	12	12D0	723	DC	IL1'18' *
12D1	1942	12D2	724	DC	AL2(BUSY3) *
12D3	C0 87		725	B	STORE4 *
726					*****
727					BEGIN CHECKING PUNCH CYCLE STEALS
728	*				*****
729					*****
12D7	38 02	1201	730	STEAL TBN	CMND-1,X'02' *CK FOR AND BRANCH IF THIS IS
12D8	C0 90	130C	731	BF	CYCLE1 *NOT A PUNCH COMMAND
12DF	0C 04	19DB 1926	732	MVC	BADLSR-24,BUSY2-10(5)
12E5	0C 04	19CA 1926	733	MVC	EXTRA-12,BUSY2-10(5)
12EB	0C 04	19B3 1926	734	MVC	NOCYCL-12,BUSY2-10(5)
12F1	3C 21	1C63	735	MVI	WORK1,X'21' INITIALIZE COUNT FOR PUNCH
12F5	30 F3	1C75	736	PRECEL SNS	WORK,X'F3' *CK FOR AND
12F9	38 06	1C75	737	TBN	WORK,X'06' *BRANCH IF
12FD	C0 10	15F4	738	BT	CKIT *FD CK OR HOPPER CK
1301	30 F1	1C75	739	SNS	WORK,X'F1' *LOOP UNTIL PUNCH
1305	38 80	1C75	740	TBN	WORK,X'80' *REG. ROLL BIT
1309	C0 90	12F5	741	BF	PRECEL *COMES UP
130D	30 F3	1C75	742	REGROL SNS	WORK,X'F3' *CK FOR AND
1311	38 06	1C75	743	TBN	WORK,X'06' *BRANCH IF
1315	C0 10	15F4	744	BT	CKIT *FD CK OR HOPPER CK
1319	30 F1	1C75	745	SNS	WORK,X'F1' *CK FOR AND BRANCH IF PUNCH
131D	38 80	1C75	746	TBN	WORK,X'80' *REG ROLL BIT IS ON
1321	C0 10	130D	747	BT	REGROL
1325	0C 01	1C68 1AA4	748	MVC	COMP,LDPU(2)

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
132B	30 F6	1C69	749	SNS	PNCHAR,X'F6'
132F	0D 01	1C69 1AA4	750	CLC	PNCHAR,LDPU(2)
1335	F2 81	13	751	JE	CKSTEL
1338	C0 87	021A	752	INCOR B	PRINT
133C	C6	133C	753	DC	XL1'C6'
133D	1D	133D	754	DC	IL1'29'
133E	19F3	133F	755	DC	AL2(BADLSR)
1340	F027	1341	756	DC	XL2'F027'
1342	C0 87	0222	757	B	HALT
1346	F027	1347	758	DC	XL2'F027'
1348	F2 87	8D	759	J	STORE4
1348	30 F1	1C75	760	CKSTEL SNS	WORK,X'F1'
134F	38 02	1C75	761	TBN	WORK,X'02'
1353	C0 10	1348	762	BT	CKSTEL
1357	30 F3	1C75	763	NOTYET SNS	WORK,X'F3'
1358	38 06	1C75	764	TBN	WORK,X'06'
135F	C0 10	15F4	765	BT	CKIT
1363	30 F1	1C75	766	SNS	WORK,X'F1'
1367	38 02	1C75	767	TBN	WORK,X'02'
1368	C0 90	1357	768	BF	NOTYET
136F	38 02	0A0C	769	TBN	SPUDT,X'02'
1373	F2 90	07	770	JF	FAST
1376	35 01	1AD1	771	L	MSEC06,XR1
137A	F2 87	04	772	J	WAIT1
137D	35 01	1ACF	773	FAST L	MSEC05,XR1
1381	30 F3	1C75	774	WAIT1 SNS	WORK,X'F3'
1385	38 06	1C75	775	TBN	WORK,X'06'
1389	C0 10	1593	776	BT	STORE1
138D	36 01	1ABF	777	A	ALLF,XR1
1391	C0 84	1381	778	BH	WAIT1
1395	0F 00	1C63 1AAE	779	SLC	WORK1(1),ONE
1398	F2 81	3A	780	JZ	STORE4
139E	0E 01	1C6B 1AAE	781	ALC	COMP(2),ONE
13A4	30 F6	1C69	782	SNS	PNCHAR,X'F6'
13A8	0D 01	1C6B 1C69	783	CLC	COMP,PNCHAR(2)
13AE	C0 81	1348	784	BE	CKSTEL
13B2	F2 84	13	785	JH	NOSTEL
13B5	C0 87	021A	786	EXTRA1 B	PRINT
13B9	C6	13B9	787	DC	XL1'C6'
13BA	17	13BA	788	DC	IL1'23'
13BB	19D6	13BC	789	DC	AL2(EXTRA)
13BD	F029	13BE	790	DC	XL2'F029'
13BF	C0 87	0222	791	B	HALT
13C3	F029	13C4	792	DC	XL2'F029'
13C5	F2 87	10	793	J	STORE4
13C8	C0 87	021A	794	NOSTEL B	PRINT
13CC	C6	13CC	795	DC	XL1'C6'
13CD	14	13CD	796	DC	IL1'20'
13CE	198F	13CF	797	DC	AL2(NOCYCL)
13D0	F028	13D1	798	DC	XL2'F028'
13D2	C0 87	0222	799	B	HALT
13D6	F028	13D7	800	DC	XL2'F028'
13D8	C0 87	1593	801	STORE4 B	STORE1
13DC	38 04	1201	802	CYCLE1 TBN	CMND-1,X'04'
13E0	C0 90	1501	803	BF	CYCLE2
804					*CK FOR AND BRANCH IF THIS IS NOT A PRINT COMMAND
805					*****
806	*				BEGIN CHECKING PRINT CYCLE STEAL
807					*****
13E4	0C 04	19DB 1938	808	MVC	BADLSR-24,BUSY3-10(5)
13EA	0C 04	19CA 1938	809	MVC	EXTRA-12,BUSY3-10(5)
13F0	0C 04	19B3 1938	810	MVC	NOCYCL-12,BUSY3-10(5)
13F6	0C 01	1C6B 1AA2	811	MVC	COMP,LDPR(2)
13FC	38 20	1202	812	TBN	CMND,X'20'
1400	F2 90	07	813	JF	*+10
1403	3C 08	1C63	814	MVI	WORK1,X'08'
1407	F2 87	04	815	J	*+7
140A	3C 06	1C63	816	MVI	WORK1,X'06'

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

140E 30 F4 1C69 817 SNS PNCHAR,X'F4' STORE PRINT ADDRESS REGISTER
1412 0D 01 1C69 1AA2 818 CLC PNCHAR,LDPDR(2) *CK FOR AND BRANCH IF REGISTER
1418 00 01 1338 819 BNE INCOR *IS NOT AS ORIGINALLY LOADED
141C 38 80 1202 820 TBN CMND,X'80' *CK FOR AND BRANCH IF NOT
1420 F2 90 18 821 JF HAM *PRINTING FROM BUFFER 2
1423 0E 01 1C6B 1ABD 822 ALC COMP,ONE2E(2) SETUP TO CK FOR BUFF 2 LSR CONTENT
1429 0E 01 1C69 1ABD 823 ALC PNCHAR,ONE28(2)
142F 30 F4 1C6D 824 WAITON SNS SAVE,X'F4'
1433 3D 00 1C6D 825 CLI SAVE,X'00'
1437 00 81 142F 826 BE WAITON
1438 38 02 0A0C 827 HAM TBN SPUOT,X'02' *CK FOR AND BRANCH IF
143F F2 90 25 828 JF HAMER1 *NOT 8 HAMMER PRINTER
1442 3C 10 1A89 829 MVI NINTEN,X'1D'
1446 3C 1C 1A87 830 MVI EIGHTN,X'1C'
144A 38 04 0A0C 831 TBN SPUOT,X'04'
144E F2 90 04 832 JF *+7
1451 3C 1B 1A87 833 MVI EIGHTN,X'1B'
1455 3C 0C 1C63 834 MVI WORK1,X'0C' INIT FOR 8 HAMMER 3 LINE PRINT
1459 38 20 1202 835 TBN CMND,X'20' *CK FOR AND BRANCH
145D F2 90 0F 836 JF HAMER *IF NOT 4 LINE PRINT
1460 3C 10 1C63 837 MVI WORK1,X'10' INIT FOR 8 HAMMER 4 LINE PRINT
1464 F2 87 08 838 J HAMER
1467 3C 1F 1A89 839 HAMER1 MVI NINTEN,X'1F'
146B 3C 1E 1A87 840 MVI EIGHTN,X'1E'
146F 0E 01 1C6B 1AAE 841 HAMER ALC COMP,ONE(2)
1475 38 04 1A9C 842 SBF FLAG1,FLAG15
1479 0C 01 1C71 1ABF 843 WAITUP MVC WAIT,ALLF(2) TURN OFF WAS 19 INCREMENT FLAG
147F 30 F4 1C6D 844 HAMPER SNS SAVE,X'F4' RE-INITIALIZE WAIT FACTOR COUNT
1483 0D 01 1C6D 1C69 845 CLC SAVE,PNCHAR(2) STORE PRINT ADDRESS REGISTER
1489 F2 01 1A 846 JNE HILO *CK FOR AND BRANCH
148C 30 F3 1C75 847 SNS WORK,X'F3' *IF IT HAS CHANGED
1490 38 06 1C75 848 TBN WORK,X'06' *CK FOR AND
1494 00 10 1593 849 BT STORE1 *BRANCH IF
1498 0F 01 1C71 1AAE 850 SLC WAIT(2),ONE *FD CK OR HOPPER CK
149E 00 01 147F 851 SNZ HAMPER *CK FOR AND BRANCH IF WAIT
14A2 00 87 13C8 852 B *FACTOR HAS NOT GONE TO 0
14A6 0D 01 1C6B 1C6D 853 HILO CLC COMP,SAVE(2) BRANCH TO PRINT NO CYCLE STEAL
14AC 00 84 13C8 854 BH NOSTEL CK FOR PROPER LSR INCREMENT
14B0 00 82 13B5 855 BL EXTRA1 BRANCH TO PRINT EXTRA CYCLE STEAL
14B4 0C 01 1C69 1C6D 856 MVC PNCHAR,SAVE(2) SAVE LSR FOR CHANGE COMPARE
14BA 0F 00 1C63 1AAE 857 SLC WORK1(1),ONE
14C0 F2 81 00 858 JZ STORE1
14C3 38 02 0A0C 859 TBN SPUOT,X'02' BRANCH OUT IF LAST ONE ALLREADY CKED
14C7 F2 90 08 860 JF COUNT1 *CK FOR AND BRANCH IF
14CA 38 03 1C6B 861 TBN COMP,X'03' *NOT 8 HAMMER PRINTER
14CE 00 90 146F 862 BF HAMER *CK FOR AND BRANCH TO ADD 1 TO COMP
14D2 3D 01 1C63 863 COUNT1 CLI WORK1,X'01' *UNLESS LAST DIGIT OF COMP IS 3
14D6 F2 81 16 864 JE FORDR3 *CK FOR AND BRANCH IF LAST
14D9 38 04 1A9C 865 CK15 TBN FLAG1,FLAG15 *CYCLE STEAL IS COMMING UP
14DD 00 10 146F 866 BT HAMER *CK FOR AND BRANCH IF LAST LSR
14E1 0E 01 1C63 1AB9 867 ALC COMP,NINTEN(2) *COMPARE AREA INCREMENT WAS 19
14E7 3A 04 1A9C 868 SBN FLAG1,FLAG15 ADD NINETEEN TO LSR COMPARE AREA
14EB 00 87 1479 869 B WAITUP TURN ON WAS 19 INCREMENT FLAG
14EF 38 20 1202 870 FOROR3 TBN CMND,X'20'
14F3 00 90 14D9 871 BF CK15
14F7 0E 01 1C6B 1AB7 872 ALC COMP,EIGHTN(2) ADD EIGHTEEN TO LSR COMPARE AREA
14FD 00 87 1479 873 B WAITUP
1501 38 01 1201 874 CYCLE2 TBN CMND-1,X'01' *CK FOR AND BRANCH IF THIS
1505 F2 90 8B 875 JF STORE1 *IS NOT A READ COMMAND
876
877 *****
878 * BEGIN CHECKING READ CYCLE STEAL.
879 *****
1508 0C 04 19DB 1913 880 MVC BADLSR-24,BUSY1-11(5)
150E 0C 04 19CA 1913 881 MVC EXTRA-12,BUSY1-11(5)
1514 0C 04 19B3 1913 882 MVC NOCYCL-12,BUSY1-11(5)
151A 0C 01 1C6B 1AA0 883 MVC COMP,LDRD(2)
1520 0E 00 1C6B 1AAE 884 ALC COMP(1),ONE

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

1526 30 F5 1C69 885 SNS PNCHAR,X'F5' STORE READ AREA ADDRESS REGISTER
152A 0D 01 1C69 1AA0 886 CLC PNCHAR,LDRD(2) *CK FOR AND BRANCH IF REGISTER
1530 00 01 1338 887 BNE INCOR *IS NOT AS ORIGINALLY LOADED
1534 3C 20 1C63 888 MVI WORK1,X'20'
1538 0C 01 1C71 1ABF 889 WAIT4 MVC WAIT,ALLF(2) RE-INITIALIZE WAIT FACTOR COUNT
153E 30 F5 1C6C 890 KICK SNS SAVE,X'F5' STORE READ AREA ADDRESS REGISTER
1542 0D 01 1C6D 1C69 891 CLC SAVE,PNCHAR(2) *CK FOR AND BRANCH
1548 F2 01 19 892 JNE HILO2 *IF IT HAS CHANGED
154B 30 F3 1C75 893 SNS WORK,X'F3' *CK FOR AND
154F 38 06 1C75 894 TBN WORK,X'06' *BRANCH IF
1553 F2 10 3D 895 JT STORE1 *FD CK OR HOPPER CK
1556 0F 01 1C71 1AAE 896 SLC WAIT(2),ONE
155C 00 01 153E 897 BNZ KICK
1560 00 87 13C8 898 B NOSTEL
1564 0D 01 1C6B 1C6D 899 HILO2 CLC COMP,SAVE(2) CK FOR PROPER LSR INCREMENT
156A 00 84 13C8 900 BH NOSTEL BRANCH TO PRINT NO CYCLE STEAL
156E 00 82 13B5 901 BL EXTRA1 BRANCH TO PRINT EXTRA CYCLE STEAL
1572 0F 00 1C63 1AAE 902 SLC WORK1(1),ONE *CK FOR AND BRANCH
1578 F2 81 18 903 JZ STORE1 *IF DONE
157B 0C 01 1C69 1C6D 904 MVC PNCHAR,SAVE(2) SAVE LSR FOR CHANGE COMPARE
1581 0E 00 1C6B 1AAE 905 ALC COMP(1),ONE UPDATE TO NEXT EXPECTED
1587 00 87 1538 906 B WAIT4
907
908 *****
909 * ENTRY POINT FOR CHECKING STATUS ONLY *
910 *****
1588 34 08 171E 911 STAT2 ST OUT9+7, ARR STORE RETURN ADDRESS
158F 34 01 171A 912 ST OUT9+3,XR1 STORE INDEX REGISTER 1
1593 0C 01 1C75 1253 913 STORE1 MVC WORK(2),WAT SETUP WAIT COUNT
1599 01 F7 15A0 914 ANY TIO DECT,X'F7' BRANCH IF ANY BUSY ON
159D F2 87 1F 915 J STORE
15A0 0D 01 1C75 1AAC 916 DECT CLC WORK(2),ZERO *CK FOR AND BRANCH IF
15A6 F2 81 0A 917 JE BBIT *END OF WAIT COUNT
15A9 0F 01 1C75 1AAE 918 SLC WORK(2),ONE SUBTRACT 1 FROM WAIT COUNT
15AF 00 87 1599 919 B ANY
15B3 00 87 021A 920 BBIT B PRINT *PRINT
15B7 01 1587 921 DC XLI'01' *BUSY DID NOT DROP
15B8 11 1588 922 DC ILI'17' *
15B9 1953 158A 923 DC AL2(NODROP) *
924 SBN FLAG1,FLAG13
925 STORE TBN CMND-1,X'04' TURN ON SPACE REQUIRED FLAG
926 JF CKIT *CK FOR AND BRANCH
927 STORE2 SNS WORK,X'F3' *IF NOT A PRINT COMMAND
928 TBN WORK,X'06' *CK FOR AND
929 JT CKIT *BRANCH IF
930 TBF WORK-1,X'CO' *FD CK OR HOPPER CK
931 BF STORE2 *WAIT FOR BUFFER BUSY
932 MVC WAIT,ONE28+1(2) *TO DROP
933 INJECT SNS WORK,X'F1' LOAD WAIT FACTOR
934 SLC WAIT(2),ONE *WAIT UP TO
935 JZ CKIT *.9 SECOND
936 TBN WORK-1,X'10' *FOR PRINT
937 BF INJECT *INJECT CB TO
938 CKIT MVC MSGADD,AREAD(2) *COME UP
939 MVI CHECK1+1,X'01' *INITIALIZE TO
940 SNS WORK,X'F3' *CHECK ERROR BITS
941 TBF WORK,X'FF' *CK FOR AND BRANCH
942 JT CKCK *IF NO ERRORS
943 CHECK1 TBN WORK,*- *CK FOR AND BRANCH IF THIS
944 JF UPDATE *ERROR BIT IS NOT ON
945 B PRINT *PRINT
946 DC XLI'01' *ERROR
947 DC ILI'13' *MESSAGE
948 MSGADD DC AL2(NODOP) *
949 SBN FLAG1,FLAG13
950 UPDATE ALC MSGADD,DEC18(2) TURN ON SPACE REQUIRED FLAG
951 ALC CHECK1+1(1),CHECK1+1 INCREMENT PRINT AREA ADDRESS
952 TBF CHECK1+1,X'FF' DOUBLE MASK IN INSTRUCTION *CK FOR AND BRANCH IF ANY

FO26 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

Table with columns for address, object code, and source statement. Contains diagnostic test instructions such as CHECK1, WORK,X'02', and UNPACK CARD.

FO26 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

Table with columns for address, object code, and source statement. Contains diagnostic test instructions such as XL1'C1', ILL'21', and UNPACK CARD.

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589734
PAGE 9

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

1837 E7E7 1066
1839 C3D6D34B40D7E4D5 185A 1067 PUHEAD DC CL34*COL. PUNCH AREA PU CK AREA CD XX*
1841 C3C840C1D9C5C140 1067
1849 40D7E440C3D240C1 1067
1851 D9C5C14040C3C440 1067
1859 E7E7 1067
185B 404040404040 1860 1068 BLANKS DC CL6*
1861 C4C3C2C1F8F4F2F1 1874 1069 HOLES DC CL20*DCBA8421 DCBA8421*
1869 4040404040C3C2C1 1069
1871 F8F4F2F1 1069
1875 4040404040404B4B 188E 1070 DATA DC CL26*
187D 4B4B4B4B4B4B4B4B 1070
1885 40404B4B4B4B4B4B 1070
188D 4B4B 1070
188F D4C6C3E440D5D6E3 189A 1071 INS1 DC CL12*MFCU NOT RDY*
1897 40D9C4E8 1071
189B E4D5C4C5E3C5C3E3 18AF 1072 UNDE1 DC CL21*UNDETECTED READ CHECK*
18A3 C5C440D9C5C1C440 1072
18AB C3C8C5C3D2 1072
18B0 E4D5C4C5E3C5C3E3 18C5 1073 UNDE2 DC CL22*UNDETECTED PUNCH CHECK*
18B8 C5C440D7E4D5C3C8 1073
18C0 40C3C8C5C3D2 1073
18C3 D5D7D9D640C2D6E3 18D5 1074 DC CL16*NPRO BOTH FEEDS*
18CE C840C6C5C5C4E260 1074
18D6 D4C1D2C540C2D6E3 18EE 1075 DC CL25*MAKE BOTH MFCU FEEDS RDY*
18DE C840D4C6C3E440C6 1075
18E6 C5C5C4E240D9C4E8 1075
18EE 4B 1075
18EF 40E6C9E3C840C1E3 190C 1076 INS9 DC CL30* WITH AT LEAST 100 BLANK CARDS*
18F7 40D3C5C1E2E340F1 1076
18FF F0F040C2D3C1D5D2 1076
1907 40C3C1D9C4E2 1076
190D D5D640D9C5C1C460 191E 1077 BUSY1 DC CL18*NO READ--FEED BUSY*
1915 60C6C5C5C440C2E4 1077
191D E2E8 1077
191F D5D640D7E4D5C3C8 1930 1078 BUSY2 DC CL18*NO PUNCH DATA BUSY*
1927 40C4C1E3C140C2E4 1078
192F E2E8 1078
1931 D5D640D7D9C9D5E3 1942 1079 BUSY3 DC CL18*NO PRINT DATA BUSY*
1939 40C4C1E3C140C2E4 1079
1941 E2E8 1079
1943 C2E4E2E840C4C9C4 1953 1080 NODROP DC CL17*BUSY DID NOT DROP*
194B 40D5D6E340C4D9D6 1080
1953 D7 1080
1954 C3D4D5C440404040 1969 1081 PTCMND DC CL22*CMND
195C 4040404040404040 1081
1964 40404040404040 1081
196A D7E4D5C3C840C3C8 197E 1082 FALSEP DC CL21*PUNCH CHECK WAS FALSE*
1972 C5C3D240E6C1E240 1082
197A C6C1D3E2C5 1082
197F D9C5C1C440C3C8C5 1992 1083 FALSER DC CL20*READ CHECK WAS FALSE*
1987 C3D240E6C1E240C6 1083
198F C1D3E2C5 1083
1993 40D7D9C9D4C1D9E8 199B 1084 PRIMRY DC CL9* PRIMARY *
199B 40 1084
199C E2C5C3D6D5C4C1D9 19A4 1085 SECOND DC CL9*SECONDARY*
19A4 EB 1085
19A5 D7E4D5C3C8C5C4 19AB 1086 PUNCHD DC CL7*PUNCHED*
19AC D5D640E7E7E7E7E7 19BF 1087 NOCYCL DC CL20*NO XXXXX CYCLE STEAL*
19B4 40C3E8C3D3C540E2 1087
19BC E3C5C1D3 1087
19C0 C5E7E3D9C140E7E7 19D6 1088 EXTRA DC CL23*EXTRA XXXXX CYCLE STEAL*
19C8 E7E7E740C3E8C3D3 1088
19D0 C540E2E3C5C1D3 1088
19D7 E7E7E7E7E740D3E2 19F3 1089 BADLSR DC CL29*XXXXX LSR INITIALLY
19DF D940C9D5C9E3C9C1 1089
19E7 D3D3E840C9D5C3D6 1089
19EF D9D9C5C3E3 1089

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589734
PAGE 9A

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

19F4 D3D6C1C440C4C1E3 1A24 1090 INST9 DC CL49*LOAD DATA CARDS IN SECONDARY AND BLANK IN PRIMARY*
19FC C140C3C1D9C4E240 1090
1A04 C9D540E2C5C3D6D5 1090
1A0C C4C1D9E840C1D5C4 1090
1A14 40C2D3C1D5D240C9 1090
1A1C D540D7D9C9D4C1D9 1090
1A24 EB 1090
1A25 C5D5E3C5D940D7D9 1A50 1091 ENTER DC CL44*ENTER PRINTABLE CHARACTER INTO DATA SWITCHES*
1A2D C9D5E3C1C2D3C540 1091
1A35 C3C8C1D9C1C3E3C5 1091
1A3D D940C9D5E3D640C4 1091
1A45 C1E3C140E2E6C9E3 1091
1A4D C3C8C5E2 1091
1A51 E4D5D7D9C9D5E3C1 1A6E 1092 BADCHA DC CL30*UNPRINTABLE CHARACTER SELECTED*
1A59 C2D3C540C3C8C1D9 1092
1A61 C1C3E3C5D940E2C5 1092
1A69 D3C5C3E3C5C4 1092
1A6F E2C5E340C4C1E3C1 1A9A 1093 SET43 DC CL44*SET DATA SWITCHES TO 03 FOR 3 LINES OF PRINT*
1A77 40E2E6C9E3C3C8C5 1093
1A7F E240E3D640F0F340 1093
1A87 C6D6D940F340D3C9 1093
1A8F D5C5E240D6C640D7 1093
1A97 D9C9D5E3 1093
1094 *****
1095 * PROGRAM INDICATOR FLAGS *
1096 *****
1A9B 00 1A9B 1097 FLAGS DC XL1*00*
1098 * FLAG0 BIT 0-OPTIONS SELECTED FLAG
1099 * FLAG1 BIT 1-COMPARE MULTIPLE RIPPLE DECKS
1100 * FLAG2 BIT 2-
1101 * FLAG3 BIT 3-
1102 * FLAG4 BIT 4-
1103 * FLAG5 BIT 5-PREVIOUS FEED CHECK INDICATOR
1104 * FLAG6 BIT 6-FIRST CARD LOADED FOR COMP INDICATOR
1105 * FLAG7 BIT 7-PRINT WAS NOT FROM SAME BUFFER INDICATOR
1A9C 00 1A9C 1106 FLAG5 DC XL1*00*
1107 * FLAG10 BIT 0-NO READ-FEED BUSY
1108 * FLAG11 BIT 1-NO PUNCH BUSY
1109 * FLAG12 BIT 2-NO PRINT BUSY
1110 * FLAG13 BIT 3-SPACE UP REQUIRED
1111 * FLAG14 BIT 4-PRIME REQUIRED
1112 * FLAG15 BIT 5-
1113 * FLAG16 BIT 6-
1114 * FLAG17 BIT 7-
1115
1116 *****
1117 * ADDRESS CONSTANTS *
1118 *****
1A9D 188E 1A9E 1119 ADATA DC AL2(DATA)
1A9F 1E00 1AA0 1120 LDRD DC AL2(RDFD)
1AA1 1D00 1AA2 1121 LDPR DC AL2(BUFF)
1AA3 1F00 1AA4 1122 LDPU DC AL2(PUFD)
1AA5 1755 1AA6 1123 AREAD DC AL2(NOOP)
1AA7 1B52 1AA8 1124 SLIP DC AL2(TABLE1+1)
1AA9 1D80 1AAA 1125 LASTCH DC AL2(BUFF+128)
1126
1127 *****
1128 * CONSTANTS *
1129 *****
1AAB 0000 1AAC 1130 ZERO DC XL2*0000*
1AAD 0001 1AAE 1131 ONE DC XL2*0001*
1AAF 0004 1AB0 1132 FOUR DC XL2*0004*
1AB1 F0F5 1AB2 1133 FIVE DC CL2*05*
1AB3 F1 1AB3 1134 D1 DC DL1*1*
1AB4 000D 1AB5 1135 DEC18 DC IL2*13*
1AB6 001E 1AB7 1136 EIGHTN DC XL2*1E*
1AB8 001F 1AB9 1137 NINTEN DC XL2*1F*
1ABA 0040 1ABB 1138 SIXTY4 DC IL2*64*

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

1ABC 0080 1ABD 1139 ONE28 DC IL2*128*
1ABE FFFF 1ABF 1140 ALLF DC XL2*FFFF*
1AC0 F9F6 1AC1 1141 F9F6 DC XL2*F9F6*
1AC2 F105 1AC3 1142 READCD DC XL2*F105*
1AC4 F905 1AC5 1143 FIRST2 DC XL2*F905*
1AC6 F305 1AC7 1144 READPU DC XL2*F305*
1AC8 FB04 1AC9 1145 RDPU22 DC XL2*FB04*
1ACA F0F0F0F0 1ACD 1146 ERRCT DC CL4*0000* READ COMPARE ERRORS
1ACE 00E6 1ACF 1147 MSEC05 DC IL2*230*
1ADD 01F4 1AD1 1148 MSEC06 DC IL2*500*
1AD2 4040F1F1F2F2F3F3 1B01 1149 DC CL48* 112233445566778899::##22*!=="00//SSTTUUVVWVWX*
1ADA F4F4F5F5F6F6F7F7 1149
1AE2 F8F8F9F9FAFA7878 1149
1AEA 7C7C7D7E7E7F7FF0 1149
1AF2 F06161E2E2E3E3E4 1149
1AFA E4E5E5E6E6E7E740 1149
1B02 E8E8E9E9E0E0E6E6 1B31 1150 DC CL48*YYZZ&&,,??_>>??--JJKKLLMMNNOOPPQQRR \$\$**);;~'
1B0A 6C6C6D6D6E6E6F6F 1150
1B12 6060D1D1D2D2D3D3 1150
1B1A D4D4D5D5D6D6D7D7 1150
1B22 D8D8D9D9E5A5A5B5B 1150
1B2A 5C5C5D5D5E5E5F5F 1150
1B32 4D4DC1C1C2C2C3C3 1B51 1151 TABLE1 DC CL32*((AABBCDDDEEFFGGHHII ..<<(((+|||'
1B3A C4C4C5C5C6C6C7C7 1151
1B42 C8C8C9C9A4A4A4B4B 1151
1B4A 4C4C4D4D4E4E4F4F 1151
1B52 F426 1B53 1152 PRTFD1 DC XL2*F426* PRINT FROM PRIMARY INTO STACKER 2
1B54 FC27 1B55 1153 PRTFD2 DC XL2*FC27* PRINT FROM SECONDARY INTO STACKER 3
1B56 F424 1B57 1154 PRTFD3 DC XL2*F424* PRINT FROM PRIMARY INTO STACKER 4
1B58 F425 1B59 1155 PRTFD4 DC XL2*F425* PRINT FROM PRIMARY INTO STACKER 1
1B5A F005 1B5B 1156 FEEDCD DC XL2*F005* FEED WAIT TO SS1
1B5C F905 1B5D 1157 ONLYRD DC XL2*F905* READ SECONDARY INTO STACKER 1
1B5E F0F0 1B5F 1158 CDCNT DC CL2*00* CARD COUNTER
1B60 F1 1B60 1159 PLUS1 DC CL1*1*
1B61 F3F2 1B62 1160 PLUS32 DC CL2*32*
1B63 1161 STABLE EQU *
1B63 40F1F2F3F4F5 1B68 1162 DC XL6*40F1F2F3F4F5*
1B69 F6F7F8F9A7A7B 1B6E 1163 DC XL6*F6F7F8F9A7A7B*
1B6F 7C7D7E7F7F061 1B74 1164 DC XL6*7C7D7E7F7F061*
1B75 E2E3E4E5E6E7 1B7A 1165 DC XL6*E2E3E4E5E6E7*
1B7B E8E9E0E6E6C6D 1B80 1166 DC XL6*E8E9E0E6E6C6D*
1B81 6E6F6D1D2D3 1B86 1167 DC XL6*6E6F6D1D2D3*
1B87 D4D5D6D7D8D9 1B8C 1168 DC XL6*D4D5D6D7D8D9*
1B8D 5A5B5C5D5E5F 1B92 1169 DC XL6*5A5B5C5D5E5F*
1B93 D0C1C2C3C4C5 1B98 1170 DC XL6*D0C1C2C3C4C5*
1B99 C6C7C8C9A4A4B 1B9E 1171 DC XL6*C6C7C8C9A4A4B*
1B9F 4C4D4E4F 1BA2 1172 DC XL4*4C4D4E4F*
1BA3 00B1B2B3B4B5 1BA8 1173 TAB DC XL6*00B1B2B3B4B5*
1BA9 86B7B8B9A3A3B 1BAE 1174 DC XL6*86B7B8B9A3A3B*
1BAF 3C3D3E3F8021 1BB4 1175 DC XL6*3C3D3E3F8021*
1BB5 A2A3A4A5A6A7 1BBA 1176 DC XL6*A2A3A4A5A6A7*
1BB8 A8A9102B2C2D 1BC0 1177 DC XL6*A8A9102B2C2D*
1BC1 2E2F20919293 1BC6 1178 DC XL6*2E2F20919293*
1BC7 949596979899 1BCC 1179 DC XL6*949596979899*
1BCD 1A1B1C1D1E1F 1BD2 1180 DC XL6*1A1B1C1D1E1F*
1BD3 908182838485 1BD8 1181 DC XL6*908182838485*
1BD9 86878889A0A0B 1BDE 1182 DC XL6*86878889A0A0B*
1BDF 0C0D0E0F071 1BE4 1183 DC XL6*0C0D0E0F071*
1BE5 727374757677 1BEA 1184 DC XL6*727374757677*
1BE8 7879FAFBFCFD 1BF0 1185 DC XL6*7879FAFBFCFD*
1BF1 FEFF70E16263 1BF6 1186 DC XL6*FEFF70E16263*
1BF7 646566676869 1BFC 1187 DC XL6*646566676869*
1BFD EAEBCEDDEEFF 1C02 1188 DC XL6*EAEBCEDDEEFF*
1C03 E05152535455 1C08 1189 DC XL6*E05152535455*
1C09 56575859DADB 1C0E 1190 DC XL6*56575859DADB*
1C0F DCDDDEF6A41 1C14 1191 DC XL6*DCDDDEF6A41*
1C15 424344454647 1C1A 1192 DC XL6*424344454647*
1C1B 4849CACBCCCD 1C20 1193 DC XL6*4849CACBCCCD*

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

1C21 CECF80313233 1C26 1194 DC XL6*CECF80313233*
1C27 343536373839 1C2C 1195 DC XL6*343536373839*
1C2D BABBC8DBEBF 1C32 1196 DC XL6*BABBC8DBEBF*
1C33 30A122232425 1C38 1197 DC XL6*30A122232425*
1C39 26272829AAAB 1C3E 1198 DC XL6*26272829AAAB*
1C3F ACADAEFA011 1C44 1199 DC XL6*ACADAEFA011*
1C45 121314151617 1C4A 1200 DC XL6*121314151617*
1C48 18199A9B9C9D 1C50 1201 DC XL6*18199A9B9C9D*
1C51 9E9F2A010203 1C56 1202 DC XL6*9E9F2A010203*
1C57 040506070809 1C5C 1203 DC XL6*040506070809*
1C5D 8A8B8C8D8E8F 1C62 1204 DC XL6*8A8B8C8D8E8F*
1C63 1205 WORK1 DS CL1
1C64 1206 STEP DS CL1
1C65 1207 WORD DS CL1
1C66 1208 PLACE DS CL1 TABLE SEARCH COUNT
1C67 1209 LAST DS CL1
1C68 1210 PNCHAR DS CL2
1C6A 1211 COMP DS CL2
1C6C 1212 SAVE DS CL2
1C6E 1213 SWITCH DS CL2
1C70 1214 WAIT DS CL2
1C72 1215 SAVIT DS CL2
1C74 1216 WORK DS CL2
1C76 1217 COUNT DS CL2
1218
1219 *****
1220 * DEFINED STORAGE AREA *
1221 *****
1000 1222 ORG X'1000'
1000 1223 BUFF EQU * MFCU PRINT BUFFERS
10FF 1224 DS CL256
1E00 1225 RDFD EQU *
1E7F 1226 DS CL128 READ FIELD
1E80 1227 RDCKFD EQU * READ CHECK FIELD
1EFF 1228 DS CL128
1F00 1229 PUFF EQU *
1F7F 1230 DS CL128 PUNCH FIELD
1F80 1231 PUCKFD EQU * PUNCH CHECK FIELD
1FFF 1232 DS CL128
1233
1234 *****
1235 * EQUATES *
1236 *****
1202 1237 CMND EQU EX2*2
0001 1238 XR1 EQU X'01*
0002 1239 XR2 EQU X'02*
0008 1240 ARR EQU X'08*
0208 1241 SBYTE0 EQU X'208*
0209 1242 SBYTE1 EQU X'209*
020A 1243 SBYTE2 EQU X'20A*
020B 1244 SBYTE3 EQU X'20B*
020C 1245 SBYTE4 EQU X'20C*
0212 1246 TEST EQU X'212*
0216 1247 LINK EQU X'216*
021A 1248 PRINT EQU X'21A*
021E 1249 UNPACK EQU X'21E*
0222 1250 HALT EQU X'222*
022A 1251 LOAD EQU X'22A*
00C0 1252 FLAG01 EQU X'CO*
0080 1253 FLAG0 EQU X'80*
0040 1254 FLAG1 EQU X'40*
0004 1255 FLAG5 EQU X'04*
0002 1256 FLAG6 EQU X'02*
0001 1257 FLAG7 EQU X'01*
0080 1258 FLAG10 EQU X'80*
0040 1259 FLAG11 EQU X'40*
0020 1260 FLAG12 EQU X'20*
0010 1261 FLAG13 EQU X'10*

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589734
PAGE 11

F026 5424 MFCU READ-PUNCH-PRINT TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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0008 1262 FLAG14 EQU X'08*
0004 1263 FLAG15 EQU X'04*
0040 1264 SNSW01 EQU X'40*
0010 1265 SNSW03 EQU X'10*
0040 1266 SNSW11 EQU X'40*
0020 1267 SNSW12 EQU X'20*
0080 1268 SNSW18 EQU X'80*
0080 1269 SNSW20 EQU X'80*
0040 1270 SNSW21 EQU X'40*
0020 1271 SNSW22 EQU X'20*
0010 1272 SNSW23 EQU X'10*
0008 1273 SNSW24 EQU X'08*
0004 1274 SNSW25 EQU X'04*
0002 1275 SNSW26 EQU X'02*
FFFF 1276 END
    
```

```

*
*
*
*
* SBYTE4
*
*
*
    
```

DATE 03NOV69 10FEB70 14APR70 29JUN70 15NOV70 15MAR71 30AUG71 PROG ID OF02-6
EC NO. 816523 816592 816678 816704 818905 818962 818667 PAGE 11

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589734
PAGE 11A

F026 5424 MFCU READ-PUNCH-PRINT TESTS

CROSS-REFERENCE

```

SYMBOL T LEN VALUE DEFN REFERENCES
ADATA A 002 1A9E 1119 0542 0543
ADDONE A 006 1008 0521 0570
ALLF A 002 1ABF 1140 0401 0595 0633 0777 0843 0889
ANY A 004 1599 0914 0919
AREAD A 002 1AA6 1123 0938
ARR C 001 0008 1240 0470 0510 0587 0687 0911
BADCD A 004 0C8C 0201 0197
BADCHA A 030 1A6E 1092 0385
BADLSR A 029 19F3 1089 0732* 0755 0808* 0880*
PADONE A 004 101B 0531 0520
BBIT A 004 15B3 0920 0917
BITS ON A 004 103F 0540 0536
BLANKS A 006 1860 1068 0517
BSYBUF A 004 114A 0614 0611 0616
BUFF A 001 1D00 1223 0100* 0101 0101* 0105 0266* 0274 0274* 0275 0275* 0278 0278* 0279
0279* 0295* 0308* 0321* 0341* 0342 0344 0344* 0367 0396 0409 0409*
0450* 0451* 0452 0452* 0453 0453* 1042 1042* 1121 1125
0712 0880 0881 0882
0718 0732 0733 0734
0724 0808 0809 0810
0267* 0282* 0346* 0351* 1043* 1048*
0939* 0951 0951* 0952 0953
0112 0114 0116
0942 0955
0227 0983 1016
0562
0704 0738 0744 0765 0926 0929 0935
0120
0593
0996
0959 0965 0984 0986
0961
0500 0502
0751 0762 0784
0070
0708
0714
0871
0475
0476 0478
0545* 0553 0553* 0554 0555
0499
0048
0073
0055* 0076* 0081* 0087* 0088* 0099* 0109* 0143* 0157* 0164* 0268* 0272*
0276* 0280* 0296* 0309* 0322* 0345* 0347* 0349* 0410* 0412 0414* 0416*
0446* 0448* 0454* 0455 0457* 0459* 0474 0498 0588 0592 0597* 0601
0606 0608 0643 0645 0649* 0653* 0676* 0678 0692 0697 0730 0802
0812 0820 0835 0870 0874 0925 0958 0993 1044* 1046*
0610 0618 0678*
0748* 0781* 0783 0811* 0822* 0841* 0853 0861 0867* 0872* 0883* 0884*
0899 0905*
0525
0145* 0169* 0230
0860
0731
0803
0517* 0518* 0521 0567 1119
0914
0950
0599
0596
0183 0186 0190
0411 0415
0079
0077
    
```

DATE 03NOV69 10FEB70 14APR70 29JUN70 15NOV70 15MAR71 30AUG71 PROG ID OF02-6
EC NO. 816523 816592 816678 816704 818905 818962 818667 PAGE 11A

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589734
PAGE 13

F026 5424 MFCU READ-PUNCH-PRINT TESTS

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEFN, REFERENCES. Includes symbols like PRTFD3, PRTFD4, PTCMND, PTDATA, PUCKFD, PUCMND, PUFD, PUHEAD, PUNCHD, RCCT, RDCKFA, RDCOMP, RDFD, RDHEAD, RDPU22, RDY, READCD, READIT, READPU, READ1, READ1A, READ11, REGROL, RESTR1, RESTR2, REST1, REST2, RIPCD5, RNUM, RT01, RT02, RT03, RT04, RT05, RT06, RT07, RT08, RTC9, SAME1, SAVE, SAVIT, SBYTE0, SBYTE1, SBYTE2, SBYTE3, SBYTE4, SECOND, SETBUF, SETB1, SETIND, SETPT, SETPU, SET2RD, SET43, SIXTY4, SLIP, SNSW01, SNSW03, SNSW11, SNSW12, SNSW18.

DATE 03NOV69 10FEB70 14APR70 29JUN70 15NOV70 15MAR71 30AUG71 PROG ID OF02-6
EC NO. 816523 816592 816678 816704 818905 818962 818667 PAGE 13

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589734
PAGE 13A

F026 5424 MFCU READ-PUNCH-PRINT TESTS

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEFN, REFERENCES. Includes symbols like SNSW20, SNSW21, SNSW22, SNSW23, SNSW24, SNSW25, SNSW26, SPACE, SPIDT, STABLE, STATUS, STAT2, STAYIN, STEAL, STEP, STORE, STORE1, STORE2, STOR E4, STRAIT, SWITCH, TAE, TABADD, TABLE, TABLE1, TEST, TESTIT, TURN, TURNB1, TURN2, UNBLNK, UNDE1, UNDE2, UNPACK, UPDATE, WAIT, WAITON, WAITUP, WAIT1, WAIT4, WAT, WHICH, WORD, WORK, WORK1, WT, WT1, XECU, XECUTE, XIT, XR1, XR2, ZERO.

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 03NOV69 10FEB70 14APR70 29JUN70 15NOV70 15MAR71 30AUG71 PROG ID OF02-6
EC NO. 816523 816592 816678 816704 818905 818962 818667 PAGE 13A

F026 5424 MFCU READ-PUNCH-PRINT TESTS

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E N INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-Y:2BQ B-4 |A6 F BB 2GA2 AC -P7/W5+H BB^M EA-OHE^8RZ OFE2% RA2BG /ZFJA-42<C /OH IDHF0260001
T+-Z5H7C +H BB^M EF3%HF^H#BA, F+0- E2<GOBVX /OZJO- HO-HGFCYHF^H:BA, F+--E2<G8BXL /OZ 20- 38HF0260002
T+-DOBX&< JHBF%< 8 &Y<2/ P|D2^R31 B7UK|17SF=HK|10 SF:.2/002^11X|. ~L20B7X /1C50-D ; CO 8/2F0260003
T+-, ,QA1U-M 2-D 14-DACO *RAD>0 D H_C-- -32UCY< JH BF%2/508& H<2Z |C *RJ8 | OK ?H GEL- KZ<F0260004
T+-ZMH HK2Z HCE2 -P19-0H^H9COGD-H #A/HAOH^HDC/ -3 2D Q< A1VG0GB J_ TL& GFP2-&-K &G /O% KT&F0260005
T+-/_FJ1-65^<C D K /,G|D)P01;GN8)P2BG /8AGO) L GGM^ A152-DD+~* K *BGD|Z8& HK2/ +*B DLQF0260006
T+->* -32DAM(A2 GF-2 &08- H<0I BETO GOG /OD% Y <^OHE^8RW3S -? 2D Q<BA-;FE&<A/- .FEZ P. F0260007
T+-?POH^BFURDE^ML 00*BG S.00&OAD-H E03? FZ%< J17FD0 8 &Y<27 GO-D%Z^MH GD<HAF6<<|17SF:H <|10 #R0F0260008
T+-OKH/>S+D E^MH &L% -72UAY#BAH A0- .^*BGB=7A2 ? 52Y*P+Y E^MHGDCY HD-GA= 0|OH^<A2G 8C 2 =E2F0260009
T+-1(OH^&608AGG^ E,T_9FZ%22115+^H *)^ &EQ%8A H<OA .^C-& -32DB28 -H <2/ J+ -BC|H&PLS FZ% -T F0260010
T+-2HG/8Z2Y|LO-D \$Q3D FZ_(; |H A&^HA *BGCEO:-AD \$CN2-P19-2YDG+ H E^MH&CLYBFZ%<P1^ -GV2 2TDF0260011
T+-3C2Y|DOM^BF2E -G5^0I*BG /DBQA9 -OH^BH? V2Y|LN^ -GV^2-KP /OH; J8 FA\$ /OHEOKHQE? VAT ^8-F0260012
T+-3=F24E2^H8G- 2IJCHOH^|8L-B -3 2DAZ(J17F,72 &2 8B HK2Z |+Z E^W2B GB#~K &G /00LOH^ BE-< 31YF0260013
T+-49- 6<OH^BFUE GF&300%8G /YF.AD EOH^BH?CB0- (H%8 GCJ,A= 4DOM^(H%G OCK,A= 4<CG2)-1_ JA D PQ<F0260014
T+-54F52\$Q-OAD-H \$M3 GF2^ 1172-D P+2 K ?HGD O GP2)- 1=GP8)^3> D-. /1C%<)^14 CG8)^/4 3:DF0260015
T+-67-3D D-. /1C \$A1 \$P1_-OHE(N%8 G /QD 6;|<-)^00 AD-H\$N^BGE12E 6 0|F)^00AD-H\$N2B GE12 4K8F0260016
T+-7DA- (OT31G-2 < JHBF5X /1*-A8 +F%BG /ZF.AZ22+ /OHS2+*0 A7^|E)^HA(3=G-8)^00 AD-H :#8F0260017
T+-8VF5<D J_-F,H #AH8OH^&63^ D-. /1C\$A1 \$P1_-OHE (23/ -T D 7_OH^ BH- H- #20-D) <B G SH 5H%F0260018
T+-9-2+<0 A17|E *\$^HALT-DB-32DCG B /,K.& %SOC2-KP S -D4 /15CED^JJD YOHM+|Z8G /,FG/Z >2C* -DYF0260019
T+-: \$OH^BH? 7OH^ +HUC A174-DAI D *)&4AGGMED^BBCSH 4 J15CED^JJD OHD +H-OAGF4^JL?^GFO < 8 6&F0260020
T+-#0,11_(-DE73& AGGMK :>GGM^ (-D^&LEAGGM(J1 5FD, --:CG2)^15 ^C DK /_P2Y^K+H K ?H :0%F0260021

F026 5424 MFCU READ-PUNCH-PRINT TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-3JD *:-ANB2Y* D+8 K ZBGD(? /OH K< *\$34 GF^ -E# KOH^+G-W ^^^ /OH EJTDEI|CCOH^BH?C CO- 28&F0260022
T+-<CIT /O2E0- |H<BGC1TA2 2-0- |I OAD-H\$P^BGD(% < JHBF57 /1C%CE2)P19-|D |^00;GP8 |^00 RH%F0260023
T+-=G-17^GP2< JH BF5^8-AMBA/ G+Y K ?HGAC> D-. /1C \$OH^BD^BGC5-4B ^ -<|<*)LX-GGP2UE- 8BAH #,DF0260024
T+-^B -H&A2GOC9, 2/4,A= =E2Y|C+ H *)-H&FCUDFZ?2D * #AAD\$2Y^HOH^BF2D HE5^ODC^BFZ? /OH EA-0 ^ DF0260025
T+-^FI, /OHS2A 8BAHA2/ GO- |1-H GACG8C2P /0 (- 65T&AD<84 /CKOH^ BFYDEFG&< J/7FF FDA- 4&F0260026
T+ / 8|D3S& |H AD04AFG^E0-HAD^H A ;HB *BGC^24 JB 3(HE_2HAF6<2 A1 WSE ^HAC|HA 8B GFQ RI-F0260027
T+ /A3FD# /1 ,+ D E^MH&C OADF<E^X-0 ADFYEX^HAGFQ2 JA \$; 2/ G|D? ^H GAC31 ^ |JATFD8 | J \$-8F0260028
T+ /B>E/D>C- 201A \$+>2&228&DEY8 JD \$2/ Q+>DEW2ADF< E% 2ADFYEX^CMBD.| /1 T+0DEW2BG /D AF/- QAMF0260029
T+ /CZT^HAD. |B /B 7OH^&B<BG /Y0+1 E^X<BG S.OI%HAD<# B /CKOH^ 48A1JC D^*1HBOH^ BDTD &S-F0260030
T+ /DU^ADS+0DEW3X OD-G2UA,B &AB(-D E?2BDD|0| JHBF2# -J1+OH^&= 06FO- REL-AD-G2D UKAAV *E:* :-YF0260031
T+ /E-2Y^FC &RPA) R+ &K -H&+CS D-. 2UA48-ACE2/ G+>D E^MHGH3C3GGM8&A1 40A JK7HGEC\$ D(, DAD 2TDF0260032
T+ /FE&3C3GGM8-A1 40A JQL/ ^-, 2U \$ /OHS2| 8H HH2Z SK ^66CYAD(-#2AC PO-H &TQBF, /AF JCOD : -F0260033
T+ /GND(-E,% ADQ7 /O^6+0&E^W3%HFZ0 02115+C *)|HE.3U FD-G2DB-8BAHA2/ &+B *)|HEF-OAD-H \$OH^ 0A8F0260034
T+ /H& /O48DA142/ HC DK /,E+>EXCG =FDE2^JG^|EDH^MH AAC35D-41^JD-20 |D -^31 G72<^/ ^G^2 NBQF0260035
T+ /I.CG8; ^/8^0-* K<3C3GGM8 /150A JY2BGC7\$ /10.OH^ JY2BGDV&8BAD^2Z HC DK /13OH^JY00 AD(Y PR8F0260036
T+ /HFD-. /O - 4BA*; (DPFT?4FZ3 A2J1Y+Y E^X<BD-G 2U #A2/17+U E^X O EFOHPTT-DD-G2U # A^AH 8H-F0260037
T+ /ATCY-FZ0<AJV YE8D02115+ H^)* &E-&88AD^2Z 2+H E^X|HEB<BG /YAD/U ;+D E^X|HEB<BG /Y AD/U RH&F0260038
T+ />C<-FZ3 UA| QOH^BF-DKFM. /1| Q+ HK *B&D^O<AAX \$FKQ<AAXHFQK<AAW 3FKQ2HJ1T<|<*)L- FGGM LD^F0260039
T+ /<70A N^CC1GGM 8-A150I K^LC3GGM 8A/150A N^CC1GGM 8-A150A LC&OAGF% EZCC6GFU(J1ZFDL 2-J< ^8 F0260040
T+ / (20H^BF2Q)F-| 0I2BG S.OI^HGTLC 1GGM8 /150A LK3C 3GGM8A/150A N^CC 1GGM8 /150I LN3- BB-0 *2^F0260041
T+ /+ 2Z G(ED&4-H GACMAF2202115+ Q *)^ &ER<6 JD^OHE L-22 GF<E,?HA+-B AGF^E,TC6GFU(J1 ,GFU 3D^F0260042
T+ /|YOHDLK^HDD2B G /,FE1X02BX /OH S2B2/1C /OHE1/2 R?^ YOH^BH? ^OH^ NU3-DD-G UAMAC & R61U =TMF0260043

F026 5424 MFCU READ-PUNCH-PRINT TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+/GT+ QDF*YR+ 0 DF\$<R+ 0AGF\$EY- -D-.2U *2BAIT2Y* D| 0=Q3F4GFU(J1 ZFD. J<8+H K 7H EF 8 PHGF0260044

T+/J; J1,F,4+ J1 ZF,40'A1_|E *\$*B AEB28 -Y<2Z V|A4 E>L0*F,*8A Y<2Z D|A\$E_30<GF<8HAM B2Z 8E-F0260045

T+/KRC30GGF|2/0- 2G1D9|A8E_08AGF\$ E,T\$DFZ0< J11F,2 0'A1_CED*\$J1Z2-D E<|<+|L-FGGP DAO LC0D 'S<F0260046

T+/LMGGDE,% AEGM /|HC&D*E11_OHE L2KBBD#M< J1ZCF4 | A1TFD#2-| 8 -Y <2Z H+ <*E2BCEFA * JO 6EMF0260047

T+/M|Q*HAET-DFZ3 DAJ7C-D*E1D9+-E E<XBGE8UHAB01 M6E8AGF\$E_PBGEGU 8 JHA2ZB.C ER61U LC E J: F0260048

T+/NH\$*YR00DF\$< RDOCAGF\$EY 8 GF\$ E,TC5GFU(J1ZFD C J<B|B *Q00AGGD E73C5GF4(J1_GFX 2 JU E14F0260049

T+/DE<|<+|L-FGGP 2DC4| J11FD# JM =0H*L2 4AGF\$*\$*B DD3T -/+5CO *Q1D >2YDGC D*EJ1_C- *E1Y 2B&F0260050

T+/P ,2BGE1-4BA* ;(1PF-0AGGKMG2G 7EEC2/12(J15FD3 2-EY| J15FD# /1D ROH*BF-DJFN<:DAD *+ E MCF0260051

T+/P#D-G2UB80211 5+ Q*)-H&H3Y GGL UAPFC D**JD=<|D *)E2AGGDE,?HABC- EGGL UAP-C DQE1D W| D JJ-F0260052

T+/Q6E-Y02115+-2 *)-H&(T- GGP2U 3 /OHE E4PNLY&FZ0 + JQPF,M+ AQHE-Y 9M1QH01 OBL-BGGP 2U - 2*QF0260053

T+/R1+-EEW2BGE78 8 JHA2ZA*CN2;P1# -2YD=H *)-H&DL4 AB-|2-MP /OHEOJM Q,* JOH*BG-D; A- 80H* JJ-F0260054

T+/E\$ /,AH/-82B\$ B /: 0-D; COWD<, /O*/2Y*H+ *)-H E<2BG /,AEAWK2AD :DAD*+ HK -H&NE5 -G52 *T*F0260055

T+/SXL*2-L*8&A1 52/ HOH*BF2DDF<P OD*BG /8AGO QO2B G /,AH//E2B\$B / = 0-D- COWD<, /O* /2Y* 3/ F0260056

T+/*SEL/ GGP2U # /OHEOJMR-? J+/ EXC-EFZ32UAH8D H H2/ EOH*BF/\$ /OH S2AGB E OH* 3 =G-8 3-UF0260057

T+/)G-2D J_-F,H #-AH8OH*E63D D-. /1CSA1 \$P1_-OHE PH2BG /\$N5WCO54A EDA EDA 1\$PE1DC C2KM J.HF0260053

T+/;Q0'I EDCHE5_ P1)V 02TE0'I 5*X T&<|L9+|C2DCC4_ R2)PT&CLA82E 0*. P9(PC2DC15;PA42X D5=E ;EZF0260059

T+/~L5*|HE<|H1*| K&DCR1*GD&<|H1*| K&EDA 5)-R5UCB5>| HE<\$E1*LSQ(-U84C X9=>X9=>X&<|A6*L SE<U EHEF0260060

T+/~+5MCX9=>X9=> X9=) 2(\$P52PRE<G N1DCM0).E&(XE0*L YO*\$LK4A 1;-P1*| T1*J E<GC8=LA44C D0;< 30MF0260061

T+///IOMA 02J 9=> C5_(.E(XE0*J E<G R1*E E(XD&<|K&G R1*E E<|D&+>X0*\$ LK4CP9(PC2DCA6*P AED *92F0260062

T+/SD5=J 0'I 0)X E04A 02J 9=) EDA EDCD02.A=|L22MA EDCD02.A=|L22MA EDA ED_.K4_.K4_. ED *TYF0260063

T+/S*EDA.K4_.K4_. K*LFO=J 5)ST&(X D:~LN1<PT1*|T1*J 6*P/1DCC2<PC4>L N1<PT1*|T1*J 5=L N02- M -F0260064

T+/T: <|H1*|K5)- R5UCB5>|HE<\$E1*L SQ(LA42N O_2T2DC M12|U5<\$E1*LS&(X D:D_ 92XT2DCA84C L1*D 3DQF0260065

F026 5424 MFCU READ-PUNCH-PRINT TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+/U58>(2-C0E<. L0)PK&<|A6*LS5)R 6*PA1FA-1\$PE1DC B9+.Y5)R 5=LN02/ 1<GTOMCB9+.Y5)R 5*U -KOF0260066

T+/V02)PT&<LA82E 0>LS:<.U8>/ 1<X DE(P084CD6)\$PO*L N1DA EDA EDA EDA EDA EDA E(-U5*| HE<<)RQF0260067

T+/A,2<PC4UCW0;1 12GL8\$PR1*GD&<| H1*|K&+SA8UCF0|) SIMCP6*XM0)XY&+. E0*\$N1<GR: (-U5*| H1*E E0 F0260068

T+/XW5)R 9=>X9=) 0=TC42N 0>|E0|) E9=|ROMCX9=>X94C C:<|L1MCS82PA4=> X9=>X&(|S6MC15*X T2*D Q0 F0260069

T+/Y/4*|Y&<XN0*\$ R6*PC8*|00*J 1<G TOMCC0)X8UC15MC S1*!05*LA6:/ 0)P DE<.L0)PK&<XNE(- R2)E =DDF0260070

T+/Z+0)XY1)PT1)V 5*X15;|AO_|E&<| HO)XAO=|E6MC15;| DE<LA82E 8>\$182| H1; .U5)-R2)PT0*. L1M 132F0260071

T+/DPO2TA6*GC82P RE+.E42PC82PD82P TE<LA82E 8>\$182| H1;I 8*R 2(| 1_\$ RE(| 42XN1;I 52R 5*U *QOF0260072

T+/K2)PT QT/8 GE -A)NF5H)- D A|C52& (AB GOA HC**X62EP 9A-<E=0L02|CO +Q A'D =B&F0260073

T+/X(|G12? 32*L 4*-P6*?7=|T9=PZ ::7_2-G5=>X**2|A /Q;.S8=|U9+PV9>\$ X94CY:>XZMEA,E61 2\$04 9,MF0260074

T+/_H\$W9?S6A-4)G K4_|L5(LN5)205*- 06(XRCVZ\$051*PN5 ;PV*-LM7A0*_.B02| D1<PE1\$G12TH2*V HKU\$ JB&F0260075

T+/>CK41<LM5+LU' |'B\$2I*EU'BPOA-U E2|C12*I 2-.3'|P 6**T9;X_2-P9*2FG S8=LV9>-Y:NA,\$F5 >\$6 3/2F0260076

T+/>=4) .L5(P05*T ROV_*PN9->4<GB02L E12-H2MZ.L05+L0B 12,+4_5E7>.U:+30 *|T=OHEHTZHOWZ:S ZDBZ ME<F0260077

T+/?9.B4>.2BJUZ+ MVR&PWIUEF101C/ =-QHC/HOF/8S1B-\$ <C&8|0GE2*7J5)X) 8;-,*||7=*7C/QW(UROQ 4S*F0260078

T+/04R6/Z:>?2#;# 78EEKM5JNNV)Q0), \$7(7;76ZA&U(DJMR GKDXH223(32=<LH 3(CM6(3-9>,>27\$= *<HD 108F0260079

T.J1SHS<UIKQXHBW DD: 2_+D=-DJHLEAM OE1-RWZ>*XR:-H-D B O&EA-*HBQD.TH6 +TO *,-F0260080

E***E7*=-DC*PH\$ =*7MEF| | C FZ ASC R A SO Q 16C10804710 81871=\$2F0260081



F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (REAC)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0A00          2      DECK 4
              3      START X'A00'
              4      *****
              5      *
              6      *      READ EVALUATION AND ADJUSTMENT DIAGNOSTIC
              7      *
              8      *****
              9      *      SECTION 3
             10      *****
             11      *      SECTION PREFACE
             12      *****
0A00 F032    OA01 13      DC      XL2'F032'      PROGRAM ID AND REVISION LEVEL
0A02 00      OA02 14      DC      XL1'00'      SECTION FLAGS
0A03 00      OA03 15      DC      XL1'00'      CURRENT ROUTINE NUMBER
0A04 0000    OA05 16      DC      XL2'0'      *
0A06 0A10    OA07 17      DC      AL2(RT01)      ADDRESS OF FIRST ROUTINE
0A08 0000    OA09 18      DC      XL2'0'      RESERVED
0A0A F04000  OA0C 19      SPUDT DC      XL3'F04000'      UNIT DEFINITION TABLE
0A0D E01000  OA0F 20      DC      XL3'E01000'
             21      *****
             22      *      ROUTINE 1 PREFIX
             23      *****
0A10 01      OA10 24      RT01 DC      XL1'01'      ROUTINE NUMBER
0A11 80      OA11 25      DC      XL1'80'      MANUAL INTERVENTION
0A12 FFFF    OA13 26      FFFF DC      XL2'FFFF'      LAST ROUTINE
             27      *****
0A14 3B C0 1460 28      SBF      FLAGS,X'CO'      *TURN OFF FIRST TIME THRU AND
             29      *      *FIRST DATA CARD FLAGS
             30      *      *TURN OFF ALL FLAGS
0A18 3B FF 1461 30      SBF      FLAGS2,X'FF'      TURN OFF ALL FLAGS
0A1C C2 01 0DAC 31      LA      STORE1+3,XR1      LOAD ADDRESS OF FIRST SENSE COMMAND
0A20 5C 03 04 00 32      GENIT MVC      4(4,XR1),0(XR1)      MOVE SENSE COMMAND INTO NEXT POSITION
0A24 D2 01 04   33      LA      4(XR1),XR1      INCREMENT XR1 TO POINT AT THIS SENSE
0A27 4E 01 00 1979 34      ALC      0(2,XR1),TWO      INCREMENT ADDRESS TO SENSE INTO
0A2C 4D 01 00 19CE 35      CLC      0(2,XR1),LAST      *CK FOR AND BRANCH IF NOT
0A31 C0 01 0A20 36      BNE      GENIT      *LAST SENSE COMMAND TO GENERATE
0A35 38 02 0A0C 37      TBN      SPUDT,X'02'      *CK FOR AND BRANCH
0A39 F2 10 25   38      JT      LD250      *IF 250 CPM
0A3C 3C 46 199D 39      MVI      D122,X'46'
0A40 3C 46 199E 40      MVI      D123,X'46'
0A44 3C 46 199F 41      MVI      D124,X'46'
0A48 0C 00 0D2A 199A 42      MVC      FIRSTD+3(1),D34      *LOAD CONSTANTS FOR
0A4E 0C 00 0D11 199A 43      MVC      MID+3(1),D34      *500 CPM
0A54 3C 1B 19C8 44      MVI      MINPUL,X'18'
0A58 0C 02 18F5 19C4 45      MVC      MIN-19,TWO50(3)
0A5E F2 87 58   46      J      INIT
             47      *
0A61 0C 00 0D2A 199B 48      LD250 MVC      FIRSTD+3(1),D68      *LOAD CONSTANTS FOR
0A67 0C 00 0D11 199C 49      MVC      MID+3(1),D77      *250 CPM
0A6D 0C 02 1815 19C1 50      MVC      TOSKEW-21,ONE62(3)
0A73 3C 12 198D 51      MVI      SKEW3,X'12'
0A77 3C 36 19C8 52      MVI      MINPUL,X'36'
0A7B 0C 02 18F5 19C7 53      MVC      MIN-19,FIVE00(3)
0A81 38 20 0A0E 54      TBN      SPUDT+2,X'20'      *CK FOR AND BRANCH IF
0A85 F2 90 31   55      JF      INIT      *LINE PRINTER IS NOT ASSIGNED
0A88 39 06 0A0F 56      TBF      SPUDT+3,X'06'      *CK FOR AND BRANCH
0A8C F2 90 2A   57      JF      INIT      *IF NOT '96 POSITION PRINTER
0A8F 3C 46 199E 58      MVI      D123,X'46'
0A93 3C 35 199F 59      MVI      D124,X'35'
0A97 3C E4 19A1 60      MVI      FFEA,X'E4'
0A9B 3C 05 131D 61      MVI      TRAIL+2,X'05'
0A9F 3C 05 1323 62      MVI      TRAIL1+2,X'05'
0AA3 3C 05 1340 63      MVI      TRAIL2+2,X'05'
0AA7 3C 05 135D 64      MVI      TRAIL3+2,X'05'
0AAB 3C 1B 19C8 65      MVI      MINPUL,X'18'
0AAF 3C 04 1457 66      MVI      DA+2,X'04'
0AB3 0C 04 1954 1963 67      MVC      POS-10,SHORT(5)
0AB9 3C FF 1873 68      INIT MVI      TABLEF+121,X'FF'      *SET ALL BITS ON
0ABD 0C 78 1872 1873 69      MVC      TABLEF+120(121),TABLEF+121 *IN THE -AND- TABLE

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F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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0AC3 3C 00 1AF9 70      MVI      TABLE+121,X'00'      *SET ALL BITS OFF
0AC7 0C 78 1AF8 1AF9 71      MVC      TABLE+120(121),TABLE+121 *IN THE -OR- TABLE
0ACD 3C 00 1DBD 72      MVI      ALLOUT,X'00'
0AD1 0C 38 1C8C 1DBD 73      MVC      ALLOUT-1,ALLOUT(60)
0AD7 3C 00 1C68 74      MVI      SKEW20,X'00'
0ADB 0C F3 1C67 1C68 75      MVC      SKEW20-1,SKEW20(244)      CLEAR SKEW AREAS
0AE1 0C 01 19A7 1975 76      MVC      LEAD,ZERO(2)      CLEAR LEADING EDGE COUNTER
0AE7 0C 05 1973 1A86 77      MVC      WORK3,TABLE0+6(6)      CLEAR LEADING EDGE TIME PRINTOUT
0AED 38 80 020B 78      WHICH TBN      SBYTE3,SNSW18
0AF1 F2 10 1B 79      JT      INIT2
0AF4 3A 08 0CDF 80      SBN      DATA1+1,X'08'
0AF8 3A 08 0D3C 81      SBN      DATA2+1,X'08'
0AFC 3A 08 1008 82      SBN      DATA3+1,X'08'
0B00 3C F8 0C7F 83      MVI      DATA4+1,X'F8'
0B04 3C F8 1000 84      MVI      DATA5+1,X'F8'
0B08 3C F8 1023 85      MVI      DATA6+1,X'F8'
0B0C F2 87 18 86      J      INIT3
             87      *
0B0F 3B 08 0CDF 88      INIT2 SBF      DATA1+1,X'08'
0B13 3B 08 0D3C 89      SBF      DATA2+1,X'08'
0B17 3B 08 1008 90      SBF      DATA3+1,X'08'
0B1B 3C F0 0C7F 91      MVI      DATA4+1,X'F0'
0B1F 3C F0 1000 92      MVI      DATA5+1,X'F0'
0B23 3C F0 1023 93      MVI      DATA6+1,X'F0'
0B27 0C 79 17FA 17FB 94      INTT3 MVC      SKEW40,SKEW40+1(122)
0B2D 0C 79 1780 1781 95      MVC      SKEW30,SKEW30+1(122)
0B33 0C 79 1706 1707 96      MVC      EMITER,EMITER+1(122)
0B39 0C 79 168C 168D 97      MVC      CELL1,CELL1+1(122)
0B3F 0C 79 1612 1613 98      MVC      CELL18,CELL18+1(122)
0B45 3C 01 1598 99      MVI      SPARE1,X'01'
0B49 0C 78 1597 1598 100     MVC      SPARE1-1,SPARE1(121)
0B4F 0C 03 188A 1936 101     MVC      THEM,SECD(4)
0B55 38 80 020B 102     TBN      SBYTE3,SASW18
0B59 F2 90 06 103      JF      LDATA
0B5C 0C 03 188A 1932 104     MVC      THEM,PRIM(4)
0B62 38 80 1460 105     LDATA TBN      FLAGS,FLAGO      *CK FOR AND BRANCH IF
0B66 F2 10 18 106     JT      RDCNTR      *NOT FIRST TIME THRU
0B69 C0 87 021A 107     B      PRINT      *PRINT
0B6D 42 108     DC      XL1'42'      *LOAD
0B6E 19 109     DC      IL1'25'      *DATA
0B6F 188A 110     DC      AL2(THEM)      *CARDS
0B71 F0E4 111     DC      XL2'FOE4'      *
0B73 C0 87 021A 112     B      PRINT      *PRINT
0B77 06 113     DC      XL1'06'      *NOTE--UDT CARD
0B78 20 114     DC      IL1'32'      *MUST BE CORRECT--
0B79 192E 115     DC      AL2(UDT)      *
0B7B 0C 87 0222 116     B      HALT      *HALT TC LOAD
0B7C F0E4 117     DC      XL2'FOE4'      *DATA CARDS
0B81 31 F5 19CC 118     RDCNTR LIO      LCRD,X'F5'
0B85 F3 F1 05 119     SIO      X'05',X'F1'
0B88 C1 F1 0888 120     TIO      *,X'F1'
0B8C 3D C3 1AC0 121     CLI      RDFD,X'C3'
0B90 F2 81 92 122     JE      CKINFO      *CK FOR AND BRANCH
0B93 38 80 1460 123     TBN      FLAGS,FLAGO      *IF CONTRCL CARD
0B97 F2 10 43 124     JT      BEFCRE      *CK FOR AND BRANCH IF
0B9A 3A 80 1460 125     SBN      FLAGS,FLAGO      *NOT FIRST TIME THRU
0B9F C0 87 021A 126     B      PRINT      *TURN ON FIRST TIME THRU FLAG
0BA2 46 127     DC      XL1'46'      *PRINT
0BA3 23 128     DC      IL1'35'      *
0BA4 184D 129     DC      AL2(MANY)      *
0BA6 F0E0 130     DC      XL2'FOE0'      *
0BA8 C0 87 0222 131     B      HALT      *
0BAC F0E0 132     DC      XL2'FOE0'      *
0BAE 30 00 1983 133     SNS      WORK-4,X'00'
0BB2 C0 87 021A 134     B      PRINT      *READ NO OF CARDS TO BE READ PER PASS
0BB6 46 135     DC      XL1'46'      *PRINT
0BB7 24 136     DC      IL1'36'      *
0BB8 1871 137     DC      AL2(SELECT)

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F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
	0B8A	FOE1			
	0B8C	CO 87 0222			
	0B8D	FOE1			
	0BC2	30 00 1985			
	0BC6	CO 87 021A			
	0BCA	46			
	0BCB	1F			
	0BCC	151E			
	0BCE	FOE2			
	0BDD	CO 87 0222			
	0BD4	FOE2			
	0BD6	30 00 1967			
	0BDA	F2 87 82			
	0BDD	CO 87 0222			
	0BE1	FOE0			
	0BE3	30 00 1989			
	0BE7	35 F0 1588			
	0BE8	F2 90 06			
	0BEE	OC 01 1983 1989			
	0BF4	CO 87 0222			
	0BF8	FOE1			
	0BFA	30 00 1969			
	0BFE	39 FF 1988			
	OC02	F2 90 06			
	OC05	OC 00 1985 1989			
	OC08	CO 87 0222			
	OC0F	FOE2			
	OC11	30 00 1989			
	OC15	35 F0 1588			
	OC19	F2 90 43			
	OC1C	OC 01 1987 1989			
	OC22	F2 87 3A			
	OC25	OC 00 198A 1A9D			
	OC28	39 CF 19AF			
	OC2F	F2 90 0E			
	OC32	39 CF 1984			
	OC36	F2 90 07			
	OC39	39 OF 1967			
	OC3D	F2 10 28			
	OC40	CO 87 021A			
	OC44	C6			
	OC45	16			
	OC46	14FF			
	OC48	FOE3			
	OC4A	CO 87 0222			
	OC4E	FOE3			
	OC5C	CO 87 0881			
	OC54	CO 87 021A			
	OC58	C6			
	OC59	19			
	OC5A	188A			
	OC5C	F2 87 23			
	OC5F	CO 87 021E			
	OC63	C6			
	OC64	1987			
	OC66	198A			
	OC68	CO 87 021A			
	OC6C	01			
	OC6D	0E			
	OC6E	146F			
	OC70	CO 87 021A			
	OC74	C6			
	OC75	0E			
	OC76	198A			
	OC78	CC 02 15AA 1991			
	OC7E	C1 F0 CC54			
	OC82	38 40 1460			
	OC86	CO 90 0D37			

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
	OC8A	OD 01 1986 1991			
	OC90	F2 81 09			
	OC93	OD 01 1986 1999			
	OC99	F2 82 0A			
	OC9C	3A 20 1460			
	OCA0	OC 01 1986 1993			
	OCA6	OC 00 198E 1975			
	OCAC	OC 02 190B 1991			
	OCB2	OC 02 190E 1991			
	OCB8	OC 79 17FA 17FB			
	OCBE	OC 79 1780 1781			
	OC04	OC 02 182A 1992			
	OCCA	3C 01 1C86			
	OCCE	0C 1C 1C85 1C86			
	OCDA	OC 02 19A5 1991			
	OCDA	31 F5 19CC			
	OCDE	F3 F1 06			
	OCE1	OC 01 196D 1993			
	OCE7	C2 01 1C80			
	OCEB	OD 01 19B6 1993			
	OCF1	CO 81 0D89			
	OCF5	06 01 196D 1993			
	OCF8	OD 01 196D 1986			
	OD01	F2 01 19			
	OD04	70 F0 01			
	OD07	78 24 01			
	OD0A	CO 90 0D04			
	OD0E	C2 02 0000			
	OD12	36 02 0A13			
	OD16	CO 84 0D12			
	OD1A	F2 87 8C			
	OD1D	70 F0 01			
	OD20	78 24 01			
	OD23	CO 90 0D10			
	OD27	C2 02 0000			
	OD2B	36 02 0A13			
	OD2F	CO 84 0D2B			
	OD33	CO 87 0CF5			
	OD37	31 F5 19CC			
	OD38	F3 F1 06			
	OD3E	OC 03 1491 1492			
	OD44	C2 01 0000			
	OD48	30 F0 198D			
	OD4C	38 18 198D			
	OD50	CO 10 0D48			
	OD54	D2 01 01			
	OD57	30 F0 198D			
	OD58	38 04 198D			
	OD5F	CO 90 0D54			
	OD63	34 01 19A7			
	OD67	OF 01 19A7 197B			
	OD6D	06 23 1973 1967			
	OD73	36 01 0A13			
	OD77	CO 84 0D6D			
	OD78	OC 03 1491 1971			
	OD81	3A 00 1460			
	OD85	CO 87 0C8A			
	OD89	30 F0 198D			
	OD8D	38 18 198D			
	OD91	CO 10 0D89			

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
OD95 OC 01 198D 19A7 274 MVC PLAY,LEAD(2) LOAD LEADING EDGE LOOP COUNT
OD98 OF 01 198D 1977 275 SUB1 SLC PLAY,GNE(2) *LOOP UNTIL ABOUT
ODA1 CO 87 0DA5 276 B **4 *8 SAMPLES AHEAD
ODA5 CO 01 0D9B 277 BNZ SUB1 *ALLOW READ
278 *****
ODA9 30 FO 1C81 279 STORE1 SNS DATFLC+1,X*FO*
ODAD 280 DS 4CL128
OFAD 06 11 19A5 1993 281 AZ COUNT(3),D1(2) INCREMENT ACTUAL CARD COUNT
OFB3 OD 02 19B2 1991 282 CLC CARDS,D00(3) *CK FOR AND BRANCH IF
OFB9 F2 81 10 283 JE FINISH *NUMBER OF CARDS NOT SPECIFIED
OFBC 06 11 19AA 1993 284 AZ CARDCT(3),D1(2) ADD 1 TO CARD COUNT
OFC2 OD 02 19AA 19B2 285 CLC CARDCT,CARDS(3) *CHECK FOR AND BRANCH IF TOTAL NO.
OFC8 CO 01 0FDA 286 BNE WAIT *OF CARDS SPECIFIED NOT READ YET
OFCC OC 02 19AA 1991 287 FINISH MVC CARDCT,D00(3) ZERO CARD COUNT AREA
OFD2 CO 87 1273 288 B SETUP
OFD6 CO 87 102A 289 B PRTOU
OFDA OD 01 19BA 19AC 290 WAIT CLC CNTRL,DELAY(2) *CHECK FOR AND BRANCH IF
OFED F2 81 1c 291 JE CKRDY *DELAY HAS BEEN COMPLETED
OFEB 06 01 19AC 1993 292 AZ DELAY(2),D1(2) INCREMENT DELAY COUNTER
OFEB 35 01 1969 293 L D6579,XR1 *DELAY
OFED 36 01 0A13 294 CLV1 A FFFF,XR1 *100
OFF1 CO 84 0FED 295 BH DLY1 *MSEC
OFF5 CO 87 0FDA 296 B WAIT
OFF9 OC 01 19AC 1991 297 CKRDY MVC DELAY,D00(2) ZERO DELAY COUNTER
OFFF C1 FO 1012 298 DATA5 TIO NTRDY,X*FO* BRANCH TO HALT IF NOT READY
1003 31 F5 19CC 299 RDNEXT LIO LORD,X*F5*
1007 F3 F1 06 300 DATA3 SIG X*06*,X*F1* START NEXT CARD
100A CO 87 1273 301 B SETUP
100E CO 87 0CE1 302 B CLEAR
303 *
1012 CO 87 021A 304 NTRDY B PRINT *
1016 46 1016 305 DC XL1*46* *
1017 4A 1017 306 DC IL1*74* *
1018 18D4 1018 307 DC AL2(MAKE) *
101A FOE5 1018 308 DC XL2*FOE5* *
101C CO 87 0222 309 B HALT *HALT FOR DEVICE
1020 FOE5 1021 310 DC XL2*FOE5* *TO BE MADE READY
1022 C1 FO 0FCC 311 DATA6 TIO FINISH,X*FO* BRANCH TO PRINT RESULTS IF NOT RDY
1026 CO 87 1003 312 B RDNEXT
313 *
314 *****
315 * SETUP AND PRINT INFORMATION STORED
316 *****
317 * SETUP CELL 18 PRINTOUT
318 *****
102A C2 01 1A80 319 PRTOU LA TABLE,XR1 LOAD ADDRESS OF -OR- TABLE
102E C2 02 1599 320 LA TAB00,XR2 LOAD ADDRESS OF CELL 18 OUTPUT
1032 OC 00 19A2 199D 321 MVC LCOPI(1),D122 LOAD LOOP COUNT
1038 78 08 00 322 CKORS TBN O(,XR1),X*08* *CK FOR AND BRANCH IF CELL 18
103B F2 10 06 323 JT CKANDS *WAS EVER COVERED
103E BC 40 00 324 MVI D(,XR2),X*40* PLACE BLANK IN MESSAGE
1041 F2 87 0F 325 J ADDONE
1044 78 08 7A 326 CKANDS TBN 122(,XR1),X*08* *CK FOR AND BRANCH IF CELL 18
1047 F2 10 06 327 JT ALWAYS *WAS ALWAYS COVERED
104A BC 61 00 328 MVI O(,XR2),X*61* PLACE SLASH IN MESSAGE
104D F2 87 03 329 J ADDONE
1050 BC 60 00 330 ALWAYS MVI O(,XR2),X*60* PLACE DASH IN MESSAGE
1053 OF 00 19A2 1977 331 ADDONE SLC LOOPI(1),ONE *DECREMENT LOOP COUNT AND
1059 CO 61 1067 332 BZ CHECK1 *BRANCH WHEN IT GOES TO ZERO
105C D2 01 01 333 LA 1(,XR1),XR1 *INCREMENT BOTH
1060 E2 02 01 334 LA 1(,XR2),XR2 *INDEX REGISTERS
1063 CO 87 1038 335 B CKORS
336 *
337 *****
338 * SETUP CELL 1 PRINTOUT
339 *****
1067 C2 01 1A80 340 CHECK1 LA TABLE,XR1 LOAD ADDRESS OF -OR- TABLE
1068 C2 02 1613 341 LA TABFF,XR2 LOAD ADDRESS OF CELL 1 OUTPUT

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
106F OC 00 19A2 199D 342 MVC LOOPI(1),D122 LOAD LOOP COUNT
1075 78 10 00 343 MOVE1 TBN O(,XR1),X*10* *CK FOR AND BRANCH IF CELL 1
1078 F2 10 06 344 JT MOVE2 *WAS EVER COVERED
107B BC 40 00 345 MVI O(,XR2),X*40* PLACE BLANK IN MESSAGE
107E F2 87 0F 346 J MOVE4
1081 78 10 7A 347 MOVE2 TBN 122(,XR1),X*10* *CK FOR AND BRANCH IF CELL 1
1084 F2 10 06 348 JT MOVE3 *WAS ALWAYS COVERED
1087 BC 61 00 349 MVI O(,XR2),X*61* PLACE SLASH IN MESSAGE
108A F2 87 03 350 J MOVE4
108D BC 60 00 351 MOVE3 MVI O(,XR2),X*60* PLACE DASH IN MESSAGE
1090 OF 00 19A2 1977 352 MOVE4 SLC LOOPI(1),ONE *DECREMENT LOOP COUNT AND
1096 CO 81 10A4 353 BZ MOVES *BRANCH WHEN IT GOES TO ZERO
109A D2 01 01 354 LA 1(,XR1),XR1 *INCREMENT BOTH
109D E2 02 01 355 LA 1(,XR2),XR2 *INDEX REGISTERS
10A0 CO 87 1075 356 B MOVE1
357 *****
358 * SETUP EMITTER PRINTOUT
359 *****
10A4 C2 01 1A80 360 MOVE5 LA TABLE,XR1 LOAD ADDRESS OF -OR- TABLE
10A8 C2 02 168D 361 LA TABEE,XR2 LOAD ADDRESS OF EMITTER OUTPUT
10AC OC 00 19A2 199D 362 MVC LOOPI(1),D122 LOAD LOOP COUNT
10B2 78 24 00 363 MOVE6 TBN O(,XR1),X*24* *CK FOR AND BRANCH IF
10B5 F2 10 06 364 JT MOVE7 *EMITTER AND ALLOW RD WAS EVER UP
10BB BC 40 00 365 MVI O(,XR2),X*40* PLACE BLANK IN MESSAGE
1088 F2 87 0F 366 J MOVE9
367 *
10BE 78 24 7A 368 MOVE7 TBN 122(,XR1),X*24* *CK FOR AND BRANCH IF
10C1 F2 10 06 369 JT MOVE8 *EMITTER AND ALLOW RD WAS ALWAYS UP
10C4 BC 61 00 370 MVI O(,XR2),X*61* PLACE SLASH IN MESSAGE
10C7 F2 87 03 371 J MOVE9
372 *
10CA BC C5 00 373 MOVE8 MVI O(,XR2),X*C5* PLACE -E- IN MESSAGE
10CD OF 00 19A2 1977 374 MOVE9 SLC LOOPI(1),ONE *DECREMENT LOOP COUNT AND
10D3 CO 81 1CE1 375 BZ MOVE10 *BRANCH WHEN IT GOES TO ZERO
10D7 D2 01 01 376 LA 1(,XR1),XR1 *INCREMENT BOTH
10DA E2 02 01 377 LA 1(,XR2),XR2 *INDEX REGISTERS
10DD CO 87 10B2 378 B MOVE6
379 *****
380 * SETUP SPARE PROBE PRINTOUT
381 *****
10E1 38 07 1460 382 MOVE10 SBF FLAGS,X*07* CLEAR SPARE PROBE FLAGS
10E5 C2 01 1A80 383 LA TABLE,XR1 LOAD ADDRESS OF -OR- TABLE
10E9 C2 02 151F 384 LA TABSPR,XR2 LOAD ADDRESS OF SPARE PROBE OUTPUT
10ED OC 00 19A2 199F 385 MVC LOOPI(1),D124 LOAD LOOP COUNTER
10F3 78 01 00 386 MOVE11 TBN O(,XR1),X*01* *CK FOR AND BRANCH IF SPARE PROBE
10F6 F2 10 0A 387 JT MOVE12 *WAS EVER UP
10F9 BC 40 00 388 MVI O(,XR2),X*40* PLACE BLANK IN MESSAGE
10FC 3A 01 1460 389 SBN FLAGS,FLAG7
1100 F2 87 17 390 J MOVE14
391 *
1103 78 01 7A 392 MOVE12 TBN 122(,XR1),X*01* *CK FOR AND BRANCH IF SPARE PROBE
1106 F2 10 0A 393 JT MOVE13 *WAS ALWAYS UP
1109 BC 61 00 394 MVI O(,XR2),X*61* PLACE SLASH IN MESSAGE
110C 3A 04 1460 395 SBN FLAGS,FLAG5
1110 F2 87 07 396 J MOVE14
397 *
1113 BC 60 00 398 MOVE13 MVI O(,XR2),X*60* PLACE DASH IN MESSAGE
1116 3A 02 1460 399 SBN FLAGS,FLAG6
111A OF 00 19A2 1977 400 MOVE14 SLC LOOPI(1),ONE *DECREMENT LOOP COUNT AND
1120 CO 81 112E 401 BZ MOVE15 *BRANCH WHEN IT GOES TO ZERO
1124 D2 01 01 402 LA 1(,XR1),XR1 *INCREMENT BOTH
1127 E2 02 01 403 LA 1(,XR2),XR2 *INDEX REGISTERS
112A CO 87 10F3 404 B MOVE11
405 *
112E 38 04 1460 406 MOVE15 TBN FLAGS,FLAG5 *CK FOR AND BRANCH IF THE SPARE
1132 F2 10 24 407 JT MOVE17 *PROBE HAS PULSE VARIATION
1135 38 02 1460 408 TBN FLAGS,FLAG6 *CK FOR AND BRANCH IF SIGNAL
1139 F2 10 09 409 JT MOVE16 *WAS EVER UP

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic data for F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ) including object codes like 113C, 1142, 1145, etc., and source statements like MOVE DOWN INTO SPARE PROBE MESSAGE, *CK FOR AND BRANCH IF SIGNAL, etc.

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic data for F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ) including object codes like 11E1, 11E3, 11E7, etc., and source statements like *COLUMN, *CK FOR AND BRANCH IF THERE WERE NO *DATA PULSES LESS THAN MINIMUM -18- MOVE -8- INTO MESSAGE, etc.

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and diagnostic instructions for S/3 read evaluation.

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and diagnostic instructions for S/3 read evaluation, including program indicator flags.

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
				682	* FLAG12 BIT 2-SKIP SPARE PROBE DATA PRINTOUT
				683	* FLAG13 BIT 3-FIRST * WAS IN CELL 1 TABLE
				684	* FLAG14 BIT 4-SKEW OF LEADING EDGE HAS BEEN CHECKED
				685	* FLAG15 BIT 5-ALL SKEW CHECKING HAS BEEN PERFORMED
				686	* FLAG16 BIT 6
				687	* FLAG17 BIT 7
				688	*****
				689	* MESSAGES
				690	*****
1462	404040C3C4E240C3	146F	691	CC DC	CL14* CDS COL DLY*
146A	D6D340C4D3E8		691		
1470	D3C5C1C4C9D5C740	149B	692	EDGE DC	CL44*LEADING EDGE TO ALLOW READ IS 0000 MICRO-SEC*
1478	C5C4C7C54CE3D640		692		
1480	C1E3D3D6E640D9C5		692		
1488	C1C440C5E24CF0F0		692		
1490	F0F040D4C9C3D9D6		692		
1498	60E2C5C3		692		
149C	C3C1D5C4E240D9C5	14A9	693	READEM DC	CL14* CARDS READ 000*
14A4	C1C440CF0F0		693		
14AA	C3D6D3E4D4D540C3	14BA	694	CKEM DC	CL17* COLUMN CHECKED 00*
14B2	C8C5C3D2C5C440F0		694		
14BA	F0		694		
14BB	C3C5D3D340F1F840	14C2	695	ROW18 DC	CL8*CELL 18 *
14C3	C3C5D3D34040F140	14CA	696	ROW1 DC	CL8*CELL 1 *
14CB	C5D4C9E3E3C5D940	14D2	697	EMIT DC	CL8*EMITTER *
14D3	E2D7C1D9C540C3C5	14E5	698	SPARE DC	CL23* SPARE CELL PROBE
14DE	D3D340D7D9D6C2C5		698		
14E3	4C4C404C4C404C		698		
14EA	C9D5C3D6D9D9C5C3	14FF	699	BAD1 DC	CL22* INCORRECT CONTROL CARD*
14F2	E340C3D6D5E3D9D6		699		
14FA	D340C3C1D9C4		699		
1500	C5D5E3C5D940D5E4	151E	700	MSEC DC	CL31* ENTER NUMBER OF 100 MSEC DELAYS*
1508	D4C2C5D940D6C640		700		
1510	F1F0F040D4E2C5C3		700		
1518	40C4C5D3C1E8E2		700		
			151F	701	TABSPR EQU *
151F			1598	702	SPARE1 DS CL122
			1599	703	TAB00 EQU *
1599			1612	704	CELL18 DS CL122
			1613	705	TABFF EQU *
1613			168C	706	CELL1 DS CL122
			168D	707	TABEE EQU *
168D			1706	708	EMITER DS CL122
1707			178C	709	SKEN30 DS CL122
1781			17FA	710	SKEN40 DS CL122
17FB	40E40740		17FE	711	UP DC CL4* UP *
17FF	C4D6E6D5		1802	712	DOWN DC CL4* DCWN*
1803	C3C1D5C4E240C5E7	182A	713	TOSKEW DC	CL40* CARDS EXCEEDING 81 MICROSECOND SKEW 000*
1808	C3C5C5C4C9D5C740		713		
1813	4CF8F14CD4C9C3D9		713		
1818	D6E2C5C3D6D5C440		713		
1823	E2D2C5E640F0F0F0		713		
1828	C5D5E3C5D940D5E4	184D	714	MANY DC	CL35* ENTER NUMBER OF CARDS TO BE CHECKED*
1833	D4C2C5D940D6C640		714		
1838	C3C1E9C4E240E3D6		714		
1843	40C2C540C3C8C5C3		714		
1846	D2C5C4		714		
184E	C5D5E3C5D940D5E4	1871	715	SELECT DC	CL36* ENTER NUMBER OF COLUMN TO BE CHECKED*
1856	D4C2C5D940D6C640		715		
185E	C3D6D3E4D4D540E3		715		
1866	D640C2C540C3C8C5		715		
186E	C3D2C5C4		715		
1872	D3D6C1C440C4C1E3	188A	716	THEM DC	CL25* LOAD DATA CARDS INTO XXXX*
187A	C140C3C1D9C4E240		716		
1882	C9D5E3D640E7E7E7		716		
188A	E7		716		
188B	D7D9C5E2E240C8C1	18BA	717	DC	CL48* PRESS HALT RESET WITH MFCU READY TO CONTINUE OR *
1893	D3E340D9C5E2C5E3		717		

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1898	40E6C9E3C840D4C6		717		
18A3	C3E440D9C5C1C4E8		717		
18AB	40E3D640C3D6D5E3		717		
18B3	C9D5E4C540D6D940		717		
18BB	D5D6E340D9C5C1C4	18D4	718	MAKE DC	CL26* NOT READY TO PRINT RESULTS*
18C3	E840E3D640D7D9C9		718		
18CB	D5E340D9C5E2E4D3		718		
18D3	E3E2		718		
18D5	C3C5D3D340F1F840	1908	719	MIN DC	CL52* CELL 18 DATA PULSES LESS THAN XXX MICRO-SEC MINIMUM *
18DD	C4C1E3C140D7E4D3		719		
18E5	E2C5E240D3C5E2E2		719		
18ED	40E3C8C1D540E7E7		719		
18F5	E740D4C9C3D9D660		719		
18FD	E2C5C340D4C5D5C9		719		
1905	D4E4D440		719		
1909	F0F0F0	190B	720	LESS18 DC	CL3*000*
190C	F0F0F0	190E	721	LESS1 DC	CL3*000*
190F	D5D6E3C56060E4C4	192E	722	UDT DC	CL32* NOTE--UDT CARD MUST BE CORRECT--*
1917	E340C3C1D9C440D4		722		
191F	E4E2E340C2C540C3		722		
1927	D6D9D9C5C3E35060		722		
192F	D7D9C9D4	1932	723	PRIM DC	CL4* PRIM*
1933	E2C5C3C4	1936	724	SECD DC	CL4* SECD*
1937	C5C1C3C840D7D6E2	195E	725	POS DC	CL40* EACH POSITION REPRESENTS 9.12 MICRO-SEC*
193F	C9E3C9D6D540D9C5		725		
1947	D7D9C5E2C5D5E3E2		725		
194F	4040F94BF1F240D4		725		
1957	C9C3D9D660E2C5C3		725		
195F	F1F84BF2F4	1963	726	SHORT DC	CL5* 18.24*
			727	*****	*****
			728	*	CONSTANTS
			729	*****	*****
1964	F2F7F3F6	1967	730	F2736 DC	DL4* 2736*
1968	19B3	1969	731	D6579 DC	IL2* 6579*
196A	FF86	196B	732	FF86 DC	XL2* FF86*
196C	F0F0	196D	733	COLCK DC	DL2* 00*
196E	000000000000	1973	734	WCRK3 DC	XL6* 0*
1974	0000	1975	735	ZERO DC	XL2* 0*
1976	0001	1977	736	CNE DC	XL2* 1*
1978	0002	1979	737	TWO DC	XL2* 2*
197A	0005	197B	738	FIVE DC	XL2* 0005*
197C	000000000000	1981	739	DC	XL6* 0*
1982	000000000000	1987	740	WORK DC	XL6* 0*
1988	0000	1989	741	WORK2 DC	XL2* 0*
198A	00000000	198D	742	PLAY DC	XL4* 0*
198E	FF	198E	743	SAVEF DC	XL1* FF*
198F	F0F0F0	1991	744	D00 DC	DL3* 000*
1992	F0F1	1993	745	D1 DC	DL2* 01*
1994	F1F5	1995	746	D15 DC	DL2* 15*
1996	F3F2	1997	747	D32 DC	DL2* 32*
1998	F3F3	1999	748	D33 DC	DL2* 33*
199A	20	199A	749	D34 DC	IL1* 32*
199B	44	199B	750	D68 DC	IL1* 68*
199C	40	199C	751	D77 DC	IL1* 77*
199D	7A	199E	752	D122 DC	IL1* 122*
199E	7A	199E	753	D123 DC	IL1* 122*
199F	60	199F	754	D124 DC	IL1* 109*
19A0	FFEE	19A1	755	FFEE DC	XL2* FFEE*
19A2	00	19A2	756	LOOP1 DC	XL1* 0*
19A3	F0F0F0	19A5	757	COUNT DC	DL3* 000*
19A6	0000	19A7	758	LEAD DC	XL2* 0*
19A8	C00000	19AA	759	CARDCT DC	XL3* 0*
19AB	F0F0	19AC	760	DELAY DC	DL2* 00*
19AD	C000	19AE	761	C DC	XL2* 0*
19AF	00000000	19B2	762	CARDS DC	XL4* 0*
19B3	00000000	19B6	763	C COLUMN DC	XL4* 0*
19B7	00000000	19BA	764	CNTRL DC	XL4* 0*
19BB	00	19BB	765	SKEW1 DC	XL1* 0*

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
198C	00	198C	766	SKEW2 DC	XL1'0'
198D	09	198D	767	SKEW3 DC	XL1'9'
198E	00	198E	768	SKEW4 DC	XL1'0'
198F	F1F6F2	19C1	769	ONE62 DC	CL3'162'
19C2	F2F5F0	19C4	770	TWO50 DC	CL3'250'
19C5	F5F0F0	19C7	771	FIVE00 DC	CL3'500'
19C8	00	19C8	772	MINPUL DC	XL1'0'
19C9	00	19C9	773	C:18 DC	XL1'0'
19CA	00	19CA	774	CT1 DC	XL1'0'
19CB	1A00	19CC	775	LDRD DC	AL2(RDFD)
19CD	1D81	19CE	779	LAST DC	AL2(TABEND)
1A00		1A00	783	ORG	X'1A00'
1A00		1A7F	784	RDFD EQU	*
1A80		1A80	786	TABLEO EQU	*
1A80		1AF9	787	DS	CL122
1AFA		1AFA	788	TABLEF EQU	*
1B74		1B73	789	DS	CL122
1BEE		1BED	790	SKEW10 DS	CL122
1C68		1C67	791	DS	CL122
1C69		1C68	792	SKEW20 DS	CL1
1C80		1C7F	793	DS	CL23
1D80		1C80	794	DATFLD EQU	*
1D82		1D7F	795	DS	CL256
		1D81	796	TABEND DS	CL2
		1D8D	797	ALLOUT DS	CL60
		798			
		799	*	EQUATES	
		800			
0001		801	XR1	EQU	1
0002		802	XR2	EQU	2
0008		803	ARR	EQU	X'08'
0208		804	SPYTE3	EQU	X'20B'
021A		805	PRINT	EQU	X'21A'
021E		806	UNPACK	EQU	X'21E'
0222		807	HALT	EQU	X'222'
0232		808	UTAB	EQU	X'232'
0080		809	SNSW18	EQU	X'80'
0080		810	FLAG0	EQU	X'80'
0040		811	FLAG1	EQU	X'40'
0020		812	FLAG2	EQU	X'20'
0010		813	FLAG3	EQU	X'10'
0008		814	FLAG4	EQU	X'08'
0004		815	FLAG5	EQU	X'04'
0002		816	FLAG6	EQU	X'02'
0001		817	FLAG7	EQU	X'01'
0080		818	FLAG10	EQU	X'80'
0040		819	FLAG11	EQU	X'40'
0020		820	FLAG12	EQU	X'20'
0010		821	FLAG13	EQU	X'10'
0008		822	FLAG14	EQU	X'08'
0004		823	FLAG15	EQU	X'04'
0002		824	FLAG16	EQU	X'02'
0001		825	FLAG17	EQU	X'01'
FFFF		826		END	

TRAILING EDGE SKEW
MAXIMUM TOLERANCE SKEW
MAXIMUM SKEW FOR THIS PASS

READ AREA

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

CROSS-REFERENCE					
SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADDONE	A	006	1053	0331	0325 0329
ALLOUT	A	060	10BD	0797	0072* 0073 0073*
ALLRDY	A	003	0D04	0233	0235
ALWAYS	A	003	1050	0330	0327
AND	A	003	13F5	0641	0640*
ARR	C	001	0008	0803	0529
BADCD	A	004	0C40	0177	0172 0174
BAD1	A	022	14FF	0699	0180
BEFORE	A	004	0BDD	0151	0124
BOTH	A	004	0D89	0271	0226 0273
C	A	002	19AE	0761	
CARDCT	A	003	19AA	0759	0202* 0284* 0285 0287*
CARDS	A	004	19B2	0762	0171 0282 0285
CC	A	014	146F	0691	0197
CELL1	A	122	168C	0706	0097 0097* 0450
CELL18	A	122	1612	0704	0098 0098* 0438
CHECK1	A	004	1067	0340	0332
CKANDS	A	003	1044	0326	0323
CKEDGE	A	003	0D54	0258	0261
CKEM	A	017	14BA	0694	0420* 0430
CKEND	A	006	1414	0649	0647
CKINFO	A	006	0C25	0170	0122
CKLEAD	A	004	0D37	0251	0205
CKMIN	A	006	142B	0654	0652
CKNEXT	A	003	1452	0662	0650
CKORS	A	003	1038	0322	0335
CKRDY	A	006	0FF9	0297	0291
CK1	A	003	1408	0646	0644
CK1ST	A	004	0C82	0204	0189
CLEAR	A	006	0CE1	0223	0302
CLMIN	A	006	1449	0660	0658
CNTRL	A	004	19BA	0764	0170* 0175 0193 0201 0290
COLCK	A	002	196D	0733	0223* 0230* 0231
COLNO	A	004	0BF4	0157	0155
COLUMN	A	004	19B6	0763	0173 0206 0208 0211* 0225 0231 0420 0515* 0522*
COOLIT	A	003	0D1D	0240	0232 0242
COUNT	A	003	19A5	0757	0220* 0281* 0421
CT1	A	001	19CA	0774	0648* 0657 0660*
CT18	A	001	19C9	0773	0645* 0654
DA	A	003	1455	0663	0066*
DATACD	A	006	0C8A	0206	0269
DATA1	A	003	0CDE	0222	0080* 0088*
DATA2	A	003	0D3B	0252	0081* 0089*
DATA3	A	003	1C07	0300	0082* 0090*
DATA4	A	004	0C7E	0203	0083* 0091*
DATA5	A	004	0FFF	0298	0084* 0092*
DATA6	A	004	1022	0311	0085* 0093*
DATFLD	A	001	1C80	0794	0218* 0219 0219* 0224 0279* 0531
DELAY	A	002	19AC	0760	0290 0292* 0297*
DELAY1	A	004	0D12	0237	0238
DELAY2	A	004	0D2B	0244	0245
DELY	A	004	0C0B	0163	0161
DEPACK	A	004	0C5F	0190	0150 0167 0169
DLY1	A	004	0FED	0294	0295
DNEXT	A	004	129A	0540	0664
DOWN	A	004	18C2	0712	0415
D00	A	003	1951	0744	0202 0206 0213 0214 0220 0282 0287 0297 0480 0487
D1	A	002	1993	0745	0211 0217 0223 0225 0230 0281 0284 0292 0619 0627 0656 0659
D122	A	001	199D	0752	0039* 0321 0342 0362
D123	A	001	199E	0753	0040* 0058* 0538
D124	A	001	199F	0754	0041* 0059* 0385
D15	A	002	1995	0746	0522
D32	A	002	1997	0747	0515
D33	A	002	1999	0748	0208
D34	A	001	199A	0749	0042 0043
D6579	A	002	1969	0731	0293

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
D68	A	001	199B	0750	0048
D77	A	001	199C	0751	0049
EDGE	A	044	149B	0692	0253 0253* 0267* 0478
EMIT	A	008	14D2	0697	0458
EMITTER	A	122	1706	0708	0096 0096* 0462
EMITTR	A	003	127F	0532	0535
EXCESS	A	006	1392	0620	0618
FFEA	A	002	19A1	0755	0060* 0537
FFFF	A	002	0A13	0026	0237 0244 0265 0294
FF88	A	002	196B	0732	0556 0577 0590 0611
FINAL1	A	003	134A	0598	0587
FINDIT	A	006	0CF5	0230	0246
FINISH	A	006	0FCC	0287	0283 0311
FIRSTD	A	004	0D27	0243	0042* 0048*
FIRST1	A	003	12E0	0562	0558
FIVE	A	002	197D	0738	0263
FIVE00	A	003	19C7	0771	0053
FLAGS	A	001	1460	0670	0028* 0105 0123 0125* 0204 0210* 0268* 0382* 0389* 0395* 0399* 0406
FLAGS2	A	001	1461	0679	0408 0413 0507 0509 0516* 0520* 0521* 0030* 0416* 0467 0473 0479* 0535* 0540 0542 0548* 0549 0557 0559*
FLAG0	C	001	0080	0810	0567 0569* 0578* 0591 0601 0603* 0635* 0651
FLAG1	C	001	0040	0811	0105 0123 0125
FLAG10	C	001	0080	0818	0204 0268
FLAG11	C	001	0040	0819	0473 0479
FLAG12	C	001	0020	0820	0557 0559 0567 0569 0591 0601 0603
FLAG13	C	001	0010	0821	0416 0467
FLAG14	C	001	0008	0822	0549 0578
FLAG15	C	001	0004	0823	0542 0548 0634
FLAG16	C	001	0002	0824	0540 0635 0651
FLAG17	C	001	0001	0825	
FLAG2	C	001	0020	0812	0210 0507 0521
FLAG3	C	001	0010	0813	0509 0516 0520
FLAG4	C	001	0008	0814	
FLAG5	C	001	0004	0815	0395 0406
FLAG6	C	001	0002	0816	0399 0408
FLAG7	C	001	0001	0817	0389 0413
F2736	A	004	1967	0730	0264
GENIT	A	004	0A20	0032	0036
GET	A	006	0CA6	0212	0209 0518 0523
GETOUT	A	004	145C	0666	0529* 0661
GET3	A	004	0C9C	0210	0207
GO	A	004	11D4	0473	0468
HALT	C	001	0222	0607	0116 0131 0139 0147 0151 0157 0163 0182 0309 0511
HERE	A	004	12ED	0567	0547
HERE2	A	004	1350	0601	0585
INIT	A	004	0AB9	0068	0046 0055 0057
INIT2	A	004	080F	0088	0079
INIT3	A	006	0B27	0094	0086
INSERT	A	004	0C68	0194	0176
LAST	A	002	19CE	0779	0035
LDATA	A	004	0B62	0105	0103
LDRD	A	002	19CC	0778	0118 0221 0251 0299
LD250	A	006	0A61	0048	0038
LEAD	A	002	19A7	0758	0076* 0262* 0263* 0274
LESS1	A	003	190E	0721	0214* 0487 0490 0659*
LESS18	A	003	19CB	0720	0213* 0480 0486 0490* 0494 0656*
LOADIT	A	004	0C54	0185	0203
LOOP1	A	001	19A2	0756	0321* 0331* 0342* 0352* 0362* 0374* 0385* 0400* 0538* 0649*
MAKE	A	026	18D4	0718	0307
MANY	A	035	184D	0714	0129
MID	A	004	0D0E	0236	0043* 0049*
MIN	A	052	1908	0719	0045* 0053* 0482* 0489*
MINPUL	A	001	19C8	0772	0044* 0052* 0065* 0654 0657
MIN1	A	006	143A	0657	0655
MOST	A	006	13C2	0631	0623

DATE 28JUL69 25AUG69 06NOV69 10FEB70 29JUN70
 EC NO. 816444 816485 816523 816592 816704

PROG ID OF03-2
 PAGE 8

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
MOVE1	A	003	1075	0343	0356
MOVE10	A	004	10E1	0382	0375
MOVE11	A	003	1CF3	0386	0404
MOVE12	A	003	1103	0392	0387
MOVE13	A	003	1113	0398	0393
MOVE14	A	006	111A	0400	0390 0396
MOVE15	A	004	112E	0406	0401
MOVE16	A	004	1145	0413	0409
MOVE17	A	006	1159	0419	0407 0414
MOVE2	A	003	1081	0347	0344
MOVE23	A	006	115F	0420	0417
MOVE3	A	003	108D	0351	0348
MOVE4	A	006	1090	0352	0346 0350
MOVE5	A	004	10A4	0360	0353
MOVE6	A	003	1082	0363	0378
MOVE7	A	003	10BE	0368	0364
MOVE8	A	003	10CA	0373	0369
MOVE9	A	006	10CD	0374	0366 0371
MSEC	A	031	151E	0700	0145
MUCH	A	006	1383	0628	0626
MULT	A	006	0D6D	0264	0266
NDNE	A	004	1217	0495	0488
NTRDY	A	004	1012	0304	0298
OFF11	A	004	12D8	0559	0552
ONE	A	002	1977	0736	0275 0331 0352 0374 0400 0579 0612 0645 0648 0649
ONE18	A	004	0D48	0255	0257
ONE62	A	003	19C1	0769	0050
OR	A	003	13E7	0638	0637*
OVER	A	005	13E2	0637	0541 0545 0560 0563 0565 0580 0583 0613
PLAY	A	004	198D	0742	0255* 0256 0259* 0260 0271* 0272 0274* 0275*
POS	A	040	195E	0725	0067* 0498
PRIM	A	004	1932	0723	0104
PRINT	C	001	021A	0805	0107 0112 0126 0134 0142 0177 0185 0194 0198 0304 0422 0427
PRTOUR	A	004	102A	0319	0431 0435 0439 0443 0447 0451 0455 0459 0463 0469 0475 0483
RDCNTR	A	004	08B1	0118	0491 0495 0499
RDFD	A	001	1A00	0784	0289
RDNEXT	A	004	1003	0299	0106 0184
READER	A	014	14A9	0693	0121 0170 0778
RESET	A	006	11E7	0480	0312
ROW1	A	008	14CA	0696	0421* 0425
ROW18	A	008	14C2	0695	0474
RT01	A	001	0A10	0024	0446
SAVEF	A	001	198E	0743	0434
SBYTE3	C	001	020B	0804	0017
SECD	A	004	1536	0724	0639* 0640 0642*
SELECT	A	036	1871	0715	0078 0102
SETUP	A	004	1273	0529	0101
SET1	A	003	1304	0575	0137
SET10N	A	003	12C7	0554	0288 0301
SET11	A	003	1367	0609	0571
SET3	A	004	1261	0520	0550
SET4	A	006	1253	0515	0508
SHORT	A	005	1963	0726	0510
SKEWCT	A	006	1371	0612	0067
SKEWUP	A	006	1312	0579	0502 0607
SKEW1	A	001	198B	0765	0568 0573
SKEW10	A	122	18ED	0790	0579* 0615 0625 0628 0630
SKEW2	A	001	198C	0766	0631
SKEW20	A	001	1C68	0792	0612* 0615 0617 0620 0622 0636*
SKEW3	A	001	198D	0767	0074* 0075 0075* 0632 0633 0633* 0653 0653*
SKEW30	A	122	1780	0709	0051* 0617 0625
SKEW4	A	001	198E	0768	0095 0055* 0216 0216* 0442 0631*
SKEW40	A	122	17FA	0710	0212* 0620 0622* 0628 0630*
SKIPIT	A	004	1152	0416	0054 0094* 0215 0215* 0454 0632*

DATE 28JUL69 25AUG69 06NOV69 10FEB70 29JUN70
 EC NO. 816444 816485 816523 816592 816704

PROG ID OF03-2
 PAGE 8A

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589736
PAGE 9

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
SNSW18	C	001	0080	0809	0078 0102
SPARE	A	023	14E9	0698	0410* 0415* 0419 0419* 0466
SPARE1	A	122	15E8	0702	0099* 0100 0100* 0472
SPUDT	A	003	0A0C	0019	0037 0054 0056
STORE1	A	004	0DA9	0279	0031 0239
SUB1	A	006	0D9B	0275	0277
SYNC	A	004	128C	0537	0533
TABEE	A	001	168D	0707	0361
TABEND	A	002	1081	0796	0779
TABFF	A	001	1E13	0705	0341
TABLEF	A	001	1AFA	0788	0068* 0C69 0069* 0503* 0504 0504*
TABLEO	A	001	1A80	0786	0070* 0071 0071* 0C77 0319 0340 0360 0383 0505* 0506 0506* 0530
TABSPR	A	001	151F	0701	0384
TABOO	A	001	1599	0703	0320
THEM	A	025	188A	0716	0101* 0104* 0110 0188
TOSKEW	A	040	182A	0713	0050* 0217* 0502 0619* 0627*
TRAIL	A	003	131B	0582	0061* 0543
TRAIL1	A	003	1321	0584	0062*
TRAIL2	A	003	133E	0593	0063*
TRAIL3	A	003	1358	0604	0064*
TWO	A	002	1979	0737	0034
TWO50	A	003	19C4	077C	0045
UDT	A	032	152E	0722	0115
UNDER1	A	006	11FC	0487	0481
UNDERS	A	006	13CE	0633	0621 0629
UNPACK	C	001	021E	0806	0190
UP	A	004	17FE	0711	0410
UTAB	C	001	0232	0808	
WAIT	A	006	0FDA	0290	0286 0296
WHICH	A	004	0AED	0078	0513
WORK	A	006	1967	0740	0133* 0141* 0149* 0156* 0162* 0168* 0192
WORK2	A	002	1989	0741	0153* 0154 0156 0159* 0160 0162 0165* 0166 0168
WORK3	A	006	1973	0734	0077* 0264* 0267
WORST	A	006	137A	0615	0592 0594 0596 0599
WORST1	A	006	13A4	0625	0616
XR1	C	001	0001	0801	0031* 0032 0032* 0032 0033* 0034 0035 0224* 0233 0234 0240 0241
					0254* 0258 0258* 0262 0265* 0293* 0294* 0319* 0322 0326 0333 0333*
					0340* 0343 0347 0354 0354* 0360* 0363 0368 0376 0376* 0383* 0386
					0392 0402 0402* 0530* 0551 0554 0554* 0555 0556* 0564 0572 0575
					0575* 0576 0577* 0588 0588* 0589 0590* 0595 0598 0606 0609 0609*
					0610 0611* 0638 0641 0662 0662*
					0236* 0237* 0243* 0244* 0320* 0324 0328 0330 0334 0334* 0341* 0345
					0349 0351 0355 0355* 0361* 0365 0370 0373 0377 0377* 0384* 0388
					0394 0398 0403 0403* 0531* 0532 0534 0534* 0537* 0544 0546 0562
					0570 0582 0584 0586 0593 0604 0637 0639 0643 0646 0663 0663*
XR2	C	001	0002	0802	0076 0212 0636 0660

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE	28JUL69	25AUG69	06NOV69	10FEB70	29JUN70
EC NO.	816444	816485	816522	816592	816704

PROG ID OF03-2
PAGE 9

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589736
PAGE 9A

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-Y: @CH B/ |A + & F ""# #0AJ--+* @MQ*HAC E1 * 0E 4-DDL-D FPV (& R3% ABS 8 -Y <@/ "")1*F0320001

T+-Z5IL1FFR4@J/W ;|DQRX00 CKYRW-0 CJDRWTO\$F*-< /T SF* L2/5-< " 4DFR\$ < " 4JFRO< /-NF* D 2D/U 7\$UF0320002

T+-D07L06F*-< /T 5F*+8H Y+@Z 1+EQ HC*HGHT1FFR8@ (JH -|+&RYLCED14@AJK T| ML&COED54@FIX H| & 1L4F0320003

T+-,EE* <AAVMFO< @*1_3CG-*\$/_3| " E=&18F?-&=LO G\$4 <+16&G\$4@ A1YC|< *R11YC DRZ1V5C M R*1Y 6CYF0320004

T+-&W/TS " -?2DAX :8 3+--+ (|CYHD - @= 1*||-& C38DB| 2/1-#8 3+0-(|C% HD -@@ 1*|| & C3 00B< :YMF0320005

T+-_/CGUP=-/#CGU P-A;ACGUPA/*GCGU OTA E(CGUDD/QL| D NW 1BER*NW OCFHY R|TS " -?2U Q< 1S HFLH 80YF0320006

T+->+*H MQ|H&F<B G /ZBFJSH@+L /OH EAS R.8BG S.09CG 5F*33@CPAG@>H|* < E |HAUTS EFC2DD< :-A& 3. &F0320007

T+-?PQ<BG /ZFH1/ (@+C /OHS@+ 0 AH COM*BFUQUFGG@B* 6 S.08L " FQP /OH E J/ @NG?C5OH*BM7C SC " " T4F0320008

T+-OKFQ-2/8. /OH S@+ 0 ANI+> RS|H &A-CAFQ<RS*BG S. 08L " FQU9*1WH@Z FC R/JW1OH*BM7C SC " " 61<F0320009

T+-1(FQU9@AWH@ZA CC DR/1W1@Y* C 4 R>/Y(+&@R, "HECTU |F\$L2U *SC1W7@/ YOH*BF\$COE|*08@B G SH "R<F0320010

T+-2H@+| /O>A0H* BF-QRFH,2/2| /OH ;A/WGFS, /OHE &B M\$@BG /YFC/W:C M RD/WJO->N<C/ EFC U 4 " ,&F0320011

T+-3C(04AF\$QRU-H AB&4AF\$QRW-HBBTY -EF < JW6FR<< AW =FPM< /U.FRD< /U +FRD<:J->:E*%<:J: E8D "HEF0320012

T+-3=C HQH/WK| D */-0*GHM*/-0BFEM RULG5F*33@EQ< JV _FR|E J2 C&DR_/W LOHD(SEQAF04RU04 AFO4 M2@F0320013

T+-49F\$@2 JVO@ E 8I G U 400-H " CQ BB| / 4K@Y;< *| A;B&A01 (G*HB " 6 -YLCHE|H&BGC|M 1*JU L1V<F0320014

T+-543|11A-OCEID MUZHA " O@AW(+A- RT* &CMTK &DO@AW (+ &RT*BECC64 JW XCODRZ1V*AS<R*1V XE-D 0MUF0320015

T(06%B| / 5_C < MUJV1+U MQ<BGCHY O@AW(+A-RT* &CQU < JW(FE*| JW(FP- /06V0 D1W3COGHD " " " 8EDF0320016

T+-XA/DRZJWLC&H RZ/WJ@YD&A/DRD/W LC&HRD/W20 D|6-0 BF&YRU*BGCX| /1 DC&DR>/W@YD&A-D R,AU 25&F0320017

T+/ SU3MAFOU6 &Y LOHE|H*BG C*Y< JW %FRGA@A K<-MR3|| 1A%BGDX| /03/0H* BFURHF|LO9*BG S. C9@D 18HF0320018

T+/A)@ "COH* & @H AFYCB /ORC "RY/W |; - @/ F?D @Y* |; /: @/ F?FD @Y* C7F " CO RY/V7OH D ER*M 78OF0320019

T+/BQ &GS -G /1 80-DE-<HBE/<< AW SFR58D C2D E@& C 2/0*8DG,2D E@&C 2/0*@Q | AMSFP- -J " N.&F0320020

T+/CLZ(HA ;HB *B GDGPB JD 0-HOT&O FEHRXP-U |H&A,1 " |HG7-U;?H&A,1 / |HG @3E " @ FEM R|@ " -HMF0320021

DATE	28JUL69	25AUG69	06NOV69	10FEB70	29JUN70
EC NO.	816444	816485	816523	816592	816704

PROG ID OF03-2
PAGE 9A

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+/D+-JC/4-DA8-H AOH*E&T%GEFCB JD C-HNG00 FEHRX7- A |HCB,1 CYAEFC 2/118 P,2D D2Q& :AA& EBYF0320022

T+/EIQ|HGA81- CY BEF | AWSFP- -JD >4-DA8-MAOH*E&3- DEFC2DB&8 /J-2/ IC <M-A=-2Y*(+ D MQ|H *E&DF0320023

T+/FDD 4< 1LYF H :HAJ/2Y*FC <M:AL ZC DM>/W6C HMDJW VOH*BFUH+EHX09&B G /YBDJK:OH*BF-D HE<H 68-F0320024

T+/F*OH*BF-E:E/. /OH& PYP-<BG /Y ABALHOH*BF-E:EY3 /OH& PYP=*BG /Y ABALKOH*BF-I:E0\$ /OH :#4F0320025

T+/G:F-DPE+UBHAJ /2/ HOH*BF-I:ER- B-AJ/2/ <OH*BF-H %EIZ:-AJ/C&HRB1W J2YD<||-Q6&BG /Y B11U PL*F0320026

T+/H5B04BF&8RU-H ADT1 F1%< /U.F&# /OH& T*RS&BG /Y AHAV;OH*BF-QYF&Y @*1_3CG-\$/_3| E=20 480F0320027

T+/I0:A,8F7UBHAJ -2/ -+A MQ|H&B&B G S.09%8GB>4< JW 6FR*#DAJ-OH*CZTY &EF #HAJ-C DR_/W NOH* 9I&F0320028

T+/H,CHQ&BAJ-O-D E-<HBGMB&I G2D - S -. /11*(HRY&C FEHRXT_4EFD&AAJ /OA L&T-HEFG2DGH 9F D N QF0320029

T+/MOA L&,Q-H &13YHEFD&DAJ/2Z F-E34&Y*J4-E:-E3 4(-DR&3/ EFG2U - #&AJ/OH*L&,H-H &#G0 0.4F0320030

T+/</P|L /11S+D MQ-H>Z EFF9B G 2D R&P|L2/0#K PZ &P|&6 JV,+ / MQ&8 F\$&R)*HG1#-Q *H &0&U =0&F0320031

T+/I*F |2UB*9D G 2DA7K PZ&P|&6 JV ,+D MQ-H&|U.H *H &(X1*|HG<G1*|H GHT/ EFG2DAY:&AJ /> -)0*F0320032

T+/+P *HEAX1*|H GB_HA;X1*|CQAF&X + AWSFP-2/6-(AW #F&32/BD(AW&F&7 2--QFHA-DFR<(AW @F&8 7.UF0320033

T+/|K&YH3C R?/W @2Y*|C& R>1W*2YH FAS QH/WLC& R>1W =2YHMC R?/W#CGU P-A?_CGUP=/1XC|< *R10 69-F0320034

T+/&|E&SHEFD:AAJ /C DR?AV5. L: E : ? AW+ &0 D*Q RTX% ;T3*FQ:8B G 2U Q AXIFP;8D G 2U Q 3DYF0320035

T+/JMC- R2/V7C0 RY/V70 DMMT-DEFG 2D Q<@11XGF-(AX IF*2/ QF /U.FR< (AXHF*2/ QF /U +FR< +LMF0320036

T+/KCC DR2/V52Y* H4-DA8-MPOH*KW&B G ***** DA &<|DBUC C5_(|(|Y4&PA1X N14CE1<-E&+|O&<G L4*Q \$8&F0320037

T+/K=9UCR1*G&E<X S&|CO&|A 5<XC6)R -8%PCO&GR1+I 6*P A1DCO&|CC5_|U5(N O&TEO*.E1DCO&<| E4* < 93UF0320038

T+/L9&|G&<|E4*(&|E 1|LIE=|E6MC S5&GR1MCC1)|L&(- R5%.E&DA &DA &<X NO*\$R6*PC84CC5_P T6)Q P9*F0320039

TIAM;44CC0|XD11P T11V 5;LMO&PR&(\$ F&|GO&DCM&P&C<L E4&GY8- ***** 2&-F0320040

T+/ -5&+LP&<LDS_P CO|XD8UCE9&|E1*L I5*) &|T1&(L1O*X O8%PC5_PD&+.K1;R @|CO1|PT11V 5;L MO&M 3HMF0320041

T+//O6MCO1UCCO)X OBUCT5UCB1MCC2<P C4&PD1|PT11V 5;L MO&PR&(\$F&<|O4=L M5MCT5UCB1MCC2<P C4&M \$CDF0320042

T+/S,11|O0*J 1<G TCMCCO)XD8UC15;| O&+X9=-P6*PS8UC HO)|T&(XE8%PT&+\$ I8&/ 5<S&C9DCR1*G D:D 1L&F0320043

F032 S/3 READ EVALUATION AND ADJUSTMENT DIAGNOSTIC (READ)

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+/TW8*R O*\$N8&X N9<N 5_V 5)ST&(X EO*LY&+|C&(-R2)P T&(XEB>LL&=.C1)| L&|G8&<LA8&E 5=L L&M =S&F0320044

T+/U/BUCL1;.S&+| HO|N 9=-X&(L1O*X OC+.E04CM2)P15+L M&|CC&|CO&(PO&N -Q+LDE4CCO)XO&(L U8>< *L4F0320045

T+/V*E<.E&<|O6)X EO=(Q(-R2)LS1*| D1*GC2DCP5>.I8&X O5MCR1)-R1;.E5;| S&DC9K*G2&(L1O*X GQ+H)2<F0320046

T+/WPI*|1=D22*|. 7&QR&#F&| ***** A H A& ***** |*O&|CO&-G 5&M H M3-F0320047

T(|X+@*-<JD5;:W7 *#-CO&| ***** |C 0 ***** U 2-\$2&?P O*CO F-)-E ***** NKYF0320048

E***E7*=-DC*PH\$ =*7M&F| ***** | C F& ASC R A SO Q ***** 213805017CO 63070=,DFC320049

PF83 USAGE METER TEST

PF83 USAGE METER TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0A00		2	DECK 4	
		3	UGH START X'A00'	8 10 72
		4	*****	
		5	*	
		6	USAGE METER TEST	
		7	*	
		8	*****	
		9	SECTION PREFACE	
		10	*****	
0A00	FF83	0A01	11	DC XL2'FF83' PROGRAM ID AND REVISION LEVEL
0A02	00	0A02	12	DC XL1'00' SECTION FLAGS
0A03	00	0A03	13	DC XL1'00' CURRENT ROUTINE NUMBER
0A04	0000	0A05	14	DC XL2'0' ADDRESS OF FIRST ROUTINE
0A06	0A22	0A07	15	DC AL2(RT01) RESERVED
0A08	0000	0A09	16	DC XL2'0' UNIT DEFINITION TABLE
0A0A	F00000	0A0C	17	SPUDT DC XL3'F00000'
0A0D	E00000	0A0F	18	DC XL3'E00000'
0A10	500000	0A12	19	DC XL3'500000'
0A13	A00000	0A15	20	DC XL3'A00000'
0A16	B00000	0A18	21	DC XL3'B00000'
0A19	E10000	0A1B	22	DC XL3'E10000'
0A1C	510000	0A1E	23	DC XL3'510000'
0A1F	701000	0A21	24	DC XL3'701000'
		25	*****	
		26	ROUTINE 1 PREFIX	
		27	*****	
0A22	01	0A22	28	RT01 DC XL1'01' ROUTINE NUMBER
0A23	80	0A23	29	DC XL1'80' MANUAL INTERVENTION
0A24	FFFF	0A25	30	DC XL2'FFFF' LAST ROUTINE
		31	*****	
0A26	C0 87 021A		32	B PRINT
0A2A	06	0A2A	33	DC XL1'06' *MFCU IS ATTACHED
0A2B	1B	0A2B	34	DC IL1'27' NO-OP MFCU SIO
0A2C	0B91	0A2D	35	DC AL2(UNT1) *CK FOR AND BRANCH IF EITHER PRINTER IS ATTACHED
0A2E	38 20 0A0B		36	TBN SPUDT-1,X'20'
0A32	F2 10 06		37	JT CKPT
0A35	0C 02 0AE6 0B76		38	NVC SIO1+2,SKIP+2(3) NO-OP PRINTER SIO
0A3B	39 20 0A0E		39	CKPT TBF SPUDT+2,X'20'
0A3F	39 20 0A1A		40	TBF SPUDT+14,X'20'
0A43	F2 90 06		41	JF CK42
0A46	0C 02 0AE9 0B76		42	NVC SIO2+2,SKIP+2(3) NO-OP PRINTER SIO
0A4C	38 20 0A11		43	CK42 TBN SPUDT+5,X'20'
0A50	F2 10 0D		44	JT CKS1 *1442 IS ATTACHED
0A53	38 20 0A1D		45	TBN SPUDT+17,X'20'
0A57	F2 10 06		46	JT CKS1 *ATTACHMENT IS ATTACHED.
0A5A	0C 02 0AF2 0B76		47	NVC SIO5+2,SKIP+2(3) NO-OP 1442 COMMAND
0A60	38 20 0A14		48	CKS1 TBN SPUDT+8,X'20'
0A64	F2 10 09		49	JT SETA *CK FOR AND BRANCH IF *DISK SPINDLE A IS ATTACHED
0A67	0C 02 0AEC 0B76		50	NVC SIO3+2,SKIP+2(3) NO-OP SPINDLE A SIO
0A6D	F2 87 04		51	J CKS2
0A70	31 A6 0CF7		52	SETA LIO CDISK,X'A6'
0A74	38 20 0A17		53	CKS2 TBN SPUDT+11,X'20'
0A78	F2 10 09		54	JT SETB *DISK SPINDLE B IS ATTACHED
0A7B	0C 02 0AEF 0B76		55	NVC SIO4+2,SKIP+2(3) NO-OP SPINDLE A SIO
0A81	F2 87 04		56	J CKTAPE
0A84	31 B6 0CF7		57	SETB LIO CDISK,X'B6'
0A88	38 20 0A20		58	CKTAPE TBN SPUDT+20,X'20'
0A8C	F2 10 0B		59	JT TRITIO TAPE ON SYSTEM ?
0A8F	3C 87 0AF4		60	NVI TU0+1,X'87' SET TO SKIP TAPE CHDS.
0A93	3C 15 0AF5		61	NVI TU0+2,X'15' SET TO SKIP TAPE CHDS.
0A97	F2 87 4A		62	J SIO1
0A9A	C0 87 021A		63	TRITIO B PRINT PRINT TAPE SET-UP
0A9E	06	0A9E	64	DC XL1'06'
0A9F	5A	0A9F	65	DC IL1'90'
0AA0	0CF5	0AA1	66	DC AL2(TUNT9)
0AA2	C0 87 0222		67	B HALT
0AA6	FFFA	0AA7	68	DC XL2'FFFA'
0AA8	3C 07 0AF4		69	NVI TU0+1,X'07'

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT			
		70	NVI TU1+1,X'07'				
		71	NVI TU2+1,X'07'				
		72	NVI TU3+1,X'07'				
		73	TIO ZRNDRY,X'60'	TAPE UNIT 0 READY ?			
		74	J TESTU1	GO TEST NEXT UNIT			
		75	ZRNDRY NVI TU0+1,X'87'	SKIP 0			
		76	TESTU1 TIO WUNDRY,X'68'	TAPE UNIT 1 READY ?			
		77	J TESTU2	GO TEST NEXT UNIT			
		78	HUNDRY NVI TU1+1,X'87'	SKIP 1			
		79	TESTU2 TIO TUNDRY,X'70'	TAPE UNIT 2 READY ?			
		80	J TESTU3	GO TEST NEXT UNIT			
		81	TUNDRY NVI TU2+1,X'87'	SKIP 2			
		82	TESTU3 TIO TRWRDY,X'78'	TAPE UNIT 3 READY ?			
		83	J SIO1	GO TEST NEXT UNIT			
		84	TRWRDY NVI TU3+1,X'87'	SKIP 3			
		85	SIO1 SIO X'00',X'F0'	MFCU FEED			
		86	SIO2 SIO X'00',X'E2'	5203 OR 1403 PRINT			
		87	SIO3 SIO Y'00',X'A0'	5444 SEEK			
		88	SIO4 SIO X'00',X'B0'	5444 SEEK			
		89	SIO5 SIO X'00',X'50'	1442 FEED			
		90	TU0 JC ++6,X'07'				
		91	SIO X'17',X'6C'	ERASE GAP UNIT 0			
		92	TU1 JC ++6,X'07'				
		93	SIO X'17',X'68'	ERASE GAP UNIT 1			
		94	TU2 JC ++6,X'07'				
		95	SIO X'17',X'70'	ERASE GAP UNIT 2			
		96	TU3 JC ++6,X'07'				
		97	SIO X'17',X'78'	ERASE GAP UNIT 3			
		98	B PRINT				
		0B0F	99	DC IL1'43'			
		0B10	100	DC IL1'30'			
		0B11	101	DC AL2(UNT2)			
		0B13	102	DC XL2'FFFO'			
		0B15	C0 87 021A	B PRINT			
		0B19	104	DC XL1'02'			
		0B1A	105	DC IL1'37'			
		0B1B	0BD4	0B1C	106	DC AL2(UNT3)	
		0B1D	C0 87 021A	B PRINT			
		0B21	02	0B21	108	DC XL1'02'	
		0B22	0F	0B22	109	DC IL1'15'	
		0B23	0BE3	0B24	110	DC AL2(UNT4)	
		0B25	C0 87 021A	B PRINT			
		0B29	02	0B29	112	DC XL1'02'	
		0B2A	1F	0B2A	113	DC IL1'31'	
		0B2B	0C02	0B2C	114	DC AL2(UNT5)	
		0B2D	C0 87 021A	B PRINT			
		0B31	02	0B31	116	DC XL1'02'	
		0B32	38	0B32	117	DC IL1'56'	
		0B33	0C3A	0B34	118	DC AL2(UNT6)	
		0B35	C0 87 021A	B PRINT			
		0B39	02	0B39	120	DC XL1'02'	
		0B3A	3F	0B3A	121	DC IL1'63'	
		0B3B	0C79	0B3C	122	DC AL2(UNT7)	
		0B3D	C0 87 021A	B PRINT			
		0B41	07	0B41	124	DC XL1'07'	
		0B42	22	0B42	125	DC IL1'34'	
		0B43	0C9B	0B44	126	DC AL2(UNT8)	
		0B45	C0 87 0222	B HALT			
		0B49	FFFO	0B4A	128	DC XL2'FFFO'	
		0B4B	0C 02 0D00 0CFC	129	START NVI COUNT,ZERO(3)	ZERO THE COUNT AREA	
		0B51	0C 91 0DA8 0E48	130	SUB1 NVC USELFS(146),NOTHNG		
		0B57	0E 02 0D00 0CFD	131	ALC COUNT,ONE(3)	ADD 1 TO LOOP COUNT	
		0B5D	0D 02 0D00 0D07	132	CLC COUNT,ATSALL(3)	*CK FOR AND BRANCH WHEN	
		0B63	F2 81 04	133	JE ALLF *COUNT IS COMPLETE		
		0B66	C0 87 0B51	134	B SUB1	BRANCH BACK THRU LOOP	
		0B6A	C0 87 0222	135	ALLF B HALT		
		0B6E	FFFE	0B6F	136	DC XL2'FFFE'	
		0B70	C0 87 0B4B	137	B START	GO BACK AND START ALL OVER AGAIN	

PF83 USAGE METER TEST

PF83 USAGE METER TEST

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ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
      138 *
OB74 P2 87 00           139 SKIP J      **3
      140
      140
      141 *****
      142 *      MESSAGES
      143 *****
OB77 D4C1D2C540C1D3D3  OB91 144 UNT1 DC    CL27'HAKE ALL I/O DEVICES READY.'
OB7F 40C961D640C4C5E5  144
OB87 C9C3C5E240D9C5C1  144
OB8F C4E84B            144
OB92 C4D640D5D6E3C8C9  OB9F 145 UNT2 DC    CL30'DO NOTHING TO THE I/O DEVICES.'
OB9A D5C740E3D640E3C8  145
OBA2 C540C961D640C4C5  145
OBA8 E5C9C3C5E24B     145
OBB0 D9C5C3D6D9C440E3  OBBD 146 UNT3 DC    CL37'RECORD THE VALUE OF ALL USAGE METERS.'
OBB8 C8C540E5C1D3E4C5  146
OBC0 40F6C640C1D3D340  146
OBC8 E4E2C1C7C540D4C5  146
OBD0 E3C5D9E24B       146
OBD5 D9C5E2C5E340E3C8  OBE3 147 UNT4 DC    CL15'RESET THE HALT.'
OBD8 C540C8C1D3E34B    147
OBE4 D7D9D6C7D9C1D440  OC02 148 UNT5 DC    CL31'PROGRAM WILL RUN FOR 6 MINUTES.'
OBE8 E6C9D3D340D9E4D5  148
OBF4 40C6D6D940F640D4  148
OBF8 C9D5E4E3C5E24B   148
OC03 D9C5C3D6D9C440C1  OC35 149          DC    CL51'RECORD AND CONFIRM 6 MINUTES ON EACH METER AT -EE- '
OC0B D5C440C3D6D5C6C9  149
OC13 D9D440F640D4C9D5  149
OC1B E4E3C5E240D6D540  149
OC23 C5C1C3C840D4C5E3  149
OC2B C5D940C1E34060C5  149
OC33 C56040            149
OC36 C8C1D3E34B       OC3A 150 UNT6 DC    CL5'HALT.'
OC3B D9C5C6C5D940E3D6  OC6E 151          DC    CL52'REFER TO APPROPRIATE ENTRY MAP IF METER INCREMENTED '
OC43 40C1D7D7D9D6D7D9  151
OC4B C9C1E3C540C5D5E3  151
OC53 D9E840D4C1D740C9  151
OC5B C640D4C5E3C5D940  151
OC63 C9D5C3D9C5D4C5D5  151
OC6B E3C5C440         151
OC6F C9D4D7D9D6D7C5D9  OC79 152 UNT7 DC    CL11'IMPROPERLY.'
OC77 D3E84B           152
OC7A D9C5E2C5E34060C5  OC9B 153 UNT8 DC    CL34'RESET -EE- HALT TO REPEAT PROGRAM.'
OC82 C56040C8C1D3E340  153
OC8A E3D640D9C5D7C5C1  153
OC92 E340D7D9D6C7D9C1  153
OC9A D44B             153
OC9C E3C1D7C540E4D5C9  OCC3 154          DC    CL40'TAPE UNITS TO BE TESTED MUST BE ENABLED,'
OCA4 E3E240E3D640C2C5  154
OCAC 40E3C5E2E3C5C440  154
OCB4 D4E4E2E340C2C540  154
OCBC C5D5C1C2D3C5C46B  154
OCC4 C1D5C440D9C5C1C4  OCE9 155          DC    CL38'AND READY, WITH WRITE ENABLE RING ON A '
OCCC E868E6C9E3C840E6  155
OCD4 D9C9E3C540C5D5C1  155
OCD8 C2D3C540D9C9D5C7  155
UCE4 40D6D540C140     155
OCEA E2C3D9C1E3C3C840  OCF5 156 TUHT9 DC   CL12'SCRATCH TAPE'
OCF2 E3C1D7C5         156
      157
      158 *****
      159 *      ADDRESS CONSTANTS
      160 *****
OCF6 OCF9             OCF7 161 CDISK DC    AL2 (ADISK)
OCF8 OD01             OCF9 162 ADISK DC    AL2 (BDISK-3)
      163

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ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
      164 *****
      165 *      CONSTANTS
      166 *****
OCFA 000000           OCFC 167 ZERO DC    XL3'0'
OCFD 01              OCFD 168 ONE DC    XL1'1'
OCFE 000000           OD00 169 COUNT DC   XL3'0'
OD01 000000FF        OD04 170 BDISK DC   XL4'000000FF'
OD05 0AFC0F          OD07 171 ATALL DC   IL3'19887'
      172
      172
      173 *****
      174 *      EQUATES
      175 *****
ODA8 176 USELES EQU   **160
OE48 177 NOTHNG EQU   **320
O21A 178 PRINT EQU    I'21A'
O222 179 HALT EQU     I'222'
FFFF 180              END

```


PF83 USAGE METER TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
ADISK	A	002	0CF9	0162	0161
ALLF	A	004	0B6A	0135	0133
ATSALL	A	003	0D07	0171	0132
BDISK	A	004	0D04	0170	0162
CDISK	A	002	0CF7	0161	0052 0057
CKPT	A	004	0A3B	0039	0037
CKS1	A	004	0A60	0048	0044 0046
CKS2	A	004	0A74	0053	0051
CKTAPE	A	004	0A88	0058	0056
CK42	A	004	0A4C	0043	0041
COUNT	A	003	0D00	0169	0129* 0131* 0132
HALT	C	001	0222	0179	0067 0127 0135
NOTING	A	001	0E48	0177	0130
ONE	A	001	0CPD	0168	0131
PRINT	C	001	021A	0178	0032 0063 0098 0103 0107 0111 0115 0119 0123
RT01	A	001	0A22	0028	0015
SETA	A	004	0A70	0052	0049
SETB	A	004	0A84	0057	0054
SIO1	A	003	0AE4	0085	0038* 0062 0083
SIO2	A	003	0AE7	0086	0042*
SIO3	A	003	0AEA	0087	0050*
SIO4	A	003	0AED	0088	0055*
SIO5	A	003	0AF0	0089	0047*
SKIP	A	003	0B74	0139	0038 0042 0047 0050 0055
SPUDT	A	003	0A0C	0017	0036 0039 0040 0043 0045 0048 0053 0056
START	A	006	0B4B	0129	0137
SUB1	A	006	0B51	0130	0134
TESTU1	A	004	0AC3	0076	0074
TESTU2	A	004	0ACE	0079	0077
TESTU3	A	004	0AD9	0082	0080
TRATIO	A	004	0A9A	0063	0059
TENRDY	A	004	0AE0	0084	0082
TUNST9	A	012	0CF5	0156	0066
TUNRDY	A	004	0AD5	0081	0079
TU0	A	003	0AF3	0090	0060* 0061* 0069* 0075*
TU1	A	003	0AF9	0092	0070* 0078*
TU2	A	003	0AFF	0094	0071* 0081*
TU3	A	003	0B05	0096	0072* 0084*
UGM	A	001	0A00	0003	
UMT1	A	027	0B91	0144	0035
UMT2	A	030	0BAP	0145	0101
UMT3	A	037	0BD4	0146	0106
UMT4	A	015	0BE3	0147	0110
UMT5	A	031	0C02	0148	0114
UMT6	A	005	0C3A	0150	0118
UMT7	A	011	0C79	0152	0122
UMT8	A	034	0C9B	0153	0126
USELES	A	001	0DA8	0176	0130*
WUNRDY	A	004	0ACA	0078	0076
ZERO	A	003	0CFC	0167	0129
ZRNRDY	A	004	0ABF	0075	0073

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

PF83 USAGE METER TEST

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E F INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+-Y:8< BSH	.....	.....	.....	.....	.....
T+-Z5+K HCTU-B/	2U Q<-	ZB7Q8H Y	J2/ (+B HG-H6A-0	BB7H.)T--E/L2D U	<-
T+-D0B/~2D U<-	7B7S2/0E1_	-37+B	HH (H6B32GB762EE	58Y)H0H*BF-R&C|P	/OHS**Y2A0,4| * H=TO ;YHFF830003
T+-,,A0X | *.AXE	-B,*2/0E2/0,400-	H2?HGAC2GB7,A*	W2Y*D|H*. <E8B>C	2/0E2/0XP2**	2=B : -RHFF830004
T+-XW |*0 | (6 | H	G * (-E*HG * (YE*H	G * (OE*HG * (8E2B	G /ZCG->?*"C /OH	E SH.5<BG /YBC0?	TOH* 4Y4FF830005
T+- /YBG00B0H*	BF-H8CC, /OHE T2	< ;*BG /YGH-2\$OH*	BH?*OC H (3&CID	(D 9HC-H (3*C&H (4	=Z6FF830006
T+->*A HAA<BGB5G	/OHS** /D_2Y*	5<GK1HCA4* (2CG	0E<LE9*IC1;I 6*P	A1+/-1 (R 5) \$T2<X	H14 9DEFF830007
T+-7P8'R 8@TE8<V	/5UCD1;PI02PSK*Y	EO *SR1DCT2<N 9*G	L9<N 5XR 0) |L&+L	S0*-E6 (LE02PR8U?	H1;H 18 FF830008
T+-OK1; (8@TE8<T	A4= (.5 *X01*YA5DC	H2) |L6 (XU5HCF5_V	*UCH2) PU82PSK*Y	EO *SR1DCA5*J 0*\$	H1XU 28<FF830009
T+-1(6)J *UCH2) P	UB2PS6 (\$H<PA02/	5<PT1) V 0; (Q<P	EQDCHO) |TK*YE12P	R6+|06<GP5*X05*X	IQ;< K-<FF830010
T+-2H1HCE5; |R:DC	H0)) 2*R 5<PT1) V	2) PC6*PH1) PT1*J	2) LP6) SP1) XL:D?	H1; .E84A-1*H-&<T	A4=< 9S-FF830011
T+-3CE+|0E (XE52P	A84CP6) SGG*GHR=|	A52N 9 (PI8=I 8*R	0XN 82PS82PD6 (L	UB> (0XN 1) PA0_1	E1FK *AQFF830012
T+-3=0) PDE (XE0*L	YE=\$I82/ 9_XI82H	1) PA0_1E6 (XI5*)	5_N 0KCS0*XAB2|	H6+|A52H<=E4A	6 *JHFF830013
TB 4G	C*B70				J. QFF830014
E** *E7*=-DC*PH\$	=*7H&F | | C	FX ASC R A	SO Q	15511012710	81572*84FF830015

LAST PAGE



FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
	2	DECK	#
0A00	0001	3 ERAP	START X'A00'
	0002	4 XR1	EQU 1
	0008	5 XR2	EQU 2
	0080	6 ARR	EQU 8
	0010	7 SSW20	EQU X'80'
	0008	8 SSW23	EQU X'10'
	0200	9 SSW24	EQU X'08'
	020C	10 HODEL	EQU X'200'
	0216	11 SBYTE	EQU X'20C'
	021A	12 LINK	EQU X'216'
	021E	13 PRINT	EQU X'21A'
	0222	14 UNPACK	EQU X'21E'
	022A	15 HALT	EQU X'222'
	0232	16 LOAD	EQU X'22A'
	0880	17 UDT	EQU X'232'
	2020	18 PRTBUF	EQU X'880'
		19 DUMP	EQU X'2020'
	20	***** SECTION PREFACE *****	
	21	*****	
0A00 FF77	0A01	22	DC XL2'FF77' * PROGRAM ID *
0A02 00	0A02	23	DC XL1'0' * SECTION FLAGS *
0A03 01	0A03	24	DC XL1'1' * CURRENT ROUTINE # *
0A04 0000	0A05	25	DC XL2'0' * N/A *
0A06 0A1C	0A07	26	DC AL2(RTN1) * FIRST ROUTINE *
0A08 F2FF	0A09	27	DC XL2'FFFF' * ERROR RECORDING *
0A0A A04000	0A0C	28	DC XL3'A04000' * DISK *
0A0D E10000	0A0F	29	DC XL3'E10000' * 1403 PRINTER *
	0A0E	30	FLG14 EQU *-2
0A10 C80000	0A12	31	C8 DC XL3'C80000'
0A13 C00000	0A15	32	C0 DC XL3'C00000'
0A16 B00000	0A18	33	B0 DC XL3'B00000' * DISK *
0A19 511000	0A1B	34	D51 DC XL3'511000'
		35	*****
		36	*****

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		38	***** ROUTINE 1 *****
		39	*****
		40	*
0A1C 01	0A1C	41	RTN1 DC XL1'1' * ROUTINE # *
0A1D 00	0A1D	42	DC XL1'0' * FLAG *
0A1E 0F2A	0A1F	43	DC AL2(RTN2) * NEXT ROUTINE *
		44	*
		45	*****
		46	*****
0A20 C0 87 021A		47	B PRINT PRINT SSW
0A24 41	0A24	48	DC XL1'41'
0A25 000000FF00	0A29	49	DC XL5'FF00'
0A2A 3C A8 1B01		50	HVI DSKDRV,X'A8'
0A2E 3D C4 0200		51	CLI HODEL,C'D'
0A32 F2 81 1E		52	JE HODELD
0A35 C2 02 0D5A		53	LA Q1B,XR2
0A39 34 02 0EBB		54	ST BRTBL,XR2
0A3D C2 02 0D6E		55	LA QEB,XR2
0A41 34 02 0ED5		56	ST BRTBL+2*13,XR2
0A45 C2 02 0DCD		57	LA QFB,XR2
0A49 34 02 0ED7		58	ST BRTBL+2*14,XR2
0A4D 0C 03 0F13 0F17		59	MVC DVTBL-1+4*15(4),X5496
		60	HODELD EQU *
0A53 C2 02 0001	0A53	61	LA 1,XR2 SYNC PT 1
		62	ONE EQU *-1
0A57 C0 87 19F3	0A56	63	B SYNHOV
0A5B C0 87 15E2		64	B SCAN
		65	*
		66	*
		67	*
		68	*
0A5F 0C FF 1E7F 1FFF		69	MVC DBUF-1(256),DBUF+255
		70	*
0A65 C0 87 15E2		71	B SCAN
0A69 0C 5F 1DE0 08DF		72	MVC PBUP+95(96),PRTBUF+95
		73	* ROTATE TABLE DOWN UNTIL LAST ENTRY IS AT BOTTOM
0A6F 0C 01 1DF6 0EB9		74	MVC TEMP,0BB1
0A75 0F 01 1DF6 1E01		75	SLC TEMP,DBUF+1-256
0A7B F2 81 24		76	JZ RTN103
0A7E 39 07 1DF6		77	TBF TEMP,X'07'
0A82 C0 90 0E39		78	BF ERMSG
		79	*
0A86 0C 07 1E07 1FFF	0A86	80	RTN102 MVC DBUF+7-256(8),DBUF+255
0A8C 0C F7 1FFF 1FFF		81	MVC DBUF+255(256-8),DBUF+255-8
0A92 0C FF 1F07 1EFF		82	MVC DBUF+7(256),DBUF-1
0A98 0F 01 1DF6 1B6E		83	SLC TEMP,EIGHT
0A9E C0 01 0A86		84	BNZ RTN102
		85	*
	0AA2	86	RTN103 EQU * WORK FROM BOTTOM UP TO FIND OLDEST ENTRY
0AA2 0C 01 1DFD 1B64		87	MVC OBRNT(2),OBRND
0AA8 3C 00 1E00		88	MVI DBUF-256,0
0AAC 35 01 1DFD		89	RTN104 L OBRNT,XR1
0AB0 1C 00 1DF6 00		90	MVC TEMP(1),0(,XR1)
0AB5 3B 0F 1DF6		91	SBF TEMP,X'0F'
JAB9 3D 00 1DF6		92	CLI TEMP,X'00'
0ABD F2 81 34		93	JE RTN106
0AC0 3D A0 1DF6		94	CLI TEMP,X'A0'
0AC4 F2 81 1C		95	JE RTN105
0AC7 3D B0 1DF6		96	CLI TEMP,X'B0'
0ACB F2 81 15		97	JE RTN105
0ACE 3D C0 1DF6		98	CLI TEMP,X'C0'
0AD2 F2 81 0E		99	JE RTN105
0AD5 3C 08 1B7E		100	MVI OBRTYP,8
0AD9 0F 01 1DFD 1B7E		101	RTN109 SLC OBRNT,OBRTP
0ADF C0 87 0AAC		102	B RTN104
	0AE3	103	RTN105 EQU *
0AE3 0D 01 1DFD 1B62		104	CLC OBRNT,OBRST
0AE9 F2 81 08		105	JE HALFWT

FP77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ADDR, STMT, SOURCE, STATEMENT. Rows include assembly code like 0AEC 3C 10 1B7E, 0AF0 C0 87 0AD9, etc., with comments such as 'DISK ENTRY', 'OBRNT0 NOW CONTAIN THE ADDRESS Q BYTES OF OLDEST ENTRY', and 'CHECK FOR EMPTY TABLE COMPUTE ADDRESS IN BRTEL'.

FP77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ADDR, STMT, SOURCE, STATEMENT. Rows include assembly code like 0BC2 7B 01 02, 0BC5 7B E0 05, etc., with comments such as 'CLEAR BITS 0-2 OF DAR', 'COMPUTE COUNT OFFSET COULD BE NEGATIVE', and 'ROUTINE TO HANDLE 5445 OBR'.

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains diagnostic data for PF77, including error codes like OC9B, OCA3, OCB3, etc., and source statements such as 'TEST FOR 1403 ATTACHED' and 'CHECK FOR HAMMER ECHO CHECK'.

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains diagnostic data for PF77, including error codes like OD72, OD75, ODB7, etc., and source statements such as 'PRINT PERM OR TEMP ERROR FLAG' and 'CL30 ERROR HISTORY TABLE IS INVALID'.

25877

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0E58	C0 87 15E2	367	B	SCAN
		368 *		END PRINT OUT OF OBR TBL
		369 *		CHECK SSW20 TO RE-INITIALIZE OBR TBL
0E5C	39 80 020C	370	TBF	SBYTE4,SSW20
0E60	F2 90 1E	371	JF	RTN1X1
		0E63	372	RTN1X1 EQU *
0E63	3C 00 1FFF	373	MVI	DBUF+255,X'00'
0E67	0C FE 1FFE 1FFF	374	MVC	DBUF+254(255),DBUF+255
0E6D	C0 87 1A19	375	B	DISKIO
0E71	02	0E71	376	DC XL1'02' WRITE
0E72	3C 1C 1B04	377	MVI	DSKSEC,X'1C'
0E76	0C 03 1F03 0EB9	378	MVC	DBUF+3(4),OBR1
0E7C	C0 87 1A19	379	B	DISKIO
0E80	02	0E80	380	DC XL1'02' WRITE
		0E81	381	RTN1X1 EQU *
		382 *		PRINT OUT MEANINGS OF ENTRIES THAT WERE IN OBR TBL
0E81	0C 01 1B80 1B77	383	MVC	SYNC#,SIX SYNC PT 6
0E87	3C 10 1DF7	384	MVI	CNT,16
0E8B	0E 01 0EB5 0EB5	385	RTN111	ALC DVPLG,DVPLG
0E91	F2 20 0C	386	JNOL	RTN112
0E94	35 02 1B80	387	L	SYNC#,XR2
0E98	3A 10 15E1	388	SBN	SCHFLG,SFLG
0E9C	C0 87 15E2	389	B	SCAN
0EA0	0E 01 1B80 0A56	390	RTN112	ALC SYNC#,ONE
0EA6	0F 00 1DF7 0A56	391	SLC	CNT,ONE
0EAC	C0 01 0EB8	392	BNZ	RTN111
0EB0	C0 87 0216	393	B	LINK
		394 *		OBR DEVICE FLAGS
0EB4	0000	0EB5	395	DVPLG DC XL2'0'
0EB6	01FF01FF	0EB9	396	OBR1 DC XL4'01FF01FF'
		397 *		DEVICE BIT BYTE SYNC PT
		398 *	5471	0 1 6
		399 *	1442	1 1 7
		400 *	BSCA	2 1 8
		401 *	5444	3 1 9
		402 *	5424	4 1 10
		403 *	5203/1403	5 1 11
		404 *	KEYBOARD	6 1 12
		405 *	2265	7 1 13
		406 *	LCD	8 2 14
		407 *	PRINTER	9 2 15
		408 *	5496	10 2 16
		409 *	5445	11 2 17
0EBA	0C93	0EBB	410	BR1BL DC AL2(Q10) 5471, KEYBOARD
0EBC	0E39	0EBD	411	DC AL2(Q20) N/A
0EBE	0E39	0EBF	412	DC AL2(Q30) N/A
0EC0	0E39	0EC1	413	DC AL2(Q40) N/A
0EC2	0CAB	0EC3	414	DC AL2(Q50) 1442
0EC4	0E39	0EC5	415	DC AL2(Q60) N/A
0EC6	0E39	0EC7	416	DC AL2(Q70) N/A
0EC8	0C1D	0EC9	417	DC AL2(Q80) BSCA
0ECA	0D67	0ECB	418	DC AL2(Q90) 2265
0ECC	0C3E	0ECD	419	DC AL2(QA0) DRIVE 1 5444
0ECE	0C3E	0ECF	420	DC AL2(QB0) DRIVE 2 5444
0ED0	0B68	0ED1	421	DC AL2(QC0) N/A
0ED2	0E39	0ED3	422	DC AL2(QD0) N/A
0ED4	0CB3	0ED5	423	DC AL2(QE0) 5203, PRINTER, LCD, 1403
0ED6	0D53	0ED7	424	DC AL2(QF0) 5424, 5496
		0ED8	425	DVTBL EQU *
0ED8	F5F4F7F1	0ED9	426	DC CL4'5471' 5471
0EDC	40404040	0EDF	427	DC CL4' ' N/A
		0EDF	428	BLANK EQU *-1
0EE0	40404040	0EE3	429	DC CL4' ' N/A
0EE4	40404040	0EE7	430	DC CL4' ' N/A
0EE8	F1F4F4F2	0EEB	431	DC CL4'1442' 1442
0EEC	40404040	0EEF	432	DC CL4' ' N/A
0EF0	40404040	0EF3	433	DC CL4' ' N/A
0EF4	C2E2C3C1	0EF7	434	DC CL4'BSCA' BSCA

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0EF8	F2F2F6F5	0EFB	435	DC CL4'2265' 2265
0EFC	F5F4F4F4	0EFF	436	DC CL4'5444' 5444
0F00	F5F4F4F4	0F03	437	DC CL4'5444' 5444
0F04	F5F4F4F5	0F07	438	DC CL4'5445' 5445
0F08	40404040	0F0B	439	DC CL4' ' N/A
0F0C	F5F2F0F3	0F0F	440	DC CL4'5203' 5203
0F10	F5F4F2F4	0F13	441	DC CL4'5424' 5424
0F14	F5F4F9F6	0F17	442	X5496 DC CL4'5496'
0F18	C3D6D5E2D6D3C5	0F1E	443	CONSOL DC CL7'CONSOLE'
0F1F	D7D9C9D5E3C5D9	0F25	444	PTRER DC CL7'PRINTER'
0F26	D3C3C440	0F29	445	YYY DC CL4'LCD'

252785

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
10D0 E8	10D0	583	DC XL1'E8' PRINTER 11
10D1 E9	10D1	584	DC XL1'E9' LCD 12
10D2 F8	10D2	585	DC XL1'F8' 5496 13
10D3 C0	10D3	586	DC XL1'C0' 5445 14
		587 *	END ROUTINE 2

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		589	*****
		590	*****
		591	*
10D4 03	10D4	592 RTN3	DC XL1'03' * ROUTINE 8
10D5 00	10D5	593	DC XL1'00'
10D6 FFFF	10D7	594	DC XL2'FFFF'
		595	*
		596	*****
		597	*****
		598	B PRINT PRINT SSW
10D8 C0 87 021A		598	DC XL1'41'
10DC 41	10DC	598	DC XL1'41'
10DD 000000FF00	10E1	600	DC XL5'FF00'
10E2 3C A8 1B01		601	HVI DSKDRV,X'A8'
10E6 C2 02 0003		602	LA 3,XR2
10EA C0 87 19F3		603	B SYNHOV
		604	* PRINT MASTER SIO TABLE
10EE 3C 04 1DF7		605	HVI CNTN,4
10F2 3C 01 1B8C		606 RTN201	HVI TABIDX,1
10F6 C0 87 15E2		607	B SCAN
10FA C0 87 18AC		608	B HEXDEC
10FE C0 87 18AC		609	B HEXDEC
1102 C0 87 021A		610	B PRINT
1106 21	1106	611	DC XL1'21'
1107 0F 00 1DF7 0A56		612	SLC CNTN,ONE
110D C0 01 10F2		613	BNZ RTN201
1111 C0 87 15E2		614	B SCAN
		615	*
1115 39 80 020C		616	TBF SBYTE4,SSW20
1119 F2 90 05		617	JF IVS
111C C0 87 1A19		618	B DISK10
1120 02	1120	619	DC XL1'02' WRITE
		1121	620 IVS EQU *
		1121	621 * INTERNAL DATA CARDS
		1121	622 IVS1 EQU *
		1121	623 B PRINT
1121 C0 87 021A		1125	624 DC XL1'47'
1125 47		1126	625 DC XL1'65'
1126 41		1128	626 DC AL2(SELECT)
1127 12D8		112A	627 DC XL2'FFFO'
1129 FFF0		628	B HALT
112B C0 87 0222		1130	629 DC XL2'00FO' SET SSW21-24
112F 00FO		630	HVC SVCSTR,CSTR0
1131 0C 01 1DF9 1DEA		631	SBF SCNPLG,UPLG USED FLAG
1137 3B 04 15E1		632	HVI SSWIX,SSW24
113B 3C 08 1144		633	HVI DRV#,0
113F 3C 00 12DE		1144	634 SSWIX EQU **1
		635	IVS2 TBN SBYTE4,0
1143 38 00 020C		636	BF PDI3
1147 C0 90 1273		637	CLI SSWIX,SSW23
114B 3D 10 1144		638	JH IVS4
114F F2 84 08		639	TBN B0-1,X'20'
1152 38 20 0A17		640	BF PDT3
1156 C0 90 1273		115A	641 IVS4 EQU *
		642	SBN SCNPLG,UPLG
115A 3A 04 15E1		643	LA DRVTBL,XR2
115E C2 02 12D9		644	A DRV#,XR2
1162 36 02 12DE		645	MVC DSKDRV(1),0(,XR2)
1166 2C 00 1B01 00		646	SBF SCNPLG,NPLG
116B 3B 20 15E1		647	HVI DSKSEC,X'08'
116F 3C 08 1B04		648	B DISKIO
1173 C0 87 1A19		1177	649 DC XL1'01' READ
1177 01		650	CLC DBUF+2(3),VOL
1178 0D 02 1F02 1582		651	JNE NSD
117E F2 01 0E		652	CLI DBUF+92,X'CB'
1181 3D CB 1F5C		653	JE SD
1185 F2 81 0B		1188	654 IVS3 EQU *
		655	CLI DBUF+92,X'67'
1188 3D 67 1F5C		656	JE SD
118C F2 81 04			

252789

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
118F	3A 20 15E1	657	MSD	SBN SCNPLG,NPL2
		658	SD	EQU *
1193	OC 01 1DEA 1B60	659		HVC CSTR0,IVSDC0 SET 0 FOR DATA CARDS
1199	CO 87 15E2	660		B SCAN
119D	38 20 15E1	661		TBN SCNPLG,NPLG
11A1	F2 90 20	662		JF SD1
11A4	3C F4 1584	663		MVI DRVC,C*4*
11A8	0F 00 1584 12DE	664		SLC DRVC,DRV0
11AE	OC 1B 089F 159B	665		MVC PRTBUF+31(28),NSDH
11B4	CO 87 021A	666		B PRINT
11B8	21	667		DC XL1'21'
11B9	CO 87 15E2	668		B SCAN
11BD	CO 87 15E2	669		B SCAN
11C1	F2 87 AF	670		J PDT3
		671	SD1	EQU *
11C4	CO 87 18AC	672		B HEXDEC SIO WRITES
11C8	CO 87 18AC	673		B HEXDEC SIO READS
11CC	CO 87 18AC	674		B HEXDEC TEMP ERRORS
11D0	39 80 020C	675		TBF SBYTE4,SSW20
11D4	CO 90 11DD	676		BF PDT
11D8	CO 87 1A19	677		B DISKIO
11DC	02	678		DC XL1'02' WRITE
		679	PDT	EQU *
11DD	CO 87 15E2	680		B SCAN
		681	*	COMPUTE # OF ENTRIES IN PERM DISK TBL.
11E1	OC 05 0887 1F08	682		MVC PRTBUF+7(6),DBUF+8 VOL ID
11E7	C2 02 1FD8	683		LA DBUF+216,XR2
11EB	3C 00 1DF7	684		MVI CNTN,0
11EF	BD FF 00	685	PDT1	CLI 0(,XR2),X'FF' CHECK FOR END
11F2	F2 81 14	686		JE DND
11F5	0E 00 1DF7 0A56	687		ALC CNTN,ONE
11FB	3D 0C 1DF7	688		CLI CNTN,12 CHECK FOR 12 ENTRY
11FF	F2 81 07	689		JE DND
1202	E2 02 02	690		LA 2(,XB2),XR2 SET FOR NEXT ENTRY
1205	CO 87 11EF	691		B PDT1
1209	3D 00 1DF7	692	DND	CLI CNTN,0
120D	F2 81 40	693		JE NOPDT
1210	3D 01 1DF7	694		CLI CNTN,1
1214	F2 81 32	695		JE ONEPDT
1217	CO 87 12DF	696		B CYLPRT
121B	0F 00 1DF7 0A56	697		SLC CNTN,ONE
1221	C2 01 1C83	698		LA PDTDC,XR1
1225	F2 87 04	699		J PDT4
1228	C2 01 1C89	700	PDT2	LA PDTDC+6,XR1
		701	PDT4	EQU *
122C	34 01 1DEA	702		ST CSTR0,XR1
1230	CO 87 15E2	703		B SCAN
1234	CO 87 12DF	704		B CYLPRT
1238	0F 00 1DF7 0A56	705		SLC CNTN,ONE
123E	CO 01 1228	706		BNZ PDT2
1242	CO 87 15E2	707		B SCAN
1246	F2 87 1D	708		J PDTX
		709	ONEPDT	EQU *
1249	CO 87 12DF	710		B CYLPRT
124D	F2 87 12	711		J PDTSCN
		712	NOPDT	EQU *
1250	3C 05 1B8C	713		MVI TABIDX,5
1254	CO 87 19D6	714		B PRTPOS
1258	4C 09 00 15A5	715		MVC 0(1C,XR1),NOPDT
125D	CO 87 021A	716		B PRINT
1261	21	717		DC XL1'21'
1262	CO 87 15E2	718	PDTSCN	B SCAN
1266	39 80 020C	719	PDTX	TBF SBYTE4,SSW20
126A	CO 90 1273	720		BF PDT3
126E	CO 87 1A19	721		B DISKIO
1272	02	722		DC XL1'02' WRITE
1273	0E 01 12DE 0A56	723	PDT3	ALC DRV#,ONE
1279	0E 00 1144 1144	724		ALC SSWXX,SSWXX

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
127F	38 80 1144	725		TBN SSWXX,SSW20
1283	CO 90 1143	726		BF IVS2
1287	38 04 15E1	727		TBN SCNPLG,UPLG
128B	CO 10 1121	728		BT IVS1
128F	OC 01 1DEA 1DF9	729		MVC CSTR0,SVCSTR
1295	CO 87 0216	730		B LINK
1299	E2C5D3C5C3E340C4	12C8 731		DC CL48'SELECT DRIVE FOR 5444 IND. VO..STAT., SET SSW2E,'
12A1	D9C9E5C540C6D6D9	731		
12A9	40F5F4F4F440C9D5	731		
12B1	C44B40E5D64B4BE2	731		
12B9	E3C1E34B6B40E2C5	731		
12C1	E340E2E2E6F2E76B	731		
12C9	E77EF160F440C6D6	12D8 732		SELECT DC CL16'X=1-4 FOR DRVX.'
12D1	D940C4D9E5E74B40	732		
		12D9 733	DRVTBL	EQU *
12D9	BCB8A0A8	12DC 734		DC XL4'BOB8A0A8' DA 6 E BITS FOR DISKIO
12DD	0000	12DE 735	DRV#	DC XL2'0'
		736		*****
		737		* CYLPRT *
		738		*****
		739		. PLACE CYL # IN PRTBUF
		740		. PLACE SECTOR # IN PRTBUF
		741		. PLACE X'FFFF' FOR RE-INITIALIZATION
		742		*****
		12DF 743	CYLPRT	EQU *
12DF	34 08 12FC	744		ST CYLX0,ARR
		745		PUT CYL # IN PRTBUF
12E3	CO 87 18AC	746		B HEXDEC
12E7	CO 87 1883	747		B RSHIFT
		748		PUT SECTOR # IN PRTBUF
12EB	CO 87 18AC	749		B HEXDEC
12EF	8C 01 00 1B7B	750		MVC 0(2,XR2),FFFF
12F4	CO 87 021A	751		B PRINT
12F8	21	12F8 752		DC XL1'21'
12F9	CO 87 0000	753		B **
		12FC 754	CYLX0	EQU *-1

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for error recording analysis, including instructions like VOL, DRVC, MSDM, NOPDTM, HEX22, PACKS, etc.

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for error recording analysis, including instructions like ST, RELOAD, EQU, CLC, etc.

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
16F3	C0 87 1857	887	CHTR	EQU *
16F7	0C 00 1888 1D81	888	B	PACK
16FD	0C 00 188A 1D82	889	HVC	CNTOPS (1),PBUF SET CNTOPS
1703	C0 87 16CC	890	HVC	CNTLNG (1),PBUF+1 SET CNTLNG
		891	B	INC
		892		
1707	C2 01 0880	893	HSG	EQU *
170B	7C 40 5F	894	LA	PRTBUF,XR1
170E	5C 5E 5E 5F	895	HVI	95(,XR1),C'
1712	C2 02 1D81	896	HVC	94(95,XR1),95(,XR1)
		897	LA	PBUF,XR2
1716	BD 6F 00	898	HSG1	EQU *
1719	F2 81 68	899	CLI	0(,XR2),C'7'
171C	BD 5A 00	900	JE	SPACE
171F	F2 81 4C	901	CLI	0(,XR2),C'1'
1722	6C 00 00 00	902	JE	ASTER
1726	D2 01 01	903	HVC	0(,XR1),0(,XR2) MOVE CHAR TO PRTBUF
1729	E2 02 01	904	LA	1(,XR1),XR1 INCR. PTR TO PRTBUF
172C	34 02 1DE8	905	LA	1(,XR2),XR2 INCR. PTR TO PBUF
1730	0D 01 1DE8 1DE6	906	HSGCK	ST PSTR0,XR2
1736	C0 04 1716	907	CLC	PSTR0,PEND0
173A	0E 01 1DEA 0A56	908	BNH	MSG1
1740	0D 01 1DEA 1B68	909	ALC	CSTR0,ONE
		910	CLC	CSTR0,CEND0
1747	911	911	CHKSW1	EQU **1
1746	C0 82 175A	912	BL	MSG2
174A	0C 5F 1DE0 08DF	913	HVC	PBUF+95(96),PRTBUF+95
1750	C0 87 1795	914	B	READ
1754	0C 5F 08DF 1DE0	915	HVC	PRTBUF+95(96),PBUF+95
175A	35 02 1DEA	916	HSG2	L CSTR0,XR2
175E	BD 6C 00	917	CLI	0(,XR2),C'X'
1761	C0 81 165D	918	BE	NEXT
1765	C0 87 021A	919	B	PRINT
1769	20	920	SPCNT	DC XL1'20'
176A	C0 87 165D	921	B	NEXT
176E	A8 01 02 01	922	ASTER	EQU *
1772	7C 5C 00	923	HZN	2(,XR2),1(,XR2)
1775	D2 01 01	924	AST1	HVI 0(,XR1),C'1'
1778	8F 00 02 0A56	925	LA	1(,XR1),XR1
177D	C0 01 1772	926	SLC	2(1,XR2),ONE
1781	F2 87 0A	927	BNZ	AST1
		928	J	SP1
		929		
1784	A8 01 02 01	930	SPACE	EQU *
1788	BC 00 01	931	HZN	2(,XR2),1(,XR2)
178B	B6 01 02	932	HVI	1(,XR2),X'00'
178E	E2 02 03	933	A	2(,XR2),XR1
1791	C0 87 172C	934	SP1	LA 3(,XR2),XR2
		935	B	HSGCK

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
937				*****
938	* READ *			1. READS DATA CARDS INTO PRTBUF *
939	*****			2. CHECK SEQUENCE OF DATA CARDS *
940	*			4. MOVES DATA CARD FROM PRTBUF TO CBUF *
941	*			5. RESETS CSTR0 *
942	*			6. PROVIDE A MESSAGE AND HALT TO USER IF DATA CARDS ARE *
943	*			NOT IN ORDER *
944	*			*****
945				*****
1795	34 08 17F3	946	READ	EQU *
1799	38 80 15E1	947		ST REXT0,ARR
179D	F2 90 25	948	RST	TBN SCHFLG,PFLG
		949	JF	RD1
		950	*	READ HEADER CARD
17A0	04 30 1D80 1B6F	951	ZAZ	CRDNMB(4),DZERO SET CRDNMB TO 0
17A6	3D A0 0232	952	CLI	X'232',X'A0' TEST FOR DISK DCP
17AA	F2 01 0A	953	JNE	RD2
17AD	C0 87 022A	954	B	LOAD
17B1	20	955	DC	XL1'20'
17B2	D0CF	956	DC	XL2'D0CF' POSITION DISK HEAD
17B4	F2 87 05	957	J	RD4
17B7	C0 87 022A	958	RD2	B LOAD
17BB	10	959	DC	XL1'10'
17BC	0D 03 08DF 1D80	960	RD4	CLC PRTBUF+95(4),CRDNMB TEST FOR HEADER CARD
17C2	F2 01 05	961	JNE	RD3
		962	RD1	EQU *
17C5	C0 87 022A	963	B	LOAD
17C9	10	964	DC	XL1'10'
		965	RD3	EQU *
17CA	3D F5 08DF	966	CLI	PRTBUF+91,C'5' CHECK LEVEL OF OCF (DATA CARDS)
17CE	F2 01 58	967	JNE	NSLEV
17D1	06 30 1D80 1B70	968	AZ	CRDNMB(4),DONE
17D7	0D 03 1D80 08DF	969	CLC	CRDNMB(4),PRTBUF+95
17DD	F2 01 14	970	JNE	UNORD
17E0	0C 5F 1D80 08DF	971	HVC	CBUF+95(96),PRTBUF+95
17E6	0C 01 1DEA 1B66	972	HVC	CSTR0,CBUF0
17EC	3B 80 15E1	973	SBF	SCHFLG,PFLG
17F0	C0 87 0000	974	B	*-*
17F3	975	975	REXT0	EQU *-1
17F4	C0 87 021A	976	UNORD	B PRINT
17F8	87	977	DC	XL1'87'
17F9	23	978	DC	IL1'35'
17FA	1828	979	DC	AL2(RHSG)
17FC	C0 87 0222	980	B	HALT
1800	00EC	981	DC	XL2'00EC' DATA CARDS NOT IN ORDER
1802	C0 87 17F4	982	B	UNORD
1806	C4C1E3C140C3C1D9	983	DC	CL35'DATA CARDS NOT IN ORDER,RE-RUN ERAP'
180E	C4E240D5D6E340C9	983		
1816	D540D6D9C4C5D96B	983		
181E	D9C560D9E4D540C5	983		
1826	D9C1D7	983		
1829	C0 87 021A	984	NSLEV	B PRINT
182D	87	985	DC	XL1'87'
182E	1C	986	DC	IL1'28'
182F	1856	987	DC	AL2(LEVEL)
1831	C0 87 0222	988	B	HALT
1835	00EE	989	DC	XL2'00EE'
1837	C0 87 1799	990	B	RST
183B	E3C8C540D3C5E5C5	991	DC	CL27'THE LEVEL OF OCF HAS TO BE '
1843	D340D6C640F0C3C6	991		
184B	40C8C1E240E3D640	991		
1853	C2C540	991		
1856	F5	992	LEVEL	DC CL01'5'

252801

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

```
ERR LOC OBJECT CODE   ADDR STMT SOURCE STATEMENT
          994 *****
          995 * PACK * PACKS DATA IN PBUF BACK INTO PBUF FROM LEFT TO RIGHT *
          996 *****
          997 *
          998 *****
          999
1857 34 08 1882      1000 PACK    ST    PEIT@,ARR
1858 35 01 186A      1001          L    PBUF@,XR1
185F 35 02 186A      1002          L    PBUF@,XR2
1863 98 01 00 00     1003 PCK1     HZN   0(,XR2),0(,XR1)
1867 98 03 00 01     1004          HNN   0(,XR2),1(,XR1)
186B D2 01 02        1005          LA    2(,XR1),XR1
186E E2 02 01        1006          LA    1(,XR2),XR2
1871 34 01 1DF6      1007          ST    TEMP,XR1
1875 0D 01 1DF6 1DE6 1008          CLC   TEMP,PEND@
187B C0 82 1863      1009          BL    PCK1
187F C0 87 0000      1010          B    *-
          1882 1011 PEIT@   EQU   *-
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1012
          1013 *****
          1014 * RSHIFT * SHIFTS A BYTE 2 BINARY PLACES TO THE RIGHT *
          1015 *****
          1016 *
          1017 *****
1883 34 08 18AB      1018 RSHIFT   EQU   *
          1019          ST    RSHFX@,ARR
          1020          LA    DBUF,XR2
          1021          A    CNTOPS,XR2
          1022          LA    6,XR1
          1023 RSHF1   ALC   0(1,XR2),0(,XR2)
          1024          JNOL  RSHF2
          1025          SBN   0(,XR2),X'01'
          1026 RSHF2   A    FFFF,XR1
          1027          BNZ   RSHF1
          1028          SBP   0(,XR2),X'CO'
          1029          B    *-
          18AB 1030 RSHFX@  EQU   *-
          1014 * RSHIFT * SHIFTS A BYTE 2 BINARY PLACES TO THE RIGHT *
          1015 *****
          1016 *
          1017 *****
1883 34 08 18AB      1018 RSHIFT   EQU   *
          1019          ST    RSHFX@,ARR
          1020          LA    DBUF,XR2
          1021          A    CNTOPS,XR2
          1022          LA    6,XR1
          1023 RSHF1   ALC   0(1,XR2),0(,XR2)
          1024          JNOL  RSHF2
          1025          SBN   0(,XR2),X'01'
          1026 RSHF2   A    FFFF,XR1
          1027          BNZ   RSHF1
          1028          SBP   0(,XR2),X'CO'
          1029          B    *-
          18AB 1030 RSHFX@  EQU   *-
```

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

```
ERR LOC OBJECT CODE   ADDR STMT SOURCE STATEMENT
          1032 *****
          1033 * HEXDEC * CONVERTS A HEX # TO A PRINTABLE DECIMAL # IN PRIBUF *
          1034 ***** WITH LEADING ZEROS SUPPRESSED
          1035 *
          1036 *
          1037 * LENGTH OF HEX # IS CONTAINED IN CNTLNG
          1038 * LOCATION OF RIGHT BYTE POSITION OF THE HEX # IS
          1039 * @ (DBUF)+CNTPOS+CNTLNG-1
          1040 * LOCATION OF PRINT POSITION (RIGHT MOST) IS
          1041 * @ (PRIBUF-1) + TABTBL(TABIDX)
          1042 * ON EXIT
          1043 * HEX # WILL BE ZERO
          1044 * CNTOPS IS INCREASED BY (CNTLNG)
          1045 * TABIDX IS INCREASED BY 1
          1046 *****
18AC 34 08 19D5      1046 HEXDEC   EQU   *
          1047          ST    CVTIX@,ARR SAVE RETURN @
          1048          LA    LNGTHBL-1,XR2
          1049          A    CNTLNG,XR2
          1050          MVC   HVCL(1),0(,XR2) SET LNG OF DEC #
          1051 * SET LOOP COUNT (CNTLNG*8)
          1052          LA    CVTCNT,XR1
          1053          MVC   0(2,XR1),CNTLNG
          1054          ALC   0(2,XR1),0(,XR1)
          1055          ALC   0(2,XR1),0(,XR1)
          1056          ALC   0(2,XR1),0(,XR1)
          1057 * SET LENGTH OF HEX # INSTR.
          1058          MVC   TEMP,CNTLNG
          1059          SLC   TEMP,ONE
          1060          MVC   ALCL(i),TEMP
          1061          MVC   CLCL(1),TEMP
          1062 * SET XR2 TO RIGHT POS OF HEX #
          1063          LA    DBUF,XR2
          1064          A    CNTOPS,XR2
          1065          A    TEMP,XR2
          1066          ZAZ   DEC,DZERO ZERO DEC #
          1067 *
18FD 8D 00 00 1B74 1068 CLCL    EQU   **1
          1069          CLC   0(1,XR2),ZERO TEST FOR ZERO
          1070          JE    HEXD0
          1071 HEXD1   AZ    DEC,DEC DOUBLE DEC #
          1072 ALCL    EQU   **1
          1073          ALC   0(1,XR2),0(,XR2) SHIFT HEX NUM
          1074          JNOL  HEXD2 TEST FOR OVERFLOW
          1075          AZ    DEC,DONE ADD 1 TO DEC #
          1076 HEXD2   SLC   CVTCNT,ONE TEST FOR END
          1077          BNZ   HEXD1
          1078 HEXD5   ITC   DEC-9(10),BLANK
          1079          TBM   SCNFLG,ZFLG
          1080          BF    HEXD3
          1081          MVI   DEC,C'0'
          1082 HEXD3   SBP   SCNFLG,ZFLG
          1083 * SET XR1 TO RIGHT POS OF PRINT POS.
          1084          B    PRTPOS
          1085 MVCL    EQU   **1
          1086          MVC   0(1,XR1),DEC MOVE DEC # TO PRIBUF
          1087          ALC   CNTOPS,CNTLNG
          1088          J    CVTX
          1089 HEXD0   SBN   SCNFLG,ZFLG
          1090          B    HEXD5
          1091 LNGTHBL EQU   * CNTLNG
          1092          DC    IL1'2' 1
          1093          DC    IL1'4' 2
          1094          DC    IL1'7' 3
          1095          DC    IL1'9' 4
          1096
          1096
          1096
          18AC 34 08 19D5
          18B0 C2 02 1950
          18B4 36 02 188A
          18B8 2C 00 193C 00
          18BD C2 01 1886
          18C1 4C 01 00 188A
          18C6 5E 01 00 00
          18CA 5E 01 00 00
          18CE 5E 01 00 00
          18D2 0C 01 1DF6 188A
          18D8 0F 01 1DF6 0A56
          18DE 0C 00 190B 1DF6
          18E4 0C 00 18FD 1DF6
          18EA C2 02 1F00
          18EE 36 02 1888
          18F2 36 02 1DF6
          18F6 04 90 1DF4 186F
          18FC 8D 00 00 1B74
          1901 F2 81 45
          1904 06 09 1DF4 1DF4
          190A AE 00 00 00
          190E F2 20 06
          1911 06 90 1DF4 1B70
          1917 0F 01 1886 0A56
          191D C0 01 1904
          1921 0B 09 1DEB 0EDF
          1927 38 08 15E1
          192B C0 90 1933
          192F 3C F0 1DF4
          1933 3B 08 15E1
          1937 C0 87 19D6
          193B 4C 00 00 1DF4
          1940 0E 01 1888 188A
          1946 F2 87 83
          1949 3A 08 15E1
          194D C0 87 1921
          1951 02
          1952 04
          1953 07
          1954 09
```

25240E

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		1097	*****	*****
		1098	* HEXHEX *	CONVERT HEX BYTE TO A PRINTABLE HEX NUMBER *
		1099	*****	*****
		1100	*	*
		1101	*****	*****
1955	34 08 19D5	1102	HEXHEX EQU *	
1959	C2 02 1F00	1103	ST CVTX0,ARR	
195D	36 02 1B88	1104	LA DBUF,XR2	
1961	C0 87 19D6	1105	A CNTOPS,XR2	
1965	36 01 1B7B	1106	B PRTPOS	
1969	3B 01 196E	1107	A FFFF,XR1	
		1108	SBF SWITCH,X'01'	FORM HNZ
		1109	SWITCH EQU **1	
196D	68 02 00 00	1110	HEX2 HNZ 0(,XR1),0(,XR2)	
1971	7A F0 00	1111	SBN 0(,XR1),X'F0'	
1974	7D F9 00	1112	CLI 0(,XR1),X'F9'	
1977	F2 04 05	1113	JNH HEX3	
197A	4F 00 00 1982	1114	SLC 0(,XR1),X39	
197F	D2 01 01	1115	HEX3 LA 1(,XR1),XR1	
1982	39 01 196E	1116	X39 TBF SWITCH,X'01'	
1986	F2 90 3A	1117	JP CVTX1	
1989	3A 01 196E	1118	SBN SWITCH,X'01'	FROM HZZ
198D	C0 87 196D	1119	B HEX2	

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		1121	*****	*****
		1122	* CVTBIN *	CONVERTS A HEX BYTE TO PRINTABLE BINARY NUMBER IN *
		1123	*****	PRTBUF *
		1124	*	*
		1125	*	LOCATION OF HEX BYTE IS @(DBUF) + CNTOPS *
		1126	*	*
		1127	*	LOCATION OF PRINT POSITION (LEFT MOST POSITION) IS *
		1128	*	@(PRTBUF)-1 + TABTBL(TABIDX) - 7 *
		1129	*	*
		1130	*	ON EXIT *
		1131	*	HEX BYTE WILL BE ZERO *
		1132	*	CNTOPS IS INCREASED BY 1 *
		1133	*	TABIDX IS INCREASED BY 1 *
		1134	*****	*****
		1135	CVTBIN EQU *	
1991	34 08 19D5	1136	ST CVTX0,ARR	SAVE EXIT &
1995	C2 02 1F00	1137	LA DBUF,XR2	COMPUTE POSITION OF HEX BYTE
1999	36 02 1B88	1138	A CNTOPS,XR2	
		1139	*	COMPUTE POSITION OF PRINT POS.
199D	C0 87 19D6	1140	B PRTPOS	
19A1	36 01 1B7C	1141	A NEG7,XR1	
		1142	*	
19A5	3C 08 1B86	1143	MVI CVTCHT,8	SET LOOP CNT
19A9	7C F0 00	1144	CVTB2 MVI 0(,XR1),C'0'	SET PRINT CHAR 0, BY DEFAULT
19AC	AE 00 00 00	1145	ALC 0(,XR2),0(,XR2)	
19B0	F2 20 03	1146	JNOL CVTB1	TEST FOR BIT ON
19B3	7C F1 00	1147	MVI 0(,XR1),C'1'	BIT ON, SET PRINT CHAR 1
19B6	D2 01 01	1148	CVTB1 LA 1(,XR1),XR1	
19B9	0F 01 1B86 0A56	1149	SLC CVTCHT,ONE	
19BF	C0 01 19A9	1150	BNZ CVTB2	
		1151	CVTX1 EQU *	
19C3	BC 00 00	1152	MVI 0(,XR2),0	
19C6	0E 01 1B88 0A56	1153	ALC CNTOPS,ONE	
		1154	*	
19CC	0E 01 1B8C 0A56	1155	CVTX EQU *	
19D2	C0 87 0000	1156	ALC TABIDX,ONE	
		1157	B *-*	
19D5	34 08 19F2	1158	CVTX EQU *-1	
19D6	C2 01 1D10	1159	PRTPOS EQU *	
19DE	36 01 1B8C	1160	ST PRTX0,ARR	
19E2	1C 00 1E82 00	1161	LA TABTBL,XR1	
19E7	C2 01 087F	1162	A TABIDX,XR1	
19EB	36 01 1B82	1163	MVC H24(1),0(,XR1)	
19EF	C0 87 0000	1164	LA PRTBUF-1,XR1	
		1165	A H24,XR1	
		1166	B *-*	
		1167	PRTX0 EQU *-1	
		1168	*	
		1168	*	
		1168	*	
		1168	*	
		1168	*	
19F3	34 08 1A18	1169	SYNHOV EQU *	LOAD SYNC PTS FOR RTN1
		1170	*	
		1171	ST SYNHX0,ARR	
19F8	C0 87 1F00	1172	OPNF EQU **1	
		1173	BC OPEN,X'87'	
19FB	3C 82 1747	1174	SYNR EQU *	
19FF	3C 82 1674	1175	MVI CHKSW1,X'82'	
1A03	3A 10 15E1	1176	MVI CHKSW,X'82'	
1A07	CC 87 15E2	1177	SBN SCNFPLG,SPLG	
1A0B	0C 53 1D0F 1D75	1178	B SCAN	
1A11	C0 87 1795	1179	MVC SYNTBL+18+83(84),CBUF+84	
1A15	C0 87 0000	1180	B READ	
		1181	B *-*	
		1182	SYNHOV EQU *-1	

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Rows include statements like '1184 *****', '1185 * DISKIO * CALLING SEQUENCE', '1198 DISKIO EQU *', '1200 USING DISKIO, XR1', '1217 DSKIO1 EQU *', '1238 CYLO EQU *', '1242 DRETRY MVI DSKNUM(,XR1),0', '1251 *

252009

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Rows include statements like '1A9D 5F 00 P5 96 1252 SLC DSKCNT(,XR1),DKONE(,XR1)', '1AAA 75 02 D9 1258 L DISKIO(,XR1),XR2', '1A19 C2 01 1A19 1199 LA DISKIO, XR1', '1A19 1200 USING DISKIO, XR1', '1A19 1217 DSKIO1 EQU *', '1A19 1218 MVI TRKSEK+2(,XR1),X'00' UPPER TRACK', '1A19 1219 CLI DSKSEC(,XR1),X'80', '1A19 1220 JL UPTRK', '1A19 1221 MVI TRKSEK+2(,XR1),X'80' LOWER TRACK', '1A19 1222 UPTRK EQU *', '1A19 1223 TIO2 TIO DSKBSY(,XR1),0', '1A19 1224 REPLY1 MVI DSKCNT(,XR1),10', '1A19 1225 LIO1 LIO SEKDCR(,XR1),X'06', '1A19 1226 SIO1 SIO 0,0 SEEK', '1A19 1227 SNS1 SNS STATUS(,XR1),X'02' SENSE BYTE 0-1', '1A19 1228 TBN STATUS(,XR1),X'10', '1A19 1229 BT SNS1(,XR1)', '1A19 1230 TBN STATUS(,XR1),X'40' CHECK FOR CYL 0', '1A19 1231 JT CYLO', '1A19 1232 *', '1A19 1233 SLC DSKCNT(,XR1),DKONE(,XR1)', '1A19 1234 BNZ LIO1(,XR1)', '1A19 1235 B DSKHLT(,XR1)', '1A19 1236 B RETRY1(,XR1)', '1A19 1237 *', '1A19 1238 CYLO EQU *', '1A19 1239 LIO4 LIO TRKDCR(,XR1),X'06', '1A19 1240 SIO3 SIO 0,0 TURN ON HEAD', '1A19 1241 MVI DSKCNT(,XR1),10', '1A19 1242 DRETRY MVI DSKNUM(,XR1),0', '1A19 1243 LIO2 LIO DAR(,XR1),X'04', '1A19 1244 LIO3 LIO DCR(,XR1),X'06', '1A19 1245 DSKFCT EQU *+1', '1A19 1246 SIO2 SIO 0,0 READ OR WRITE', '1A19 1247 TIO1 TIO *(,XR1),X'02', '1A19 1248 SNS2 SNS STATUS(,XR1),X'02' SENSE BYTE 0-1', '1A19 1249 TBP STATUS-1(,XR1),X'FF', '1A19 1250 JT RWD', '1A19 1251 *

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
1B1F	1A60	1B20	1320	DC	AL2(SNS1)
1B21	1A94	1B22	1321	DC	AL2(SNS2)
1B23	1A7C	1B24	1322	DC	AL2(LIO4)
1B25	1A7F	1B26	1323	DC	AL2(SIO3)
1B27	FFFF	1B28	1324	DC	AL2(*--*--1)
1B29	40C8C1D3E34060C6	1B5A	1325	DC	CL50' HALT -FX- X=1-4, VOL X IS NOT READY OR ERROR ON V'
1B31	E76040E77EF160F4		1325		
1B39	6B40E5D6D340E740		1325		
1B41	C9E240D5D6E340D9		1325		
1B49	C5C1C4E840D6D940		1325		
1B51	C5D9D9D6D940D6D5		1325		
1B59	40E5		1325		
1B5B	D6D340E7	1B5E	1326	DSKMSG DC	CL04*OL X-
		0001	1327	DROP	XR1

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
1B5F	1B99	1B60	1329	IVSDC	DC AL2(IVSDC)
1B61	1E08	1B62	1330	OBRSST	DC AL2(DBUF-256+8)
1B63	1FF8	1B64	1331	OBRRND	DC AL2(DBUF+256-8)
1B65	1D21	1B66	1332	CBUF	DC AL2(CBUF)
1B67	1D79	1B68	1333	CEND	DC AL2(CBUF+88)
1B69	1D81	1B6A	1334	PBUF	DC AL2(PBUF)
1B6B	0010	1B6C	1335	SIXTEN	DC IL2'16'
1B6D	0008	1B6E	1336	EIGHT	DC IL2'8'
1B6F	F0	1B6F	1337	DZERO	DC DL1'0'
1B70	F1	1B70	1338	DONE	DC DL1'1'
1B71	00000000	1B74	1339	ZERO	DC XL4'0'
1B75	00	1B75	1340	CCNT	DC XL1'0'
1B76	0006	1B77	1341	SIX	DC IL2'6'
1B78	000E	1B79	1342	XOE	DC XL2'000E'
1B7A	FF	1B7A	1343		DC XL1'FF'
		1B7B	1344	FFFF	EQU *
1B7B	FFF9	1B7C	1345	NEG7	DC IL2'-7'
1B7D	0008	1B7E	1346	OBRTYP	DC XL2'8'
1B7F	0000	1B80	1347	SYNC	DC XL2'0'
			1348	*	H24 IS ALWAYS I'00IX'
1B81	0000	1B82	1349	H24	DC XL2'0'
1B83	0000	1B84	1350	DSKOPS	DC XL2'0'
1B85	0000	1B86	1351	CVTCNT	DC XL2'0'
1B87	0000	1B88	1352	CNTOPS	DC XL2'0'
1B89	0000	1B8A	1353	CNTLNG	DC XL2'0'
1B8B	0000	1B8C	1354	TABIDX	DC XL2'0'
1B8D	7B	1B8D	1355	I123	DC IL1'123'
1B8E	6B	1B8E	1356	I107	DC IL1'107'
1B8F	77	1B8F	1357	I119	DC IL1'119'
1B90	7E	1B90	1358	I126	DC IL1'126'
1B91	15	1B91	1359	I21	DC IL1'21'
1B92	C9D5E5C1D3C9C4	1B98	1360	INV	DC CL7'INVALID'
		1B99	1361	IVSDC	EQU *
1B99	F0F5F1F5F2F7F3F5	1B05	1362	DC CL6'051527353#44>0@<0004#2+--- 5444	IND. VOL. STAT. DATA CARDS INDIVIDUAL VOLUME STATISTICS'
1BA1	F37BF4F46EF07C4C		1362		
1BA9	F0F0F0F44AF24E60		1362		
1BB1	606040F5F4F4F440		1362		
1BB9	40C9D5C4C9E5C9C4		1362		
1BC1	E4C1D340E5D6D3E4		1362		
1BC9	D4C540E2E3C1E3C9		1362		
1BD1	E2E3C9C3E2		1362		
1BD6	40606060D0F14E6F	1C12	1363	DC CL61' --- 1+?0913) 709*?14COUNTERS?10* PERH. ERRORS * 146 * VOL 'D'	
1BDE	F0F951F35DD06FF0		1363		
1BE6	F95C6FF1F4C3D6E4		1363		
1BE8	D5E3C5D9E26FF1F0		1363		
1BF6	5C40D7C5D9D44840		1363		
1BFE	C5D9D9D6D9E2405C		1363		
1C06	D05AF4F6D05C40E5		1363		
1C0E	D6D340C9C4		1363		
1C13	405C40E3C5D4D740	1C4F	1364	DC CL61' * TEMP ERRORS*WRITES & VERIFIES*READS & SCANS* CYL * SECTOR *	
1C1B	C5D9D9D6D9E25CE6		1364		
1C23	D9C9E3C5E2405040		1364		
1C2B	E5C5D9C9C6C9C5E2		1364		
1C33	5CD9C5C1C4E24050		1364		
1C3B	40E2C3C1D5E25C40		1364		
1C43	C3E8D3405C40E2C5		1364		
1C4B	C3E3D6D940		1364		
1C50	5CD05AF4F6D05C6F	1C82	1365	DC CL51'* 146 *708*70@*?11*70) *705*708* 3) 801#08<#7+146 1+X'	
1C58	F0F85C6FF07C5C6F		1365		
1C60	F1F15C6FF05D5C6F		1365		
1C68	F0F55C6FF0F85CD0		1365		
1C70	6C5DF8F0F14AF0F8		1365		
1C78	4C6CF74E5AF4F6D0		1365		
1C80	F14E6C		1365		
		1C83	1366	PDTDC EQU *	
1C83	F04E5AF3F6D0F0F2	1CA9	1367	DC CL39'0+136 023#44>?36*705*108* #7+?26110 1+X'	
1C8B	F37BF4F46E6FF3F6		1367		
1C93	5C6FF0F55C6FF0F8		1367		

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

1C9B	5CD06CF74E6FF3F6	1367			
1CA3	5AF1F0DDF14E6C	1367			
1CAA	FOFOFOF1FOFO	1368	SYNTBL	EQU	*
1CAF		1369	DC		DL6'000100' RTN1 SYNC PT CARD 1 COL 0
1CB0	FOF1F0F9FOFO	1370	DC		DL6'010900' RTN2 SYN PT
1CB6	FOF1F5F9FOFO	1371	DC		DL6'015900' RTN3 SYN PT
1CBC		1372	DS		14XL6
		1373	TABTBL	EQU	*
1D10		1374	DS		17XL1
		1375	CBUF	EQU	*
1D21		1376	DS		96XL1
		1377	CRDNHB	EQU	CBUF+95
		1378	PBUF	EQU	*
1D41		1379	DS		96XL1
		1380	QRSNS	EQU	*
		1381	DS		XL4
		1382	PEND@	DS	AL2
		1383	PSTR@	DS	AL2
		1384	CSTR@	DS	AL2
		1385		DS	XL1
		1386	PROG#	DS	XL2
		1387	PROGC	DS	XL1
		1388	PROGI	DS	XL6
		1389	DEC	DS	ODL10
		1390	TEMP	DS	XL2
		1391	CNT	DS	XL1
		1392	CNTN	DS	0XL1
		1393	SVCSTR	DS	AL2
		1394	SDRIDX	DS	AL2
		1395	OBRNT@	DS	AL2
		1396	END	EQU	*
1E00		1397	ORG		X'1E00'
1E00		1398	DS		XL256
		1399	DBUF	EQU	*
1F00		1400	DS		XL256
		1401	PTBUF	EQU	DBUF-256
		1402	PCHBUF	EQU	DBUF-256
		1403	RDBUF	EQU	DBUF-256+X'80'
		1404	ORG		DBUF+241
1FF1		1405	HACH#	DS	OCL5
1FF1		1406	ORG		DBUF+247
1FF7		1407	STRDAT	DS	OCL6
1FFD		1408	ORG		DBUF+253
1FFD		1409	NEW DAT	DS	OCL6
1F00		1410	ORG		DBUF
1F00 38 20 0A14		1411	OPEN	TBN	CO-1,X'20'
1F04 F2 90 0D		1412	JF		OPNX
1F07 C0 87 022A		1413	B		LOAD
1F0B 04		1414	DC		XL1'04' LOAD RTN 4 FOR 5445 IVS
1F0C DFF3		1415	DC		XL2'DFF3'
1F0E 0C 01 10D7 1F1D		1416	HVC		RTN3+3,X3000(2) SET LINKAGE FOR RTN 4.
1F14 3C 07 19F8		1417	HVI		OPNF,X'C7' FORM A NO-OP BRANCH.
1F18 C0 87 19FB		1418	B		SYNR
1F1C 2000		1419	DC		XL2'2000'
		1420	FFFF		END

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADD8	A	005	0D33	0280	0275
ALCL	A	001	190B	1072	1060*
ARR	C	001	0008	0006	0744 0763 0802 0947 1000 1019 1047 1103 1136 1160 1171 1201
ASTER	A	001	176E	0922	0902
AST1	A	003	1772	0924	0927
A107	A	005	0D0E	0269	0261 0266
A119	A	005	0D06	0267	0263
BLANK	A	001	0EDF	0428	1078
BOTH	A	004	0D40	0284	0273 0279 0281
BR@	A	004	0B64	0140	0125*
BRTBL	A	002	0EBB	0410	0054* 0056* 0058* 0122
BSPLG	C	001	0002	0799	0510 0529 0531
BYTES	A	004	0DBB	0321	0319
BO	A	003	0A18	0033	0639
CBUF	A	001	1D21	1375	0971* 1179 1332 1333 1377
CBUF@	A	002	1B66	1332	0820 0972
CCNT	A	001	1B75	1340	0534* 0545* 0552* 0555 0561* 0562
CEND@	A	002	1B68	1333	0842 0910
CHKSW	A	001	1674	0843	1176*
CHKSW1	A	001	1747	0911	1175*
CLCL	A	001	14FD	1068	1061*
CNT	A	001	1DF7	1391	0384* 0391* 0471* 0476* 0477 0483 0493* 0571*
CNTLNG	A	002	1B8A	1353	0554* 0890* 1049 1053 1058 1087
CNTN	A	001	1DF7	1392	0605* 0612* 0684* 0687* 0688 0692 0694 0697* 0705*
CNTOPS	A	002	1B88	1352	0132* 0133* 0176* 0177* 0201 0216* 0222 0227* 0250* 0252 0317* 0322
					0473* 0474* 0537* 0540* 0555* 0766* 0768 0776* 0889* 1021 1064 1087*
					1105 1138 1153*
CNTR	A	001	16F3	0987	0852
CONSOL	A	007	0F1E	0443	0295
CRDNHB	A	001	1D80	1377	0811 0951* 0960 0968* 0969
CSTR@	A	002	1DEA	1384	0630 0659* 0702* 0729* 0821* 0839 0841* 0842 0846 0865* 0874* 0909*
					0910 0916 0972*
CVTBIN	A	001	1991	1135	0138 0139 0180 0181 0212 0213
CVTB1	A	003	19B6	1148	1146
CVTB2	A	003	19A9	1144	1150
CVTCNT	A	002	1B86	1351	1052 1076* 1143* 1149*
CVT1	A	001	19CC	1155	1088
CVT1@	A	001	19D5	1158	1047* 1103* 1136*
CVT11	A	001	19C3	1151	1117
CYLPRT	A	001	12DF	0743	0696 0704 0710
CYLI@	A	001	12FC	0754	0744*
CYLO	A	001	1A7C	1238	1231 1255
CO	A	003	0A15	0032	1411
C8	A	003	0A12	0031	
DAR	A	001	1B09	1302	1243
DBUF	A	001	1F00	1399	0069 0069* 0075 0080 0080* 0081 0081* 0082 0082* 0088* 0200 0221
					0251 0321 0373* 0374 0374* 0378* 0650 0652 0655 0682 0683 0767
					1020 1063 1104 1137 1301 1330 1331 1401 1402 1403 1404 1406
					1408 1410
DBUF@	A	002	1B09	1301	0133 0177
DCR	A	002	1B07	1300	1244
DD51	A	001	10C9	0576	0464*
DEC	A	010	1DF4	1389	1066* 1071 1071* 1075* 1078* 1081* 1086
DHLTX@	A	001	1AEE	1284	1266*
DISKIO	A	001	1A19	1198	0375 0379 0490 0567 0618 0648 0677 0721 0880 1199 1200
DISKX@	A	002	1AF2	1286	1201* 1202 1258
DIVEY4	A	004	0D1B	0272	0268 0270
DKONE	A	001	1AAF	1260	1233 1252
DND	A	004	1209	0692	0686 0689
DONE	A	001	1B70	1338	0968 1075
DRETRY	A	003	1A85	1242	1253
DRIVE	A	002	1AF0	1285	1267* 1269 1269* 1271* 1275
DRV#	A	002	12DE	0735	0633* 0644 0664 0723*
DRVC	A	001	1584	0759	0663* 0664*
DRVIBL	A	001	12D9	0733	0643

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
DSDR1	A	006	0F6E	0474	0478
DSDR2	A	001	0FA4	0487	0484
DSDR3	A	006	0F68	0473	0486
DSK	A	001	16D6	0877	0850
DSKBSY	A	001	1AB0	1262	1223
DSKCRF	A	001	1B0E	1310	1224* 1233* 1241* 1252*
DSKCYL	A	001	1B03	1297	
DSKDEV	A	001	1B01	1294	0050* 0465* 0601* 0645* 1213 1267
DSKFCF	A	001	1A8F	1245	1203*
DSKFLG	A	001	1B02	1296	1300
DSKHLT	A	001	1AB6	1265	1235 1254 1263
DSKH1	A	004	1ACB	1272	1270
DSKH2	A	004	1AC1	1269	1273
DSKIO1	A	001	1A48	1217	1211
DSKIO2	A	004	1A2A	1207	1215
DSKMSG	A	004	1B5E	1326	1280
DSKNJM	A	001	1B05	1299	1242*
DSKOPS	A	002	1B84	1350	0472* 0473 0485*
DSKSEC	A	001	1B04	1298	0377* 0647* 0879* 1219
DUMP	C	001	2020	0019	
DVFLG	A	002	0EB5	0395	0146* 0196* 0208* 0232* 0239* 0243* 0292* 0296* 0296* 0304* 0309* 0327*
DVTBL	A	001	0ED8	0425	0385 0385*
DZERO	A	001	1B6F	1337	0059* 0128
D51	A	003	0A1B	0034	0951 1066
EIGHT	A	002	1B6E	1336	0083 0280 0334 0346
EMPTY	A	001	0E44	0361	0114
END	A	001	1DFE	1396	
ENT1	A	009	0C12	0191	0149* 0150* 0151
ENT2	A	009	0C1B	0192	0148* 0188
ENAP	A	001	0A00	0003	
ERNMG	A	004	0E39	0355	0078
E1	A	001	10CA	0577	0461*
FFFF	A	001	1B7B	1344	0750 0805 1026 1107 1272
FPLG	C	001	0080	0793	0809 0833 0948 0973
FLG14	A	001	0A0E	0030	0244 0255 0459
HALFNT	A	001	0AF4	0108	0105
HALT	C	001	0222	0015	0628 0830 0980 0988 1281
HEXDEC	A	001	1BAC	1046	0182 0203 0214 0215 0218 0219 0284 0306 0312 0475 0519 0535
HEXD0	A	004	1949	1099	0536 0538 0539 0553 0556 0608 0609 0672 0673 0674 0746 0749
HEXD1	A	006	1904	1071	1070
HEXD2	A	006	1917	1076	1077
HEXD3	A	004	1933	1082	1074
HEXD5	A	006	1921	1078	1080
HEXHEX	A	001	1955	1102	1090
HEX2	A	004	196D	1110	0136 0137 0179 0183 0184 0197 0236 0305 0311 0320 0324
HEX22	A	001	15A6	0762	1119
HEX22X	A	001	15E0	0778	0185 0186 0187
HEX3	A	003	197F	1115	0763*
HLTCOD	A	002	1AEA	1282	1276*
HLTTBL	A	001	1B0A	1304	1274
H24	A	002	1B82	1349	0818* 0819 1163* 1165
INC	A	006	16CC	0874	0882 0886 0891
INV	A	007	1B98	1350	0288
INVALID	A	001	0D47	0286	0254
IVS	A	001	1121	0620	0617
IVSDC	A	001	1B99	1361	1329
IVSDC0	A	002	1B60	1329	0659
IVS1	A	001	1121	0622	0728
IVS2	A	004	1143	0635	0726
IVS3	A	001	1188	0654	
IVS4	A	001	115A	0641	0638
I107	A	001	1B8E	1356	0269
I119	A	001	1B8F	1357	0267
I123	A	001	1B8D	1355	0257

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
I126	A	001	1B90	1358	0282
I21	A	001	1B91	1359	0271
I5	A	001	0D01	0265	0278
LEVEL	A	001	1856	0992	0987
LINE	A	001	16E9	0884	0858
LINK	C	001	0216	0012	0393 0573 0730
LIO1	A	003	1A5A	1225	1234 1314
LIO2	A	003	1A88	1243	1315
LIO3	A	003	1A8B	1244	1316
LIO4	A	003	1A7C	1239	1322
LNGTBL	A	001	1951	1091	1048
LOAD	C	001	022A	0016	0954 0958 0963 1413
MACH#	A	005	1FF0	1405	
MODEL	C	001	0200	0010	0051
MODEL	A	001	0A53	0060	0052
NOVID	A	004	0C77	0223	0189
MSG	A	001	1707	0893	0848
MSGCK	A	004	172C	0906	0935
MSGX	A	030	0E38	0348	0358
MSG1	A	001	1716	0898	0908
MSG2	A	004	175A	0916	0912
MVCL	A	001	193C	1085	1050*
MVCUSF	A	004	08BE	0170	0164
HYPTX	A	001	0D8A	0308	0302
HX1	A	004	0DB7	0320	0314 0316
HEG7	A	002	1B7C	1345	1141
HEWDAT	A	006	1FFC	1409	
NEXT	A	001	165D	0837	0822 0875 0918 0921
NPLG	C	001	0020	0795	0646 0657 0661
NOPDT	A	001	1250	0712	0693
NOPDTM	A	010	15A5	0761	0715
NSD	A	004	118F	0657	0651
NSDM	A	023	159B	0760	0665
NSLEV	A	004	1B29	0984	0967
NXT1	A	004	1665	0840	0862
NXT2	A	003	167E	0847	0844
OBRND0	A	002	1B64	1331	0087 0113 0233 0332 0335
OBRNT0	A	002	1DFD	1395	0087* 0089 0101* 0104 0110* 0113 0119 0147 0209 0332 0334* 0335
OBRST0	A	002	1B62	1330	0337 0346*
OBRSTP	A	002	1B7E	1346	0104
OBR1	A	004	0EB9	0396	0100* 0101 0106* 0110
ONE	A	001	0A56	0062	0074 0378
ONEPDT	A	001	1249	0709	0250 0317 0390 0391 0476 0520 0545 0569 0570 0571 0612 0687
OPEN	A	004	1F00	1411	0697 0705 0723 0766 0775 0776 0865 0874 0909 0926 1059 1076
OPNF	A	001	19F8	1172	1149 1153 1156 1210
OPNX	A	004	1F14	1417	0695
PACK	A	004	1857	1000	1173
PACKD	A	002	15CC	0773	1417*
PACKS	A	002	15CA	0772	1412
PBUF	A	001	1D81	1378	0871 0878 0888
PBUF0	A	002	1B6A	1334	0765*
PCHBUF	A	001	1E00	1402	0769*
PCK1	A	004	1863	1003	0072* 0117 0838 0872 0879 0885 0889 0890 0897 0913* 0915 1334
PDT	A	001	11DD	0679	1001 1002
PDTDC	A	001	1C83	1366	1009
PDTSCN	A	004	1262	0718	0676
PDTX	A	004	1266	0719	0698 0700
PDT1	A	003	11EF	0685	0711
PDT2	A	004	1228	0700	0708
PDT3	A	006	1273	0723	0691
PDT4	A	001	122C	0701	0706
PEND0	A	002	1DE6	1382	0636 0640 0670 0720
PEXT0	A	001	1882	1011	0699

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEPN, REFERENCES. Contains multiple rows of symbols and their corresponding reference values.

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEPN, REFERENCES. Contains multiple rows of symbols and their corresponding reference values.

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

PF77 DISK ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEFB, REFERENCES. Contains cross-reference data for symbols like S21, TAB, TABID, etc.

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

Table with columns: CL 1 THROUGH 16, CL 17 THROUGH 32, CL 33 THROUGH 48, CL 49 THROUGH 64, CL 65 THROUGH 80, CL 81 THROUGH 96. Contains object card listing data.

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+-@JM^P4^*E EDA	EDA EDA EDC1^|L	2EDA EDA EDCBB^|	A@7.6^~P4^|L5^|L	4^~L4^HA EDC5@7C	3^~E 3.0FF770022
T+-^@?L5^|X60^\$	N8_5L1)-R2)PT1)X	LO@J - E5<BG /Z	A^~^~^~^~^~^~^~^~^	D|^D@2TU-B/,2D E	@HJ^~^~^~^~^~^~^~^
T+-=G2L2YPOGB	BOH^R@BGE;H@EA7	7C0DS/A_9C D\$SA>	DC-D\$SA_90B^*Q, @	G^~^~^~^~^~^~^~^~^	>OH^~^~^~^~^~^~^~^
T+-^B /Y/OH^N8TO	AF80^ A77@YDHC-D	S/ ^NOH^|E^~^~^~^	2U P /1YR TO<G^~	@AA> O-H@2C@BG^~	5 J4 K3<FF770025
T+-^~^~^~^~^~^~^~^	@YD(>A A@/C@B-H	COH^|2CMBP8 :DAP	/OH^N8T@BE;D5 J7	@~Q @YE@-Q- @YE	5~^~^~^~^~^~^~^~^
T+ / 8 |HA<<BGFHO	| A4@BV\$ J BOH^	BPSG /1PS (E@)=77	Y |HA-3-BE;G2DG-	: /P/OH^*E TOGF7P	/1- 43QFF770027
T+ /A3, <BGFHO+ J>	HDF@ /1S^OH^*Q, @	AF@-@*BG /Y/OH^*	N8TOAP80| A_5BV\$	J 6OH^*EY- Q AO	@<A^~^~^~^~^~^~^~^
T+ /B) *BGFHO@ />	HC-D\$SA_50H^*Q, <B	G /Y/OH^*N8TOAP80	| A_5C5H^E/_50 D	E) L@ -32U P /1Y	R -8)5-FF770029
T+ /CZ J> BVQ+ J7	*BVQ| A77BV\$ E^~	OH^BE/A@B|B SAH	E:+X80 <^~^~^~^ /OH	E@E^~^~^~^~^~^~^~^	@ |H-5^*H B <^~^~^~^
T+ /DUOH^R@B3DGC^~	@ J><OH^*F@BGFH3	/1S^OH^*BPSD| A7	7BV\$ JC2OH^*N8T@	^~^~^~^~^~^~^~^~^	-32U P /1YR^*B G /Y
T+ /E-J4DK6|^*OOH^*	BH-COC D)=J7D+OE	N8LOHDH@A.:+^~	BC<B@DX<^~^~^~^@E	H+B HE@B@DX<:AAP	/O-H QDFF770032
T+ /FED_U6 /-;^~	S @ HAP/| -SA<B	GF/UAC@H^~ /OB@-D	+|^~^~^~^~^~^~^~^~^	2-E@:HAP/C D):/_	-OH^~^~^~^~^~^~^~^
T+ /GHE;H@HAP/@Z	-|@N/ @ E@E7-0	SBI@N@B@G /Y/OH^*	N8^BGE;.2/:^~ /1S	XOH^*Q, <BGFHO9- H	<OI^~^~^~^~^~^~^~^
T+ /H@D)7 /1YR^*B	GE;H<A@SGGOTB /M	Q| )^~^~^~^~^~^~^~^	G^~^~^~^~^~^~^~^~^	S^~^~^~^~^~^~^~^~^	/1G?|E)^~^~^~^
T+ /I. J77@YD2OH^*	K70@ G^~^~^~^~^~^~^~^	2/OLB J2I (D):^*B	GE;. /1.^~CO)^*OZ	OO DKH<BGE;.2/17	/1H^~^~^~^~^~^~^~^
T+ /H^~^~^~^~^~^~^~^	/1XOL U EEP /OH	EH^*BGE;H9- H<OI	K^~@BGF/UBC-DK7-Z	OC- JJAED+H JJ<B	EDH< 5LOFF770037
T+ /A+ ENB^* EDKD	< J7DG-X /OH08XP	L1^|T@<LR2;PE@<\$	O6MC5^|L4@<XN1D_	9)R.K=.TO; (.E4C	S1;< 20-FF770038
T+ /@@+.S97.XE=)	=@OC4@<@O6MCD6;P	XK4B0>HBY^~^~^~^	@OH^*Q, <BGFH| /1S	X^~^~^~^~^~^~^~^~^	T D F7? /OH^~^~^~^
T+ /O:9) \$L@J 2;I	OH^CN5_N-8>|A5*L	A6^*J 5@GC4_PO@<P	R6) \$R8U 4BAP-OH^*	B5TEAE^*O+ J>HBV\$	B J@ OTHFF770040
T+ /P5 CQAF8-4 JP	HOH^*BG-H^~^~^~^	P@D^~^~^~^~^~^~^~^	8AF8OH^N-8AF8-	H^~^~^~^~^~^~^~^~^	B (-O?^*H AGH@6 J_7(-H\$;@
T+ /QO^*A N8-H@QCS	E;G2D^~^~^~^ 16^~^	AB^~^~^~^~^~^~^~^~^	DO DEAAO P8HE(EH	S-TQBF6Q4 /7D@Y*	>|E^~^~^~^~^~^~^~^
T+ /R. T.2-E@ /OH	E/1DOP<BG SH :TD	E;G /1Q|6^*PL5^*G	DE<LA8@E O@GR1+.	B J6 (E@):T@AG;Q	4 /4 @H^*FF770043

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+ /EN:-4AG;YSE|H	BB<BGE9M5 /7D?)	@YFC?H@ @YE<?HY	@YET?O@ @YDY?OO	@YDH?H@ @YEG4-D	AS^~^~^~^~^~^~^~^
T+ /@?L5^|X60^\$	N8_5L1)-R2)PT1)X	LO@J - E5<BG /Z	A^~^~^~^~^~^~^~^~^	D|^D@2TU-B/,2D E	@HJ^~^~^~^~^~^~^~^
T+-=G2L2YPOGB	BOH^R@BGE;H@EA7	7C0DS/A_9C D\$SA>	DC-D\$SA_90B^*Q, @	G^~^~^~^~^~^~^~^~^	>OH^~^~^~^~^~^~^~^
T+-^B /Y/OH^N8TO	AF80^ A77@YDHC-D	S/ ^NOH^|E^~^~^~^	2U P /1YR TO<G^~	@AA> O-H@2C@BG^~	5 J4 K3<FF770025
T+-^~^~^~^~^~^~^~^	@YD(>A A@/C@B-H	COH^|2CMBP8 :DAP	/OH^N8T@BE;D5 J7	@~Q @YE@-Q- @YE	5~^~^~^~^~^~^~^~^
T+ / 8 |HA<<BGFHO	| A4@BV\$ J BOH^	BPSG /1PS (E@)=77	Y |HA-3-BE;G2DG-	: /P/OH^*E TOGF7P	/1- 43QFF770027
T+ /A3, <BGFHO+ J>	HDF@ /1S^OH^*Q, @	AF@-@*BG /Y/OH^*	N8TOAP80| A_5BV\$	J 6OH^*EY- Q AO	@<A^~^~^~^~^~^~^~^
T+ /B) *BGFHO@ />	HC-D\$SA_50H^*Q, <B	G /Y/OH^*N8TOAP80	| A_5C5H^E/_50 D	E) L@ -32U P /1Y	R -8)5-FF770029
T+ /CZ J> BVQ+ J7	*BVQ| A77BV\$ E^~	OH^BE/A@B|B SAH	E:+X80 <^~^~^~^ /OH	E@E^~^~^~^~^~^~^~^	@ |H-5^*H B <^~^~^~^
T+ /DUOH^R@B3DGC^~	@ J><OH^*F@BGFH3	/1S^OH^*BPSD| A7	7BV\$ JC2OH^*N8T@	^~^~^~^~^~^~^~^~^	-32U P /1YR^*B G /Y
T+ /E-J4DK6|^*OOH^*	BH-COC D)=J7D+OE	N8LOHDH@A.:+^~	BC<B@DX<^~^~^~^@E	H+B HE@B@DX<:AAP	/O-H QDFF770032
T+ /FED_U6 /-;^~	S @ HAP/| -SA<B	GF/UAC@H^~ /OB@-D	+|^~^~^~^~^~^~^~^~^	2-E@:HAP/C D):/_	-OH^~^~^~^~^~^~^~^
T+ /GHE;H@HAP/@Z	-|@N/ @ E@E7-0	SBI@N@B@G /Y/OH^*	N8^BGE;.2/:^~ /1S	XOH^*Q, <BGFHO9- H	<OI^~^~^~^~^~^~^~^
T+ /H@D)7 /1YR^*B	GE;H<A@SGGOTB /M	Q| )^~^~^~^~^~^~^~^	G^~^~^~^~^~^~^~^~^	S^~^~^~^~^~^~^~^~^	/1G?|E)^~^~^~^
T+ /I. J77@YD2OH^*	K70@ G^~^~^~^~^~^~^~^	2/OLB J2I (D):^*B	GE;. /1.^~CO)^*OZ	OO DKH<BGE;.2/17	/1H^~^~^~^~^~^~^~^
T+ /H^~^~^~^~^~^~^~^	/1XOL U EEP /OH	EH^*BGE;H9- H<OI	K^~@BGF/UBC-DK7-Z	OC- JJAED+H JJ<B	EDH< 5LOFF770037
T+ /A+ ENB^* EDKD	< J7DG-X /OH08XP	L1^|T@<LR2;PE@<\$	O6MC5^|L4@<XN1D_	9)R.K=.TO; (.E4C	S1;< 20-FF770038
T+ /@@+.S97.XE=)	=@OC4@<@O6MCD6;P	XK4B0>HBY^~^~^~^	@OH^*Q, <BGFH| /1S	X^~^~^~^~^~^~^~^~^	T D F7? /OH^~^~^~^
T+ /O:9) \$L@J 2;I	OH^CN5_N-8>|A5*L	A6^*J 5@GC4_PO@<P	R6) \$R8U 4BAP-OH^*	B5TEAE^*O+ J>HBV\$	B J@ OTHFF770040
T+ /P5 CQAF8-4 JP	HOH^*BG-H^~^~^~^	P@D^~^~^~^~^~^~^~^	8AF8OH^N-8AF8-	H^~^~^~^~^~^~^~^~^	B (-O?^*H AGH@6 J_7(-H\$;@
T+ /QO^*A N8-H@QCS	E;G2D^~^~^~^ 16^~^	AB^~^~^~^~^~^~^~^~^	DO DEAAO P8HE(EH	S-TQBF6Q4 /7D@Y*	>|E^~^~^~^~^~^~^~^
T+ /R. T.2-E@ /OH	E/1DOP<BG SH :TD	E;G /1Q|6^*PL5^*G	DE<LA8@E O@GR1+.	B J6 (E@):T@AG;Q	4 /4 @H^*FF770043

FF77 DISK ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ />8B ;6_7~/P I5:PA4@XD@|P1'~. 7@*P3;~L4\$7A@L|C 0@|JH@U9-QFA '~-L 4'D'' NYOFF770066

T+ /?3@<XN1<1V2*L U0) (9) \$L9 (LES+. T0;|IB>|IO=I QFA -4|E+S*C907()4F'' 0=N17@~LC5>LN8@P R8W@ 3QMPF770067

T+ /0>@-A*E(-E6) J .@<PR6) \$R8@A*4E, 4*_A*E+P044CI1DA *E+|E5 () 1)XR5_X SP+\$R2;|EBUA@E+P E6*U *HOPF770068

T+ /1Z1\$XEBV3R1*G D8@A@E@+.CO)PSPDC C: ((PDCS1*|T5_V P(AE'|S@PF*0=E1 7@G1*\$"G1PF*OPW1 7@|H E1 FF770069

T+ /2UPP*0=E3@E7 8@|EH@|/<\$|) +07L 6@|E+S|A+07|64|C 2@77@'P97@*R*\$*C 5PF*0=E3@E|)+\$*| 607D *2UPF770070

TE/2#@|C1LW30@|C 1@|C0@-C9@|C0@-P 9@| 5 @FF770071

TGJ@)+B HE|H@C*B G SYD7* << JCPG1@ @A1X8@H*B=2 QJ@FF770072

E*'*E7*=-DC*PH\$ =*7H@P| | C P% ASC R A SO Q 1@21101271@ 72372*Y@FF770073

----- LAST PAGE -----

DATE	30SEP70	01AEP71	01JUG71	21JAN72	01MAR72	12JUN72	24JUL72	PROG ID	QIF7-7
EC EQ.	816760	818948	818317	577007	818350	577050	577060	RECL	19



ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	ERAP	START X'0'
		3	DECK	4
		4	*****	
		5	*	BOOTSTRAP - FIRST CARD *
		6	*****	
	0000	7	USING	BOOT1,1
		8	COM	INHIBIT OBJECT DECK
0000	C2 01 0000	9	BOOT1	LA 0,XR1 LOAD BASE REGISTER
0004	D1 F0 17	10	TIO	BOOT1E(,XR1),X'F0' GO HALT IF MFCU ERROR OR NOT READY
0007	F1 F5 1E	11	LIO	BOOT1I(,XR1),X'F5' LOAD READ ADDRESS REGISTER
000A	F3 F1 40	12	SIO	IPL,READ READ A CARD INTO LOCATIONS 512-607
000D	D1 F1 0D	13	BOOT1A	TIO BOOT1A(,XR1),X'F1' LOOP UNTIL DONE
0010	D1 F0 17	14	TIO	BOOT1E(,XR1),X'F0' GO HALT IF ERROR
0013	C0 87 0200	15	B	BOOT2 GO TO BOOTSTRAP ROUTINE
		16		
0017	F0 3B 5D	17	BOOT1E	MPL H5,HH *MFCU NOT READY OR ERROR
001A	D0 87 00	18	B	BOOT1(,XR1) GO TRY AGAIN
		19		
001D	0200	001E	20	BOOT11 DC AL2(512)
			21	
001F	40D7D540E7E7E7E7	003B	22	DC CL29' PN XXXXXX EC XXXXXX L'
0027	E7E7E740C5C340E7		22	
002F	E7E7E7E7E7E74040		22	
0037	40404040D3		22	
			23	
			24	
			25	*****
			26	* BOOTSTRAP - SECOND CARD *
			27	*****
0200		0200	28	ORG 512
			29	USING BOOT2,2
0200	C2 02 0200		30	BOOT2 LA BOOT2,XR2 LOAD BASE REGISTERS
0204	C2 01 1100		31	BT2 LA CDREAD,XR1 PUT LOADER IN HIGH CORE
0208	F2 87 03		32	J BOOT2A
020B	F0 3B 5D		33	BOOT2E MPL H5,HH *MFCU NOT READY OR ERROR
020E	E1 F0 0B		34	BOOT2A TIO BOOT2E(,XR2),X'F0' GO HALT IF MFCU NOT READY OR ERROR
0211	B1 F5 3B		35	LIO BOOT23(,XR2),X'F5' LOAD READ LSR FOR ADDR 0000
0214	F3 F1 40		36	SIO IPL,READ READ A CARD
0217	E1 F1 17		37	BOOT2B TIO BOOT2B(,XR2),X'F1' LOOP UNTIL DONE
021A	E1 F0 0B		38	TIO BOOT2E(,XR2),X'F0' GO HALT IF ERROR
021D	4C 3B 3B 003B		39	MVC 59(60,XR1),59 MOVE DATA TO CORE
0222	D2 01 3C		40	LA 60(,XR1),XR1 INCREMENT POINTER FOR NEXT CARD
0225	AF 00 39 05		41	SLC BOOT22(1,XR2),BOOT21(,XR2) CONTINUE UNTIL 4 CARDS HANDLED
0229	E0 01 0E		42	BNZ BOOT2A(,XR2)
022C	BC 40 FF		43	MVI 255(,XR2),C' ' BLANK THE LINE
022F	0C 82 0:FE 02FF		44	MVC X'2FE'(131),X'2FF' GO TO DIAGNOSTIC LOADER
0235	C0 87 1:27		45	B NEXTR
			46	
		0205	47	BOOT21 EQU BT2+1
0239	03	0239	48	BOOT22 DC 1L1'3'
023A	0000	023B	49	BOOT23 DC AL2(0)

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1100		51	ORG	X'1100'
		52	*****	
		53	*	DIAGNOSTIC LOADER *
		54	*****	
		55		
		56	*	
		57	**	SUBROUTINE TO READ ONE CARD.
		58	*	
		59	USING	CDREAD-4,2
	10FC	60	CDREAD	LA CDREAD-4,XR2 LOAD BASE REGISTER
		61	ST	CDEXIT+3(,XR2),ARR
1100	C2 02 10FC		62	DQLIO TIO ERR(,XR2),X'F0' GO HALT IF MFCU NOT READY OR ERROR
1104	B4 08 20		63	LIO AINPUT(,XR2),X'F5' LOAD LSR TO START LOADING AT X'AO0'
1107	E1 F0 21		64	SIO X'00',READ READ A CARD - NORMAL MODE
110A	B1 F5 2E		65	BUSY TIO BUSY(,XR2),X'F1' LOOP UNTIL READ DONE
110D	F3 F1 00		66	SNS CDREAD-1(,XR2),X'F3' GO HALT IF FEED OR READ CHECK
1110	E1 F1 14		67	TBF CDREAD-1(,XR2),X'86'
1113	B0 F3 03		68	CDEXIT BT *-*
1116	B9 86 03		69	ERR MPL H5,HH EXIT SUBROUTINE IF NO ERRORS
1119	C0 10 0000		70	B DQLIO(,XR2) *MFCU NOT READY OR ERROR
111D	F0 3B 5D		71	
1120	E0 87 0B		72	NEG3X DC XL2'FFF0'
		1124	73	NEG4X DC XL2'FFFC'
1123	FFFF		74	
1125	FFFC		75	
			76	NEXTR LA INPUT,XR1
1127	C2 01 0200		77	B CDREAD
1128	C0 87 1100		78	CLI O(,XR1),C'T' BRANCH IF THIS IS TEXT CARD
112F	7D E3 00		79	JE LOOP
1132	F2 81 06		80	CLI O(,XR1),C'E' BRANCH IF NOT END CARD
1135	7D C5 00		81	JNE CKREP
1138	F2 01 72		82	LOOP CLI 1(,XR1),X'DO' REPLACE ALL HEX 'DO' BYTES WITH '2A'
113B	7D D0 01		83	JNE *-*
113E	F2 C1 03		84	MVI 1(,XR1),X'2A'
1141	7C 2A 01		85	LA 1(,XR1),XR1
1144	D2 01 01		86	ST LDWORK(,XR2),XR1
1147	B4 01 01		87	CLI LDWORK(,XR2),X'58' CONTINUE THROUGH CARD
114A	BD 58 01		88	BL LOOP(,XR2)
114D	E0 82 3F		89	
			90	LA INPUT+87,X'03' INITIALIZE POINTERS
1150	C2 03 0257		91	LENGTH MVI S1+1,0 INITIALIZE LENGTH OF ADD FIELD
1154	3C 00 115F		92	CMLoop MVC S2+1(1),S1+1
1158	0C 00 1163 115F		93	S1 ALC 1(*-,XR2),1(,XR2) SHIFT OFF HIGH-ORDER 2 BITS
115E	AE 00 01 01		94	S2 ALC 1(*-,XR2),1(,XR2)
1162	AE 00 01 01		95	ALC S1+1(1),N1 PREPARE TO OPERATE ON NEXT BYTE
1166	0E 00 115F 11A2		96	CLI S1+1,4 CONTINUE UNTIL 4 BYTES COMPRESSED
116C	3D 04 115F		97	BNE CMLoop
1170	C0 01 1158		98	
			99	MVC 1(3,XR1),0(,XR2)
1174	6C 02 01 00		100	*
			101	A NEG3X,XR1
1178	36 01 1124		102	A NEG4X,XR2
117C	36 02 1126		103	ST LDWORK,XR1
1180	34 01 10FD		104	CLI LDWORK,X'17'
1184	3D 17 10FD		105	BH LENGTH
1188	C0 84 1154		106	
			107	LA INPUT,XR1
118C	C2 01 0200		108	CLI O(,XR1),C'E' POINT XR1 AT READ-IN FIELD
1190	7D C5 00		109	BE ENT IF THIS IS END CARD, GO ON
1193	C0 81 0380		110	
			111	MVC MOVE+3(3),25(,XR1)
1197	1C 02 11A7 19		112	LPTONE MVC MOVE+4(1),23(,XR1)
119C	1C 00 11A8 17		113	LA 26(,XR1),XR1
11A1	D2 01 1A		114	MOVE MVC *-*(,XR1),*-(,XR1)
11A4	1C 00 0000 00		115	B NEXTR
11A9	C0 87 1127		116	HPL X'73',X'68'
11AD	F0 68 73		117	*
			118	



ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT		
119	SEQ	6		BEGIN SEQUENCING AT 6		
120	ECON			ALLOW OBJECT DECK		
121	ORG	*-3		FORCES A NEW TEXT CARD		
122	CKREP	CL	0(,XR1),C'R'	BRANCH IF NOT REPLACE CARD		
123	BNE	CKCOM				
124	*					
125	*					
1184	34	01	OF96	SAVE REGISTERS		
1188	34	02	OF98			
118C	3C	04	OF89			
11C0	C2	01	0204			
11C4	C2	02	1200			
11C8	C0	87	0C98			
11CC	35	01	OF96			
11D0	7D	C5	01			
11D3	F2	01	07			
11D6	35	01	1200			
11DA	D0	87	00			
11DD	D2	01	08			
11E0	34	01	OF96			
11E4	3C	02	OF89			
11E8	35	02	1200			
11EC	36	01	11FE			
11F0	C0	87	0C98			
11F4	35	01	OF96			
11F8	F2	87	06			
11FB	0001					
11FD	FFFF	11FC	145 NU1	DC XL2'0001'		
11FF	0000	1200	146 NEG1X	DC AL2'FFFF'		
1201	0E	01	1200	11FC 147 DEST	DC AL2'***'	
1207	7D	40	01	148 ABB	ALC DEST(2),NU1	
120A	C0	81	1127	149 CKBLK	CLI 1(,XR1),C' '	
120E	D2	01	01	150	BE NEXTR	
1211	7D	68	00	151	LA 1(,XR1),XR1	
1214	C0	81	1207	152	CLI 0(,XR1),C' '	
1218	D2	01	01	153	BE CKBLK	
121B	C0	87	11E0	154	LA 1(,XR1),XR1	
121F	7D	5C	00	155	B NEXT	
1222	0C	01	1234	156 CKCOM	CLI 0(,XR1),C'**	
1226	0C	57	02D8	157	BNE CKCHN	
122C	C0	87	0D18	158	MVC X'2DB'(88),INPUT+87	
1230	C0	87	1127	159	B PRINT	
1234	4D	00	07	1293	160	B NEXTR
1239	F2	81	09	161 CKCHN	CLC 7(1,XR1),CHAIN	
123C	4D	00	06	1293	162	JE EEEE
1241	C0	01	1127	163	CLC 6(1,XR1),CHAIN	
1245	3C	02	0EBD	164	BNE NEXTR	
1249	4D	02	08	1296	165 EEEE	MVI CTR,2
124E	F2	81	08	166	CLC 11(3,XR1),D120	
1251	4D	02	0A	1296	167	JF DDDD
1256	F2	01	04	168	CLC 10(3,XR1),D120	
1259	3C	05	0EBD	169	JNE PTIMG	
125D	0C	01	OF98	128C	170 DDDD	MVI CTR,5
1263	C0	87	1100	171 PTIMG	MVC R2SAV(2),IMAD24	
1267	35	02	OF98	172 RDCD	B CDREAD	
1268	C2	01	022E	173	LA R2SAV,XR2	
126F	3C	30	0F89	174	LA INPUT+46,XR1	
1273	C0	87	0C98	175	MVI PKLEN,48	
1277	0E	01	OF98	128E	176	B PACKIT
127D	0F	00	0EBD	11A2	177	ALC R2SAV(2),N24
1283	C0	84	1263	178	SLC CTR(1),N1	
1287	C0	87	1127	179	BH RDCD	
128B	0317	128C	181 IMAD24	DC AL2(IMAG+23)		
128D	0018	128E	182 N24	DC IL2'24'		
128F	C3C8C1C9D5	1293	183 CHAIN	DC CL5'CHAIN'		
1294	F1F2F0	1296	184 D120	DC DL3'120'		

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	
0000				186 * THE FOLLOWING IS THE RESTART ROUTINE IN LOW COME	
0004	C0	87	0380	187 ORG X'0000'	
0008	30	00	1007	188 B ENT	
000C	38	80	10D6	189 TEST ST BRBK+3,ARR	
0010	C0	90	0000	190 SNS TEMP,X'00'	
0014	F0	38	3C	191 TBN TEMP-1,X'80'	
0017	30	00	10D7	192 BRBK BF *-*	
001B	38	80	10D6	193 HPL X'3C',X'3B'	
001F	C0	90	0008	194 SNSSW SNS TEMP,X'00'	
0023	3D	F1	10D6	195 TBN TEMP-1,X'80'	
0027	F2	81	0A	196 BF TEST+4	
002A	3D	F0	10D6	197 CLI TEMP-1,X'F1'	
002E	F2	81	0A	198 JE SWON	
0031	F2	87	33	199 CLI TEMP-1,X'F0'	
0034	3C	3A	005C	200 JE SWOFF	
0038	F2	87	04	201 J HALTSW	
003B	3C	38	005C	202 SWON MVI SETIT,X'3A'	
003F	3D	08	10D7	203 J SWOFF+4	
0043	F2	84	21	204 SWOFF MVI SETIT,X'3B'	
0046	3D	00	10D7	205 CLI TEMP,X'08'	
004A	F2	81	1A	206 JH HALTSW	
004D	C2	01	006D	207 CLI TEMP,X'00'	
0051	0C	00	005B	10D7	208 JE HALTSW
0057	1C	00	005D	00	209 LA MASKS-1,XR1
005C	3A	00	0ED3		210 MVC SETIT-1(1),TEMP
0060	F0	3C	3C		211 MVI SETIT+1,*-*(1,XR1)
0063	C0	87	0017		212 SETIT SBN SWITCH,*-*
0067	F0	7C	76		213 HPL X'3C',X'3C'
006A	C0	87	0017		214 B SNSSW
006E	0402000000000000	0075			215 B SNSSW
0076	34	08	0093	0076	216 HALTSW HPL X'76',X'7C'
007A	C2	02	025A		217 B SNSSW
007E	6D	01	05	05	218 MASKS EQU *
0082	F2	01	0B		219 DC XL8'0402000000000000'
0085	6D	01	01	01	220
0089	F2	01	04		221 *****
008C	6D	01	03	03	222 * MMDDYY * ON ENTRANCE: XR1 CONTAIN A PTR TO LOW @ BYTE OF START *
0090	C0	87	0000		223 ***** OR END DATE TO BE COMPARED AGAINST. *
					224 *
					225 * ON EXIT : THE CONDITION REG WILL BE: *
					226 * 1.HIGH -- THE DATE ON SIP CARD IS HIGH *
					227 * 2.EQUAL -- THE DATE ON SIP CARD IS EQUAL *
					228 * 3.LOW -- THE DATE ON SIP CARD IS LOW *
					229 *
					230 *
					231 *
					232 *
					233 *****
					234 MMDDYY EQU *
					235 ST MMDDX,ARR
					236 LA INPUT+90,XR2
					237 CLC 5(2,XR1),5(,XR2) YEAR
					238 JNE MMDDX
					239 CLC 1(2,XR1),1(,XR2) MONTH
					240 JNE MMDDX
					241 CLC 3(2,XR1),3(,XR2) DAY
					242 MMDDX B *-*
					0093 243 MMDDX EQU *-1

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		245		*****
		246		* MFCUID SUBROUTINE * ENTRY POINTS
		247		*****
		248		1. MFCUPH
		249		2. MFCURD
		250		*
		251		MFCUPH -- READ,PUNCH,PRINT FROM SEC. HOPPER INTO STACKER 3
		252		* MFCURD IS CALLED IF
		253		A . NO CARD IN WAIT 2
		254		B . CARD IN WAIT 2 IS NOT BLANK*
		255		*
		256		* HALT -EO- IF MFCU NOT READY OR ERROR, TO RETRY
		257		RESET HALT
		258		*
		259		MFCURD -- READ FROM SEC. HOPPER INTO STACKER 2
		260		* HALT -EO- IF MFCU NOT READ OR ERROR, TO RETRY
		261		RESET HALT
		262		*
		263		*****
0094	C2 01 0098	264	MFCUPH	EQU *
0098	74 08 38	265		USING MFCUID,XR1
		266	LA	MFCUID,XR1
		267	ST	MPCHX2(XR1),ARR
		268	MFCUID	EQU *
0098	70 F3 89	269	MPCH3	EQU *
009E	78 10 88	270	SNS	MSTAT(XR1),X'F3'
00A1	F2 10 03	271	TBN	MSTAT-1(XR1),X'10'
		272	JT	MPCH4
		273	MPCH2	EQU *
00A4	D0 27 39	274	B	MFCURD(XR1)
00A7	7C 60 15	275	MV	MFCNT(XR1),96
00AA	C2 02 01FF	276	LA	RDBUF-1,XR2
00AE	BD 40 00	277	MPCH1	CLI 0(XR2),C'
		278	MFCNT	EQU *-1
00B1	D0 01 09	279	BNE	MPCH2(XR1)
00B4	5F 00 15 3A	280	SLC	MFCNT(1,XR1),NONE(XR1)
00B8	D0 01 13	281	BNZ	MPCH1(XR1)
00BB	D1 F8 53	282	TIO	MFCUND(XR1),X'F8'
00BE	71 F4 87	283	LIO	PTBUF2(XR1),X'F4'
00C1	71 F5 83	284	LIO	RDBUF2(XR1),X'F5'
00C4	71 F6 85	285	LIO	PHBUF2(XR1),X'F6'
00C7	F3 FF 87	286	SIO	X'87',X'FF'
		287	*	PRINT BUF 2, PUNCH, READ FROM
		288	PSTACK	EQU *-1
00CA	D0 87 60	289	B	MFCUER(XR1)
00CD	D0 87 00	290	B	MPCH3(XR1)
00D0	C0 87 0000	291	B	*-*
		292	MPCHX2	EQU *-1
		293	MFCURD	EQU *
		294	MONE	EQU **1
00D4	C2 01 0098	295	LA	MFCUID,XR1
00D8	74 08 52	296	ST	MRDX2(XR1),ARR
00DB	D1 F8 53	297	MFRD1	TIO MFCUND(XR1),X'F8'
00DE	71 F5 83	298	LIO	RDBUF2(XR1),X'F5'
00E1	F3 F9 06	299	SIO	X'06',X'F9'
		300	RSTACK	EQU *-1
00E4	D0 87 60	301	B	MFCUER(XR1)
00E7	D0 87 40	302	B	MFRD1(XR1)
00EA	C0 87 0000	303	B	*-*
		304	MRDX2	EQU *-1
		305	MFCUND	EQU *
00EE	74 08 7F	306	ST	ERX2(XR1),ARR
00F1	5F 01 7F 81	307	SLC	ERX2(XR1),THREE(XR1)
00F5	75 02 7F	308	L	ERX2(XR1),XR2
00F8	F2 87 18	309	J	MFER1
		310	MFCUER	EQU *
00FB	74 08 7F	311	ST	ERX2(XR1),ARR
00FE	D1 FF 63	312	TSTD	TSTD(XR1),X'FF'

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		0101	313	TSTP EQU *
		0104	78 40 88	314 SNS MSTAT(XR1),X'F3'
		0107	D0 10 66	315 TBN MSTAT-1(XR1),X'40'
		010A	75 02 7F	316 BT TSTP(XR1)
		010D	79 C6 89	317 L ERX2(XR1),XR2
		0110	E0 10 03	318 TBF MSTAT(XR1),X'C6'
		0113	F0 38 50	319 BT 3(XR2)
		0116	E0 87 00	320 MFER1 EQU *
		0119	0000	321 * MFCU SEC. NOT READY OR ERROR ON MFCU SEC.
		0118	0003	322 HPL X'5D',X'38'
		011D	0200	323 B 0(XR2)
		011F	0280	011A 324 ERX2 DC XL2'0'
		C121	0200	011C 325 THREE DC IL2'3'
		0123	0000	011E 326 RDBUF2 DC AL2(RDBUF)
				0120 327 PHBUF2 DC AL2(PHBUF)
				0122 328 PTBUF2 DC AL2(PTBUF)
				0124 329 MSTAT DC XL2'0'
				0200 330 RDBUF EQU X'200'
				0280 331 PCHBUF EQU X'280'
				0200 332 PTBUF EQU X'200'
				0001 333 DROP XR1
				334
		0125		0164 335 CNTR DS CL64
		0165		016A 336 STRDAT DS CL6
		0168		0170 337 ENDDAT DS CL6
		0171		0171 338 CNT DS CL1

64 COUNTER FOR PROG #

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for error recording analysis.

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

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ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0733 38 08 0ED4 609 *
0737 F2 90 04 610 PCH TBN FLAGS,LSTCRD HAS LAST CARD BEEN PUNCHED
073A C0 87 087D 611 JF LST IF NOT, THEN JUMP
073E 3A 08 0ED4 612 B ENTSUM GO TO SUMMARY
0742 3C 7C 0003 613 LST SBN FLAGS,LSTCRD TO PROVIDE SYS RES/START IN CASE BAD PARITY
0746 38 F0 0178 614 MVI X'003',X'7C'
074A 38 F0 0179 615
074E 38 F0 017A 616 TBN X'178',X'F0' SEE IF COMMUNICATIONS AREA IS
0752 38 F0 017B 617 TBN X'179',X'F0' VALID BY CHECKING FOR F IN
0756 38 F0 017C 618 TBN X'17A',X'F0' LEFT HEX DIGIT OF EACH BYTE
075A 38 F0 017D 619 TBN X'17B',X'F0' OF THE DATE
075E C0 90 087D 620 TBN X'17C',X'F0'
621 TBN X'17D',X'F0'
622 F14 BF ENTSUM
623
624 * DECODE PRINT POSITIONS IN CORE TO ACTUAL PRINT POS FAILING
625
0762 C2 01 01A0 626 LA X'1A0',XR1
0766 7D 00 00 627 LOOP29 CLI O(,XR1),X'0' SKIP OVER IF 00
0769 C0 81 07A9 628 BE ERP29
076D 7D 78 00 629 CLI O(,XR1),X'78' OK IF GREATER THEN 78
0770 F2 84 07 630 JH ERP11
0773 7C FF 00 631 MVI O(,XR1),X'FF' OTHERWISE ILLEGAL, SO SET TO X'FF'
0776 C0 87 07A9 632 B ERP29
077A 4F 00 00 103E 633 ERP11 SLC O(1,XR1),X78 ADJUST TO 1-132
077F 7D 04 00 634 CLI O(,XR1),4 IF PRINT POS IS 1-4 INCLUSIVE,
0782 F2 04 17 635 JNH PLS116 THEN ADD 116 TO IT
0785 7D 08 00 636 CLI O(,XR1),11 IF 5-11, ADD 104
0788 F2 04 19 637 JNH PLS104
078B 7C 10 00 638 CLI O(,XR1),16 IF 12-16, ADD 116
078E F2 04 08 639 JNH PLS116
0791 7D 18 00 640 CLI O(,XR1),24 IF 17-24, ADD 104
0794 F2 04 0D 641 JNH PLS104
0797 4E 00 00 0EC7 642 ALC O(,XR1),D116 IF 25-132, SUBTRACT 24 (ADD 232)
079C 4E 00 00 0EC7 643 PLS116 ALC O(,XR1),D116 ADD 116
07A1 F2 87 05 644 J ERP29
07A4 4E 00 00 0EC6 645 PLS104 ALC O(,XR1),D104 ADD 104
07A9 36 01 0F88 646 ERP29 A ONE,XR1 POINT TO NEXT PRINT POSITION
07AD 34 01 0F96 647 ST RISAV,XR1
07B1 3D A9 0F96 648 CLI RISAV,X'A9' CONTINUE UNTIL ALL TEN DONE
07B5 C0 04 0766 649 BNH LOOP29
650
07B9 0C 03 01A' 01AD 651 MVC X'1A9'(4),X'1A9'+4 MOVE 4 USAGE BYTES OVER
07BF 0C 03 01AD 01B1 652 MVC X'1A9'+4(4),X'1A9'+8 MOVE 4 USAGE BYTES OVER
07C5 3C 2E 0E8D 653 MVI CTR,46 SET UNPACK CTR TO 46
07C9 C2 01 01AD 654 LA X'1A9'+4,XR1 LOAD SOURCE ADDRESS
07CD C0 02 02DB 655 LA X'2D3'+8,XR2 LOAD DESTINATION ADDRESS-1
07D1 C0 87 0CD6 656 B UNPACK
657
07D5 3C E6 0280 658 MVI X'280',C'W' MOVE IN THE 'W' FOR COLUMN 1
659 * PREPARE TO PUNCH THE DATE
660 * PUT IN MONTH
07D9 0C 00 02DD 0179 661 MVC X'2DD'(1),X'179' MONTH
07DF 3D F1 0178 662 CLI X'178',X'F1' IS TENS COLUMN OF MONTH = 1
07E3 C0 01 0803 663 BNE PC IF NOT, DON'T GO THRU CONVERSION
07E7 3D F1 0179 664 CLI X'179',X'F1'
07EB F2 84 0A 665 JH DECA
07EE F2 82 0E 666 JL OCTA
07F1 3C 60 02DD 667 MVI X'2DD',X'60' FOR NOV
07F5 F2 87 0B 668 J PC
07F8 3C D0 02DD 669 DECA MVI X'2DD',X'D0' FOR DEC
07FC F2 87 04 670 J PC
07FF 3C F0 02DD 671 OCTA MVI X'2DD',X'F0' FOR OCT
672 * SET UP DAY AND YEAR
0803 0D 01 017B 0ECD 673 PC CLC X'17B'(2),F3F1 IF DATE GREATER THEN 31, GET OUT.
0809 C0 84 087D 674 BH ENTSUM
080D 3C C0 02DE 675 MVI X'2DE',X'C0' FORCE AT LEAST 'C'

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0811 08 01 0818 017A 676 MZN CDEORF+1,X'17A' PREPARE TO PUT IN C,D,E, OR F
0817 3A 00 02DE 677 CDEORF SBN X'2DE',X'F0' DO IT
0818 3D F9 0178 678 CLI X'17B',X'F9' MAKE SURE LESS THAN 'FA'
081F C0 84 087D 679 BH ENTSUM
0823 08 03 02DE 017B 680 MNN X'2DE',X'17B' SET UP NUMERIC
0829 3D C0 02DE 681 CLI X'2DE',X'C0' MAKE SURE DATE NOT 00
082D C0 81 087D 682 BE ENTSUM WHICH GIVES INVALID X'CO'
0831 3D E1 02DE 683 EXCPN CLI X'2DE',X'E1' IF E1 OR E0 PUT IN F9 OR F8
0835 F2 84 0B 684 JH GETYR
0838 3D E0 02DE 685 CLI X'2DE',X'E0'
083C F2 84 04 686 JL GETYR
083F 3A 18 02DE 687 SBN X'2DE',X'18' TURNS E0,E1 INTO F8,F9
0843 0C 00 02DF 017D 688 GETYR MVC X'2DF',X'17D' PUT IN ONE'S DIGIT OF YEAR
689
690 * PUNCH CARD
691 B MFCUPH
692 MVC X'200'+95(96),X'280'+95
693 MVI X'280'+95,C' ' BLANK THE PRINT BUFFER
694 MVC X'280'+94(95),X'280'+95
695 SLC X'1B1'(50),X'1B1' ZERO THE ERROR RECORDING AREA
696 SLC X'17D'(6),X'17D' ZERO THE DATE
697 B DD GO PROCESS THIS LAST ENTRY
698
699 *** THESE TWO INSTRUCTIONS ARE ENTERED FROM A BRANCH AT X'37C'.
700 *** IF A PROCESS CHECK DUE TO BAD PARITY OCCURS WHILE PREPARING TO
701 *** PUNCH THE E.R.A., RECOVERY IS MADE WITH A FORCED BRANCH TO X'37C'.
702 RECOVR MVI X'1AD'+4,X'00' ZERO THE ERROR RECORDING AREA
703 MVC X'1AC'+4(49),X'1AD'+4 FOR THE CASE OF BAD PARITY
704 MVC X'17D'(6),X'1AD' ZERO THE DATE
705 * THEN ENTER SUMMARY
706 *****
707 ** SUMMARY SECTION **
708 *****
709
710 * SEQUENCE THE TABLE
711 ENTSUM MVI X'0003',X'80' RESTORE RESTART AT 0000
712 SBF FLAGS,ISBSCA TURN OFF BS CA FLAG
713 MVI LINE+95,C' ' BLANK OUT 'LINE'
714 MVC LINE+94(95),LINE+95
715 LA TAB,XR1 POINT AT TAB BEGINNING
716 CLC ZERO(4),8(,XR1) CHECK FOR ONLY ONE ENTRY
717 JE SEQUN IF SO DON'T SEQUENCE
718 SEQ1 LA 5(,XR1),XR2
719 SEQ2 CLC 3(4,XR1),3(,XR2) COMPARE
720 BNH SEQ3
721 MVC TEMP(5),4(,XR1)
722 MVC 4(5,XR1),4(,XR2) * TRADE ENTRIES
723 MVC 4(5,XR2),TEMP *
724 SEQ3 LA 5(,XR2),XR2 NEXT ENTRY
725 ST R2SAV,XR2
726 CLC R2SAV(2),TABEND
727 BNH SEQ2
728 LA 5(,XR1),XR1 NEXT ENTRY
729 ST RISAV,XR1 END OF TABLE?
730 CLC RISAV(2),TABEND
731 BL SEQ1 IF NOT, LOOP BACK
732
733 * SELECT,CHECK, AND PRINT AN ENTRY
734
735 SEQUN B SPACE SKIP LINE BEFORE SUMMARY
736 SLC CTRDEV(2),CTRDEV ZERO OUT THE TWO COUNTERS
737 SBN FLAGS,FIRST
738 LA TAB,XR1 POINT AT TAB BEGINNING
739 *
740 LOOP20 MVC TEMP(2),3(,XR1)
741 MZZ TEMP-1,0(,XR1) NOW OR IS IN TEMP

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
08F2 58 02 03 02	742 *		
08F6 58 01 03 01	743	MNZ	3(,XR1),2(,XR1)
08FA 58 02 02 01	744	MZN	3(,XR1),1(,XR1)
08FE 58 01 02 00	745	MNZ	2(,XR1),1(,XR1)
0902 4C 01 01 10D7	746	MZN	2(,XR1),0(,XR1)
0907 1C 03 0F8F 03	747	MVC	1(2,XR1),TEMP
090C C2 02 0DA5	748	MVC	QRSS(4),3(,XR1)
0910 3C 02 0EBD	749	LA	LINE+3,XR2
0914 34 01 0F96	750	MVI	CTR,2
0918 36 01 0F88	751	ST	RISAV,XR1
091E 38 01 0F88	752	A	DNE,XR1
0920 0C 01 0DA7 0DA6	753	B	UNPACK
0926 3C 40 0DA5	754	MVC	LINE+5(2),LINE+4
	755	MVI	LINE+3,C'
	756		
	757 *		PUT IN 0'S & 1'S
	758 *		
092A C2 02 0DBE	759	LA	BITBGN+19,XR2
092E C0 87 0D48	760	B	BINARY
0932 38 80 0F8C	761	TBN	QRSS-3,X'80'
0936 39 70 0F8C	762	TBF	QRSS-3,X'70'
093A F2 90 1A	763	JF	REGBIN
093D 3C 40 0DBE	764	MVI	BITBGN+19,C'
0941 0C 07 0DBD 0DBE	765	MVC	BITBGN+18(8),BITBGN+19
0947 3C 01 0EBD	766	MVI	CTR,1
094B C2 01 0F8F	767	LA	QRSS,XR1
094F C2 02 0DBA	768	LA	BITBGN+15,XR2
0953 C0 87 0CD6	769	B	UNPACK
0957 35 01 0F96	770	REGBIN L	RISAV,XR1
	771 *		SET REGISTER BACK 5 TO POINT TO PREVIOUS ENTRY
095D 7B 0F 00	772	SBF	0(,XR1),X'0F'
095E 36 01 0F82	773	A	NEG5,XR1
0962 38 80 0ED4	774	TBN	FLAGS,FIRST
0966 C0 10 0AC2	775	BT	ERDTB
096A 5D 01 08 03	776	CLC	8(2,XR1),3(,XR1)
096E C0 01 09D9	777	BNE	SUMSNS
0972 5D 00 05 00	778	CLC	5(1,XR1),0(,XR1)
0976 C0 01 09D9	779	BNE	SUMSNS
	780		
	781 *		
	782 *		PRINT
097A D2 01 05	783 PRT	LA	5(,XR1),XR1
	784 *		UPDATE COUNTERS
097D 3D FF 10D4	785	CLI	CTRDEV,X'FF'
0981 F2 81 05	786	JE	ERPB
0984 1E 00 10D4 04	787	ALC	CTRDEV,4(1,XR1)
	788 *		PUT IN NUMBER OF OCCURANCES
0989 0C 02 0DC8 1049	789 ERP8	MVC	LINE+38(3),ZRSC
098F 7D 00 04	790	CLI	4(,XR1),X'0'
0992 F2 81 0F	791	JE	EDT
0995 06 20 0DC8 0F86	792 LOOP15	AZ	LINE+38(3),NUM1(1)
0998 4F 00 04 0F88	793	SLC	4(1,XR1),ONE
09A0 C0 84 0995	794	BH	LOOP15
09A4 0B 01 0DC6 0E04	795 EDT	ITC	LINE+36(2),BLANK
09AA 0C 5F 02DB 0E01	796	MVC	X'2DB'(96),LINE+95
09B0 C0 87 0D18	797	B	PRINT
09B4 0C 5F 0E01 02DB	798	MVC	LINE+95(96),X'27C'+95
09BA D2 01 05	799	LA	5(,XR1),XR1
09BD 34 01 0F96	800	ST	RISAV,XR1
09C1 0D 01 0F96 1027	801	CLC	RISAV(2),TABEND
09C7 C0 04 08E8	802	BNH	LOOP20
09CB 7C FF 05	803	MVI	5(,XR1),X'FF'
09CE 7C 8B 00	804	MVI	0(,XR1),X'BB'
09D1 3A 20 0ED4	805	SBN	FLAGS,LSTERR
09D5 C0 87 09D9	806	B	SUMSNS
	807		
	808		*****
09D9 809	SUMSNS	EQU	*

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
09D9 5D 00 05 00	810	CLC	5(1,XR1),0(,XR1)
09DD C0 01 0A7C	811	BNE	DEVSUM
09E1 39 10 0ED4	812	TBF	FLAGS,NOCRD
09E5 C0 10 0D14	813	BT	SPACE
	814		
	815 *		ROUTINE TO DECODE SENSE BITS
	816 *		
09E9 38 10 0ED4	817 BITMNG	TBN	FLAGS,NOCRD
09ED C0 10 0A74	818	BT	ERP14
09F1 0C 01 0A04 0E40	819	MVC	SS1+3(2),BTBND
09F7 0C 01 0A0E 0FC3	820	MVC	SS2+5(2),SSTABA
09FD 3C 93 0A0C	821	MVI	SS2+3,X'93'
0A01 38 01 0000	822 SS1	TBN	*-,X'01'
0A05 C0 90 0A25	823	BF	INC2
0A09 0C 16 0293 0000	824 SS2	MVC	X'27C'+23(23),*--
0A0F 3D 07 0A0C	825	CLI	SS2+3,X'D7'
0A13 C0 04 0A1F	826	BNH	INC2-6
0A17 C0 87 0D18	827	B	PRINT
0A1B 3C 7C 0A0C	828	MVI	SS2+3,X'7C'
0A1F 0E 00 0A0C 103C	829	ALC	SS2+3(1),TWNTY3
0A25 0E 01 0A0E 103C	830 INC2	ALC	SS2+5,TWNTY3(2)
0A2B 0D 01 0A04 0F2A	831	CLC	SS1+3,J1(2)
0A31 C0 81 0A56	832	BE	TWICE
0A35 0D 01 0A04 0F2E	833	CLC	SS1+3,J3(2)
0A3B C0 81 0A56	834	BE	TWICE
0A3F 0D 01 0A04 0F2C	835	CLC	SS1+3,J2(2)
0A45 C0 01 0A5C	836	BNE	ONCE
0A49 38 02 0ED4	837	TBN	FLAGS,ISBSCA
0A4D F2 10 1C	838	JT	PATTI
0A50 0E 01 0A04 0F88	839	ALC	SS1+3(2),ONE
0A56 0E 01 0A04 0F88	840 TWICE	ALC	SS1+3(2),ONE
0A5C 0E 01 0A04 0F88	841 ONCE	ALC	SS1+3(2),ONE
0A62 0D 01 0A04 0F30	842	CLC	SS1+3,J4(2)
0A68 C0 04 0A01	843	BNH	SS1
	844		
	845 *		PRINT SUMMARY
0A6C 3D 93 0A0C	846 PATTI	CLI	SS2+3,X'93'
0A70 C0 84 0D1B	847	BH	PRINT
0A74 C0 87 0D14	848 ERP14	B	SPACE
	849		
	850	B	PRT
0A78 C0 87 097A	851		
	852		*****
	853		
	854 *		PRINT DEVICE SUMMARY
0A7C 0C 10 02A6 103A	855 DEVSUM	MVC	X'2A6'(17),TOTMSK
0A82 3B 02 0ED4	856	SBF	FLAGS,ISBSCA
0A86 06 20 02A6 0F86	857 LOOP23	AZ	X'2A6'(3),NUM1(1)
0A8C 0F 00 10D4 0F88	858	SLC	CTRDEV(1),ONE
0A92 C0 84 0A86	859	BH	LOOP23
0A96 0B 01 02A4 0E04	860	ITC	X'2A4'(2),BLANK
0A9C C0 87 0D1B	861	B	PRINT
0AA0 3C 60 02C1	862	MVI	X'2C1',C'-'
0AAA 0C 40 02C0 02C1	863	MVC	X'2C0'(65),X'2C1'
0AAB C0 87 0D1B	864	B	PRINT
	865		
0AAE 38 20 0ED4	866	TBN	FLAGS,LSTERR
0AB2 C0 10 0C07	867	BT	SUMPOS
	868		
0AB6 C0 87 0D14	869	B	SPACE
0ABA C0 87 0D14	870	B	SPACE
0ABE C0 87 0B04	871	B	COMPQ
	872		
	873		*****
	874		
0AC2 3B 80 0ED4	875 ERDTB	SBF	FLAGS,FIRST
0AC6 C0 87 0ADB	876	B	CORD
0ACA 3D 61 0200	877	CLI	X'200',C'/'

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589748
PAGE 7

ERPS CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

OACE F2 81 07 878 JE *+10
OAD1 F0 7C 5D 879 HPL X'5D',X'7C' .HALT WITH 'E5', INVALID CONTROL CARD
OAD4 C0 87 OAC6 880 B ERDTB+4 .TRY AGAIN
OAD8 F2 87 29 881 J COMPO SET UP FIRST BIT MEANINGS
882
883 * UPDATE BIT MEANING TABLE
884
885 * SUBROUTINE TO READ A CARD FROM PRIMARY
886 CDRD ST LK+3,ARR SET UP TO LINK BACK TO CALLER
887 J RCTL
888 MERR HPL H5,HH HALT 'H5'
889 RDCTL TIO MERR,X'FO' GO HALT IF MFCU NOT READY
890 LIO FSTIN,X'F5' LOAD READ IN AREA
891 SIO X'00',READ READ CARD
892 LOOP16 TIO LOOP16,X'F1'
893 SNS POSTMP-5,X'F3' GO HALT IF FEED OR READ CHECK
894 TBF POSTMP-5,X'86'
895 BF MERR
896 LK B *-+
897
898
899 COMPO TBN FLAGS,LSTCTL DON'T COMPARE Q'S IF ALL CONTROL
900 BT QH .. CARDS HAVE BEEN READ
901 MZN X'200',X'201' * SET UP
902 TBN X'201',X'FO' * TO COMPARE
903 JT ERP16 * DEVICE ADDRESSES
904 ALC X'200'(1),X90 *
905 ERP16 MNN X'200',ZERO *
906 CLC X'200',5(1),XR1) COMPARE DEVICE CODES
907
908 JE QE DEVICE ADDRESSES =?
909 JL QL JUMP IF NEED TO READ MORE
910
911 QH SBN FLAGS,NOCRD NO CONTROL CARDS, SET BIT ON
912 TBF 5(,XR1),X'FO' .IF DEVICE ADDRESS IS 0, MOVE IN
913 JF *+12 . CONSOLE HEADING TO PRINT
914 MVC X'27C'+51(15),CONSOL .
915 J *+9
916 MVC X'2A1'(32),NCDMSG SET UP TO PRINT NO-CARDS MESSAGE
917 B PRINT PRINT IT
918 J BPRT GO PRINT HEADING AND RETURN TO PRT
919 QE MVC X'27C'+84(76),X'200'+84 MOVE DATA CARD TO PRINT FIELD
920 CLI X'200',X'80'
921 JNE *+7
922 SBN FLAGS,ISBSCA
923 B PRINT
924 SBF FLAGS,NOCRD MAKE SURE NO-CARD BIT IS OFF
925
926 * READ 7 CARDS, PUT FIRST 6 IN BIT MEANING TABLE
927 J *+7 ALLOW CASE OF Q LOW TO ENTER HERE
928 QL SBN FLAGS,NOCRD FROM COMPO ABOVE
929
930 MVI CTR,X'06' INITIALIZE COUNTER
931 CLI X'200',X'80' CLI
932 JNE *+7 JE
933 MVI CTR,3
934 MVC ERP13+3(2),SSTABF POINT AT 1ST BIT MEANING IN SSTABF
935 LOOP24 B CDRD GO READ ONE CARD AND COME BACK
936 CLI X'200',C'/' MAKE SURE THIS IS A CONTROL CARD
937 JE *+10
938 HPL X'5D',X'7C' .HALT WITH 'E5', INVALID CONTROL CARD
939 B LOOP24 .TRY AGAIN
940 SLC CTR(1),ONE DECREMENT COUNTER (READ 7 CARDS)
941 BL ERP23
942 BNZ ERP13 TREAT 6TH CARD SPECIAL (1 ENTRY)
943 TBN FLAGS,ISBSCA
944 JT ERP13
945 MVC LSSTAB(23),X'200'+26 MOVE IN LAST BIT MEANING

DATE 28NOV69 17APR70 24SEP70 01OCT70 01APR71 01AUG71
EC NO. 816559 816667 816777 816760 818945 818817
PROG ID OERP-5
PAGE 7

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589748
PAGE 7A

ERPS CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

OB82 F2 87 06 946 J ERP13+6
OB85 OC 44 0000 0248 947 ERP13 MVC *-(69),X'200'+72 MOVE PART OF RECORD TO TABLE
OB8B OE 01 0888 0F9C 948 ALC ERP13+3(2),SIXTY9 POINT TO NEXT TABLE ENTRY
OBC1 CO 87 0885 949 B LOOP24 CONTINUE UNTIL 7 CARDS READ
950
OBC5 OD 02 0203 0EA4 951 ERP23 CLC X'203'(3),CEND
OBC8 F2 01 04 952 JNE *+7 WAS LAST CARD READ THE LAST CONTROL
OBCE 3A 40 0ED4 953 SBN FLAGS,LSTCTL IF SO, SET ON LAST-CARD BIT
OBD2 38 10 0ED4 954 TBN FLAGS,NOCRD SET IT ON
OBD6 CO 10 0B04 955 BT COMPO DID WE JUST LOAD THE RIGHT BIT
956 MEANINGS? IF NOT, GO COMPARE Q
957 BPRT B SPACE SKIP 2 LINES AFTER DEVICE HEADING
958 B SPACE
959 MVC X'27D'+37(37),SMHD
960 TBN FLAGS,ISBSCA
961 JF REGHED
962 MVC X'27D'+7(5),RTYS
963 MVC X'27D'+27(9),COMP
964 REGHED B PRINT PRINT THE HEADING
965 B SPACE SKIP A LINE
966 B BITMNG GO PRINT SENSE SUMMARY
967
968 *****
969
970 * PRINT POSITION SUMMARY
971
972 SUMPOS B SPACE
973 B SPACE
974 MVC X'2A8'(29),REDLST SKIP A LINE
975 B PRINT PUT IN HEADING FOR PRINT POS SUMMARY
976 B SPACE
977 LA POSTAB+1,XR2
978 CTRX MVI CTR,33 POINT AT FIRST TABLE ENTRY
979 MVC TEMPI(3),NUM1
980 LOOP25 MVC X'2A0'(3),ZRSC INITIALIZE HAMMER NUMBER TO 1
981 MVI CTR,4 INITIALIZE NUMBER TO 000
982 LOOP21 A NEG1,XR2 SET UP TO HANDLE 4 PRINT POSITIONS
983 CLI 0(,XR2),X'0' POINT TO NEXT TABLE ENTRY
984 BE IF 0, IGNORE IT
985 LOOP19 AZ ERP26
986 CLI X'2A0'(3),NUM1(1) * TABULATE NUMBER
987 JNL ERP26 * OF OCCURENCES
988 SLC 0(1,XR2),ONE *
989 BH LOOP19 *
990 ERP26 SLC CTR,ONE DO 4 POSITIONS FOR EACH HAMMER
991 BH LOOP21
992 MVC X'290'(3),TEMP PUT HAMMER NUMBER INTO LINE
993 CLC X'2A0'(3),ZRSC DON'T PRINT IF NUMBER IS 000
994 JE ERP18
995 B PRINT
996 ERP18 AZ TEMP(3),NUM1(1) PRINT LINE
997 SLC CTR(1),ONE INCREMENT HAMMER NUMBER
998 BH LOOP25
999
1000 GETEND CLC X'203'(3),CEND FLUSH OUT
1001 JE FINISH
1002 GETNDI EQU *
1003 B CDRD MFCU IS
1004 B GETEND READY
1005 FINISH HPL X'63',X'7C' HALT 'EJ'
1006 B FINISH
1007 *****
1008 **
1009 ** ROUTINES
1010 **
1011 *****
1012

DATE 28NOV69 17APR70 24SEP70 01OCT70 01APR71 01AUG71
EC NO. 816559 816667 816777 816760 818945 818817
PROG ID OERP-5
PAGE 7A

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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1013 *          PACK ROUTINE
1014 *
OC9B 34 08 0CD5 1015 PACKIT ST  ARRET+3,ARR  SAVE RETURN ADDRESS
OC9F BC 00 C0 1016 PK2  MVI  O(,XR2),X'0'  MAKE SURE PARITY OK ON DEST BYTE
OCA2 98 03 00 01 1017 MNN  O(,XR2),I(,XR1)  MOVE NUMERIC BITS TO OUTPUT FIELD
OCA6 78 F0 01 1018 TBN  I(,XR1),X'FO'  BRANCH IF EBCDIC DIGIT IS 0-9
OCA9 F2 10 05 1019 JT  PK3
OCAC 8E 00 00 OF83 1020 ALC  O(1,XR2),NINE  CORRECT NUMERIC BITS
OCB1 98 01 00 00 1021 PK3 MZN  O(,XR2),O(,XR1)  REPEAT FOR ZONE BITS
OCB5 78 F0 00 1022 TBN  O(,XR1),X'FO'
OCB8 F2 10 05 1023 JT  PK4
OCBB 8E 00 00 103F 1024 ALC  O(1,XR2),X90  ADD 9 TO ZONE BITS
OCC0 36 01 OF7C 1025 PK4 A  NEG2,XR1  DECREMENT POINTERS
OCC4 36 02 OF7A 1026 A  NEG1,XR2
OCC8 0E 00 OF89 OF7C 1027 ALC  PKLEN(1),NEG2
OCCE C0 84 OC9F 1028 BH  PK2
OCD2 C0 87 0000 1029 ARRET B  *-+ RETURN
1030
1031 *          UNPACK ROUTINE
1032 *
OCD6 34 08 0D13 1033 UNPACK ST  RTN+3,ARR
OCDA 98 03 01 00 1034 UNPK2 MNN  I(,XR2),O(,XR1)  MOVE NUMERIC BITS
OCDE 98 02 00 00 1035 MNZ  O(,XR2),O(,XR1)  MOVE ZONE BITS TO OUTPUT FIELD
OCE2 BA F0 00 1036 SBN  O(,XR2),X'FO'  FORCE ZONE BITS TO HEX 'F' FOR BOTH
OCE5 BA F0 01 1037 SBN  I(,XR2),X'FO'
OCE8 8D FA 00 1038 CLI  O(,XR2),X'FA'
OCEB F2 82 05 1039 JL  UNPK3
OCEE 8E 00 00 103D 1040 ALC  O(1,XR2),XC7  BRANCH IF HEX DIGIT IS 0-9
OCF3 8D FA 01 1041 UNPK3 CLI  I(,XR2),X'FA'  DIGIT IS A-F, ADD X'C7'
OCF6 F2 82 05 1042 JL  UNPK4  REPEAT FOR OTHER HEX DIGIT
OCF9 8E 00 01 103D 1043 ALC  I(1,XR2),XC7
OCFE 36 02 CF7C 1044 UNPK4 A  NEG2,XR2  DECREMENT POINTERS FOR NEXT BYTE
OD02 36 01 OF7A 1045 A  NEG1,XR1
OD06 0F 00 0EBD OF88 1046 SLC  CTR(1),ONE
OD0C C0 C1 0CDA 1047 BNZ  UNPK2  CONTINUE TIL FIELD IS FINISHED
OD10 C0 87 0000 1048 RTN  B  *-+
1049
1050 *          PRINTING ROUTINE
1051 *
OD14 3C E0 0D3A 1052 SPACE MVI  PRSIO+1,X'EO'  SET UP SID FOR SPACE ONLY
OD18 F2 87 04 1053 J  +-+
OD1B 3C E2 0D3A 1054 PRINT MVI  PRSIO+1,X'E2'  SET UP SID FOR PRINT AND SPACE
OD1F 34 08 0D47 1055 ST  SELF3+11,ARR  STORE RETURN ADDRESS
OD23 F2 87 03 1056 J  RDY
OD26 F0 38 7D 1057 LPERR MPL  H0,HH  HALT, DISPLAY 'H6'
OD29 C1 E0 0D26 1058 RDY  TIO  LPERR,X'EO'  GO HALT IF PRINTER NOT READY
OD2D 31 E0 0ED1 1059 LIO  FL,X'EO'  LOAD FORMS LENGTH
OD31 31 E4 OF28 1060 LIO  IMAD,X'E4'  LOAD CHAIN IMAGE
OD35 31 E6 0ECF 1061 LIO  FSTIN,X'E6'  LOAD PRINTER DATA
OD39 F3 E2 01 1062 PRSIO SID  X'01',X'E2'  PRINT AND/OR SPACE 1
OD3C C1 E6 0D3C 1063 SELF3 TIO  SELF3,X'E6'  WAIT TIL BUSY DROPS
OD40 C1 E0 0D26 1064 TIO  LPERR,X'EO'  HALT IF PRINTER NOT READY
OD44 C0 87 0000 1065 B  *-+
1066
1067 *          CONVERT TO EBCDIC FROM BINARY
1068 *
OD48 34 08 0D8C 1069 BINARY ST  BIRTN+3,ARR
OD4C 0C 01 0D5D OE03 1070 MVC  T01+3(2),ADQRSS  INSERT ADDR OF QRSS
OD52 3C 02 0EBD 1071 MVI  CTR,2  SET COUNTER = 2
OD56 3C 01 0D5B 1072 BT1  MVI  T01+1,X'01'  POINTER TO RIGHTMOST BIT
OD5A 38 00 0000 1073 T01  TBN  *-+,-+  TEST POINTER BIT AND INSERT 0 OR 1
OD5E F2 10 06 1074 JT  INI
OD61 8C F0 00 1075 MVI  O(,XR2),C'0'
OD64 F2 87 03 1076 J  AA
OD67 8C F1 00 1077 IN1  MVI  O(,XR2),C'1'
OD6A 38 08 0D5B 1078 AA  TBN  T01+1,X'08'  4 BITS DONE? IF SO, SPACE ONE
OD6E F2 90 04 1079 JF  BYT1
OD71 36 02 OF7A 1080 A  NEG1,XR2

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ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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OD75 38 80 0D5B 1081 BYT1 TBN  T01+1,X'80'  ONE SENSE BYTE DECODED? IF SO SPACE..
OD79 F2 90 18 1082 JF  STEP2  ...TWICE AND STEP TO NEXT BYTE
OD7C 36 02 OF7E 1083 A  NEG3,XR2
OD80 0F 00 0EBD OF88 1084 SLC  CTR(1),ONE  DECREMENT COUNTER
OD86 C0 81 0000 1085 BIRTN BZ  *-+
OD8A 0F 01 0D5D OF88 1086 SLC  T01+3(2),ONE
OD90 C0 87 0D56 1087 B  BT1  LOOP BACK AND POINT TO BIT 7
OD94 36 02 OF7A 1088 STEP2 A  NEG1,XR2  NEXT BYTE IN 'LINE'
OD98 0E 00 0D5B OD5B 1089 ALC  T01+1(1),T01+1  MOVE POINTER LEFT
OD9E C0 87 0D5A 1090 B  T01  LOOP BACK
1091
1092 *****
1093 **          STORAGE **
1094 *****
ODA2 1095 LINE EQU  *
OE00 1096 DS  CL95
OE01 1097 DC  CL1' '
OE02 OF8F 1098 ADQRSS DC  AL2(QRSS)
OE04 40 1099 BLANK DC  CL1' '
OE05 D5D6E3C540C6D6D9 1100 DC  CL36*NOTE FOR BSCA- R IS NO. OF RETRIES, '
OE0D 40C2E2C3C16040D9 1100
OE15 40C9E240D5D64B40 1100
OE1D D6C640D9C5E3D9C9 1100
OE25 C5E26840 1100
OE29 E2C5D5E2C540F140 OE3E 1101 BSCAMG DC  CL22*SENSE 1 IS COMP. CODE.'
OE31 C9E240C3D6D4D748 1101
OE39 40C3D6C4C54B 1101
OE3F 0DAB 1094 1102 BYBNAD DC  AL2(BITBGN)
OE41 1094 1103 CARD DS  CL96
OE41 40 1094 1104 DC  CL1' '  FOR BLANK CARD TEST, MUST FOLLOW CARD
OE42 C5D5C4 1094 1105 CEND DC  CL3*END'
OE45 C3D6D4D74BC3D6C4 1094 1106 COMP DC  CL9*COMP.CODE'
OE4D C5 1106
OE4E 5C5C5C40C3D6D5E2 OEBC 1107 CONSOL DC  CL15*** CONSOLE ***
OE86 D6D3C5405C5C5C 1107
OE8D 00 1081 1108 CTR DC  XL1'00'
OE8E 00 1081 1109 CTR4 DC  XL1'00'
OE8F F0F061 1081 1110 DTHER DC  CL3'00/'
OEC2 0000 1081 1111 DUMY DC  XL2'0'
OEC4 OFCB 1081 1112 DVAOR DC  AL2(TABDEV+5)
OEC6 68 1081 1113 D104 DC  IL1'104'
OEC7 74 1081 1114 D116 DC  IL1'116'
OEC8 0008 1081 1115 EIGHT DC  IL2'8'
OECA 0E82 1081 1116 E8TH DC  AL2(CARD-30)
OECC F3F1 1081 1117 F3F1 DC  XL2'F3F1'
OECE 0200 1081 1118 FSTIN DC  XL2'200'
OED0 7070 1081 1119 FL DC  XL2'7070'
OED2 00 1081 1120 FLAG DC  XL1'00'
OED3 00 1081 1121 SWITCH DC  XL1'00'  THIS MUST IMMEDIATELY PRECEDE 'FLAGS'
OED4 00 1081 1122 FLAGS DC  XL1'00'
OED5 C8C1D4D4C5D9407B 1081 1123 HEDLST DC  CL29*HAMMER # HAMMER ECHO CHECKS'
OEDD 404040C8C1D4D4C5 1123
OEE5 D940C5C3C8D640C3 1123
OEEF C8C5C3D2E2 1123
OEF2 C4C5E5C9C3C540D8 OF25 1124 DC  CL52*DEVICE Q R STATUS BYTES 2 AND 1PRINT POSITIONS DAT'
OEFA 4040D9404040E2E3 1124
OF02 C1E3E4E240C2E8E3 1124
OF0A C5E240F240C1D5C4 1124
OF12 40F1D7D9C9D5E34 1124
OF1A D7D6E2C9E3C9D6D5 1124
OF22 E2C4C1E3 1124
OF26 C5 1081 1125 HEDNG DC  CL1'E'
OF27 0300 1081 1126 IMAD DC  AL2(IMAG)
OF29 0DAE 1081 1127 J1 DC  AL2(BITBGN+3)
OF2B 0DB3 1081 1128 J2 DC  AL2(BITBGN+8)
OF2D 0DB9 1081 1129 J3 DC  AL2(BITBGN+14)
OF2F 0DBE 1081 1130 J4 DC  AL2(BITBGN+19)
OF31 C306D9C540C5E7C3 OF58 1131 MSGCR DC  CL40*CORE EXCEEDED, FOLLOWING NOT IN SUMMARY'

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ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

OF39 C5C5C4C5C46B40C6 1131
OF41 D6D3D3D6E6C9D5C7 1131
OF49 40D5D6E340C9D540 1131
OF51 E2E4D4D4C1D9E840 1131
OF59 D5D640C3D6D5E3D9 OF78 1132 NCDMSG DC CL32*NO CONT*DL CARDS FOR THIS DEVICE*
OF61 D6D340C3C1D9C4E2 1132
OF69 40C6D6D940E3C8C9 1132
OF71 E240C4C5E5C9C3C5 1132
OF79 FFFF OF7A 1133 NEG1 DC XL2'FFFF'
OF7B FFFE OF7C 1134 NEG2 DC XL2'FFFE' MUST FOLLOW NEG1
OF7C FFFD OF7E 1135 NEG3 DC XL2'FFFD'
OF7F FFFC OF80 1136 NEG4 DC XL2'FFFC'
OF81 FFFB OF82 1137 NEG5 DC XL2'FFFB'
OF83 09 OF83 1138 NINE DC IL1'9'
OF84 F0F0F1 OF86 1139 NUM1 DC CL3'001'
OF87 0001 OF88 1140 ONE DC IL2'1'
OF89 00 OF89 1141 PKLEN DC XL1'00'
OF8A 10CD OF8B 1142 POSAD DC AL2(POSTAB)
OF8C 00000000 OF8F 1143 QRSS DC XL4'00'
OF90 D9C5E3D9E8 OF94 1144 RTYS DC CL5'RETRY'
OF95 0000 OF96 1145 RISAV DC XL2'00'
OF97 0000 OF98 1146 R2SAV DC XL2'00'
OF99 0006 OF9A 1147 SIX DC IL2'6'
OF9B 0045 OF9C 1148 SIXTY9 DC IL2'69'
OF9D D84040D940404040 OFC1 1149 SMHD DC CL37'Q R SENSE 2 SENSE 1 COUNT*
OFA5 E2C5D5E2C540F240 1149
OFAD 404040E2C5D5E2C5 1149
OFB5 40F1404040404040 1149
OFBD C3D6E4D5E3 1149
OFC2 10EE OFC3 1150 SSTABA DC AL2(SSTAB+22)
OFC4 111C OFC5 1151 SSTABF DC AL2(SSTAB+68)
OFC6 1152 TABDEV EQU *
OFF5 1153 DC CL48*CONSOLK8/CIO-INVLD5IOC -INVLD1442 -INVLD-INVLD*
OFC6 C3D6D5E2D6D3D2C2
OFCE 61C3C9D660C9D5E5 1153
OFD6 D3C4E2C9D6C34040 1153
OFDE 60C9D5E5D3C4F1F4 1153
OFE6 F4F2404060C9D5E5 1153
OFE6 D3C460C9D5E5D3C4 1153
OFF6 C2E2C3C1404060C9 1025 1154 DC CL48*BSCA -INVLDDISK1 DISK2 -INVLD-INVLDLP MFCU *
OFFE D5E5D3C7C4C9E2D2 1154
1000 F140C4C7E2D2F240 1154
100E 60C9D5E5D3C460C9 1154
1016 D5E5D3C4D3D74040 1154
101E 4040D4C6C3E44040 1154
1026 0000 1027 1155 TABEND DC XL2'00*
1028 1FF0 1029 1156 TABLIM DC XL2'1FF0' ***** SET TABLE-LIMIT FOR 8K ASSUMED
102A C4C5E5C9C3C540E3 103A 1157 TOTMSK DC CL17'DEVICE TOTAL= 000*
1032 D6E3C1D37E40F0F0 1157
103A F0 1157
103B 0017 103C 1158 TMTY3 DC IL2'23*
103D C7 103D 1159 XC7 DC XL1'C7*
103E 7B 103E 1160 X7B DC XL1'7B*
103F 90 103F 1161 X90 DC XL1'90*
1040 00000000000000 1045 1162 ZERO DC XL6'0*
1046 6BF0F0F0 1049 1163 ZRSC DC CL4',000*
104A 10CD 1164 POSTAB DS CL132
10CE 10D7 1165 POSTMP DS CL10
1166
10D8 1167 SSTAB EQU *
1133 1168 DS CL92
1134 118F 1169 DS CL92
1190 11EB 1170 DS CL92
11EC 1247 1171 LSSTAB DS CL92
1248 1172 TAB EQU *
1173 ORG X'300*
0300 1174 IMAG EQU *
0300 F1F2F3F4F5F6 0305 1175 DC XL6'F1F2F3F4F5F6*
0306 F7F8F9F0787C 0308 1176 DC XL6'F7F8F9F0787C*

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

030C 61E2E3E4E5E6 0311 1177 DC XL6'61E2E3E4E5E6*
0312 E7E8E950686C 0317 1178 DC XL6'E7E8E950686C*
0318 D1D2D3D4D5D6 031D 1179 DC XL6'D1D2D3D4D5D6*
031E D7D8D9605B5C 0323 1180 DC XL6'D7D8D9605B5C*
0324 C1C2C3C4C5C6 0329 1181 DC XL6'C1C2C3C4C5C6*
032A C7C8C94E4B7D 032F 1182 DC XL6'C7C8C94E4B7D*
1183 *****
1184 ** EQUATES **
1185 *****
1186
112A 1187 AINPUT EQU NEXTR+3
0008 1188 ARR EQU 8
00AB 1189 BITBGN EQU LINE+9
1004 1190 CTRDEV EQU POSTMP-3
10D3 1191 CTRSNS EQU POSTMP-4
0080 1192 FIRST EQU X'80* FLAG BIT 0
003B 1193 HH EQU X'3B* MASK FOR SWITCHES WHICH INHIBIT
0006 1194 HDQUES EQU X'06* HEADING PRINT OUT
005D 1195 H5 EQU X'5D*
007D 1196 H6 EQU X'7D*
0200 1197 INPUT EQU X'200*
0040 1198 IPL EQU X'40*
10FD 1199 LDWORK EQU CDREAD-3
0008 1200 LSTCRD EQU X'08* FLAG BIT 4
0040 1201 LSTCTL EQU X'40* FLAG BIT 1
0020 1202 LSTERR EQU X'20* FLAG BIT 2
0010 1203 NDCRD EQU X'10* FLAG BIT 3
0004 1204 NOPRNT EQU X'04* SWITCH BIT 5
11A2 1205 NI EQU LPTONE+6
00F1 1206 READ EQU X'F1*
0002 1207 ISBSCA EQU X'02* FLAG BIT 6
0001 1208 TABFUL EQU X'01* FLAG BIT 7
10D7 1209 TEMP EQU POSTMP
0001 1210 XR1 EQU 1
0002 1211 XR2 EQU 2
0380 1212 END ENT

ERPS CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AA	A	004	0D6A	1078	1076
AB	A	004	055E	0474	0468 0472
ABB	A	006	1201	0148	0144
AC	A	004	05D6	0509	0505
ADD1	A	003	06E9	0590	0575
ADDRSS	A	002	0ED3	1098	1070
AINPUT	A	004	112A	1187	0063
AJDEST	A	003	11DD	0137	0134
ARR	C	001	0008	1188	0061 0189 0235 0267 0296 0306 0311 0886 1015 1033 1055 1069
ARRET	A	004	0CD2	1029	1015*
BB	A	006	0707	0597	0563 0588 0591
BINARY	A	004	0D48	1069	0548 0760
BIPTN	A	004	0D86	1085	1069*
BITBGN	A	001	0DAB	1189	0759 0764* 0765 0765* 0768 1102 1127 1128 1129 1130
BITMNG	A	004	09E9	0817	0966
BLANK	A	001	0E04	1099	0795 0860
BLNK	A	003	058A	0502	0496
BOOT1	A	004	0000	0009	0007 0018
BOOT1A	A	003	000D	0013	0013
BOOT1E	A	003	0017	0017	0010 0014
BOOT11	A	002	001E	0020	0011
BOOT2	A	004	0200	0030	0015 0029 0030
BOOT2A	A	003	020E	0034	0032 0042
BOOT2B	A	003	0217	0037	0037
BOOT2E	A	003	0208	0033	0034 0038
BOOT21	A	004	0205	0047	0041
BOOT22	A	001	0239	0048	0041*
BOOT23	A	002	023B	0049	0035
BPRT	A	004	0BDA	0957	0918
BRBK	A	004	0010	0192	0189*
BS	A	004	0407	0375	0374 0375 0386 0388 0606
BSCAEX	A	004	071A	0601	0520 0599
BSCAMG	A	022	0E3E	1101	0603
BTBNAD	A	002	0E40	1102	0819
BT1	A	004	0D56	1072	1087
BT2	A	004	0204	0031	0047
BUSY	A	003	1110	0065	0065
BYT1	A	004	0D75	1081	1079
CARD	A	096	0EA0	1103	0379* 0380 0381 0383 0383 0387 0410 0411* 0418* 0419* 0420* 0422* 0428* 0430* 0432* 0433* 0435* 0436 0448 0480 1116
CDEORF	A	004	0817	0677	0676*
CDEXIT	A	004	1119	0068	0061*
CDRD	A	004	0ADB	0886	0876 0935 1003
CDREAD	A	004	1100	0060	0031 0059 0060 0066* 0067 0077 0172 1199
CEND	A	003	0EA4	1105	0951 1000
CHAIN	A	005	1293	0183	0161 0163
CKBLK	A	003	1207	0149	0153
CKCHN	A	005	1234	0161	0157
CKCOM	A	003	121F	0156	0123
CKREP	A	003	11AD	0122	0081
CMLDOP	A	006	1158	0092	0097
CNT	A	001	0171	0338	0395* 0405*
CNTR	A	064	0164	0335	0396
CNT3	A	006	05C1	0504	0501
COMP	A	009	0EAD	1106	0963
COMPQ	A	004	0804	0899	0871 0881 0955
CONSOL	A	015	0EBC	1107	0914
CTR	A	001	0EBD	1108	0165* 0170* 0178* 0463* 0475* 0493* 0504* 0653* 0750* 0766* 0930* 0933* 0940* 0978* 0997* 1046* 1071* 1084* 0736 0736* 0785 0787* 0858*
CTRDEV	A	010	10D4	1190	
CTRSNS	A	010	10D3	1191	
CTR4	A	001	0E8E	1109	0981* 0990*
DD	A	006	0413	0379	0697
DDDD	A	004	1259	0170	0167
DEC	A	004	04D2	0432	0427

ERPS CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
DECA	A	004	07F8	0669	0665
DEST	A	002	1200	0147	0130 0135 0140 0148*
DEVSUM	A	006	0A7C	0855	0811
DOLIO	A	003	1107	0062	0070
DTHED	A	003	0EC1	1110	
DUMY	A	002	0EC3	1111	0465* 0466* 0467 0469
DVADR	A	002	0EC5	1112	0536
D104	A	001	0EC6	1113	0645
D116	A	001	0EC7	1114	0642 0643
D120	A	003	1296	0184	0166 0168
EDT	A	006	09A4	0795	0791
EEEE	A	004	1245	0165	0162
EIGHT	A	002	0EC9	1115	0597
ENDDAT	A	006	0170	0337	0369 0369* 0442 0445*
ENT	A	004	0380	0343	0109 0188 1212
ENTSUM	A	004	087D	0711	0612 0622 0674 0679 0682
ERAP	A	001	0000	0002	
ERDTB	A	004	0AC2	0875	0775 0880
ERP11	A	005	077A	0633	0630
ERP13	A	006	08B5	0947	0934* 0942 0944 0946 0948*
ERP14	A	004	0A74	0848	0818
ERP16	A	006	0B1F	C905	0903
ERP18	A	006	0C73	0996	0994
ERP20	A	006	04DD	0435	0424 0434
ERP23	A	006	0BC5	0951	0941
ERP26	A	006	0C56	0990	0984 0987
ERP29	A	004	07A9	0646	0628 0632 0644
ERP4	A	004	0682	0562	0523
ERP8	A	006	0989	0789	0786
ERR	A	003	111D	0069	0062
ERX@	A	002	011A	0324	0306* 0307* 0308 0311* 0317
EXCPTN	A	004	0831	0683	
E8TH	A	002	0ECB	1116	0598
FINISH	A	003	0C94	1005	1001 1006
FIRST	C	001	0080	1192	0737 0774 0875
FL	A	002	0ED1	1119	1059
FLAG	A	001	0ED2	1120	0532* 0533 0537* 0540*
FLAGS	A	001	0ED4	1122	0355 0355* 0535* 0562 0584* 0601 0604* 0610 0613* 0712* 0737* 0774 0805* 0812 0817 0837 0856* 0866 0875* 0899 0911* 0922* 0924* 0928* 0943 0953* 0954 0960
FSTIN	A	002	0ECF	1118	0890 1061
F14	A	004	075E	0622	0352*
F3F1	A	002	0ECD	1117	0673
GETEND	A	006	0C83	1000	1004
GETND1	A	001	0C8C	1002	
GETYR	A	006	0843	0688	0684 0686
HALTSW	A	003	0067	0216	0201 0206 0208
HDQUES	C	001	0006	1194	0362
HEDLST	A	029	0EF1	1123	0974
HEDNG	A	001	0F26	1125	0364 0365 0366
HH	C	001	0038	1193	0017 0033 0069 0888 1057
H5	C	001	005D	1195	0017 0033 0069 0888
H6	C	001	007D	1196	1057
IMAD	A	002	0F28	1126	1060
IMAD24	A	002	128C	0181	0171
IMAG	A	001	0300	1174	0181 1126
INCL	A	005	0702	0596	0592
INC2	A	006	0A25	0830	0823 0826
INPUT	C	001	0200	1197	0076 0090 0107 0129 0158 0174 0236 0391 0436* 0441 0445
INSERT	A	005	06F4	0593	0577
INI	A	003	0D67	1077	1074
IPL	C	001	0040	1198	0012 0036
ISBSCA	C	001	0002	1207	0535 0601 0604 0712 0837 0856 0922 0943 0960
ISX	A	004	0435	0387	0382
J1	A	002	0F2A	1127	0831
J2	A	002	0F2C	1128	0835

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
SEQDUN	A	004	08D6	0735	0717
SEQ1	A	003	089B	0718	0731
SEQ2	A	004	089E	0719	0727
SEQ3	A	003	08B4	0724	0720
SETIT	A	004	005C	0212	0202* 0204* 0210* 0211*
SIX	A	002	0F9A	1147	0539
SIXTY9	A	002	0F9C	1148	0948
SMHD	A	037	0FC1	1149	0959
SMSSW	A	004	00IT	0194	0214 0217
SPACE	A	004	0D14	1052	0343 0344 0345 0346 0487 0735 0813 0848 0869 0870 0957 0958
SPC	A	004	072F	0606	0602
SSTAB	A	001	10D8	1167	1150 1151
SSTABA	A	002	0FC3	1150	0820
SSTABF	A	002	0FC5	1151	0934
SS1	A	004	0A01	0822	0819* 0831 0833 0835 0839* 0840* 0841* 0842 0843
SS2	A	006	0A09	0824	0820* 0821* 0825 0828* 0829* 0830* 0846
STEP2	A	004	0D94	1088	1082
STRDAT	A	006	016A	0336	0370* 0438 0441*
SUMPOS	A	004	0C07	0972	0867
SUMSNS	A	001	09D9	0809	0777 0779 0806
SWITCH	A	001	0ED3	1121	0212* 0362 0485 0522
SWOFF	A	004	003B	0204	0200 0203
SWON	A	004	0034	0202	0198
S1	A	004	115E	0093	0091* 0092 0095* 0096
S2	A	004	1162	0094	0092*
TAB	A	001	1248	1172	0361 0361* 0567 0715 0738
TABDEV	A	001	0FC6	1152	1112
TABEND	A	002	1027	1155	0595* 0726 0730 0801
TABFUL	C	001	0001	1208	0562 0584
TABLIM	A	002	1029	1156	0581
TEMP	A	010	10D7	1209	0190* 0191 0194* 0195 0197 0199 0205 0207 0210 0347* 0348 0568*
TEST	A	004	0004	0189	0570 0571 0572 0573 0721* 0723 0740* 0741* 0747 0979* 0992 0996*
THREE	A	002	011C	0325	0196 0357 0376
TOTMSK	A	017	103A	1157	0307
TSTD	A	003	00FE	0312	0855
TSTP	A	001	0101	0313	0312
TWICE	A	006	0A56	0840	0316
TWNTY3	A	002	103C	1158	0832 0834
T01	A	004	0D5A	1073	0829 0830
T255	A	006	054F	0471	1070* 1072* 1078 1081 1086* 1089 1089* 1090
UNPACK	A	004	0CD6	1033	0470*
UNPK2	A	004	0CDA	1034	0656 0753 0769
UNPK3	A	003	0CF3	1041	1047
UNPK4	A	004	0CFE	1044	1039
UPDT	A	006	0558	0473	1042
URPX1	A	003	046B	0404	0464* 0469* 0470
URPX2	A	004	0459	0399	0400 0402
XC7	A	001	103D	1159	0406
XRI	C	001	0001	1210	1040 1043
					0009* 0010 0011 0013 0014 0018 0031* 0039 0040 0040* 0076* 0078
					0080 0082 0084 0085 0085* 0086 0099 0101* 0103 0107* 0108 0111
					0112 0113 0113* 0114 0122 0126 0129* 0132* 0133 0135* 0136 0137
					0137* 0138 0141* 0143* 0149 0151 0151* 0152 0154 0154* 0156 0161
					0163 0166 0168 0174* 0209* 0211 0237 0239 0241 0265 0266* 0267
					0270 0271 0274 0275 0279 0280 0280 0281 0282 0283 0284 0285
					0289 0290 0295* 0296 0297 0298 0301 0302 0306 0307 0307 0308
					0311 0312 0314 0315 0316 0317 0318 0333 0380* 0391* 0396* 0401
					0403 0404 0404* 0438* 0442* 0448* 0449 0455 0455* 0462* 0465 0474*
					0491* 0495 0498 0506* 0513* 0514 0514* 0525* 0526 0527 0554* 0555
					0567* 0574 0576 0578 0578* 0580 0590 0593 0594 0595 0596 0626*
					0627 0629 0631 0633 0634 0636 0638 0640 0642 0643 0645 0646*
					0647 0654* 0715* 0716 0718 0719 0721 0722 0728 0728* 0729 0738*
					0740 0741 0743 0743 0744 0744 0745 0745 0746 0746 0747 0748
					0751 0752* 0767* 0770* 0772 0773* 0776 0776 0778 0778 0783 0783*
					0787 0790 0793 0799 0799* 0800 0803 0804 0810 0810 0906 0912

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
XR2	C	001	0002	1211	1017 1018 1021 1022 1025* 1034 1035 1045*
					0030* 0034 0035 0037 0038 0041 0041 0042 0043 0060* 0061 0062
					0063 0065 0066 0067 0070 0086 0087 0088 0093 0093 0094 0094
					0099 0102* 0127 0130* 0140* 0173* 0236* 0237 0239 0241 0276* 0277
					0308* 0317* 0319 0323 0375* 0392* 0397* 0399 0399 0456* 0492* 0494
					0497 0502 0503 0503 0507* 0515* 0547* 0655* 0718* 0719 0722 0723
					0724 0724* 0725 0749* 0759* 0768* 0977* 0982* 0983 0988 1016 1017
					1020 1021 1024 1026* 1034 1035 1036 1037 1038 1040 1041 1043
					1044* 1075 1077 1080* 1083* 1088*
X78	A	001	103E	1160	0633
X90	A	001	103F	1161	0904 1024
ZERO	A	006	1045	1162	0519 0537 0576 0594 0716 0905
ZRSC	A	004	1049	1163	0494 0789 0980 0993

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+GXR)U O DKG3E AC904 --QI E|S*H A-LB /H OH*W3M AC9R*1EG2 E*5 JH 4H*4-DH(D|VTO BC8U -.MERP50006

T+/HS(GHK CQAD-# /O2\$(ED|V?HGA- A**@** 8AD- J*G5 **BADK-K E+EEOC -JHG4-DAOH*J8G5 * < 8\$HERP50007

T+/I) JH4CE*860I POH*(F2BGGDK)(* KI*HABM4 A/HLO D JI30BC,5(-XKV?H ABD4BB/HU2-DD| M +7E0 a-aERP50008

T+AHQ E=QD*3 /1D (GH|WCHA S8aC = IOH*W08AC9-KT-a C,4JY8BDCW| /1D X 1* F<|H0*XN2- 0 *** EERP50009

T+ :OH*C-C&H AK O ACP+H E5%BE C O+300 ACP+H E5%B E -'aJCO2YDH|~ E57HAB7HG<30: E3 2/0E :8ERP50010

T+A5|CZ PC4HD(- 2/BD* ACP2YDEO-D \$E0 E%E510 E4 +- +4* a|<BG A- O-G\$ /O PA H ***** #:DERP50011

T+B0(- U2HB VZ - EME2-D.\$EDA -H AAF4A O| /O O-D W7&H+GC3SP-&S|H E'BG+P1-E*HB - = 'E *** 8Z<ERP50012

T+C,4 DIPO N+ AD*G8M7G4/7G5-7G 6/-|"/'BGQ(BG <B G CB EB\$) /K4-/ L*-OC2*UF4H)-4H) 2H* *1UERP50013

T+ DU A4BG*- P= A|E|I*2Y*Q) /"4- T*|+I;DBH4AAW|E|I *;*E18A C2C_)8H* ***** OH Y B ***** E04ERP50014

T++60H*H\$*BGCJL /O4MOH*(E<BGCJE 08/CP+ -E57HECCO ACCH2/ OS|I*GP*MA 2-2AC_E+5<BG E aE H =E-ERP50015

T+|1*02B 78B*01 -C-DB*02DDUOKLCU FC_|2UAQ<H&H;C1< <C-H=C2H< O.\$C2\$ /O4\$C8<E3JC(C4% A* D JSQERP50016

T+-E%* 2A OY|SCZ C <U# OCTCEB+ 8 AO-HDA2BG L /OC MCE2+Y I-O-D+&T7 WCUG2-JD(PO:-CDG -E* 5HMERP50017

T+JX<A2 2BGA * 'E :-OHDDA30E8X B E|S0-H&52BGC1% aE E10-DAI*HBD(;>AO 2S -2-2 aYD EL- :8ERP50018

T+KS =H4-DACO A*E=HO DDOE0BD(+ +YC37C22'=ACD2YD G|U&57HAAC2QD(Q #OACOC D+X-22B < +X/ 6R4ERP50019

T+L15--BCZ4E5-0 AC20|/L70D(P / L |)| E5*8DA<? -EL K|ID+X|HGB330CZ3 2/0E22-:*|ID+W*H GA-0 ETDERP50020

T+HQ :*D(HKAEI -C2CB EVOH*)?H DA-OE OYBP2HA O? /OA62-HFC MA* I -O-D+&T&AC9\$K M, B / ERDERP50021

T+NL530<C8X /O2 \$O-DE530FC,4< &N \$C8%* #C @ CZ< |SC6CC%| / N;COD E00#CC DEM-N\$CE *** a 080ERP50022

T-O+;?HAA-B |SCQAC7Y| :*C8T **MDC M(*O:-C D + E7* C D(*-7'|FD (*C1/C-28A #LOA E6% ;S8ERP50023

T+PI/04HO-DE52H BC;M2A-:IT <ADDV * C2-JFFH D|/U2 *** =HOH&E2-HGA#1 **EOB D| :*C8T 2-E0 \$#DERP50024

T+QDI-DI;TQBC8C /00;|D (33MAC9\$ K E\$B --|| -|S*B GC1% (O=|DDP -E* E+ E+42 EAYH5 E= OG D =,4ERP50025

T+Q*CE2AG D(,-< 2P 7<B H+4--<|E- +47HAACYBC_E< &R GC2M| **KDDP -ER BC-DFJO=ECO +4-# HO D 2, &ERP50026

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-R:ATH<A&6Y C B -7DOH*(KCS C80 9* =<2Z L|D (1 0 GC* <(1CMAC9Q* E7 A01~_X+*BGCJ% aE 8 =9QERP50027

T+-E5 E1;C- + L- AC_L D *GO-DKK 0 AD(*|T00AC2|T&- BC80E5--AC84E5-- BC84E50-AC88E544 C O2 \$D&ERP50028

T+>OT2BAA>V(O< E J*BAA?LK EM4 E= QC&D|WA ZOHFFZTY AC_E<IOHOC5T /O4 \$2G1P2Y*;-2DOHD GA2 ;IDERP50029

T+*,/O*BL <CCB* <A U&JLEADB)+ ** E |S 8AC9Q+2E4AC9Q +2*HAA<BGA|Y8 -# M2Z +CCUB0 8=+OH +5< Q9YERP50030

T+>W/O4\$OH*DA3- HC_L2U L /O/*+-- +5C12 <82 E8+| A;LTO PY82 E#+| A-CTO P7 U /'O-D AYG4 81&ERP50031

T+; / C -E;Z-PZ 2YEG-|2 OH*GDM2 ** A -E& 2-EP-E% 2-ER-J 2-E-J- 2-E(L -C%)+ +1*H 8Z*ERP50032

T+>*/ON+ +1TQ AC8-4 E=O|EU|V% DA6Q< OFZ E4< OF _ \$D2.-:'O-DA,*H B ? /O3O|+QB- 0 **_4 #.DERP50033

T+>P PU*2&E80 D H 371 PX2/ ,2--8 2Q .)2Y*.|(B7-H GAC30 _4(E&#CZ7 / /'|< B7--ABA- A;TY K/*ERP50034

T+>K .:|UA;2B DBG4H O.; P%*O . ;OHDH-L7/ _#2/ % *8 .;2YHD+/-B7-0 **_2A-*BG I&<POI -_2 *H*ERP50035

T+S(|D B701; _8 B7021 \$DAZ&2E P4 A-*BGAA<2 F1CC AZ F1C MA-EF_|H **3ZBC_2&E 8ACE8 + ** 8 =TQERP50036

T+>TH *HADU-) 1A EB|HA+*HBA04C O| A S4G E&50J2A E DT EDD(-S -M4 -- QC&D|WA XO GHX_H AAL& :2<ERP50037

T+UC E=OC&D|V/ XOHHHW2BGCJE | JC MD(E:- #MO-DKKA0 AD(*CF ** E5-AQ -< BO DC N-B -EQ &H L D 18UERP50038

T+U= JCPG <|TO| B -6V| H+?LEAC9Q 6 E=HOH* <5-OACE* (ZT1 CEPB -6=OH* (KCS C809* =<2Z E|D 2THERP50039

T+V9C\$8<A06'C\$8 2 E: 'O-D|T2HBC\$, /O3O(E&D|VX%| CQ AC8H8- #MOA HOV4 AB | EXRPE E < AB|U M--ERP50040

T+W44-DE|>2&5|H AAJ8 D(E&D C H(2AA I-E D2YD|AS (2 = FLO DCBT / WNBOD (1-8DCE2B608A0H* (FOO E|JQER*50041

T+X?PO8A _?K EM 4 E=OC&D|V/ XO E H:G3*AP2# CY-C_L /OXRPE E < ABXO 9D #MOA (E<-E<L D Y NI-ERP50042

T+YD) OAB-E+& E O AB-8|032LB-08 E OI H|E00 Z< C7 PB-3 A Y-OH*(F31 2B-0+ Y<DCO+ EY +DCO H92ERP50043

T+ZVC&DHA 2DOHD HN-4AB-E|.2B8BVQ (EYDC23 E2*+ H +5|H&G 8AB-E|S 8 AB-E|S 8AB-E|S 4 AB-E 18HERP50044

T+D-C3C A YA|R< HC<BDCJ? /O4MOH* I;-O& DQ&+T2BC_E FH HWC8Q| ACMC8T / DFBOBZ 8DOH* (F30 :H-ERP50045

T+>,\$Q .ACD BO . AOH*(F3--C_L D O GOH*(E<BGCJL /O% D+8 +5<BGB_*Q&H 2YDG2G1)OH*H1/H GHLE #Y<ERP50046

T+>XOB 2C2Y*22C 10- H8TG5C2*32&C A2E,0<|<E4TWFDI . U ,SOH* C/ C_L D 2OB DB HA+| B -H KSHERP50047

T+>JD Q+ H DC2 H OH DDM) H A-H AH*F8|CY&C J92 P 2U UKC-H?C,32/OO <GOH/C7T /O4\$2Y; HCDZ *9UERP50048

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+><_BNC6 -C 2 &&: -#MOH*(F3% &C_L2/O&:D #M; Q +?L6 -C2 &&@ 0: 'C D.> *E0H*H635 / - L--ERP50049

T+-7G@YDG@G1)OH* ./&@ C,4|5<BBB@P &>5+ H+5|H&B&O ODU*BF?HGA-1D BK 8AB#-|X<BGB8M (-H 4T&ERP50050

T+-OB 0:U@-DD+U +5C-&C_L D %DOH* (E<BGCJ&C I HSC@D 8 -#M@Z <C &B/ = MC -BW :_OH*(F@B GCJ& 1 D ERP50051

T+-O'OH*I:*BGCJL /O4MCAO&D #10H* (F@BGCJLB /C+|BD +?&OBD(*|/-OB D &KLODC,86 -?:?& OH D &H ERP50052

T+-18CEOFH H-CBQ **OH;@-HITO CBT / I CO +?=-HOH& <(EOB Z &504B D &K-HAA<BGCJ&FHAC PCBQ QS-ERP50053

T+-23CO +?&=HOH& <HO4B -<+Z|HAB<B GB_? /O2C@G1TOM* <VC&HC(O@ BQ 0 A;| A@/ ET- C@+ Q & 28QERP50054

T+-3> GTO |H&AQB A *(-D|-CQBC7Y + =IC73 / 2-OH* C&HCJ+Q CD W H .,0 .,0 \$7: |H BAQB LBDERP50055

T+-4Z &|&7: -H BAQB J'(-H|-CQ AC7Y| : 'CBT &3 EO H* C3-CL,2/O& @B-4:(-|J*HG * #*D 3TOERP50056

T+-5UB 4WK; +4LG UC2-19-#|@=HAO;Q (|<G-CK\$ /O (- (S&OACN4+ 3OBC,4 @ &5\$+ |H&A,3 0 |H 7SUERP50057

T+-6-/O+@&& 8B 5 \$@Z D(-H|;TS CN? ZUA-6 -|=CO +?&= HOHD @ACN4|S<B GCNQ6 -|=C- (O05 \$OH* M-@ERP50058

T &6/CNY M.-ERP50059

T+-8#& =|&(PD8@N 1_S&E<.S0@E-E|V 2;I 5|R.&(|\$F&(X E8*X11;I,&+.E5;. E&|E 2;I 0*\$M54_ 0*Q 9.<ERP50060

TA 9 1<N.C&Z :28ERP50061

T+-#&&<PNI<|O5() .0*\$DINI+PDCC5_P S5_|E&E1*P @|A / |26/4 -+?-?| 1 -A0* <TA5(L E6M @/ERP50062

T+-@0;4A &C<TA5(L E6MCE@2TO&<|H1*| K8%LE9*XC1MCQ&DC R&DA 8>|A8=LS&<. Y8@PS&|I 0|PD&|G P6*U =&QERP50063

T+-J5:(5*\$S2;| 15_PSI<GT1&< C&E8 (X069C\$#C5_XE&<P X0@PE1<PD<4CF5_| L5>\$I5*) 5|&T&<X N&+H 2T ERP50064

T+-<9(LMO)XY&(P O&<|O5;|R5(O@G R1+I 1_S&E+|H2;I 1<PV2*|E*****7M *****3*=OX0@|D & &3& 9,YERP50065

T+-"G 6*PT6;- Q J|/ &(V &DA 8%PN8%N @UA &DCS1|PS1MC1&DA &DA 0*\$U5;<&#/D *0*Q -14ERP50066

T+/ B5;.04'.BQ*| 15WC15;PL1+.15Z(&FC15;PL1|G4'|I &FC15;PL1FC15;P L1<.S0&E &FC15;P L1<& 5E-ERP50067

T+/ '2;.K@MCD2;. K@UA-2|PV4@J-21P V4@LL54A &DCM1&| U&D A*O1<PV2*| E&+|O&2GL-UCO@| E2* |R8ERP50068

TBIAI;9 A ,@|CO 8-QERP50069

T.O<7@-.3'|P6'*T 9@G_@Q;.T9+PW9=T ZMF_@4|.L5(P05'T ROE_*0*.C1<PF1@T ILU_ ;B-ERP50070

ERP5 CARD ERAP - ERROR RECORDING ANALYSIS PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

E 8A*E7*=-DC*PH\$ =*7M&F| | C F& ASC R A SO Q 11170719710 72271P1MERP50071

FFFF DIAGNOSTIC CONTROL PROGRAM

```

RPP LOC OBJECT CODE ADDR STAT SOURCE STATEMENT
0000 2 DECK 8
3 SEQ 6
4 COM THIS PREVENTS GENERATION OF OBJECT DECK
5 PAP START X'0'
6 *****
7 * BOOTSTRAP - FIRST CARD *
8 *****
9 *****
10 *
11 * THIS ONE CARD PROGRAM IS CONTAINED IN THE FIRST CARD OF THE
12 * DIAGNOSTIC CONTROL PROGRAM. IT IS READ INTO LOCATIONS 0-95 BY
13 * INITIAL PROGRAM LOAD. WHEN GIVEN CONTROL, THE BOOTSTRAP ROUTINE
14 * READS THE SECOND CARD OF THE DCP OBJECT DECK INTO 512-607 AND
15 * BRANCHES TO IT.
16 *
17 * NOTE - THE SECOND TIER OF THIS CARD CONTAINS THE PART NUMBER AND
18 * EC LEVEL OF DCP.
19 *
0000 20 *****
21 USING BOOT1,IR1
22 BOOT1 LA 0,IR1 LOAD BASE REGISTER
23 TIO BOOT1E(,IR1),X'F0' GO HALT IF MFCU ERROR OR NOT READY
24 LIO BOOT11(,IR1),X'F5' LOAD READ ADDRESS REGISTER
25 STO IPL,READ READ A CARD INTO LOCATIONS 512-607
26 BOOT1A TIO BOOT1A(,IR1),X'F1' LOOP UNTIL DONE
27 TIO BOOT1E(,IR1),X'F0' GO HALT IF ERROR
28 B BOOT2 GO TO BOOTSTRAP ROUTINE
29
30 BOOT1E HPL H5,RR *MFCU NOT READY OR ERROR
31 B BOOT1(,AL1) GO TRY AGAIN
32
0000 33 BOOT11 DC AL2(512)
34
0000 35 DC CL29' PN 2589900 EC XXXXXX L'
36
36
36
36
37 *****
38 * BOOTSTRAP - SECOND CARD *
39 *****
40 *
41 * THIS ONE CARD PROGRAM IS CONTAINED IN THE SECOND CARD OF THE
42 * DIAGNOSTIC CONTROL PROGRAM. IT IS READ INTO LOCATIONS 512-585
43 * BY THE IPL CARD. THIS ROUTINE READS THREE 11L FORMAT CARDS INTO
44 * LOW CORE TO BUILD ENOUGH OF THE DIAGNOSTIC LOADER TO HANDLE THE
45 * CARDS. THEN THE BOOTSTRAP ROUTINE BRANCHES TO THIS PORTION OF
46 * THE DIAGNOSTIC LOADER, WHICH LOADS THE REMAINDER OF THE LOADER
47 * AND DCP.
48 *
0200 49 *****
0200 50 ORG 512
0200 51 USING BOOT2,IR1
0200 52 USING BOOT2,IR2
0200 53 BOOT2 LA BOOT2,IR2 LOAD BASE REGISTERS
0200 54 BT2 LA 96(,IR1),X'1'
0200 55 J BOOT2A
0200 56 BOOT2E HPL H5,RR *MFCU NOT READY OR ERROR
0200 57 BOOT2A TIO BOOT2E(,IR2),X'F0' GO HALT IF MFCU NOT READY OR ERROR
0200 58 LIO BOOT23(,IR2),X'F5' LOAD READ LSR FOR ADDR 0000
0200 59 STO IPL,READ READ A CARD
0200 60 BOOT2B TIO BOOT2B(,IR2),X'F1' LOOP UNTIL DONE
0200 61 TIO BOOT2E(,IR2),X'F0' GO HALT IF ERROR
0200 62 HVC 59(60,IR1),59 MOVE DATA TO CORE
0200 63 LA 60(,IR1),IR1 INCREMENT POINTER FOR NEXT CARD

```

FFFF DIAGNOSTIC CONTROL PROGRAM

```

RPP LOC OBJECT CODE ADDR STAT SOURCE STATEMENT
0224 AP 00 39 05 64 SLC BOOT22(1,IR2),BOOT21(,IR2) CONTINUE UNTIL 4 CARDS HANDLED
0228 W0 01 0D 65 SNZ BOOT2A(,IR2)
022B 3C 40 08FF 66 MVI I'8FF',C' CLEAR PRINT FIELD
022F 0C FE 08FF 08FF 67 HVC I'0FF'(255),I'8FF'
0235 C0 87 008B 68 B NEXTB GO TO DIAGNOSTIC LOADER
69
0205 70 BOOT21 EQU BT2+1
0239 03 0239 71 BOOT22 DC I1.1'3'
023A 0000 023B 72 BOOT23 DC AL2(0)
73
73
73
73
73
73
73
73
74 ORG I'60'
75 *****
76 * DIAGNOSTIC LOADER *
77 *****
78 *****
79 *
80 * A ONE CARD BOOTSTRAP READS THIS LOADER INTO CORE AND BRANCHES TO
81 * IT. THE DIAGNOSTIC LOADER THEN LOADS THE CONTROL PROGRAM,
82 * INCLUDING ITS SECTION REFERENCE TABLE. AFTER DCP IS LOADED, THIS
83 * MODULE THEN TRANSFERS CONTROL INTO A SECTION LOADER BY ALTERING A
84 * BRANCH ADDRESS. (OBJECT CARDS RECORDED BY BOTH PHASES INCLUDE
85 *
86 * TEXT
87 * REPLACE
88 * COMMENT
89 * SENSE SWITCH
90 * END
91 *
92 * THE DCP LOADER PORTION ALSO RECOGNIZES THE FOLLOWING CARDS--
93 * SRT
94 * UDT
95 * CHAIN TRACE CONTROL LED TRACE CARDS
96 *
97 * OTHER CARDS ARE IGNORED.
98 *
99 *
100 *****
101 *****
102 *
103 ** SUBROUTINE TO READ ONE CARD.
104 *
0050 105 USING CDREAD,IR2
0050 106 CDREAD LA CDREAD(,AL2) LOAD BASE ADDRESS
0050 107 LA INIUT,IR1 SET
0067 108 AINPUT EQU *-1
0067 109 ST CDEXIT+3(,IR2),L0R SET UP RETURN ADDRESS
0067 110 TIO ERR(,AL2),X'10' GO HALT IF MFCU NOT READY OR ERROR
0067 111 DOLIO LIO AINIB1(,AL2),X'F5' LOAD 15L TO START LOADING AT 0000
0067 112 STO NORM,REFL READ A CARD - NORMFL MODE
0067 113 BUSY TIO BUSY(,AL2),X'F1' LOOP UNTIL READ DONE
0067 114 SWS STATUS(,IR2),X'13' GO HALT IF FEED OR FEED CHECK
0067 115 TIP STATUS(,AL2),X'80'
0067 116 CDEXIT BT *-2 EXIT SUBROUTINE IF NO ERRORS
0067 117 ERR HPL H5,RR *MFCU NOT READY OR ERROR
0067 118 B DOLIO(,IR2) GO TRY START I/O
119
0067 120 NEG3 DC XL2'FFFD'
0067 121 RECO DC XL2'FFFD'
122
122
123
0067 124 NEXTB I CDREAD GO READ A CARD
0067 125 C'1 0(,IR1),C'1' BRANCH IF THIS IS TEXT CARD
0067 126 JE LOOP

```

FFP8 DIAGNOSTIC CONTROL PROGRAM

Table with columns: ERP LOC, OBJCT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for diagnostic control program.

FFP8 DIAGNOSTIC CONTROL PROGRAM

Table with columns: ERP LOC, OBJCT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for diagnostic control program, including comments and cross-references.

FFFF DIAGNOSTIC CONTROL PROGRAM

ADDR STMT SOURCE STATEMENT

018P D2 03 255 LA 3(,XR1),XR1 POINT TO NEXT NUMBER
018E C0 81 0177 256 BE CHKSSO CONTINUE UNTIL CARD DONE
0192 C0 87 008B 257 B NEXTR WHEN DONE, GO READ NEXT CARD
0196 7D C5 00 258 CHKEND CLI 0(,XR1),C'E' GO READ NEXT CARD IF NOT END
0199 E0 01 2F 259 BNE NEXTR(,XR2)
019C 38 04 01FD 260 TBN FLAG,BIT5 BRANCE TO X'901'
01A0 80 90 81 261 BF 129(,XR1)
01A3 C0 87 0000 262 LDX B *-*
01A6 263 LDXB EQU *-1
264 LDPT2 ST LDXB,ARR
265 B CDREAD
266 TBF FLAG,BIT0+BIT2+BIT4+BIT5
267 BT NEXTR+4(,XR2)
268 B UNPACK
01BA 269 DC XL1'2'
01BB 270 DC AL2(DTABLE+1)
01BE 271 DC AL2(DECO-4)
272 CLC DECO-4(3),90(,XR1) CHECK ID
273 JNE HLTHD
274 CLC DECO(4),95(,XR1) CHECK FOR CARD 0
275 JE OK
276 CLC DEC1(4),95(,XR1) CHECK FOR CARD 1
277 JE OK
278 HLTHD L DTABLE+1,ARR
279 HPL HD,HH
280 B LDPT2+4
01E2 281 OK TBN FLAG,BIT2
282 BT LDX
01EA 283 B NEXTR+4(,XR2)
01ED 284 DC XL4'0'
01F4 285 DECO DC DL4'0' DECO MUST START AT X'1F1'
01F5 286 DECO DC DL1'1'
01F6 287 DC XL06'0'
01FD 288 DC AL2(CDREAD)
01FF 289 DC AL2(LDPT2)
290
291 ORG X'A00'
292 * THESE INSTRUCTIONS AND CONSTANTS ARE USED ONLY BY THE DCP LOADER. *
293 * THE UNIQUE SECTIONS OF THE SECTION LOADER ARE LOADED INTO THE *
294 * LOADER AREA, X'000' - X'1FF'. *
295
296
0A00 F0F4F8 0A02 297 D048 DC DL3'048'
0A03 F1F2F0 0A05 298 D120 DC DL3'120'
0A06 18 0A06 299 N24 DC IL1'24'
0A07 C3C8C1C9D5 0A0B 300 CHAIN DC CL5'CHAIN'
0A0C 301 CHCTR DC XL1'0'
302
0A0D 7D 5C 00 303 CKCONA CLI 0(,XR1),C'+' BRANCH IF NOT CORRECT CARD
0A10 F2 01 13 304 JNE CKCPU
0A13 C0 87 111B 305 B FIXMOB
0A17 38 01 0206 306 TBN SBYTE0,SSW07 SKIP PRINTING IF SSW07 IS ON
0A1B E0 10 2F 307 BT NEXTR(,XR2)
0A1E C0 87 021A 308 B PRINT PRINT CONTENTS OF THIS CARD
0A22 21 0A22 309 DC XL1'21'
0A23 E0 87 2F 310 B NEXTR(,XR2) GO READ NEXT CARD
311
0A26 7D C3 00 312 CKCPU CLI 0(,XR1),C'C' BRANCH IF NOT CPU DEFINITION CARD
0A29 F2 01 34 313 JNE CKUPT
0A2C 1C 00 0200 04 314 MVC SHOD(1),4(,XR1) PUT SYSTEM MODEL INTO SRT
0A31 C0 87 111B 315 B FIXMOB ---GO DO CIO OVERLAY ETC.
0A35 C0 87 0226 316 B PACK PACK CORE SIZE INTO SRT
0A39 04 0A39 317 DC IL1'4'
0A3A 0889 0A3B 318 DC AL2(INPUT+9)
0A3C 0203 0A3D 319 DC AL2(SIZE)
0A3E 3B 80 0204 320 SBP CPU,X'80' SET DUAL PGM FEATURE FLAG IF
0A42 7D F1 08 321 CLI 1(,XR1),C'1' COLUMN 12 CONTAINS '1'
0A45 F2 01 04 322 JNE *+7

FFFF DIAGNOSTIC CONTROL PROGRAM

ADDR STMT SOURCE STATEMENT

0A48 3A 80 0204 323 SBM CPU,X'80'
0A4C 7D C2 04 324 CLI 4(,XR1),C'B'
0A4F F2 82 06 325 JL CDERRO
0A52 7D C4 04 326 CLI 4(,XR1),C'D'
0A55 E0 04 2F 327 BNE NEXTR(,XR2) YES, GO READ NEXT CARD
0A58 F0 3B 6F 328 CDERR0 HPL HU,HH *NO, CARD SET UP IMPROPERLY
0A5B E0 87 2F 329 B NEXTR(,XR2) GO READ NEXT CARD AFTER HALT RESET
330
0A5E 09 0A5E 331 F9 DC XL1'09'
0A5F C0 0A5F 332 DEV DC XL1'0'
0A60 7D F4 00 333 CKUPT CLI 0(,XR1),C'U' BRANCH IF NOT UDT CARD
0A63 F2 01 AA 334 JNE CKDCPS
0A66 7D 40 03 335 CLI 3(,XR1),C' USE THIS CARD AS A CONTINUATION IF
0A69 F2 01 0A 336 JNE PTFDC COLUMN 4 IS NOT BLANK
0A6C 3C 00 025F 337 NVI UTAB+45,X'0' IF BLANK - CLEAR UDT TABLE FOR ALL
0A70 0C 2C 025E 025F 338 MVC UTAB+44(45),UTAB+45 NEW ENTRIES
0A76 D2 01 05 339 PTFDC LA 5(,XR1),XR1 POINT AT FIRST DEVICE CODE
0A79 3A 01 0A83 340 ULP1 ST UPTR,XR1 SET UP DEVICE CODE POINTER
0A7D C0 87 0226 341 B PACK PACK DEVICE CODE
0A81 02 0A81 342 DC IL1'2'
0A82 0000 0A83 343 UPTR DC AL2(*-*)
0A84 0A5F 0A85 344 DC AL2(DEV)
0A86 C2 02 022F 345 LA UTAB-3,XR2 POINT AT DCP UNIT TABLE
0A8A E2 02 03 346 ULP2 LA 3(,XR2),XR2 INCREMENT UNIT TABLE POINTER
0A8D B8 10 01 347 TBN 1(,XR2),BIT3 BRANCH IF NOT LAST DCP ENTRY
0A90 F2 90 07 348 JF
0A93 F0 3B 6F 349 RPL HU,HH *RAN OUT ROOM IF UDT TABLE
0A96 C0 87 008B 350 B NEXTR GO READ NEXT CARD
0A9A 8D C0 00 0A5F 351 UDTA CLC 0(,XR2),DEV BRANCH TO OVERLAY IF THIS IS SAME AS
0A9F F2 81 07 352 JE LDUDT PREVIOUS ENTRY
0AA2 BD 00 00 353 CLI 0(,XR2),X'0' IS THIS AN UNUSED ENTRY
0AA5 C0 01 0A8A 354 BNE ULP2 IF NOT UNUSED, GO CHECK NEXT
0AA9 8C 00 00 0A5F 355 LDUDT MVC 0(,XR2),DEV SET UP THIS UDT ENTRY DEVICE CODE
0AAE F0 0F 01 356 SBP 1(,XR2),X'0F' CLEAR OPTION BITS
0AB1 BC 00 02 357 NVI 2(,XR2),X'0'
0AB4 D2 01 01 358 LA 1(,XR1),XR1 POINT AT FIRST OPTION NUMBER, ALLOW
0AB7 7D 60 00 359 CLI 0(,XR1),C'-' FOR DASH
0ABA F2 01 03 360 JNE *+6
0ABD D2 01 01 361 ULP4 LA 1(,XR1),XR1 POINT AT NEXT OPTION NUMBER
0AC0 7D 40 00 362 CLI 0(,XR1),C' IF BLANK ENCOUNTERED, CARD IS DONE
0AC3 C0 81 008B 363 BE NEXTR
0AC7 7D 68 00 364 CLI 0(,XR1),C' IF CONNA ENCOUNTERED, GO TO NEXT
0ACA F2 01 07 365 JNE UDTB DEVICE CODE
0ACD D2 01 02 366 LA 2(,XR1),XR1
0ADO C0 87 0A79 367 B ULP1
0AD4 7D F0 00 368 UDTB CLI 0(,XR1),X'F0' CHANGE EBCDIC 0-B TO BINARY
0AD7 F2 02 05 369 JNL UDTC
0ADA 4E 00 00 0A5E 370 ALC 0(,XR1),F9
0ADP 7B F0 00 371 UDTC SBP 0(,XR1),X'F0'
0AE2 0C 01 0FA9 00FD 372 MVC MASK(2),M1 SHIFT BIT TO PROPER POSITION TO
0AE8 4F 00 00 00FD 373 ULP3 SLC 0(,XR1),M1
0AED F2 82 0A 374 JL UDTB
0AFO 0F 01 0FA9 0FA9 375 ALC MASK(2),MASK
0AF6 C0 87 0AEB 376 B ULP3
0APA 0C 00 0A07 0FA8 377 UDTD MVC USET1+1(1),MASK-1 LOAD MASK INTO SET BITS ON
0B00 0C 00 0B0A 0FA8 378 MVC USET2+1(1),MASK INSTRUCTIONS
0B06 BA 00 01 379 USET1 SBN 1(,XR2),*- TURN ON PROPER OPTION BIT
0B09 BA 00 02 380 USET2 SBN 2(,XR2),*- GO LOOK AT NEXT OPTION NUMBER
0B0C C0 87 0AED 381 B ULP4
382
0B10 4D 02 02 0BA5 383 CKDCPS CLC 2(3,XR1),SSWD BRANCH IF NOT SSW CARD
0B15 F2 01 0C 384 JNE CKCHE
0B18 3C 00 0208 385 NVI SBYTE0,X'0' CLEAR COMMON SENSE SWITCHES
0B1C 3C 00 0209 386 NVI SBYTE1,X'0'
0B70 C0 87 0174 387 B ISSSB GO SET PROPER SENSE SWITCHES
388
0B24 4D 04 06 0A0B 389 CKCHE CLC 6(5,XR1),CHAIN BRANCH IF NOT CHAIN IMAGE CONTROL
0B29 F2 81 08 390 JE ISCHE CARD WITH '//CHAIN' OR '//CHAIN'

FFPB DIAGNOSTIC CONTROL PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0B2C	#U 04 07 0A0B	391	CLC	7(5, XR1), CHAIN
0B31	F2 01 3D	392	JNE	CKEND
0B34	3C 17 0B8R	393	ISCRN	MVI IMGADR, 23
0B38	3C 02 0A0C	394	MVI	CHCTR, 2
0B3C	3C 00 0B78	395	MVI	LPIHAG+120, X'0'
0B40	#D 02 0A 0A05	396	CLC	10(3, XR1), D120
0B45	F2 81 1E	397	JE	IS120
0B48	#D 02 0B 0A05	398	CLC	11(3, XR1), D120
0B4D	F2 81 16	399	JE	IS120
0B50	#D 02 0A 0A02	400	CLC	10(3, XR1), D048
0B55	F2 81 16	401	JE	NOCHG
0B58	#D 02 0B 0A02	402	CLC	11(3, XR1), D048
0B5D	F2 81 0E	403	JE	NOCHG
0B60	F0 3B 6F	404	HPL	NO, RH
0B63	E0 87 2F	405	B	NEXTR(, XR2)
0B66	3C 05 0A0C	406	IS120	MVI CHCTR, 5
0B6A	3C FF 0B78	407	MVI	LPIHAG+120, X'FF'
0B6E	F2 87 2A	408	NOCHG	J RDCD
		409		
0B71	7D C5 00	410	CKEND	CLI 0(, XR1), C'E'
0B74	E0 01 2F	411	BNE	NEXTR(, XR2)
0B77	C2 01 0150	412	LA	CKCOM, XR1
0B7A	34 01 0112	413	ST	CKCOM+3, XR1
0B7F	C0 87 0DD5	414	B	BEGIN
		415		
0B83	C0 87 0226	416	OKCTR	B PACK
0B87	30	0B87	417	DC IL1'48'
0B88	08AF	0B89	418	DC AL2(INPUT+47)
0B8A	0800	0B8B	419	IMGADR DC IL2'800'
0B8C	0F 00 0B8B 0A06	420	ALC	IMGADR(1), N24
0B92	0F 00 0A0C 039F	421	SLC	CHCTR(1), ONE
0B98	E0 04 2F	422	BWH	NEXTR(, XR2)
0B9B	C0 87 0060	423	RDCD	B CDREAD
0B9F	C0 87 0B83	424	B	OKCTR
0BA3	E2E2E6	0BA5	425	SSWD DC CL3'SSW'
		426		
		426		
		426		
		426		
		426		
		426		
		427		
		428		*****
		429		*****
00FD	430	N1	EQU	LPTONE+2
0880	431	INPUT	EQU	X'880'
005F	432	STATJS	EQU	CDREAD-1
005D	433	LDWORK	EQU	CDREAD-3
0249	434	UDT1	EQU	X'249'
0261	435	UDT2	EQU	X'261'
0040	436	IPL	EQU	X'40'
0000	437	NORM	EQU	X'0'
00F1	438	READ	EQU	X'F1'
	439			
0200		ORG	X'200'	
	441			*****
	442			*****
	443			*****
	444			*****
	445			*****
	446			*****
	447			*****
	448			*****
	449			*****
	450			*****
	451			*****
	452			*****
	453			*****

FFPB DIAGNOSTIC CONTROL PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
				454 *
				455 ** SRT DATA
				456 *
0200	00	0200	457	SHOD DC XL1'0'
0201	00	0201	458	DC XL1'0'
0202	0000	0203	459	SIZE DC XL2'0'
0204	00	0204	460	CPU DC XL1'0'
0205	00	0205	461	DC XL1'0'
0206	0000	0207	462	DC XL2'0'
		0208	463	LRASE EQU *
0208	00	0208	464	SBYTE0 DC XL1'0'
0209	00	0209	465	SBYTE1 DC XL1'0'
020A	00	020A	466	SBYTE2 DC XL1'0'
020B	00	020B	467	SBYTE3 DC XL1'0'
020C	00	020C	468	SBYTE4 DC XL1'0'
020D	00	020D	469	SBYTE5 DC XL1'0'
020E	00000000	0211	470	RPFY DC XL4'0'
		471		
		472		*
		473		** ASSEMBLED TRANSFER TABLE
		474		*
0212	35 10 0546	475	TEST	L TR1, IAR
0216	35 10 09FD	476	LINK	L TR2, IAR
021A	35 10 02D0	477	PRINT	L TR3, IAR
021E	35 10 068F	478	UNPACK	L TR4, IAR
0222	35 10 09FF	479	HALT	L TR5, IAR
0226	35 10 0231	480	PACK	L TR6, IAR
022A	35 10 056B	481	LOAD	L TR7, IAR
022F	05C4	022F	482	LMSG@ DC AL2(LMSG)
0230	03BA	0231	483	ITR6 DC AL2(RPACK)
		484		*
		485		** UNIT DEFINITION TABLE
		486		*
0232	0000000000000000	0232	487	UTAB EQU *
023A	0000000000000000	0261	488	DC XL48'1000'
0242	0000000000000000	488		
024A	0000000000000000	488		
0252	0000000000000000	488		
025A	0000000000000000	488		

FFPR DIAGNOSTIC CONTROL PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

490 *****
491 * LOAD ***** LOAD *
492 *****
493 *
494 * SURROUTINE TO LOAD PROGRAMS OR DATA RECORDS FROM THE LOADING
495 * DEVICE. ENTRY TO THIS SUBROUTINE IS MADE AS FOLLOWS--
496 *
497 * B LOAD WHERE LOAD IS EQUATED TO X'22A'
498 * *DC XL1'FLAGS'
499 * **DC XL2'DXXI' XXX - PROGRAM ID
500 *
501 * FLAG BIT ON
502 * NONE - NORMAL TERMINATION
503 * 0 - WE HALT,LOAD XXX, MA HALT AND GIVE XXX CONTROL
504 * 1 - ABNORMAL TERMINATION
505 * 2 - READ FIRST RECORD OF XXX INTO X'880' AND RETURN CONTROL
506 * 3 - READ NEXT SEQUENTIAL RECORD INTO X'880' AND RETURN CONTROL
507 * 4 - LOAD XXX AND GIVE XXX CONTROL
508 * 5 - LOAD XXX AND RETURN CONTROL
509 * 6 - SEEK TO VTOC AND RETURN CONTROL
510 *
511 * *NOTE FLAG BYTE, NOT MORE THAN ONE BIT CAN BE SET ON
512 * A CALL TO THE LOAD ROUTINE IN DCP
513 *
514 * **NOTE PROGRAM ID IS ONLY INCLUDED IF BIT 0,2,4, OR 5
515 * IS ON
516 *
517 *
518 *****
0208 519 USING LBASE,XR2
0262 0279 0263 520 APLD DC AL2(APL)
00FD 521 F0 EQU X'FD'
00FA 522 F1 EQU X'FA'
00F1 523 F4 EQU X'F1'
0264 34 02 029D 524 RLOAD ST LODEN+7,XR2 SAVE XR2
0268 C2 02 0208 525 LA LBASE,XR2
026C R4 08 99 526 ST RLDA+3(,XR2),ARR SET UP RETURN ADDRESS
026F B4 01 91 527 ST LODEN+3(,XR2),XR1 SAVE XR1
528 *THE FOLLOWING THREE INSTRUCTIONS ARE TO FORCE THE
529 * 1. PROG LEVEL TO 1
530 * 2. TURN OFF DUAL PROG. FEAT.
0277 35 20 0263 531 L APLD,X'20' LOAD IAR-1
0276 F1 00 00 532 APL 0,0 FORCE PROG LEV TO 1
0279 F3 00 00 533 APL SIO 0,0 TURN OFF DUAL PROG FEAT
027C E0 87 0A 534 B TEST(,XR2)
027F B5 01 99 535 L RLDA+3(,XR2),XR1 POINT AT FLAGS
0282 8E 01 99 039F 536 ALC RLDA+3(2,XR2),ONE ADJUST RETURN @
0283 537 LONE EQU *-4
538 MVC DTABLE+1(3),2(,XR1) MOVE FLAG,DXXI
028C 78 10 00 539 TBN 0(,XR1),BIT3 TEST FLAG BYTE
028F F2 90 10 540 JF LD1
0292 C0 87 0000 541 B *-
0295 542 ENTRY1 EQU *-1
543 LODEN LA *-*,XR1 RESTORE REGISTERS
029A C2 02 0000 544 LA *-*,XR2
029E C0 87 0000 545 RLDA B *-
02A2 546 LD1 EQU *
547 TBN 0(,XR1),BIT6
548 JT LE2 SEEK TO VTOC
02A8 8E 01 99 0341 549 RLD1 ALC RLDA+3(2,XR2),TWO ADJUST RETURN @
02AD 79 2C 00 550 TBF 0(,XR1),BIT2+BIT4+BIT5 FLAG BIT 2,4,OR 5 ON?
02B0 F2 90 81 551 JF LE2 YES
552
02B3 BA 80 C9 553 SBN RLPLGS(,XR2),BIT0 SET ERROR BIT IF ABNORMAL
02B6 78 40 00 554 TBN 0(,XR1),BIT1 TERMINATION
02B9 F2 10 11 555 JT PTMSG
02BC BB 80 C9 556 SBP RLPLGS(,XR2),BIT0 OTHERWISE, TURN IT OFF
02BF B8 40 00 557 TBN SBYTE(,XR2),SSW01 LOOP ON ROUTINE IF SSW 01 IS ON

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FFPB DIAGNOSTIC CONTROL PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

02C2 C0 10 05AE 558 BT LNK1A
02C6 B8 80 00 559 TBN SBYTE(,XR2),SSW00 LOOP ON SECTION IF SSW00 SET
02C9 C0 10 0000 560 PTZERO BT 0
02CD C0 87 05E7 561 PTMSG B RPAINT PRINT SECTION TERMINATE MSG
02D0 562 ITR3 EQU *-1
02D1 C7 02D1 563 RLPLGS DC XL1'C7'
02D2 12 02D2 564 DC IL1'18'
02D3 05B6 02D4 565 DC AL2(TMSG)
02D5 PF00 02D6 566 DC XL2'PF00'
02D7 B8 01 00 567 TBN SBYTE(,XR2),SSW07 BYPASS HALT IF SSW07 ON
02DA F2 10 06 568 JT RLD2
02DD F0 3B 7C 569 HLTF HPL HE,WH HALT TO INDICATE SECTION COMPLETED
02E0 E0 87 0A 570 B TEST(,XR2) GO CHECK DATA SWITCHES
02E3 B8 80 01 571 RLD2 TBN SBYTE1(,XR2),SSW09 IF SSW09 IS ON,
02E6 F2 10 04 572 JT LE1 THEN DON'T CLR SECT. SWITCHES
02E9 AF 03 05 05 573 SLC SBYTE5(4,XR2),SBYTE5(,XR2) CLEAR SECTION SSW
02EA 574 THREE EQU *-3
02ED 78 80 00 575 LE1 TBN 0(,XR1),BIT0 FLAG BIT 0 ON
02F0 F2 10 41 576 JT LE2 IF ON
02F3 C2 02 0208 577 XREF1 LA LBASE,XR2
02F7 E0 87 0A 578 B TEST(,XR2) FOR -HD- HALT
02FA C2 01 01FD 579 LX1 LA DTABLE-1,IR1
02FD 580 PTR EQU *-1
02FF 78 01 00 581 TBN 0(,XR1),BIT7 FOR CARD SYS (J LE2)
0301 F2 90 0D 582 LX2 JF CHKPF4
0304 6E 00 02 78 583 ALC 2(,IR1),LONE(,XR2)
0308 78 0F 02 584 TBN 2(,XR1),X'OP'
030B F2 90 16 585 JF NOVID
030E 7B 0F 02 586 SBP 2(,XR1),X'OP'
0311 BD F1 F5 587 CHKPF4 CLY PTR(,XR2),F4
0314 F2 01 09 588 JNE STEP
0317 F0 3B 6C 589 HLTC1 HPL HC,WH
031A E0 87 0A 590 B TEST(,XR2)
031D BC FD F5 591 NVI PTR(,XR2),F0
0320 AF 00 F5 E2 592 STEP SLC PTR(1,XR2),THREE(,XR2)
0324 B5 01 F5 593 NOVID L PTR(,XR2),IR1
0327 6D 01 02 C4 594 CLC 2(2,IR1),PTZERO+3(,XR2)
032B C0 81 0317 595 BE HLTC1
032F 1C 02 01FF 02 596 MVC DTABLE+1(3),2(,XR1)
0334 C0 87 0000 597 LE2 B *-
0338 C0 87 0296 0337 598 ENTRY2 EQU *-1
599 B LODEN

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FFFF DIAGNOSTIC CONTROL PROGRAM

```

EPR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
0000 601 HZ2 EQU 00
0001 602 HZ4 EQU 01
0002 603 HZ8 EQU 02
0003 604 HZC EQU 03
033C 00 033C 605 CTR DC IL1'0'
033D FFFF 033E 606 WEG1 DC IL2'FFFF'
033F C0 033F 607 DC IL1'00'
0340 0002 0341 608 TWO DC IL2'2'
        609 *
        610 CHPKR ST CHPKID,ARR
        611 B SAVREG SAVE REGISTERS
        612 L ARRSV,XR2 PICK UP RETURN @
        613 LA CTR,XR1 LOAD BASE @
033C 614 USING CTR,XR1
        615 ALC ARRSV(2,XR1),FIVE(,XR1) AJUST RETURN @
        616 MVC CTR(1,XR1),00(,XR2) MOVE LENGTH BYTE
        617 MVC DEST1(2,XR1),4(,XR2) MOVE TO @
        618 MVC DEST2(2,XR1),4(,XR2) MOVE TO @
        619 L 2(,XR2),XR2 PICK UP FROM @
        620 B *-
0368 621 CHPKID EQU *-1
0368 622 TEMP EQU *-1
        623 *
        624 *****
        625 * UNPACK ***** UNPACK *
        626 *****
        627 *
        628 * SUBROUTINE TO CONVERT PACKED HEXADECIMAL DATA TO PRINTABLE *
        629 * EBCDIC. TWO PRINT CHARACTERS, 0-F, RESULT FROM EACH SOURCE BYTE. *
        630 * LINKAGE TO THIS SUBROUTINE IS AS FOLLOWS-- *
        631 *
        632 * B UNPACK WHERE UNPACK IS EQUATED TO X'21E' *
        633 * DC XL1'LENGTH OF HEX FIELD IN BYTES' *
        634 * DC AL2(FROM ADDRESS -RIGHTMOST BYTE-) *
        635 * DC AL2(TO ADDRESS -RIGHTMOST BYTE-) *
        636 *
        637 *****
0369 34 08 03FD 638 ROUNK ST ARRSV,ARR
036D C0 87 0342 639 B CHPK
0371 7C 03 39 640 UNPK1 HVI HVX1(,XR1),HNN DO NUMERIC
0374 68 00 4A 00 641 UNPK2 HVX TEMP1(0,XR1),0(,XR2)
0375 642 HVX1 EQU *-3
        643 SBM TEMP1(,XR1),X'F0' SET FOR 0-9
        644 CLI TEMP1(,XR1),X'FA' CHECK FOR A-F
        645 JL UNPK3
        646 SLC TEMP1(1,XR1),X39(,XR1) SUBTRACT X'39' IF A-F
        647 UNPK3 HVI *-*,0
0386 648 TEMP1 EQU *-3
0388 649 DEST1 EQU *-1
        650 ALC DEST1(2,XR1),NEG1(,XR1) DECREMENT TO ADDRESS
        651 CLI HVX1(,XR1),HNN CHECK FOR ZONE DONE
038P 652 X39 EQU *-1
        653 JE UNPK4
        654 HVI HVX1(,XR1),HNN DO ZONE
        655 B UNPK2(,XR1)
        656 UNPK4 A NEG1(,XR1),XR2 DECREMENT FROM @
        657 ALC CTR(1,XR1),NEG1-1(,XR1) DECREMENT LENGTH & CHECK FOR 0
039P 658 ONE EQU *-1
        659 BNZ UNPK1(,XR1) NO
        660 B LDREG(,XR1) YES
        661 *
        662 SAVREG ST SR1+3,ARR SAVE RETURN @
        663 ST LDREG+3,XR1 SAVE XR1
        664 ST SR2+3,XR2 XR2
        665 B BTEST CHECK DATA SWITCHES
        666 SR1 B *-
        667

```

FFFF DIAGNOSTIC CONTROL PROGRAM

```

EPR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
        668 *****
        669 * PACK ***** PACK *
        670 *****
        671 *
        672 * SUBROUTINE TO CONVERT EBCDIC DIGITS 0-F TO PACKED HEXADECIMAL *
        673 * DATA. LINKAGE TO THIS SUBROUTINE IS AS FOLLOWS-- *
        674 *
        675 * B PACK
        676 * DC XL1'LENGTH'
        677 * DC AL2(FROM ADDRESS -RIGHTMOST BYTE-)
        678 * DC AL2(TO ADDRESS -RIGHTMOST BYTE-)
        679 *****
038A 34 08 03FD 680 RPACK ST ARRSV,ARR
038E C0 87 0342 681 B CHPK
03C2 7C 03 98 682 PK1 HVI HVX2(,XR1),HNN DO NUMERIC
03C5 6C C0 7C 00 683 PK2 HVC TEMP(,XR1),0(1,XR2) PACK BYTE INTO HIGH HALF BYTE
03C9 7D F0 2C 684 CLI TEMP(,XR1),X'F0' CHECK FOR 0-9
03CC F2 02 04 685 JNL PK3 JUMP IF 0-9
03CF 5E 00 2C DA 686 ALC TEMP(1,XR1),NINE(,XR1) AJUST FOR A-F
03D3 18 00 0000 2C 687 PK3 HVX *-*(0),TEMP(,XR1) MOVE HALF BYTE TO @
03D4 688 HVX2 EQU *-4
03D6 689 DEST2 EQU *-2
        690 A NEG1(,XR1),XR2 DECREMENT FROM @
        691 CLI HVX2(,XR1),HNN CHECK FOR ZONE DONE
        692 JE PK4 JUMP IF DONE
        693 HVI HVX2(,XR1),HNN DO ZONE
        694 B PK2(,XR1)
        695 PK4 ALC DEST2(2,XR1),NEG1(,XR1) DECREMENT TO @
        696 SLC CTR(1,XR1),TWO(,XR1) CHECK FOR END
03EE 697 FIVE EQU *-1
        698 BP PK1(,XR1)
        699 LDREG LA *-*,XR1 IF NOT DO NEXT BYTE
        700 SR2 LA *-*,XR2 RESTORE XR1
        701 B *-*
        702 ARRSV EQU *-1 RETURN TO SECTION

```

PPFB DIAGNOSTIC CONTROL PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
704	*****			*****
705	* TEST			***** TEST *
706	*****			*****
707	*			*
708	*			* SUBROUTINE USED TO READ CONSOLE SWITCHES AND TEST FOR VALIDITY
709	*			* POSITIONS. ONCE ONE OF THE FOLLOWING VALIDITY CONDITIONS IS
710	*			* ENCOUNTERED, ENTRIES ARE ACCEPTED UNTIL THE VALIDITY SWITCH IS
711	*			* CHANGED.
712	*			*
713	*			* FIXX - TURN OFF SSW XX.
714	*			* FIXX - TURN ON SSW XX.
715	*			* P2XX - GO TO ROUTINE XX.
716	*			* PEXX - TERMINATE SECTION.
717	*			* DXXO EXECUTE ALL PROGRAMS FOR DEVICE XX -DISK-.
718	*			* DXXX - EXECUTE SECTION XXX
719	*			*
720	*****			*****
03FE	80	721	TBASE	EQU *
03FE	80	722	SET0	DC XL1'80'
03FF	402010080402	723		DC XL6'402010080402'
0405	01	724		DC XL1'01'
0406	0000	725	DATSW5	DC XL2'0'
				READIN AREA FOR DATA SWITCHES
03FE		726		USING SET0, XR1
0409		727	TONE	EQU **1
0407		728	XREF5	EQU DATSW5
0408		729	XREF4	EQU *
0408	34 01 0438	730	SETSSW	ST VXR1+3, XR1
040C	C2 01 03FE	731		LA SET0, XR1
0410	74 08 3A	732		ST SETSX0(, XR1), ARR
0413	58 03 1F 09	733		MWZ CHKSS1+3(, XR1), DATSW5(, XR1) FORM CORRECT BIT PATTERN
0417	78 F8 1F	734	NINE	EQU *-1
041A	5C 00 2D 00	735		SBP CHKSS1+3(, XR1), X'F8' TO SET A BIT ON IN
041E	5E 01 09 09	736	CHKSS1	NVC CHKSS2+1(1, XR1), *-*(, XR1) SBYTE0 THRU SBYTE5
0422	58 02 2E 09	737		ALC DATSW5(, XR1), DATSW5(, XR1)
0426	C2 01 0208	738		MWZ CHKSS2+2(, XR1), DATSW5(, XR1)
		739		LA SBYTE0, XR1
042A	7A 00 00	740	MODIFY	EQU *
042D	3B 01 042A	741	CHKSS2	SBN *-*(, XR1), *-*
0431	C2 01 0000	742		SBP MODIFY, X'01'
0435	C0 87 0000	743	VXR1	LA *-*, XR1
		744		B *-*
0438		745	SETSX0	EQU *-1
0001		746	DROP	XR1
0406		747		USING DATSW5-1, XR2
0439	34 02 045D	748	RTEST	ST TEXIT1+3, XR2
043D	C2 02 0406	749		LA DATSW5-1, XR2
0441	B4 01 53	750		ST TEXIT+3(, XR2), XR1
0444	B4 08 58	751		ST TESTE+3(, XR2), ARR
0447	F2 87 0C	752	TSTOVL	J TEXIT
044A	BD ED 00	753		CLI DATSW5-1(, XR2), X'ED'
044D	F2 84 13	754		JH TEST1
0450	B8 D0 00	755		TBN DATSW5-1(, XR2), X'DO'
0453	F2 10 0D	756		JT TEST1 FOR CARD SYS (JT 0)
0455		757	TSTDSK	EQU *-1
0456	C2 01 0000	758	TEXIT	LA *-*, XR1
045A	C2 02 0000	759	TEXIT1	LA *-*, XR2
045E	C0 87 0000	760	TESTE	B *-*
0462	40	761		DC XL1'40'
0463	BC 00 86	762	TEST1	NVI DJHP(, XR2), 0
0466	BC 3C 77	763	HLTA	NVI THLT+2(, XR2), HP
0469	F2 87 0F	764		J
046C	BD 3E 77	765	TEST2	CLI THLT+2(, XR2), HP
046F	F2 81 06	766		JE TEST3
0472	BC 3E 77	767	HLTB	NVI THLT+2(, XR2), HP
0475	F2 87 03	768		J
		769	T3	EQU *-1
0478	BC 6B 77	770	TEST3	NVI THLT+2(, XR2), HU
047B	F0 3B 00	771	THLT	HPL *-*, HH
				HALT -HP- OR -HU- FOR SWITCH ENTRY

PPFB DIAGNOSTIC CONTROL PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
047F	B0 00 01	772	SNS	DATSW5(, XR2), X'0'
				READ DATA SWITCHES
0481	B8 D0 00	773	TSTCRD	EQU **2
0484	B9 20 00	774	TBN	DATSW5-1(, XR2), X'DO'
0487	F2 90 39	775	TBF	DATSW5-1(, XR2), X'20'
048A	F2 87 00	776	JF	TEST7
		777	J	0
048C		778	DJHP	EQU *-1
		779	LA	FLAG-3, XR1
048D	C2 01 01FA	780	HVI	PTR, P0
0491	3C FD 02FD	781	SLC	02(12, XR1), 02(, XR1)
0495	5F 0B 02 02	782	ST	DADDR(, XR2), XR1
0499	B4 01 9C	783	HVI	DJHP(, XR2), TEST5A-DJHP-1
049C	BC 12 86	784	TEST5A	LA *-*, XR1
049F	C2 01 0000	785	DADDR	EQU *-1
		786	CLI	DADDR(, XR2), P4-3
04A3	BD FE 9C	787	JNE	TEST6
04A6	F2 01 06	788	HLTC	HPL H2, HH
04A9	F0 3B 76	789		B
04AC	E0 87 5B	790	TEST6	NVC
04AF	6C 02 02 01	791	TBF	2(3, XR1), DATSW5(, XR2)
04B3	79 0F 02	792	JT	TEST6A
04B6	F2 10 03	793	SBP	0(, XR1), X'01'
04B9	7B 01 00	794	TEST6A	EQU *
		795	SLC	DADDR(1, XR2), T3(, XR2)
04BC	AF 00 9C 71	796	B	TEST2(, XR2)
04C0	EG 87 66	797	TEST7	CLI DATSW5-1(, XR2), X'EE'
04C3	BD FE 00	798	JNE	TEST7A
04C6	F2 01 08	799	NVC	TESTE+3(2, XR2), ITR7
04C9	8C 01 5B 056B	800	B	TEST2(, XR2)
04CE	E0 87 66	801	TEST7A	EQU *
		802	CLI	DATSW5-1(, XR2), X'F1'
04D1	BD F1 00	803	JE	TEST8
04D8	F2 81 09	804	CLI	DATSW5-1(, XR2), X'P0'
04D7	BD F0 00	805	JNE	TEST11
04DA	F2 01 15	806	SBW	MODIFY(, XR2), X'01'
04DD	RA 01 24	807	TEST8	CLI DATSW5(, XR2), X'30'
04E0	BD 30 01	808	JL	TEST9
04E3	F2 82 06	809	HLTD	HPL H2, HH
04E6	F0 3B 76	810	B	TEST2(, XR2)
04E9	E0 87 66	811	TEST9	EQU *
		812	B	SETSSW(, XR2)
04EC	E0 87 02	813	B	TEST2(, XR2)
04EF	E0 87 66	814	TEST11	CLI DATSW5-1(, XR2), X'P2'
04F2	BD F2 00	815	BNE	TEXIT(, XR2)
04F5	E0 01 50	816	L	FRTH, XR1
04F8	35 01 0A07	817	HVC	RNUM(1), 0(, XR1)
04FC	1C 00 0A03 00	818	TEST12	CLC RNUM(1), 0(, XR1)
0501	1D 00 0A03 00	819	JE	TEST14
0506	F2 81 06	820	TEST13	HPL H3, HH
0509	F0 3B 57	821	B	TEST2(, XR2)
050C	E0 87 66	822	TEST14	CLC DATSW5(1, XR2), 0(, XR1)
0513	F2 81 17	823	JE	TEST16
0516	7D FF 02	824	CLI	2(, XR1), X'FF'
0519	F2 81 0B	825	JE	TEST15
051C	2E 00 0A03 03	826	ALC	RNUM(1), TONE(, XR2)
0521	75 01 03	827	L	3(, XR1), XR1
0524	E0 87 FB	828	B	TEST12(, XR2)
0527	F0 3B 76	829	TEST15	HPL H2, HH
052A	E0 87 66	830	B	TEST2(, XR2)
052D	1C 03 0211 03	831	TEST16	NVC RPPY(4), 3(, XR1)
0532	D2 01 04	832	LA	4(, XR1), XR1
0535	B4 01 5B	833	ST	TESTE+3(, XR2), XR1
0538	34 01 05A8	834	ST	LNK6+3, XR1
053C	E0 87 66	835	B	TEST2(, XR2)
		0002	836	DROP XR2

FFFB DIAGNOSTIC CONTROL PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

838 *****
839 * LINK ***** LINK *
840 *****
841 *
842 * SUBROUTINE TO PROVIDE ROUTINE TO ROUTINE AND SECTION TO SECTION
843 * LINKAGE. THE CONTROL PROGRAM USES THE ROUTINE PREFIX AS AN
844 * INTERFACE BETWEEN DIAGNOSTIC SECTION AND CONTROL PROGRAM.
845 *
846 *****
053P 34 01 05A0 847
0543 C0 87 0439 848 PLINK ST LNK5+3,X*1 SAVE XR1
0547 38 40 0208 849
054B F2 90 0B 850 LNK1 B RTEST GO CHECK DATA SWITCHES
054E 3D 01 0A03 851 ITR1 EQU *-1
0557 C0 87 0000 852 TBN SBYTE0,SSW01 PROVIDE LOOP ON ROUTINE IF SSW01 ON
055B F2 87 44 853 JF LNK2
0559 3D FF 0210 854 LNK1A CLI RNUM,X'01' IF FIRST RTN BEING RUN, GO TO
055D F2 01 0B 855 BE 0 PROGRAM RESTART
0560 38 80 0208 856 J LNK5
0564 C0 10 C000 857
0568 C0 87 0264 858 LNK2 CLI RPPX-1,X'FF' IS THIS LAST ROUTINE
056C 00 056B 859 JNE LNK3 NO, GO ON TO CHECK FURTHER
056D 35 01 0211 860
0571 0E 00 0A03 039P 861 TBN SBYTE0,SSW00 TEST FOR LOOP ON SECTION
0577 1D 00 0A03 00 862 BT 0 YES, GO RESTART PROGRAM
057C F2 81 07 863 B RLOAD NO, GO LOAD NEXT SECTION
057F F0 3B 57 864 ITR7 EQU *-1
0582 C0 87 0543 865 DC XL1'0'
0586 1C 03 0211 03 866
058B 38 20 0208 867 LNK3 L RPPX,XR1 SET UP TO GO TO NEXT ROUTINE
058F 78 80 01 868 ALC RNUM(1),ONE INCREMENT ROUTINE NUMBER AND
0592 C0 10 0559 869 CLC RNUM(1),0(,XR1) CHECK AGAINST RTN PREFIX
0596 D2 01 04 870 JE LNK4
0599 34 01 05A4 871 HLTE HPL H3,HR *RTN NUM IN RTN PREFIX OUT OF ORDER
059D C2 01 00C0 872 B LNK1 GO CHECK FOR DATA SWITCH VERIFICA-
05A1 C0 87 0000 873 * TION
05A5 1C 03 0211 03 874
05A8 38 20 0208 875 LNK4 HVC RPPX(4),3(,XR1) SET UP CURRENT ROUTINE PREFIX
05AB 78 80 01 876 TBN SBYTE0,SSW02 CHECK FOR BYPASS MANUAL INTERV RTNS
05AD 3D 01 0A03 039P 877 TBN 1(,XR1),BITO CHK RTN PREFIX MANUAL INTERV FLAG
05AE 3D 01 0A03 00 878 BT LNK2 SKIP ROUTINE IF BOTH CONDITIONS TRUE
05AF 78 80 01 879
05B2 C0 10 0559 880 LA 4(,XR1),XR1 LOAD ROUTINE STARTING ADDR
05B5 D2 01 04 881 ST LNK6+3,XR1 RESTORE INDEX REGS
05B8 34 01 05A4 882 LNK5 LA *-*,XR1 EXIT SUBROUTINE
05BA C2 01 00C0 883 LNK6 B *-*
05BC 00 056C 884

```

FFFB DIAGNOSTIC CONTROL PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

886 *****
887 * PRINT ***** PRINT *
888 *****
889 * LINKAGE TO PRINT IS AS FOLLOWS--
890 *
891 * B PRINT WHERE PRINT IS EQUATED TO 1304
892 * DC XL1'FLAGS'
893 * 1*DC IL1'LENGTH - MAXIMUM OF 91--
894 * 1*DC AL2(ADDRESS OF LAST CHARACTER OF PRINT FIELD)
895 * 2,1*DC XL2'MESSAGE IDENTIFICATION'
896 * FLAGS
897 * BIT 0 - DEFINES THIS AS AN ERROR PRINTOUT
898 * 1 - FIRST LINE OF MESSAGE - HEADING PRINTED-
899 * 2 - PRINT FROM DCP PRINT AREA.
900 * 3 - SPACE ONLY
901 * 4 - RESERVED
902 * 5 - BITS 5-7 MUST CONTAIN THE NUMBER OF
903 * 6 - SPACES DESIRED. FOR A PRINT, -001-
904 * 7 - MUST BE ENTERED TO PRINT AND SPACE TO
905 * THE NEXT LINE. -000- MAY BE ENTERED
906 * TO PROVIDE FOR MULTIPLE OPERATIONS ON
907 * THE SAME LINE.
908 *
909 * 1*NOTE - THESE PARAMETERS MUST BE ABSENT FOR SPACE
910 * ONLY OPERATIONS.
911 *
912 * 2*NOTE - THE MESSAGE IDENTIFICATION IS INCLUDED
913 * ONLY FOR A FIRST LINE PRINTOUT. THE FOUR
914 * DIGIT IDENTIFICATION REFERS TO A TABLE OF
915 * ERROR DESCRIPTIONS OR PRINTOUT DEFINITION.
916 *
917 * OPTIONS-- SSW03 - BYPASS ERROR PRINT.
918 * SSW04 - BYPASS NON-ERROR PRINT.
919 * SSW05 - USE ALTERNATE PRINTER
920 *
921 *****
922 USING PR3,XR2
923 THSG DC CL18'SECTION TERMINATED'
924
925 LMSG DC CL14'SECTION LOADED'
926
927 PR3 DC AL2(PLINE)
928 HDG1 EQU *
929 EDG DC CL28' ID IXXX. PROG DUXY-RR. SSW5'
930
931 SSW EQU *-2
932 NSPACE DC XL1'0' SPACE COUNTER
933 SNUM DC XL2'0'
934 PTAGS DC XL1'0'
935 RPRINT ST PRTE2+3,XR2 SAVE INDEX REGS AND SET UP BASE
936 LA PR3,XR2
937 RPONE ST PRTE1+3,XR1
938 ST PRTE+3,ARR LOAD RETURN ADDRESS
939 L PRINTE+3,XR1 POINT AT PARAMETER LIST WITH XR1
940 HVI LPDATA+132,C' ' SET BLANK CHAR
941 HVC PTAGS(1,XR2),0(,XR1)
942 HVI HDG1(,XR2),C' ' PUT NON-ERR PRINT INDICATION IN HDNG
943 TBN 0(,XR1),BITO BRANCH IF THIS IS NON-ERROR PRINT
944 JP PRT2
945 HVI HDG1(,XR2),C' ' PUT ERROR * IN PRINT LINE
946 TBP SBYTE0,SSW03
947 J PRT2A
948 TBP SBYTE0,SSW04 EXIT IF SENSE SW TO BYPASS THIS TYPE
949 PRT2A JP PREXIT PRINTOUT IS ON
950 HVC NSPACE(1,XR2),0(,XR1) LOAD SPACE COUNTER

```


FFFB DIAGNOSTIC CONTROL PROGRAM

FFFB DIAGNOSTIC CONTROL PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for diagnostic control program.

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FFPB DIAGNOSTIC CONTROL PROGRAM

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
09DE AC 00 67 00        1220 LHLT1 HVC HALTA+1(1,XR2),*--(,XR2)  LOAD FIRST HALT
09E2 AC 00 68 00        1221 LHLT1A HVC HALTA+2(1,XR2),*--(,XR2)
09E6 FO 00 00           1222 HALTA HPL *-*,*--*  HALT TO INDICATE DEVICE
09E9 AC 00 72 00        1223 LHLT2 HVC HALTB+1(1,XR2),*--(,XR2)  LOAD SECOND HALT
09ED AC 00 73 00        1224 LHLT2A HVC HALTB+2(1,XR2),*--(,XR2)
09F1 FO 00 00           1225 HALTB HPL *-*,*--*  HALT TO DISPLAY INDEX NUMBER
09F4 CO 87 0439         1226 HEXIT B RTEST      GO CHECK FOR SWITCH ENTRY
09F6 CO 87 03F2         1227 B LDREG           GO RESTORE REGS & EXIT SUBROUTINE
1228 *****
1229 * TRANSFER TABLE CONSTANTS *****
1230 *****
0546 1231 TR1 EQU ITR1
09FD 1232 TR2 DC AL2(RLINK)
02B0 1233 TR3 EQU ITR3
068F 1234 TR4 EQU ITR4
09FF 1235 TR5 DC AL2(RHALT)
0231 1236 TR6 EQU ITR6
056B 1237 TR7 EQU ITR7
1238 *****
1239 * XREF *****
1240 *****
1FF0 1241 ORG X'1FF0'  FOR THE CE TO CHANGE ODT AND CPU
1FF0 CO 87 0DD5         1242 B BEGIN          IN CORE AT IPL TIME, AND THEN START
1243 *                AT THIS ADDRESS TO GET A NEW PRINT
1244 *                OUT OF THE SYSTEM DATA. THIS ADDRESS
1245 *                SHOULD NOT BE CHANGED, SINCE OTHER RELEASE
1246 *                DOCUMENTATION TELL THE CE TO USE THIS
1247 *                ADDRESS.
1248 ORG X'1FF6'
1FF6 1249 DC AL2(XREF5)  LOCATION FOR SSW VALUE
1FF6 0407             1FF9 1250 DC AL2(XREF4)  SUBRTN TO SET SSW
1FF8 0408             1FFB 1251 DC AL2(XREF3)  LOADER BRANCH @ WHEN DCP IS LOADED
1FFA 0DD5             1FFD 1252 DC AL2(XREF2)  LOADER BRANCH @ WHEN LOADING DCP
1FFC 111B             1FFF 1253 DC AL2(XREF1)  LOADER RETURN IF NOT IN VTOC
1FFE 02F3             1254
OC96 1255 ORG HHLT2+X'500'
1256 ** PRINTER INPUT/OUTPUT ROUTINE SUPPORTING THE 5203 AS PRIMARY OUTPUT
1257 ** DEVICE AND THE 5471 PRINTER KEYBOARD AS SECONDARY. ONCE LOADED,
1258 ** DCP SCANS THE ODT TABLE TO SEE IF THE 5471 IS ATTACHED. IF IT IS,
1259 ** DCP REPLACES THE 5424 PORTION WITH THE 5471 OVERLAY.
1260 **
0723 1261 USING PRTH, XR2
OC96 1262 PRTHA EQU *
1263
1264 HPL H6, HH *KEYBOARD PRINTER ERROR
1265 B PRTH1(, XR2)
1266 PTCIO ALC PRTH+1(1), ZONE(, XR2)  ADJUST LENGTH OF PRINT
1267 SBF PRTH+1, X'80'  LIMIT NUMBER OF CHARACTERS TO 127
1268 HVI CIO2+2(, XR2), X'81'  SET UP TO DO PRINT
1269 CLI PRSIO+1(, XR2), X'EO'  CHANGE TO CARRIAGE RETURN IF SPACE
1270 JNE CIO1 ONLY
1271 CLI PRSIO+2(, XR2), 0  SKIP CARR RETURN IF SPACE 0
1272 BE PRTEXT(, XR2)
1273 CLI NSPACE, 2  LIMIT NUM SPACES TO 2
1274 JL **7
1275 HVI NSPACE, 2
1276 HVI PRTH+1, 0
1277 HVI CIO2+2(, XR2), X'41'
1278 CIO1 LA X'880', XR1  POINT XR1 AT PRINT FIELD
1279 CIO1B LIO 1(, XR1), X'18'  LOAD CHARACTER TO BE PRINTED
1280 CIO2X STO *-*, X'18'  ISSUE COMMAND TO 5471
1281 SNS CIOSTS(, XR2), X'19'  HALT IF ERROR
1282 TBF CIOSTS(, XR2), X'03'
1283 BF CIOHLT(, XR2)
1284 HVI 0(, XR1), C' '  CLEAR OUT THIS CHARACTER
1285 LA 1(, XR1), XR1  INCREMENT PRINT FIELD POINTER
1286 SLC PRTH+1(1), ZONE(, XR2)
1287 BNL CIO1A(, XR2)  CONTINUE UNTIL WHOLE LINE PRINTED

```

FFPB DIAGNOSTIC CONTROL PROGRAM

```

PRP LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
OCE7 EO 87 67           1288 B PRTEXT(, XR2)
1289
0758 1290 CIOSTS EQU HSTAT
OCE9 1291 LAST EQU *-1  MUST BE LAST STATEMENT OF OVERLAY
07CA 1292 CIO1A EQU HHLT2+CIO1B-PRTHA
0796 1293 CIOHLT EQU HHLT2
07CD 1294 CIO2 EQU HHLT2+CIO2X-PRTHA
1295
1296 *****
OCEA 1297 PRTHX EQU *
1298 DO41X HPL X'34', X'78'
1299 B PRTH1(, XR2)
OCFO 7D 40 00          1300 PR41 CLI 0(, XR1), X'40'
OCF3 EO 01 67          1301 BNE PRTEXT(, XR2)
OCF6 E1 FO 73          1302 TIO DO41(, XR2), X'FO'
OCF9 B1 FO 3C          1303 LIO PR2(, XR2), X'FO'
OCFC F3 F2 00          1304 SIO 0, X'F2'
OCFF E1 F2 88          1305 BY41X TIO BY41(, XR2), X'F2'
OD02 E1 FO 73          1306 TIO DO41(, XR2), X'FO'
OD05 OC 83 08FF 0900  1307 HVC LPDATA+131(132), LPDATA+132
OD0B EO 87 67          1308 B PRTEXT(, XR2)
1309 ND EQU *
0024 1310 LWC41 EQU ND-DO41X
0796 1311 DO41 EQU HHLT2+DO41X-PRTHX
07AB 1312 BY41 EQU HHLT2+BY41X-PRTHX
0002 1313 DROP XR2

```

FPFB DIAGNOSTIC CONTROL PROGRAM

Table with columns: ADDR, STMT, SOURCE, STATEMENT. Rows include diagnostic statements for printer input/output routines, adjust return address, and test for alternate output.

FPFB DIAGNOSTIC CONTROL PROGRAM

Table with columns: ADDR, STMT, SOURCE, STATEMENT. Rows include diagnostic statements for common sense switches, loop on section, and halt display codes.

FFPB DIAGNOSTIC CONTROL PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains program instructions from 1443 to 1510, including comments like 'THE FOLLOWING INSTRUCTIONS ARE PERFORMED AFTER INITIAL DCP' and 'LOAD UDT POINTER'.

FFPB DIAGNOSTIC CONTROL PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains program instructions from 0EAA to 0P75, including comments like 'CONTINUE UNTIL ALL OPTIONS CHECKED' and 'TEST FOR 1442 AS LOAD DEVICE'.

PPFB DIAGNOSTIC CONTROL PROGRAM

Table with columns: EPP LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic code entries for various components like HFCU, Goload, and printer status.

PPFB DIAGNOSTIC CONTROL PROGRAM

Table with columns: EPP LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic code entries for various components like HFCU, Goload, and printer status.

FFP8 DIAGNOSTIC CONTROL PROGRAM

FFP8 DIAGNOSTIC CONTROL PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
11F0	F2 81 07	1684		JE	NOVP
11F3	3D E1 0407	1685		CLI	DATSW5,X'E1'
11F7	F2 01 06	1686		JNE	CKP
11FA	0C 00 0235 0407	1687	NOVP	HVC	X'235'(1),DATSW5
1200	3D 88 0235	1688	CKP	CLI	X'235',X'E8'
1204	F2 01 39	1689		JNE	TST41
		1690			
1207	3C 00 0638	1691		HVI	DUMCON-1,X'0'
1208	3C 00 066C	1692		HVI	SPBFHG,X'0'
120P	3C 05 066B	1693		HVI	SPBFHG-1,X'05'
1213	3C 40 06B2	1694		HVI	PRTHG-1,X'40'
1217	3C 00 06B8	1695		HVI	PRTHG+5,X'0'
121B	3C 00 06B9	1696		HVI	PRTHG+6,X'0'
121F	3C 40 06E1	1697		HVI	PRT6A+4,X'40'
1223	3C 05 06EE	1698		HVI	SPAPRT-1,X'05'
1227	3C 00 06EF	1699		HVI	SPAPRT,X'0'
122B	C0 87 12CA	1700		B	CHKID
122F	F8	1701	122F	DC	XL1'F8' IF DATA RECORDER IS NOT ATTACHED THEN BYPASS ALT. PRINT RTN.
1230	F2 01 04	1702		JNE	**7
1233	3C 00 0D5A	1703		HVI	NOSECX-1,0 NO-OP SEC. PTR
1237	0C B1 07D4 ODD4	1704		HVC	PRTN+PR3H-PRTNH (PR3H-PRTNH+1),PR3H
123D	F2 87 79	1705		J	LVHOB
1240	3D 40 0235	1706	TST41	CLI	X'235',X'40'
1244	F2 01 4D	1707		JNE	CKCIO
1247	0C 23 07B9 ODD0	1708		HVC	MHLT2+LNG41-1(LNG41),ND-1
124D	3C 40 0638	1709		HVI	DUMCON-1,X'40'
1251	3C 40 06EE	1710		HVI	SPAPRT-1,X'40'
1255	3C 40 066B	1711		HVI	SPBFHG-1,X'40'
1259	3C 42 06B2	1712		HVI	PRTHG-01,X'42'
125D	3C 40 06B8	1713		HVI	PRTHG+05,X'40'
1261	3C 42 06E1	1714		HVI	PRT6A+04,X'42'
1265	3C 78 0763	1715		HVI	LPERR2+1,X'78'
1269	3C 34 0764	1716		HVI	LPERR2+2,X'34'
126D	3C 40 0769	1717		HVI	PRIME+01,X'40'
1271	3C 40 076C	1718		HVI	PRIME+04,X'40'
1275	3C 44 076F	1719		HVI	PRIME+07,X'44'
1279	3C 46 0772	1720		HVI	PRIME+10,X'46'
127D	3C 46 0785	1721		HVI	BSYLP+1,X'46'
1281	3C 40 0788	1722		HVI	BSYLP+4,X'40'
1285	C0 87 12CA	1723		B	CHKID
1289	F8	1724	1289	DC	XL1'F8' IF DATA RECORDER IS NOT ATTACHED THEN BYPASS ALT. PRINT RTN.
128A	F2 01 2C	1725		JNE	LVHOB
128D	3C 00 0756	1726		HVI	NOSEC-1,0 NO-OP SEC. PTR
1291	F2 87 25	1727		J	LVHOB
1294	34 01 12B8	1728	CKCIO	ST	SAVE1+3,XR1 SAVE XR1
1298	C0 87 12CA	1729		B	CHKID
129C	10	1730	129C	DC	XL1'10' IF 5471 IS ATTACHED THEN REPLACE 5424 ALT. PRINT RTN. WITH 5471 MODULE
129D	F2 81 0F	1731		JE	ISCIO
12A0	C0 87 12CA	1732		B	CHKID
12A4	F0	1733	12A4	DC	XL1'F0' IF HPCU IS NOT ATTACHED THEN BYPASS ALT. PRINT RTN.
12A5	F2 81 0D	1734		JE	SAVE1
12A6	3C 00 0756	1735		HVI	NOSEC-1,0 NO-OP SEC PTR
12AC	F2 87 06	1736		J	SAVE1
12AF	0C 53 07E9 OCE9	1737	ISCIO	HVC	MHLT2+LAST-PRINA (LAST-PRINA+1),LAST
12B5	C2 01 0000	1738	SAVE1	LA	***,XR1 RESTORE XR1
12B9	0C 02 0449 12C9	1739	LVHOB	HVC	TSTOVL+2(3),TSTINS+2
12BF	C0 87 0212	1740		B	TEST
12C3	C0 87 0000	1741		B	***
		0406	1742	USING	DATSW5-1,XR2
12C7	B0 00 01	1743	TSTINS	SWS	DATSW5(,XR2),0
		12CA	1744	CHKID	EQU *
12CA	34 08 12FC	1745		ST	CHKI@+3,ARR
12CE	34 01 12F8	1746		ST	CHKSR1+3,XR1
12D2	35 01 12FC	1747		L	CHKI@+3,XR1
12D6	0E 01 12FC 039F	1748		ALC	CHKI@+3(2),ONE
12DC	1C 00 12E6 00	1749		HVC	SID(1),0(,XR1)
12E1	C2 01 0232	1750		LA	UTAB,XR1
12E5	7D 00 00	1751		ITCHKL	CLI 0(,XR1),0 SUBROUTINE TO CHECK IF A PASSED ID IS IN THE UDT TABLE. ON EXIT

FRP LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
12E6	F2 81 0A	1752	SID	EQU	**2
12E8	78 10 01	1753		JE	CHKSR1
12EE	D2 01 03	1754		TBW	1(,XR1),X'10'
12F1	C0 90 12E5	1755		LA	3(,XR1),XR1
12F5	C2 01 0000	1756		BF	ITCHKL
12F9	C0 87 0000	1757	CHKSR1	LA	***,XR1
		1758	CHKX@	B	***
		ODD5	1759	END	BEGIN

THE CONDITION CODE WILL BE SET TO EQUAL IF ID IS PRESENT, NOT EQUAL IF ID IS NOT PRESENT.

FFPB DIAGNOSTIC CONTROL PROGRAM

FFPB DIAGNOSTIC CONTROL PROGRAM

CROSS-REFERENCE

CROSS-REFERENCE

Table with columns: SYMBOL, LEN, VALUE, DEPN, REFERENCES. Contains diagnostic data for FFPB program.

Table with columns: SYMBOL, T, LEN, VALUE, DEPN, REFERENCES. Contains diagnostic data for FFPB program on page 19A.

CROSS-REFERENCE

SYMBOL	T	LPN	VALUE	DEFN	REFERENCES
XZ1	A	004	10FD	1622	1627
X200	A	001	0200	0199	0198
X39	A	001	0387	0652	0646
X880	A	001	0880	1123	1125
ZONE	A	001	072B	1046	1266 1286
ZRO	A	006	0112	0190	0191* 0192 0193

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY =

0

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
TRED11D -"03=G*8	-"03*G?@-008A JH	AKL4A JL / DKC4	A*1"0H* SOD	.....	.....
T+-PBOR* S77R <	AB-7 /ORWA SE LR	*16G2 G25) ,E/OC	K 6S4)T /ORH -	B>)D/ ~H A8HD	74-D HBDFFF80007
T+-E' P5, +BA7'H	A :BG375* |HAC3-	A -T-DB* /ORHB;B	G.44B -P/O DAV-@	C -4BC) HAALCA OG	/OH P26FFF80008
T+-P81-H	EGOR* DBG5,)HA @BA P-	/OB. ~*H 8 D?+ &	A*) BE-+BG ... 4B P	ROH* QCN% ~7-DCI	/OH SCQFFF80009
T+-G3G-HA*OGGGR	A@E,2 J) OG4P*H	AD14C ~H~@YD. (6-	A** *+@BG EXBR G	*OA AT=BG<0 ... C	0@] 5ZUPFF80010
TROG*@ID	Q FX	.....	.....	.....	.....
T+-Y: @|L8@ ~.OP<	HO*KN G5* |HAD@B	GDJX8 EHR8A ?OH*	BPSG-/2*0OC2 LG	* H A<BGDJ? /OB	4A - 6YHFFF80012
T+-75SEHC+8 BAG7	1B*HAACD ~-J'O-L	2--R*1 L-AB*U+6"	-/2@I G70 |HADIX5	*HABTO V@<. Y	; V@ *EYFFF80013
T+-D04-DE(DH-@B	G SOB ... HP@HB S"	S -+8D G2U ~0+6"	/OB.T6 ... RV*2-@;	* C &DHT ... BV=	@CUD ;@-FFF80014
T+,,? B4-DA~O	@-DC4-DA~H	OH D S75, |HAA'HA XB	GBXV*@ C2 -H*	HPX?O OAC:U *HA	..... *B-FFF80015
T+-XW~HBF-BAC:U	|D*BGB>-< *GC:-	< *XHC:W: P: ..	/OD*LCHBB:P2 @O	@ HH| BB*BG PJ	(A Q 9QUFFF80016
T+_/B-?2-@/(A *	HP*HA| LOPB8% @-Y	< H;D@BB-YE@YD	:L@H.B-P2-JR(-Y	H ?HAEU@BBOYB@YD	+@CK K@UFFF80017
T+>*S=BG.30EB-0	@*O/8@Y*D~*H @ D	?O-DANCGA J. /07	NOH*BIT H,0- C-	.SOYPCO HC +~8 &	?OH* 50@FFF80018
TB >V PC /O>CB>.	B	.....	.....	.....	.....
T+-R:	.....	(J EJTHEB~@5D .@ (J	PTJHEB~@5D H1(J	E@OPD @Y	.....
T+-I5	.....	.....	.....	.....	.....
T+-H0@E @O @H*	H_EFRT-PR 9@* -G	" X-@ |H@DKBG C	B @ O-H <BG A	8 -C2DH2+ RUC@PU	X |H OJ FFF80022
T+.,,URF:-<V8@ C	2DAP@-<WRE C D H	+>H "OA ... <BGA;~	GD-0@*08@ @C2D S	0+73-/0D8@ G2D K	? OH ;2HFFF80023
T+<WAPS |H@E*H	B -T-/O,B 6G*: D	@Z (S- B;7-| ?H	@EXK| ,71~HAB~	@S+BGB,3'@ @:;H	5 ~H HY@FFF80024
T+-(/S@DB1<BA 1*	* -G" XBG C /OH	O |"" B(-C@KB	G :Q5 -1*0-DC|EB	AOSIX ... S ECAPO	AR-@ H9KFFF80025
T+>>_@HBOH* C@	R *7 /O(B~<9E A	H G,OKX7:K?HBAE@	KV@ ... P-EK X4	B~HAAKOB+) BG+GQ	B V8 @SQFFF80026

FFP8 DIAGNOSTIC CONTROL PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+-IP A4 D54H; 6(-C>LEA "M4 -I	90H*D+*BG 4B |	'OH*CEXOCWFO . A	'@B32 -J; B3EP	BO EQ0FFFF80027	
T+-EK)-EB-EFQAYD F- FQ4H;IP-PE VB	PE/H5B E 0-H	<BG B EB EB E	B E (DD(<HA "9	4BCY @EYFFFF80028	
T+-J(O <-BP?BG50 .EA; EUIO H>B*H	A -/: * EED0-D	<EG 4 -J) 0-H	DA,EAH#EHO"HC.7	1H 0Y0FFFF80029	
T+-KH/A+84 C2D 7 B E 0-H <BG A	? BF?C17BY*?L9	7BYDF?C97BY*CF_	7BC% % A>(>K	@Z "3XFFFF80030	
T+-LC+~HG <HA -Y @ME. 'PO*E ,EAX.O	K/%HA B'@Z32 ES	0+7S-/55% -HA;E@	B@/ C;OD ,OB**;B	GR,4 E2DFFFF80031	
T+-L=#-C2 ESC N% EE=BGR,71 |HABS7	0 |HABSYAI.40 -H	BA? #)>BGR>BG >B	GR,72 + AMCHAR-*	* Y 0J<FFFF80032	
T+-M9 0) YC |H AA? *N=BGRZ4 EC	2-J) 'NO.2-E%> Y	C 7MA =BG=" #)>B	GR/OC /DC4-DD_ E	S(D @RXXXX80033	
T+-N4AEL-/604 60 -OH*D+L/ -T2U %	'EYCOHD |HGJC7	" /C2 E48- HHOA	<BG WE (E8BD68	B-< 7-HFFFF80034	
T+-O? 9@) YC |H /A" #N@BGMK* OH	J 3-- -/8- G D N	R4-DD (DEZ<HA C	/O 8XPC6XOSHC	T1)U @L FFF80035	
T+-PD5<XNO;|E1+. EO=|I5_N 4' SA1<P	DBHA 2*J 9=-X94_	5'XO14CU9+XQ(X	RK4CS8>SS C6	BA18 QZ FFF80036	
T+-QV0-HE1TEAA1Y 4B *S(EDGHT1 B&B	* B '2D A;H @Z	H?EOA+J BB|HGACU	H -T2U (;* A4 >*-	)|F 8:0FFFF80037	
T+-R-A/RD C2D.N 8H C2DHX /O*T8	<-OT*BEA8E C2UGL	K 604 Q3 /OH; -	A* /OH; -YAA) X	/OH P2QFFFF80038	
T+-ESG-DH OP*OH* GH= A.A%HW13B ES	*? -C-MBC6H(@S	0+-DBC)HA #EA3XB	G 6UAA;N WX1, EB	G@Y 894FFFF80039	
T+-S0?L -8HH3-D A|G@F6BB A_T+OH*	GH=H OH*GH= AG	F6 D| SQ 9*2-/X	* ES* 20AA_Y G-	F6-D *REFFFF80040	
T+-*JC OH* GH=H ,O)H?HBBXB	GA2| - *BGA><</ T	"BE 5 0*S;D @Z	C8-HB;L @Z C8-H	C8-H 0Q6FFFF80041	
T+-< L&BA2.B E 0-H <BG CB -*	T_ /2_EE2X E- Q8	A*- (AOH*BDTS A;S	2U *9D HHAY*D+E-	BB< PZ*FFFF80042	
T+-;GU \$4+ EBB|H 5J-HGC- B H-GA	O@C_ '8H*L8; %%;	=%;E;%;Q@>O/~+H	BB-H@ YHP< +G	WQ;D P YFFFF80043	
T+-B8C*B -PP(ED GH%BG CO+57-/1+	'8E"--O;O@3S8DC-	2D X/=G13= C/Q@#	/=G+1'C,3"HKO@3S	8EC*): FFF80044	
TC--J8ABEB-/3CHK H*OU 8H) X				" ,HFFFF80045	
T.O-?@.3' |P6"IT 9@G @Q;.T9+PW9=T	ZMP_#4).L5 (POS'T	BQE_*0*.C1<PP1@T	ILU_	EJ FFF80046	
T+-U:EDOA5OH?GA5 E|08- YB@/ =0-H	HB%HA TI_ @-D	OX B 2-C EF:H P	8D GS -| U 00@Y*	P;A *KQFFFF80047	
T+-V5)HA @BEBJD 9E G2D |0+0| /OU	XOH*BFU+A*L" CU	A --9B G'@Z C@C%	"(E<HA10 B-< G<	BD&< \$S0FFFF80048	

FFP8 DIAGNOSTIC CONTROL PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+-W00H*RD_BGA	F@C)V*\$PP4G-5@	" ;013-C04B |'OH*	CZ%HBBO 5 E|'C-D	C*E (A-E A@YH6-*@	A@YE OIHFFFF80049
T+-X,DL-H -T2UC?	2/0*8 -HH@/ 1W I	/ I-CREBQ W0AW (	0 L7"B- 94 YA@ZQ	., AX HO E CO B	% GH @RUFF80050
TDOX" HO *OCO C	/O@90H*CA-M"BR				90*FFFF80051
T 1*30H* (5@					*JYFFFF80052
TRJ"MA *DR 7NDJ%	B@0				=,0FFFF80053
T+-3E@C_ '8H*L.-	F6 -@- \$O?HF??;A	-@-DQ?@A-8HEX|EH	EB"HBAC0BA;<@ \$	Q?DF%O-DH-GDQ -<	Q .)A@FFFF80054
T+-4. PLS9 3T-UG(	@E CK ED? \$QB+	BZ=BGR"AB (+BGD75	+ AR=G0+@G0|11	2 +G2S+G0*02CB|@	I + =IXFFFF80055
T E4 (/6*					LSDFFFF80056
T+-5) 0-HGH#EH@#E	HO#MAD40 ESQT-P	, 4G /OHK+H E9?H	EA3UG -T2/O@9B H	'OI P'C-D -T2DD7	/8L@ KE4FFFF80057
T+-60@Y*H<;HCK"MA	8 (+BGE=GURLUGA;|	20 E19.G2/1M'AE	'AYDF%;E?@= L-	A =:19H619V>18XP	38 "SRHFFFF80058
T+-7L8;168;AB@Y*	\$@G-48H*P-M @-D	|8-A"%-B_@"H 8-H	H8-A"CHK"HO 0-H	E1THAA2. /O BGO	FEO- J*XXXX80059
T+-R+-60E A |D*B	GDJ? /OHED@O C'D	B CO 30"ORBA-D	G|A C| |HGA--B 30	B -EEC'@|DOQAC'@	1. @ 2S' FFF80060
T+-9Y <@ 9" @8	ROH*BF-DOC= 8- H	D@Z ROH*BF-DIC=X	/OH@ L<@>*BG /Y	A<1 *OH*BF-D3D.X	B EH #I-PPF80061
T+-:D<T@AC:5' C	2-Q84 E9-OH*BG-D	SCO-HR/.1- 0	AC:UCX30 C:Y< : C:-< :CC:V9 E	9 H #E0FFFF80062	
T+-:"@/ OT AC:D	: @ P'=-G2--O+ D	|Y;H3 E8AC:U|D@8	C:YCX34<C:; --9	3|ED|, -HACH@EB@	C| H 6-XFFFF80063
T+-:C:72/1' --	_@-DIT QHC@Y@ =	_CAU@ (-SEOH*BF-D	EDCR8D GK E| U 9	|C D|D-HC| -@B ?H	AB<H 1SHFFFF80064
T+-@5 E (D|D-B	AC1HC|T4-C1G2AA	<"0 G?@+ @J 3#	/O@H0H*BF/D'Y H	2@YD.OH*BF-*>DPL	2/24 OIHFFFF80065
T+-'COH*BF-D*DE.	/OHEA2HE/%BGD%Z	0@-DN0H*E'*BG /Y	A|AC40H*E'*BG /Y	P|*HB |HAIL5J T.	2-J8 "JHFFFF80066
T+-=, |N B<?HAE@B	GD%,O@YD|OH*K2?G	2-E- /OHDB ("W+ D	BB|H@ " #|@BG /.	/O.31"HG| "HG<O	" | )COPFF80067
T+-"W' RA OHR-	0+DAHNE/-E@A84'S	A1<PR5'XI5;|E6) L	O1<PLE+) .E< O6*W	8%XZ1HCX9'I 1+L	A44 "2UFFFF80068
T+ / /5@-H@ (PT84C	D1*\$I5*YT2) \$N@+|	A0_|E@D_ .K4_ S+L	S84CB1HCC5_XR1*!	T@PCV1) XI1>/-EDA	@D " ;HFFFF80069
T+ /A*EDA EDA EDA	EDA EDA EDA EDA	1< PE (100*LE1DA	-@+.E84CC5_LM5_N	@>.W@UCA5*J/5_V	6*H :KYFFFF80070

FFPB DIAGNOSTIC CONTROL PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+/BPRXPT&<TAU=I	E5;|E6HCP6)SG6*G	HC+.E@APC@X05;I	0)PDE+.TO)XTEDA	EDA EDA EDA EDA	ED E3QFFF80071
T+/CKEDA EDA-QPA	-QPA-QPA-QPA-QPA	-QPA-QPA-QPA-QPA	-QCL05() @@GP1HC	E6)X06HCS8@GT2;.	T2*< LJYFFF80072
T+/D(BUCB1*\$06*N	6;LN5*XN14CD2;.	K@<L10*-N5>.T2*|	SQC@HDJ0@ /DE|F	H? 0:B.5H?<BG /Y	/CO : HFFF80073
T+/EHDJYCX@ AD|7	/0 C@HD%Q'P S	@YDH|*HH-< AD%|	A1@9|H*J.00A ZH	A*50A 3*A*0@E -@	A*34 86UFFF80074
T+/FCY H2@YDE@ H	C =X| DNE@BAH<	|ZC6- T.2-@%*0-H	@YD|0H*KVCBTA *	B @CP@ZA/|<HB C1	@AF* 2TDFFF80075
T+/F=| @DSLO@AG<	@- J9|G-D-C18A@Y	@E K,|G-CPC10 10	@; LX|A@D:C18A@Y	@G H,|G-EHC@AKU	@; H 9A4FFF80076
T+/G@-C0*A0D@;	;|G@B731@C9*@N =	QC @ITO=@Y*D|<E	B C A * : EG@YD	+| DA"HAAJ7/A -	2 EQ R@KFFF80077
T+/H4C B (@EG|;-	B (~HA+LO AT-@ R	%| HPE31 A, H@ E	B| P>L1 A>D@AGS	>| P#@BGD%,R@-D	D| :H FFF80078
T+/I?CNY<@E-HC) L	2/70'E H5@-E(CBC	G>E@{|D P+C| A>B	@E H,|DHPX1 A,-	@E-S/|G-GQ304A6@	@E * 4B<FFF80079
T+/HDEL1 A60@J )	?|DQG*T1PA8N@E ;	H0H*K2?T2 K0@)	0@Y*V { DK><BGDXY	@YD|0H*K2?C2-@4	@ * 7R0FFF80080
T+/.VN?HGA-1LA=0	<:*HA < -JIDXY	/OHKOH*	LE HD?04 J.8 (@DK" B	AD?0CX10 D>Q 0-D	B<X4 \$2*FFF80081
TE/.@ C2-@Z8D G	K @| UA.VO-D <B	G			8E4FFF80082
EC)N*E7*=-DC*PHS	=*7N@P|	F C	FX ASC R A SO Q	09361012710	22972@9 FFF80083

----- LAST PAGE -----

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589905 PAGE 1

FF12 SYSTEM TEST RELOCATING LOADER

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
2 DECK 4
3 FF1 START X'A00'
4 *****
5 *
6 * SYSTEM/3 SYSTEM TEST RELOCATING LOADER
7 *
8 *****
9 DC XL2'FF12' PROGRAM IDENTIFICATION AND LEVEL
10 DC XL1'80' FLAGS - NO SPUOT
11 DC IL1'0' CURRENT ROUTINE NUMBER
12 DC XL2'0' RESERVED
13 DC AL2(RTN01) ADDRESS OF FIRST ROUTINE PREFIX
14 DC XL2'0' RESERVED
15 *****
16 DC XL6'0' RESERVED FOR SYSTEM TEST SUPERVISOR
17
18 TABLE EQU * TABLE CONTAINING CATALOG OF PROGRAM
19 * MODULES IN CORE. PROVISIONS ARE *
20 * MADE FOR SUPERVISION OF UP TO 16 *
21 * MODULES. INFORMATION IS CONTAINED *
22 * AS IN THE FOLLOWING DIAGRAM. *
23 *
24 * *****
25 * * ARR I XR1 I XR2 I STARTING *
26 * * I I I ADDRESS *
27 * *****
28 *
29 * THIS RELOCATING LOADER INITIALIZES THIS TABLE
30 DC XL24'XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX'
31
32 DC XL24'XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX'
33
34 DC XL24'XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX'
35
36 * AND MODIFIES THESE CONSTANTS DURING LOADING. *
37 USING START,1
38 USING START,2
39 START DC XL2'0E00' STARTING ADDRESS OF NEXT MODULE
40 BASE DC AL2(*-*) RELOCATION FACTOR FOR CURRENT MODULE
41 NPROGS DC IL1'16' THIS COUNT IS DECREMENTED AFTER EACH
42 * MODULE LOADED - NO MORE THAN 16 *
43 * ALLOWED. *
44 SKFLAG DC XL1'0' WHEN FF, LOADER IS SKIPPING MODULE
45 * WHEN EE, LOADER HAS RUN OUT OF CORE*
46 MSIZE DC XL2'0' POINTER TO MODULE TABLE
47 POINTR DC AL2(TABLE)
48 FF2 DC CL3'FF2'
49 XA00 DC XL2'A00' STARTING ADDRESS OF ALL MODULES
50 NEG3 DC XL2'FFFD'
51 NEG4 DC XL2'FFFC'
52 WORK DC XL2'0' WORK AREA
53 LPTR DC XL2'0'
54 *****

DATE 28JUL69 15SEP69 14NOV69 20JAN70 01APR71
EC NO. 816444 816499 816555 816576 818948

PROG ID OFF1-2 PAGE 1

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589905 PAGE 1A

FF12 SYSTEM TEST RELOCATING LOADER

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
0AA8 56 SETUP EQU *
57 CLC UTAB,X'A0' CHECK FOR DISK LOADER
58 JNE LOADC
59 CLI INPUT,C'E' CHECK FOR END CARD
60 JNE LOADC
61 ALC LPTR,EIGHT
62 L LPTR,XR1
63 TBM O(,XR1),X'20'
64 JF RDC
65 L POINTR,XR1
66 MVI O(,XR1),X'FF'
67 J LOSV
68 RDC EQU *
69 MVC PID,1(2,XR1)
70 B LOAD
71 DC XL1'20'
72 PID DC XL2'0'
73 J CCM
74 LOADC EQU *
75 B LOAD
76 DC XL1'10'
77 COMM EQU *
78 LA INPUT,XR1
79 LA START,XR2
80 CLC 90(3,XR1),FF2(,XR2) BRANCH IF NOT FIRST CARD OF SPRVSR
81 JNE CHKEE
82 LOSV EQU *
83 B LOAD LOAD SYSTEM TEST SUPERVISOR
84 DC XL1'08' CARDS.
85 DC XL2'FF2' BRANCH IF OUT OF CORE
86 CHKEE CLI SKFLAG(,XR2),X'EE' BRANCH IF NOT HEADER CARD
87 BE SETUP(,XR2)
88 CLC 7(8,XR1),GBK IF NO DEVICE ID, GC AHEAD AND
89 JNE CKSKIP LOAD THE MODULE
90 CLI 75(,XR1),C' * PACK DEVICE IDENTIFICATION
91 JE CLFLAG
92 B PACK
93 DC IL1'2'
94 DC AL2(INPUT+76)
95 DC AL2(INPUT+7)
96 LA UTAB,XR2 INITIALIZE POINTER TO DCP UNIT TABLE
97 LOCP1 CLC O(1,XR2),7(,XR1) BRANCH IF UNIT IS ATTACHED TO SYSTEM
98 JE CLFLAG
99 TBN 1(,XR2),X'10' CHECK FOR LAST DCP ENTRY
100 LA 3(,XR2),XR2 INCREMENT TO NEXT UDT ENTRY
101 BF LOOPI CONTINUE UNLESS DCP UNIT TABLE DONE
102 SETSKP MVI SKFLAG,X'FF' SET FLAG TO SKIP THIS MODULE
103 B SETUP
104 CLFLAG LA START,XR2 RELOAD BASE REGISTER
105 MVI SKFLAG(,XR2),X'00' CLEAR SKIP FLAG
106 B PACK PACK SIZE OF MODULE
107 DC IL1'4'
108 DC AL2(INPUT+80)
109 DC AL2(MSIZE)
110 MVC 31(32,XR1),63(,XR1)
111 MVI 95(,XR1),C' *
112 MVC 94(63,XR1),95(,XR1)
113 L POINTR,XR1 PUT STARTING ADDRESS IN PROPER
114 MVC 7(2,XR1),START TABLE ENTRY
115 B UNPACK UNPACK STARTING ADDRESS OF THIS
116 DC IL1'2' MODULE
117 DC AL2(START)
118 DC AL2(INPUT+36)
119 MVC BASE(2,XR2),START(,XR2) SET UP RELOCATION FACTOR FOR THIS
120 SLC BASE(2,XR2),XA00(,XR2) MODULE
121 MVC WORK(2,XR2),START(,XR2)
122 ALC WORK(2,XR2),MSIZE(,XR2)
123 CLC WORK(2,XR2),SIZE BRANCH IF THIS MODULE WILL FIT IN

DATE 28JUL69 15SEP69 14NOV69 20JAN70 01APR71
EC NO. 816444 816499 816555 816576 818948

PROG ID OFF1-2 PAGE 1A

FF12 SYSTEM TEST RELOCATING LOADER

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for FF12 loader, including instructions like MVI, DC, B, and comments such as 'CORE', 'SET FLAG TO INDICATE OUT OF CORE', and 'DISK SETUP FOR RELOCATION'.

DATE 28JUL69 15SEP69 14NOV69 20JAN70 01APR71 EC NO. 816444 816499 816555 816576 818948

PROG ID OFF1-2 PAGE 2

FF12 SYSTEM TEST RELOCATING LOADER

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for FF12 loader, including instructions like LA, ALC, MVI, and comments such as 'POINT XR2 AT TABLE OF RELOC BYTES', 'SET UP DESTINATION ADDRESS', and 'MODULE UDT REQUIREMENT COULD NOT BE FULFILLED'.

DATE 28JUL69 15SEP69 14NOV69 20JAN70 01APR71 EC NO. 816444 816499 816555 816576 818948

PROG ID OFF1-2 PAGE 2A

FF12 SYSTEM TEST RELOCATING LOADER

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and comments such as 'ON PUT UNIT IDENTIFICATION IN PRINTOUT', 'PRINT ERROR MESSAGE TO INDICATE THAT UNIT NOT DEFINED IN UDT', and 'GO TO READ NEXT MODULE'.

FF12 SYSTEM TEST RELOCATING LOADER

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and comments such as 'LOAD XL1*02', 'SEEK TO VTOC', 'READ A RECORD CHECK FOR ACTIVE ENTRY', and 'CHECK FOR SYSTEM TEST MOD.'.

FF12 SYSTEM TEST RELOCATING LOADER

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ACT	A	0C3	0E90	0360	0327
AJDEST	A	0C3	0CB6	0218	0215
ARR	C	0C1	0008	0370	
BASE	A	0C2	0A94	0040	0119* 0120* 0179 0190 0201 0213
CDSTP	A	0C5	0C4C	0189	0176
CHKEE	A	003	0AFA	0086	0081
CKBLK	A	003	0CCC	0225	0229
CKCCM	A	003	0CE3	0232	0208
CKEND	A	0C3	0CF8	0239	0233
CKREP	A	0C3	0C94	0207	0150
CKSKIP	A	003	08B5	0147	0089
CLFLAG	A	0C4	0B34	0104	0091 0098
CMLOCP	A	0C5	0BE6	0162	0167
CGAM	A	0C1	0AE4	0C77	0073
DBUF	C	0C1	0880	0363	0327 0329 0331 0333 0337* 0340
DEST	A	0C2	0CC5	0223	0212 0213* 0216 0224*
DEVID	A	002	0D4C	0265	0262*
EIGHT	A	0C2	0088	0288	0061 0279 0342
ENSG	A	034	0DD8	0295	0129
ENSG1	A	038	0DB6	0294	0266 0270
FF1	A	001	0A00	0C03	
FF2	A	003	0A9D	0C48	0080
GBK	A	0C8	0D90	0289	0088
HALT	C	001	0222	0375	0131 0140 0272
HOG	A	036	0EB7	0362	0351
INPUT	C	001	0880	0379	0059 0078 0094 0095 0108 0118 0160 0174 0185* 0186 0211 0357*
LDEND	A	0C6	0D63	0275	0244 0254
LDSV	A	0C1	0AF3	0C82	0067
LENGTH	A	0C4	0BE2	0161	0173
LOAD	C	0C1	022A	0377	0070 0075 0083 0320 0325
LOADC	A	0C1	0ADF	0074	0058 0C60
LOOP1	A	0C4	0B18	0C97	0101
LOOP2	A	0C3	0BC8	0153	0159
LOOP3	A	0C3	0C6F	0198	0187 0204
LPTR	A	0C2	0AA7	0053	0061* 0062 0324* 0335 0342* 0356*
MOVE	A	0C5	0C8B	0205	0178* 0179* 0180* 0189* 0190* 0191* 0199
MSIZE	A	0C2	0A98	0046	0109 0122 0275
NEG1	A	0C1	0DFF	0316	0202
NEG3	A	0C2	0AA1	0050	0169
NEG4	A	002	0AA3	0C51	0170
NEXT	A	0C4	0CB9	0219	0231
NEXTS	A	0C1	0E67	0345	0330 0332 0334
NPROGS	A	0C1	0A95	0041	0280*
OLD	A	0C3	0E93	0361	0329
ONE	A	0C1	0DFC	0313	0165 0224 0280 0343
PACK	C	0C1	0226	0376	0092 0106 0209 0220 0338
PID	A	0C2	0ADB	0072	0069*
POINTR	A	0C2	0A9A	0C47	0065 0113 0241 0277 0279* 0354*
PRINT	C	0C1	021A	0373	0126 0134 0138 0236 0267 0348
PRTHD	A	0C4	0E68	0348	0319
PTITLE	A	004	086F	0134	0124
PTXR1	A	0C3	0C6C	0197	0193
RDC	A	0C1	0ADD	0C68	0064
RELCC	A	005	0C7A	0201	0200*
RTN01	A	0C1	0DFC	0312	0013
SBYTE3	C	0C1	020B	0372	0136
SEEK2	A	0C4	0E19	0325	0346
SETSKP	A	004	0B2C	0102	0145
SETUP	A	001	0AA8	0056	0087 0103 0133 0137 0146 0148 0196 0206 0226 0235 0238 0240 0274 0283 0358
SIZE	C	0C1	02C3	0371	0123
SKFLAG	A	0C1	0A96	0044	0086 0102* 0105* 0125* 0147 0282*
SRCE	A	002	0CC3	0222	0219*
SSW18	C	0C1	0080	0381	0136
START	A	0C2	0A92	0C39	0037 0038 0079 0104 0114 0117 0119 0121 0275*
S1	A	0C4	0BEC	0163	0161* 0162 0165* 0166

FF12 SYSTEM TEST RELOCATING LOADER

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
S2	A	0C4	0BFO	0164	0162*
TABLE	A	001	0A10	0018	0047 0323 0353 0355
TCNT	A	0C1	0E8D	0359	0322* 0343*
TEDCNE	A	004	0C1A	0174	0152
TOB	A	0C2	0E56	0341	0336*
UFIND1	A	004	0D08	0245	0253
UFIND2	A	0C4	0D0F	0246	0257
UFIND3	A	0C3	0D21	0251	0260
UFIND4	A	0C3	0D2E	0255	0247
UNPACK	C	0C1	021E	0374	0115 0263
UTAB	C	0C1	0232	0378	0057 0096 0151 0175 0245 0318
VEND	A	001	0E68	0347	0328 0344
WORK	A	002	0AA5	0052	0121* 0122* 0123 0142* 0143* 0144 0157* 0158 0171* 0172 0202*
XAOO	A	002	0A9F	0049	0120
XR1	C	0C1	0001	0368	0062* 0063 0065* 0066 0069 0078* 0080 0088 0090 0C57 0110 0110 0111 0112 0112 0113* 0114 0149 0153 0155 0156 0156* 0157 0168 0169* 0171 0174* 0178 0180 0181 0182 0183 0183* 0184 0184* 0185 0186* 0189 0191 0192 0193 0195 0196 0197 0197* 0201 0205 0207 0214 0216* 0217 0218 0218* 0219 0225 0227 0227* 0228 0230 0230* 0232 0239 0241* 0242 0242* 0243 0246 0248 0249 0250 0251 0252 0252* 0259 0261 0261* 0262 0277* 0278 0323* 0324 0335* 0336 0353* 0354 0355* 0356
XR2	C	0C1	0002	0369	0079* 0080 0086 0087 0C96* 0097 0099 0100 0100* 0104* 0105 0119 0119 0120 0120 0121 0121 0122 0122 0123 0125 0133 0137 0142 0143 0144 0145 0146 0147 0148 0157 0158 0163 0163 0164 0164 0168 0170* 0181* 0192* 0198 0200 0202* 0203 0226 0235 0238 0240 0245* 0246 0248 0249 0255 0256 0256*

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

FF12 SYSTEM TEST RELOCATING LOADER

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-Y:1H C-0 [.....] \$:UFF120001

T+-Z5 -ZHFF120002

T+-D0 C- A HD<8F2-Y 7 Y H22-D 0]M JZMFF120003

T+.,BHC2 KU+ ED XCQ-5 &CX:B @Z H(EDHWX3* HGH10 AB_ZAOH*BHS IH GA*BG SYE0-DM-KH BBZH RE FF120004

T+-ZWS&IEBMAA2B G SYHC H#-L--JR (AC*(U|HA,P5 KMH AI3BG SQBB<OH/3H B TH) G2YDK>A A8-H QE3FF120005

T+_/ @B&B1Z2*OD OOH*HD<HBBZH L /OHWA T&BZ/*G12 *-DA-PC9;P3MABZZ < &*HJZBG /8BBZH HZHO PD*FF120006

T+>* &H ,ODBC EO ADOB> J<FT&DL -I 2AAE2*-L /OHE15H (6|2AOH*9H?2A84* OOH*BFSDB- H.8I OOH* :EHFF120007

T+-?P /YGOH*8H?M -Z L>O3K?E K8HF EBH*O?->2D8-HDO->< @-GLIE B<?HAMX7 & -HA 7OD)HA &C AC*4 KJ-FF120008

T+-CK6A| --?HO-< H530 B=4< ?1B=6 > DA,- A &8 B=4 (*C4DB=7 &7H5 H A CQA3DD6 -DT(D HZL4 *A-FF120009

T+-1VODVOM&.82H ABH *Y :22-DXG H <T-<+ &2+BZ&* 2 |)H8*70 GQA)H AAC&A3HGB &SC2Y* TG H B -FF120010

T+-2HCHBRC-D<T-D MG <T1-K Vn+ A* <\$XO EU8AEOD,4-D E?& 2YDO. <- A + & HVCQBC-24 -D VCH* L3FF120011

T+-3CCF2* <B GB0/*6&C2 MX /OH WA SEC<M+ &3EBZJ *1EG2 &+5 &3E4H* 4-DHI D<O2BG SQ B KR-FF120012

T+-3= + &3EC-1 * & G--J&K &E*EOC -&3<4-DAOH<P5 * |HAC3-A -T-DA\$ /OHE4;BGEX7E + AETK -, -FF120013

T+-49 &DE) &DG;H B2/AQO-HB<Z4 2 J/Z OBE<. PY -B7-&B*HA @B&C&7 2/308J GS -I U 4 . |;D 39*FF120014

T+-5482B&CKGK &Y 4 &5<OH+BG-D 6 ROH*BFSZMC\$S* 2B G S. * 2BGBD+ &D KBZ-5 &DE- C-D HW-4 P#4FF120015

T+-67S @ BZM(=|H AAC3>BZ\$ /ODY / 12.K&<-B4<LE9*X C1MCX94CN5>| O:| TO*|H1*J-5{SD9| | E<<H */HFF120016

TH 7Q:(-A8).E1<| O6*N 5>PE6*\$L5>\$ E1F7L5ZGD2|PG&+| E6|LI5*GT1*E =H&FF120017

T+-85 D *Y H 20 D+EBBG SYB|A +T*HAB/D4 &DXOH* BH/ (-SBCZC &9 ,C&HH/O:LOHD+R37 *BHY :-QFF120018

T+-900HD+R35 BH, -&9X(EDH23&ACVQ @1 SDOH*BI-&H/O C-DHZO6HCO +T&7 @OH+EBGGC/X /OH E&S& *B FF120019

T+-:,C,->HAB/ 4 &DEO-DHEC&ABD* @1&S OH*HDACA0=| O4@LL2;.T&{SF&IL O1+LL1;I MDOS82G P82U O1MFF120020

TBO:75*) C*LD6*P S83PS RE-FF120021

FF12 SYSTEM TEST RELOCATING LOADER

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

EM**E7*=-DC*PHS =*7M&F| C F& ASC R A SO Q 21530317710 51171*8UFF120022



FF25 SYSTEM TEST SUPERVISOR

ERR LOC OBJECT CODE

ADDR STMT SOURCE STATEMENT

```

0A00          2      DECK 1
              3  FF2  START X'AO0'                2 22 72
              4  *****
              5  *
              6  *      SYSTEM/3 SYSTEM TEST SUPERVISOR
              7  *
              8  *****
0A00 FF25     GA01  9      DC  XL2'PP25'          PROGRAM IDENTIFICATION AND LEVEL
0A02 80       GA02 10     DC  XL1'80'          FLAGS - NO SPOUT
0A03 00       GA03 11     DC  IL1'0'          CURRENT ROUTINE NUMBER
0A04 0000     GA05 12     DC  XL2'0'          RESERVED
0A06 GA91     GA07 13     DC  AL2(RTN01)       ADDRESS OF FIRST ROUTINE PREFIX
0A08 0000     GA09 14     DC  XL2'0'          RESERVED
              15
              16 *****
              17 *      TRANSFER TABLE
              18 *****
              19 *
              20 *      THE SYSTEMS TEST SUPERVISOR PROVIDES THE FOLLOWING LINKAGE
              21 *      FOR USE BY THE MODULES IT CONTROLS.  EACH MODULE MUST BE WRITTEN
              22 *      TO BRANCH TO THIS ENTRY WHENEVER THE DEVICE BEING TESTED IS BUSY
              23 *      OR NOT READY.
              24 *****
0A0A 35 10 0A0F          25      L  TR1,IAR          ENTRY TO PASS CONTROL TO NEXT MODULE
              26
0A0E 0A22     GA0F 27     TR1  DC  AL2(RETRY)
              28
0A10          29  TABLE EQU *          TABLE CONTAINING CATALOG OF PROGRAM
0A10          30     DS  CL129          MODULES IN CORE.  PROVISIONS ARE
              31 *      MADE FOR SUPERVISION OF UP TO 16
              32 *      MODULES.  INFORMATION IS CONTAINED
              33 *      AS IN THE FOLLOWING DIAGRAM.
              34 *
              35 *      *****
              36 *      * ARR I XR1 I XR2 I STARTING *
              37 *      * I I I I ADDRESS *
              38 *****
              39
              40 *****
              41 *      ROUTINE 01 - SYSTEMS TEST SUPERVISOR
              42 *****
              43 *
              44 *      THIS ROUTINE PROVIDES THE SUPERVISORY FUNCTION TO HANDLE THE
              45 *      SIMULTANEOUS OPERATION OF UP TO 16 PROGRAM MODULES.  THE INDI-
              46 *      VIDUAL MODULES ARE REFERENCED BY 8-BYTE ENTRIES IN -TABLE-.
              47 *      LINKAGE FROM MODULE TO SUPERVISOR MUST TAKE PLACE EACH TIME THE
              48 *      DEVICE BEING TESTED IS BUSY OR NOT READY.  TRANSFER MUST BE MADE
              49 *      VIA A BRANCH TO LOCATION X'AOA'.  THE SUPERVISOR SAVES THE PRO-
              50 *      GRAN ARR, XR1 AND XR2.  THEN PASSES CONTROL TO THE NEXT PROGRAM
              51 *      BY BRANCHING VIA ITS PREVIOUSLY STORED ARR.
              52 *****
0A91 01       GA91 53     RTN01 DC  XL1'01'          CURRENT ROUTINE NUMBER
0A92 00       GA92 54     DC  XL1'0'          FLAGS
0A93 0B63     GA93 55     DC  AL2(RTN02)       ADDRESS OF NEXT ROUTINE PREFIX
              56 *****
0A95 C2 01 0A10          57      LA  TABLE,XR1          SET UP TO RESTART ALL MODULES
0A99 7D FF 00          58  R1LOOP CLI  0(,XR1),X'FF'
0A9C F2 81 A5          59      JP  FIRST
0A9F 75 02 07          60      L   7(,XR1),XR2
0AA2 6C 01 01 07       61      MVC  1(2,XR1),7(,XR2)
0AA6 4E 01 01 0C4D     62      ALC  1(2,XR1),FOUR
0AAB D2 01 08          63      LA  8(,XR1),XR1
0AAE C0 87 0A99          64      B   R1LOOP
              65 *****
              66 *      MODULE LINKAGE TO THIS SUPERVISORY ROUTINE IS MADE AS FOLLOWS
              67 *
              68 *      B  ENTRY  WHERE  ENTRY  EQU  X'AOA'
              69 *****

```

FF25 SYSTEM TEST SUPERVISOR

ERR LOC OBJECT CODE

ADDR STMT SOURCE STATEMENT

```

0AB2 34 01 0C9B          70  RENTRY ST  SAVE1,XR1          SAVE XR1 TEMPORARILY
0AB6 35 01 0C9F          71      L   POINTR,XR1          RELOAD TABLE POINTER
0ABA 74 08 01          72      ST  1(,XR1),ARR          PLACE RETURN ADDRESS IN TABLE SLOT
0ABD 4C 01 03 0C9B       73      MVC  3(2,XR1),SAVE1       SAVE MODULE XR1 AND XR2
0AC2 74 02 05          74      ST  5(,XR1),XR2
0AC5 30 00 0C9B          75  CKLOG SNS  SAVE1,X'0'          CHECK DATA SWITCHES FOR LOGOUT
0AC9 3D FB 0C9A          76      CLI  SAVE1-1,X'5B'        INSTRUCTIONS
0ACD C0 81 0216          77      RE  LINK
0AD1 38 A0 0C9A          78      TBM  SAVE1-1,X'AO'        CONTINUE TEST IF NOT 'A' OR 'B'
0AD5 39 40 0C9A          79      TBF  SAVE1-1,X'40'        IN DATA SWITCHES
0AD9 F2 90 4C          80      JF   CKDCP
0ADC 08 01 0C9C 0C9A     81      MZM  WORK-1,SAVE1-1       ISOLATE ID OF MODULE TO BE ENABLED
0AE2 08 02 0C9C 0C9B     82      MZM  WORK-1,SAVE1       OR DISABLED
0AEF 08 01 0C9D 0C9B     83      MZM  WORK,SAVE1
0AFF C2 01 0A08          84      LA  TABLE-8,XR1       GO THROUGH TABLE OF MODULES UNTIL
0AF2 D2 01 08          85  F1DLP LA  8(,XR1),XR1          CORRECT ONE FOUND
0AF5 7D FF 00          86      CLI  0(,XR1),X'FF'
0AF8 F2 81 2D          87      JE  CKDCP
0AFP 75 02 07          88      L   7(,XR1),XR2
0AFE 28 03 0C9D 01       89      MZM  WORK,1(,XR2)
0B03 2D 01 0C9D 01       90      CLC  WORK(2),1(,XR2)
0B08 C0 01 0AF2          91      BNE  F1DLP
0B0C 38 10 0C9A          92      TBM  SAVE1-1,X'10'      'B' ENABLE ON ?
0B10 F2 90 12          93      JF   JF
0B13 7D FE 00          94      CLI  0(,XR1),X'FE'      THIS MODULE BEEN DISABLED ?
0B16 F2 01 0F          95      JNE  CKDCP
0B19 6C 01 01 07         96      MVC  1(2,XR1),7(,XR2)
0B1D 4E 01 01 0C4D       97      ALC  1(2,XR1),FOUR
0B22 F2 87 03          98      J   CKDCP
0B25 7C FE 00          99  TER  MVI  0(,XR1),X'FE'      DISABLE MODULE CUZ ENTRY WAS 'A'
0B28 35 01 0C9F          100 CKDCP L   POINTR,XR1          RELOAD TABLE POINTER
0B2C 3D D0 0C9A          101     CLI  SAVE1-1,X'D0'        GO TO DCP IF POSSIBLE VALID ENTRY
0B30 C0 02 0212          102     BNL  TEST
0B33 D2 01 08          103  NEXT LA  8(,XR1),XR1          INCREMENT POINTER TO NEXT TABLE SLOT
0B37 7D FE 00          104     CLI  0(,XR1),X'FE'      SKIP MODULE IF IT IS DISABLED
0B3A C0 81 0B34          105     BF  NEXT
0B3E 7D FF 00          106     CLI  0(,XR1),X'FF'      BRANCH IF NOT LAST ENTRY
0B41 F2 01 0C          107     JNE  GOTO
0B44 C2 01 0A08          108  FIRST LA  TABLE-8,XR1       RE-INITIALIZE TABLE POINTER IF THIS
0B48 34 01 0C9F          109     ST  POINTR,XR1          WAS LAST ENTRY
0B4C C0 87 0AC5          110     B   CKLOG
0B50 1C 01 0B62 01       111  GOTO MVC  RETURN+3(2),1(,XR1)    LOAD RETURN ADDRESS WITH SAVED ARR
0B55 75 02 05          112     L   5(,XR1),XR2          RESTORE XR1 AND XR2 FOR THIS PROGRAM
0B58 34 01 0C9F          113     ST  POINTR,XR1          MODULE & SAVE TABLE POINTER
0B5C 75 01 03          114     L   3(,XR1),XR1
0B5F C0 87 0000          115  RETURN B          GO TO NEW PROGRAM MODULE
              116 *****
              117 *****
              118 *      ROUTINE 2 - LOGOUT
              119 *****
              120 *
              121 *      THIS ROUTINE LOGS THE ERROR RECORDING TABLE FROM EACH MODULE.
              122 *      LOGOUT OCCURS ONLY UPON DATA SWITCH SELECTION OF THIS ROUTINE.
              123 *      RECORDING TABLE ENTRIES HAVE THE FOLLOWING FORMAT
              124 *
              125 *      *****
              126 *      * CODE * LENGTH * N BITES OF FORMAT SPECIFIED *
              127 *      * BYTE * -R- * BY TLY CODF BYTE
              128 *      *****
              129 *
              130 *
              131 *
              132 *      BIT 0 - PRINTABLE DATA - FIRST 15 IS.
              133 *      1 - PACKED E&I DATA - PLACE BEFORE PRINTING.
              134 *
              135 *      A CODE BYTE OF Y'FF' TERMINATES LOGOUT.
              136 *****
0B63 02          0B63 137 RTN02 DC  XL1'02'          CURRENT ROUTINE NUMBER

```

FP25 SYSTEM TEST SUPERVISOR

Table with columns: ERR LOC, OBJCT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for system test supervisor.

FP25 SYSTEM TEST SUPERVISOR

Table with columns: ERR LOC, OBJCT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for system test supervisor, including constants and equates.

PF25 SYSTEM TEST SUPERVISOR

CROSS-REFERENCE

SYMBOL	T	LEN	VALUF	DEFN	REFERENCES
ADR	A	002	0C51	0215	0157* 0158* 0162 0170 0170* 0171
ARR	C	001	0008	0235	0072
CKDCP	A	004	0B28	0100	0080 0087 0395 0098
CKLOG	A	004	0AC5	0075	0110
CKMOD	A	003	0B7F	0148	0195
ENDRSG	A	021	CC99	0221	0199
PF2	A	0C1	0A00	0003	
FINDLP	A	003	0AF2	0085	0091
FIRST	A	004	0B44	0108	0059
FOUR	A	002	0C4D	0213	0062 0097
GOTO	A	005	0B50	0111	0107
HALT	C	001	0222	0241	0205
IAR	C	001	0010	0236	0025*
LTRK	C	001	0216	0238	0077
LOGEND	A	004	0C27	0196	0149
LOGPS	A	003	0B91	0154	0187
NEXT	A	003	0B34	0103	0105
NKCODE	A	004	CC01	0185	0180
NXMOD	A	004	0C0C	0188	0155 0167
NXMOD1	A	003	0C20	0194	0152
ONE	A	002	0C4B	0212	0161
PADR	A	002	0C00	0184	0160* 0161* 0162* 0163
PLPN	A	001	0BFE	0183	0159*
PLINE	C	001	0B80	0242	0143* 0144 0144* 0172* 0173 0173* 0190* 0191 0191* 0201* 0202 0202*
PCINTR	A	002	0C9F	0228	0071 0100 0109* 0113*
PRINT	C	001	021A	0239	0141 0145 0178 0181 0188 0192 0196 0203
PRTENT	A	004	0BF9	0181	0165
RETRY	A	004	0AB2	0070	0027
RETURN	A	004	0B5F	0115	0111*
RTNO1	A	001	CA91	0053	0013
RTNO2	A	001	0B63	0137	0055
R1LOOP	A	003	0A99	0058	0064
SAVE1	A	002	0C9B	0226	0070* 0073 0075* 0076 0078 0079 0081 0082 0083 0092 0101
TABLE	A	001	0A10	0029	0057 0084 0108 0147
TER	A	003	0B25	0099	0093
TEST	C	001	0212	0237	0102
TR1	A	002	0A0F	0027	0025
UADR1	A	002	0BFE	0176	0163* 0185
UADR2	A	002	0BFO	0177	0169* 0171*
ULPN	A	001	0BEC	0175	0168*
UNPACK	C	001	021E	0240	0174
WORK	A	002	0C9D	0227	0081* 0082* 0083* 0089* 0090 0057* 0058 0060 0061 0062 0063 0063* 0070 0071* 0072 0073 0074 0084* 0085 0085* 0086 0088 0094 0096 0097 0099 0100* 0103 0103* 0104 0106 0108* 0109 0111 0112 0113 0114 0114* 0147* 0148 0150 0194 0194*
XR2	C	001	0002	0234	0060* 0061 0074 0088* 0089 0090 0096 0112* 0150* 0151 0153 0153*
XR21	A	002	0C4F	0214	0154 0157 0159 0160 0164 0166 0168 0185* 0186 0186*

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

PF25 SYSTEM TEST SUPERVISOR

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```
TC0Y|*20 ..... BZD .. CPEB-2H*- ..... C04G7Q*PF250001
T<0,D E .02HAB/A *0C2-EN5 -) % ED GL-DACD7K ET /OD R ( D<W3HACI*4B E < E<<W76BAE 0HB8 -PE*CH/4PF250002
T.C,4< <W368CI, -EHO*H <WTF CI, 2UDOH 82*CIYH -2 *CI*H 82) CI?B EY H4-DH BOYISH-GAY LCO*CJS8PF250003
T( %Z->2 @YD_)EH GH <<XED_ 82) * AB?H8D 2E2Z K--8 a-D|S DAA48A E1 (@Y*C-|8 (ED BO EE/D<-C-PF250004
T<-_PCTB*4 2E0 H BD_HABG7=<FAB3J *0C2 83B EYH( D <X@BGB*H* 6_S PH BALGACI*5 CDZIKD )DOMAS20PF250005
T+8>0 81 /0 -C **2RG /Y|E0H6-1 RB(UH6%BG /YSO-D HDG7* |HAYHBA87 *B|HAU,HBB8U* |E 8) 6 /#SDPF250006
T< ?G. <M8D8 1 6. ."-D4 -0 C-D < .1.C-D< 1JC D .8-0 >H @/ 8>D @ZAE. THJ4SE1E JC -CPLHFF250007
T<078 ?% 80AR* <LOB CED<M88AB* <ML1 B|@<-0T=B|* /OH; ..... C /OH EH-HGB<BG - ND08 (8E*B58HFF250008
T(-02P-D ..... 5 -? >8-HA0H*.U*BG /Y J|P H6-1RB (UH6%B G /YS4-DH0H*.~2B G /ZBK 2R*~D2P 2E-2E-9-PF250009
T+-1_P(Y<08TRB(, /OHEI%BG S.*8*B G ..... 8 DBHD (| 01*5084CC5_LP42P T1HA-8 (XE5 ($V1HA -05H 0JHFF250010
IH02R0DCP6) $HE (| E1> ( 2UCS9>I 82T E5MCR1;.E84CH0) | T6+106 (XEB)|A6;< ..... *DQPF250011
*****ELDPF250012
* PF2 - SYSTEM TEST SUPERVISOR. .... *Z*PF250013
* ROUTINE ..... *56*PF250014
* ..... 01 - MODUL E MULTI-PROGRAMM ING SUPERVISOR. .... *JSHFF250015
* ..... 02 - LOGOUT P ROUTINE. SET L EPT 2 ADDRESS SW ITCHES TO -BB- T O OBTAIN LOGOUT. .... *L*PF250016
* ..... AFTER LOGOUT REMOVE - BB- FROM LEFT 2 SWITCHES. .... *~LO*PF250017
*****ILXPF250018
E**I*P7*~DC*PHS =*7HEP| | C P% ASC R A SO Q ..... 21301012710 224*288DPF250019
```



IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589909
PAGE 1

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		2		DECK 1
0000		3	FE1	START C
0A00		4		ORG X'0A00'
		5		
		6		*****
		7		SYSTEM/3 CPU MODULE FOR SYSTEM TEST
		8		*****
		9		SECTION PREFACE
		10		*
0A00	FF13	0A01	11	DC XL2'FE13' PROGRAM ID
0A02	80	0A02	12	DC XL1'80' SECTION FLAGS
0A03	01	0A03	13	DC XL1'01' ROUTINE NO.
0A04	0000	0A05	14	DC XL2'00' RESERVED
0A06	0A0A	0A07	15	DC AL2(TST01) ADDRESS OF FIRST ROUTINE PREFIX
0A08	FFFF	0A09	16	DC XL2'FFFF' FILLER
		17		*
		18		*****
		19		ROUTINE PREFACE
		20		*
0A0A	01	0A0A	21	TST01 DC XL1'01' ROUTINE NUMBER
0A0B	00	0A0B	22	DC XL1'00' ROUTINE FLAGS
0A0C	FFFF	0A0D	23	DC XL2'FFFF'
		24		*
		25		*****

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589909
PAGE 1A

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		27	TST01A	B TEST
		28	TBN	CPU,X'80'
		29	JF	TST01B
		30	L	ERRINT,IARO
		31	MVI	BRANCH+1,X'80'
		32	SIO	0,0
		33	L	ADRY,P1IAR
		34	L	ADR2,P2IAR
		35	DPY	L ADRX,P2IAR
		36	DPZ	APL 0
		37	J	DP2
		38		
		39	DPX	B HALT
0A36	C0 87 0222	0A3B	40	DC XL2'FE32'
0A3A	FE32		41	*
			42	
		43	DP2	SIO X'06',X'0'
		44	L	TNTRPT,IARO
		45	L	ADRA,P1IAR
		46	L	ADRB,P1IAR
		47	L	ADRC,P2IAR
		48	DPA	L ADRB,P2IAR
		49	DPC	APL 0
		50	BRANCH	B DPC
		51		
		52	B	HALT
0A5A	C0 87 0222	0A5F	53	DC XL2'FE31'
0A5E	FE31		54	*
		55		
		56	DP6	MVI BRANCH+1,X'87'
0A60	3C 87 0A57		57	
		58	TST01B	EQU *
		59		
		60	A	L CORSIZ,3
0A64	35 03 0203		61	CLI CORSIZ,X'FF'
0A68	3D FF 0203		62	JNE B
0A6C	F2 01 04		63	L ZERO,3
0A6F	35 03 0D94		64	B A NEG128,3
0A73	36 03 0DA7		65	JZ TEST2
0A77	F2 81 0C		66	CLC 127(128,XR2),127(,XR1)
0A7A	9D 7F 7F 7F		67	B EXIT
0A7E	C0 87 0D35		68	B B
0A82	C0 87 0A73		69	TEST2 EQU *
		70	MVI	TSTFLD,0
0A86	3C 00 0DB6	0A86	71	TBN TSTFLD,X'FF'
0A8A	38 FF 0DB6		72	JF **9
0A8E	F2 90 06		73	B HALT
0A91	C0 87 0222	0A96	74	DC XL2'FE01'
0A95	FE01		75	
		76	TBF	TSTFLD,X'FF'
0A97	39 FF 0DB6		77	JT **9
0A9B	F2 10 06		78	B HALT
0A9E	C0 87 0222	0AA3	79	DC XL2'FE02'
0AA2	FE02		80	
		81	MVI	TSTFLD,X'FF'
0AA4	3C FF 0DB6		82	TBF TSTFLD,X'FF'
0AA8	39 FF 0DB6		83	BF **10
0AAC	C0 90 0AB6		84	B HALT
0AB0	C0 87 0222	0AB5	85	DC XL2'FE03'
0AB4	FE03		86	
		87	TBN	TSTFLD,X'FF'
0AB6	38 FF 0DB6		88	JT **9
0ABA	F2 10 06		89	B HALT
0ABD	C0 87 0222	0AC2	90	DC XL2'FE04'
0AC1	FE04		91	
		92	MVI	TSTFLD,0
0AC3	3C 00 0DB6		93	SBN TSTFLD,X'FF'
0AC7	3A FF 0DB6		94	TBN TSTFLD,X'FF'
0ACB	38 FF 0DB6			

TEST FOR VALID DCP ENTRY IN DATA SW
 TEST FOR DUAL PROGRAM FEATURE
 BYPASS IF NOT PRESENT
 LOAD INTERRUPT IAR FOR ERROR
 SET BRANCH INST. TO NOP
 DISABLE DUAL PGM.
 LOAD PROGRAM LEVEL 1 IAR
 LOAD PROGRAM LEVEL 2 IAR
 LOAD PROGRAM LEVEL 2 IAR
 ADVANCE PROGRAM LEVEL
 TO NEXT TEST

GO HALT -OC32- BECAUSE APL INSTR
 CAUSED PROGRAM ADVANCE WHEN NOT
 ENABLED.

ENABLE DUAL PGM.
 LOAD INTERRUPT LEVEL 0 IAR
 LOAD PROGRAM LEVEL 1 IAR
 LOAD PROGRAM LEVEL 1 IAR
 LOAD PROGRAM LEVEL 2 IAR
 LOAD PROGRAM LEVEL 2 IAR
 ADVANCE PROGRAM LEVEL

GO TO HALT -OC31- BECAUSE APL DID
 NOT CAUSE AN ADVANCE WHEN DUAL
 PROGRAM WAS ENABLED.

SET BRANCH TO UNCONDITIONAL

LOAD CORE SIZE IN XR1 & XR2
 .CHECK IF CPU HAS 64K OF CORE.
 IF NOT, CONTINUE NORMALLY. IF
 YES, ENTER X'0000' IN XR1 & XR2
 .SUBTRACT 128 BY ADDING X'FF80'
 .IF ALL CORE TESTED, END TEST.
 IF NOT, CHECK PARITY OF 128
 BYTES AND CHECK WITH SUPERVISOR
 BEFORE CHECKING NEXT 128 BYTES.

SET TEST FIELD TO ZERO
 TEST ALL BITS FOR ON
 BYPASS HALT IF ALL OFF
 TO HALT IF ANY TEST ON

HALT ID

TEST ALL BITS FOR OFF
 BYPASS HALT IF ALL OFF
 TO HALT IF ANY ON
 HALT ID

SET TEST FIELD TO 'FF'
 TEST ALL BITS FOR OFF
 BYPASS HALT IF ALL ON
 TO HALT IF ANY TEST OFF
 HALT ID

TEST ALL BITS FOR ON
 BYPASS HALT IF ALL ON
 TO HALT IF ANY TEST OFF
 HALT ID

SET TEST FIELD TO ZERO
 SET ALL BITS ON
 TEST ALL BITS FOR ON

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for CPU module testing, including instructions like BT, B, DC, MVI, SRF, TBF, BT, B, DC, MVI, SBN, CLI, JE, B, DC, ZAZ, AZ, SZ, MVI, ZAZ, CLI, BE, B, DC, MVI, MVC, AZ, CLC, JE, B, DC, L, L, ST, ST, CLC, B, DC, MVI, CLC, JE, B, DC, L, MVI, CLC, B, DC, L, MVI, CLC, and various comments.

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for CPU module testing, including instructions like JE, B, DC, LA, ST, CLC, B, DC, LA, LA, ST, CLC, BNE, LA, LA, ST, CLC, BNE, B, MVI, MVI, AZZ, CLI, JE, B, DC, KZN, CLI, JE, B, DC, MNN, CLI, JE, B, DC, MNZ, CLI, JE, B, DC, MVI, LA, LA, ST, CLC, JE, B, DC, MVC, LA, LA, ST, CLC, JE, B, DC, and various comments.

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
OC95	F2 88 00	231	JOZ	**3 RESET DECIMAL OVERFLOW
OC98	3C D9 0DB6	232	MVI	WORK,X'D9' SET WORK TO MINUS DECIMAL 9
OC9C	06 00 0DB6 0D97	233	AZ	WORK(1),XD9(1) ADD MINUS DEC. 9 TO WORK
OCA2	F2 88 06	234	JOZ	**9 JUMP OVER HALT IF DECIMAL OVER FLOW
OCA5	C0 87 0222	235	R	HALT TO HALT IF ERROR
OCA9	FE16	236	DC	XL2'FE16' HALT ID
OCAB	3C D9 0DB6	237	MVI	WORK,X'D9' SET WORK TO MINUS DECIMAL 9
OCAF	06 00 0DB6 0D97	238	AZ	WORK(1),XD9(1) ADD MINUS DEC. 9 TO WORK
OCB5	C0 88 0CBF	239	ROZ	**+10 BRANCH OVER HALT IF DECIMAL OVERFLOW
OCB9	C0 87 0222	240	R	HALT TO HALT IF ERROR
OCBD	FE17	241	DC	XL2'FE17' HALT ID
OCBF		242	DC	XL2'FE17'
OCBF	C0 08 0CC9	243	BNOZ	**+10 BRANCH OVER HALT IF NO OVERFLOW
OCC3	C0 87 0222	244	R	HALT TO HALT IF ERROR
OCC7	FE18	245	DC	XL2'FE18' HALT ID
OCC8		246	DC	XL2'FE18'
OCC9	F2 08 06	247	JNOZ	**+9 JUMP OVER HALT IF NO OVERFLOW
OCCC	C0 87 0222	248	B	HALT TO HALT IF ERROR
OCDD	FE19	249	DC	XL2'FE19' HALT ID
OCDD		250	DC	XL2'FE19'
OCDE	0C 01 0DB7 0D9D	251	MVC	WORK+1(2),X2020 SET WORK TO HEX-2020-
OCDE	0A 01 0DB7 0D99	252	ED	WORK+1(2),XE1F0 EDIT
OCDE	0D 01 0DB7 0D9F	253	CLC	WORK+1(2),XF1F0 CHECK RESULT
OCE4	F2 81 06	254	JE	**+9 JUMP OVER HALT IF OK
OCE7	C0 87 0222	255	B	HALT TO HALT IF ERROR
OCEB	FE1A	256	DC	XL2'FE1A' HALT ID
OCEC		257	DC	XL2'FE1A'
OCEB		258	DC	XL2'FE1A'
OCEB		259	DC	XL2'FE1A'
OCEB		260	DC	XL2'FE1A'
OCEB		261	DC	XL2'FE1A'
OCEB		262	DC	XL2'FE1A'
OCEB		263	DC	XL2'FE1A'
OCEB		264	DC	XL2'FE1A'
OCEB		265	DC	XL2'FE1A'
OCEB		266	DC	XL2'FE1A'
OCEB		267	DC	XL2'FE1A'
OCEB		268	DC	XL2'FE1A'
OCEB		269	DC	XL2'FE1A'
OCEB		270	DC	XL2'FE1A'
OCEB		271	DC	XL2'FE1A'
OCEB		272	DC	XL2'FE1A'
OCEB		273	DC	XL2'FE1A'
OCEB		274	DC	XL2'FE1A'
OCEB		275	DC	XL2'FE1A'
OCEB		276	DC	XL2'FE1A'
OCEB		277	DC	XL2'FE1A'
OCEB		278	DC	XL2'FE1A'
OCEB		279	DC	XL2'FE1A'
OCEB		280	DC	XL2'FE1A'
OCEB		281	DC	XL2'FE1A'
OCEB		282	DC	XL2'FE1A'
OCEB		283	DC	XL2'FE1A'
OCEB		284	DC	XL2'FE1A'
OCEB		285	DC	XL2'FE1A'
OCEB		286	DC	XL2'FE1A'
OCEB		287	DC	XL2'FE1A'
OCEB		288	DC	XL2'FE1A'
OCEB		289	DC	XL2'FE1A'
OCEB		290	DC	XL2'FE1A'
OCEB		291	DC	XL2'FE1A'
OCEB		292	DC	XL2'FE1A'
OCEB		293	DC	XL2'FE1A'
OCEB		294	DC	XL2'FE1A'
OCEB		295	DC	XL2'FE1A'
OCEB		296	DC	XL2'FE1A'
OCEB		297	DC	XL2'FE1A'
OCEB		298	DC	XL2'FE1A'

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
OD6A	F2 87 04	299	J	RESETT
OD6D	35 60 0DB3	300	INTERR L	BADINT,X'60'
OD71	F3 00 05	301	*	
OD74	C0 87 0222	302		
OD78	FE89	303	RESETT SIO	5,0
OD7A	C0 87 0D6D	304		
OD7E	0D45	305	SETARR B	HALT
OD80	0D6D	306	DC	XL2'FE89'
OD82	0D74	307		
OD84		308	B	INTERR
OD86		309	INTRPT DC	AL2(INTOK)
OD88	F1F2F3F4F5F6F7F8	310	ERRINT DC	AL2(INTERR)
OD90	F9F0	311	BADINT DC	AL2(SETARR)
OD92	F1	312	PISAV DS	CL2
OD93	0000	313	P2SAV DS	CL2
OD95	FFFF	314	UNITS DC	CL10'1234567890'
OD97	D9	315	DEONE DC	CL1'1'
OD99	E1F0	316	ZERO DC	XL2'0'
OD9A	F1F0	317	XFF DC	XL2'FFFF'
OD9C	2020	318	XD9 DC	XL1'D9'
OD9E	0DB6	319	XE1F0 DC	XL2'E1F0'
ODA0	0DBB	320	XF1F0 DC	XL2'F1F0'
ODA2	0DD5	321	X2020 DC	XL2'2020'
ODA4	0DFE	322	WORK0 DC	AL2(WORK)
ODA6	FF80	323	WORK5 DC	AL2(WORK+5)
ODAB	0000	324	WORK31 DC	AL2(WORK+31)
ODAA	0A36	325	MINUS2 DC	XL2'0DFE'
ODAC	0A2C	326	NEG128 DC	XL2'FF80'
ODAE	0A30	327	REGSAV DC	XL2'0'
ODB0	0A4F	328	ADRX DC	AL2(DPX)
ODB2	0A60	329	ADRY DC	AL2(DPY)
ODB4	0A53	330	ADRX DC	AL2(DPX)
ODB6		331	ADRA DC	AL2(DPA)
ODB8		332	ADRB DC	AL2(DPB)
ODBA		333	ADRC DC	AL2(DPC)
ODBC		334	WORK EQU	*
ODBE		335	DS	CL74
ODBF		336	XR1 EQU	01
ODC0		337	XR2 EQU	02
ODC2		338	ARR EQU	08
ODC4		339	IARO EQU	X'80'
ODC6		340	P1IAR EQU	X'20'
ODC8		341	P2IAR EQU	X'40'
ODCA		342	CORSIZ EQU	X'203'
ODCB		343	CPU EQU	X'204'
ODCC		344	ENTRY EQU	X'AOA'
ODCE		345	HALT EQU	X'222'
ODD0		346	TEST EQU	X'212'
ODD2		347	TST'LD EQU	WORK
ODD4		348	END	TSTOIA

GO RESET THE INTERRUPT.
LOAD P1-IAR & P2-IAR WITH THE
ADDRESS OF SETARR INSTRUCTION.

RESET & DISABLE INTERRUPTS

GO TO HALT -FE89- IF INT LEV 0 ERR

RESETT FAILED, TRY AGAIN

PROGRAM LEVEL 1 IAR
PROGRAM LEVEL 2 IAR

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589909
PAGE 4

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
A	A	004	0A64	0060	
ADRA	A	002	0DB1	0331	0045
ADRB	A	002	0DB3	0332	0046 0048
ADRC	A	002	0DR5	0333	0047
ADRX	A	002	0DAB	0328	0035
ADRY	A	002	0DAD	0329	0033
ADRZ	A	002	0DAF	0330	0034
ARR	C	001	0008	0338	0265 0277
R	A	004	0A73	0064	0062 0068
BADINT	A	002	0D83	0311	0285 0300
BR	A	004	0D41	0280	0277*
BRANCH	A	004	0A56	0050	0031* 0056*
CORSIZ	C	001	0203	0342	0060 0061
CPU	C	001	0204	0343	0028
DEONE	A	001	0D92	0315	0121 0122
DPA	A	004	0A4F	0048	0331
DPB	A	004	0A60	0056	0332
DPC	A	003	0A53	0049	0050 0333
DPX	A	004	0A36	0039	0328
DPY	A	004	0A2C	0035	0329
DPZ	A	003	0A30	0036	0330
DP2	A	003	0A3C	0043	0037
ENTRY	C	001	0A0A	0344	0279
FRRINT	A	002	0D81	0310	0030
EXIT	A	004	0D35	0277	0067 0118 0185 0275
FE1	A	001	0000	0003	
HALT	C	001	0222	0345	0039 0052 0073 0078 0084 0089 0096 0103 0110 0116 0127 0135 0144 0148 0156 0164 0171 0193 0199 0205 0211 0219 0228 0235 0241 0245 0249 0256 0268 0272 0305 003C* 0044* 0289 0292 0308 0310
IARD	C	001	0080	0339	
INTERR	A	004	0D6D	0300	
INTOK	A	004	0D45	0282	0309
INTRPT	A	002	0D7F	0309	0044
LOAD1	A	003	0B07	0175	0178
LOAD2	A	003	0BEC	0181	0184
MINUS2	A	002	0DA5	0325	0177 0183
MV11	A	003	0R98	0152	
MV12	A	003	0BAC	0160	
NEG128	A	002	0DA7	0326	0064
NEWLD	A	003	0D5F	0294	0291
NOOOP	A	004	0D54	0289	
P1IAR	C	001	0020	0340	0033* 0045* 0046*
P1SAV	A	002	0D85	0312	0282* 0296
P2IAR	C	001	0040	0341	0034* 0035* 0047* 0048*
P2SAV	A	002	0D87	0313	0283* 0297
REGSAV	A	002	0DA9	0327	0176* 0177 0182* 0183 0213* 0216* 0217 0222* 0225* 0226
RESETT	A	003	0D71	0303	0299
SETARR	A	004	0D74	0305	0311
TEST	C	001	0212	0346	0027
TEST2	A	001	0A86	0069	0065
TSTFLD	A	001	0DB6	0347	0070* 0071 0076 0081* 0082 0087 0092* 0093* 0094 0099* 0100* 0101 0106* 0107* 0108 0112* 0113* 0114 0015 0276 0348 0029
TST01	A	001	0A0A	0021	
TST01A	A	004	0A0E	0027	
TST01B	A	001	0A64	0058	
UNCVD	A	004	0D58	0291	
UNITS	A	010	0D91	0314	0120 0124 0132 0133
WORK	A	001	0DB6	0334	0120* 0121* 0122* 0123* 0124* 0125 0130* 0131 0131* 0132* 0133 0140* 0141* 0142 0146 0154 0162 0168* 0169 0188* 0189* 0190 0190* 0191 0196 0196* 0197 0202 0202* 0203 0208 0208* 0209 0214 0223 0232* 0233* 0238* 0239* 0252* 0253* 0254 0259* 0260* 0261 0261* 0262* 0263 0265* 0264* 0265* 0266 0266 0270 0322 0323 0324 0347 0217 0226 0270 0151 0159 0233 0239
WORK0	A	002	0D9F	0322	
WORK31	A	002	0DA3	0324	
WORK5	A	002	0DA1	0323	
XD9	A	001	0D97	0318	

DATE 28JUL69 22OCT69 20JAN70 01OCT70 15JUN71
EC NO. 816444 816538 816576 816756 818948

PROG ID OFE1-3
PAGE 4

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589909
PAGE 4A

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
XEIFO	A	002	0D99	0319	0253
XFF	A	002	0D96	0317	0138 0142 0213 0222 0264
XFIFO	A	002	0D98	0320	0254
XRI	C	001	0001	0336	0066 0138* 0140 0151* 0152 0167* 0168 0174* 0175 0175* 0176 0214* 0215 0224* 0225
XR2	C	001	0002	0337	0066 0139* 0141 0159* 0160 0180* 0181 0181* 0182 0215* 0216 0223*
X2020	A	002	0D9D	0321	0224
ZERO	A	002	0D94	0316	0252 0063 0139 0146 0169

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 28JUL69 22OCT69 20JAN70 01OCT70 15JUN71
EC NO. 816444 816538 816576 816756 818948

PROG ID OFE1-3
PAGE 4A

FE13 FE1 - CPU MODULE FOR SYSTEM TEST

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T(Y4*/+ E B- , **OD***/OHK+H BA|HEK30 CQD@- Z P@U (K (,LN CE@ 5E 6, @E @Y* .2% XHA0G9QHFE130001

T<0ZYA%BG S.=<?< ATO CP@5H 61(K (X3N C\$M5E 63@E OH*HM@BG S.=<L2 GBV*5 OHC|E >IA4 REJD(#JOFE130002

T<OD*OHC@-DD(E< (VCOCC@-2-E2)-7' *OH*((BGRX@ 6 6+|@(_?H&A%BG S. = LX*CS\$2D 11B *F 41J\$ FE130003

T<O, EA7BG S.= T3 *CSQ9*0660I H_7B G S.= 3T*CS\$2D \$ /OHS*-E@ 66+7@ (_TT*CS\$ D 1.KU *D-8HBY@FE130004

T<-XCB_X /OHS*-M @*066+*@(_TX*CS\$ D ,?CH*BH78F| (_TY CSQ 66@YD FOH*BH78G BUVHJ* LC0%A3LHFE130005

T.O%3|1@(_TX CSQ *066@YDFOH*BH78 HOH*((E<C-C\$@ (UEQ -C\$@ (U-*C\$@ (UT3 6C\$QD B8DHBE\$G/O QB0*C)A8FE130006

T.O_T 66CQY*206 60HD.J@BG S.=BL3 EC\$B<A06*CS8FB 6 =CR (B 6=CRC2-E\$ /OHS B-WHS *F/Q <B EB;/@FE130007

T<E>N*-Y5 E60(EH (VCEAC\$*4 -69CED (_060@YDFOH*BH78 .CED(>E6M@YDFOH* BH78<(ED BQUE1M JCEUELE FE130008

T<0?ICEE@E *E6 @YDFOH*BH78 (E@H (Y\$2D C6DC\$72-E\$ /OHS*-#B E (D (_04AC\$*(V 3<K4 *EE-A4EUF130009

T<-?@YDFOH*BH78 10-D (HA T&ACFU (E6ZCEP 87PO-H *+HB T&BCEU E6 ZCEP 87% CH>.B-)FJ*LJ&E&FE130010

T<E0>OH*((LO|CSQ @@ 67B (_-67|-@ (_?HAA%BG S.=D - ACSQ(_34|CS\$2-E\$ /OHS*/D HBESEJD |R0*CP10FE130011

T<E1-P<(_-67|E (_?HAA%BG S.=D-- BC\$Q(_34|CS\$2-E\$ /OHS*/<< E6ZCR\$ B E664-H .2%ZGA- OB&MC3ZDFE130012

T<E2K C&BCEU E6 ZCR*2-E\$ /OHS*/E <E6ZCR\$B --668-D (D(DE4ACEU XMH AA%RG SH HS-UGJU PB--D*H-FE130013

T<-3E*/P2S 26E6 6A- (_-6P@Y-FOH* BH780| (U(-O CSQ (V@BHC.* /OHS*/- B 3IOH*B B2VHJ@ SC-OH&SOF130014

T< 36H78Q@--FOH* BH78RC D(_06)B-D (_06RC&D(_06\$@YD FOH*BH78E| (5TO C)M<G- B8D@J% PEJD|504FE130015

T.-4VC)E(5L3*E-@ <G&7=C-@.G-66CRQ 4B 7QCJ6(5 7*@YD FOH*BH78*CED(6 6 T@YD .BY)F1*LD&4 .A0CA41<FE130016

T<05RAZBG S.=GXB GCLP /OY+(-JCT =B-C EYHOH* CE -COM4E 6G(0 (-MD *B C07 /O 1HSQ SD-8HMS*FE130017

THE6CCN#2/O#3 0 5H 6E(M (/MHGACN -CQ13 P /OHS*YX /05_CMM(\$E54 BUXIK< OC0%A@LUF130018

T.E65@-3*|P6*MT 9@|D |**6;G0@- -H 66C\$X(5&C=*B *Y6BSOH< Z|BW HMO *KZZI2M TF1UP;DHFE130019

EB-9*E7*--DC*PH\$ =*7MCF| | C *F% ASC *R A SO Q 06540804710 809719\$HFE130020

----- LAST PAGE -----

DATE	28JUL69	22OCT69	20JAN70	01OCT70	15JUN71
EC NO.	816444	816538	816576	816756	818948

PROG ID OFE1-3
PAGE 5



EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000 0A00
2 DECK 1
3 EOF START 0
4 ORG X'A00'
5 *****
6 * SECTION PREFACE *
7 *****
8 *
9 * THIS AREA CONTAINS INFORMATION NECESSARY FOR SECTION OPERATION. *
10 * THE PROGRAM IDENTIFICATION, FLAGS, FIRST ROUTINE ADDRESS AND *
11 * ERROR RECORDING TABLE ADDRESS ARE LOADED BY ASSEMBLED DATA. THE *
12 * CURRENT ROUTINE NUMBER IS SUPPLIED BY THE CONTROL PROGRAM. THE *
13 * UNIT DEFINITION TABLE, SPUT, IS NOT USED BY THIS SECTION. *
14 *
15 *****
0A00 EOF1 0A01 16 PROGID DC XL2'E0F1' PROGRAM IDENTIFICATION
0A02 00 0A02 17 SPFLGS DC XL1'0' FLAGS
0A03 01 0A03 18 RNUM DC IL1'1' CURRENT ROUTINE NUMBER
0A04 0000 0A05 19 DC XL2'0' NOT USED
0A06 0A99 0A07 20 FRTN DC AL2(RTN01) ADDRESS OF FIRST ROUTINE PREFIX
0A08 0A0D 0A09 21 TABADR DC AL2(ERRTAB) ADDRESS OF ERROR RECORDING TABLE
0A0A E05000 0A0C 22 SPUT EQU * UNIT TABLE
23 DC XL3'E05000'
24
25 *
26 ** ERROR RECORDING TABLE.
27 *
0A0D 80 0A0D 28 ERRTAB DC XL1'80'
0A0E 0C 0A0E 29 DC IL1'12'
0A0F F5F2F0F340D7D9C9 0A1A 30 DC CL12'5203 PRINTER'
0A17 D5E3C509 30
0A18 80 0A1B 31 DC XL1'80'
0A1C 0F 0A1C 32 DC IL1'15'
0A1D D3C1E2E340F340C3 0A2B 33 DC CL15'LAST 3 COMMANDS'
0A25 D6D4D4C1D5C4E2 33
0A2C 40 0A2C 34 DC XL1'40'
0A2D 02 0A2D 35 DC IL1'2'
0A2E 0000 0A2F 36 CMD1 DC XL2'0'
0A30 40 0A30 37 DC XL1'40'
0A31 02 0A31 38 DC IL1'2'
0A32 0000 0A33 39 CMD2 DC XL2'0'
0A34 40 0A34 40 DC XL1'40'
0A35 02 0A35 41 DC IL1'2'
0A36 0000 0A37 42 CMD3 DC XL2'0'
0A38 80 0A38 43 DC XL1'80'
0A39 0D 0A39 44 DC IL1'13'
0A3A D3C1E2E340F340C5 0A46 45 DC CL13'LAST 3 ERRORS'
0A42 D9D9D6D9E2 45
46
0A47 80 0A47 47 DC XL1'80'
0A48 19 0A48 48 DC IL1'25'
0A49 40C3D6D4D4C1D5C4 0A61 49 ECMDS DC CL25' COMMANDS XXXX XXXX XXXX'
0A51 E24040E7E7E7E740 49
0A59 E7E7E7E740E7E7E7 49
0A61 E7 49
50
0A62 80 0A62 51 DC XL1'80'
0A63 19 0A63 52 DC IL1'25'
0A64 40C3D240E2E3C1E3 0A7C 53 SNS011 DC CL25' CK STATUS XXXX XXXX XXXX'
0A6C E4E240E7E7E7E740 53
0A74 E7E7E7E740E7E7E7 53
0A7C E7 53
54
0A7D 80 0A7D 55 DC XL1'80'
0A7E 19 0A7E 56 DC IL1'25'
0A7F 40D7D9C9D5E340D7 0A97 57 SNS110 DC CL25' PRINT POS XXX XXX XXX'
0A87 D6E24040E7E7E740 57
0A8F 40E7E7E74040E7E7 57
0A97 E7 57

```

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0A98 FF 0A98 58 DC XL1'FF'
59

```

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
61 *****
62 * ROUTINE 01 - 5203 SYSTEM TEST MODULE *
63 *****
64 *
65 * COMMANDS ARE ISSUED TO THE 5203 IN RANDOM ORDER FROM A COMMAND *
66 * TABLE. SKIPS ARE TO THE NEXT LINE ONLY. *
67 *
68 *****
0A99 01 0A99 69 RTN01 DC XL1'01' ROUTINE PREFIX
0A9A 00 0A9A 70 DC XL1'0'
0A9B FFFF 0A9C 71 DC XL2'FFFF'

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
129 *
130 ** THE FOLLOWING CODING DETERMINES WHICH FAILURE HAS OCCURRED AND
131 ** SETS UP THE PROPER HALT CODE.
132 **
133 ** 04 - CHAIN SYNC CHECK.
134 ** 05 - INCREMENTER SYNC OR SLIP CHECK.
135 ** 06 - INCREMENTER FAILURE CHECK.
136 ** 09 - HAMMER ECHO CHECK.
137 ** 0A - ANY HAMMER ON CHECK.
138 ** 07 - THERMAL CHECK.
139 ** 01 - CARRIAGE SYNC CHECK.
140 ** 02 - CARRIAGE SPACE CHECK.
141 ** 03 - FORMS CHECK JAM.
142 ** 08 - NO OP STATUS BIT SET WITH NO OTHER ERROR.
143 ** 0C - UNPRINTABLE CHARACTER SKIPPED.
144 *
145 LA SNSTAB-3,XR1 POINT AT TABLE OF SENSE /HALT INFO
146 SNSLP LA 3(XR1),XR1 INCREMENT TO NEXT ENTRY
147 MVC CHECK1+1(1),0(XR1) MOVE MASK TO CHECK NEXT ERROR BIT
148 MVC CHECK2+1(1),1(XR1)
149 CHECK1 TBF PSTAT-1,-* CHECK TO SEE IF THIS IS ERROR BIT
150 CHECK2 TBF PSTAT,-* DETECTED
151 BT SNSLP CONTINUE IF NOT
152 MVC PHALT(1),2(XR1) FOUND IT - SET UP HALT
153 DOHALT B HALT ERROR HALT
0BA9 154 PHALT DC XL2'E000'
155 MVI LPDATA-1,X'0'
156 B GOOUT EXIT MODULE
157 CKBUSY TIO ISBUSY,X'E6' BRANCH IF PRINTER BUSY
158 J CKCARR GO ISSUE COMMAND IF NOT BUSY
159 ISBUSY SLC TIMEOUT(2),CNE GO BACK TO SUPERVISOR IF NO TIMEOUT
160 BNZ GOOUT
161 B HALT *BUSY TOO LONG
0BC8 162 DC XL2'E014'
163 B GOOUT EXIT SUBROUTINE
164 CKCARR TBN SBYTEL,SSWOB SET UP TO CHECK LEFT OR RIGHT CARR.
165 JF SLEFT LINE COUNTER DEPENDING ON SSWOB
166 SNS LCIS,X'E0' -RIGHT CARRIAGE
167 J CKDCP
168 SLEFT SNS LCIS+1,X'E0' -LEFT CARRIAGE
169 CKDCP CLI LPDATA-1,X'FF' BRANCH IF DCP DID NOT PRINT
170 J KLINE
171 MVC LCSB(1),LCIS NO OP LINE COUNTER CHECK
172 MVI LPDATA-1,X'FF'
173 CKLINE CLC LCIS(1),LCSB CHECK LINE COUNTER
174 JE LDCMD
175 ZAZ LCERR-13(3),DZERO(1)
176 ZAZ LCERR-1(3),DZERO(1)
177 MVC WORK(1),LCIS SET UP ACTUAL LINE COUNTER
178 ISLOOP AZ LCERR-13(3),DONE(1)
179 SLC WORK(1),ONE
180 BNZ ISLOOP
181 MVC WORK(1),LCSB SET UP EXPECTED LINE COUNTER
182 SBLOOP AZ LCERR-1(3),DONE(1)
183 SLC WORK(1),ONE
184 BNZ SBLOOP
185 B PRINT PRINT LINE COUNTER ERROR
186 DC XL1'C5' MESSAGE
187 DC IL1'39'
188 DC AL2(LCERR)
189 DC XL2'E033'
190 B HALT HALT ON ERROR
0C35 191 DC XL2'E033'
192 MVI LPDATA-1,X'0' SET UP TO SKIP NEXT LINE CTR CHECK
193 B CKBUSY
194 LDCMD L CMDPTR,XR1 LOAD POINTER FOR THIS COMMAND
195 MVC STRTIO+2(2),1(XR1) MOVE INTO COMMAND
196 TBN 0(XR1),X'02' BRANCH IF NO PRINT

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OC55	F2	90	12		JF	CKSKIP
OC58	OC	00	0D43	ODC7	MVC	PFIELD-1(1),PFIELD+131 RIPPLE PRINT FIELD
OC5E	OC	83	0DC7	ODC6	MVC	PFIELD+131(132),PFIELD+130
OC64	OC	83	08FF	ODC7	MVC	LPDATA+131(132),PFIELD+131 MOVE TO PRINTOUT AREA
OC6A	7D	FF	01	201	CKSKIP	CLI 1(,XR1),X'FF' BRANCH IF NOT SKIP TO NEXT LINE
OC6D	F2	01	18	202	JNE	SETLC
OC70	0E	00	0DCF	ODC4	ALC	LCSB(1),ONE
OC76	OC	00	0CC1	ODCF	MVC	STRTO+2(1),LCSB SET UP TO SKIP TO NEXT LINE
OC7C	3D	70	0CC1	205	CLI	STRTO+2,112 IS WE OVERFLOW LENGTH, SET UP
OC80	F2	04	18	206	JNH	LDETAB TO GO TO LINE 1
OC83	3C	01	0CC1	207	MVI	STRTO+2,1
OC87	3E	00	0DCF	208	MVI	LCSB,0
OC88	0E	00	0DCF	ODC1	ALC	LCSB(1),STRTO+2 SET UP EXPECTED LINE COUNTER TO WHAT
OC91	3D	70	0DCF	210	CK112	CLI LCSB,112 IT SHOULD BE AFTER THIS COMMAND
OC95	F2	04	06	211	JNH	LDETAB
OC98	0F	00	0DCF	OC92	SLC	LCSB(1),CK112+1 TAKE CARE OF CROSSING LINE 112
OC9E	38	80	0209	213	LDETAB	TBN SBYTE1,SSW08 PRINT USING RIGHT CARRIAGE IF SSW08
OCA2	F2	90	04	214	JF	**7 IS ON
OCA5	3A	08	0CC0	215	SBN	STRTO+1,X'08'
OCA9	38	80	0DD6	216	SBF	FLAG,X'80'
OCA0	0C	01	0A2F	OA33	MVC	CMD1(2),CMD2
OCB3	0C	01	0A35	OA37	MVC	CMD2(2),CMD3
OCB9	0C	01	0A37	OCC1	MVC	CMD3(2),STRTO+2
OCBF	F3	00	00	220	STRTO	SIO ***,** DO COMMAND
OCC2	0C	01	0DD5	OCE0	MVC	TIMOUT(2),TIME SET UP BUSY TIMEOUT
OCC8	3D	E0	0A00	222	GOUT	CLI X'A00',X'E0' CHECK TO SEE IF SECTION RELOCATED
OCCC	00	01	0A0A	223	BNE	ENTRY YES, GO TO SYSTEM TEST SUPERVISOR
OCDO	E0	87	4A	224	B	LDPTR(,XR2) NO, REMAIN IN TEST
				225		
				226	*****	
				227	* CONSTANTS *****	
				228	*****	
OCD3	0001		OCD4	229	ONE	DC IL2'1'
OCD5	0002		OCD6	230	TWO	DC IL2'2'
OCD7	F0		OCD7	231	DZERO	DC DL1'0'
OCD8	F1		OCD8	232	DONE	DC DL1'1'
OCD9	7070		OCD9	233	N112	DC XL2'7070'
OCD8	0800		OCD8	234	X800	DC XL2'800'
OCDD	087C		OCDE	235	X87C	DC XL2'87C'
OCDF	1770		OCF0	236	TIME	DC IL2'6000'
OCE1	78		OCE1	237	X78	DC XL1'78'
			OCE2	238	SNSTAB	EQU * TABLE OF ERROR STATUS/HALTS
OCE2	0080040040051000	OCF6	239	DC	XL21'00800400400510000604000902000A002007800001'	
OCEA	06C4000902000A00		239			
OCF2	2007800001		239			
OCF7	400002200C030100	OD02	240	DC	XL12'40000220000301000800020C'	
OCFF	0800020C		240			
			241	*		
			242	**	TABLE OF COMMANDS.	
			243	*		
OD03	E201		OD03	244	CHDTAB	EQU * PRINT & SPACE 1
OD05	E202		OD04	245	DC	XL2'E201' PRINT & SPACE 2
OD07	E201		OD06	246	DC	XL2'E202' PRINT & SPACE 2
OD09	E203		OD08	247	DC	XL2'E201' PRINT & SPACE 3
OD08	E201		OD0A	248	DC	XL2'E203' PRINT & SPACE 3
OD0D	E000		OD0C	249	DC	XL2'E201' SPACE 0
OD0F	E201		OD0E	250	DC	XL2'E000' SPACE 0
OD11	E001		OD10	251	DC	XL2'E201' SPACE 1
OD13	E201		OD12	252	DC	XL2'E001' SPACE 1
OD15	E6FF		OD14	253	DC	XL2'E201' PRINT & SKIP TO LINE XX
OD17	E201		OD16	254	DC	XL2'E6FF' PRINT & SKIP TO LINE XX
OD19	E4FF		OD18	255	DC	XL2'E201' SKIP TO LINE XX
OD18	00		OD1A	256	DC	XL2'E4FF' SKIP TO LINE XX
			OD1B	257	DC	XL1'0'
			258			
			259	*****		
			260	* PRINTOUTS *****		
			261	*****		

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OD1C	D3C9D5C540C3D6E4	OD42	262	LCERR	DC	CL39'LINE COUNTER ERROR. IS XXX. SHD BE XXX.'
OD24	D5E3C5D940C5D9D9		262			
OD2C	D6D94B40C9E240E7		262			
OD34	E7E74B40E2C8C440		262			
OD3C	C2C540E7E7E748		262			
			263			
			264	*****		
			265	* RESERVED STORAGE *****		
			266	*****		
OD43		OD43	267	DS	CL1	DUMMY BYTE FOR RIPPLE
OD44		OD44	268	PFIELD	EQU *	PRINTER WORK FIELD
ODC7		ODC7	269	DS	CL132	
ODC8		ODC9	270	PSTAT	DS	CL2
ODCA		ODCB	271	CHDPTR	DS	CL2
ODCC		ODCC	272	LCIS	DS	CL2
ODCE		ODCE	273	DS	CL1	ACTUAL LINE COUNTER
ODCF		ODCF	274	LCSB	DS	CL1
ODDD		ODDD	275	WORK	DS	CL2
ODD2		ODD3	276	PSTAT2	DS	CL2
ODD4		ODD5	277	TIMOUT	DS	CL2
ODD6		ODD6	278	FLAG	DS	CL1
			279			
			280	*****		
			281	* EQUATES *****		
			282	*****		
0010	283	IAR	EQU	X'10'		INSTRUCTION ADDRESS REGISTER
0008	284	ARR	EQU	X'08'		ADDRESS RECALL REGISTER
0001	285	XR1	EQU	X'01'		INDEX REGISTER 1
0002	286	XR2	EQU	X'02'		INDEX REGISTER 2-
			287			
0208	288	SBYTE0	EQU	X'208'		FIRST BYTE OF COMMON SENSE SWITCHES
0209	289	SBYTE1	EQU	X'209'		SECOND BYTE OF COMMON SENSE SWITCHES
020A	290	SBYTE2	EQU	X'20A'		FIRST BYTE OF SECTION SSWs
020B	291	SBYTE4	EQU	X'20B'		SECOND BYTE OF SECTION SSWs
0212	292	TEST	EQU	X'212'		SRT - ENTRY TO CHECK CONSOLE SWS
0216	293	LINK	EQU	X'216'		- ENTRY TO CHAIN ROUTINE
021A	294	PRINT	EQU	X'21A'		- ENTRY TO PRINT
021E	295	UNPACK	EQU	X'21E'		- ENTRY TO CONVERT HEX TO EBCDIC
0222	296	HALT	EQU	X'222'		- ENTRY TO HALT
0226	297	PACK	EQU	X'226'		- ENTRY TO PACK EBCDIC TO HEX
0232	298	UTAB	EQU	X'232'		- DCP UNIT TABLE
0800	299	LPIMAG	EQU	X'800'		FIRST BYTE OF 5203 PRINT IMAGE FIELD
087C	300	LPDATA	EQU	X'87C'		FIRST BYTE OF 5203 PRINT DATA FIELD
			301			
			302	*		
			303	**	SENSE SWITCHES.	
			304	*		
0004	305	SSW05	EQU	X'04'		PRINT ON MFCU
0080	306	SSW08	EQU	X'80'		USE 5203 RIGHT CARRIAGE
			307			
0A0A	308	ENTRY	EQU	X'A0A'		MULTIPROGRAMMING ENTRY
0A9D	309	END	BEGIN			

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ARR	C	001	0008	0284	
BEGIN	A	004	0A9D	0074	0072 0073 0074 0309
CHECK1	A	004	0B93	0149	0147*
CHECK2	A	004	0B97	0150	0148*
CKBUSY	A	004	0BB2	0157	0100 0193
CKCARR	A	004	0BCD	0164	0158
CKDCP	A	004	0BDF	0169	0167
CKLINE	A	006	0BFO	0173	0170
CKSKIP	A	003	0C6A	0201	0197
CK112	A	004	0C91	0210	0212
CMDPTR	A	002	0DCB	0271	0090* 0091 0095* 0194
CMDTAB	A	001	0D03	0244	0089
CMD1	A	002	0A2F	0036	0217*
CMD2	A	002	0A33	0039	0217 0218*
CMD3	A	002	0A37	0042	0114 0218 0219*
DOHALT	A	004	0BA4	0153	
DONE	A	001	0CB8	0232	0126 0178 0182
DZERO	A	001	0CD7	0231	0125 0175 0176
ECMDS	A	025	0A61	0049	0110* 0111 0111* 0115
ENTRY	C	001	0A0A	0308	0223
ERRTAB	A	001	0A0D	0028	0021
EOF	A	001	0000	0003	
FIRSTC	A	004	0ADF	0089	0094
FLAG	A	001	0DD6	0278	0106 0108* 0216*
FRTN	A	002	0A07	0020	
GOOUT	A	004	0CC8	0222	0104 0107 0156 0160 0163
HALT	C	001	0222	0296	0153 0161 0190
IAR	C	001	0010	0283	
ISBUSY	A	006	0BB9	0159	0157
ISLOOP	A	006	0C08	0178	0180
LCERR	A	039	0D42	0262	0175* 0176* 0178* 0182* 0188
LCIS	A	002	0DCD	0272	0166* 0168* 0171 0173 0177
LCSB	A	001	0DCF	0274	0171* 0173 0181 0203* 0204 0208* 0209* 0210 0212*
LDCMD	A	004	0C49	0194	0174
LDETAB	A	004	0C9E	0213	0206 0211
LDPTR	A	004	0AE7	0091	0224
LD120	A	006	0AC3	0083	0079
LINK	C	001	0216	0293	
LPDATA	C	001	0B7C	0300	0085* 0155* 0169 0172* 0192* 0200*
LPERR	A	004	0B0C	0101	0096
LPINAG	C	001	0B00	0299	0080 0083
N112	A	002	0C0A	0233	0086
ONE	A	002	0C04	0229	0127 0159 0179 0183 0203
PACK	C	001	0226	0297	
PFIELD	A	001	0D44	0268	0075* 0076* 0080* 0081 0081* 0083* 0084 0084* 0198 0198* 0199 0199*
PHALT	A	002	0BA9	0154	0200
PPLOOP	A	006	0B72	0126	0152*
PRINT	C	001	021A	0294	0128
PROGID	A	002	0A01	0016	0185
PSTAT	A	002	0DC9	0270	0077* 0078 0097* 0098 0099 0101* 0102 0103 0105 0120 0149 0150
PSTAT2	A	002	0D03	0276	0109* 0124* 0127*
RNUM	A	001	0A03	0018	
RTNO1	A	001	0A99	0069	0020
SBLOOP	A	006	0C21	0182	0184
SBYTE0	C	001	0208	0288	
SBYTE1	C	001	0209	0289	0164 0213
SBYTE2	C	001	020A	0290	
SBYTE4	C	001	020B	0291	
SETLC	A	006	0C88	0209	0202
SETPRF	A	004	CACF	0085	0082
SLEFT	A	004	0B08	0168	0165
SMSLP	A	003	0B86	0146	0151
SMSTAB	A	001	0CE2	0238	0145
SNS011	A	025	0A7C	0053	0116 0116* 0117 0117* 0121
SNS110	A	025	0A97	0057	0122 0122* 0123 0123* 0125* 0126*

DATE 28JUL69 28NOV69 20JAN70
EC NO. J16444 816542 816548

PROG ID OEOF-1
PAGE 4

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
SPFLGS	A	001	0A02	0017	
SPUDT	A	001	0A0A	0022	
SSW05	C	001	0004	0305	
SSW08	C	001	0080	0306	0164 0213
STRTIO	A	003	0C8F	0220	0195* 0204* 0205 0207* 0209 0215* 0219
TABADR	A	002	0A09	0021	
TEST	C	001	0212	0292	
TIME	A	002	0CE0	0236	0221
TIMGUT	A	002	0DD5	0277	0159* 0221*
TWD	A	002	0CD6	0230	
UNPACK	C	001	021E	0295	0112 0118
UTAB	C	001	0232	0298	
WORK	A	002	0001	0275	0177* 0179* 0181* 0183*
XR1	C	001	0001	0285	0089* 0090 0091* 0092* 0092* 0093 0095 0145* 0146 0146* 0147 0148
XR2	C	001	0002	0286	0152 0194* 0195 0196 0201
X7B	A	001	0CE1	0237	0074* 0094 0224
X800	A	002	0C0C	J234	0124
X87C	A	002	0C0E	0235	0087
					0088

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 28JUL69 28NOV69 20JAN70
EC NO. 816444 816542 816548

PROG ID OEOF-1
PAGE 4A

EOF1 EOF - 5203 PRINTER SYSTEM TEST MODULE

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

S2P01UA & ..... 7 P ..... PYHEOF10001
T+ Y88|D & BZU HC:AE H <~.024C P6*KN82PR- *LO;. T&| ( 0'SM5<GN1+I - & H D B B UG*HOEOF10002
T+-23C|A8>( 24C E6)XD6;H FMCC5_L MO)PD8UA 9--X94C X9--X&+-X9=; FMC C4UCS82GT9+I 9-- X94 70<EOF10003
T(-DD9--X94CX9-- X-AV 5*XI5;( 5*8 SEDCX9=) &+-X94A 9--X*OD *H*B -D )|D (131 C+Q080 (C 3502EOF10004
T< ,SC+UBA 7I2Z |CB2(1&-?CED(V&7 G2Y*CG*(1&/7C U (L&7G| H;3G-C(V 19 3* <E 7H2</F1& KC MA;KMEOF10005
T< &<9-3;0-D( L& AC*35 &7.4-DB-& 8HEB( D(22G-800 0807I+;H(2LX7C+T D >2< 7H2+TG1& +B-QB)L EOF10006
T. 39807I+;H(2LX 7C+T D 3H+ H(2LS C)S D 3H+Y (5TC WC) << OZPBVO< OZ * ..... .B-WH/8EE/H +B-QB2JVEOF10007
T.&_XBWG /OH; -Y 7BWD< 022BX* < OZ 78X3 /OH; -7IBX0 < -D(BZH< -DKBZ* | ..... ,HKMTG140EA +B--AK. EOF10008
T. >MC) << 8&&-BZ* <50Q-BZ* <6 a C) < <5< AB7.B &3-4-D CG .V * ..... >Q LU ..... HK&|FJMLC04 IA0<A0Q*EOF10009
T<E?FC*-9 710A .//O B:UBOH+BM> | ..... H;2BGC<TA9-> 92Y+MCO D(5&3MO D <2<BG SH .KUXHA0 (B&MA&14EOF10010
T<O? :8AL /O3H+H BB-H&A3C-C+72/O& 08 7+|-2H; H&B-0 C*2(3L3*BGZ( 7 (C*2-N DH >.BE SE1 EMS4EOF10011
TH00MCLM<50&-CMD <500 C)D(3EQ-CLM <6 a C)D<5< AC 3 < 7JC+2FH 5AC(- H2UVH12$FJMLC04 IA0<A38DEF10012
T<-1RCO (4&3MO D <H*BG /,EI0588C| /OHS8C<2 /#OH* .3TMAC*3* &3A P- B |H&D-0 ..... ZIKD JB&MCNZ&EOF10013
T.-2HCM<(102CC** (1-2CB|3(177* -H AF08 C*2<5 O C<D (3350C<G2AA&2 &3 A| ..... BOVHJ2$F&2 IA0<A+C2EOF10014
T.&26C*2+ 7|C<D * 7|2-&FCO (302 K+H BB-H&ACVHC< #- 7CC DH.OY3C D H<O 7B4Z12<-EAH .A0HA-HYEOF10015
T(63&BT* < &Y7C<G 3 ..... < &7NC+ *B Y O DHB>BGK- A ..... 02PAOB H-A)O;OB A A AJ A-E A +A0MA&:QEOF10016
T+-4XB&H B- -AB M S OD B BC+HAB-.S ;HC8-G - +HAB GS ;$*8-G U*OCL2)PE&<(09(P T)IU &IHEOF10017
TF-5B&<PR6)SRK4C 18UCX9=).&+.H1DC B1MCX9=). ..... 72DEF10018
EBZ5*E7*=-DC*PHS =*7H&F| ..... C ..... F& ASC R A SO Q ..... 1011690 1267008QEOF10019

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LAST PAGE

DATE 28JUL69 28NOV69 20JAN70
EC NO. 816444 816542 816548

PROG ID QEOF-1
PAGE 5



FOF2 5424 MFCU SYSTEM TEST MODULE

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ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
      2 DECK 1
      3 FOF2 START X'A00'
      4 *****
      5 *
      6 * 5424 MFCU SYSTEM TEST MODULE *
      7 *
      8 *****
      9 DC XL2'FOF2' PROGRAM IDENTIFICATION
     10 DC XL1'0' FLAGS
     11 DC XL1'1' CURRENT ROUTINE NUMBER
     12 DC XL2'0' RESERVED
     13 DC AL2(RTN01) ADDRESS OF FIRST ROUTINE PREFIX
     14 DC AL2(ERCTRS) ADDRESS OF ERROR RECORDING TABLE
     15 DEVID DC XL3'F05000' SECTION PREFACE UDF
     16 *****
     17 * ROUTINE 1 *
     18 *****
     19 RTN01 DC XL1'1' CURRENT ROUTINE NUMBER
     20 DC XL1'0' FLAGS
     21 DC XL2'FFFF' LAST ROUTINE
     22 *****
     23 * INITIALIZATION *
     24 BEGIN BC START,X'80' 'NO-OP' BRANCH
     25 MVI BEGIN+1,X'87' MODIFY TO UNCCNDITIONAL BRANCH
     26 LIO ADDPRT,X'F4' LOAD PRINT ADDRESS REGISTER
     27 TBF DEVID,X'01' TEST FOR KATAKANA PUNCH & PRINT
     28 BT CKKATA
     29 MVC PUNCH1+95(96),READ1+95 LOAD 8-BIT PATTERN
     30 B CKKATA
     31 * COMMAND GENERATION *
     32 START L ACMDT1,XR1
     33 MVC SIOCMD+2,0(2,1)
     34 CLI 1(,1),X'FF'
     35 JNE AROUND
     36 LA CMDTBL-16,XR1
     37 AROUND LA 2(,XR1),XR1
     38 ST ACMDT1,XR1
     39 * TEST FOR BUSY, NOT READY OR ERROR *
     40 TIO EXIT,X'F7' TEST 5424 BUSY
     41 TIO NRORER,X'F0' TEST PRI NOTRDY OR ERROR
     42 TIO NRORER,X'F8' TEST SEC NOTRDY OR ERROR
     43 * SECONDARY FEED INITIALIZATION *
     44 PRNTT SNS SENSE1,X'F3' SENSE STATUS INDICATORS
     45 TBN SENSE1-1,X'10' TEST FOR CARD IN SECONDARY WAIT
     46 JF PRTPCH-4
     47 * COMPARE *
     48 REDONY TBF LASTCM-1,X'01' WAS PREVIOUS CMD READ
     49 JT PRTPCH
     50 CLI READ1+95,X'40' IS COLUMN 96 BLANK
     51 JNE COMPR
     52 CLC READ1+94(95),READ1+95 ALL COLUMNS BLANK?
     53 JE PRTPCH
     54 CCMPR CLC READ1+95(96),PUNCH1+95 COMPARE
     55 JE PRTPCH
     56 B PRINT
     57 DC XL1'C6' PRINT
     58 DC XL1'0D' COMPARE
     59 DC AL2(MESSG9) ERROR
     60 DC XL2'F035'
     61 B HALT
     62 DC XL2'F035'
     63 SBF LASTCM-1,X'01'
     64 J EXIT
     65 * START I/O ROUTINE *
     66 MVI SIOCMD+1,X'F8' FEED CARD TO SECONDARY WAIT STATION
     67 PRTPCH LIO ADDPCH,X'F6' LOAD PCH ADDRESS REGISTER
     68 LIO ADDRED,X'F5' LOAD RED ADDRESS REGISTER
     69 SIOCMD SIO X'00',X'00' START I/O COMMAND

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FOF2 5424 MFCU SYSTEM TEST MODULE

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ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
      70 * SAVE COMMANDS *
      71 MVC SECTLT(2),NXTLST SAVE SECOND TO LAST COMMAND
      72 MVC NXTLST(2),LASTCM SAVE NEXT TO LAST COMMAND
      73 MVC LASTCM(2),SIOCMD+2 SAVE LAST COMMAND
      74 * EXIT TO SUPERVISOR *
      75 EXIT CLI X'A00',X'F0'
      76 BNE ENTRY
      77 B START
      78 * CHECK FOR ERROR *
      79 NRORER SNS SENSE1,X'F3' SENSE 5424 STATUS INDICATORS
      80 TBF SENSE1,X'FF' ANY ERRORS
      81 BT NOTRDY JUMP IF NO ERRORS
      82 MVC SENSE4(2),SENSE3 SAVE
      83 MVC SENSE3(2),SENSE2 ERROR
      84 MVC SENSE2(2),SENSE1 STATUS
      85 MVI TESTBN+1,X'02'
      86 LA TABLE,XR1
      87 TESTBN TBN SENSE1,X'02' TEST FOR
      88 JT PRTRER ERROR
      89 LA 14(,XR1),XR1 INCREMENT (14) HALT TABLE
      90 ALC TESTBN+1(1),TESTBN+1
      91 BNZ TESTBN
      92 PRTRER MVC ID1(1),0(,XR1) MOVE ERROR ID
      93 MVC ID2(1),0(,XR1) TO HALT AND PRINT
      94 LA 13(,XR1),XR2 MOVE MESSAGE
      95 ST ID1-2,XR2 ADDRESS TO PRINT
      96 B PRINT
      97 DC XL1'C6' PRINT
      98 DC XL1'0D' ERROR
      99 DC AL2(*-*) MESSAGE
     100 ID1 DC XL2'FO00'
     101 B HALT
     102 ID2 DC XL2'FO00' HALT
     103 MVC READ1+95(96),PUNCH1+95 FORCE EQUAL COMPARE
     104 TBF SENSE1,X'E0' READ, PUNCH OR PCH INVD CK?
     105 BT START NO
     106 MVC SIOCMD+2,LASTCM(2)
     107 B PRTPCH YES
     108
     109 *****
     110 * CONSTANTS *
     111 *****
     112 ACMDT1 DC AL2(CMDTBL-14)
     113 ADDRED DC AL2(READ1)
     114 ADPCCH DC AL2(PUNCH1)
     115 ADDPRT DC AL2(PRINT1)
     116 ERCTRS DC XL1'80'
     117 DC XL1'09'
     118 DC CL9'5424 MFCU'
     119 DC XL1'80'
     120 DC XL1'0C'
     121 DC CL12'LAST 3 CMNDS'
     122 DC XL1'40'
     123 DC XL1'02'
     124 SECTLT DC XL2'0000'
     125 DC XL1'40'
     126 DC XL1'02'
     127 NXTLST DC XL2'0000'
     128 DC XL1'40'
     129 DC XL1'02'
     130 LASTCM DC XL2'0000'
     131 DC XL1'80'
     132 DC XL1'0D'
     133 DC CL13'LAST 3 ERRORS'
     134 DC XL1'40'

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IBM MAINTENANCE DIAGNOSTIC PROGRAM

FOF2 5424 MFCU SYSTEM TEST MODULE

PART NO. 2589917
PAGE 3

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ACKATA	A	002	0C7D	0169	0166
ACMDT1	A	002	0B38	0112	0032 0038*
ADDPCH	A	002	0B3C	0114	0067
ADDPRT	A	002	0B3E	0115	0026
ADDRED	A	002	0B3A	0113	0068
ALINE4	A	002	0C7F	0170	0167 0169 0218*
AROUND	A	003	0A42	0037	0035
BEGIN	A	004	0A11	0024	0025*
CKKATA	A	004	0C60	0163	0028 0030
CMDTBL	A	016	0B6F	0152	0036 0112 0210
COMPR	A	006	0A77	0054	0051
DEVID	A	003	0A0C	0015	0027 0163
ENTRY	C	001	0A0A	0202	0076
ERCTRS	A	001	0B3F	0116	0014
EXIT	A	004	0A88	0075	0040 0064 0212
FOF2	A	001	0A00	0003	
HALT	C	001	0222	0204	0061 0101
ID1	A	002	0B18	0100	0092* 0095*
ID2	A	002	0B1E	0102	0093*
LASTCM	A	002	0B63	0130	0048 0063* 0072 0073* 0106
LINE4	A	032	0CFF	0177	0170 0218
MESSG9	A	013	0BFD	0154	0059
NCTRDY	A	004	0DD2	0209	0081
NRORER	A	004	0AC4	0079	0041 0042
NXTLST	A	002	0B5F	0127	0071 0072*
PRINT	C	001	021A	0203	0056 0096
PRINT1	A	001	0C00	0156	0115 0217*
PRNTT	A	004	0A55	0044	0214
PRTRER	A	005	0AFE	0092	0088
PRTPCH	A	004	0A9B	0067	0046 0049 0053 0055 0107
PUNCH1	A	001	0D00	0178	0029* 0054 0103 0114
READ1	A	001	0B80	0145	0029 0050 0052 0054 0103* 0113
REDONY	A	004	0A60	0048	0211
RTNO1	A	001	0A0D	0019	0013
SECNDY	A	004	0DE0	0212	0209
SECTLT	A	002	0B58	0124	0071*
SENSE1	A	002	0DD1	0201	0044* 0045 0079* 0080 0084 0087 0104
SENSE2	A	002	0B7E	0142	0083 0084*
SENSE3	A	002	0B7A	0139	0082 0083*
SENSE4	A	002	0B76	0136	0082*
SETUPK	A	006	0DF6	0218	0164 0165* 0166* 0167*
SIOCMD	A	003	0AA3	0069	0033* 0066* 0073 0106* 0210* 0213
START	A	004	0A2F	0032	0024 0077 0105 0215 0219
TABLE	A	001	0D60	0185	0086
TESTBN	A	004	0AEA	0087	0085* 0090 0090* 0091
WIPE	A	006	0DF0	0217	0168
WIPLIN	A	001	0C80	0171	0217
XR1	C	001	0001	0205	0032* 0036* 0037 0037* 0038 0086* 0089 0089* 0092 0093 0094
XR2	C	001	0002	0206	0094* 0095

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 28JUL69 20JAN70 15NOV70
EC NO. 816444 816576 818905

PRCG ID OFOF-2
PAGE 3

IBM MAINTENANCE DIAGNOSTIC PROGRAM

FOF2 5424 MFCU SYSTEM TEST MODULE

PART NO. 2589917
PAGE 3A

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T< YC@|H E B-4 .|*A& D "" - Y ?|H*HDTG4B389 &Y <0A<Q I-CN2.72B GCF 5 & >HS-UHA0 QE UG=QQFOF20001

T< Z/B3-* &DV G7 " -HAA<HAB*MK &H 4 &X80-*H><G0B&L A= ,D<|<4L-&C)C ZUC*9 & "H2*TG1& PD HABT-FOF20002

T<-DMB6.2DC&E ? -2-DICN8.7-2-2YD UCNA.705-2YD\$OH* BF&Q(B*7C|*BG S. 0|L&AB6.2 CDVF/- JCO-A:C<FOF20003

T< ,E/2D2= DU<-Q .|CG5B3,3 "" & \$B52< &-B6<< & T&D&Y O D&H&B BGS2020 >HS *F/Q MCGUE2 *FOF20004

T.-,4C)D9*07J0A (4-0AB7Q.-0AB7Y .-0AB78(4LOBB)? B &5-+ H(4-H&C)H AC-8 I2<-F1UNDO2 (B&MA28-FOF20005

T<E&W "" ,&? "" & DG .F * "" & ; (H BCL&B81\$ /OHE1-4 "" | OH*BH? CE2 .705-+; "" B2_FJD <B &6&SDFOF20006

T<E_QC)G D Y?C D HZ&_TOH*HW07/B8 ("" 0 - X5|.4&L FD=K C(|A8>| 24C C5(PD8U E1MLD&2 .B&MA#K&FOF20007

T+>L - & P D B B C(|A8>| 24C E6|X06;I "" & H .D B C*82T18YC M5&LU420 9_XI8=| E5Q 0#&FOF20008

T+>?+0>S 6|SN-(X U5|E |2A"-." 0 D=OP:A7UG= T7B-Q H|E74C|<2-#1C" G>D>4L#AL,E;Y 0:J* 024FOF20009

T.-?|:ATXF;Q&9J? UG<|8/#/G=C1A-Y F" -1A-:D&P&P|": U"2|C5(-A6*N-1)X R5_U 82&FOF20010

T+0:EDARQW|U&DA, &(-R2)PT|J 9+. 15+) 0>LF1&PR&|E &FNWR6/Z+GE2*7J 5)X)E-HD.TH6+T9B EW90 5A<FOF20011

T(| 17XR:-YH2 &H> %E:4&H=1&,+58EE GKDVKM5|MNRRQU(| DJME6_3UD8-3 U 7 6|E2(|"00AC-U "" 4<BOYL:-FOF20012

T(| 2UCG4< &7#CG" /070CG2<="|H2;I 02GR1DCP6*XN82P DE+LS2)PGE<.U1& E6MC2KU<LMB C04 .A0MAQ-2FOF20013

T+3-L5AE051)PV -QD_&097;X_2-P9 "4<GB02LE1&-H2)G K4'LN5_-C6;.T9+P W9=TI2|G22"LS'?'- 8=M 6BDFOF20014

T+4E42XN1MCF5>L RE+&A8UCS1)|E0=| E1DCT2<XSE+|I5<P T2<XSE(|L01+LL1MC W6*XT&2PN&<.Y&(|X 05M "" =C FOF20015

T+5N6;LP42NHK41 (LU&CV_#FN9-QFE ,&F5>7Z#-G5=-"C A0&|D1*\$G2<XJ4_| M5)P6(|X58=LV9>- Y:- "" ES*FOF20016

T+6&2-.3'|P6*MT 9&A.F1*PD&<|H1*| K&DA D&T05'-E6MC C2<PC4U M5*XT&<| L9+|C2DCC4/PP6;| 1<D 1&4FOF20017

T+7.82E 0'I &A& P9(PC2DC15;PA42X DE'-J5*|H&<|H1*| K&D Q6*PA1DCC2<P C4UA &AXN5WC054A &D 1HMF0F20018

T 07|&DA & 6L4FOF20019

T.&7*0- (8 0ABDM .8*BGBWCA= D8+&D HZ< &BVP /OY?C U <B&2ICA2<-03*OH* H.0 _HK*THJ4REJD (B&*C&B0FOF20020

E""*E7*=-DC*PH\$ =*7M&F| | C F& ASC R A SO Q 23121102701 211700#UF0F20021

LAST PAGE

DATE 28JUL69 20JAN70 15NOV70
EC NO. 816444 816576 818905

PROG ID OFOF-2
PAGE 3A



T-905

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589923 PAGE 1

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
2 DECK 4
3 FF4 START X'AO0'
4 *****
5 *
6 * MASTER TIMING ANALYSIS PROGRAM
7 *
8 *****
9 * SECTION PREFACE
10 *****
11 DC XL2'FF45' PROGRAM ID AND REVISION LEVEL
12 DC XL1'00' SECTION FLAGS
13 DC XL1'00' CURRENT ROUTINE NUMBER
14 DC XL2'0' ADDRESS OF FIRST ROUTINE
15 DC AL2(RT01)
16 DC XL2'0' UNIT DEFINITION TABLE
17 DC XL3'F01000'
18 *****
19 * ROUTINE 1 PREFIX
20 *****
21 RT01 DC XL1'01' ROUTINE NUMBER
22 DC XL1'00'
23 DC XL2'FFFF'
24 RDCNTR B HALT
25 DC XL2'FFFF'
26 COW SBF FLAGS2,X'FF' TURN OFF FLAGS 10 THRU 17
27 MVC LINE1+2,BLANK(2)
28 MVC LINE2+2,BLANK(2)
29 MVI ORTAB+506,X'00'
30 MVI ANDTAB+506,X'FF'
31 SNS WORK,X'00' READ THE DATA SWITCHES
32 CLI WORK-1,X'AA' *CK FOR AND BRANCH IF LOOP ON
33 JE CKFE *RUNNING THE SAME TEST IS WANTED
34 CLI 562,X'AO' *CK FOR AND BRANCH IF
35 JNE NEXTM *NOT LOADING FROM DISK
36 SNS DA,0
37 B LOAD *LOAD
38 DC XL1'20' *FIRST
39 DA DC XL2'0' *RECORD
40 J STOP
41 NEXTM B LOAD *LOAD REST OF RECORDS
42 DC XL1'10' *ONE AT A TIME
43 STOP MVC RDFD+95,2271(96)
44 B PRINT
45 DC XL1'01'
46 DC IL1'96'
47 DC AL2(RDFD+95)
48 CLI RDFD+1,X'F1' *CK FOR AND BRANCH IF THIS IS NOT
49 JNE CARD FIRST CONTROL CARD
50 *****
51 * CONTROL CARD 1 MODIFICATION OF PROGRAM
52 *****
53 B PACK *PACK COMMANDS
54 DC IL1'32' *AND DELAYS
55 DC AL2(RDFD+35) *INTO CMND
56 DC AL2(CMND+15) *TABLE
57 MVC CMND,RDFD+49(14) MOVE CMND NAME INTO MSG
58 J NEVER GO READ ANOTHER CARD
59 CARD CLI RDFD+1,X'F2' *CK FOR AND BRANCH IF THIS IS
60 JE CARD2 *THE SECOND CONTROL CARD
61 CLI RDFD+1,X'F3' *CK FOR AND BRANCH IF THIS IS NOT
62 JNE CARD4 *THE THIRD CONTROL CARD
63 *****
64 * CONTROL CARD 3 MODIFICATION OF PROGRAM
65 *****
66 MVC LINE1,RDFD+87(86) INSERT FIRST LINE OF BIT NAMES
67 J NEVER GO READ ANOTHER CARD
68 CARD4 CLI RDFD+1,X'F4' *CK FOR AND BRANCH IF THIS IS NOT
69 JNE NEVER *THE FOURTH CONTROL CARD

DATE 25AUG69 03NOV69 10FEB70 16MARTO 14APR70 29JUN70 01OCT70 PROG ID OFF4-5
EC NO. 816485 816523 816592 816651 816678 816704 816760 PAGE 1

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589923 PAGE 1A

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
71 *****
72 * CONTROL CARD 4 MODIFICATION OF PROGRAM
73 *****
74 MVC LINE2,RDFD+87(86) INSERT SECOND LINE OF BIT NAMES
75 NEVER CLI RDFD+1,X'05'
76 JNE CARDS
77 B PRINT
78 DC XL1'16'
79 CKFE TBN FLAGS,FLAG1 *CK FOR AND BRANCH IF
80 JF CKO *NO HALT AFTER LAST CONTROL CARD
81 B HALT
82 DC XL2'FOFE'
83 CKO B LETSGO GO START THE PROGRAM
84 *****
85 * CONTROL CARD 5 MODIFICATION OF PROGRAM
86 *****
87 CARDS CLI RDFD+1,X'F5'
88 BNE NEXTM
89 B PACK
90 DC IL1'84'
91 DC AL2(RDFD+87)
92 DC AL2(LIMITS+41)
93 B NEXTM
94 *****
95 * CONTROL CARD 2 MODIFICATION OF PROGRAM
96 *****
97 CARD2 MVC MULT,RDFD+23(4)
98 MVC RAYO2+3,DATA1(2)
99 SBF FLAGS2,FLAG15
100 CLI RDFD+87,X'40' *CK FOR AND BRANCH IF
101 JE PACKIT *THIS AREA IS BLANK
102 SBN FLAGS2,FLAG11 TURN ON SYNC-SAMP WANTED
103 MVC SS,RDFD+87(2) MOVE COUNT IN FOR SYNC-SAMP
104 PACKIT B PACK *PACK
105 DC IL1'88'
106 DC AL2(RDFD+87)
107 DC AL2(DATFLD+43)
108 CLI RDFD+4,X'05' *CK FOR AND BRANCH IF THIS
109 BE LDPRNT *IS A PRINTER TAP
110 CLC RDFD+49,BLANK(7) *CK FOR AND BRANCH IF THIS
111 BNE LDDISK *IS A DISK TAP
112 LDTHM MVC LET3+1(1),DATFLD+18 LOAD I/O
113 MVC LET4+1(1),DATFLD+19 LOAD I/O
114 MVC LET5+1(1),DATFLD+20 LOAD I/O
115 CLC RDFD+75,BLANK(2) *CK FOR AND BRANCH IF
116 JE CK42 *NO THIRD SYNC
117 MVC DELAY3,RDFD+85(4) *MAKE SYNC 3 INSTRUCTION
118 MVC SYNC3+2,DATFLD+40(3) *MODIFICATIONS
119 MVC SENSE3+1(1),DATFLD+37
120 MVC WAY+3,BACK3+3(2)
121 J SETUP2
122 *
123 CK42 CLC RDFD+63,BLANK(2) *CK FOR AND BRANCH
124 JE CK411 *IF NO SECOND SYNC
125 MVC WAY+3,BACK2+3(2)
126 SETUP2 MVC DELAY2,RDFD+73(4) *MAKE SYNC 2 INSTRUCTION
127 MVC SYNC2+2,DATFLD+34(3) *MODIFICATIONS
128 MVC SENSE2+1(1),DATFLD+31
129 J PACK1
130 *
131 CK411 CLI RDFD+50,X'E3' *CK FOR SYNC ON TIO
132 JNE CK41 *AND BRANCH IF NOT
133 MVC TIOCND+1(1),DATFLD+26
134 MVC WAY+3,ATIO(2)
135 J CLEAR
136 *
137 CK41 MVC WAY+3,BACK1+3(2)
138 PACK1 MVC DELAY1,RDFD+61(4) *MAKE SYNC 1 INSTRUCTION

DATE 25AUG69 03NOV69 10FEB70 16MARTO 14APR70 29JUN70 01OCT70 PROG ID OFF4-5
EC NO. 816485 816523 816592 816651 816678 816704 816760 PAGE 1A

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0E0A 3C 10 0ED7      275      MVI      ONLY1+1,X'10'      SETUP TO PRIME MFCU
0E0E F2 87 04        276      J          INIT2
277 *
0E11 3C 97 0ED7      278      BYPASS MVI      ONLY1+1,X'97'      SETUP TO SAMPLE IMMEDIATELY
0E15 F3 F0 00        279      INIT2  SIO      X'00',X'F0'      PRIM PRIMARY
0E18 F3 F8 00        280      SIO      X'00',X'F8'      PRIM SECONDARY
0E1B 0C FE 1C85 1C86 281      LETS     MVC      ORTAB+505,ORTAB+506(255) *INITIALIZE -OR- TABLE
0E21 0C FE 1887 1888 282      MVC      ANDTAB+251,ORTAB+252(252) *TO ALL ZEROS
0E27 0C FE 1E82 1E83 283      MVC      ANDTAB+505,ANDTAB+506(255) *INITIALIZE -AND- TABLE
0E2D 0C FB 1DB4 1DB5 284      MVC      ANDTAB+251,ANDTAB+252(252) *TO ALL ONES
0E33 C2 01 1F60      285      NEXTCD  LA      CMNDS,XR1      LOAD ADDR OF CMNDS INTO XR1
0E37 0C 03 1561 1F75 286      MC      SETPRT,MULT(4)      LOAD SAMPLE TIME COUNT CONSTANT
0E3D 31 F4 1585      287      LET3    LIO      LDRD,X'F4'
0E41 3D F4 0E3E      288      CLC     LET3+1,X'F4'      *CK FOR AND BRANCH IF THIS IS NOT A
0E45 F2 01 04        289      JNE     LET4      *MFCU PRINT LIO
0E48 3C F5 0E3E      290      MVI     LET3+1,X'F5'      SETUP FOR READ LIO INSTEAD OF PRINT
0E4C 31 F5 1585      291      LET4    LIO      LDRD,X'F5'
0E50 31 F6 1585      292      LET5    LIO      LDRD,X'F6'
0E54 C1 F8 10F1      293      TIO TWO TIO      DIAG,X'F8'      BRANCH IF ERROR OR NOT READY
0E58 C1 F0 10F1      294      TIO ONE TIO      DIAG,X'F0'      BRANCH IF ERROR OR NOT READY
0E5C 4D 01 03 1EDD   295      LET2    CLC     3(2,XR1),ZERO *CK FOR AND BRANCH IF THIS IS THE
0E61 F2 81 58        296      JE      SAMP      *COMMAND TO BE SAMPLED
0E64 79 F0 00        297      TBF     0(,XR1),X'F0' *CK FOR AND BRANCH IF THIS IS NOT
0E67 F2 90 38        298      JF      NODLAY      *A TIME DELAY BETWEEN COMMANDS
0E6A 1C 01 15D9 01   299      MVC     WORK,1(2,XR1)  LOAD DELAY COUNT
0E6F C0 87 021E      300      B          UNPACK
0E73 02              301      DC      IL1'2'
0E74 15D9           302      DC      AL2(WORK)
0E75 15D5           303      DC      AL2(WORK-4)
0E76 15D5           304      DELAY7  ALC     DELAY,ONE(3)
0E78 0E 02 1EEC 1EDE 305      SZ      WCRK-4(3),D001(1)
0E7E 07 20 15D5 1596 306      BNZ     DELAY7
0E84 C0 01 0E78      307      RELOAD  L      D6579,XR2      *DELAY
0E88 35 02 159E      308      DLY1    A      FFFF,XR2      *100
0E8C 36 C2 1EDB      309      BH      DLY1      *MSEC
0E90 C0 84 0E8C      310      SLC     DELAY(3),ONE *CK FOR AND BRANCH BACK IF
0E94 0F 02 1EEC 1EDE 311      BNZ     RELOAD      *DELAY FACTOR HAS NOT GONE TO ZERO
0E9A C0 01 0E88      312      LA      2(,XR1),XR1
0E9E D2 01 02        313      B          TIO TWO
0EA1 C0 87 0E54      314 *
0EA5 1C 01 0EB7 01   315      NODLAY  MVC     XCUTE+2,1(2,XR1)  MOVE CMND IN FOR EXECUTION
0EAA 1C 01 15AE 01   316      MVC     TIME,1(2,XR1)
0EAF 0C 00 0EB6 1EB9 317      MVC     DISK-1,OPISIT(1)
0EB5 F3 00 00        318      XCUTE   SIO      0,0
0EB8 D2 01 02        319      LA      2(,XR1),XR1
0EBB C0 87 0E3D      320      B          LET3
321 *
0EB4 1C 01 0ED1 01   322      SAMP    MVC     XCUTE+2,1(2,XR1)  MOVE CMND IN FOR EXECUTION
0EC4 1C 01 15AE 01   323      MVC     TIME,1(2,XR1)
0EC9 0C 00 1EB6 1EB8 324      MVC     DISK-1,BACK(1)
0ECF F3 00 00        325      XCUTE2  SIO      0,0
0ED2 38 10 1506      326      TBN     FLAGS,FLAG3
0ED6 F2 10 08        327      ONLY1  JT      START
0ED9 3A 10 1506      328      SBN     FLAGS,FLAG3
0EDD C0 87 0E33      329      B          NEXTCD
330 *
0EE1 0C 02 1583 15CD 331      START   MVC     CHECK1,NUMBER(3)  LOAD SAMPLE COUNT
0EE7 C2 01 16C0      332      LA      DATFLD,XR1      LGAD DATA FIELD ADDRESS
0EEB C2 02 1ABC      333      LA      ORTAB,XR2
0EEF 7C 00 0A        334      MVI     10(,XR1),X'00'
0EF2 7C 00 0E        335      MVI     14(,XR1),X'00'
0EF5 06 30 150B 1596 336      AZ      MANY(4),D001(1)  ADD ONE TO CMNDS CHECKED COUNT
0EF8 C0 87 0EFF      337      WAY     B          **4      BRANCH TO FIRST SENSE REQUIRED
338 *****
339 *      SYNC ON TIO CONDITION GOING OFF
340 *****
341 TICND TIO      *,*-
342      J          WHERE

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FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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344 *****
345 *      START HERE IF 3 SYNCs
346 *****
0F06 70 00 01        347      SENSE3  SNS      1(,XR1),*-*      STORE DESIRED DATA
0F09 78 00 00        348      SYNC3   TBN     *-*(,XR1),*-*      *CK FOR AND BRANCH IF SYNC BIT IS
0F0C C0 90 0F06      349      BACK3   BF      SENSE3      *NOT IN THE CONDITION SPECIFIED
0F10 0C 03 15D9 15E5 350      MVC     WORK,DELAY3(4)  LOAD A DELAY COUNT
0F16 07 30 15D9 1596 351      SUB3    SZ      WCRK(4),D001(1)  DECREMENT THE DELAY COUNT
0F1C 0C 05 15D5 15D5 352      MVC     WCRK-4,WCRK-4(6)  DELAY 18 MACHINE CYCLES
0F22 C0 84 0F16      353      BP      SUB3      LOOP IF COUNT IS NOT 0 BUT IS PLUS
354 *****
355 *      START HERE IF 2 SYNCs
356 *****
0F26 70 00 01        357      SENSE2  SNS      1(,XR1),*-*      STORE DESIRED DATA
0F29 78 00 00        358      SYNC2   TBN     *-*(,XR1),*-*      *CK FOR AND BRANCH IF SYNC BIT IS
0F2C C0 90 0F26      359      BACK2   BF      SENSE2      *NOT IN THE CONDITION SPECIFIED
0F30 0C 03 15D9 15E1 360      MVC     WORK,DELAY2(4)  LOAD A DELAY COUNT
0F36 07 30 15D9 1596 361      SUB2    SZ      WCRK(4),D001(1)  DECREMENT THE DELAY COUNT
0F3C 0C 05 15D5 15D5 362      MVC     WCRK-4,WCRK-4(6)  DELAY 18 MACHINE CYCLES
0F42 C0 84 0F36      363      BP      SUB2      LOOP IF COUNT IS NOT 0 BUT IS PLUS
364 *****
365 *      START HERE IF 1 SYNC
366 *****
0F46 70 00 01        367      SENSE1  SNS      1(,XR1),*-*      STORE DESIRED DATA
0F49 78 00 00        368      SYNC1   TBN     *-*(,XR1),*-*      *CK FOR AND BRANCH IF SYNC BIT IS
0F4C C0 90 0F46      369      BACK1   BF      SENSE1      *NOT IN THE CONDITION SPECIFIED
0F50 C0 87 0F54      370      NOWAIT  B          **4      BR TO START SAMPLES IF NO DELAY
0F54 0C 03 15D9 15DD 371      MVC     WORK,DELAY1(4)  LOAD A DELAY COUNT
0F5A 07 30 15D5 1596 372      SUB1    SZ      WCRK(4),D001(1)  DECREMENT THE DELAY COUNT
0F60 0C 05 15D5 15D5 373      MVC     WCRK-4,WCRK-4(6)  DELAY 18 MACHINE CYCLES
0F66 C0 84 0F5A      374      BP      SUB1      LOOP IF COUNT IS NOT 0 BUT IS PLUS
0F6A C0 87 0F6E      375      WHERE   B          **4
376 *****
377 *      START SAMPLING
378 *****
379 *      SENSE EVERY 50 MICRO-SEC ONLY
380 *****
0F6E 70 00 05        381      SNS3    SNS      5(,XR1),*-*
0F71 70 00 07        382      SNS4    SNS      7(,XR1),*-*
0F74 D2 01 04        383      LA      4(,XR1),XR1
0F77 07 04 1583 1596 384      SZ      CHECK1(5),D001(5)  *DECREMENT SAMPLE COUNT AND LOOP
0F7D C0 01 0F6E      385      TAB3    BNZ     SNS3      *BACK IF IT IS NOT TO ZERO
0F81 C2 01 16C0      386      NONDD   LA      DATFLD+0,XR1  LGAD DATA FIELD ADDRESS
0F85 C2 02 1ABC      387      LA      ORTAB+0,XR2  LOAD THE ADDRESS OF THE -OR- TABLE
0F89 0C 02 1583 15CD 388      MVC     CHECK1,NUMBER(3)
0F8F C0 87 14BA      389      SAVEIT  B          SETUP1
0F93 D2 01 04        390      LA      4(,XR1),XR1  GO SAVE DATA
0F96 07 21 1583 1596 391      SZ      CHECK1(4),D001(2)
0F9C C0 01 0F8F      392      BNZ     SAVEIT
0FA0 C0 87 16CE      393      CUT2    B          ERRCR
394 *****
395 *      SENSE EVERY 100-450 MICRO-SEC
396 *****
0FA4 70 00 05        397      SNS5    SNS      5(,XR1),*-*
0FA7 70 00 07        398      SNS6    SNS      7(,XR1),*-*
0FAA 07 30 1561 1596 399      SZ      SETPRT(4),D001(1)  11 DECREMENT SAMPLE TIME COUNT BY 1
0FB0 F2 87 05        400      J          WAIT50      3
0FB3 1C 06 15D8 00   401      WAIT15  MVC     WCRK-1,0(7,XR1)  19 DELAY 19 MACHINE CYCLES
0FB8 07 20 1561 1596 402      WAIT50  SZ      SETPRT(3),D001(1)  10 DECREMENT SAMPLE TIME COUNT BY 1
0FBE C0 84 0FB3      403      BH      WAIT15      4
0FC2 D2 01 04        404      LA      4(,XR1),XR1  3
0FC5 0C 01 1561 1F75 405      MVC     SETPRT,MULT(2)  10 LOAD SAMPLE TIME COUNT
0FCB 07 30 1583 1596 406      SZ      CHECK1(4),D001(1)  11 *DECREMENT SAMPLE COUNT AND CONTINUE
0FD1 C0 01 0FA4      407      TAB5    BNZ     SNS5      4 *TO SAMPLE IF COUNT IS NOT TO ZERO
0FD5 C0 87 0F81      408      B          NOWDD

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FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

410 *****
411 * SENSE EVERY 50 MICRO-SEC WHILE SAVING THE LAST STATUS
412 *****
413 SNS1 SNS 5(XR1),*-*
414 SNS2 SNS 7(XR1),*-*
415 MVC DD1+1,10(1,XR1) *-OR- ACCUMULATED DATA INTO REGULAR
416 DD1 SBN *-*(XR1),*-* *STATUS AREA BEFORE SAVING IT
417 MVC SETPRT,MULI(4) LOAD SAMPLE TIME COUNT CONSTANT
418 AA1 SNS 13(XR1),*-* *SENSE AND -OR- ONE
419 B51 MVC CC1+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
420 CC1 SBN 14(XR1),*-* *50 MICRO-SECONDS
421 CVER3 MVC CC+1,*-*(1,XR1) MOVE BYTE OF DATA INTO MASK
422 OD SBN C1(XR2),X'00' -OR- DATA INTO ALL ZERO TABLE
423 A D509,XR2 ADD 509 TO XR2
424 AA2 SNS 13(XR1),*-* *SENSE AND -OR- ONE
425 BB2 MVC CC2+1,*-*(1,XR2) *BYTE SPECIFIED EVERY
426 CC2 SBN 14(XR1),*-* *50 MICRO-SECONDS
427 COMP3 SLC SAVEF,*-*(1,XR1) COMPLEMENT DATA
428 MVC ADD+1(1),SAVEF MOVE COMPLEMENTED DATA INTO MASK
429 J *+3 DELAY 3 MACHINE CYCLES
430 AA3 SNS 13(XR1),*-* *SENSE AND -OR- ONE
431 BB3 MVC CC3+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
432 CC3 SBN 14(XR1),*-* *50 MICRO-SECONDS
433 ADD SBF O(XR2),X'00' -AND- DATA INTO ALL ONES TABLE
434 A D508,XR2 SUBTRACT 508 FOR NEXT -OR- TABLE ADD
435 OVER33 MVC OR33+1,*-*(1,XR1) MOVE BYTE OF DATA INTO MASK
436 AA4 SNS 13(XR1),*-* *SENSE AND -OR- ONE
437 BB4 MVC CC4+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
438 CC4 SBN 14(XR1),*-* *50 MICRO-SECONDS
439 OR33 SBN O(XR2),X'00' -OR- DATA INTO ALL ZERO TABLE
440 A D509,XR2 ADD 509 TO XR2
441 COMP33 SLC SAVEF-1,*-*(1,XR1) COMPLEMENT DATA
442 AA5 SNS 13(XR1),*-* *SENSE AND -OR- ONE
443 BB5 MVC CC5+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
444 CC5 SBN 14(XR1),*-* *50 MICRO-SECONDS
445 MVC AND33+1(1),SAVEF-1 MOVE COMPLEMENTED DATA INTO MASK
446 AND33 SBF O(XR2),X'00' -AND- DATA INTO ALL ONES TABLE
447 MVI SAVEF,X'FF' RE-INITIALIZE
448 AA6 SNS 13(XR1),*-* *SENSE AND -OR- ONE
449 BB6 MVC CC6+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
450 CC6 SBN 14(XR1),*-* *50 MICRO-SECONDS
451 MVI SAVEF-1,X'FF' RE-INITIALIZE
452 A D508,XR2 SUBTRACT 508 FOR NEXT -OR- TABLE ADD
453 B *+4
454 AA7 SNS 13(XR1),*-* *SENSE AND -OR- ONE
455 BB7 MVC CC7+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
456 CC7 SBN 14(XR1),*-* *50 MICRO-SECONDS
457 SZ SETPRT(4),FIFO(2) 12 DECREMENT SAMPLE TIME COUNT BY 10
458 J FINSH1 3
459 AA8 SNS 13(XR1),*-* *SENSE AND -OR- ONE
460 BB8 MVC CC8+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
461 CC8 SBN 14(XR1),*-* *50 MICRO-SECONDS
462 SZ SETPRT(4),DOO1(3) 13 DECREMENT SAMPLE TIME COUNT BY 1
463 FINSH1 BH AAB 4
464 AA9 SNS 13(XR1),*-* *SENSE AND -OR- ONE
465 BB9 MVC CC9+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
466 CC9 SBN 14(XR1),*-* *50 MICRO-SECONDS
467 SZ CHECK1(4),DOO1(4) DECREMENT SAMPLE COUNT
468 AA10 SNS 13(XR1),*-* *SENSE AND -OR- ONE
469 BB10 MVC CC10+1,*-*(1,XR1) *BYTE SPECIFIED EVERY
470 CC10 SBN 14(XR1),*-* *50 MICRO-SECONDS
471 LA 4(XR1),XR1 9 CLEAR AREA TO -OR- 50 MICROSEC SAMP
472 MVC 14(XR1),ZERO(2) BR IF ALL SAMPLES NOT TAKEN YET
473 TAB1 BNZ SNS1 *CK FOR AND BRANCH IF PRINT
474 ERROR TBN SBYTE5,SNSW28 *ON ERROR OR NOT RDY ONLY
475 BT LETS *CK FOR AND BRANCH IF NO
476 TBN FLAGS2,FLAG11 *SYNC-SAMP IS WANTED
477 JF ALLIN

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

10DA 07 10 1CB8 1596 478 SZ SS(2),DOO1(1) DECREMENT SYNC-SAMP COUNT
10EO 00 01 0EE1 479 BNZ START LOOP IF NOT TO ZERO
10E4 07 30 1F75 1596 480 ALLIN SZ PASSES(4),DOO1(1) SUBTRACT 1 FOR NO. OF REQ SAMPLINGS
10EA F2 81 1C 481 JZ ALLOUT
10ED 00 87 0E33 482 B NEXTCD
483 *
484 DIAG TBN SBYTE5,SNSW28 *CK FOR AND GO PRINT NORMAL DATA
485 BF ALLOUT *IF PRINT ONLY ON ERROR IS OFF
486 MVC OUT2+3,AHOW(2)
487 B NGWDO
488 *
489 HOW MVC OUT2+3,AERROR(2)
490 ALLOUT MVC ORTAB+3,ORTAB+5(2) *INITIALIZE FIRST 2 BYTES OF ORTAB
491 MVC ANDTAB+3,ANDTAB+5(2) *AND ANDTAB FOR PRINTING
492 CLC MANY,ELANK(4) *BRANCH TO CAT IF DATA HAS
493 JNE CAT *BEEN TAKEN
494 B HALT
495 DC XL2'FFF9'
496 B COW
497 CAT B UNPACK
498 DC IL1'2'
499 DC AL2(TIME)
500 DC AL2(LAST)
501 MVC WORK,TWO380(2)
502 WAIT SLC WORK,ONE(2)
503 BNZ WAIT
504 SCOPE MVC TIME,DOO1-1(7) CLEAR TIME PRINTOUT
505 MVI LINECT,X'00' INITIALIZE LIMITS LINE COUNT
506 LA ORTAB+2,XR1
507 LA ANDTAB+2,XR2
508 MVC CHECK1,SAMPLE(3) LOAD SAMPLE COUNT
509 TBN FLAGS2,FLAG14 *CK FOR AND BRANCH TO PRINT GRAPH
510 BT DGNEXT *IF SELECTED AFTER TABULAR OUTPUT
511 TBN SBYTE5,SNSW29 *CK FOR AND BRANCH TO SETUP AND PR-
512 BF DGNEXT *OUT IF NOT RDY AND PRINT MODE
513 *****
514 * START HERE FOR TABULAR PRINTOUT
515 *****
516 MVC NOW+3,AMASK2(2) *
517 B PRINT
518 DC XL1'43'
519 DC IL1'79'
520 DC AL2(LAST)
521 DC XL2'FFFF'
522 MVC FIRST+5,CT11(2) *INITIALIZE TO MOVE LEFT MOST BIT
523 MVC SECD1+5,CT22(2) *NAME INTO TABULAR PRINTOUT
524 MVI DATA,X'40'
525 MVC DATA-1,DATA(87) CLEAR DATA FIELD
526 MVC EXPAND,HISTRY-13(8) MOVE IN -MICROSEC-
527 MVI EXPAND-16,X'60' MOVE IN DASH
528 *****
529 * RETURN HERE AFTER EACH LINE IS FINISHED
530 *****
531 NOWCK LA GRTAB+2,XR1
532 LA ANDTAB+2,XR2
533 J NGW
534 NEXTI LA ORTAB+1,XR1
535 LA ANDTAB+1,XR2
536 NOW TBN *-*,X'01' *CK FOR AND BRANCH IF
537 BF MOD1 *THIS BIT IS NOT TO BE CHECKED
538 B PRINT *SPACE
539 DC XL1'12' *ONLY
540 MVC CHECK1,SAMPLE(3) LOAD SAMPLE COUNT
541 MVC TIME,DOO1-1(7) CLEAR TIME PRINTOUT
542 MVC EXPAND-17,TIME(7)
543 FIRST MVC EXPAND-46(9),*- *MOVE BOTH HALVES OF BIT NAME
544 SECD1 MVC EXPAND-35(9),*- *INTO TABULAR PRINTOUT
545 SLC FIRST+5,ELEVEN(2) *DECREMENT BY 11 TO POINT AT

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and comments for the left page.

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and comments for the right page.

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

Table with columns: ERR, LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP).

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

Table with columns: ERR, LOC, OBJECT CODE, ADDR, STMT, SOURCE STATEMENT. Contains assembly code for FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP).

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589923
PAGE 7

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (NTAP)

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
159B	000B	159C	807	ELEVEN DC XL2*000B*
159D	1983	159E	808	D6579 DC IL2*6579*
159F	FFFF	15A0	809	SAVEF DC XL2*FFFF*
15A1	40404040404040	15A7	810	BLANK DC CL7*
15A8	40404040404040	15AE	811	TIME DC CL7*
15AF	4040404040	15B3	812	CHECK1 DC CL5*

813 ***** NUMBER OF SAMPLES *****				
814 * ADDRESS CONSTANTS *****				
815 *****				
15B4	1F00	15B5	816	LDRD DC AL2(RDFD)
15B6	15E5	15B7	817	ALINE1 DC AL2(LINE1-86)
15B8	163D	15B9	818	ALINE2 DC AL2(LINE2-86)
15BA	1103	15BB	819	AHOW DC AL2(AHOW)
15BC	1F70	15BD	820	AMASK1 DC AL2(MASK1)
15BE	1F71	15BF	821	AMASK2 DC AL2(MASK2)
15C0	0EFF	15C1	822	ATIO DC AL2(TIOCND)
15C2	10CB	15C3	823	AERROR DC AL2(ERROR)
15C4	0F50	15C5	824	ANOWT DC AL2(NOWAIT)
15C6	1721	15C7	825	DATA1 DC AL2(DATA+10)

826 ***** RESERVED STORAGE AREA *****				
827 * *****				
828 ***** NUMBER OF SAMPLES TO BE TAKEN *****				
15C8		15CA	829	SAMPLE DS CL3
15CD		15CB	830	NUMBER DS CL3
15CE		15D9	831	WORK DS CL12
15DA		15DD	832	DELAY1 DS CL4
15DE		15E1	833	DELAY2 DS CL4
15E2		15E5	834	DELAY3 DS CL4
15E6		163B	835	LINE1 DS CL86
163C		163D	836	DS CL2
163E		1693	837	LINE2 DS CL86
1694		1695	838	DS CL2
1696		1696	839	LIMITS EQU *
168F		840	DS CL42	
16C0		16C0	841	CATFLD EQU *
1AB8		842	DS 4CL255	
1ABC		1ABC	843	ORTAB EQU *
1CB5		844	DS 2CL253	
1CB6		1CB6	845	DS CL1
1CB7		1CB8	846	SS DS CL2
1CB9		1CB9	847	ANDTAB EQU *
1EB2		848	DS 2CL253	
1EB3		1EB3	849	DS CL1

850 ***** THIS AREA CONTAINS DATA WHICH WILL ONLY BE USED WITH A DISK TAP *****				
851 * *****				
852 *****				
1EB4		1EB4	853	BDISK EQU *
1EB7		854	DS CL4	
1EB8		1EB8	855	BACK DS CL1
1EB9		1EB9	856	CPISIT DS CL1
1EBA	OC 03 1EB7 16D8	857	LDDISK MVC DISK,CATFLD+24(4)	
1EC0	OC 01 0E53 1ED7	858	MVC LET5+3,CDISK(2)	
1EC6	OC 00 1EB9 16EA	859	MVC OPISIT,DATFLD+42(1)	
1ECC	OC 00 1EB8 16D7	860	MVC BACK,DATFLD+23(1)	
1ED2	CO 87 0B0D	861	B LDTHM	
1ED6	1ED9	1ED7	862	CDISK DC AL2(ADISK)
1ED8	1EB4	1ED9	863	ADISK DC AL2(BDISK)
1EDA	FFFF	1EDB	864	FFFF DC XL2*FFFF*
1EDC	0000	1E00	865	ZERO DC XL2*0*
1EDE	01	1E0E	866	CNE DC XL1*01*
1EDF	CO 87 0E58	867	NOT1 B TIOONE	
1EE3	FEO4	1EE4	868	D508 DC XL2*FEO4*
1EE5	FOFOF2	1EE7	869	D002 DC DL3*002*
1EE8	2380	1EE9	870	TMO380 DC XL2*2380*
1EEA	000000	1EEC	871	DELAY DC XL3*000*

872 *****				
873 *****				
874 *****				

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589923
PAGE 7A

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (NTAP)

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1F00		873	ORG	X*1F00*
1F00		1F00	874	RDFD EQU *
1F00		1F5F	875	DS CL96
1F60		1F60	876	CMNDS EQU *
1F60		1F6F	877	DS CL16
1F70		1F70	878	MASK1 DS CL1
1F71		1F71	879	MASK2 DS CL1
1F72		1F75	880	MULT DS CL4
1F76		1F79	881	PASSES DS CL4
1F7A		1F7D	882	TIMES DS CL4
1F7E	01FD	1F7F	883	D509 DC IL2*509*

884 ***** THIS AREA CONTAINS DATA WHICH WILL ONLY BE USED WITH PRINTER TAP *****				
885 * ***** MUST BE AT ADDR -1F80- *****				
886 *****				
1F80	OC 01 0E40 1FA1	887	LDRNT MVC LET3+3,FORM(2)	
1F86	CC 01 0E4F 1FA5	888	MVC LET4+3,IMAGE(2)	
1F8C	OC 01 0E53 1FA3	889	MVC LET5+3,PTAREA(2)	
1F92	OC 03 0E57 1FAD	890	MVC TIOFWO+3,PRTBSY+3(4)	
1F98	3C 0D 0DFA	891	MVI MAYBE,X*0D*	
1F9C	CO 87 0B0D	892	B LDTHM	
1FA0	1581	1FA1	893	FORM DC AL2(WASDN-3)
1FA2	1FA7	1FA3	894	PTAREA DC AL2(ATE7C)
1FA4	1FA9	1FA5	895	IMAGE DC AL2(ATEG0)
1FA6	087C	1FA7	896	ATE7C DC XL2*87C*
1FA8	0800	1FA9	897	ATE0C DC XL2*800*
1FAA	C1 E6 0E54	898	PRTBSY TIO TIOFWO,X*E6*	

899 *****				
900 * EQUATES *****				
901 *****				
0001	902	XR1	EQU	1
0002	903	XR2	EQU	2
0008	904	ARR	EQU	X*08*
020D	905	SBYTES	EQU	X*20D*
021A	906	PRINT	EQU	X*21A*
021E	907	UNPACK	EQU	X*21E*
0222	908	HALT	EQU	X*222*
0226	909	PACK	EQU	X*226*
022A	910	LOAD	EQU	X*22A*
0080	911	SNSW28	EQU	X*80*
0040	912	SNSW29	EQU	X*40*
0010	913	SNSW28	EQU	X*10*
0040	914	FLAG1	EQU	X*40*
0010	915	FLAG3	EQU	X*10*
0008	916	FLAG4	EQU	X*08*
0002	917	FLAG6	EQU	X*02*
0001	918	FLAG7	EQU	X*01*
0080	919	FLAG10	EQU	X*80*
0040	920	FLAG11	EQU	X*40*
0020	921	FLAG12	EQU	X*20*
0010	922	FLAG13	EQU	X*10*
0008	923	FLAG14	EQU	X*08*
0004	924	FLAG15	EQU	X*04*
1717	925	EXPAND	EQU	DATFLD+87
1717	926	DATA	EQU	DATFLD+87
171A	927	LINECT	EQU	DATFLC+90
FFFF	928		END	

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

CROSS-REFERENCE

Table with columns: SYMBOL, T, LEN, VALUE, DEFN, REFERENCES. Lists symbols like SNS1, START, STOP, SUB1, etc., and their cross-references.

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

Table with columns: DATE, EC NO., and dates from 25AUG69 to 01OCT70.

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

Main body of object card listings, including lines like T+Y:4M B-4, T+Z5Y H2B-D+<, etc.

Table with columns: DATE, EC NO., and dates from 25AUG69 to 01OCT70.

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+>JD ->DAMFOH* +<OOBES<N3*HAE8C B /D2~ H~ +AT NB1000H**AD C?M 2/6JO EB C U a FC < &JOFF450022

T+>(E)UN9E*OEIU NV-OEE)MN5*BDC1R 0 EB C U aWC < N6JP/A3 N6JDC M N5JPNOH&|X P- < 6:QFF450023

T+>GU *FOH*IN O CE)UN7E*OE)UNV-O EE)MN5*BDC5, /O >* E* G4-DDA0& N31000 D|S&HAE8C B /Y &KUFF450024

T+>B? OBE8<N3*B GE.,K &&GHJ03ER\$ ** &=10H*E27 AP AO*OEODNV?HGAJO FE)- A2 NQJ000H& |S*H 39<FF450025

T+>H? &&< JN/G7M G<A03ER\$ &=UOH* |-P AP A10 C=M H;- C <NQJ*5* (G |*-A: B* = .Y ##2FF450026

T+>B 6 /?M* (G &C&A: B~ AD - O DBUNY|HG G CJO DBQ ;~ +>O (-H;9AO DD * (G 2 8FF450027

T+>A3DC4 ;~ +> (-H~12 ER2 * (G &N A: B< AA)ER=# a*10~* (G &S A: B2*10 ~(-H *ZYFF450028

T+>B>G>L /1A:* (G &-OA: BGHJN /ERT2/1E0 4* AB P GY C~*KEODNV3B DDH90 4* AB3 GY C~* K&FF450029

T+>CZ 103ERRO 4 * AB* GY C_HAADO AC/#)O D|6LS -7 D 8S+D NA~H&B~* &G~NV3 AC>DGKA* 9ERQ M\$DFF450030

T+>DU2YD*OH**<3S -7 UADIC D|Y10 #OH*|-&OAC:<N00Q AF,2E0&OAG.O*?-4 CE&3NZ*HAB2BG S. =* * &FF450031

T+>E~/OYPOH*BG H N~/NOC DN6J#ZCOD N6J#;O DJ100FE8 NVLO E1,B JD=O-H *>OOBES<N2T-HE& DA< 6J8FF450032

T+>FERL/ -7 UAI VC DJ,10*OH*BFU(|ENS**00AD) MV-O AD)QXNT1 E1*<N/* OE1*CA1*PELU2QA* GO-D &QOFF450033

T+>GNF, #B /222Y* HO-DE?H&G.Y8 & OI K33BG /YKC H N31PHC QN, /QNC Q PA/O>C -O: & C - O')/UFF450034

T+>HE &AD) NX a AD)QNXG-A *H&H7- A ~H&MC-HE&S2D 4 8 JMF2Z OC -O*/O (C QPC/O>2Y*_; D A2/ :2 FF450035

T+>I.6 OHE?8NE00 FEOQN, -A *H&EP- AA~H&C*HGO-OHE?8 N) OFEOQN,2BG /Y A(1*P+~HNAT3IE&Q <A/* O:OFF450036

T+>HFC/OX2Y*5> D CAZ Q> DA2/ ZOH* K 3-HE&S2DAB: JM F2Y*P> DAOI KQ-O HE78N) OFEOQN,TY HE&Q N\$8FF450037

T+>.A4-DB8-HBAS& N~/MOA3 N31000 D J83-BE&S2U *8 /M F2Y*TC DK31G,; D aZ IC *O*JN22Y* FC * ~RMFF450038

T+>.2E74N/<BG /Y AGJ\$C- J,JF_C- J9AGUC- KM11LC- KGIH-C- KCJH(C- J:/GDC- KOJIRC- K*JH MBMFF450039

T+><7*8B DSMKI-H ACC-&E&- DAFUOH* JMWLOADE42 JGU| D KM30AD/22 JH(| D J:TOADVU2 JI1| D KIL- EKMF450040

T+>(2DAMG2/ ++/ NA00ADE2N?BGDEL /OHEET E)U*1P RO DHDLYHE&- /1E AC DMDAKMC DLJAO * D K, &FF450041

T+>+ C2DE4+ AI 2D7H+ A|*D*O+ AI SD=H+ A|7D=a+ AI 50*M+ A|8D*? JI 1| DL*TOAD*O2 JI SI D ES4FF450042

T+>|YD*Ma J|?| D L=3S E&-2DE8:-AM GC DLJAO(-D:63Q BG_? /111C YNQJN S; DC2/ (; DA2/ -|ID MKUFF450043

DATE 25AUG69 03NOV69 10FEB70 16MAR70 14APR70 29JUN70 01OCT70 PROG ID OFF4-5
EC NO. 816485 816523 816592 816651 816678 816704 816760 PAGE 11

FF45 S/3 MASTER TIMING ANALYSIS PROGRAM (MTAP)

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+>TEN*2/1*B &G 2UA+8 &|2U 68 &G 2U *22JNR2Y*FC Q NP10>C Y AN/COD MDAQ*OH*L|C> E&~ K &< G\$HFF450044

T+>J|B-HCC- PF/# ;(DN6LEBE)-B JE 00-HPH7* |HAG77 = |MAH44 A*E2Y& .L& AE1,2-->2P C K &H 2&OFF450045

T+>KR2Y*F4-DA8-H .OH*M|LMAEJUS /P PAS&N, /MO+B NA~H >Y-E&- /OHE&42 NN?*"OH*BF-EQET? /CH #/*FF450046

T+>LMF-IQEZ| /OH E N-PEO*/E<KNV3 AD6P /OHEE2BGB/D 4BAMEG M1 B: 6 /"GO NY < AL GEE \$04FF450047

T+>M|D> |12NYCQ BG>* ALW SY CQ BG72~ AD- &O E|- NY.2 C3*EE 6 /# UOH* &DA &DA &D 3, MFF450048

T+>NHEDA &DA &DA &DA O*LN1+I 82G M5*|EIDA-&|CO2|C O&|L1O'XG8%PC&+. A5(-L1MCT2)LEK4A 42D K/UFF450049

T+>OE8>| O*LNIDA &DA &DA &DA &DA &DA 92PN84CD5> N92PN84A 9(1) 92G S&<L09_PMO;I &+L P&D OH4FF450050

T+>P 9*GR2*GB42P 52|CO2|CO2|G12 H 3R3***&DA &DA &DA &DA &DA &DA &DA &DA &DA &DA &E;MO|JDCG7 ~*88 :E8FF450051

TA/PG*1C.C5 PH& =Z FF450052

T</#3C <|_15QC D +M1#PC ;>J&DC ;>ASPCH*.CJ#RG, L ""O *BGCVT=A|C O2S+ 8#FF450053

T.1= -4< &9 G: D < &9|G:MK &9LG:< < O9PG:4&C&7:OH* .CJGAG:*~D&/28 C A9-9M J&-FF450054

E***E7*=-DC*PHS =*7M&F| | C * F3 ASC R A SO Q 20070818700 9237Q=Y2FF450055

LAST PAGE

DATE 25AUG69 03NOV69 10FEB70 16MAR70 14APR70 29JUN70 01OCT70 PROG ID OFF4-5
EC NO. 816485 816523 816592 816651 816678 816704 816760 PAGE 11A



0015 CPU AND MEMORY DIAGNOSTICS: PROGRAM 01

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2 UVWXYZ START 0
          3 DECK 4
          4 *****
          5 *****
          6 *****
          7 *****
          8 *****
          9 *****
         10 *****
         11 *****
         12 *****
         13 *****
         14 *****
         15 *****
         16 *****
         17 *****
         18 *****
         19 *****
         20 *****
         21 *****
         22 *****
         23 *****
         24 *****
         25 *****
         26 *****
         27 *****
         28 *****
         29 *****
         30 *****
         31 *****
         32 *****
         33 *****
         34 *****
0000 F0 FC 03 35 HALT1 HPL X'03',X'FC'
          36 *
          37 *
          38 *
          39 *
          40 *
0003 P2 00 00 41 JUMP1 JC JUMP2,X'00'
          42 *
0006 P2 00 00 43 JUMP2 JC JUMP3,X'00'
          44 *
0009 P2 00 15 45 JUMP3 JC HALT4,X'00'
          46 *
000C P0 FC 76 47 HALT2 HPL X'76',X'FC'
          48 *
          49 *
          50 *
000F 40      000F 51 DC CL1'
0010 00      0010 52 DC XL1'00'
0011 404040 0013 53 DC CL3'
          54 *
0014 0080      0015 55 ADBOOT DC XL2'0080'
0016 4040404040404040 001F 56 DC CL10'
001E 4040      57 *
0020 00      0020 57 DC XL1'0'
          58 *
          59 *
0021 P0 FC 1B 60 HALT3 HPL X'1B',X'FC'
          61 *
          62 *
          63 *
          64 *
          65 *
0024 31 P5 0015 66 LOAD LIO ADBOOT,X'F5'
          67 *
0028 P3 P1 45 68 SIO X'45',X'P1'

```

0015 CPU AND MEMORY DIAGNOSTICS: PROGRAM 01

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

          69 *
002B P2 00 2B 70 JUMP4 JC HALT9,X'00'
          71 *
002E P0 FC 07 72 HALT7 HPL X'07',X'FC'
          73 *
          74 *
          75 *
          76 *
0031 4040404040404040 003F 77 DC CL15'
0039 4040404040404040 77 DC CL15'
0040 61      0040 78 DC XL1'61'
0041 4040404040404040 0050 79 DC CL16'
0049 4040404040404040 79 DC CL16'
          80 *
0051 P0 7C 5D 81 HALT5 HPL X'5D',X'7C'
          82 *
          83 *
          84 *
          85 *
          86 *
0054 4040      0055 87 DC CL2'
          88 *
0056 P0 7C 7D 89 HALT6 HPL X'7D',X'7C'
          90 *
          91 *
          92 *
          93 *
          94 *
0059 P0 7C 5F 95 HALT9 HPL X'5F',X'7C'
          96 *
          97 *
          98 *
          99 *
          100 *
005C P2 C7 40 101 JUMP5 JC BACDOR,X'C7'
          102 *
005F 40      005F 103 DC CL1'
          0040 104 BACDOR EQU X'40'
          FFFF 105 END

```

0015 CPU AND MEMORY DIAGNOSTICS: PROGRAM 01

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADBOOT	A	002	0015	0055	0066
BACDOR	C	001	0040	0104	0101
HALT1	A	003	0000	0035	
HALT2	A	003	000C	0047	
HALT4	A	003	0021	0060	0045
HALT5	A	003	0051	0081	
HALT6	A	003	0056	0089	
HALT7	A	003	002E	0072	
HALT9	A	003	0059	0095	0070
JUMP1	A	003	0003	0041	
JUMP2	A	003	0006	0043	0041
JUMP3	A	003	0009	0045	0043
JUMP4	A	003	002B	0070	
JUMP5	A	003	005C	0101	
LOAD	A	004	0024	0066	
UVWXYZ	A	001	C000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY =

0

0015 CPU AND MEMORY DIAGNOSTICS: PROGRAM 01

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T- :2|OCa- "a- "a- H0|166 A ED -DA EDA EDA ED "0|05<-H E-|1J-H "H"C0A4A EDA EDA "ED")JU00150001

TI A-EDA EDA/EDA "EDA EDA EDA EDA E|A0PMA 0G1'0G1 -0%) E "AK-00150002

E***E7*-DC*PHS =*7H6P| | C P% ASC B A 50 Q 21301012710 2247210400150003

----- LAST PAGE -----

0025 CPU AND MEMORY DIAGNOSTICS: PROGRAM 02

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0080          2 UVWYZ START 128
              3 DECK 4
              4 *****
              5 *****
              6 *****          PROG 2   BOOTSTRAP          *****
              7 *****
              8 *****
              9 *****          TEST   (1)   LSR INTERCHANGE          *****
             10 *****          (2)   BR OR TIO OP DECODE          *****
             11 *****
             12 *****
             13
0080 FD 6F 76 14 HLT1  HPL  X'76',X'62'          IPL OR TIO FOUND MFCU ERR/NOT RDY.
              15 *          HALT DISPLAY = 02
              16 *
              17 *
              18 *
0083 C1 F0 0080 19 TST1  TIO  HLT1,X'F0'          TEST MFCU FOR ERROR OR NOT RDY.
0087 31 F5 0097 20          LIO  ZERO,X'P5'          LOAD MFCU READ BUFFER ADDR REG.
008B F3 F1 45   21          SIO  X'45',X'F1'          READ NEXT CARD INTO LOC HEX 00-5F.
008E C1 F1 008E 22 TST2  TIO  TST2,X'F1'          WAIT HERE TILL BUSY DROPS.
0092 C0 87 0003 23          B    3          BRANCH TO LAST CARD READ.
              24
0096 0000          0097 25 ZERO  DC   XL2'0000'
0098 404040404040 009E 26          DC   CL7' '          CORE LOC 0098 THRU 009E ARE BLANK
              27
009F C0 87 0083 28 BACDOR B   TST1          GO CHECK MFCU
              29
              30
00A3 FD 6F 76 31 HALT2  HPL  X'76',X'6F'          * PROG 2, HALT 2.  ERROR HALT.
              32 *          * PREVIOUS BRANCH INSTR. FAILED.
              33 *          * FAILING CARDS A-B3S2,A-B3J2,A-B3P2
              34 *          * FAILING PUNCT (1), (2), (1)
              35          PFFF          END
    
```

0025 CPU AND MEMORY DIAGNOSTICS: PROGRAM 02

CROSS-REFERENCE

SYMBOL T LEN VALUE DEFN REFERENCES

```

BACDOR A 004 C09F 0028
HALT2  A 003 C0A7 0031
HLT1   A 003 0080 0014 0019
TST1   A 004 0083 0019 0028
TST2   A 004 008E 0022 0022
UVWXYZ A 001 0080 0002
ZERO   A 002 0097 0025 0020
    
```

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0025 CPU AND MEMORY DIAGNOSTICS: PROGRAM 02

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TIERVAP*6C~ -CG 5 Y~32MFA@EB+OH* 0 6DA 6DA 6CB G H10\$70 6HDC0250001

E***E7*=-DC*PHS =*7M6P| | C P% ASC R A SO Q 21301012710 224721.000250002

----- LAST PAGE -----

0035 CPU AND MEMORY DIAGNOSTICS: PROGRAM 03

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3          DECK 4
              4 *****
              5 *****
              6 *****          PROG 3          ( BC ) & ( JC )
              7 *****
              8 *****
              9 *****          TEST          (1) EXCLUSIVE OR
             10 *****          (2) IR SKP TRUE
             11 *****          (3) BR OR SKP TRUE
             12 *****          (4) ALU BLANK
             13 *****          (5) GT CR TO A
             14 *****          (6) LSR INTERCHANGE
             15 *****          (7) INT
             16 *****          (8) BR DECODE
             17 *****          (9) SKP DECODE
             18 *****          (10) P1
             19 *****          (11) LSR LO TO A
             20 *****          (12) AND
             21 *****          (13) BLK
             22 *****          (14) MOVE NUB (KILLS AND ZONE)
             23 *****          (15) BR OR SKIP
             24 *****          (16) PHASE B
             25 *****          (17) CLOCK 3C-5C
             26 *****          (18) CLOCK 5B
             27 *****          (19) B REG BIT 0
             28 *****          (20) BIN SUB GATE
             29 *****          (21) INTERNAL
             30 *****
             31 *****
             32 *****
             33 *****
             34 *****
             35 *****
             36 *
             37 HLT1 HPL UNITS,TENS          IPL HALT
             38 *
             39 *
             40 *
             41 *
             42 *
             43 *
             44 JMP1 JC JMP5,NOOP1          -----NO-OP (1, 2, 3, 4, 5)
             45 *
             46 JMP2 JC JMP4,NOOP2          | -----NO-OP (1, 4, 12, 13)
             47 *
             48 BR1 BC HLT4,NOOP1          | | -----NO-OP ( 6 )
             49 *
             50 BR2 RC JMP6,UNCD1          | | | -----UNCD BRANCH. (1, 6, 7, 8, 10)
             51 *
             52 JMP3 JC HLT3,UNCD1          | | | ---* (BR2) ERR, TRY UNCD JUMP.
             53 *
             54 *
             55 *
             56 *
             57 *
             58 *
             59 HLT3 HPL UNITS,TENS          | | | | --->* (JMP3) OK, A-B3P2,A-B3S2,A-B3Q2,
             60 *
             61 *
             62 *
             63 *
             64 HLT4 HPL UNITS,TENS          | | | | --->* (BR1) ERR, A-B3P2, A-B3J2
             65 *
             66 *
             67 *
             68 JMP4 JC HLT6,UNCD2          | | | | --->* (JMP2) ERR, TRY UNCD JUMP.
             69 *
    
```

```

0000 P0 6P 57
0003 P2 7P 20
0006 P2 8P 18
0009 C0 7P 011A
000D C0 8P 002F
0011 P2 8P 03
0014 P0 6P 57
0017 P0 6P 57
001A P0 6P 57
001D P2 00 03
    
```

0035 CPU AND MEMORY DIAGNOSTICS: PROGRAM 03

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0020 P0 6F 57      70 *
                   71 HALT5 HPL UNITS,TENS      * PROG 3, HALT 5. ERROR HALT.
                   72 *                   * (JMP4) FAILED TO JUMP.
                   73 *                   * A-B3H2,A-B3H2,A-B3T2 A-B3S2
                   74 *                   * ( 4, 12, 13, 17 ) ( 4 )
                   75 *
                   76 *
                   77 *
0023 P0 6F 57      78 HLT6 HPL UNITS,TENS      * (JMP4) OK,A-B3S2,A-B3J2,A-B3H2,
                   79 *                   * ( 1, 14 ) (21)
                   80 *                   * A-B3H2
                   81 *                   * (21)
                   82 *
0026 F2 FF 03      83 JMP5 JC HLT8,UNCD1      * (JMP1) ERR, TRY UNCD JUMP.
                   84 *
0029 P0 6F 57      85 HLT7 HPL UNITS,TENS      * (JMP5) ERR,A-B3H2,A-B3H2,A-B3H2,
                   86 *                   * ( 4, 5, 20 )
                   87 *
                   88 *
                   89 *
002C P0 6F 57      90 HLTR HPL UNITS,TENS      * (JMP5) OK,A-B3S2,A-B3T2,A-B3H2
                   91 *                   * ( 1,2 ),(18,19),(21)
                   92 *
                   93 *
002F F2 00 51      94 JMP6 JC BOOT,UNCD2      UNCD JUMP TO BOOTSTRAP.
0032 C0 00 0039     95 BR3 BC HLT10,UNCD2      * (JMP6) ERR, TRY UNCD BRANCH.
                   96 *
0036 P0 6F 57      97 HLT9 HPL UNITS,TENS      * (BR3) ERR,A-B3S2,A-B3J2
                   98 *                   * (21)
                   99 *
                   100 *
                   101 *
0039 P0 6F 57      102 HLT10 HPL UNITS,TENS      * (BR3)OK,A-B3J2,A-B3S2,A-B3H2,A-B3H2
                   103 * REFER TO CHART FOR HALT 10, PROG 3. ( 2 )
                   104 *
                   105 *
                   106 *
007F 107 NOOP1 EQU X'7F'      B REG BIT 0 LINE DOWN
                   108 * ALU-BLANK LINE DOWN.
                   109 *
0080 110 NOOP2 EQU X'80'      B REG BIT 0 LINE UP
                   111 * ALU-BLANK LINE UP.
                   112 *
00FF 113 UNCD1 EQU X'FF'      B REG BIT 0 LINE UP
                   114 * ALU-BLANK LINE DOWN.
                   115 *
0000 115 UNCD2 EQU X'00'      B REG BIT 0 LINE DOWN
                   117 * ALU-BLANK LINE UP.
0057 118 UNITS EQU X'57'
006F 119 TENS EQU X'6F'
0051 120 BOOT EQU X'51'
FFFF 121 END
    
```

0035 CPU AND MEMORY DIAGNOSTICS: PROGRAM 03

CROSS-REFERENCE

```

SYMBOL T LEN VALUE DEPN REFERENCES
BOOT C 001 0051 0120 0094
BR1 A 004 0009 0046
BR2 A 004 000D 0048
BR3 A 004 0032 0095
HALT2 A 003 0014 0052
HALT5 A 003 0020 0071
HLT1 A 003 0000 0037
HLT10 A 003 0039 0102 0095
HLT3 A 003 0017 0059 0050
HLT4 A 003 001A 0064 0046
HLT6 A 003 0023 0078 0068
HLT7 A 003 0029 0085
HLT8 A 003 002C 0090 0083
HLT9 A 003 0036 0097
JMP1 A 003 0003 0042
JMP2 A 003 0006 0044
JMP3 A 003 0011 0050
JMP4 A 003 001D 0068 0044
JMP5 A 003 0026 0083 0042
JMP6 A 003 002F 0094 0048
NOOP1 C 001 007F 0107 0042 0046
NOOP2 C 001 0080 0110 0044
TENS C 001 006F 0119 0037 0052 0059 0064 0071 0078 0085 0090 0097 0102
UNCD1 C 001 00FF 0113 0048 0050 0083
UNCD2 C 001 0000 0116 0068 0094 0095
UNITS C 001 0057 0118 0037 0052 0059 0064 0071 0078 0085 0090 0097 0102
UVWXYZ A 001 0000 0002
    
```

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0035 CPU AND MEMORY DIAGNOSTICS: PROGRAM 03

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@P'PaXa-@Y HOG@ PXC" B"2"0| 0\$5-0\$5-0\$5-2 | 0\$5-0\$5-2"0|0\$5- 0\$5-2 EG " 9aP' PaPa : 000350001

T #NO E9H00350002

E"'"*E7*=-DC"PHS ="/M&P| | C F% ASC R A SO Q 21301012710 224721\$*00350003

----- LAST PAGE -----

0045 CPU AND MEMORY DIAGNOSTICS: PROGRAM 04

PRR LOC OFJCT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****
              8 *****
              9 *****
             10 *****
             11 *****
             12 *****
             13 *****
             14 *****
             15 *****
             16 *****
             17 *****
             18 *****
             19 *****
             20 *****
             21 *****
             22 *****
             23 *****
             24 *****
             25 *****
             26 *****
             27 *****
             28 *****
             29 *****
             30 *
             31 HLT1 HPL UNITS,TENS IPL HALT
             32 *
             33 *
             34 *
             35 *
             36 *
             37 JMP1 JH HIOVFL,PSR LOAD CR WITH HI,BIN & DEC OVFL & FLS
             38 JMP2 JC JHP3 JUMP ON HI. (1, 2, 3, 4)
             39 * * (JHP1) ERR, TRY JUMP ON LO OR EQ.
             40 HLT2 HPL UNITS,TENS * CR NOT HI, LO OR EQ.
             41 * * FAILING CARDS A-B3T2,A-B3P2
             42 * * FAILING FUNCT (2,4)
             43 *
             44 *
             45 HLT3 HPL UNITS,TENS * CR SET TO LO OR EQ
             46 * * FAILING CARDS A-B3H2,A-B3J2
             47 * * FAILING FUNCT (1,12,14,15),(3)
             48 *
             49 *
             50 JMP3 JC JMP4,DECOV JUMP ON DECIMAL OVERFLOW.
             51 *
             52 HLT4 HPL UNITS,TENS * (JHP3) ERR.
             53 * REFER TO CHART FOR HALT 4, PROG 4.
             54 * * FAILING CARDS A-B3H2,A-B3S2,A-B3H2
             55 * * FAILING FUNCT (11,3),(5),(6)
             56 *
             57 JMP4 JC HLT8,DECOV CHECK FOR RESET OF DEC OVFLW.
             58 JMP5 JC JMP6,FALSE JUMP ON FALSE.
             59 *
             60 HLT5 HPL UNITS,TENS * (JHP5) ERR.
             61 * * FAILING CARDS A-B3H2,A-B3H2,A-B3S2
             62 * * FAILING FUNCT (10,3),(6) (16)
             63 *
             64 *
             65 JMP6 JC HLT8,FALSE CHECK FOR RESET OF FALSE.
             66 JMP7 JC JMP8,BINOV JUMP ON BINARY OVERFLOW.
             67 *
             68 HLT6 HPL UNITS,TENS * (JHP7) ERR.
             69 * * FAILING CARDS A-B3H2,A-B3H2

```

```

0000 P0 6F 1B
CC03 35 04 003A
0007 P2 R4 09
000A P2 R3 03
000D P0 6F 1B
0010 P0 6F 1B
0013 P2 R8 03
0016 P0 6F 1B
0019 P2 R8 19
001C P2 A0 03
001F P0 6F 1B
0022 P2 90 10
0025 P2 A0 03
0028 P0 6F 1B

```


IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 7

0045 CPU AND MEMORY DIAGNOSTICS: PROGRAM 04

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

70 *
71 *
72 *
002B F2 20 04 73 JMP8 JC HLT7,MBINOV
002E C0 87 0083 74 B BOOT
75 *
0032 F0 6F 1B 76 HLT7 HPL UNITS,TENS
77 *
78 *
79 *
80 *
0035 F0 6F 1B 81 HLT8 HPL UNITS,TENS
82 *
83 *
84 *
85 *
0038 38 0038 86 HIOVPL DC XL1'38'
0004 87 PSR EQU X'04'
0083 88 LOEQ EQU X'83'
0088 89 DECOV EQU X'88'
0090 90 FALSE EQU X'90'
00A0 91 BINOV EQU X'A0'
0020 92 MBINOV EQU X'20'
001B 93 UNITS EQU X'1B'
006F 94 TENS EQU X'6F'
0083 95 BOOT EQU 131
FFFF 96 END
    
```

```

* FAILING FUNCT (3), (6)
CHECK FOR RESET OF BINARY OVERFLOW.
BRANCH TO BOOTSTRAP.
* (JMP8) ERR.
* FAILING CARDS A-B3W2,A-B3J2,A-B3S2
* FAILING FUNCT (7), (9), (9)
* (JMP6) ERR.
* FAILING CARDS A-B3W2,A-B3J2,A-B3S2
* FAILING FUNCT (13,7), (8), (13)
    
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 7A

0045 CPU AND MEMORY DIAGNOSTICS: PROGRAM 04

CROSS-REFERENCE

SYMBOL	LEN	VALUE	DEPN	REFERENCES
BINOV	C	001	00A0	0091 0066
BOOT	C	001	0083	0095 0074
DECOV	C	001	0088	0089 0050 0057
FALSE	C	001	0090	0090 0058 0065
HIOVPL	A	001	0038	0086 0036
HLT1	A	003	0000	0031
HLT2	A	003	000D	0040
HLT3	A	003	0010	0045 0038
HLT4	A	003	0016	0052
HLT5	A	003	001F	0060
HLT6	A	003	0028	0068
HLT7	A	003	0032	0076 0073
HLT8	A	003	0035	0081 0057 0065
JMP1	A	003	0007	0037
JMP2	A	003	000A	0038
JMP3	A	003	0013	0050 0037
JMP4	A	003	0019	0057 0050
JMP5	A	003	001C	0058
JMP6	A	003	0022	0065 0058
JMP7	A	003	0025	0066
JMP8	A	003	0028	0073 0066
LOEQ	C	001	0083	0088 0038
MBINOV	C	001	0020	0092 0073
PSR	C	001	0004	0087 0036*
TENS	C	001	006F	0094 0031 0040 0045 0052 0060 0068 0076 0081
UNITS	C	001	001B	0093 0031 0040 0045 0052 0060 0068 0076 0081
UVWXYZ	A	001	0000	0002

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0045 CPU AND MEMORY DIAGNOSTICS: PROGRAM 04

OBJECT CARD LISTING

THE CHARACTER . INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ 82P0\$(66 +|H DB-HC "A?P"A?P"H H "A?P"RHP-HC "A ?P"R6D|H- "A?P"R -AKBG H|0\$120\$1% B /<00450001

E"MI*E7*=-DC*PHS ="7H6P| C .. FX ASC R A SO Q 21301012710 224720,000450002

----- LAST PAGE -----

0055 CPU AND MEMORY DIAGNOSTICS: PROGRAM 05

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3          DECK 4
              4 *****
              5 *****
              6 *****          PROG 5          (L) & (JC)          *****
              7 *****
              8 *****          TEST          (1) LD TO LO          *****
              9 *****          (2) ALU BLANK          *****
             10 *****          (3) CR          *****
             11 *****          (4) BIN ADD SUB NOT MOVE          *****
             12 *****          (5) EDIT ACTIVE          *****
             13 *****          (6) DEC INSTR ACTIVE          *****
             14 *****          (7) ALU BIT 3 ACTIVE          *****
             15 *****          (8) ALU BIT 4 ACTIVE          *****
             16 *****          (9) ALU BIT 2 ACTIVE          *****
             17 *****          (10) INTERNAL          *****
             18 *****
             19 *****
             20 *
0000 P0 6P 5D 21 HLT1 HPL UNITS,TENS IPL HALT
              22 *
              23 *
              24 *
              25 *
0003 35 04 0024 26 L LOH,PSR LOAD CR WITH LOW .
0007 P2 82 03 27 JMP1 JL JMP2 JUMP ON LOW.
              28 *
00CA P0 6P 5D 29 HLT2 HPL UNITS,TENS * (JMP1) ERR
              30 *          * FAILING CARDS A-B3H3, A-B3H2
              31 *          * FAILING FUNCT ( 1,2 )
              32 *
              33 *
000D P2 3D 03 34 JMP2 JC HLT3+3,NOVFHE JUMP ON NOT HI,EQ,PLS, DEC,BIN OVFLW
              35 *
0010 P0 6P 5D 36 HLT3 HPL UNITS,TENS * (JMP2) ERR
              37 *          * FAILING CARDS A-B3H2 ,A-B3J2
              38 *          * FAILING FUNCT 3,4,7,8,9), (10)
              39 *
              40 *
0013 35 04 0025 41 L EQUAL,PSR LOAD CR WITH EQUAL.
0017 P2 81 03 42 JMP3 JE JMP4 JUMP ON EQUAL.
              43 *
001A P0 6P 5D 44 HLT4 HPL UNITS,TENS * (JMP3) ERR
              45 *          * FAILING CARDS A-B3H2,A-B3H2,A-B3J2
              46 *          * FAILING FUNCT (6,1) (2) (4,5)
              47 *
              48 *
001D C0 3E 0081 49 JMP4 BC BOOT,NOVFHL BR ON NOT HI, LO,PLS, BIN,DEC OVFL
              50 *
0021 P0 6P 5D 51 HLT5 HPL UNITS,TENS * (JMP4) ERR
              52 *          * FAILING CARDS A-B3H2,A-B3J2
              53 *          * FAILING FUNCT (3), (10)
              54 *
              55 *
0024 02 0024 56 LOW DC XL1'02'
0025 01 0025 57 EQUAL DC XL1'01'
0004 58 PSR EQU X'04'
003E 59 NOVFHL EQU X'3E'
003D 60 NOVFHE EQU X'3D'
006F 61 TENS EQU X'6F'
005D 62 UNITS EQU X'5D'
0083 63 BOOT EQU 131
FFFF 64 END

```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 9

0055 CPU AND MEMORY DIAGNOSTICS: PROGRAM 05

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0063	0049
EQUAL	A	001	0025	0057	0041
HLT1	A	003	0000	0021	
HLT2	A	003	000A	0029	
HLT3	A	003	0010	0036	0034
HLT4	A	003	001A	0044	
HLT5	A	003	0021	0051	
JMP1	A	003	0007	0027	
JMP2	A	003	000D	0034	0027
JMP3	A	003	0017	0042	
JMP4	A	004	001D	0049	0042
LOW	A	001	0024	0056	0026
NOVPHE	C	001	003D	0060	0034
NOVPHL	C	001	003E	0059	0049
PSR	C	001	0004	0058	0026* 0041*
TENS	C	001	006F	0061	0021 0029 0036 0044 0051
UNITS	C	001	005D	0062	0021 0029 0036 0044 0051
UVWXYZ	A	001	0000	00Q2	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 9A

0055 CPU AND MEMORY DIAGNOSTICS: PROGRAM 05

OBJECT CARD LISTING

THE CHARACTER $\bar{}$ INDICATES A BLANK COLUMN AND THE CHARACTERS $\bar{D} \bar{E} \bar{H}$ INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TIE VAP*) (EE I|H B *A?P-H* *A?PLM D BP2-6|0557 | -B CAP*) -D PJH00550001

E***E7*=-DC*PHS =*7HEP| | C P* ASC R A SO Q 21301012710 224720#000550002

0065 CPU AND MEMORY DIAGNOSTICS: PROGRAM 06

```

ERR LOC OBJECT CODE   ADDR STMT SOURCE STATEMENT
0000                  2 UVWXYZ START 0
                      3 DECK 4
                      4 *****
                      5 *****
                      6 *****
                      7 *****
                      8 *****          TEST (1) BIN ADD SUB NOT MOVE
                      9 *****          (2) LSR LO TO A
                     10 *****          (3) BIN SUB
                     11 *****          (4) CR SET
                     12 *****          (5) DATA TO STORAGE
                     13 *****          (6) SINGLE EB CYCLE INSTR.
                     14 *****          (7) OP END GATE
                     15 *****          (8) REGISTER INSTR
                     16 *****          (9) BIN ADD GRP
                     17 *****          (10) SET OR TEST OFF
                     18 *****          (11) LOAD CR INSTR
                     19 *****          (12) RECOMP ACTIVE
                     20 *****          (13) EB CYCLE
                     21 *****          (14) ALU BLANK
                     22 *****          (15) ARITH CARRY
                     23 *****          (16) EB CYCLE
                     24 *****          (17) INTERNAL
                     25 *****
                     26 *****
                     27
                     28
                     29 *
0000 F0 6F 7D        30 HLT1  HPL  UNITS,TENS          IPL HALT
0003 35 04 C319     31 L          HIGH,PSR          LOAD PSR(CR) TO HIGH.
0007 3D 01 0039     32 COMP1 CLI  ZERO,X'01'        COMPARE 00 & 01.
000F F2 82 09       33 JL          COMP2          JUMP IF CR LOW.
000E F2 81 03       34 JE          HLT3          * JUMP IF CR EQUAL.
                     35 *
0011 F0 6F 7D        36 HLT2  HPL  UNITS,TENS          * CR HIGH
                     37 *
                     38 *
                     39 *
                     40 *
0014 F0 6F 7D        41 HLT3  HPL  UNITS,TENS          * CR EQUAL
                     42 *          REPER TO CHART FOR HALT 3, PROG 6.
                     43 *
                     44 *
                     45 *
0017 3D FF 0037     46 COMP2 CLI  XFF,X'FF'        COMPARE FF & FF.
001B F2 81 03       47 JE          COMP3          JUMP IF CR EQUAL.
                     48 *
001E F0 6F 7D        49 HLT4  HPL  UNITS,TENS          * CR NOT EQUAL.
                     50 *
                     51 *
                     52 *
                     53 *
0021 3D FF 0037     54 COMP3 CLI  XFF,X'FF'        CHECK FOR STORING(NOT REGEN)
0025 F2 81 03       55 JE          COMP4          JUMP IF XFF NOT ALTERED BY (CLI).
                     56 *
0028 F0 6F 7D        57 HLT5  HPL  UNITS,TENS          * STORAGE ALTERED BY (CLI)
                     58 *
                     59 *
                     60 *
                     61 *
002B 3D 02 0037     62 COMP4 CLI  XFF,X'02'        COMPARE FF WITH 02.
002F C0 84 0083     63 BH          BOOT          BR TO BOOTSTRAP IF CR HIGH.
                     64 *
0033 F0 6F 7D        65 HLT6  HPL  UNITS,TENS          * CR NOT HIGH
                     66 *
                     67 *
                     68 *
                     69 *

```

0065 CPU AND MEMORY DIAGNOSTICS: PROGRAM 06

```

ERR LOC OBJECT CODE   ADDR STMT SOURCE STATEMENT
0036 FFFF           70 *
0038 0000           71 HIGH  EQU  X'19'
0037 72 XFF         72 XFF   DC   XL2'FFFF'
0039 73 ZERO        73 ZERO  DC   XL2'0000'
0004 74 PSR         74 PSR   EQU  X'04'
007D 75 UNITS       75 UNITS EQU  X'7D'
006F 76 TENS        76 TENS  EQU  X'6F'
0083 77 BOOT        77 BOOT  EQU  131
FFFF 78             78      END

```

0065 CPU AND MEMORY DIAGNOSTICS: PROGRAM 05

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0077	0063
COMP1	A	004	0007	0032	
COMP2	A	004	0017	0046	0033
COMP3	A	004	0021	0054	0047
COMP4	A	004	0028	0062	0055
HIGH	C	001	0019	0071	0031
HLT1	A	003	0000	0030	
HLT2	A	003	0011	0036	
HLT3	A	003	0014	0041	0034
HLT4	A	003	001E	0049	
HLT5	A	003	0028	0057	
HLT6	A	003	0033	0065	
PSR	C	001	0004	0074	0031*
TENS	C	001	006P	0076	0030 0036 0041 0049 0057 0065
UNITS	C	001	007D	0075	0030 0036 0041 0049 0057 0065
UVWXYZ	A	001	0000	0002	
XPF	A	002	0037	0072	0046 0057 0062
ZERO	A	002	0039	0073	0032

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0065 CPU AND MEMORY DIAGNOSTICS: PROGRAM 06

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+6 90P** (EE P14 A CX2--12-610577 0574*0 70YDC0P' '1-0 ('HA "A7-L4 B C- / BC0P**"0 2 800650001

E***E7*--DC*PHS =*7H6P1 | C .. FX ASC R A SO Q 21301012710 224720.000650002

----- LAST PAGE -----

0075 CPU AND MEMORY DIAGNOSTICS: PROGRAM 07

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000	2	UVWXYZ	START 0
	3		DECK 4
	4	*****	
	5		*****
	6		*****
	7		*****
	8		*****
	9	TEST	(1) BINARY OVERFLOW
	10		(2) ALU BLANK 0
	11		(3) ALU BLANK 1
	12		(4) CONDITION REGISTER
	13		(5) TEST ON/OFF INSTR.
	14		(6) BR OR SKP ACTIVE
	15		(7) INTERNAL
	16	*****	
	17	*****	
0000	18	HLT1	HPL UNITS,TENS IPL HALT
	19	*****	
	20	*****	
	21	*****	
	22	*****	
0003	23	L	LOVFLW,PSR LOAD PSR(CR) TO LOW & DEC OVERFLOW
0007	24	CLI	X'FF,X'00' COMPARE FF & 00.
000B	25	JC	HLT2,BINOV JUMP IF BINARY OVERFLOW IS SET.
000E	26	JH	HLT2+3 JUMP IF HIGH SET.
	27	*****	
0011	28	HLT2	HPL UNITS,TENS * PSR(CR) SET WRONG.
	29	*****	
	30	*****	
	31	*****	
	32	*****	
0014	33	CLI	X'7F,X'00' COMPARE 7F & 00.
0018	34	JNH	HLT3 JUMP IF HIGH NOT SET.
001B	35	CLI	X'BF,X'00' COMPARE BF & 00.
001F	36	JH	HLT3+3 JUMP IF HIGH SET.
	37	*****	
0022	38	HLT3	HPL UNITS,TENS * PSR(CR) SET WRONG.
	39	*****	
	40	*****	
	41	*****	
	42	*****	
0025	43	CLI	X'FF,X'FF' COMPARE FF & FF.
0029	44	JF	HLT4 JUMP IF FALSE SET.
002C	45	BNOZ	HLT2 GO HALT IF DEC OVERFLOW HAS RESET.
0030	46	B	BOOT BRANCH TO BOOTSTRAP.
	47	*****	
0034	48	HLT4	HPL UNITS,TENS * PSR(CR) SET WRONG.
	49	*****	
	50	*****	
	51	*****	
	52	*****	
0037	53	DC	XL1'FF' XL1'FF'
0039	54	XFF	DC XL1'FF'
0039	55	X7F	DC XL1'7F'
003A	56	XBF	DC XL1'BF'
003B	57	LOVFLW	DC XL1'0A'
00A0	58	BINOV	EQU X'A0'
0004	59	PSR	EQU X'04'
0007	60	UNITS	EQU X'07'
006F	61	TENS	EQU X'6F'
0083	62	BOOT	EQU 131
FFFF	63		END

0075 CPU AND MEMORY DIAGNOSTICS: PROGRAM 07

CROSS-REFERENCE					
SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BINOV	C	001	00A0	0058	0025
BOOT	C	001	0083	0062	0046
HLT1	A	003	0000	0018	
HLT2	A	003	0011	0028	0025 0026 0045
HLT3	A	003	0022	0038	0034 0036
HLT4	A	003	0034	0048	0044
LOVFLW	A	001	003B	0057	0023
PSR	C	001	0004	0059	0023*
TENS	C	001	006F	0061	0018 0028 0038 0048
UNITS	C	001	0007	0060	0018 0028 0038 0048
UVWXYZ	A	001	0000	0002	
XBF	A	001	003A	0056	0035
XFF	A	001	0038	0054	0024 0043
X7F	A	001	0039	0055	0033

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 13

0075 CPU AND MEMORY DIAGNOSTICS: PROGRAM 07

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```
T+ :@P@G(EE +34 CT2Y |2/ |0S0* 9a-EG|G +7H D "A?A37" CT2U T B JOH* -"A?A" ~-@B 6HQ00750001
T #B- .....
E***Z7*~DC*PHS =*7RCP| I C PK ASC B A SO Q ..... 21301012710 2247208400750003
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 13A

0095 CPU AND MEMORY DIAGNOSTICS: PROGRAM 09

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```
0000 2 UVWXYZ START 0
3 DECK 4
4 *****
5 *****
6 *****
7 *****
8 *****
9 *****
10 *****
11 *****
12 *****
13 *****
14 *****
15 *****
16 *****
17 *****
18 *****
19 *****
20 *
21 HLT1 HPL UNITS,TENS
22 L HIGH,PSR
23 NVI PAD,X'FF'
24 JH HLT4+3
25 CLI PAD,X'01'
26 JE HLT4
27 JL HLT3
28 *
29 HLT2 HPL UNITS,TENS
30 *
31 *
32 *
33 *
34 HLT3 HPL UNITS,TENS
35 *
36 *
37 *
38 *
39 HLT4 HPL UNITS,TENS
40 *
41 *
42 *
43 *
44 CLI PAD,X'FF'
45 JE HLT5+3
46 *
47 HLT5 HPL UNITS,TENS
48 *
49 *
50 *
51 *
52 NVI PAD,X'00'
53 CLI PAD,X'FF'
54 BNE BOOT
55 *
56 HLT6 HPL UNITS,TENS
57 *
58 *
59 *
60 *
61 PAD DC XL1'00'
62 HIGH DC XL1'00'
63 PSR EQU X'04'
64 UNITS EQU X'5F'
65 TENS EQU X'6F'
66 BOOT EQU 131
67 FFFF END

IPL HALT
LOAD PSR TO HIGH.
MOVE FF TO PAD.
JUMP IF CR STILL HIGH.
* CHECK RESULT
* JUMP IF RESULT IS 01.
* JUMP IF RESULT IS 00.
* CR ERR
* FAILING CARDS A-B3M2,A-B3J2
* FAILING FUNCT (2,8), (10)
* DECODE ERR.
* FAILING CARDS A-B3J2,A-B3M2
* FAILING FUNCT (5), (10)
* NO COMP A REG.
* FAILING CARDS A-B3M2,A-B3J2,A-B3W2
* FAILING FUNCT (1), (10), (10)
CHECK RESULT.
JUMP IF RESULT IS FF.
* FF NOT STORED IN PAD.
* FAILING CARDS A-B3J2,A-B3M2,A-B3W2
* FAILING FUNCT (3,6), (9), (10)
MOVE 00 INTO PAD.
CHECK RESULT
BRANCH TO BOOTSTRAP IF RESULT NOT FF
* STORE OR BLOCK SDR ERR
* FAILING CARDS A-B3J2,A-B3M2,A-B3W2
* FAILING FUNCT (4,7), (10), (10)
```

----- LAST PAGE -----

0095 CPU AND MEMORY DIAGNOSTICS: PROGRAM 09

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0066	0054
HIGH	A	001	003R	0062	0022
HLT1	A	003	0000	0021	
HLT2	A	003	0018	0029	
HLT3	A	003	001R	0034	0027
HLT4	A	003	001E	0039	0024 0026
HLT5	A	003	002R	0047	0045
HLT6	A	003	0037	0056	
PAD	A	001	003A	0061	0023* 0025 0044 0052* 0053
PSR	C	001	0004	0063	0022*
TENS	C	001	006F	0065	0021 0029 0034 0039 0047 0056
UNITS	C	001	005F	0064	0021 0029 0034 0039 0047 0056
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0095 CPU AND MEMORY DIAGNOSTICS: PROGRAM 09

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@P'-(EE +33 " C,2/AK' E :@YD I@YHC@P'~@P'~@P' ~|~@ +?HA "A?P30 " CY"0 :0 D -"A ?PO " J:600950001

T 48*00950002

P"'"*P7*--DC"PHS ="7H6P| | C " P% ASC " R A S0 " Q 21301012710 224723#4C0950003

----- LAST PAGE -----

00A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 0A

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	UVWXYZ	START 0
		3		DECK 4
		4	*****	*****
		5	*****	*****
		6	*****	*****
		7	*****	*****
		8	*****	*****
		9	*****	*****
		10	*****	*****
		11	*****	*****
		12	*****	*****
		13	*	
0000	FO 6F 3F	14	HLT1	HPL UNITS,TEWS IPL HALT
		15	*	
		16	*	
		17	*	
		18	*	
0003	3C 00 0050	19	PPP	HVI 80,X'00' PUT HEX -00- IN LOC HEX -50-
0007	3A FF 0050	20	SZW	80,X'FF' SET ALL BITS ON AND
000B	3D FF 0050	21	CLI	80,X'FF' CHECK RESULT, LOC HEX -50- SHUD NOW
000F	F2 81 03	22	JE	HLT2+3 CONTAIN HEX -FF-
		23	*	
0012	FO 6F 3F	24	HLT2	HPL UNITS,TEWS ERR-SBO FAILED, NOT ALL BITS ON
		25	*	REFER TO CHART FOR HALT 2, PROG A.
		26	*	
		27	*	
		28	*	
0015	3C 00 0050	29	HVI	90,X'00' PUT HEX -00- IN LOC HEX -50-
0019	3A C0 0050	30	SBN	80,X'00' SET NO BITS ON AND
001D	3D C0 0050	31	CLI	80,X'00' CHECK RESULT, LOC HEX -50- SHUD NOW
0021	F2 81 03	32	JE	HLT3+3 CONTAIN HEX -00-
		33	*	
0024	FO 6F 3F	34	HLT3	HPL UNITS,TEWS ERR-SBO FAILED, NOT ALL BITS OFF
		35	*	REFER TO CHART FOR HALT 3, PROG A.
		36	*	
		37	*	
		38	*	
0027	3C FF 0050	39	HVI	80,X'FF' PUT HEX -FF- IN LOC HEX -50-
002B	3A 00 0050	40	SBN	80,X'00' SET NO BITS ON
002F	3D FF 0050	41	CLI	80,X'FF' CHECK RESULT
0033	C0 81 0083	42	BE	BOOT BR TO BOOTSTRAP IF ALL BITS ON
		43	*	
0037	FO 6F 3F	44	HLT4	HPL UNITS,TEWS *ERR-SBO FAILED, NOT ALL BITS ON
		45	*	REFER TO CHART FOR HALT 4, PROG A.
		46	*	
		47	*	
		48	*	
003F		49	UNITS	EQU X'3F'
006F		50	TEWS	EQU X'6F'
0083		51	BOOT	EQU 131
FFFF		52	END	

00A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 0A

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	00A3	0051	0042
HLT1	A	003	0000	0014	
HLT2	A	003	0012	0024	0022
HLT3	A	003	0024	0034	0032
HLT4	A	003	0037	0044	
PPP	A	004	0003	0019	
TENS	C	001	006F	0050	0014 0024 0034 0044
UNITS	C	001	003F	0049	0014 0024 0034 0044
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

00A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 0A

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96
T+E 92P2M1 MC, " E "0A&YDC0P0 "I NCY E ' A &YDC0P0"110 NCY " E "0A&0HD -"A 710 BR400A50001
E"MI+E7+~DC"PHS =*7H6P1 | C P% ASC R A SO Q 21301012710 22472*000A50002

----- LAST PAGE -----

00C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 0C

FRR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000 2 UVWXYZ START 0
3 DECK 4
4 *****
5 *****
6 *****
7 *****
8 *****
9 *****
10 *****
11 *****
12 *****
13 *****
14 *****
15 *****
16 *****
17 *****
18 *****
19 *
20 HLT1 HPL UNITS,TENS IPL HALT
21 *
22 *
23 *
24 *
25 L HIGH,PSR LOAD PSR(CR) TO HIGH.
26 MVI PAD,X'00' PUT 00 IN PAD
27 TEN PAD,X'FF' TEST FOR ALL BITS ON.
28 JC HLT3,X'AB' JUMP ON LOW, EQUAL, DEC OR BIN OVFLW
29 JF HLT3+3 JUMP ON FALSE
30 *
31 HALT2 HPL UNITS,TENS * PROG C, HALT 2. ERROR HALT.
32 * * CON. REG NOT SET TO FALSE BY TBN
33 * * FAILING CARDS A-B3H2,A-B3H2,A-B3J2
34 * * FAILING FUNCT (1), (2), (5)
35 *
36 *
37 *
38 HLT3 HPL UNITS,TENS * CR WRONG. 2572, 2571.
39 * * FAILING CARDS A-B3H2,A-B3H2
40 * * FAILING FUNCT (1), (2,8)
41 *
42 *
43 CLI PAD,X'00' CHECK FOR ANY BITS SET ON BY TBO
44 JE HLT4+3 JUMP IF PAD STILL 00
45 *
46 HLT4 HPL UNITS,TENS * TBO ALTERED PAD.
47 * * FAILING CARDS A-B3J2
48 * * FAILING FUNCT 3
49 *
50 *
51 MVI PAD,X'FF' PUT FF IN PAD.
52 TBN PAD,X'FF' TEST FOR ALL BITS ON.
53 BT BOOT BR TO BOOTSTRAP IF FALSE NOT SET
54 *
55 HLT5 HPL UNITS,TENS * CR SET TO FALSE.
56 * * FAILING CARDS A-B3H2,A-B3J2,A-B3H2
57 * * FAILING FUNCT (4), (6), (7)
58 * * FAILING CARDS A-B3H2
59 * * FAILING FUNCT (6)
60 *
61 *
62 HIGH DC XL1'00'
63 PSR EQU X'04'
64 PAD EQU X'50'
65 UNITS EQU X'6C'
66 TENS EQU X'6F'
67 BOOT EQU 131
68 PFFF END

00C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM OC

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0067	0053
HALT2	A	003	0015	0031	
HIGH	A	001	0034	0062	0025
HLT1	A	003	0000	0020	
HLT3	A	003	0018	0038	0028 0029
HLT4	A	003	0022	0046	0044
HLT5	A	003	0031	0055	
PAD	C	001	0050	0064	0026* 0027 0043 0051* 0052
PSR	C	001	0004	0063	0025*
TENS	C	001	006F	0066	0020 0031 0038 0046 0055
UNITS	C	001	006C	0065	0020 0031 0038 0046 0055
UVWXYZ	A	001	C000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

00C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM OC

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

T ( 4AP'X(EE (CO .. E R*OACEDXPAZ PBP'XBP'XIC H|H A "A?SC3" E 8"0A 80A .."A?S ..... 13Q00C50001
E***E7*=-DC*PHS ="7HEP| | C .. .. ASC .. R A SO 0 ..... 21301012710 22472*8000C50002
    
```

C
8
6
4
2
0
2
4
6
8
0
2
4
6
8
0
2
4
6
8
0

00E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 0E

ERR LOC	OBJCT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	UVWXYZ	START 0
		3	DECK	4
		4	*****	*****
		5	*****	*****
		6	*****	*****
		7	*****	*****
		8	*****	*****
		9	*****	*****
		10	*****	*****
		11	*****	*****
		12	*****	*****
		13	*	
0000	P0 6F 7C	14	HLT1	HPL UNITS,TENS IPL HALT
		15	*	
		16	*	
		17	*	
		18	*	
0003	3C FE 0050	19	HVI	PAD,X'FE'
0007	39 01 0050	20	TEN	PAD,X'01'
000B	F2 10 25	21	JT	HLT2
000E	3C FD 0050	22	HVI	PAD,X'FD'
0012	38 02 0050	23	TBN	PAD,X'02'
0016	F2 10 1A	24	JT	HLT2
0019	3C FB 0050	25	HVI	PAD,X'FB'
001D	38 04 0050	26	TBN	PAD,X'04'
0021	F2 10 0F	27	JT	HLT2
0024	3C F7 0050	28	HVI	PAD,X'F7'
0028	38 08 0050	29	TBN	PAD,X'08'
002C	F2 10 04	30	JT	HLT2
002F	C0 87 0083	31	B	BOOT
		32	*	
0033	P0 6F 7C	33	HLT2	HPL UNITS,TENS
		34	*	
		35	*	
		36	*	
		37	*	
		38	PAD	EQU X'50'
		39	UNITS	EQU X'7C'
		40	TENS	EQU X'6F'
		41	BOOT	EQU 131
		42	END	

00E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 0E

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0041	0031
HLT1	A	003	0000	0014	
HLT2	A	003	0033	0033	0021 0024 0027 0030
PAD	C	001	0050	0038	0019* 0020 0022* 0023 0025* 0026 0028* 0029
TENS	C	001	006F	0040	0014 0033
UNITS	C	001	007C	0039	0014 0033
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

00F5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 02

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E N INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T(6 50P'0118 NC- A EC2DEN0*6AG+ R H1H0PT30 E BA A 60/111* NC-H EC 2D L /0BC0P'0 *2600E50001

P'001*E7*=-DC*PHS =*7H6P1 | C P% ASC R A SO Q 21301012710 224720#000E50002

00F5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 02

ERP LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000	2	UVWXYZ	START	0	
	3		DECK	4	
	4	*****			
	5	*****			
	6	*****			
	7	*****			
	8	*****			
	9	TEST	(1)	ALU	(RIPPLE BITS)
	10	*****			
	11	*****			
0000	13	HLT1	HPL	UNITS,TENS	IPL HALT
	14	*			
	15	*			
	16	*			
	17	*			
0003	3C	EF	0050	HVI	PAD,X'EF'
0007	38	10	0050	TBN	PAD,X'10'
0008	F2	10	25	JT	HLT2
000F	3C	DF	0050	HVI	PAD,X'DF'
0012	38	20	0050	TBN	PAD,Y'20'
0016	F2	10	1A	JT	HLT2
0019	3C	BF	0050	HVI	PAD,X'BF'
001D	38	40	0050	TBN	PAD,X'40'
0021	F2	10	0F	JT	HLT2
0024	3C	7F	0050	HVI	PAD,X'7F'
0028	38	80	0050	TBN	PAD,X'80'
002C	F2	10	04	JT	HLT2
002F	C0	87	0083	B	BOOT
	31	*			
0033	F0	6F	3C	HLT2	HPL UNITS,TENS
	33	*			
	34	*			
	35	*			
	36	*			
0050	37	PAD	EQU	X'50'	
003C	38	UNITS	EQU	X'3C'	
006F	39	TENS	EQU	X'6F'	
0083	40	BOOT	EQU	131	
FFFF	41	END			

SET ALL BITS ON EXCEPT BIT 3.
TEST FOR BIT 3 ON.
JUMP IF TEST FALSE LATCH NOT SET.
SET ALL BITS ON EXCEPT BIT 2.
TEST FOR BIT 2 ON.
JUMP IF TEST FALSE LATCH NOT SET.
SET ALL BITS ON EXCEPT BIT 1.
TEST FOR BIT 1 ON.
JUMP IF TEST FALSE LATCH NOT SET.
SET ALL BITS ON EXCEPT BIT 0.
TEST FOR BIT 0 ON.
JUMP IF TEST FALSE LATCH NOT SET.
BRANCH TO BOOTSTRAP

* TEST FALSE NOT SET.
* FAILING CARDS A-B3H2
* FAILING PUNCT 1

----- LAST PAGE -----

00F5 CPU AND MEMORY DIAGNOSTICS: PROGRAM OF

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DPFN	REFERENCES
BOOT	C	001	00R3	C040	0030
HLT1	A	003	C000	0013	
HLT2	A	003	C033	C032	0020 0023 0026 0029
PAD	C	001	0050	0037	0018* 0019 0021* 0022 0024* 0025 0027* 0028
TENS	C	001	006F	0039	0013 0032
UNITS	C	001	003C	0038	0013 0032
UVWXYZ	A	001	C000	C002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

00F5 CPU AND MEMORY DIAGNOSTICS: PROGRAM OF

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T(6 52P00)1+2 MC- E EC2DEPH00AE+B M|MCPT2" E 8E A &0/ |IG0 MCS EC 2D L /0BC0P00 12H00P50001

E***E7*=-DC*PHS =*7M0P| C FX ASC R A 50 21301012710 224720.000P50002

0105 CPU AND MEMORY DIAGNOSTICS: PROGRAM 10

FR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	UVWXYZ	START 0
		3		DECK 4
		4	*****	
		5	*****	*****
		6	*****	*****
		7	*****	*****
		8	*****	*****
		9	*****	*****
		10	*****	*****
		11	*****	*****
		12	*****	*****
		13	*****	
		14	*	
0000	F0 03 6F	15	HLT1	HPL UNITS,TENS IPL HALT
		16	*	
		17	*	
		18	*	
		19	*	
0003	3C FF 0050	20	MVI	PAD,X'FF'
0007	3F FF 0050	21	SET1	SBP PAD,X'FF'
000B	39 FF 0050	22	TST1	TBF PAD,X'FF'
00CF	F2 10 0D	23	JT	HLT3+3
0012	3D FF 0050	24	CLI	PAD,X'FF'
0016	F2 81 03	25	JE	HLT3
		26	*	
0019	F0 03 6F	27	HLT2	HPL UNITS,TENS
		28	*	
		29	*	
		30	*	
		31	*	
		32	*	
		33	*	
001C	F0 03 6F	34	HLT3	HPL UNITS,TENS
		35	*	
		36	*	
		37	*	
		38	*	
001F	3D 00 0050	39	CLI	PAD,X'00'
0023	F2 81 03	40	JE	HLT4+3
		41	*	
0026	F0 03 6F	42	HLT4	HPL UNITS,TENS
		43	*	
		44	*	
		45	*	
		46	*	
		47	*	
		48	*	
0029	3C 00 0050	49	MVI	PAD,X'00'
002D	3B 00 0050	50	SET2	SBP PAD,X'00'
0031	39 00 0050	51	TST2	TBF PAD,X'00'
0035	C0 10 0083	52	BT	BOOT
		53	*	
0039	F0 03 6F	54	HLT5	HPL UNITS,TENS
		55	*	
		56	*	
		57	*	
		58	*	
0050		59	PAD	EQU X'50'
006F		60	UNITS	EQU X'6F'
0003		61	TENS	EQU X'03'
0083		62	BOOT	EQU 131
FFFF		63	END	

0105 CPU AND MEMORY DIAGNOSTICS: PROGRAM 10

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0062	0052
HLT1	A	003	0000	0015	
HLT2	A	003	0019	0027	
HLT3	A	003	001C	0034	0023 0025
HLT4	A	003	0026	0042	0040
HLT5	A	003	0039	0054	
PAD	C	001	0050	0059	0020* 0021* 0022 0024 0039 0049* 0050* 0051
SET1	A	004	0007	0021	
SET2	A	004	002D	0050	
TENS	C	001	0003	0061	0015 0027 0034 0042 0054
TST1	A	004	000B	0022	
TST2	A	004	0031	0051	
UNITS	C	001	006F	0060	0015 0027 0034 0042 0054
UVWXYZ	A	001	0000	0002	

CROSS-REFERENCE

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0105 CPU AND MEMORY DIAGNOSTICS: PROGRAM 10

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@ (?|)@ MC? " E 9*0A6@/ (1-@ M|H@ " CS" CS34 .. EC2-@10 6@@ A @+0 HCU EC D B C@ < 3@<01050001

T *#0 EA401050002

E**+E7*=-DC*PH\$ =*7H6P| I C P% ASC R A SO Q 21301012710 224721,001050003

0115 CPU AND MEMORY DIAGNOSTICS: PROGRAM 11

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000	2	UVWXYZ	START 0	
	3		DECK 4	
	4	*****		
	5	*****		
	6	*****		
	7	*****		
	8	*****		
	9	*****		
	10	*****		
	11	*****		
	12	*****		
	13	*****		
	14	*****		
	15	*****		
	16	*****		
	17	HLT1	HPL	UNITS,TENS
	18			IPL HALT
	19			
	20			
	21			
	22	L	X0110,XR1	LOAD XR1 WITH HEX -0110-
	23	L	X2020,XR2	LOAD XR2 WITH HEX -2020-
	24	L	X4004,PSR	LOAD PSR WITH HEX -4004-
	25	L	X8080,ARR	LOAD ARR WITH HEX -8080-
	26	HVI	XR1LO,X'0P'	SET XR1 SAVE AREA TO
	27	HVI	XR1HI,X'PP'	HEX -PPPP-
	28	ST	XR1LO,XR1	STORE XR1
	29	ST	XR2LO,XR2	STORE XR2
	30	ST	PSRLO,PSR	STORE PSR
	31	ST	ARRLO,ARR	STORE ARR
	32	B	BOOT	BRANCH TO BOOTSTRAP.
	33			
	34	DC	XL2'0110'	XR1 DATA
	35	DC	XL2'2020'	XR2 DATA
	36	DC	XL2'4004'	PSR DATA
	37	DC	XL2'8080'	ARR DATA
	38			
	39	XR1	EQU 1	
	40	XR2	EQU 2	
	41	PSR	EQU 4	
	42	ARR	EQU 8	
	43	XR1LO	EQU X'0100'	
	44	XR1HI	EQU X'00FF'	
	45	XR2LO	EQU X'0102'	
	46	PSRLO	EQU X'0104'	
	47	ARRLO	EQU X'0106'	
	48	UNITS	EQU X'03'	
	49	TENS	EQU X'03'	
	50	BOOT	EQU 131	
	51		END	

----- LAST PAGE -----

0115 CPU AND MEMORY DIAGNOSTICS: PROGRAM 11

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ARR	C	001	0008	0042	0025* 0031
ARRLO	C	001	0106	0047	0031*
BOOT	C	001	0083	0050	0032
HLT1	A	003	0000	0017	
PSR	C	001	0004	0041	0024* 0030
PSRLO	C	001	0104	0046	0030*
TENS	C	001	0003	0049	0017
UNITS	C	001	0003	0048	0017
UVWXYZ	A	001	0000	0002	
XR1	C	001	0001	0039	0022* 0028
XR1HI	C	001	00FF	0044	0027*
XR1LO	C	001	0100	0043	0026* 0028*
XR2	C	001	0002	0040	0023* 0029
XR2LO	C	001	0102	0045	0029*
X0110	A	002	0030	0034	0022
X2020	A	002	0032	0035	0023
X4004	A	002	0034	0036	0024
X8080	A	002	0036	0037	0025

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0115 CPU AND MEMORY DIAGNOSTICS: PROGRAM 11

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T(- 62 <C(ED <CH B CH5A 4(6- (TO | E 3*OC*(DA CE B SR4A DD(-AA\$B G H<ADB -E K - 0/001150001

E***P7**--DC*PH\$ =*7H6F1 | C P% ASC R A SO Q 21301012710 224721#401150002

2
3
4
5
6
7
8
9
0

0125 CPU AND MEMORY DIAGNOSTICS: PROGRAM 12

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWITZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****          PROG 12
              8 *****          (L, ST) LOAD & STORE REGISTER
              9 *****          TEST
              10 *****          (1) LSR LOW
              11 *****          (2) BIN ADD/SUB GRP
              12 *****          (3) STORE DATA
              13 *****          (4) INHIBIT SDR TRANSFER
              14 *****          (5) ARRAY LOW
              15 *****          (6) ARRAY HIGH
              16 *****          (7) FIRST EB CYCLE
              17 *****          (8) WRITE HIGH
              18 *****          (9) LSR HIGH TO A REGISTER
              19 *****          (10) ZONE/NUM INTRCHG
              20 *****          (11) SINGLE EB INSTR
              21 *****          (12) 2 ADDRESS FORMAT
              22 *****          (13) CLK 5-6
              23 *****          (14) INTERNAL
              24 *****          NOTE: PROGRAMS 11 AND 12 SHOULD BE RUN TOGETHER
              25 *****
              26 *****
              27 *
0000 P0 03 76 28 HLT1 HPL UNITS,TENS          IPL HALT
              29 *
              30 *
              31 *
              32 *
0003 3D 04 0104 33 TST1 CLI PSRLO,X'04'          CHECK PSRLOW FOR HIGH CONDITION
0007 P2 01 07   34 JNE HLT2          JUMP IF PSRLOW NOT HIGH
000A 3D 10 0100 35 TST2 CLI XR1LO,X'10'          CHECK LOAD/STORE OF XR1 LOWER BYTE.
000E P2 01 03   36 JE TST3          JUMP IF XR1LO EQUALS HEX -10-.
0011 P0 03 76   37 HLT2 HPL UNITS,TENS          * FAILING CARDS A-B3H2,A-B3J2,A-B3C2
              38 *          * FAILING FUNCT (1,2) (1,2,3,4,12) (5)
              39 *          * FAILING CARDS A-B3P2
              40 *          * FAILING FUNCT (14)
              41 *
              42 *
              43 *
0014 3D 01 00FF 44 TST3 CLI XR1HI,X'01'          CHECK LOAD/STORE OF XR1 UPPER BYTE.
0018 P2 01 0A   45 JE TST5          JUMP IF XR1HI EQUAL HEX -01-.
001B 3D 00 00FF 46 TST4 CLI XR1HI,X'00'
001F P2 01 14   47 JE HLT5
0022 P0 03 76   48 HLT3 HPL UNITS,TENS          * FAILING CARDS A-B3B2,A-B3J2,A-B3H2
              49 *          * FAILING FUNCT (6), (10,11), (10)
              50 *          * FAILING CARDS A-B3S2,A-B3H2,A-B3P2
              51 *          * FAILING FUNCT (11), (13), (8)
              52 *
              53 *
              54 *
0025 3D 20 0102 55 TST5 CLI XR2LO,X'20'          CHECK LOAD/STORE OF XR2 LOWER BYTE.
0029 P2 01 07   56 JNE HLT4          JUMP IF XR2LO NOT EQUAL HEX -20-.
002C 3D 80 0106 57 TST6 CLI ARRLO,X'80'          CHECK LOAD/STORE OF ARR LOWER BYTE.
0030 P2 01 54   58 JE BOOT          JUMP IF ARRLO EQUAL HEX -80-.
0033 P0 03 76   59 HLT4 HPL UNITS,TENS          * FAILING CARDS A-B3P2
              60 *          * FAILING FUNCT (14)
              61 *
              62 *
              63 *
0036 P0 03 76   64 HLT5 HPL UNITS,TENS          * FAILING CARDS A-B3P2,A-B3T2,A-B3H2
              65 *          * FAILING FUNCT (8), (7,8,9), (9)
              66 *
              67 *          REFER TO CHART FOR HALT 5, PROG 12.
              68 *
              69 *
    
```

0125 CPU AND MEMORY DIAGNOSTICS: PROGRAM 12

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

00FF 70 XR1HI EQU X'00FF'
0100 71 XR1LO EQU X'0100'
0102 72 XR2LO EQU X'0102'
0104 73 PSRLO EQU X'0104'
0106 74 ARRLO EQU X'0106'
0076 75 UNITS EQU X'76'
0003 76 TENS EQU X'03'
0054 77 BOOT EQU X'54'
FFFF 78 END
    
```

0125 CPU AND MEMORY DIAGNOSTICS: PROGRAM 12

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
APPLO	C	001	0106	0074	0057
BOOT	C	001	0054	0077	0058
HLT1	A	003	0000	0028	
HLT2	A	003	0011	0037	0034
HLT3	A	003	0022	0048	
HLT4	A	003	0033	0059	0056
HLT5	A	003	0036	0064	0047
ESRLO	C	001	0104	0073	0033
TENS	C	001	0003	0076	0028 0037 0048 0059 0064
TST1	A	004	0003	0033	
TST2	A	004	000A	0035	
TST3	A	004	0014	0044	0036
TST4	A	004	001B	0046	
TST5	A	004	0025	0055	0045
TST6	A	004	002C	0057	
UNITS	C	001	0076	0075	0028 0037 0048 0059 0064
UVWXYZ	A	001	0000	0002	
IR1HI	C	001	00FF	0070	0044 0046
IR1LO	C	001	0100	0071	0035
IR2LO	C	001	0102	0072	0055

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0125 CPU AND MEMORY DIAGNOSTICS: PROGRAM 12

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T* 80 (6188AAIH AA34E 8C2-610 70 ' 8C*BYDR|E "H AE| C)T4- 8.2 E* -- DP0YEN0 (68 (6 0-Y01250001

E"HI*P7*=-DC*PH\$ =*7H&P| | C P% ASC R A SO Q 21301012710 224721.401250002

----- LAST PAGE -----

0135 CPU AND MEMORY DIAGNOSTICS: PROGRAM 13

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****          PROG 13
              8 *****          (L, ST, A) LOAD, STORE & ADD REGISTER
              9 *****          TEST (1) AR
             10 *****          (2) BAR
             11 *****          (3) LSR SELECT
             12 *****
             13 *****
             14 *
0000 P0 03 57 15 HLT1 HPL UNITS,TENS IPL HALT
             16 *
             17 *
             18 *
             19 *
0003 35 01 0030 20 L XAA55,X'01' LOAD XR1 WITH HEX -AA55-
             21
0007 35 02 0031 22 L X55AA,X'02' LOAD XR2 WITH HEX -55AA-
             23
0008 34 03 0051 24 ST ALLREG,X'03' STORE XR1 & XR2 IN LOC - 50 & 51-
             25
000F 3D FF 0050 26 CLI ALLREG-1,X'FF' CHECK FOR ORING OF REGS.
0013 F2 81 03 27 JE HLT2+3 JUMP IF OK.
             28 *
0016 P0 03 57 29 HLT2 HPL UNITS,TENS * FAILING CARDS A-B3P2
             30 * * FAILING FUNCT 3
             31 *
             32 *
             33 *
0019 35 0F 0033 34 L XFF,X'0F' LOAD PSR, AR, XR1 & XR2 WITH -FFFF-
001D 36 01 0035 35 A ONE,XR1 ADD HEX -0001- TO XR1.
0021 F2 20 08 36 JNOL HLT3 CHECK FOR BIN. OVFLOW COND.
0024 36 02 0035 37 A ONE,XR2 ADD HEX -0001- TO XR2.
0028 C0 A0 0083 38 BOL BOOT CHECK FOR BIN. OVFLOW COND.
             39 *
002C P0 03 57 40 HLT3 HPL UNITS,TENS * BINARY OVERFLOW NOT SET
             41 * * FAILING CARDS A-B3J2,
             42 * * FAILING FUNCT (1,2)
             43 *
             44 *
002F AA55 0030 45 XAA55 DC XL2'AA55'
0031 AA 0031 46 X55AA DC XL1'AA'
0032 FFFF 0033 47 XFF DC XL2'FFFF'
0034 0C01 0035 48 ONE DC XL2'0001'
             0001 49 XR1 EQU 1
             0002 50 XR2 EQU 2
             0051 51 ALLREG EQU X'51'
             0057 52 UNITS EQU X'57'
             0003 53 TENS EQU X'03'
             0083 54 BOOT EQU 131
             FFFF 55 END
    
```

0135 CPU AND MEMORY DIAGNOSTICS: PROGRAM 13

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
ALLREG	C	001	0051	0051	0024* 0026
BOOT	C	001	0083	0054	0038
HLT1	A	003	0000	0015	
HLT2	A	003	0016	0029	0027
HLT3	A	003	002C	0040	0036
ONE	A	002	0035	0048	0035 0037
TENS	C	001	0003	0053	0015 0029 0040
UNITS	C	001	0057	0052	0015 0029 0040
UVWXYZ	A	001	0000	0002	
XAA55	A	002	0030	0045	0020
XFF	A	002	0033	0047	0034
XR1	C	001	0001	0049	0035*
XR2	C	001	0002	0050	0037*
X55AA	A	001	0031	0046	0022

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0135 CPU AND MEMORY DIAGNOSTICS: PROGRAM 13

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E F INDICATE DECIMIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T (C 50 (P (80 <CH B CD4 0AJ1 -> N)H A * CH3R) CK6 6 505 H1 -R (*B- 8) 0 5;00E, *0 A :2601350001

D * * * * * 21301012710 2247218401350002

LAST PAGE

0145 CPU AND MEMORY DIAGNOSTICS: PROGRAM 14

ERR LOC OBJCT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 OVERTZ START 0
              1          DECK 4
              4 *****
              5 *****
              6 *****
              7 *****
              8 *****
              9 *****
             10 *****
             11 *****
             12 *****
             13 *****
             14 *****
             15 *****
             16 HALT1 HPL UNITS,TENS          PROC 14, HALT 1. IPL HALT.
             17 *
             18 *
             19 *
             20 *
             21 *****
             22          L          ZEROES,X'07'          SET IR1,IR2 & PSR TO ALL ZEROES
             23 *****
             24 LOAD1 LA          HALT4,IR1          LOAD IR1 WITH -0036-
             25 *****
             26          ST          PAD1,IR2          STORE IR2 IN LOC -0050 & 0051-.
             27 *****
             28 LOAD2 LA          X'FFFF',IR2          LOAD IR2 WITH -FFFF-.
             29 *****
             30          ST          PAD2,IR1          STORE IR1 IN LOC -0052 & 0053-.
             31          ST          PAD3,IR2          STORE IR2 IN LOC -0054 & 0055-.
             32 *****
             33          CLI          PAD3-1,X'00'          GO HALT IF IR2 WAS NOT SELECTED
             34          JE          HALT3          BY LOAD2.
             35 *****
             36          CLI          PAD2,X'36'          GO HALT IF IR1 NOT SELECTED BY LOAD1
             37          JNE          HALT2          OR IF IR1 WAS SELECTED BY LOAD2.
             38 *****
             39          CLI          PAD1-1,X'00'          GO HALT IF IR2 WAS SELECTED
             40          JE          BOOT          BY LOAD1.
             41 *****
             42 HALT2 HPL UNITS,TENS          * PROG 14, HALT 2. ERROR HALT.
             43 *
             44 *
             45 *
             46 *
             47 *****
             48 HALT3 HPL UNITS,TENS          * PROG 14, HALT 3. ERROR HALT.
             49 *
             50 *
             51 *
             52 *
             53 *****
             54 HALT4 HPL UNITS,TENS          * PROG 14, HALT 4. ERROR HALT.
             55 *
             56 *
             57 *
             58 *
             59 *****
             60          DC          XL2'0000'          DATA USED TO SET IR1, IR2 & PSR.
             61          EQU          X'51'
             62          EQU          X'53'
             63          EQU          X'55'
             64          EQU          1
             65          EQU          2
             66          EQU          X'1B'
             67          EQU          X'03'
             68          EQU          X'53'
             69          END
0039 0000          003A 60 ZEROES DC          XL2'0000'
0051 61 PAD1 EQU          X'51'
0053 62 PAD2 EQU          X'53'
0055 63 PAD3 EQU          X'55'
0001 64 XR1 EQU          1
0002 65 XR2 EQU          2
001B 66 UNITS EQU          X'1B'
0003 67 TENS EQU          X'03'
0053 68 BOOT EQU          X'53'
FFFF 69          END

```

0145 CPU AND MEMORY DIAGNOSTICS: PROGRAM 14

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0053	0068	0040
HALT1	A	003	0000	0016	
HALT2	A	003	0030	0042	0037
HALT3	A	003	0033	0048	0034
HALT4	A	003	0036	0054	0024
LOAD1	A	004	0007	0024	
LOAD2	A	004	0007	0028	
PAD1	C	001	0051	0061	0026* 0039
PAD2	C	001	0053	0062	0030* 0036
PAD3	C	001	0055	0063	0031* 0033
TENS	C	001	0003	0067	0016 0042 0048 0054
UNITS	C	001	0018	0066	0016 0042 0048 0054
UNWITZ	A	001	0000	0002	
XR1	C	001	0001	0064	0024* 0030
XR2	C	001	0002	0065	0026 0028* 0031
ZEROS	A	002	003A	0060	0022

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0145 CPU AND MEMORY DIAGNOSTICS: PROGRAM 14

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E S INDICATE DECIMIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T-- :B <S (S* +H A CQ4 -A30- .**3E A 2C4 -AN1C N1H ADL46 E12 2** A 40TELO <32 <32 < S **** 9J*01450001

P****E7*-DC*PNS =*7HGF1 | C ** PK ASC ** R A 50 Q 21301012710 224720,401450002

----- LAST PAGE -----

0155 CPU AND MEMORY DIAGNOSTICS: PROGRAM 15

ERP LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UNKNTZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****
              8 *****
              9 *****
             10 *****
             11 *****
             12 *****
             13 *****
             14 *****
             15 *****
             16 *****
             17 *****
0000 F0 03 5D 18 HALT1 HPL UNITS,TENS          PROG 15, HALT 1. IPL HALT.
              19 *
              20 *
              21 *
              22 *
              23 *
0003 3C A5 0050 24 HVI PAD,X'A5'          SET PAD (LOC 0050) TO -A5-.
              25 *****
0007 08 01 0050 0022 26 MOVBNH HNH PAD,X96          MOVE NUMERIC -96- TO NUMERIC OF PAD
              27 *****
000D 3D 03 0050 0011 F2 01 03 28 CLI PAD,X'03'          GO TO HALT2 IF RESULT
              29 JNE HALT2+3          WAS -03-.
              30 *****
0014 F0 03 5D 31 HALT2 HPL UNITS,TENS          * PROG 15, HALT 2. ERROR HALT.
              32 *          * FAILING CARD# A-B3P2
              33 *          * FAILING FUNCT 4
              34 *
              35 *
              36 *
0017 3E A0 0050 001B F2 01 03 37 CLI PAD,X'A0'          GO TO HALT3 IF RESULT
              38 JNE HALT3+3          WAS -A0-.
              39 *****
001E F0 03 5D 40 HALT3 HPL UNITS,TENS          * PROG 15, HALT 3. ERROR HALT.
              41 *          * FAILING CARD# A-B3N2
              42 *          * FAILING FUNCT 3
              43 *
              44 *
              45 *
0021 3D 96 0050 0025 F2 81 07 46 CLI PAD,X'96'          GO TO HALT4 IF RESULT
              47 JE HALT4          WAS -96-.
              48 *****
0028 3D A5 0050 002C F2 01 03 49 CLI PAD,X'A5'          GO TO HALT4 IF RESULT
              50 JNE HALT4+3          WAS -A5-.
              51 *****
002F F0 03 5D 52 HALT4 HPL UNITS,TENS          * PROG 15, HALT4. ERROR HALT.
              53 *          * FAILING CARD# A-B3J2,A-B3H2
              54 *          * FAILING FUNCT (1,2), (6)
              55 *
              56 *
              57 *
0032 3D A9 0050 0036 F2 01 4A 58 CLI PAD,X'A9'          GO TO HALT5 IF RESULT
              59 JNE BOOT          WAS -A9-.
              60 *****
0039 F0 03 5D 61 HALT5 HPL UNITS,TENS          * PROG 15, HALT 5. ERROR HALT.
              62 *          * FAILING CARD# A-B3J2
              63 *          * FAILING FUNCT 5
              64 *
              65 *
              66 *
              67 X96 EQU X'22'
              68 PAD EQU X'50'
              69 UNITS EQU X'5D'
    
```

0155 CPU AND MEMORY DIAGNOSTICS: PROGRAM 15

ERP LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0003 70 TENS EQU X'03'
004A 71 BOOT EQU X'A4'
FFFF 72 END
    
```

0155 CPU AND MEMORY DIAGNOSTICS: PROGRAM 15

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	004A	0071	0059
HALT1	A	003	0000	0018	
HALT2	A	003	0014	0031	0029
HALT3	A	003	001E	0040	0038
HALT4	A	003	002F	0052	0047 0050
HALT5	A	003	0039	0061	
HOVERN	A	006	0007	0026	
PAD	C	001	0050	0068	0024* 0026* 0028 0037 0046 0049 0058
TENS	C	001	0003	0070	0018 0031 0040 0052 0061
UNITS	C	001	005D	0069	0018 0031 0040 0052 0061
DMVITZ	A	001	0000	0002	
T96	C	001	0022	0067	0026

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0155 CPU AND MEMORY DIAGNOSTICS: PROGRAM 15

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E N INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ : 0 () I H M N - C E HT4C EC2 E; 0 54 Y AG-DCA () I RQ N I H A A 36 Y EC 2 E I 0 54 D E A G B - E H D < KB01550001

T 0 P 6 31001550002

F H H I * E 7 * = - D C * P H S = * 7 R 0 P I ; C P E A S C B A S O Q 21301012710 2247204001550003

----- LAST PAGE -----

0165 CPU AND MEMORY DIAGNOSTICS: PROGRAM 16

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000	2	UVWITZ	START 0
	3		DECK 4
	4	*****	*****
	5	*****	PROG 16
	6	*****	*****
	7	*****	(MMM) MOVE NUMERIC TO NUMERIC
	8	*****	*****
	9	*****	TEST (1) GATE LSR LO NORMAL TO A.
	10	*****	(2) GATE LSR LC CROSSED TO A.
	11	*****	(3) SINGLE EB CFC INST.
	12	*****	(4) MMN DECODE
	13	*****	(5) ALB AND-OR
	14	*****	(6) I/O NOT CE TEST
	15	*****	*****
	16	*****	*****
	17	*****	*****
0000 F0 03 7D	18	HALT1	RPL UNITS,TENS PROG 16, HALT 1. IPL HALT.
	19	*	
	20	*	
	21	*	
	22	*	
	23	*	
0003 3C 11 0050	24	HVI	PAD-1,X'11'
0007 3C A5 C051	25	HVI	PAD,X'A5'
	26	*	
000B 08 03 0051 0030	27	MOVENN	MMN PAD,X96 MOVE NUMERIC -96- TO NUMERIC OF PAD.
	28	*	RESULT IN LOC 0051 SHUD BE -A6-.
0011 3D AP 0051	29	CLI	PAD,X'AP'
0015 P2 01 03	30	JMF	HALT2+3 BYPASS HALT2 IF RESULT IN LOC 0051
	31	*	WAS NOT -AP-.
0018 F0 03 7D	32	HALT2	RPL UNITS,TENS * PROG 16, HALT 2. ERROR HALT
	33	*****	* FAILING CARDS A-B3H2
	34	*	* HALT DISPLAY = '16' *
	35	*	* SAR DISPLAY = 001B *
	36	*****	* FAILING PUNCT 1,2
	37	*****	
001B 3D 11 0050	38	CLI	PAD-1,X'11'
001P P2 81 03	39	JE	HALT3+3 BYPASS HALT3 IF LOC 0050 WAS NOT
	40	*	ALTERED BY (MOVENN).
0022 F0 03 7D	41	HALT3	RPL UNITS,TENS * PROG 16, HALT 3. ERROR HALT
	42	*****	* FAILING CARDS A-B3J2
	43	*	* HALT DISPLAY = '16' *
	44	*	* SAR DISPLAY 0027 *
	45	*****	* FAILING PUNCT 3
	46	*****	
0025 3D A6 0051	47	CLI	PAD,X'A6'
0029 C0 81 0083	48	BE	BOOT GO TO HALT4 IF RESULT IN LOC 0051
	49	*	WAS NOT -A6-. GO TO BOOTSTRAP IF
	50	*	RESULT IN LOC 0051 WAS -A6-.
002D F0 03 7D	51	HALT4	RPL UNITS,TENS * PROG 16, HALT 4. ERROR HALT.
	52	*****	* FAILING CARDS A-B3J2,A-B3H2,A-B3P2
	53	*	* HALT DISPLAY = '16' *
	54	*	* SAR DISPLAY = 002P *
	55	*****	* FAILING PUNCT (4), (5), (6)
	56	*****	
0030 96	57	X96	DC XL1'96'
	58	PAD	EQU X'51'
	007D	59	UNITS EQU X'7D'
	0003	60	TENS EQU X'03'
	0083	61	BOOT EQU 131
	FFFF	62	END

0165 CPU AND MEMORY DIAGNOSTICS: PROGRAM 16

CROSS-REFERENCE									
SYMBOL	T	LEN	VALUE	DEFN	REFERENCES				
ROOT	C	001	0083	0061	0048				
HALT1	A	003	0000	0018					
HALT2	A	003	0018	0032	0030				
HALT3	A	003	0022	0041	0039				
HALT4	A	003	002D	0051					
MOVENN	A	006	000R	0027					
PAD	C	001	0051	0058	0024* 0025* 0027* 0029 0038 0047				
TENS	C	001	0003	0060	0018 0032 0041 0051				
UNITS	C	001	007D	0059	0018 0032 0041 0051				
UVWITZ	A	001	0000	0002					
X96	A	001	0030	0057	0027				

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0165 CPU AND MEMORY DIAGNOSTICS: PROGRAM 16

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TK 08 ('1AC MC2 V EDH OAJ C ' ,0A J0-DC0 ('1JD H/H A * C-L6H EC -68 G0 ('V- -#001650001

ENR1*27*-DC*PHS =*7HEP1 | C .. FX ASC R A SO Q 21301012710 224720.401650002

0175 CPU AND MEMORY DIAGNOSTICS: PROGRAM 17

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000		2	OVWITZ	START 0		
		3		DECK 4		
		4	*****	*****		
		5	*****	*****		
		6	*****	*****		
		7	*****	*****		
		8	*****	*****		
		9	*****	*****		
		10	*****	*****		
		11	*****	*****		
		12	*****	*****		
		13	*****	*****		
		14	*****	*****		
		15	*****	*****		
		16	*****	*****		
		17	*****	*****		
		18	*****	*****		
0000	P0	03	07	19	HALT1	HPL UNITS,TENS
				20	*	
				21	*	
				22	*	
				23	*	
				24	*	
0003	3C	A5	0050	25	HVI	PAD,X'A5'
				26		
0007	08	C0	0050 001F	27	HZZ	PAD,X96
				28		
000D	3D	65	0050	29	CLI	PAD,X'65'
0011	F2	01	03	30	JWE	HALT2+3
				31		
0014	P0	03	07	32	HALT2	HPL UNITS,TENS
				33	*	
				34	*	
				35	*	
				36	*	
				37	*	
0017	3F	A5	0050	38	CLI	PAD,X'A5'
001B	F2	81	07	39	JE	HALT3
				40		
001E	3D	96	0050	41	CLI	PAD,X'96'
0022	F2	01	03	42	JWE	HALT3+3
				43		
0025	P0	03	07	44	HALT3	HPL UNITS,TENS
				45	*	
				46	*	
				47	*	
				48	*	
				49	*	
0028	3D	A9	0050	50	CLI	PAD,X'A9'
002C	F2	01	03	51	JWE	HALT4+3
				52		
002F	P0	03	07	53	HALT4	HPL UNITS,TENS
				54	*	
				55	*	
				56	*	
				57	*	
				58	*	
0032	3D	95	0050	59	CLI	PAD,X'95'
0036	F2	81	4A	60	JE	BOOT
				61		
0039	P0	03	07	62	HALT5	HPL UNITS,TENS
				63	*	
				64	*	
				65	*	
				66	*	
				67	*	
				68	PAD	EQU X'50'
				69	I96	EQU X'1F'

PROG 17 *****

(HZZ) MOVE ZONE TO ZONE *****

TEST (1) ZONE NUM INTERCHANGE *****

(2) MOVE NUM *****

(3) MOVE ZONE *****

(4) HZZ DECODE *****

(5) ALU AND-OR FUNCTION *****

(6) Q BIT 6 *****

(7) INTERNAL *****

PROG 17, HALT 1. IPL HALT.

SET PAD (LOC 0050) TO -A5-.

MOVE ZONE OF -96- TO ZONE OF PAD.

GO TO HALT2 IF RESULT WAS -65-.

* PROG 17, HALT 2. ERROR HALT 2.

* FAILING CARDS A-B3J2, A-B3H2

* FAILING PUNCT (1), (7)

GO TO HALT3 IF RESULT WAS -A5-.

GO TO HALT3 IF RESULT WAS -96-.

* PROG 17, HALT 3. ERROR HALT 3.

* FAILING CARDS A-B3J2, A-B3H2

* FAILING PUNCT (2,3), (3)

GO TO HALT4 IF RESULT WAS -A9-.

* PROG 17, HALT 4. ERROR HALT.

* FAILING CARDS A-B3J2

* FAILING PUNCT 6

GO TO HALT5 IF RESULT WAS NOT -95-.

GO TO BOOTSTRAP IF RESULT WAS -95-.

* PROG 17, HALT5. ERROR HALT.

* FAILING CARDS A-B3J2, A-B3H2

* FAILING PUNCT (4), (5)

REFER TO CHART

----- LAST PAGE -----

0175 CPU AND MEMORY DIAGNOSTICS: PROGRAM 17

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0007	70	UNITS	EQU	X*07*
0003	71	TENS	EQU	X*03*
004A	72	BOOT	EQU	X*4A*
FFFF	73		END	

0175 CPU AND MEMORY DIAGNOSTICS: PROGRAM 17

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	004A	0072	0060
HALT1	A	003	0000	0019	
HALT2	A	003	001A	0032	0030
HALT3	A	003	0025	0044	0039 0042
HALT4	A	003	002F	0053	0051
HALT5	A	003	0039	0062	
PAD	C	001	0050	0068	0025* 0027* 0029 0038 0041 0050 0059
TENS	C	001	0003	0071	0019 0032 0044 0053 0062
UNITS	C	001	0007	0070	0019 0032 0044 0053 0062
UNIKY7	A	001	0000	0002	
X%	C	001	001F	0069	0027

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0175 CPU AND MEMORY DIAGNOSTICS: PROGRAM 17

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T-- :@ <G|HM N - E G35V EC2 &| 0 0**ZBAG@YDGIRO HJNA * CA36Z EC 2 &|0 0**VSAG@YE B@ < 7H*01750001

T @R) 88*01750002

E***E7*=-DC*PHS =*7H6P| | C FR ASC R A SO Q 21301012710 2247208001750003

----- LAST PAGE -----

0185 CPU AND MEMORY DIAGNOSTICS: PROGRAM 18

ERR LOC OBJECT CODE ADDR STRT SOURCE STATEMENT

```

0000          2 UVWITZ START 0
              3          DECK 4
              4 *****
              5 *****
              6 *****          PROG 18          *****
              7 *****          (FNZ) MOVE ZONE TO NUMERIC          *****
              8 *****          TEST          (1) GATE LSR LO CROSSED TO A          *****
              9 *****          (2) GATE LSR LO NORMAL TO A          *****
             10 *****          (3) ZONE NUM INTERCHANGE          *****
             11 *****          (4) HWZ DECODE          *****
             12 *****          (5) ALU AND OR FUNCTION          *****
             13 *****
             14 *****
             15 HALT1 HPL UNITS,TENS          PROG 18, HALT 1. IPL HALT.
             16 *
             17 *
             18 *
             19 *
             20 *
             21          NVI PAD,X'A5'          SET PAD (LOC 0050) TO -A5-.
             22
             23          HWZ PAD,X96          MOVE ZONE OF -96- TO NUMERIC OF PAD.
             24
             25          CLI PAD,X'A6'          GO TO HALT2 IF RESULT
             26          JNE HALT2+3          WAS -A6-.
             27
             28 HALT2 HPL UNITS,TENS          * PROG 18, HALT 2. ERROR HALT.
             29 *          * FAILING CARDS A-B3J2,A-B3N2
             30 *          * FAILING FUNCT (3), (3)
             31 *          REFER TO CHART
             32 *
             33
             34          CLI PAD,X'A0'          GO TO HALT3 IF RESULT
             35          JNE HALT3+3          WAS -A0-.
             36
             37 HALT3 HPL UNITS,TENS          * PROG 18, HALT 3. ERROR HALT.
             38 *          * FAILING CARDS A-B3N2
             39 *          * FAILING FUNCT 1
             40 *
             41 *
             42
             43          CLI PAD,X'AF'          GO TO HALT4 IF RESULT
             44          JNE HALT4+3          WAS -AF-.
             45
             46 HALT4 HPL UNITS,TENS          * PROG 18, HALT 4. ERROR HALT.
             47 *          * FAILING CARDS A-B3N2
             48 *          * FAILING FUNCT 1,2
             49 *
             50 *
             51
             52          CLI PAD,X'A9'          GO TO HALT5 IF RESULT WAS NOT -A9-,
             53          BE BOOT          GO TO BOOTSTRAP IF RESULT WAS -A9-.
             54
             55 HALT5 HPL UNITS,TENS          * PROG 18, HALT 5. ERROR HALT.
             56 *          * FAILING CARDS A-B3J2,A-B3N2
             57 *          * FAILING FUNCT (4), (5)
             58 *          REFER TO CHART
             59 *
             60
             61 X96 DC XL1'96'
             62 PCD EQU X'50'
             63 UNITS EQU X'7F'
             64 TENS EQU X'03'
             65 BOOT EQU 131
             66          END
0036 96          0036          61 X96 DC XL1'96'
                   0050          62 PCD EQU X'50'
                   007F          63 UNITS EQU X'7F'
                   0003          64 TENS EQU X'03'
                   0083          65 BOOT EQU 131
                   PFFF          66          END

```

0185 CPU AND MEMORY DIAGNOSTICS: PROGRAM 18

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0065	0053
HALT1	A	003	0000	0015	
HALT2	A	003	0014	0028	0026
HALT3	A	003	001E	0037	0035
HALT4	A	003	0028	0046	0044
HALT5	A	003	0033	0055	
PAD	C	001	0050	0062	0021* 0023* 0025 0034 0043 0052
TRNS	C	001	0003	0064	0015 0028 0037 0046 0055
UNITS	C	001	007F	0063	0015 0028 0037 0046 0055
UVWXYZ	A	001	0000	0002	
X96	A	001	0036	0061	0023

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0185 CPU AND MEMORY DIAGNOSTICS: PROGRAM 18

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

T(- 60 ("|H H - B E (T6H EC2 &| 0 70*Y AG0-DC0 ( "I00 H|HA " C-36 Z ZC -CBC0 ("V- ..... 01801850001
E***E7*=-DC*PHS =*7HEP| | C .. PS ASC R A SO Q ..... 21301012710 224723,401850002

```

0195 CPU AND MEMORY DIAGNOSTICS: PROGRAM 19

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	UVWXYZ	START 0
		3		DECK 4
		4	*****	
		5	*****	PROG 19
		6	*****	(NZ N) MOVE NUMERIC TO ZONE
		7	*****	
		8	*****	TEST (1) ZONE NUM INTERCHANGE
		9	*****	(2) NZN DECODE
		10	*****	(3) ALG AND-OR FUNCTION
		11	*****	(4) INTERNAL
		12	*****	
		13	*****	
		14	*****	
0000	PO 03 5P	15	HALT1	HPL UNITS,TENS PROG 19, HALT 1. IPL HALT.
		16	*	
		17	*	
		18	*	
		19	*	
		20	*	
0003	3C A5 0050	21	HVI	PAD,X'A5' SET PAD (LOC 0050) TO -A5-
		22	*	
0007	08 01 0050 0022	23	NZN	PAD,X96 MOVE NUMERIC OF -96- TO ZONE OF PAD
		24	*	
000D	3D 95 0050	25	CLI	PAD,X'95' GO TO HALT2 IF RESULT
0011	P2 01 03	26	JNE	HALT2+3 WAS -95-
		27	*	
0014	PO 03 5P	28	HALT2	HPL UNITS,TENS * PROG 19, HALT 2. ERROR HALT.
		29	*	* FAILING CARDS A-B3J2,A-B3W2
		30	*	* FAILING FUNCT (1), (4)
		31	*	
		32	*	
		33	*	
0017	3D 65 0050	34	CLI	PAD,X'65' GO TO HALT3 IF RESULT WAS NOT -65-
001B	C0 81 0083	35	BE	BOOT GO TO BOOTSTRAP IF RESULT WAS -65-
		36	*	
001P	PO 03 5P	37	HALT3	HPL UNITS,TENS * PROG 19, HALT 3. ERROR HALT.
		38	*	* FAILING CARDS A-B3J2,A-B3W2
		39	*	* FAILING FUNCT (2), (3)
		40	*	
		41	*	
		42	*	
0022	96	0022	43	X96 DC XL1'96'
		0050	44	PAD EQU X'50'
		005P	45	UNITS EQU X'5P'
		0003	46	TENS EQU X'03'
		0083	47	BOOT EQU 131
		FFFF	48	END

0195 CPU AND MEMORY DIAGNOSTICS: PROGRAM 19

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0047	0035
HALT1	A	003	0000	0015	
HALT2	A	003	0014	0028	0026
HALT3	A	003	001P	0037	
PAD	C	001	005C	0044	0021* 0023* 0025 0034
TPNS	C	001	0003	0046	0015 0028 0037
UNITS	C	001	005P	0045	0015 0028 0037
UVWXYZ	A	001	0000	0002	
X96	A	001	0022	0043	0023

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0195 CPU AND MEMORY DIAGNOSTICS: PROGRAM 19

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS B E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TH- S9 (~)HM H - A E HT6M EC2 61 0 58'86A60HD -" CP9Q 73801950001

E"":*27*-DC*PHS =*7M6P| | C F4 ASC R A SO 0 21301012710 2247234401950002

----- LAST PAGE -----

01A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1A

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2  UNWITZ START 0
              3  DECK 4
              4  *****
              5  *****
              6  *****          PROG 1A
              7  *****          (MVC) MOVE LOGICAL CHARACTER
              8  *****          (CLC) COMPARE LOGICAL CHARACTER
              9  *****
             10  *****          TEST (1) MVC DECODE
             11  *****          (2) OP END TOO SOON
             12  *****          (3) CLC DECODE
             13  *****          (4) 0 NON BLANK, 0 REG BLANK **
             14  *****          (5) 1 ADDRESS FORMAT
             15  *****
             16  *****          NOTE: IF 0 NUMERIC BLANK OR 0 REG BLANK LINES
             17  *****          ARE STUCK DOWN, THE FIRST MVC INSTRUCTION WILL
             18  *****          TAKE 52 EA-EB CYCLES BEFORE AN INVALID ADDRESS
             19  *****          IS GENERATED.
             20  *****
             21  *
             22  HLT1  NPL  UNITS,TENS          IPL HALT
             23          MVI  PAD,I'AA'          INITIALIZE PAD
             24          MVI  PAD-1,I'55'          HEX -55AA-.
             25          MVC  PAD(2),I'EEFF'          MOVE HEX -EEFF- TO PAD.
             26          CLI  PAD,I'FF'          CHECK DATA MOVED TO LOC HEX -0051-.
             27          JE   HLT2*3          JUMP IF EQUAL TO HEX -FF-.
             28  *
             29  HLT2  NPL  UNITS,TENS          * WRONG DATA IN LOC HEX -0051-.
             30  *          * FAILING CARDS A-B3J2
             31  *          * FAILING FUNCT 1
             32  *
             33  *
             34          CLI  PAD-1,I'EE'          CHECK DATA MOVED TO LOC HEX -0050-.
             35          JE   HLT3*3          JUMP IF EQUAL TO HEX -EE-.
             36  *
             37          CLI  PAD-1,I'FF'          CHECK DATA MOVED TO LOC HEX -0050-.
             38          JE   HLT4          JUMP IF EQUAL TO HEX -FF-.
             39  *
             40  HLT3  NPL  UNITS,TENS          * WRONG DATA IN LOC HEX -0050-.
             41  *          * FAILING CARDS A-B3S2,A-B3J2
             42  *          * FAILING FUNCT (2), (4)
             43  *
             44  *
             45          CLC  PAD(2),I'EEFF'          TEST (CLC) INSTRUCTION
             46          BE   BOOT
             47  *
             48  HLT4  NPL  UNITS,TENS          * FAILING CARDS A-B3J2,A-B3H2
             49  *          * FAILING FUNCT (3,5), (5)
             50  *
             51  *
             52  *
             53  IEEFF  DC   IL2'EEFF'
             54  PAD    EQU  I'51'
             55  UNITS  EQU  I'3P'
             56  TENS   EQU  I'03'
             57  BOOT   EQU  131
             58  END
0000 F0 03 3F
0003 3C AA 0051
0007 3C 55 0050
000R 0C 01 0051 003A
0011 3D FF 0051
0015 F2 81 03

0018 F0 03 3F

001B 3D FF 0050
001F F2 81 0A

0022 3D FF 0050
0026 F2 8' 0D

0029 F0 03 3F

002C 0D 01 0051 003A
0032 C0 81 0083

0036 F0 03 3F

0039 EEFF
003A
0051
003F
0003
0083
FFFF
    
```

01A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1A

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DIFF	REFERENCES
POOT	C	001	0083	0057	0046
HLT1	A	003	C000	0022	
HLT2	A	003	0018	0029	0027
HLT3	A	003	0029	0040	0035
HLT4	A	003	0036	0040	0038
PAD	C	001	0051	0054	0023* 0024* 0025* 0026 0034 0037 0045
TENS	C	001	0003	0056	0022 0029 0040 0048
UNITS	C	001	003F	0055	0022 0029 0040 0048
UVWYZ	A	001	0000	0002	
XEFF	A	002	003A	0053	0025 0045

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

01A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1A

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```
T+ :@ < " | H Y M L I N E < S A J C Y * O A J B Y D C @ < * | ; 8 M | H A B T 7 * E C 2 - 6 7 0 3 0 ( S A J C , - S B C @ < * 4 7 8 7 H 4 0 1 A 5 0 0 0 1
E M M * E 7 * - - D C * P H S = * 7 M E P | | C P X * * * * * A S C R A S O Q * * * * * 2 1 3 0 1 0 1 2 7 1 0 2 2 4 7 2 * 4 4 0 1 A 5 0 0 0 2
```


01C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1C

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7          PROG 1C
              8          (HVC) MOVE LOGICAL CHARACTER
              9          (ALC) ADD LOGICAL CHARACTER
             10          (SLC) SUBTRACT LOGICAL CHARACTER
             11          (CLC) COMPARE LOGICAL CHARACTER
             12          *****
             13          TEST (1) CR SET WRONG
             14          (2) RESULT WRONG
             15          *****
             16          *
0000 PD 03 6C 17 HLT1  HPL  UNITS,TENS      IPL HALT
             18          *
             19          *
             20          *
             21          *
0003 0C 00 0050 003A 22          HVC  PAD(1),XFF      INITIALIZE PAD TO HEX -FF-.
0009 0E 00 0050 003B 23          ALC  PAD(1),X01      ADD HEX -01- TO PAD.
000F F2 20 22        24          JNOL HLT2      JUMP IF BIN OVFLW NOT SET.
0012 F2 01 1F        25          JNE  HLT2      JUMP IF EQ NOT SET.
0015 0D 00 0050 0004 26          CLC  PAD(1),X00      CHECK RESULT.
001B F2 01 19        27          JNE  HLT3      JUMP IF NOT EQUAL TO HEX -00-.
001E 0E 00 0050 0000 29          ALC  PAD(1),X'00'      ADD HEX -00- TO PAD.
0024 F2 40 0D        29          JOL  HLT2      JUMP IF BIN OVFLW NOT RESET.
0027 0F 00 0050 003A 30          SLC  PAD(1),XFF      SUBTRACT HEX -FF- FROM PAD.
002D F2 AC 07        31          JOL  HLT3      JUMP IF BIN OVFLW SET.
0030 0D 82 0083      32          BL   BOOT      BRANCH IF LOW SET.
             33          *
0034 PD 03 6C 34 HLT2  HPL  UNITS,TENS      * FAILING CARDS A-B3B2
             35          *
             36          *
             37          *
             38          *
0037 PD 03 6C 39 HLT3  HPL  UNITS,TENS      * FAILING CARDS A-B3J2
             40          *
             41          *
             42          *
             43          *
003A FF          44 IPP  DC   XL1'FF'
003B 01          45 IO1  DC   XL1'01'
             46 X00  EQU  X'04'
             47 PAD  EQU  X'50'
             48 UNITS EQU  X'6C'
             49 TENS EQU  X'03'
             50 BOOT EQU  131
             51 PFFF  END
    
```

01C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1C

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0050	0032
HLT1	A	003	0000	0017	
HLT2	A	003	0034	0034	0024 0025 0029
HLT3	A	003	0037	0039	0027 0031
PAD	C	001	0050	0047	0022* 0023* 0026 0028* 0030*
TENS	C	001	0003	0049	0017 0034 0039
UNITS	C	001	006C	0048	0017 0034 0039
UVWYZ	A	001	0000	0002	
XFF	A	001	003A	0044	0022 0030
X00	C	001	0004	0C46	0026
X01	A	001	003B	0045	0023

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

01C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1C

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@ (3C H :C- H #DS S@-D ~C@ H DA-DRC- H @D (CO H :@D G@HB -" CS| CS|@ ST#D1C50001

T * @ =0Q01C50002

P***E7*=-DC*PHS ="7H6P| I C PK ASC R A SO Q 21301012710 22472*\$001C50003

01P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1P

PR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000 2 UVWXYZ START 0
      3 DECK 4
      4 *****
      5 *****
      6 *****
      7 *****
      8 *****
      9 *****
     10 *****
     11 *****
     12 *****
     13 *****
     14 *****
     15 *****
     16 *****
     17 *****
     18 *****
     19 *****
     20 *
     21 HLT1 HPL UNITS,TENS IPL HALT
     22 *
     23 *
     24 *
     25 *
     26 L HIGH,X'0C' SET CR TO HIGH & ARR TO HEX -0000-
     27 ZAZ XPO(1),XPO(1) ZERO & ADD DEC 0
     28 JE HLT2+3 JUMP IF EQUAL CONDITION SET.
     29 *
     30 HLT2 HPL UNITS,TENS * FAILING CARDS A-B3H2,A-B3J2,A-B3H2
     31 * * FAILING FUNCT (1), (2,5,6), (7)
     32 * * FAILING CARDS A-B3H2
     33 * * FAILING FUNCT (9)
     34 *
     35 *
     36 ST SAVARR,ARR SAVE ARR
     37 CLC SAVARR(2),ADXPO COMPARE IT WITH ADDRESS OF XPO
     38 JE HLT3+3 JUMP IF EQUAL
     39 *
     40 CLC SAVARR(2),ADNPO GO TO HALT5 IF ARR
     41 JE HALT5 WAS DECREMENTED.
     42 *
     43 HLT3 HPL UNITS,TENS * ARR HRT SELECT
     44 * * FAILING CARDS A-B3P2
     45 * * FAILING FUNCT 2
     46 *
     47 *
     48 RC BOOT,X'0B' BRANCH TO BOOTSTRAP IF DEC. OVERFLOW
     49 * CONDITION NOT SET.
     50 HLT4 HPL UNITS,TENS * DECIMAL OVERFLOW WAS SET 2571
     51 * * FAILING CARDS A-B3H2
     52 * * FAILING FUNCT 3
     53 *
     54 *
     55 *
     56 HALT5 HPL UNITS,TENS *PROG 1P, HALT 5. ERROR HALT
     57 * * FAILING CARDS A-B3P2,A-B3H2
     58 * * FAILING FUNCT (8), (8)
     59 *
     60 *
     61 XPO DC XL1*PO'
     62 ADNPO DC AL2(XPO-1)
     63 HIGH EQU X'09'
     64 ADXPO EQU X'0C'
     65 SAVARR EQU X'50'
     66 ARR EQU 8
     67 UNITS EQU X'3C'
     68 TENS EQU X'03'
     69 BOOT EQU 131

```

----- LAST PAGE -----

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 41

01P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1P

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
FFFF 70 END

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 41A

01P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1P

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADNPO	A	002	0038	0062	0040
ADXP0	C	001	000C	0064	0037
ARR	C	001	0008	0066	0036
ROOT	C	001	0083	0069	0048
HALT5	A	003	0033	0056	0041
HIGH	C	001	0009	0063	0026
HLT1	A	003	0000	0021	
HLT2	A	003	0010	0030	0028
HLT3	A	003	0023	0043	0038
HLT4	A	003	0030	0050	
SAVAPP	C	001	0050	0065	0036* 0037 0040
TENS	C	001	0003	0068	0021 0030 0043 0050 0056
UNITS	C	001	003C	0067	0021 0030 0043 0050 0056
DVMXYZ	A	001	0000	0062	
XPO	A	001	0036	0061	0027 0027* 0062

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

01P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 1P

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS \bar{D} \bar{E} \bar{H} INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ 8a <a (60 BEE CO (7HA " CICE H E (6AE 32-60 (6AE CT2-6,0 33 B Bca <a0 <a0 5 -I 01P50001

ENNI *E7*~BC*PHS =*7H6P| | C P% ASC R A SO Q 21301012710 22472a.401P50002

0205 CPU AND MEMORY DIAGNOSTICS: PROGRAM 20

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000	2	UVWXYZ	START 0	
	3		DECK 4	
	4	*****		
	5	*****		
	6	*****		
	7	*****		
	8	*****		
	9	*****		
	10	*****		
	11	*****		
	12	*****		
	13	*****		
	14	*****		
	15	*****		
	16	*****		
	17	*****		
	18	HLT1	HPL UNITS,TENS	IPL HALT
	19	HVI	PAD,X'P6'	MOVE HEX -P6- INTO PAD.
	20	ZAZ	PAD(1),XP3(1)	ZERO 6 ADD DEC 3.
	21	CLI	PAD,X'P3'	CHECK RESULT.
	22	JE	BOOT	JUMP TO BOOTSTRAP IF RESULT EQUALS
	23	*		DECIMAL 3.
	24	CLI	PAD,X'P7'	*
	25	JNE	HLT2+3	* JUMP IF RESULT NOT EQ TO DEC 7.
	26	*		
	27	HLT2	HPL UNITS,TENS	* FAILING CARDS A-B3N2,A-B3N2,A-B3S2
	28	*		* FAILING FUNCT (2), (1), (6)
	29	*		
	30	*		
	31	*		
	32	*		
	33	CLI	PAD,X'P0'	*
	34	JE	HLT5	* JUMP IS RESULT EQUALS DEC 0.
	35	CLI	PAD,X'P9'	*
	36	JNE	HLT3+3	* JUMP IF RESULT NOT EQ TO DEC 9.
	37	*		
	38	HLT3	HPL UNITS,TENS	* FAILING CARDS A-B3N2
	39	*		* FAILING FUNCT 4
	40	*		
	41	*		
	42	*		
	43	CLI	PAD,X'P6'	
	44	JE	HLT4+3	* JUMP IF RESULT EQUALS DEC 6.
	45	*		
	46	HLT4	HPL UNITS,TENS	* FAILING CARDS A-B3N2,A-B3N2
	47	*		* FAILING FUNCT (4), (4)
	48	*		
	49	*		
	50	*		
	51	HLT5	HPL UNITS,TENS	* CARRY IN ON SUB
	52	*		* FAILING CARDS A-B3N2
	53	*		* FAILING FUNCT 1,5
	54	*		
	55	*		
	56	PAD	EQU X'50'	
	57	XP3	EQU X'0E'	
	58	UNITS	EQU X'6F'	
	59	TENS	EQU X'76'	
	60	BOOT	EQU X'6F'	
	61		END	

----- LAST PAGE -----

0205 CPU AND MEMORY DIAGNOSTICS: PROGRAM 20

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	006F	0060	0022
HLT1	A	003	0000	0018	
HLT2	A	003	001B	0027	0025
HLT3	A	003	002C	0038	0036
HLT4	A	003	0036	0046	0044
HLT5	A	003	0039	0051	0034
PAD	C	001	005C	0056	0019* 0020* 0021 0024 0033 0035 0043
TENS	C	001	0076	0059	0018 0027 0038 0046 0051
UNITS	C	001	006F	0058	0018 0027 0038 0046 0051
UVWXYZ	A	001	0000	0002	
XP3	C	001	000E	0057	0020

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0205 CPU AND MEMORY DIAGNOSTICS: PROGRAM 20

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@GR?|IQ N S P CT73 EC2-0@ **0A@-DC@GR?|~ N|H@EC79 EC2 @| 0|W@'-@@YDC@GR ?@GQ \$#@02050001

T *#0 EA802050002

F***E7*--DC*PHS =*7H6P| I C P% ASC R A SO Q 21301012710 224721, @02050003

0215 CPU AND MEMORY DIAGNOSTICS: PROGRAM 21

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	UVWXYZ	START 0
		3		DECK 4
		4	*****	
		5	*****	
		6	*****	
		7	*****	
		8	*****	
		9	*****	
		10	*****	
		11	*****	
		12	*****	
		13	*****	
		14	*****	
		15	*****	
		16	*****	
		17	*****	
		18	*****	
		19	*****	
		20	*****	
		21	*****	
		22	*****	
		23	*****	
		24	*****	
0000	F0 76 03	25	HLT1	HPL UNITS,TENS IPL HALT
		26	*	
		27	*	
		28	*	
		29	*	
0003	04 C0 0050 0030	30	ZAZ	PAD(1),XDO(1) ZERO & ADD DEC MINUS ZERO.
0009	F2 82 2D	31	JL	HLT5 GO HALT IF CR SET TO LOW
000C	3D F0 0050	32	CLI	PAD,X'F0' CHECK RESULT.
0010	C0 81 C083	33	BE	BOOT JUMP TO BOOTSTRAP IF SIGN CHANGED.
0014	3D F9 0050	34	CLI	PAD,X'F9' *
0018	F2 81 11	35	JE	HLT3 * JUMP IF RESULT EQUALS DEC 9.
001B	3D F1 0050	36	CLI	PAD,X'F1' *
001F	F2 01 03	37	JNE	HLT2+3 * JUMP IF RESULT NOT EQ TO DEC 1.
		38	*	
0022	F0 76 03	39	HLT2	HPL UNITS,TENS * FAILING CARDS A-B3H2
		40	*	
		41	*	
		42	*	
		43	*	
0025	3D 20 0050	44	CLI	PAD,X'20' *
0029	F2 01 03	45	JNE	HLT3+3 * JUMP IF RESULT NOT EQ TO HEX -20-.
		46	*	
002C	F0 76 03	47	HLT3	HPL UNITS,TENS * FAILING CARDS A-B3H2
		48	*	
		49	*	
		50	*	
		51	*	
002F	3D D0 0050	52	CLI	PAD,X'D0' *
0033	F2 81 03	53	JF	HLT5 * JUMP IF RESULT EQUALS DEC -0.
		54	*	
0036	F0 76 03	55	HLT4	HPL UNITS,TENS * FAILING CARDS A-B3H2
		56	*	
		57	*	
		58	*	
		59	*	
0039	F0 76 03	60	HLT5	HPL UNITS,TENS * FAILING CARDS A-B3F2,A-B3H2,A-B3H2
		61	*	
		62	*	
		63	*	
		64	*	
		65	*	
0030		66	XDO	EQU X'30'
0050		67	PAD	EQU X'50'
C076		68	TENS	EQU X'76'
0003		69	UNITS	EQU X'03'

0215 CPU AND MEMORY DIAGNOSTICS: PROGRAM 21

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		0083	70	BOOT EQU 131
		FFFF	71	END

0215 CPU AND MEMORY DIAGNOSTICS: PROGRAM 21

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0070	0033
HLT1	A	003	0000	0025	
HLT2	A	003	0022	0039	0037
HLT3	A	003	002C	0047	0035 0045
HLT4	A	003	0036	0055	
HLT5	A	003	0039	0060	0031 0053
PAD	C	001	0050	0067	0030* 0032 0034 0036 0044 0052
TENS	C	001	0076	0068	0025 0039 0047 0055 0060
UNITS	C	001	0003	0069	0025 0039 0047 0055 0060
UVWYZ	A	001	0000	0002	
XDO	C	001	0030	0066	0030

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0215 CPU AND MEMORY DIAGNOSTICS: PROGRAM 21

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@GQCA ' ' ' ' 08YH_ | ~ ' ' K C B A H C ' '=CAGBYDJ | -D M | H A *A6 34- EC2 6 | 0) -<'4 ACBYDCAGQ C@GQ 'SD402150001

T ' 0 E6H02150002

E***E7*=-DC*PH\$ =*7HEP | | C ' ' P K ' ASC ' R A 50 ' Q 21301012710 2247219@02150003

0225 CPU AND MEMORY DIAGNOSTICS: PROGRAM 22

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2 UVWXYZ START 0
          3 DECK 4
          4 .....
          5 .....
          6 .....          PROG 22
          7 .....          (ZAZ) ZERO AND ADD DECIMAL
          8 .....
          9 .....          TEST (1) SDR SIGN MINUS
         10 .....          (2) CHANGE ALU BIT 2
         11 .....          (3) NOT FIRST RECOMPLEMENT CYCLE
         12 .....          (4) FORCE BITS
         13 .....          (5) Q REGISTER
         14 .....          (6) 'E' CYCLE
         15 .....          (7) INTERNAL
         16 .....
         17 .....
         18 *
0000 19 HLT1  HPL  UNITS,TENS      IPL HALT
         20 *
         21 *
         22 *
0003 23 *          RVI  PAD-1,X'0F'  INITIALIZE PAD-1 TO HEX -0F-.
0007 24 *          ZAZ  PAD(1),XBO(1)  ZERO & ADD DEC MINUS ZERO, HEX -B0-
000D 25 *          CLI  PAD,X'F0'     CHECK RESULT.
0011 26 *          JE   HLT2+3       JUMP IF RESULT EQUALS DEC ZERO.
         27 *
0014 28 HLT2  HPL  UNITS,TENS      * FAILING CARDS A-B3P2,A-B3H2,A-B3H2
         29 *          * FAILING FUNCT (1,2), (1,2), (7)
         30 *
         31 *
         32 *
0017 33 *          CLI  PAD-1,X'0F'  CHECK FOR ALTERING ONLY ONE BYTE.
001B 34 *          JE   HLT3+3       JUMP IF OK.
         35 *
001E 36 HLT3  HPL  UNITS,TENS      * FAILING CARDS A-B3L2
         37 *          * FAILING FUNCT 3
         38 *
         39 *
         40 *
0021 41 *          ZAZ  PAD(2),X'F3(1)  ZERO & ADD DEC 3 INTO 2 BYTE FIELD.
0027 42 *          CLC  PAD(2),X'F3    CHECK FOR ALTERING BOTH BITES
002D 43 *          BE   BOOT         BRANCH TO BOOTSTRAP IF OK.
         44 *
0031 45 HLT4  HPL  UNITS,TENS      * PROG 22, HALT 4.  ERROR HALT.
         46 *          * FAILING CARDS A-B3H2,A-B3L2,A-B3H2
         47 *          * FAILING FUNCT (1), (6), (7)
         48 *          * FAILING CARDS A-B3H2
         49 *          * FAILING FUNCT (7)
         50 *
         51 *
         52 *
0034 53 IB0   DC    XL1'80'
0035 54 X'F3  DC    XL2'F3'
0037 55 X'F3  DC    XL1'F3'
0050 56 PAD   EQU   X'50'
0076 57 UNITS EQU   X'76'
0076 58 TENS  EQU   X'76'
0083 59 BOOT  EQU   131
FFFF 60      END
    
```

0225 CPU AND MEMORY DIAGNOSTICS: PROGRAM 22

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	00R3	0059	0043
HLT1	A	003	0000	0019	
HLT2	A	003	0014	0028	0026
HLT3	A	003	001E	0036	0034
HLT4	A	003	0031	0045	
PAD	C	001	005C	0056	0023* 0024* 0025 0033 0041* 0042
TENS	C	001	0076	0058	0019 0028 0036 0045
UNITS	C	001	0076	0057	0019 0028 0036 0045
UVWXYZ	A	001	0000	0002	
XBO	A	001	0074	0053	0024
X'OP3	A	002	0036	0054	0042
X'F3	A	001	0037	0055	0041

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0225 CPU AND MEMORY DIAGNOSTICS: PROGRAM 22

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T(0 7AGR6| @ ILOE F (C70 EC2-8| 0) IQ*COA|@YDC@GR 6AA N 7C6D H 60HD -*A6),COB* < ***** LB802250001

E***E7*=-DC*PHS =*7HSP| | C * * * * * P% ASC R A SO Q 21301012710 224721.802250002

0245 CPU AND MEMORY DIAGNOSTICS: PROGRAM 24

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVHIYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****          PROG 24
              8 *****          (AZ) ADD DECIMAL
              9 *****
             10 *****          TEST (1) DEC COMP A REGISTER
             11 *****          (2) CR LOW LATCH
             12 *****          (3) CR DECIMAL OVERFLOW
             13 *****          (4) ADD DEC INSTR
             14 *****          (5) SDR SIGN MINUS
             15 *****          (6) ALU NUM BLANK
             16 *****          (7) CLOCK 3 CD
             17 *****          (8) ARITH CARRY
             18 *****          (9) OP BIT 7
             19 *****          (10) INTERNAL
             20 *****
             21 *
0000 P0 76 1R 22 HLT1  HPL  UNITS,TENS          IPL HALT
              23 *
              24 *
              25 *
              26 *
0003 P2 88 00 27 *
0006 3C D9 0050 28 NEXT  NEXT          RESET DEC OVERFLOW IF PRESENT.
000A 06 C0 0050 C03A 29 *          PAD,X'D9'          INITIALIZE PAD TO MINUS DEC 9.
0010 P2 C8 24 30 *          AZ          PAD(1),XD9(1)          ADD MINUS DEC 9 TO PAD.
0013 P2 02 12 31 *          JNOZ  HLT4          JUMP IF DEC OVERFLOW NOT SET
0016 3D D8 0050 32 *          JNL  HLT3          JUMP IF LOW NOT SET
001A P2 01 14 33 *          CLI  PAD,X'D8'          CHECK RESULT
001D 06 C0 0050 C03B 34 *          JNE  HLT2          JUMP IF WRONG
0021 P2 88 11 35 *          AZ          PAD(1),XP2(1)          ADD DEC 2 TO PAD
0026 P2 02 08 36 *          JOZ  HLT4          GO TO HALT 3 IF DEC OVFLW SET
0029 3D D6 0050 37 *          JNL  HLT3          GO TO HALT 3 IF LOW COND. WAS SET
002D C0 81 C083 38 *          CLI  PAD,X'D6'          CHECK RESULT
              39 *          BE  BOOT          GO TO BOOTSTRAP IF RESULT CORRECT
0031 P0 76 1R 40 HLT2  HPL  UNITS,TENS          * WRONG RESULT
              41 *          * FAILING CARDS A-B3H2
              42 *          * FAILING FUNCT 1,4
              43 *
              44 *
              45 *
0034 P0 76 1R 46 HLT3  HPL  UNITS,TENS          * CR WRONG
              47 *          * FAILING CARDS A-B3P2,A-B3H2,A-B3H2
              48 *          * FAILING FUNCT (5), (6), (7)
              49 *          * FAILING CARDS A-B3T2,A-B3H2
              50 *          * FAILING FUNCT (7), (8)
              51 *
              52 *
0037 P0 76 1R 53 HLT4  HPL  UNITS,TENS          * CR WRONG
              54 *          * FAILING CARDS A-B3H2,A-B3H2,A-B3H2
              55 *          * FAILING FUNCT (3), (8,9), (10)
              56 *          * FAILING CARDS A-B3T2
              57 *          * FAILING FUNCT (10)
              58 *
003A D9 59 ID9  DC  XL1'D9'
003B 60 XP2  DC  XL1'P2'
0050 61 PAD  EQU  X'50'
001R 62 UNITS EQU  X'1B'
0076 63 TENS EQU  X'76'
0083 64 BOOT EQU  131
FFFF 65 END
    
```

----- LAST PAGE -----

0245 CPU AND MEMORY DIAGNOSTICS: PROGRAM 24

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0087	0064	0038
HLT1	A	003	0000	0022	
HLT2	A	003	0071	0040	0033
HLT3	A	003	0034	0046	0031 0036
HLT4	A	003	0037	0053	0030 0035
NEXT	A	004	0006	0028	0027
PAD	C	001	0050	0061	0028* 0029* 0032 0034* 0037
TENS	C	001	0076	0063	0022 0040 0046 0053
UNITS	C	001	001B	0062	0022 0040 0046 0053
UVWXYZ	A	001	0000	0002	
XD9	A	001	003A	0059	0029
XP2	A	001	003B	0060	0034

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0245 CPU AND MEMORY DIAGNOSTICS: PROGRAM 24

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :2G0S0Y- | (U H O E +?HHI|H BGT7Q BC2 J&P A E C?2SAG2 -X*5-A 60HD -"A6P"A6P"A 6P'U *1*02450001

T 82- *CU02450002

E***E7*=-CC*PHS =*7H&P| | C * * * * * FX * * * * * ASC R A S0 Q 21301012710 224720,002450003

0255 CPU AND MEMORY DIAGNOSTICS: PROGRAM 25

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****          PROG 25
              8 *****          (AZ) ADD DECIMAL
              9 *****          (ZAZ) ZERO & ADD DECIMAL
             10 *****          TEST (1) SIX CORRECT
             11 *****          (2) DEC COMP B REG
             12 *****          (3) CLOCK 3CD
             13 *****          (4) INTERNAL
             14 *****
             15 *****
             16 *
             17 HLT1 HPL UNITS,TENS IPL HALT
             18 *
             19 *
             20 *
             21 *
             22 ZAZ PAD(9),DATA(9) RIPPLE SIX CORRECT LOGIC INPUTS
             23 CLC PAD(9),DATA CHECK RESULT
             24 JE HLT2+3 JUMP IF OK
             25 *
             26 HLT2 HPL UNITS,TENS * WRONG RESULT
             27 * * FAILING CARDS A-B3H2
             28 * * FAILING FUNCT 1
             29 *
             30 *
             31 MVI PAD,X'D0'
             32 MVC PAD-1(8),PAD SET PAD TO MINUS DEC 0.
             33 AZ PAD(9),DATA(9) RIPPLE DEC COMP B REG INPUTS
             34 CLC PAD(9),DATA CHECK RESULT
             35 BE BOOT
             36 *
             37 HLT3 HPL UNITS,TENS * WRONG RESULT
             38 * * FAILING CARDS A-B3H2,A-B3T2
             39 * * FAILING FUNCT (2,3), (4)
             40 *
             41 *
             42 DATA DC DL9'987654321'
             43 IDO DC XL1'D0'
             44 PAD EQU X'58'
             45 UNITS EQU X'5D'
             46 TENS EQU X'76'
             47 BOOT EQU 131
             48 PFFF END

```

0255 CPU AND MEMORY DIAGNOSTICS: PROGRAM 25

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	00A3	0047	0035
DATA	A	009	003A	0042	0022 0023 0033 0034
HLT1	A	003	0007	0017	
HLT2	A	003	0012	0026	0024
HLT3	A	003	002F	0037	
PAD	C	001	0058	0044	0022* 0023 0031* 0032 0032* 0033* 0034
TENS	C	001	0076	0046	0017 0026 0037
UNITS	C	001	005D	0045	0017 0026 0037
UVWXYZ	A	001	0000	0002	
XDO	A	001	003B	0043	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

C255 CPU AND MEMORY DIAGNOSTICS: PROGRAM 25

OBJECT CARD LISTING

TRF CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@GR) A - O :CE- O :BYBC@GR)|(O OG E* O O H E- +-NH E- +XB A H|O) V79=|-6'-L 3@7D 02#02550001

T 84 7SD02550002

E*E7*=-DC*PHS =*7HCP| | C FX ASC R A SO Q 21301012710 224720#02550003

----- LAST PAGE -----

C265 CPU AND MEMORY DIAGNOSTICS: PROGRAM 26

ERR LOC OBJCT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 0VWXYZ START 0
              3          DECK 4
              4 *****
              5 *****
              6 *****
              7 *****
              8 *****
              9 *****
             10 *****
             11 *****
             12 *****
             13 *****
             14 *****
             15 *****
             16 *
             17 HLT1  HPL  UNITS,TENS          IPL HALT
             18 *
             19 *
             20 *
             21 *
             22
             23
             24
             25
             26
             27
             28
             29
             30
             31
             32
             33 *
             34 HLT2  HPL  UNITS,TENS          * WRONG RESULT
             35 *
             36 *
             37 *
             38 *
             39 *
             40 HLT3  HPL  UNITS,TENS          * CR WRONG
             41 *
             42 *
             43 *
             44 *
             45 HLT4  HPL  UNITS,TENS          * PAD NOT ALTERED BY FIRST SZ
             46 *
             47 *
             48 *
             49 *
             50 XD1  DC    XL1'D1'
             51 KP3  DC    XL1'P3'
             52 LO   DC    XL1'02'
             53 PSR  EQU   X'04'
             54 PAD  EQU   X'50'
             55 UNITS EQU   X'7D'
             56 TENS EQU   X'76'
             57 BOOT EQU   131
             58          END
0003 3C F1 0050
0007 07 CC 0050 C038
000D P2 04 22
0010 3D P1 0050
0014 P2 01 1E
0017 3D P2 0050
0018 P2 01 11
001E 07 CC 0050 C039
0024 P2 02 08
0027 3D D1 0050
0028 C0 01 C083
002F P0 76 7D
0032 P0 76 7D
0035 P0 76 7D
0038 D1
0039 P3
003A 02
0038 50 XD1  DC    XL1'D1'
0039 51 KP3  DC    XL1'P3'
003A 52 LO   DC    XL1'02'
0004 53 PSR  EQU   X'04'
0050 54 PAD  EQU   X'50'
007D 55 UNITS EQU   X'7D'
0076 56 TENS EQU   X'76'
C083 57 BOOT EQU   131
FFFF 58          END

```

0265 CPU AND MEMORY DIAGNOSTICS: PROGRAM 26

CROSS-REFERENCE

SYMBOL	T	LEN	VALUF	DEFN	REFERENCES
ROOT	C	001	0083	0057	0032
HLT1	A	003	0000	0017	
HLT2	A	003	002F	0034	0028
HLT3	A	003	0032	0040	0024 0030
HLT4	A	003	0035	0045	0026
LO	A	001	003A	0052	
PAD	C	001	0050	0054	0022* 0023* 0025 0027 0029* 0031
PSR	C	001	0004	0053	
TENS	C	001	0076	0056	0017 0034 0040 0045
UNITS	C	001	007D	0055	0017 0034 0040 0045
UVWXYZ	A	001	0000	0002	
XD1	A	001	0038	0050	0023
XP3	A	001	0039	0051	0029

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0265 CPU AND MEMORY DIAGNOSTICS: PROGRAM 26

OBJECT CARD LISTING

THE CHARACTER * INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@GR||D H * E +|HDHT71 EC 2-J8'@-AG@-DJAO H 9@-R.||D H<B A H(0)X70)X70)X7 JOB 58602650001

E***E7*~EC*PHS =*7H6P| | C P* ASC R A SO Q 21301012710 224720.802650002

----- LAST PAGE -----

0275 CPU AND MEMORY DIAGNOSTICS: PROGRAM 27

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****          PROG 27
              6 *****          (ED) EDIT
              7 *****
              8 *****          TEST (1) EDIT DECODE
              9 *****          (2) CONDITION REG
             10 *****          (3) B REG 20
             11 *****          (4) B REG SIGN HIUS
             12 *****          (5) P C INST
             13 *****          (6) INTERNAL
             14 *****
             15 *****
0000 P0 76 07 16 HALT1 HPL UNITS,TENS          PROG 27, HALT 1. IPL HALT.
              17 *
              18 *
              19 *
              20 *
              21 *
0003 0C 01 0051 0037 22          MVC          PAD(2),X2020          SET PAD (LOC 0050 & 0051) TO -2020-
              23
0009 35 04 0038      24          L          LO,PSR          SET PSR (CR) TO LOW CONDITION.
              25
000D 0A 01 0051 0033 26          ED          PAD(2),XE1F0          EDIT XE1F0. RESULT SHUD BE -F1F0-.
              27
0013 C0 84 0083      28          BH          BOOT          GO TO BOOT IF CR SET TO HI
              29
0017 0D 01 0051 0033 30          CLC          PAD(2),XE1F0          * GO TO HALT3 IF RESULT
001D F2 81 0C        31          JE          HALT3          * WAS -F1F0-.
              32
0020 0D 01 0051 0037 33          CLC          PAD(2),X2020          GO TO HALT4 IF RESULT
0026 F2 81 06        34          JE          HALT4          WAS -2020-.
              35
0029 P0 76 07      36 HALT2 HPL UNITS,TENS          * PROG 27, HALT 2. ERROR HALT.
              37 *          * FAILING CARDS A-B3H2,A-B3W2
              38 *          * FAILING FUNCT (3,4,5), (4)
              39 *
              40 *
002C P0 76 07      41 HALT3 HPL UNITS,TENS          * PROG 27, HALT 3. ERROR HALT.
              42 *          * FAILING CARDS A-B3J2,A-B3M2
              43 *          * FAILING FUNCT (1), (4)
              44 *
              45 *
002F P0 76 07      46 HALT4 HPL UNITS,TENS          * PROG 27, HALT 4. ERROR HALT.
              47 *          * FAILING CARDS A-B3M2,A-B3P2,A-B3J2
              48 *          * FAILING FUNCT (3), (3), (6)
              49 *
              50 *
              51 *
0032 E1F0          0033 52 XE1F0 DC          XL2'E1F0'
0034 F1F0          0035 53 XF1F0 DC          XL2'F1F0'
0036 2020          0037 54 X2020 DC          XL2'2020'
0038 02            0039 55 LO DC          XL1'02'
              0051 56 PAD EQU          X'51'
              0007 57 UNITS EQU          X'07'
              0076 58 TENS EQU          X'76'
              0083 59 BOOT EQU          131
              0004 60 PSR EQU          X'04'
              FFPP 61          END
    
```

0275 CPU AND MEMORY DIAGNOSTICS: PROGRAM 27

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0059	0028
HALT1	A	003	0000	0015	
HALT2	A	003	0029	0036	
HALT3	A	003	002C	0041	0031
HALT4	A	003	002F	0046	0034
LO	A	001	0038	0055	0024
PAD	C	001	0051	0056	0022* 0026* 0030 0033
PSR	C	001	0004	0060	0024*
TENS	C	001	0076	0058	0016 0036 0041 0046
UNITS	C	001	0007	0057	0016 0036 0041 0046
UVWXYZ	A	001	0000	0002	
XE1F0	A	002	0033	0052	0026 0030
XF1F0	A	002	0035	0053	
X2020	A	002	0037	0054	0022 0033

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0275 CPU AND MEMORY DIAGNOSTICS: PROGRAM 27

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ 88GQGC D ME 7(EE + YA ED <2B D R((&AJ C12-EO (&AJ C-2-ES0) -- 0) -- 0) -- / @ J G O H B B 46-02750001

*****E7*--DC*PHS =*7H6P1 | C * * * * * PK ASC R A SO Q 21301012710 2247208802750002

C285 CPU AND MEMORY DIAGNOSTICS: PROGRAM 28

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2  UVWXYZ START 0
               3  DECK 4
               4  *****
               5  *****
               6  *****          PROG 28          *****
               7  *****          (ED) EDIT          *****
               8  *****          TEST (1)  B REG 20 , RIPPLE TEST *****
               9  *****          *****
              10  *****          *****
              11  *****          *****
              12  *****          *****
              13
0000 P0 76 7F 14  HALT1 HPL UNITS,TENS          PROG 28, HALT 1.  IPL HALT
               15 *
               16 *
               17 *
               18 *
               19
0003 0C 01 0057 0039 21  HVC PAD(2) ,X2020          SET PAD TO -2020
               22
0009 0A 01 0057 0037 23  ED PAD(2) ,IE1P0          EDIT -E1P0-
               24
000F 0D 01 0057 0039 25  CLC PAD(2) ,X2020          GO TO HALT2 IF RESULT
               26
0015 P2 81 15 27  JE HALT2          WAS -2020-
               28
0018 0C 04 0057 0034 29  HVC PAD,PATRN(5)          SET PAD (LOC 0853 THRU 0057)
               30 *          TO -2824222100-.
               31
001E 0A 04 0057 0035 32  ED PAD,IPP(5)          EDIT IPP. PAD SHOULD NOT BE ALTERED.
               33
0024 0D 04 0057 0034 34  CLC PAD,PATRN(5)          GO TO HALT2 IF PAD WAS ALTERED,
002A P2 81 56 35  JE BOOT          GO TO BOOTSTRAP IF PAD NOT ALTERED
               36
002D P0 76 7F 37  HALT2 HPL UNITS,TENS          * PROG 28, HALT 2.  ERROR HALT.
               38 *          * FAILING CARDS A-B3F2
               39 *          * FAILING FUNCT (1)
               40 *
               41 *
               42
0030 2824222100 0034 43  PATRN DC XL5*2824222100*
0035 PP 0035 44  IPP DC XL1*PP*
0036 E1P0 0037 45  IE1P0 DC XL2*E1P0*
0038 2020 0039 46  X2020 DC XL2*2020*
               007F 47  UNITS EQU X*7P*
               0076 48  TENS EQU X*76*
               0057 49  PAD EQU X*57*
               0056 50  BOOT EQU X*56*
               FPPP 51  END
    
```

----- LAST PAGE -----

0285 CPU AND MEMORY DIAGNOSTICS: PROGRAM 28

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0056	0050	0035
HALT1	A	003	0000	0014	
HALT2	A	003	002D	0037	0027
PAD	C	001	0057	0049	0021* 0023* 0025 0029* 0032* 0034
PATRN	A	005	0034	0043	0029 0034
TENS	C	001	0076	0048	0014 0037
UNITS	C	001	007F	0047	0014 0037
UVWXYZ	A	001	0000	0002	
YE1F0	A	002	0037	0045	0023
XFF	A	001	0035	0044	0032
X2020	A	002	0039	0046	0021 0025

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0285 CPU AND MEMORY DIAGNOSTICS: PROGRAM 28

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+E 9@GR MC D NO 9E-D NO 7C&D NO 9@YDNC E NO 4B-E NO 5C&E NO 4BYE 0@GR HBSHEC*8 -H *002850001

P**E7*=-DC*PH\$ =*7M6P| | C P% ASC R A SO Q 21301012710 224723,802850002

0295 CPU AND MEMORY DIAGNOSTICS: PROGRAM 29

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	
0000		2	UWVITZ	START 0	
		3		DECK 4	
		4	*****		
		5	*****		
		6	*****		
		7	*****		
		8	*****		
		9	TEST	(1) SIGN CONTROL	*****
		10		(2) CONDITION REG	*****
		11	*****		
		12	*****		
0000	PO 76 5P	13			
		14	HALT1	RPL UNITS,TENS	PROG 29, HALT 1. IPL HALT
		15	*		
		16	*		
		17	*		
		18	*		
		19			
0003	3C 20 0050	20	HVI	PAD,X'20'	SET PAD (LOC 0050) TO -20-.
		21			
0007	35 04 0005	22	L	HI,PSR	SET PSR (CR) TO HIGH CONDITION.
		23			
0008	0A 00 0050 003A	24	EDIT1	ED PAD(1),XB1	EDIT XB1. RESULT SHUD BE -F1-.
		25			
0011	F2 02 23	26	JNL	HALT3	GO TO HALT2 IF CR NOT SET TO LOW.
		27			
0014	3D F1 0050	28	CLI	PAD,X'F1'	GO TO HALT3 IF EDIT1 DID
0018	P2 01 19	29	JNE	HALT2	NOT SET PAD TO -F1-.
		30			
0018	3C 20 0050	31	HVI	PAD,X'20'	SET PAD (LOC 0050) TO -20-.
		32			
001P	35 04 0005	33	L	HI,PSR	SET PSR (CR) TO HIGH CONDITION.
		34			
0023	0A 00 0050 003P	35	EDIT2	ED PAD(1),XD1	EDIT XD1. RESULT SHUD BE -F1-.
		36			
0029	P2 02 08	37	JNL	HALT3	GO TO HALT3 IF CR NOT SET TO LOW.
		38			
002C	3D F1 0050	39	CLI	PAD,X'F1'	GO TO HALT2 IF EDIT2 DID
0030	C0 81 0083	40	BE	BOOT	NOT SET PAD TO -F1-.
		41			
0034	PO 76 5P	42	HALT2	RPL UNITS,TENS	* PROG 29, HALT 2. ERROR HALT.
		43	*		* FAILING CARDS A-B3H2
		44	*		* FAILING FUNCT 1
		45	*		
		46	*		
		47	*		
0037	PO 76 5P	48	HALT3	RPL UNITS,TENS	* PROG 29, HALT 3. ERROR HALT.
		49	*		* FAILING CARDS A-B3H2
		50	*		* FAILING FUNCT 2
		51	*		
		52	*		
		53	*		
003A	B1	54	IR1	DC XL1'B1'	
003B	D1	55	XD1	DC XL1'D1'	
		56	HI	EQU X'05'	
		57	PSR	EQU X'08'	
		58	PAD	EQU X'50'	
		59	BOOT	EQU 111	
		60	UNITS	EQU X'5P'	
		61	TENS	EQU X'76'	
		62	END		

0295 CPU AND MEMORY DIAGNOSTICS: PROGRAM 29

CROSS-REFERENCE					
SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0083	0C59	0040
EDIT1	A	006	0008	0024	
EDIT2	A	006	0023	0035	
HALT1	A	003	0000	0014	
HALT2	A	003	0034	0042	0029
HALT3	A	003	0037	0048	0026 0037
HI	C	001	0005	0056	0022 0033
PAD	C	001	0050	0058	0020* 0024* 0028 0031* 0035* 0039
PSR	C	001	0004	0057	0022* 0033*
TENS	C	001	0076	0061	0014 0042 0048
UNITS	C	001	005P	0060	0014 0042 0048
XB1	A	001	003A	0054	0024
XD1	A	001	003B	0055	0035

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0295 CPU AND MEMORY DIAGNOSTICS: PROGRAM 29

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@GR-|B NCM D HH AE C,2 SK '0EAE0-DR|P NCM D HH AE C?2 -X '0EAE0HD -"A6P"A 6P#D 0HD02950001

T 04E OSD02950002

T+ :@E7*-DC"PHS ="7HEP| | C P% ASC R A SO 0 21301012710 224723#02950003

----- LAST PAGE -----

02A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2A

PPR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000	2	UVWYZ	START 0		
	3		DECK 4		
	4	*****			*****
	5	*****			*****
	6	*****			*****
	7	*****			*****
	8	TEST	(1)	CONDITION REGISTER (FIRST EA CYCLE)	*****
	9		(2)	ALU CONTROLS	*****
	10		(3)	EA CYCLE ACTIVE	*****
	11	*****			*****
	12	*****			*****
	13	*****			*****
0000	FO 76 3P	14	HALT	HPL UNITS,TENS	PROG 2A, HALT 1. IPL HALT.
		15	*		
		16	*		
		17	*		
		18	*		
		19			
0003	35 04 0005	20	L	HI,PSR	SET PSR (CR) TO HIGH CONDITION.
0007	0C 01 0050 003B	21			
		22	HVC	PAD,X2020 (2)	SET PAD (LOC 0050 & 0051) TO -2020-.
		23			
000D	0A 01 0050 0037	24	ED	PAD,XD5F1 (2)	EDIT XD5F1. RESULT SHUD BE -F5F1-.
		25			
0013	F2 04 1D	26	JNH	HALT3	GO TO HALT3. IF CR NOT SET TO HIGH.
		27			
0016	0D 01 0050 0039	28	CLC	PAD,XP5F1 (2)	GO TO HALT2 IF RESULT IS NOT -F5F1-
001C	F2 01 11	29	JNF	HALT2	
		30			
001F	3C 00 0050	31	HVI	PAD,X'D0'	SET PAD TO MINUS ZERO
		32			
0023	0A 00 0050 0039	33	ED	PAD,XP5F1 (1)	EDIT -F1-. CR SHUD BE HIGH.
		34			
0029	F2 02 07	35	JL	HALT3	GO HALT IF CR WAS SET TO LOW.
		36			
002C	00 07 0083	37	B	BOOT	GO TO BOOTSTRAP.
		38			
0030	FO 76 3P	39	HALT2	HPL UNITS,TENS	* PROG 2A, HALT.2. ERROR HALT.
		40	*		* FAILING CARDS A-B3H2
		41	*		* FAILING FUNCT 2
		42	*		
		43	*		
		44	*		
0033	FO 76 3P	45	HALT3	HPL UNITS,TENS	* PROG 2A, HALT 3. ERROR HALT.
		46	*		* FAILING CARDS A-B3H2
		47	*		* FAILING FUNCT 1,3
		48	*		
		49	*		
		50			
0036	D5F1	0037	51	XD5F1 DC	XL2'D5F1'
0038	F5F1	0039	52	XP5F1 DC	XL2'F5F1'
003A	2020	003B	53	X2020 DC	XL2'2020'
		0005	54	HI EQU	I'05'
		0004	55	PSR EQU	I'04'
		0003	56	BOOT EQU	131
		003P	57	UNITS EQU	I'3P'
		0076	58	TENS EQU	I'76'
		0050	59	PAD EQU	I'50'
		FFFF	60	END	

02A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2A

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0056	0037
HALT	A	003	0000	0014	
HALT2	A	003	0030	0039	0029
HALT3	A	003	0033	0045	0026 0035
HI	C	001	0005	0054	0020
PAD	C	001	0050	0059	0022* 0024* 0028 0031* 0033*
PSR	C	001	0004	0055	0020*
TENS	C	001	0076	0058	0014 0039 0045
UNITS	C	001	003F	0057	0014 0039 0045
UVWYZ	A	001	0000	0002	
XD5P1	A	002	0037	0051	0024
XF5P1	A	002	0039	0052	0028 0033
X2020	A	002	003B	0053	0022

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

02A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2A

OBJECT CARD LISTING

THE CHARACTER $\bar{}$ INDICATES A BLANK COLUMN AND THE CHARACTERS $\bar{D} \bar{E} \bar{H}$ INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

T+ :@GQ*(EE AEO A E +OYA E (*H DGE4A E +-HADL3 E E H AE CX2--- /OBCAGQ*AGQ*5-G 5BK '9M02A50001
T *H ..... :Q402A50002
E**+E7*--DC*PH$ =*7H&P! | C P% ASC R A SO Q ..... 21301012710 22472'@02A50003

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02C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2C

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****          PROG 2C          *****
              7 *****
              8 *****          (ITC) INSERT AND TEST CHARACTERS *****
              9 *****
              10 *****         TEST (1) OP DECODE *****
              11 *****         (2) BIN COMP A REG *****
              12 *****
              13 *****
              14
              15
0000 P0 76 6C 16 HALT1 HPL UNITS,TENS
0003 35 0C 0032 17 L LO,PSRARR          SET PSR TO LO & ARR TO 0002.
0007 3C 0C 0050 18 HVI PAD,X'00'          SET PAD TO ZERO
000B 08 00 0050 0034 19 ITC PAD(1),X004F          INSERT & TEST PAD WITH -4F-
0011 34 08 0053 20 ST SAVARR,ARR          STORE THE ARR
0015 0D 00 0053 0034 21 CLC SAVARR(1),X004F          GO TO HALT3 IF ARR WAS
0018 P2 81 0D 22 JE HALT3          DECREMENTED.
001E 0D 00 0053 0032 23 CLC SAVARR(1),LO          GO TO HALT2 IF ARR NOT SELECTED.
0024 C0 C1 0083 24 BNE BOOT          GO TO BOOT IF ARR WAS SELECTED.
0028 P0 76 6C 25 HALT2 HPL UNITS,TENS          * PROG 2C, HALT 2.
                26 *          * FAILING CARDS A-B3J2
                27 *          * FAILING FUNCT 1
                28 *
                29 *
002R P0 76 6C 30 HALT3 HPL UNITS,TENS          * PROG 2C, HALT 3.
                31 *          * FAILING CARDS A-B3H2
                32 *          * FAILING FUNCT 2
                33 *
                34 *
002E P0 76 6C 35 HALT4 HPL UNITS,TENS          * PROG 2C, HALT 4.
                36 *          * FAILING CARDS A-B3J2
                37 *          * FAILING FUNCT 1
                38 *
                39 *
0031 0C02 0032 40 LO DC XL2'0002'
0033 004F 0034 41 X004F DC XL7'004F'
006C 42 UNITS EQU X'6C'
0076 43 TENS EQU X'76'
0050 44 PAD EQU X'50'
0053 45 SAVARR EQU X'53'
000C 46 PSRARR EQU X'0C'
0081 47 BOOT EQU 131
0008 48 ARR EQU X'08'
FFFF 49 END

```

02C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2C

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ARR	C	001	0008	0048	0020
BOOT	C	001	0083	0047	0024
HALT1	A	003	0000	0016	
HALT2	A	003	0028	0025	
HALT3	A	003	002B	0030	0022
HALT4	A	003	002E	0035	
LO	A	002	0032	0040	0017 0023
PAD	C	001	005C	0044	0018* 0019*
PSRARR	C	001	000C	0046	0017*
SAVARR	C	001	0053	0045	0020* 0021 0023
TENS	C	001	0076	0043	0016 0025 0030 0035
UNITS	C	001	006C	0042	0016 0025 0030 0035
UVWXYZ	A	001	0000	0002	
X004F	A	002	0034	0041	0019 0021

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

02C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2C

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T (40GR%(EC <TO P . AC C&B A LCB HO 40YD(C& HO 20 D -"A6S|A 6S|A6S B D@ ET*02C50001

E"MI*E7*=-DC*PHS =*7F6P| | C F% ASC R A SO Q 21301012710 22472*\$802C50002

02E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2E

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3          DECK 4
              4 *****
              5 *****
              6 *****
              7 *****
              8 *****
              9 *****
             10 *****
             11 *****
             12 *****
             13 *****
             14 *****
             15 *****
             16 *****
             17
             18
             19 HALT1 HPL UNITS,TENS
             20          HVI PAD,X'00'
             21          L XFF,ARR
             22          ITC PAD(1),XFF
             23          ST SAVARR,ARR
             24          CLI PAD,X'FF'
             25          JNE PADCHK
             26          CLC SAVARR(1),X0051
             27          BE BOOT
             28 HALT2 HPL UNITS,TENS
             29 *
             30 *
             31 *
             32 *
             33 PADCHK CLI PAD,X'00'
             34          JE HALT4
             35 HALT3 HPL UNITS,TENS
             36 *
             37 *
             38 *
             39 *
             40 HALT4 HPL UNITS,TENS
             41 *
             42 *
             43 *
             44 *
             45 XFF DC IL1'FF'
             46 X0051 DC IL2'0051'
             47 ARR EQU X'08'
             48 SAVARR EQU X'53'
             49 PAD EQU X'50'
             50 BOOT EQU 131
             51 UNITS EQU X'7C'
             52 TENS EQU X'76'
             53          END

0000 FC 76 7C
0003 3C C0 0050
0007 35 C8 0036
0008 08 00 0050 0036
0011 34 C8 C053
0015 3D FF 0050
0019 F2 01 0D
001C 0D C0 0053 0038
0022 C0 81 C083
0026 F0 76 7C

0029 3D 00 0050
002D F2 81 03
0030 FC 76 7C

0033 F0 76 7C

0076 FF
0037 C051
0036
0038
0008
0053
0050
0083
007C
0076
FFFF
    
```

SET PAD TO -00-
 LOAD ARR WITH -1BFF-
 INSERT & TEST PAD WITH -FF-
 STORE THE ARR
 GO TO PADCHK IF RESULT NOT
 EQUAL TO -FF-
 GO TO HALT2 IF ARR NOT SET TO -0051-
 GO TO BOOT IF ARR IS SET TO -0051-
 * PROG 2E, HALT 2.
 * FAILING CARDS A-B3P2,A-B3T2
 * FAILING FUNCT (2), (3)

GO TO HALT4 IF RESULT EQ TO -00-
 GO TO HALT3 IF RESULT NOT EQ TO -00-
 * PROG 2E, HALT3
 * FAILING CARDS A-B3J2
 * FAILING FUNCT 4

* PROG 2E, HALT 4.
 * FAILING CARDS A-B3P2,A-B3S2
 * FAILING FUNCT (1,5), (1,5)

----- LAST PAGE -----

02E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2E

CROSS-REFERENCE

SYMBOL	T	LEN	VALDF	DEPN	REFERENCES
ARR	C	001	0008	0047	0021* 0023
BOOT	C	001	0083	0050	0027
HALT1	A	003	0000	0019	
HALT2	A	003	0026	0028	
HALT3	A	003	0030	0035	
HALT4	A	003	0033	0040	0034
PAD	C	001	0050	0049	0020* 0022* 0024 0033
PADCHK	A	004	0029	0033	0025
SAVARR	C	001	0053	0048	0023* 0026
TENS	C	001	0076	0052	0019 0028 0035 0040
UNITS	C	001	007C	0051	0019 0028 0035 0040
UVWXYZ	A	001	0000	0002	
XPF	A	001	0036	0045	0021 0022
X0051	A	002	0038	0046	0026

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

02E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2E

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T* 82GR0| MCH H CO. AS C04B A LI-3 H|HAC54 EK *<BA H|O)X0' A 62YDC@GR@GR@0A J 49402E50001

E***E7*=-DC*PHS =*7M5P| | C P% ASC R A SO Q 21301012710 22472@#802E50002

02P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2P

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
0000                      2 UVWXYZ START 0
                          3 DECK 4
                          4 *****
                          5 *****
                          6 *****          PROG 2P
                          7 *****
                          8 *****          (ITC) INSERT AND TEST CHARACTERS
                          9 *****
                         10 *****          TEST (1) SIGN DIGIT
                         11 *****          (2) SIG OR SIG DIG STUCK DOWN
                         12 *****          (3) NOT BA ELIN
                         13 *****          (4) ARR SELECT STUCK UP
                         14 *****
                         15 *****
                         16 *****
                         17 *****
0000 F0 76 3C            18 HALT1 HPL UNITS,TENS
0003 0C 02 0052 0036    19 HVC PAD+2,X007(3) SET PAD TO -0000F7-
0009 0B 02 0050 0037    20 ITC PAD,XFE(3) INSERT 6 TEST PAD WITH -PFE-
000F 34 08 0055          21 ST SAVARR,ARR STORE ARR IN SAVARR
0013 0D 02 0052 003B    22 CLC PAD+2,XFF7(3) GO TO ARCHK IF RESULT WAS
0019 F2 81 0D           23 JE ARCHK EQUAL TO -FFFFFF7-
001C 3D EE 0051          24 CLI PAD+1,X'EE' GO TO HALT3 IF -EE- WAS
0020 F2 81 03           25 JE HALT3 INSERTED IN LOC -0051-
0023 F0 76 3C           26 HALT2 HPL UNITS,TENS * PROG 2P, HALT 2
                          27 * * FAILING CARD# A-B3P2,A-B3S2,A-B3H2
                          28 * * FAILING FUNCT (1,2), (1,2), (1)
                          29 *
                          30 *
0026 F0 76 3C           31 HALT3 HPL UNITS,TENS * PROG 2P, HALT 3
                          32 * * FAILING CARD# A-B3H2
                          33 * * FAILING FUNCT 3
                          34 *
                          35 *
0029 3D 52 0055          36 ARCHK CLI SAVARR,X'52' GO TO HALT4 IF ARR NOT EQ TO -0052-
002D C0 81 0083          37 BE BOOT GO TO BOOT IF ARR IS EQ TO -0052-
0031 F0 76 3C           38 HALT4 HPL UNITS,TENS * PROG 2P, HALT 4
                          39 * * FAILING CARD# A-B3P2
                          40 * * FAILING FUNCT 4
                          41 *
                          42 *
0034 0000F7            43 X007 DC XL3'0000F7'
0037 FF                44 XFE DC XL1'FF'
0038 EE                45 DC XL1'EE'
0039 FFFFFFF7          46 XFF7 DC XL3'FFFFFF7'
0050 47 PAD EQU X'50'
0055 48 SAVARR EQU X'55'
003C 49 UNITS EQU X'3C'
0076 50 TENS EQU X'76'
0083 51 BOOT EQU 131
0008 52 ARR EQU X'08'
FFFF 53 END

```

02P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2P

```

CROSS-REFERENCE
SYMBOL T LEN VALUE DEPN REFERENCES
ARR C 001 0008 0052 0021
ARRCHK A 004 0029 0036 0023
BOOT C 001 0083 0051 0037
HALT1 A 003 0000 0018
HALT2 A 003 0023 0026
HALT3 A 003 0026 0031 0025
HALT4 A 003 0031 0038
PAD C 001 0050 0047 0019* 0020* 0022 0024
SAVARR C 001 0055 0048 0021* 0036
TENS C 001 0076 0050 0018 0026 0031 0038
UNITS C 001 003C 0049 0018 0026 0031 0038
UVWXYZ A 001 0000 0002
XFE A 001 0037 0044 0020
XFF7 A 003 003B 0046 0022
X007 A 003 0036 0043 0019

```

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

02P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 2P

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :2GQ2C H H- 6BOH H 7(- H24 B EH +HACL7> EG 2-6(0)T30)T0H-A HOND -"A6| "" >"B *L002P50001

T 4'0 PT-02P50002

E""*E7*=-DC*PH\$ ="7H6P| | C .. P% ASC R A SO Q 21301012710 224722.202P50003

0305 CPU AND MEMORY DIAGNOSTICS: PROGRAM 30

EPR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000		2	UVWXYZ START 0	
		3	DECK 4	
		4	*****	
		5	*****	
		6	*****	
		7	*****	PROG 30
		8	*****	(ITC) INSERT AND TEST CHARACTERS
		9	*****	
		10	*****	TEST (1) SIG LOGIC
		11	*****	
		12	*****	
		13	*****	
		14	*****	
0000	F0 57 6P	15	HALT1 HPL UNITS,TENS	
0003	0C 04 0054 0032	16	HVC PAD*4,RIPPLE(5)	SET PAD TO -P001PBFDF9--
0009	08 04 0050 0038	17	ITC PAD,XPF(5)	INSERT & TEST PAD WITH -PF-
000P	34 08 0058	18	ST SAVARR,ARR	STORE ARR IN SAVARR
0013	0D 00 0058 002D	19	CLC SAVARR(1),X0054	GO TO HALT2 IF ARR NOT EQ -0054-
0019	F2 81 03	20	JE PADCHK	GO TO PADCHK IF RESULT IS EQ -0054-
001C	F0 57 6P	21	HALT2 HPL UNITS,TENS	* PROG 30, HALT 2
		22	*	* FAILING CARDS A-B3P2
		23	*	* FAILING FUNCT 1
		24	*	
		25	*	
001P	0D 04 0054 0037	26	PADCHK CLC PAD*4,RESULT(5)	GO TO HALT3 IF PAD NOT -FFFFFFFFF9-
0025	CC 81 0083	27	BE BOOT	GO TO BOOT IF PAD IS -FFFFFFFFF9-
0029	F0 57 6P	28	HALT3 HPL UNITS,TENS	* PROG 30, HALT3
		29	*	* FAILING CARDS A-B3P2
		30	*	* FAILING FUNCT 1
		31	*	
		32	*	
002C	0054	002D	33 X0054 DC XL2'0054'	
002E	P001PBFDF9	0032	34 RIPPLE DC XL5'P001PBFDF9'	
0033	FFFFFFFFF9	0037	35 RESULT DC XL5'FFFFFFFFF9'	
0038	FF	0038	36 XPF DC XL1'FF'	
		0050	37 PAD EQU X'50'	
		0058	38 SAVARR EQU X'58'	
		0083	39 BOOT EQU 131	
		006P	40 UNITS EQU X'6P'	
		0057	41 TENS EQU X'57'	
		CC08	42 ARR EQU X'08'	
		FFFF	43 END	

----- LAST PAGE -----

C305 CPU AND MEMORY DIAGNOSTICS: PROGRAM 30

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ARR	C	001	0008	0042	0018
BOOT	C	001	0083	0039	0027
HALT1	A	003	0000	0015	
HALT2	A	003	001C	0021	
HALT3	A	003	0029	0028	
PAD	C	001	0050	0C37	0016* 0017* 0026
PADCHK	A	006	001F	0026	0020
RESULT	A	005	0037	0035	0026
RIPPLE	A	005	0032	0034	0016
SAVARR	C	001	0058	0038	0018* 0019
TENS	C	001	0057	0041	0015 0021 0028
UNITS	C	001	006F	0040	0015 0021 0028
UVWXYZ	A	001	0000	0002	
XFF	A	001	0038	0036	0017
X0054	A	002	002D	0033	0019

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

C305 CPU AND MEMORY DIAGNOSTICS: PROGRAM 30

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```
T+ 82E) ?C E N 280E H 8( - O 4 E- -HA "AP504 D EG (8BA H10N68 N| A="79*****I *****ZM03050001
Z***E7*=-DC*PHS ="7H6P| | C P% ASC R A SO Q ..... 21301012710 224721,003050002
```

0315 CPU AND MEMORY DIAGNOSTICS: PROGRAM 31

```

ERR LOC OBJECT CODE  ADDR STMT SOURCE STATEMENT
0000
  2 UVWXYZ START 0
  3 DECK 4
  4 *****
  5 *****
  6 *****
  7 *****          PROG 31
  8 *****          INDEXING TESTS
  9 *****          TESTS  (1)  ARR SELECT
 10 *****          (2)  FORCE BIT 7 TO A
 11 *****          (3)  LSR LO EQUAL TO ALL ONES
 12 *****          (4)  CARRY CONTROLS- CARRY FROM 3-4 LOST
 13 *****          (5)  BIN COMP & BIN SUB
 14 *****          (6)  XR1 JSELECT
 15 *****          (7)  CLOCK 3-7
 16 *****          (8)  CLOCK 4+8
 17 *****          (9)  INTERNAL
 18 *****
 19 *****
 20 *****
 21 *****
 22 *****  CARD 31  SAR CONTENTS DURING  REASON FOR HALTING
 23 *****  HALTS  I-OP  I-Q  I-R
 24 *****
 25 *****  HALT 1  0000  0001  0002  IPL HALT
 26 *****  IF THIS HALT OCCURS
 27 *****  WHEN NOT IPL'ING, THEN
 28 *****  XR1 SELECT IS STUCK UP
 29 *****
 30 *****  HALT 2  0027  0028  0029  THE ARR WAS SET TO THE
 31 *****  WRONG VALUE DURING AN
 32 *****  INDEXED NO-OP BRANCH.
 33 *****
 34 *****  HALT 3  002A  002B  002C  THE ARR WAS NOT SELECTED
 35 *****  DURING AN INDEXED NO-OP
 36 *****  BRANCH.
 37 *****
 38 *****  HALT 4  0110  0111  0112  THE HIGH ORDER BYTE OF
 39 *****  THE IAR WAS INCREMENTED
 40 *****  DURING I-X, 1-2 TIME.
 41 *****
 42 *****
 43 *****
 44 *****
 45 *****
 46 *****
 47 *****
 48 *****
0000 P0 57 03  49 HALT1 HPL  UNITS,TENS  * PROG 31, HALT 1, IPL HALT.
 50 *
 51 *
 52 *
 53 *
 54 *
 55 *****
0003 35 08 0031  56 LOAD  L  X0001,X'0B'  LOAD XR1,XR2 & ARR WITH -0001-.
 57 *****
 58 *****
0007 0C 02 0112 002F  59 MVC  X'0112',HALT4+2(3)  MOVE HALT3 TO LOC -0110 THRU 0112-.
 60 *****
 61 *****
000D D0 80 FE  62 BC  X'FE' (,XR1),NOOP  BRANCH NO-OP. THE ARR SHOULD NOW
 63 *  CONTAIN -OFFF-.
 64 *****
0010 34 08 0051  65 ST  PAD,X'0B'  STORE THE ARR IN LOC -0050 & 0051-.
 66 *****
 67 *****
0014 0D 01 0051 0033  68 CLC  PAD(2),X00FF  COMPARE THE STORED ARR WITH -00FF- &
001A C0 81 0083  69 BE  BOOT  GO TO BOOTSTRAP IF EQUAL.
 70 *****
001E 0D 01 0051 0031  71 CLC  PAD(2),X0001  * COMPARE THE STORED ARR WITH -0001-
 72 *****

```

0315 CPU AND MEMORY DIAGNOSTICS: PROGRAM 31

```

ERR LOC OBJECT CODE  ADDR STMT SOURCE STATEMENT
0024 P2 81 03  70 JE  HALT3  * 6 GO TO HALT3 IF EQUAL.
 71 *
 72 *
0027 P0 57 03  73 HALT2 HPL  UNITS,TENS  * PROG 31, HALT 2. ERROR HALT.
 74 *
 75 *
 76 *
 77 *
 78 *
 79 *
002A P0 57 03  80 HALT3 HPL  UNITS,TENS  * PROG 31, HALT 3. ERROR HALT.
 81 *
 82 *
 83 *
 84 *
 85 *
002D P0 57 03  86 HALT4 HPL  UNITS,TENS  * PROG 31, HALT 4. ERROR HALT.
 87 *
 88 *
 89 *
 90 *
 91 *
0C30 0001  0031 92 X0001 DC  XL2'0001'
0032 00FF  0033 93 X00FF DC  XL2'00FF'
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IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 65

0315 CPU AND MEMORY DIAGNOSTICS: PROGRAM 31

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0100	0067
HALT1	A	003	0000	0049	
HALT2	A	003	0027	0073	
HALT3	A	003	002A	0080	0070
HALT4	A	003	002D	0086	0059
LOAD	A	004	0003	0056	
NOOP	C	001	0080	0096	0061
PAD	C	001	0051	0095	0064* 0066 0069
TENS	C	001	0057	0099	0049 0073 0080 0086
UNITS	C	001	0003	0098	0049 0073 0080 0086
UVWXYZ	A	001	0000	0002	
IR1	C	001	0001	0097	0061
XOFF	A	002	0033	0093	0066
X0001	A	002	0031	0092	0056 0069

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 65A

0315 CPU AND MEMORY DIAGNOSTICS: PROGRAM 31

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T<0 30E*C(6% <60 B JH . *B *T&H ED (SAJ C| -8BCC&D *H& 10YDC&E*C&E* C&E*C D *0 ***** 58 03150001

E***E7*=-DC*PHS =*7HEP| | C *% ASC R A SO Q ***** 21301012710 224721#003150002

----- LAST PAGE -----

DATE 15SEP69 14NOV69 20JAN70 13MAR70 01OCT70 28APR71 01MAR72 PROG ID 0031-5
EC NO. 816499 816559 816576 816638 816756 816788 818693 PAGE 65

DATE 15SEP69 14NOV69 20JAN70 13MAR70 01OCT70 28APR71 01MAR72 PROG ID 0031-5
EC NO. 816499 816559 816576 816638 816756 816788 818693 PAGE 65A

0325 CPU AND MEMORY DIAGNOSTICS: PROGRAM 32

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****          PROG 32          *****
              6 *****          INDEXING TESTS          *****
              7 *****
              8 *****          TEST          (1)  XR1 & XR2 SELECT          *****
              9 *****          (2)  SEL XR2 GATE          *****
             10 *****          (3)  CARRY CONTROLS- CARRY FORCED AT 7-8          *****
             11 *****
             12 *****          CARD 32          SAR CONTENTS DURING REASON FOR HALTING          *****
             13 *****          HALTS          I-OP  I-Q  I-R          *****
             14 *****
             15 *****          HALT 1          0000  0001  0002  IPL HALT          *****
             16 *****          HALT2          0023  0024  0025  XR1 & XR2 WERE BOTH          *****
             17 *****          SELECTED DURING I-X 3-4          *****
             18 *****          TIME OF THE INDEXED          *****
             19 *****          BRANCH. (BRNCH1)          *****
             20 *****          HALT 3          002D  002E  002F  XR1 WAS SELECTED INSTEAD          *****
             21 *****          OF XR2 DURING I-X 3-4          *****
             22 *****          TIME OF THE INDEXED          *****
             23 *****          BRANCH. (BRNCH1)          *****
             24 *****          HALT 4          0030  0031  0032  CARRY IN AT I-X 7-8 TIME          *****
             25 *****          EVEN THOUGH NO CARRY OUT          *****
             26 *****          AT I-X 3-4 TIME.          *****
             27 *****
             28 *****
             29 HALT1  HPL  UNITS,TENS          * PROG 32, HALT 1.  IPL HALT.
             30 *
             31 *
             32 *
             33 *
             34 *
             35          L          X000A,X'09'          LOAD XR1 & ARR WITH -000A-.
             36
             37          L          X0005,X'02'          LOAD XR2 WITH -0005-.
             38
             39
             40 BRNCH1 BC  X'FF' (,XR2),NOOP          INDEXED BRANCH NO-OP. THE ARR
             41 *          SHOULD NOW CONTAIN -0104-.
             42
             43          ST          PAD,X'08'          STORE THE ARR IN LOC -0050 & 0051-.
             44
             45          CLC          PAD,X0104 (2)          COMPARE THE STORED ARR WITH -0104-.
             46          BE          BOOT          GO TO BOOTSTRAP IF EQUAL.
             47
             48          CLI          PAD,X'0E'          * COMPARE STORED ARR LO WITH -0E-.
             49          JNE          HALT2+3          * GO TO HALT2 IF EQUAL.
             50 *          * BYPASS HALT2 IF NOT EQUAL.
             51
             52 HALT2  HPL  UNITS,TENS          * PROG 32, HALT 2.  ERROR HALT.
             53 *          * FAILING CARD# A-B3P2
             54 *          * FAILING FUNCT 1
             55 *
             56 *
             57
             58          CLI          PAD,X'09'          * COMPARE STORED ARR LO WITH -09-.
             59          JNE          HALT4          * GO TO HALT3 IF EQUAL.
             60 *          * GO TO HALT4 IF NOT EQUAL
             61
             62 HALT3  HPL  UNITS,TENS          * PROG 32, HALT 3.  ERROR HALT.
             63 *          * FAILING CARD# A-B3P2,A-B3J2
             64 *          * FAILING FUNCT (1), (2)
             65 *
             66 *
             67
             68 HALT4  HPL  UNITS,TENS          * PROG 32, HALT 4.  ERROR HALT.
             69 *          * FAILING CARD# A-B3M2

```

0325 CPU AND MEMORY DIAGNOSTICS: PROGRAM 32

ERR LOC OBJCT CDDP ADDR STMT SOURCE STATEMENT

```

              70 *
              71 *          * FAILING FUNCT 3
              72 *
              73
             0033 0C0A          0034  74  X000A  DC          XL2'000A'
             0035 0CC5          0036  75  X0005  DC          XL2'0005'
             0037 0108          0038  76  X0104  DC          XL2'0104'
              77
             C051  78  PAD          EQU          X'51'
             0080  79  NOOP          EQU          X'80'
             0002  80  XR2          EQU          X'02'
             0076  81  UNITS          EQU          X'76'
             C057  82  TENS          EQU          X'57'
             0083  83  BOOT          EQU          X'83'
              84
             FPPP  85          END

```

0325 CPU AND MEMORY DIAGNOSTICS: PROGRAM 32

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0083	0046
BRNCH1	A	003	000B	0040	
HALT1	A	003	0000	0029	
HALT2	A	003	0023	0052	0049
HALT3	A	003	002D	0062	
HALT4	A	003	0030	0068	0059
HOOP	C	001	0080	0079	0040
PAD	C	001	0051	0078	0043* 0045 0048 0058
TEWS	C	001	0057	0082	0029 0052 0062 0068
UNITS	C	001	0076	0081	0029 0052 0062 0068
UVWXYZ	A	001	0000	0002	
XR2	C	001	0002	0080	0040
X000A	A	002	0034	0074	0035
X0005	A	002	0036	0075	0037
X0104	A	002	0038	0076	0045

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0325 CPU AND MEMORY DIAGNOSTICS: PROGRAM 32

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ BAE)6(EU (CH B CS--|04B AJCED HE 80HD -34+ EG 2 E|GN7Q*BEAJ0-D CAE)6AE)6 Y AED D 5.003250001

E***+27*--DC*PHS =*7H6P| | C F% ASC B A SO Q 21301012710 224721.003250002

0335 CPU AND MEMORY DIAGNOSTICS: PROGRAM 33

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****          PROG 33          *****
              7 *****          INDEXING TESTS          *****
              8 *****          TEST          (1) LSR LO = PP.          *****
              9 *****          (2) LSR WRITE HI AT I-X CLOCK 2.          *****
             10 *****          (3) GATE LSR HI TO B AT I-X CLOCK 2.          *****
             11 *****          (4) FORCE BIT 7 TO A.          *****
             12 *****          (5) SEL IR2 GATE          *****
             13 *****          (6) INTERNAL          *****
             14 *****
             15 *****
             16 *****          CARD 33 SAR CONTENTS REASON FOR HALTING.          *****
             17 *****          HALTS DURING,          *****
             18 *****
             19 *****          HALT 1 I-OP = 0000 IPL HALT.          *****
             20 *****          I-Q = 0001          *****
             21 *****          I-R = 0002          *****
             22 *****
             23 *****          HALT 2 I-OP = 0028 THE IAR HI BYTE WAS NOT          *****
             24 *****          I-Q = 0029 INCREMENTED DURING I-X CYCLE          *****
             25 *****          I-R = 002A CLOCK 2.          *****
             26 *****
             27 *****          HALT 3 I-OP = 002B IF STORED ARR HI = 01, THE IAR          *****
             28 *****          I-Q = 002C WAS NOT GATED TO B DURING I-X          *****
             29 *****          I-R = 002D CYCLE CLOCK 2.          *****
             30 *****
             31 *****          HALT 4 I-OP = 002E XR2 WAS SELECTED WHEN          *****
             32 *****          I-Q = 002F XR1 WAS SPECIFIED.          *****
             33 *****          I-R = 0030          *****
             34 *****
             35 *****
             36 *****
             37 *****
             38 *****
             39 *****
             40 *****          USING HALT1,1          *****
             41 *****          USING HALT1,2          *****
0000 FC 57 57 42 HALT1 HPL UNITS,TENS          * PROG 33, HALT 1. IPL HALT.
             43 *
             44 *
             45 *
             46 *****
0003 35 09 0035 47 LOAD L X0000,X'09'          LOAD XR1 & ARR WITH -0000-.
             48 *****
0007 35 02 0037 49 L X0019,X'02'          LOAD XR2 WITH -0019-.
             50 *****
000R 0C 02 02FF 0033 51 MOVE MVC X'02FF',BRANCH+2(3)          MOVE THE INDEXED UNCONDITIONAL
             52 *          BRANCH TO LOC -02FD THRU 02FF-.
             53 *****
0011 C0 87 02FD 54 B X'02FD'          GO TO LOC -02FD-. THE INDEXED BRANCH
             55 *          AT LOC -02FD- WILL BRANCH BACK TO
             56 *          THE NEXT INSTRUCTION (STORE)
             57 *****
0015 34 08 0051 58 STORE ST PAD,X'08'          STORE THE ARR (OLD IAR) IN
             59 *          LOC -0050 & 0051-.
             60 *****
0019 3D 03 0050 61 CLI PAD-1,X'03'          COMPARE STORED ARR HI WITH -03-.
001D C0 81 0083 62 BE BOOT          GO TO BOOTSTRAP IF EQUAL.
             63 *****
0021 3D 02 0050 64 CLI PAD-1,X'02'          * COMPARE STORED ARR HI WITH -02-.
0025 P2 01 03 65 JNE HALT3          * GO TO HALT2 IF EQUAL.
             66 *          * GO TO HALT3 IF NOT EQUAL
             67 *****
0028 F0 57 57 68 HALT2 HPL UNITS,TENS          * PROG 33, HALT 2. ERROR HALT.
             69 *          * FAILING CARDS A-B3P2,A-B3C2

```

0335 CPU AND MEMORY DIAGNOSTICS: PROGRAM 33

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

              70 *
              71 *          * FAILING FUNCT (2), (4), (1)
              72 *
              73 *
002R F0 57 57 74 HALT3 HPL UNITS,TENS          * PROG 33, HALT 3. ERROR HALT.
              75 *          * FAILING CARDS A-B3N2
              76 *          * FAILING FUNCT 3 WITH ARR=0100
              77 *
              78 *
              79 *
002F F0 57 57 80 HALT4 HPL UNITS,TENS          * PROG 33, HALT 4. ERROR HALT
              81 *          * FAILING CARDS A-B3J2,A-B3P2
              82 *          * FAILING FUNCT (5), (6)
              83 *
              84 *
              85 *
0031 D0 87 15 86 BRANCH B STORE(,XR1)          INDEXED UNCONDITIONAL BRANCH.
              87 *****
0034 0000 0035 88 X0000 DC XL2'0000'
0036 0019 0037 89 X0019 DC XL2'0019'
              90 *****
0051 91 PAD EQU X'51'
0001 92 XR1 EQU X'01'
0057 93 UNITS EQU X'57'
0057 94 TENS EQU X'57'
0083 95 BOOT EQU X'83'
00FF 96 END

```


0345 CPU AND MEMORY DIAGNOSTICS: PROGRAM 34

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		2	UVWXYZ	START	0
		3		DECK	4
		4	*****		
		5	*****		
		6	*****		
		7	*****		
		8	*****		
		9	TESTS	(1)	RIPPLE THE LSR LO = PF LOGIC.
		10	*****		
		11	*****		
		12	*****		
	C000	13	USING	HALT1,1	
	C000	14	USING	HALT1,2	
0000	PO 57 1B	16	HALT1	HPL	UNITS,TENS * PROG 34, HALT 1. IPL HALT.
		17	*		
		18	*		
		19	*		
		20	*		
0003	35 03 0036	22	LOAD	L	X'0000,X'03' LOAD XR1, XR2, ARR WITH -0000-.
0007	0C 05 00FE 0034	24	MOVE	HVC	X'00FE'(6),BRNCH2+2 MOVE BRNCH1 & BRNCH2 TO LOC -00F9 THRU 00FE-.
000D	C0 87 00F9	27		B	X'F9' GO TO BRNCH1 AT LOC -00F9-.
		28			
		29	*		BRNCH1 WILL BRANCH BACK TO STORE1 AT LOC -0010-. (NEXT INSTRUCTION).
		30	*		
0011	34 08 0051	32	STORE1	ST	PAD,ARR STORE THE ARR IN LOC -0050 & 0051-.
0015	3D 01 0050	34	CLI	PAD-1,X'01'	COMPARE STORED ARR HI WITH -01-.
0019	F2 81 10	35	JE	HALT2	GO TO HALT2 IF ARR HI = -01-.
001C	C0 87 00FC	36	B	X'FC'	GO TO BRNCH2 IF ARR HI NOT = -01-.
		37			
		38	*		BRNCH2 WILL BRANCH BACK TO STORE2 AT LOC -001F-. (NEXT INSTRUCTION)
		39	*		
002C	34 08 0051	41	STORE2	ST	PAD,ARR STORE THE ARR IN LOC -0050 & 0051-.
0024	3D 01 0050	43	CLI	PAD-1,X'01'	COMPARE STORED ARR HI WITH -01-.
0028	C0 C1 0083	44	ENE	BOOT	GO TO BOOTSTRAP IF ARR HI NOT -01-.
		45	*		GO TO HALT2 IF ARR EQ -01-.
002C	PO 57 1B	47	HALT2	HPL	UNITS,TENS * PROG 34, HALT 2. ERROR HALT.
		48	*		* FAILING CARD# A-B3C2
		49	*		* FAILING FUNCT 1
		50	*		
		51	*		
002F	D0 87 11	53	BRNCH1	B	STORE1(,XR1) INDEXED BRANCH TO LOC -0010-.
0032	D0 87 20	55	BRNCH2	B	STORE2(,XR1) INDEXED BRANCH TO LOC -001F-.
0035	0000	57	X0000	DC	XL2*0000'
		58			
		59	PAD	EQU	X'51'
		60	ARR	EQU	X'08'
		61	XR1	EQU	X'01'
		62	UNITS	EQU	X'1B'
		63	TENS	EQU	X'57'
		64	BOOT	EQU	X'83'
		65	END		

0345 CPU AND MEMORY DIAGNOSTICS: PROGRAM 34

					CROSS-REFERENCE	
SYMBOL	T	LEN	VALUE	DEPN	REFERENCES	
ARR	C	001	0008	0060	0032	0041
BOOT	C	001	0083	0064	0044	
BRNCH1	A	003	002F	0053		
BRNCH2	A	003	0032	0055	0024	
HALT1	A	003	0000	0016	0013	0014
HALT2	A	003	002C	0047	0035	
LOAD	A	004	0003	0022		
MOVE	A	006	0007	0024		
PAD	C	001	0051	0059	0032*	0034 0041* 0043
STORE1	A	004	0011	0032	0053	
STORE2	A	004	0020	0041	0055	
TENS	C	001	0057	0063	0016	0047
UNITS	C	001	001B	0062	0016	0047
UVWXYZ	A	001	0000	0002		
XR1	C	001	0001	0061	0053	0055
X0000	A	002	0036	0057	0022	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0345 CPU AND MEMORY DIAGNOSTICS: PROGRAM 34

OBJECT CARD LISTING

THE CHARACTER . INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T(- 6DE*(E< (-0 E |B (<EG |U4B A J|&D H|HAD<BG |0 4B AJ|&D H< A H| 0M1?6/1G6/2 7H#03450001

E***E7*=-DC*P#E =*7#6P| | C P% ASC R A SO Q 21301012710 224720,003450002

0355 CPU AND MEMORY DIAGNOSTICS: PROGRAM 35

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****
              8 *****
              9 *****
             10 *****
             11 *****
             12          USING HALT1,1
             13          USING HALT1,2
0000 P0 57 5D 14 HALT1 HPL UNITS,TENS          PROG 35, HALT 1.  IPL HALT.
              15 *
              16 *
              17 *
              18 *
              19 *
0003 35 03 003R 20 LOAD L X0000,X'03'          LOAD IR1, IR2, ARR WITH -0000-.
              21
0007 0C 02 00FD 0036 22 MOVE1 MVC X'00FD'(3),BRNCH1+2  MOVE BRNCH1 TO LOC -00FB THRU 00FD-
              23
000D F2 87 EB 24 J X'EB'          GO TO BRNCH1 AT LOC -00FB-.
              25
              26 *
              27 *
              28
0010 34 C8 0051 29 STORE1 ST PAD,ARR          STORE THE ARR IN LOC -0050 & 0051-.
              30
0014 3D 01 0050 31 CLI PAD-1,X'01'          COMPARE STORED ARR HI WITH -01-.
0018 F2 81 16 32 JE HALT2          GO TO HALT2 IF ARR HI = -01-.
              33
001B 0C 02 00DF 0039 34 MOVE2 MVC X'00DF'(3),BRNCH2+2  MOVE BRNCH2 TO LOC -00DD THRU 00DF-.
              35
0021 C0 87 00DD 36 B X'DD'          GO TO BRNCH2 AT LOC -00DD-.
              37
              38 *
              39 *
              40
0025 34 C8 0051 41 STORE2 ST PAD,ARR          STORE THE ARR IN LOC -0050 & 0051-.
              42
0029 3D 01 0050 43 CLI PAD-1,X'01'          COMPARE STORED ARR HI WITH -01-.
002D C0 01 0083 44 BNE BOOT          GO TO BOOTSTRAP IF ARR HI NOT -01-.
              45 *
              46
0031 P0 57 5D 47 HALT2 HPL UNITS,TENS          * PROG 35, HALT 2.  ERROR HALT.
              48 *
              49 *
              50 *
              51 *
              52
0034 D0 87 10 53 BRNCH1 B STORE1(,XR1)          INDEXED BRANCH TO LOC -0010-.
              54
0037 D0 87 25 55 BRNCH2 B STORE2(,XR1)          INDEXED BRANCH TO LOC -0025-.
              56
003A 0C00 003B 57 X0000 DC XL2'0000'
              58
0051 59 PAD EQU X'51'
0008 60 ARR EQU X'08'
0001 61 XR1 EQU X'01'
005D 62 UNITS EQU X'5D'
0057 63 TENS EQU X'57'
0083 64 ROOT EQU X'83'
FFFF 65 END

```

----- LAST PAGE -----

0355 CPU AND MEMORY DIAGNOSTICS: PROGRAM 35

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ARR	C	001	0008	0060	0029 0041
BOOT	C	001	0083	0064	0044
BRNCH1	A	003	0034	0053	0022
BRNCH2	A	003	0037	0055	0034
HALT1	A	003	0000	0014	0012 0013
HALT2	A	003	0031	0047	0032
LOAD	A	004	0003	0020	
MOVE1	A	006	0007	0022	
MOVE2	A	006	001B	0034	
PAD	C	001	0051	0059	0029* 0031 0041* 0043
STORE1	A	004	0010	0029	0053
STORE2	A	004	0025	0041	0055
TENS	C	001	0057	0063	0014 0047
UNITS	C	001	005D	0062	0014 0047
UVWXYZ	A	001	0000	0002	
XR1	C	001	0001	0061	0053 0055
XG000	A	002	003B	0057	0020

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0355 CPU AND MEMORY DIAGNOSTICS: PROGRAM 35

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+- :2P1) (E< +CO 3 14 (2HG:3CH ED ' CAG@YDOC H 70 90H* 7LGH ED* EA 60 D -"APP) BGD(B GIE 5-803550001

..... 76603550002

P"R" *E7*=-DC"PHS =*7H&P| | C P% ASC R A S0 Q 21301012710 2247206803550003

----- LAST PAGE -----

0365 CPU AND MEMORY DIAGNOSTICS: PROGRAM 36

0365 CPU AND MEMORY DIAGNOSTICS: PROGRAM 36

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2	UVWXYZ	START 0
		3	DECK	4
		4	*****	*****
		5	*****	*****
		6	*****	PROG 36
		7	*****	INDEXING TESTS
		8	*****	*****
		9	*****	TESTS (1) RIPPLE THE LSR LO = PF LOGIC
		10	*****	*****
		11	*****	*****
0000		12	USING	HALT1,1
0000		13	USING	HALT1,2
		14		
0000	F0 57 7D	15	HALT1	HPL UNITS,TENS PROG 36, HALT 1. IPL HALT.
		16	*	
		17	*	
		18	*	
		19		
0003	35 0B 003B	20	LOAD	L X'0000,X'0B' LOAD XR1, XR2, ARR WITH -0000-.
		21		
0007	0C 02 00EF 0036	22	MOVE1	MVC X'00EF'(3),BRNCH1+2 MOVE BRNCH1 TO LOC -00ED THRU 00EF-.
		23		
000D	F2 87 DD	24	J	X'DD' GO TO BRNCH1 AT LOC -00ED-.
		25		
		26	*	BRNCH1 WILL BRANCH BACK TO STORE1
		27	*	AT LOC -0010-. (NEXT INSTRUCTION)
		28		
0010	34 08 0051	29	STORE1	ST PAD,ARR STORE THE ARR IN LOC -0050 & 0051-.
		30		
0014	3D 01 0050	31	CLI	PAD-1,X'01' COMPARE STORED ARR HI WITH -01-.
0018	F2 81 16	32	JE	HALT2 GO TO HALT2 IF ARR HI = -01-.
		33		
001E	0C 02 00BF 0039	34	MOVE2	MVC X'00BF'(3),BRNCH2+2 MOVE BRNCH2 TO LOC -00BD THRU 00BF-
		35		
0021	C0 87 C0BD	36	B	X'BD' GO TO BRNCH2 AT LOC -00BD-.
		37		
		38	*	BRNCH2 WILL BRANCH BACK TO STORE2
		39	*	AT LOC -0025-. (NEXT INSTRUCTION)
		40		
0025	34 08 0051	41	STORE2	ST PAD,ARR STORE THE ARR IN LOC -0050 & 0051-.
		42		
0029	3D 01 0050	43	CLI	PAD-1,X'01' COMPARE THE STORED ARR HI WITH -01-.
002D	C0 01 0083	44	BNE	BOOT GO TO BOOTSTRAP IF ARR HI NOT -01-.
		45	*	GO TO HALT2 IF ARR HI = -01-.
		46		
0031	F0 57 7D	47	HALT2	HPL UNITS,TENS * PROG 36, HALT 2. ERROR HALT.
		48	*	* FAILING CARDS A-B3C2
		49	*	* FAILING PUNCT 1
		50	*	
		51	*	
		52		
0034	D0 87 10	53	BRNCH1	B STORE1(,XR1) INDEXED BRANCH TO LOC -0010-.
		54		
0037	D0 87 25	55	BRNCH2	B STORE2(,XR1) INDEXED BRANCH TO LOC -0025-.
		56		
003A	0000	57	X0000	DC XL2'0000'
		58		
		59	PAD	EQU X'51'
		60	ARR	EQU X'08'
		61	XR1	EQU X'01'
		62	UNITS	EQU X'7D'
		63	TENS	EQU X'57'
		64	BOOT	EQU X'83'
		65	END	

CROSS-REFERENCE

SYMBOL	T	LPN	VALUF	DEPN	REFERENCES
ARR	C	001	0008	0060	0029 0041
BOOT	C	001	0083	0064	0044
BRNCH1	A	003	0034	0053	0022
BRNCH2	A	003	0037	0055	0034
HALT1	A	003	0000	0015	0012 0013
HALT2	A	003	0031	0047	0032
LOAD	A	004	0003	0020	
MOVE1	A	006	0007	0022	
MOVE2	A	006	001B	0034	
PAD	C	001	0051	0059	0029* 0031 0041* 0043
STORE1	A	004	0010	0029	0053
STORE2	A	004	0025	0041	0055
TENS	C	001	0057	0063	0015 0047
UNITS	C	001	007D	0062	0015 0047
UVWXYZ	A	001	0000	0002	
XR1	C	001	0001	0061	0053 0055
X0000	A	002	003B	0057	0020

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0365 CPU AND MEMORY DIAGNOSTICS: PROGRAM 36

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :@E) '(6% +00 B +@ (?HG7LEH ED ' SAESYDOC H ?0 90H* ?LEH ED' SA 80 D -"AP-)BGD(B GIE 5H<03650001

T 7-803650002

E**E7*=-DC*PHS =*7M6P| | C F% ASC R A SO Q 21301012710 224720.803650003

0375 CPU AND MEMORY DIAGNOSTICS: PROGRAM 37

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****          PROG 37
              8 *****          INDEXING TESTS
              9 *****          TESTS (1) RIPPLE THE LSR LO = PF LOGIC
             10 *****
             11 *****
             12          0000 USING HALT1,1
             13          0000 USING HALT1,2
             14
0000 P0 57 07 15 HALT1 HPL UNITS,TENS          PROG 37, HALT 1. IPL HALT.
             16 *
             17 *
             18 *
             19 *
0003 35 08 003B 20 LOAD L X0000,X'0B'          LOAD XR1, XR2, ARR WITH -0000-.
             21
0007 0C 02 007F 0036 22 MOVE1 MVC X'007F'(3),BRNCH1+2          MOVE BRNCH1 TO LOC -007D THRU 007F-.
             23
000D P2 87 6D 24 J X'6D'          GO TO BRNCH1 AT LOC -007D-.
             25
             26 *
             27 *
             28 *
             29 STORE1 ST PAD,ARR          STORE THE ARR IN LOC -0050 & 0051-.
             30
0014 3D 01 0050 31 CLI PAD-1,X'01'          COMPARE STORED ARR HI WITH -01-.
0018 P2 81 16 32 JE HALT2          GO TO HALT2 IF ARR HI = -01-.
             33
001B 0C 07 00P7 0039 34 MOVE2 MVC X'00P7'(3),BRNCH2+2          MOVE BRNCH2 TO LOC -00P5 THRU 0057-.
             35
0021 C0 87 00P5 36 B X'P5'          GO TO BRNCH2 AT LOC -00P5-.
             37
             38 *
             39 *
             40 *
             41 STORE2 ST PAD,ARR          STORE THE ARR IN LOC -0050 & 0051-.
             42
0029 3D 01 0050 43 CLI PAD-1,X'01'          COMPARE THE STORED ARR HI WITH -01-.
002D C0 C1 0083 44 BNE BOOT          GO TO BOOTSTRAP IF ARR HI NOT -01-.
             45 *
             46 *
             47 HALT2 HPL UNITS,TENS          * PROG 37, HALT 2. ERROR HALT.
             48 *          * FAILING CARDS A-B3C2
             49 *          * FAILING FUNCT 1
             50 *
             51 *
             52
0034 D0 87 10 53 BRNCH1 B STORE1(,XR1)          INDEXED BRANCH TO LOC -0010-.
             54
0037 D0 87 25 55 BRNCH2 B STORE2(,XR1)          INDEXED BRANCH TO LOC -0025-.
             56
003A 0000 003B 57 X0000 DC XL2'0000'
             58
             59 PAD EQU X'51'
             60 ARR EQU X'08'
             61 XR1 EQU X'01'
             62 UNITS EQU X'07'
             63 TENS EQU X'57'
             64 BOOT EQU X'83'
             65 END

```

----- LAST PAGE -----

0375 CPU AND MEMORY DIAGNOSTICS: PROGRAM 37

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ABR	C	001	0008	0060	0029 0041
BOOT	C	001	0083	0064	0044
BRNCH1	A	003	0034	0053	0022
BRNCH2	A	003	0037	0055	0034
HALT1	A	003	0000	0015	0012 0013
HALT2	A	003	0031	0047	0032
LOAD	A	004	0003	0020	
MOVE1	A	006	0007	0022	
MOVE2	A	006	0018	0034	
PAD	C	001	0051	0059	0029* 0031 0041* 0043
STORE1	A	004	0010	0029	0053
STORE2	A	004	0025	0041	0055
TENS	C	001	0057	0063	0015 0047
UNITS	C	001	0007	0062	0015 0047
UNITYZ	A	001	0000	0002	
XR1	C	001	0001	0061	0053 0055
XC000	A	002	003B	0057	0020

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0375 CPU AND MEMORY DIAGNOSTICS: PROGRAM 37

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :2E*G(6X +00 3 GB (7HGSLEH ED *EACBYDOC H '0 90H* 'LEH ED' CA 80 D --APA*BGD)8 GIC 12 03750001

..... 70603750002

E***E7**~DC*PHS =*7H6PI I C ** FX ASC R A SO Q 21301012710 2247208803750003

----- LAST PAGE -----

0385 CPU AND MEMORY DIAGNOSTICS: PROGRAM 38

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
0000                      2 UVWXYZ START 0
                          3 DECK 4
                          4 *****
                          5 *****
                          6 *****          PROG 38
                          7 *****
                          8 *****          INDEXING TESTS
                          9 *****
                          10 *****      TEST (1) 2 ND OP INDEXED
                          11 *****      (2) XR1,XR2 SELECT
                          12 *****
0000                      13 USING HALT1,1
0000                      14 USING HALT1,2
0000 P0 57 7F            15 HALT1 HPL UNITS,TENS          PROG 38, HALT 1. IPL HALT
                          16 *
                          17 *
                          18 *
                          19 *
0003 35 01 0031         20 LOAD1 L X0003,XR1          SET XR1 TO POINT TO LOC -0003-
0007 35 02 0033         21 LOAD2 L X000C,XR2          SET XR2 TO POINT TO LOC -000C-
000B 35 04 0034         22 LOAD3 L OVFPALS,PSR        SET PSR TO LO,BIN OVFL & FALSE.
                          23 *
000F 1C 00 0051 00      24 MOVE1 MVC PAD,0(1,XR1)      MOVE LOAD1 OP CODE -35- TO LOC 0051
                          25 *
0014 P2 P2 07           26 JC X'07',X'F2'              BYPASS NEXT 7 BYTES
                          27 *
0017 00                 28 DC XL1'0'
                          29 *
0018 P0 57 7F            30 HALT2 HPL UNITS,TENS        * PROG 38, HALT2. ERROR HALT.
                          31 *
                          32 *
                          33 *
                          34 *
001B CC0000             001D 36 DC XL3'0'
                          37 *
                          38 *
001E 2C 00 0050 00      39 MOVE2 MVC PAD-1,0(1,XR2)    MOVE LOAD3 Q CODE -04- TO LOC 0050
                          40 *
0023 0D 01 0051 0036    41 CLC PAD(2),X0435           BRANCH TO BOOT IF PROPER INDEX REGS
0029 C0 81 C083         42 BE BOOT                     WERE SELECTED DURING MOVE1 & MOVE2.
                          43 *
                          44 *
002D P0 57 7F            45 HALT3 HPL UNITS,TENS        * PROG 38, HALT 3. ERROR HALT.
                          46 *
                          47 *
                          48 *
                          49 *
                          50 *
                          51 *
                          52 *
0030 0003             0031 53 *****          PROGRAM CONSTANTS AND EQUATES
0032 000C             0033 54 X0003 DC XL2'0003'
0034 P2               0034 55 X000C DC XL2'000C'
0035 0435             0036 56 OVFPALS DC XL1'F2'
                          0036 57 X0435 DC XL2'0435'
                          58 *
0001 59 XR1 EQU 1
0002 60 XR2 EQU 2
0004 61 PSR EQU 4
0051 62 PAD EQU X'51'
0083 63 BOOT EQU X'83'
007F 64 UNITS EQU X'7F'
0057 65 TENS EQU X'57'
                          66 *
                          67 *
                          68 *
                          PFFF 68 END

```

0385 CPU AND MEMORY DIAGNOSTICS: PROGRAM 38

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
FOOT	C	001	0083	0063	0042
HALT1	A	003	C000	0015	0013 0014
HALT2	A	003	0018	0030	
HALT3	A	003	002D	0045	
LOAD1	A	004	0003	0020	
LOAD2	A	004	0007	0021	
LOAD3	A	004	000B	0022	
MOVE1	A	005	000F	0024	
MOVE2	A	005	001E	0039	
OVFPALS	A	001	0034	0056	0022
PAD	C	001	0051	0062	0024* 0039* 0041
PSR	C	001	0004	0061	0022*
TENS	C	001	0057	0065	0015 0030 0045
UNITS	C	001	007F	0064	0015 0030 0045
UVWXYZ	A	001	C000	0002	
XR1	C	001	0001	0059	0020* 0024
XR2	C	001	C002	0060	0021* 0039
X000C	A	002	0033	0055	0021
X0003	A	002	0031	0054	0020
X0435	A	002	0036	0057	0041

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0385 CPU AND MEMORY DIAGNOSTICS: PROGRAM 38

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T(- 60E) (8D <LM B C<5A 4G H&C 20-* 0E) " H (&AJ C5 -8B C0E) " < C|HD(6 0EY03850001

E***E7*=-DC*PHS =*7H&F| | C P% ASC R A SO Q 21301012710 224723,003850002

0395 CPU AND MEMORY DIAGNOSTICS: PROGRAM 39

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3          DECK 4
              4 *****
              5 *                               PROG 39
              6 *                               (L, ST) LOAD & STORE REGISTER
              7 *
              8 *                               TEST      (1) 2 ADDRESS FORHAT
              9 *                               (2) INTERNAL
             10 *
             11 *
             12 *
             13 *****
             14
             15
             16
0000 P0 57 5P 17 HALT1  HPL  UNITS,TENS          PROG 39, HALT 1.  IPL HALT.
             18 *
             19 *
             20
0003 35 0F 0021 21          L      X'FFF6,X'0F'          LOAD P1-ARR, PSR, XR1, & XR2
             22 *                               WITH -FFF6-
             23
0007 34 09 0051 24          ST      PAD,X'09'          STORE P1-ARR & XR1 IN
             25 *                               LOC -50 & 51-.
             26
000R 3D F6 0051 27          CLI     PAD,X'F6'          GO TO BOOT IF STORED DATA EQUALS
000F C0 R1 0083 28          BE      BOOT          LOADED DATA.
             29
0013 3D FF 0051 30          CLI     PAD,X'FF'          GO TO HALT3 IF LOC -51-
0017 F2 01 03 31          JNE     HALT3          IS -FF-.
             32
001A P0 57 5P 33 HALT2  HPL  UNITS,TENS          * PROG 39, HALT 2.  ERROR HALT
             34 *                               * FAILING CARD# A-B3P2
             35 *                               * FAILING FUNCT  1
             36 *
             37 *
             38
001D P0 57 5P 39 HALT3  HPL  UNITS,TENS          * PROG 39, HALT 3.  ERROR HALT
             40 *                               * FAILING CARD# A-B3J2
             41 *                               * FAILING FUNCT  (2)
             42 *
             43 *
             44
             45
             46 ***** PROGRAM CONSTANTS AND EQUATES
             47
0020 FFF6      0021 48 X'FFF6 DC      XL2'FFF6'
              0051 49 PAD      EQU      X'51'
              005F 50 UNITS  EQU      X'5F'
              0057 51 TENS   EQU      X'57'
              0083 52 BOOT   EQU      X'83'
              FFFF 53          END

```

----- LAST PAGE -----

0395 CPU AND MEMORY DIAGNOSTICS: PROGRAM 39

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ROOT	C	001	0083	0052	0028
HALT1	A	003	0000	0017	
HALT2	A	003	001A	0033	
HALT3	A	003	001D	0039	0031
PAD	C	001	0051	0049	0024* 0027 0030
TENS	C	001	0057	0051	0017 0033 0039
UNITS	C	001	005F	0050	0017 0033 0039
UVWXYZ	A	001	0000	0002	
XFFF6	A	002	0021	0048	0021

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0395 CPU AND MEMORY DIAGNOSTICS: PROGRAM 39

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E R INDICATE NUMERIC SCRIPT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

THE / (P) - (P) HIG I ED - AJORD - 37 * EG2 6 | ON5 " ON5 " * - -SU03950001

F " * * P 7 * - - DC " PHS = " 7 M & P | | C P % ASC R A SO Q 21301012710 224723# @ C3950002

03A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3A

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *      PROG 3A.  TEST TO CHECK IF Q BIT IS STUCK DOWN
              7 *
              8 *****
0000 F0 57 3F  9 HALT1 HPL X'3F',X'57'      .PROG 3A IPL HALT
0003 3C 00 0100 10      MVI X00,X'00'      .MOVING 256 BYTES OF DATA
0007 3C FF C1FF 11      MVI X00+255,X'FF'      CHECKS OUT ALL Q BITS. IF A
000B 0C FF 01FE 01FF 12      MVC X00+254(256),X00+255  Q BIT IS STUCK DOWN THE
0011 3D FF 01C0 13      CLI X00,X'FF'      MOVE OF 256 BYTES ISN'T
0015 C0 81 0083 14      BE BOOT      COMPLETED THUS CAUSING HLT2
0019 F0 57 3F 15 HALT2 HPL X'3F',X'57'      *Q BIT ERROR HALT
              16 *
              17
0083 18 BOOT EQU X'83'
01C0 19 X00 EQU X'100'
FFFC 20      END
    
```

03A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3A

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
POOT	C	001	0083	0018	0014
HALT1	A	003	0000	0009	
HALT2	A	003	0019	0015	
UVWXYZ	A	001	0000	0002	
X00	C	001	0100	0019	0010* 0011* 0012 0012* 0013

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

03A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3A

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TFO \$@E*| A C3 " ~a<"OG= ~a*"OD OHD ~"AP|O Q0603A50001

E**|*E7*=-DC*PHS ="7H&F| | C F% ASC R A SO Q 21301012710 224721#803A50002

----- LAST PAGE -----

03C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3C

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3          DECK 4
              4 *****
              5 *****
              6 *****          PROG 3C          *****
              7 *****          (SNS), SENSE CONSOLE DATA SWITCHES          *****
              8 *****
              9 *****
             10 *****          TEST          (1) SNS I/O          *****
             11 *****          (2) 2 ADDR FORMAT          *****
             12 *****          (3) 1 ST E CYCLE ACTIVE          *****
             13 *****          (4) INTERNAL          *****
             14 *****
             15 *****          NOTE: THIS TEST WILL CAUSE ERROR HALTS IF          *****
             16 *****          -OOPE- WAS NOT ENTERED IN THE DATA          *****
             17 *****          SWITCHES PRIOR TO RUNNING THE TEST.          *****
             18 *****
             19 *****
             20 *****
             21 *****
0000 P0 57 6C 22 HALT1 HPL UNITS,TENS          PROG 3C, HALT 1. IPL HALT
              23
              24
0003 0C 01 0051 0031 25 MVC PAD(2),X9999          SET LOC 50 & 51 TO -9999-.
              26
0009 30 00 0051 27 SENSE SNS PAD,X'00'          SENSE THE CONSOLE DATA SWITCHES
              28 *          INTO LOC 50 & 51.
              29
000D 3D PE 0051 30 CLI PAD,X'PE'          JUMP TO HALT3 IF LOC 51 WAS
0011 F2 01 14 31 JNE HALT3          NOT ALTERED BY SENSE INST.
              32
0014 0D 01 0051 002F 33 CLC PAD(2),XPEPE          JUMP TO HALT4 IF LOC 51 & 50 BOTH
001A F2 81 0E 34 JE HALT4          CONTAINED -PE-.
              35
001D 3D 00 0050 36 CLI PAD-1,X'00'          GO TO HALT2 IF LOC 50 WAS NOT
0021 C0 81 0083 37 BE BOOT          ALTERED BY SENSE INSTR.
              38
              39
0025 P0 57 6C 40 HALT2 HPL UNITS,TENS          * PROG 3C, HALT2. ERROR HALT
              41 *          * FAILING CARDS A-B3S2,A-B3T2,A-B3J2
              42 *          * FAILING FUNCT (2), (5), (5)
              43 *          * FAILING CARDS A-B2V3
              44 *          * FAILING FUNCT (5), ROTARY BIT SW
              45 *          * HIGH ORDER CONSOLE SWITCHES REFER
              46 *          * TO CHART
              47 *
              48 *
              49
0028 P0 57 6C 50 HALT3 HPL UNITS,TENS          * PROG 3C, HALT 3. ERROR HALT
              51 *          * FAILING CARDS A-B3J2
              52 *          * FAILING FUNCT 1
              53 *
              54 *
              55
002R F0 57 6C 56 HALT4 HPL UNITS,TENS          * PROG 3C, HALT 4. ERROR HALT
              57 *          * FAILING CARDS A-B3T2
              58 *          * FAILING FUNCT 3
              59 *          * LOW ORDER CONSOLE SWITCHES,REFER
              60 *          * TO CHART
              61 *
              62 *
              63
002E FEFE 002F 64 ***** PROGRAM CONSTANTS & EQUATES
0030 9999 0031 65 XPEPE DC XL2'PEPE'
              0031 66 X9999 DC XL2'9999'
              0051 67 PAD EQU X'51'
              006C 68 UNITS EQU X'6C'
              0057 69 TENS EQU X'57'
    
```

03C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3C

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0083	70	BOOT	EQU	X'83'
FFFF	71		END	

03C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3C

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0083	C070	0037
HALT1	A	003	0000	0022	
HALT2	A	003	0025	0040	
HALT3	A	003	0028	0050	0031
HALT4	A	003	002B	0056	0034
PAD	C	001	0051	0067	0025* 0027* 0030 0033 0036
SENSE	A	004	00C9	0027	
TENS	C	001	0057	0C69	0022 0040 0050 0056
UNITS	C	001	006C	0C68	0022 0040 0050 0056
UVWXYZ	A	001	0000	0002	
XFEFE	A	002	002F	0065	0033
Y9999	A	002	0031	0066	0025

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

03C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3C

OBJECT CARD LISTING

THE CHARACTER . INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SCRIPT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T<E 12E)K C D H6 1< NL7= EG2 JE (&AJ B*2-EB' A 50HD -"APS|APS|A PS|&=WRU ;1D03C50001

F*H1*E7*=-DC*PH5 =*7H&P| | C P% ASC R A 50 Q 21301012710 22472*5803C50002

----- LAST PAGE -----

03E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3E

ERP LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *
              7 *
              8 *
              9 *
              10 *
              11 *
              12 *
              13 *
              14 *
              15 *
              16 *
              17 *
              18 *
              19 *****
              20
              21
              22 CC00 USING HALT1,1
              23 0000 USING HALT1,2
              24 HALT1 HPL UNITS,TENS
              25 LA 0,X'03'
              26
              27
              28 CLC PAD(1,XR1),PAD .CHECK BIT 1
              29 CLC PAD(1,XR1),PAD(,XR1) .CHECK BIT 1+3
              30 CLC PAD(1,XR1),PAD(,XR2) .CHECK BIT 1+2
              31
              32
              33 CLC PAD(1,XR2),PAD .CHECK BIT 0
              34 CLC PAD(1,XR2),PAD(,XR1) .CHECK BIT 0+3
              35 CLC PAD(1,XR2),PAD(,XR2) .CHECK BIT 0+2
              36
              37
              38 CLI PAD(,XR1),X'00' .CHECK BIT 1+2+3
              39 CLI PAD(,XR2),X'00' .CHECK BIT 0+2+3
              40
              41 B BOOT
              42
              43 *****PROGRAM EQUATES
              44 PAD EQU X'50'
              45 BOOT EQU 131
              46 UNITS EQU X'7C'
              47 TENS EQU X'57'
              48 XR1 EQU X'01'
              49 XR2 EQU X'02'
              50 PFFF END

```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 83

03E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3E

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0045	0041
HALT1	A	003	C000	0024	0022 0023
PAD	C	001	0050	0044	0028 0028 0029 0029 0030 0030 0033 0033 0034 0034 0035 0035
					0038 0039
TENS	C	001	0057	0047	0024
UNITS	C	001	007C	0046	0024
UVWXYZ	A	001	0000	0002	
XR1	C	001	0001	0048	0028 0029 0029 0030 0034 0038
XR2	C	001	0002	0049	0030 0033 0034 0035 0035 0039

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 83A

03E5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3E

OBJECT CARD LISTING

THE CHARACTER $\bar{}$ INDICATES A BLANK COLUMN AND THE CHARACTERS $\bar{D} \bar{E} \bar{H}$ INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CI 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

TH- D̄E) 20-< D4 M A6P6A6M4 MEB ( E MI4 MEB EA E-6A6?EACOH* -0 ..... 8AY03E50001
P***E7*=-DC*PHS =*7P6P1 | C P% ASC R A SO Q ..... 21301012710 224722803E50002
    
```

DATE 15SEP69 14NOV69 20JAN70 13MAR70 01OCT70 28APR71 01MAR72 PROG ID 003E-5
EC NO. 816499 816559 816576 816638 816756 816788 818693 PAGE 83

----- LAST PAGE -----
DATE 15SEP69 14NOV69 20JAN70 13MAR70 01OCT70 28APR71 01MAR72 PROG ID 003E-5
EC NO. 816499 816559 816576 816638 816756 816788 818693 PAGE 83A

03P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3P

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *
              7 *
              8 *
              9 *
             10 *
             11 *
             12 *****
             13
             14
0000 F0 57 3C 15 HALT1 HPL UNITS,TENS      PROG 3P, HALT 1. IPL HALT
             16 *
             17 *
             18
0003 3D 00 000F 19 CLI X'F00,X'00'      COMPARE 00 TO 00
             20
0007 C0 81 0083 21 BE BOOT          GO TO BOOT IF CR SET TO EQUAL
             22
000B F0 57 3C 23 HALT2 HPL UNITS,TENS      * PROG 3P, HALT 2. ERROR HALT
             24 *
             25 *
             26 *
             27 *
             28
             29
             30 ***** PROGRAM CONSTANTS & EQUATES
             31 *
000E FF00      32 X'F00 DC X'2'F00'
0083          33 BOOT EQU 131
003C          34 UNITS EQU X'3C'
0057          35 TENS EQU X'57'
FFFF         36 END

```

03P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3P

CROSS-REFERENCE

```

SYMBOL T LEN VALUE DEPN REFERENCES
BOOT   C 001 0083 0033 0021
HALT1  A 003 000C 0015
HALT2  A 003 000B 0023
TENS   C 001 0057 0035 0015 0023
UNITS  C 001 003C 0034 0015 0023
UVWXYZ A 001 0000 0002
X'F00  A 002 000F 0032 0019

```

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0375 CPU AND MEMORY DIAGNOSTICS: PROGRAM 3P

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS \bar{D} \bar{E} \bar{H} INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TC0 |@E*@|E C@B A H|0N33" 2Y<03P50001

E***E7*=-DC*PHS ="7M&P| | C P% ASC R A SO Q 21301012710 22472B.003P50002

----- LAST PAGE -----

0405 CPU AND MEMORY DIAGNOSTICS: PROGRAM 40

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 HVWXYZ START 0
              3          DECK 4
              4 .....
              5 *
              6 *
              7 *
              8 *          (CLC) COMPARE LOGICAL CHARACTER
              9 *
             10 *          TEST (1) OP END
             11 *
             12 .....
             13
             14
             15 HALT1 HPL UNITS,TENS          PROG 40, HALT 1.  IPL HALT
             16 *
             17 *
             18
             19          NVI PAD,X'00'          PLACE HEX -PF00- IN
             20          NVI PAD-1,X'FF'          LOC 50 & 51.
             21
             22          CLC PAD{2},X00FF          COMPARE PAD WITH HEX -00FF-
             23
             24          JL HALT3          GO TO HALT3 IF CR SET LO
             25
             26          BH BOOT          GO TO BOOT IF CR SET HI
             27
             28 HALT2 HPL UNITS,TENS          * PROG 40, HALT2.  ERROR HALT
             29 *          * FAILING CARDS A-B3J2,A-B3M2
             30 *          * FAILING FUNCT (1), (1)
             31 *
             32 *
             33
             34 HALT3 HPL UNITS,TENS          * PROG 40, HALT 3.  ERROR HALT
             35 *          * FAILING CARDS A-B3M2
             36 *          * FAILING FUNCT 1
             37 *
             38 *
             39
             40 ***** PROGRAM CONSTANTS AND EQUATES
             41
             42 X00FF DC XL2'00FF'
             43 PAD EQU X'50'
             44 BOOT EQU 131
             45 UNITS EQU X'6F'
             46 TENS EQU X'1B'
             47          END
             48
             49
             50
             51
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             98
             99

```

0405 CPU AND MEMORY DIAGNOSTICS: PROGRAM 40

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0044	C026
HALT1	A	003	0000	0015	
HALT2	A	003	0018	0028	
HALT3	A	003	001B	0034	0024
PAD	C	001	0050	0043	0019* 0020* 0022
TENS	C	001	001B	0046	0015 0028 0034
UNITS	C	001	006F	0045	0015 0028 0034
UVWXYZ	A	001	0000	0002	
XOFFP	A	002	001F	0042	0022

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0405 CPU AND MEMORY DIAGNOSTICS: PROGRAM 40

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TGO -DA ? | MC3 " D@ (6AE A*2-- / BCDA_?DA_? |@ KI004050001

E**E7*=-DC*PHS ="7HEP| | C P% ASC R A SO Q 21301012710 224721,-04050002

0415 CPU AND MEMORY DIAGNOSTICS: PROGRAM 41

FRP LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2		UVWXYZ START 0
		3		DECK 4
		4		*****
		5	*	PROG 41
		6	*	(AZ) ADD DECIMAL
		7	*	
		8	*	TEST (1) OP BIT 7
		9	*	(2) A REG BIT 2 ACTIVE
		10	*	
		11	*	
		12	*	
		13		*****
		14		
		15		
0000	F0 1B 03	16	HALT1	HPL UNITS,TENS IPL HALT
0003	3C D9 0050	17	HVI	PAD,X'D9' SET PAD TO MINUS DECIMAL 9.
		18		
0007	06 00 0050 00D9	19	AZ	PAD(1),X'D9'(1) ADD MINUS DECIMAL 9 TO PAD.
		20		
000D	3D F0 0050	21	CLI	PAD,X'F0' GO TO HALT2 IF RESULT EQUALS DECIMAL
		22	*	ZERO, GO TO BOOT IF RESULT IS
0011	C0 01 0083	23	BNE	BOOT NOT DECIMAL ZERO
		24		
0015	F0 1B 03	25	HALT2	HPL UNITS,TENS * PROG 41, HALT 2. ERROR HALT
		26	*	* FAILING CARDS A-B3H2
		27	*	* FAILING PUNCT (1,2)
		28	*	
		29		
		30		
0050		31	PAD	EQU X'50'
0083		32	BOOT	EQU 131
0003		33	UNITS	EQU X'03'
001B		34	TENS	EQU X'1B'
FFFF		35		END

0415 CPU AND MEMORY DIAGNOSTICS: PROGRAM 41

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0083	0032	0023
HALT1	A	003	0000	0016	
HALT2	A	003	0015	0025	
PAD	C	001	0050	0031	0017* 0019* 0021
TENS	C	001	001B	0034	0016 0025
UNITS	C	001	0003	0033	0016 0025
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0415 CPU AND MEMORY DIAGNOSTICS: PROGRAM 41

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS \bar{D} \bar{E} \bar{H} INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TEO P0A%CI (U N Q) E 6L70 EC 8B C0A%C ;BH04150001

EHHI*E7*=-DC*PHS =7H6P1 | C FX ASC R A S0 Q 21301012710 2247218-04150002

0425 CPU AND MEMORY DIAGNOSTICS: PROGRAM 42

PRR LOC OBJCT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 0
              4 *****
              5 *                               PROG 42  APL TEST
              6 *
              7 *                               TEST (1) APL DECODE
              8 *                               (2) I/O COND B
              9 *                               (3) IR SKP TRUE
             10 *
             11 *****
0000 P0 1B 76 13 HALT1  HPL  UNITS,TENS          PROG 42, HALT 1.  IPL HALT
              14 *
              15 *
              16 *
0003 C1 P0 0015 17 TST1   TIO  HALT3,X'P0'          TEST HPCU FOR ERROR OR NOT READY.
0007 31 P5 0027 18         LIO  AD255,X'P5'          LOAD HPCU READ ADDRESS REGISTER
000B F3 P1 45   19         SIO  X'45',X'P1'        READ NEXT CARD INTO LOC HEX 100-15F
000E C1 P1 0018 20 TST2   TIO  APLTST,X'P1'        GO TO APLTST ON HPCU BUSY.
              21 *
0012 P0 1B 76  22 HALT2  HPL  UNITS,TENS          * PROG 42, HALT 2.  ERROR HALT.
              23 *
              24 *
              25 *
0015 P0 1B 76  26 HALT3  HPL  UNITS,TENS          * PROG 42, HALT 3.  ERROR HALT.
              27 *
              28 *
              29 *
0018 P1 P1 00   30 APLTST APL  0,X'P1'          WAIT HERE ON HPCU BUSY.
              31 *
001B C1 P1 C023 32 TST3   TIO  HALT4,X'P1'        GO TO HALT4 IF HPCU STILL BUSY.
001F F2 87 P3   33         J    X'P3'          EXIT PROGRAM
0022 00          34         DC    XL1'0'
              35 *
0023 P0 1B 76  36 HALT4  HPL  UNITS,TENS          * PROG 42, HALT 4.  ERROR HALT.
              37 *
              38 *
              39 *
0026 C0FF      40
              41 AD255  DC    AL2(255)
              42 *
0076          43 UNITS  EQU  X'76'
001B          44 TENS   EQU  X'1B'
0083          45 BOOT   EQU  131
              46 *
              47         END
0000          47         END

```

----- LAST PAGE -----

0425 CPU AND MEMORY DIAGNOSTICS: PROGRAM 42

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AD255	A	002	0027	0041	0018
APLTST	A	003	0018	0030	0020
BOOT	C	001	0083	0045	
HALT1	A	003	0000	0013	
HALT2	A	003	0012	0022	
HALT3	A	003	0015	0026	0017
HALT4	A	003	0023	0036	0032
TENS	C	001	001B	0044	0013 0022 0026 0036
TST1	A	004	0003	0017	
TST2	A	004	000E	0020	
TST3	A	004	001B	0032	
UNITS	C	001	0076	0043	0013 0022 0026 0036
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0425 CPU AND MEMORY DIAGNOSTICS: PROGRAM 42

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TIO X0A_60~ ELG 5 B-30MFA00 Q0A_ 60A_60-D 0-D H"H G00C0F7Q "0 :3B04250001

E"***P7*=-DC"PHS ="7M0P| | C "FX ASC R A SO Q 21301012710 224721.-04250002

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 90

0435 CPU AND MEMORY DIAGNOSTICS: PROGRAM 43

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

00FF          2 UVWXYZ START 255
              3 DECK 4
              4 *****
              5 *
              6 *
              7 *          PROG 43 APL TEST
              8 *****
              9
00FF F0 1B 57 10 HALT1 HPL UNITS,TENS          PROG 43, HALT 1.  IPL HALT
0102 C0 87 0083 11 B BOOT
0106 0C0C000000000000 0114 12 DC XL15'0'
010E CCCCCCCCCC0000 13
0115 C0 87 0083 14 B BOOT
              15
CC57 16 UNITS EQU X'57'
C01B 17 TENS EQU X'1B'
CCB3 18 BOOT EQU 131
              19
FFFF 20 END
    
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 90A

0435 CPU AND MEMORY DIAGNOSTICS: PROGRAM 43

CROSS-REFERENCE

SYMBOL T LEN VALDE DEPN REFERENCES

```

BOOT C 001 00R3 001R 0011 0014
HALT1 A C03 00FF 0010
TENS C 001 001B 0C17 0010
UNITS C 001 0057 0016 0010
UVWXYZ A C01 00FF 0002
    
```

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0435 CPU AND MEMORY DIAGNOSTICS: PROGRAM 43

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TFEDQQA_PCH* -0 <BG R< JJDO4350001

E**I*E7*=-DC*PHS =*7E6P| | C FX ASC R A SO Q 21301012710 2247218-04350002

----- LAST PAGE -----

DATE	15SEP69	14SEP69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	0043-5
EC NO.	816499	816559	816576	816638	816756	816788	818693	PAGE	91

0705 CPU AND MEMORY DIAGNOSTICS: PROGRAM 70

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000		2	UVWXYZ	START 0		
		3		DECK 4		
		4	*****	*****	*****	*****
		5	*****	PROG 70	*****	*****
		6	*****	(LIO) & (SNS), LOAD & SENSE I/O LSR'S	*****	*****
		7	*****		*****	*****
		8	*****	*****	*****	*****
		9	*****	* HFCU *	*****	*****
		10	*****	*****	*****	*****
		11	*****		*****	*****
		12	*****		*****	*****
		13	*****	FAILURE TO SELECT CORRECT LSR WILL	*****	*****
		14	*****	RESULT IN ERROR HALT.	*****	*****
		15	*****		*****	*****
		16	*****	*****	*****	*****
		17				
		18				
	0000	19		USING HALT1,1		
	0000	20		USING HALT1,2		
0000	P0 07 6P	21	HALT1	HPL UNITS,TENS	PROG 70, HALT 1.	IPL HALT.
		22	*			
		23	*			
		24				
0003	C2 01 0000	25	LA	HALT1,IR1	USE IR1 AS A BASE REG	
		26				
0007	71 P4 37	27	LIO	XCPFF(,IR1),X'P4'	LOAD HFCU PRINT ADDRESS LSR	
		28	*		WITH -CPFF-.	
		29				
000A	71 P5 39	30	LIO	X6PFF(,IR1),X'P5'	LOAD HFCU READ ADDRESS LSR	
		31	*		WITH -6PFF-.	
		32				
000D	71 P6 3B	33	LIO	X3PFF(,IR1),X'P6'	LOAD HFCU PUNCH ADDRESS LSR	
		34	*		WITH -3PFF-.	
		35				
0010	70 P4 51	36	SNS	81(,IR1),X'P4'	STORE HFCU PRINT ADDRESS LSR	
		37	*		IN LOC HEX -0050 & 0051-.	
		38				
0013	70 P5 53	39	SNS	83(,IR1),X'P5'	STORE HFCU READ ADDRESS LSR	
		40	*		IN LOC HEX -0052 & 0053-.	
		41				
0016	70 P6 55	42	SNS	85(,IR1),X'P6'	STORE HFCU PUNCH ADDRESS LSR	
		43	*		IN LOC HEX -0054 & 0055-.	
		44				
0019	5D 01 55 3B	45	CLC	85(,1),X3PFF(2,1)	GO TO HALT2 IF PUNCH	
001D	P2 81 03	46	JE	HALT2+3	LSR WAS NOT LOADED CORRECTLY	
		47				
0020	P0 07 6P	48	HALT2	HPL UNITS,TENS	* PROG 70, HALT 2. ERROR HALT	
		49	*		* REFER TO CHART.	
		50	*		* PUNCH ADDRESS LSR ERR	
		51				
0023	5D 01 53 39	52	CLC	83(,1),X6PFF(2,1)	GO TO HALT3 IF READ ADDRESS	
0027	P2 81 03	53	JE	HALT3+3	LSR WAS LOADED INCORRECTLY	
		54				
002A	P0 07 6P	55	HALT3	HPL UNITS,TENS	* PROG 70, HALT 3. ERROR HALT ***	
		56	*		* READ ADDRESS SELECTION ERR	
		57				
002D	7D CP 50	58	CLI	80(,1),X'CP'	GO TO HALT 4 IF PRINT ADDRESS	
0030	P2 81 50	59	JE	BOOT	LSR WAS SELECTED INCORRECTLY	
		60				
0033	P0 07 6P	61	HALT4	HPL UNITS,TENS	PROG 70, HALT 4. ERROR HALT	
		62	*		* PRINT LSR SELECTION ERROR	
		63				
0036	CPFF	0037	64	XCPFF DC	XL2'CPFF'	
0038	6PFF	0039	65	X6PFF DC	XL2'6PFF'	
003A	3PFF	003B	66	X3PFF DC	XL2'3PFF'	
			67			
		0001	68	IR1 EQU	1	
		006F	69	UNITS EQU	X'6P'	

DATE	15SEP69	14NOV69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	0070-5
EC NO.	816499	816559	816576	816638	816756	816788	818693	PAGE	91A

0705 CPU AND MEMORY DIAGNOSTICS: PROGRAM 70

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0007	70	TENS	EQU	X'07'
0050	71	BOOT	EQU	X'50'
FFFF	72		END	

0705 CPU AND MEMORY DIAGNOSTICS: PROGRAM 70

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ROOT	C	001	0050	0071	0059
HALT1	A	003	0000	0021	0019 0020 0025
HALT2	A	003	0020	0048	0046
HALT3	A	003	002A	0055	0053
HALT4	A	003	0033	0061	
TENS	C	001	0007	0070	0021 0048 0055 0061
UNITS	C	001	006F	0069	0021 0048 0055 0061
UVWXYZ	A	001	0000	0002	
XCFFF	A	002	0037	0064	0027
XR1	C	001	0001	0068	0025* 0027 0030 0033 0036 0039 0042
X3FFF	A	002	003R	0066	0033 0045
X6FFF	A	002	0039	0065	0030 0052

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

C705 CPU AND MEMORY DIAGNOSTICS: PROGRAM 70

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :2)?0-D GG 4 (7G5+PG6+7C4MPC 5H7C6NN4ANL?2-E| 0A6') N<9BYDC@) ?~*'@BYE@@)?3'' ?*3@ :.X07050001

T *0 EC@07050002

E***E7*=-DC*PHS =*7MEP| | C F% ASC R A SO Q 21301012710 224721,X07050003

0715 CPU AND MEMORY DIAGNOSTICS: PROGRAM 71

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000		2	UVWXYZ	START 0		
		3		DECK 4		
		4	*****			
		5	*****	PROG 71	*****	
		6	*****	(LIO) & (SNS), LOAD & SENSE I/O LSR'S	*****	
		7	*****		*****	
		8	*****	*****	*****	
		9	*****	* PRINTER *	*****	
		10	*****	*****	*****	
		11	*****		*****	
		12	*****	FAILURE TO SELECT ANY LSR WILL CAUSE	*****	
		13	*****	'A' REG CHECK DURING (SNS) EB CYCLE.	*****	
		14	*****		*****	
		15	*****	FAILURE TO SELECT CORRECT LSR WILL	*****	
		16	*****	RESULT IN ERROR HALT.	*****	
		17	*****		*****	
		18	*****			
		19				
0000	P0 07 03	20	HALT1	HPL UNITS,TENS	PROG 71, HALT 1. IPL HALT.	
		21	*			
		22	*			
		23				
0003	31 E4 0037	24		LIO XCFPP,X'E4'	LOAD PRINTER IMAGE ADDRESS LSR	
		25	*		WITH -CPFF-.	
		26				
0007	31 E6 0039	27		LIO X3PP8,X'E6'	LOAD PRINTER DATA ADDRESS LSR	
		28	*		WITH -3PP8-.	
		29				
0008	30 E4 0051	30		SNS 81,X'E4'	STORE PRINTER IMAGE ADDRESS LSR	
		31	*		IN LOC HEX -0050 & 0051-.	
		32				
000F	30 E6 0053	33		SNS 83,X'E6'	STORE PRINTER DATA ADDRESS LSR	
		34	*		IN LOC HEX -0052 & 0053-.	
		35				
0013	3D FE 0053	36		CLI 83,X'FE'	GO TO HALT4 IF DATA SWITCHES	
0017	P2 81 19	37		JE HALT4	WERE ALSO GATE TO I/O BUSS	
		38				
001A	0D 01 0053 0039	39		CLC 83(2),X3PP8	GO TO HALT2 IF PRINTER DATA ADDRESS	
0020	P2 81 03	40		JE HALT2+3	LSR WAS LOADED INCORRECTLY	
		41				
0023	P0 07 03	42	HALT2	HPL UNITS,TENS	* PROG 71, HALT 2. ERROR HALT.	
		43	*		* REFER TO CHART.	
		44	*		* DATA ADDRESS LSR SELECTION ERROR	
		45				
0026	3D 01 0051 0037	46		CLC 81,XCFPP(2)	GO TO HALT3 IF IMAGE ADDRESS	
002C	C0 81 C083	47		BE BOOT	LSR WAS LOADED INCORRECTLY	
		48				
0030	P0 07 03	49	HALT3	HPL UNITS,TENS	* PROG 71, HALT 3. ERROR HALT ***	
		50	*		* IMAGE ADDR LSR SELECTION ERROR	
		51				
0033	P0 07 03	52	HALT4	HPL UNITS,TENS	* PROG 71, HALT 4. ERROR HALT	
		53	*		* THE DATA SNS WERE ORED IN ALSO	
		54	*		* FAILING CARD# A-B3T2	
		55	*			
		56	*			
		57				
0036	CFFF	0037	58	XCFPP DC XL2'CFFF'		
0038	3PP8	0039	59	X3PP8 DC XL2'3PP8'		
		60				
		0003	61	UNITS EQU X'03'		
		0007	62	TENS EQU X'07'		
		CCR3	63	BOOT EQU 131		
		FFFF	64	END		

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 94

0715 CPU AND MEMORY DIAGNOSTICS: PROGRAM 71

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0063	0047
HALT1	A	003	0000	0020	
HALT2	A	003	0023	0042	0040
HALT3	A	003	0030	0049	
HALT4	A	003	0033	0052	0037
TENS	C	001	0007	0062	0020 0042 0049 0052
UNITS	C	001	0003	0061	0020 0042 0049 0052
UVWXYZ	A	001	0000	0002	
ICPPF	A	002	0037	0058	0024 0046
X3FP9	A	002	0039	0059	0027 0039

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 94A

0715 CPU AND MEMORY DIAGNOSTICS: PROGRAM 71

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E W INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+E 98 *C<;E (3G W CU09 AJK+Q M37 = E|2-JU(EAL CX 2-E|0A0<(EAJ C- -EBCB *CB *C3"2 ==) 1807150001

F"MI*E7*=-DC"PHS = "7M6P| | C P% ASC R A SO Q 21301012710 2247210XC7150002

0725 CPU AND MEMORY DIAGNOSTICS: PROGRAM 72

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2 UVWXYZ START 0
          3 DECK 4
          4 *****
          5 *****
          6 *****          (LIO) & (SNS), LOAD & SENSE I/O LSR'S
          7 *****
          8 *****
          9 *****          * MFCU *
         10 *****          *****
         11 *****
         12 *****
         13 *****          FAILURE TO SENSE CORRECT VALUE WILL
         14 *****          RESULT IN LSR CHECK.
         15 *****
         16 *****
         17
         18
         19      0000 USING HALT1,1
         20      0000 USING HALT1,2
         21 HALT1 RPL UNITS,TENS          PROG 72, HALT 1. IPL HALT.
         22 *
         23 *
         24
         25      LA HALT1,XR1          USE XR1 AS A BASE REG
         26
         27      LIO X3000(,XR1),X'P4'          LOAD MFCU PRINT ADDRESS LSR
         28 *          WITH -3000-.
         29
         30      LIO X9000(,XR1),X'P5'          LOAD MFCU READ ADDRESS LSR
         31 *          WITH -9000 .
         32
         33      LIO XC000(,XR1),X'P6'          LOAD MFCU PUNCH ADDRESS LSR
         34 *          WITH -C000-.
         35
         36      SNS 81(,XR1),X'P4'          STORE MFCU PRINT ADDRESS LSR
         37 *          IN LOC HEX -0050 & 0051-.
         38
         39      SNS 83(,XR1),X'P5'          STORE MFCU READ ADDRESS LSR
         40 *          IN LOC HEX -0052 & 0053-.
         41
         42      SNS 85(,XR1),X'P6'          STORE MFCU PUNCH ADDRESS LSR
         43 *          IN LOC HEX -0054 & 0055-.
         44      B BOOT          LSR'S SENSED CORRECTLY,BRANCH
         45
         46 X3000 DC XL2'3000'
         47 X9000 DC XL2'9000'
         48 XC000 DC XL2'C000'
         49
         50 XR1 EQU 1
         51 UNITS EQU X'76'
         52 TENS EQU X'07'
         53 BOOT EQU X'83'
         54      END
    
```

0725 CPU AND MEMORY DIAGNOSTICS: PROGRAM 72

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0053	0044
HALT1	A	003	C000	0021	0019 0020 0025
TENS	C	001	0007	0052	0021
UNITS	C	001	0076	0051	0021
UVWXYZ	A	001	0000	0002	
XC000	A	002	0022	0048	0033
XR1	C	001	0001	0050	0025* 0027 0030 0033 0036 0039 0042
X3000	A	002	001P	0046	0027
X9000	A	002	0020	0047	0030

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0725 CPU AND MEMORY DIAGNOSTICS: PROGRAM 72

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TH- S@) 60-D GG 4GXG5HGG6HXC4MPC 5H7C6N*BG HCO I 0 *Q07250001

E**E7*=-DC*PH\$ =7H6P| | C *% ASC R A SO Q 21301012710 224721.X07250002

0735 CPU AND MEMORY DIAGNOSTICS: PROGRAM 73

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          .2 UVWXYZ START 0
                3          DECK 4
                4 *****
                5          PROG 73 *****
                6          (LIO) & (SNS), LOAD & SENSE I/O LSR'S *****
                7          *****
                8          *****
                9          * PRINTER * *****
               10          *****
               11          *****
               12          FAILURE TO SENSE THE CORRECT VALUE *****
               13          WILL RESULT IN LSR CHECK *****
               14          *****
               15          *****
               16          *****
               17 HALT1 HPL UNITS,TENS          PROG 73, HALT 1. IPL HALT.
               18 *
               19 *
               20          *
               21          LIO X3000,X'E4'          LOAD PRINTER IMAGE ADDRESS LSR
               22          *          WITH -3000-.
               23          *
               24          LIO XC007,X'E6'          LOAD PRINTER DATA ADDRESS LSR
               25          *          WITH -C007-.
               26          *
               27          SNS 81,X'E4'          STORE PRINTER IMAGE ADDRESS LSR
               28          *          IN LOC HEX -0050 & 0051-.
               29          *
               30          SNS 83,X'E6'          STORE PRINTER DATA ADDRESS LSR
               31          *          IN LOC HEX -0052 & 0053-.
               32          *
               33          B BOOT          LSRS WERE SENSED CORRECTLY,BRANCH
               34          *
               35          *
               36 X3000 DC XL2'3000'
               37 XC007 DC XL2'C007'
               38          *
               39 UNITS EQU X'57'
               40 TENS EQU X'07'
               41 BOOT EQU 131
               42          END
0000 PD 07 57
0003 31 F4 0018
0007 31 E6 001A
000B 30 E4 0051
000F 30 E6 0053
0013 C0 87 0083
0017 3000 C018 36 X3000 DC XL2'3000'
0019 C007 C01A 37 XC007 DC XL2'C007'
0057 39 UNITS EQU X'57'
0007 40 TENS EQU X'07'
0083 41 BOOT EQU 131
FFFF 42          END

```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 97

0735 CPU AND MEMORY DIAGNOSTICS: PROGRAM 73

CROSS-REFERENCE

SYMBOL	T	LEN	VALUP	DEFN	REFERENCES
BOOT	C	001	0083	0041	0033
HALT1	A	003	0000	0017	
TENS	C	001	0007	0040	0017
UNITS	C	001	0057	0039	0017
UVWXYZ	A	001	0000	0002	
XC007	A	002	001A	0037	0024
X3000	A	002	0018	0036	0021

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 97A

0735 CPU AND MEMORY DIAGNOSTICS: PROGRAM 73

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TP- E0) P< ; E PCG W AYC9 AJK+Q M0B G HCO < G 4H*07350001

EMMI*P7*~PC*PHS =*7HEPI | C P% ASC R A SO Q 21301012710 2247213%07350002

DATE	15SEP69	14NOV69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	0073-5
EC NO.	816499	8164559	816576	816638	816756	816788	818693	PAGE	97

----- LAST PAGE -----

DATE	15SEP69	14NOV69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	0073-5
EC NO.	816499	8164559	816576	816638	816756	816788	818693	PAGE	97A

0745 CPU AND MEMORY DIAGNOSTICS: PROGRAM 74

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
0000                      2 UVWXYZ START 0
                          3 DECK 4
                          4 *****
                          5 *
                          6 *
                          7 *          PROG 74
                          8 *          LOAD AND SENSE INTERRUPT LEVEL 1 IAR
                          9 *
                         10 *          *****
                         11 *          * KEYBOARD OR PRINTER KEYBOARD *
                         12 *          *****
                         13 *
                         14 *
                         15 *****
                         16
                         17
0000 F0 07 1B            18 HALT1 HPL  UNITS,TENS          .PROG 74, HALT 1. IPL HALT.
                         19 *
                         20 *
0003 0C 01 0051 002B    21          MVC  X'51',X0000(2)      .ZERO OUT STORAGE AREA.
0009 35 C0 002D          22          L    XFFFF,X'CO'          .LOAD INTERRUPT LEVEL IAR
                         23 *          WITH -FFFF-.
000D 34 C0 0051          24          ST  X'51',X'CO'          .STORE INT LEVEL 1 IAR INTO
                         25 *          LOCATIONS HEX -0050- & -0051-.
                         26
0011 0D 01 0051 002D    27          CLC  X'51'(2),IFFFF          .GO TO HALT2 IF INT LEV 1 IAR
0017 C0 81 001E          28          BE  KONT1          NOT SELECTED CORRECTLY.
001B F0 07 1B            29 HALT2 HPL  UNITS,TENS          * PROG 74, HALT 2. ERROR HALT.
                         30 *          * INT LEV 1 IAR SELECTION ERROR
                         31 *
                         32 *
                         33 *
001E 35 C0 002B          34 KONT1  L    X0000,X'CO'          .FAILURE TO SENSE THE CORRECT
0022 34 C0 0051          35          ST  X'51',X'CO'          VALUE WILL RESULT IN LSR CHECK
0026 C0 87 0083          36          B    BOOT
                         37
                         38
                         39
                         40
002A 0000              002B 41 X0000 DC  XL2'0'
002C FFFF              002D 42 XFFFF DC  XL2'FFFF'
                          001B 43 UNITS EQU X'1B'
                          0007 44 TENS EQU X'07'
                          0083 45 BOOT EQU X'83'
                          46
                          FFFF 47 END
    
```

0745 CPU AND MEMORY DIAGNOSTICS: PROGRAM 74

CROSS-REFERENCE

SIMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0045	0036
HALT1	A	003	C000	CC18	
HALT2	A	003	001B	0029	
KONT1	A	004	001E	0034	0028
TENS	C	001	0007	0044	0018 0029
UNITS	C	001	001B	0043	0018 0029
UVWXYZ	A	001	0000	0002	
XFFFF	A	002	002D	0042	0022 0027
X0000	A	002	002B	0041	0021 0034

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 99

0745 CPU AND MEMORY DIAGNOSTICS: PROGRAM 74

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.
CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T.6 _@ *SC D ME , (* .LL ED (EA J B7 -6 ;@ *S (* H3L EG /OBC C ""0 -R 07450001
E""*E7*=-DC*PH5 ="7H&P| | C FX ASC R A SO Q 21301012710 224720,407450002

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 99A

0755 CPU AND MEMORY DIAGNOSTICS: PROGRAM 75

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3          DECK 4
              4 .....
              5 *
              6 *
              7 *
              8 *
              9 *
             10 *
             11 *
             12 *
             13 .....
             14
             15
             16 HALT1 HPL UNITS,TENS          PROG 75, HALT 1. IPL HALT.
             17 *
             18 *
             19 *
             20 *
             21
             22          LIO XCFF8,X'C4'          LOAD DISK DATA ADDRESS LSR
             23 *
             24          LIO X3PPP,X'C6'          LOAD DISK CONTROL ADDRESS LSR
             25 *
             26 *
             27          SNS 81,X'C6'          STORE DISK CONTROL ADDRESS LSR
             28 *
             29 *
             30          SNS 83,X'C4'          STORE DISK DATA ADDRESS LSR
             31 *
             32 *
             33
             34          CLI 83,X'FE'          GO TO HALT 4 IF DATA SWITCHES WERE
             35          JE HALT4              ALSO SELECTED AT THIS TIME
             36          CLC 83,XCFF8(2)      GO TO HALT2 IF DATA ADDRESS LSR WAS
             37          JE HALT2+3          NOT SELECTED CORRECTLY.
             38
             39 HALT2 HPL UNITS,TENS          * PROG 75, HALT 2. ERROR HALT
             40 *
             41 *
             42 *
             43 *
             44
             45          CLC 81,X3PPP(2)      GO TO HALT3 IF CONTROL ADDRESS LSR
             46          BE BOOT              WAS NOT SELECTED CORRECTLY.
             47
             48 HALT3 HPL UNITS,TENS          * PROG 75, HALT 3. ERROR HALT.
             49 *
             50 *
             51 *
             52 *
             53
             54 HALT4 HPL UNITS,TENS          * PROG 75, HALT 4. ERROR HALT
             55 *
             56 *
             57 *
             58 *
             59
             60          XCFF8 DC XL2'CFF8'
             61          X3PPP DC XL2'3PPP'
             62          UNITS EQU X'5D'
             63          TENS EQU X'07'
             64          BOOT EQU 131
             65
             66          FFFF END
    
```

----- LAST PAGE -----

DATE 15SEP69 14NOV69 20JAN70 13MAR70 01OCT70 28APR71 01MAR72 PROG ID 0074-5
EC NO. 816499 816559 816576 816638 816756 816788 818693 PAGE 99

DATE 28APR71 01MAR72
EC NO. 816788 818693

PROG ID 0075-5
PAGE 99A

0755 CPU AND MEMORY DIAGNOSTICS: PROGRAM 75

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0064	0046
HALT1	A	003	0000	0016	
HALT2	A	003	0023	0039	0037
HALT3	A	003	0030	0048	
HALT4	A	003	0033	0054	0035
TENS	C	001	0007	0063	0014 0039 0048 0054
UNITS	C	001	005D	0062	0016 0039 0048 0054
UVWXYZ	A	001	0000	0002	
XCFF8	A	002	0037	0060	0022 0036
X3PPP	A	002	0039	0061	0025 0045

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0755 CPU AND MEMORY DIAGNOSTICS: PROGRAM 75

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS \bar{D} \bar{E} \bar{H} INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+E 9a)) <*E (3G P CU01-AJ<<E M37 = P12-JU(EAL C- 2-E10A54(EAJ CX -EBCa))@))3"- ""0"" OCQ07550001

E""*P7*=-DC*PHS =*7M&P| C P% ASC B A SO Q 21301012710 224720%07550002

----- LAST PAGE -----

0765 CPU AND MEMORY DIAGNOSTICS: PROGRAM 76

0765 CPU AND MEMORY DIAGNOSTICS: PROGRAM 76

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000	2	UVWXYZ	START 0
	3	DECK	4
	4	*****	
	5		PROG 76
	6		*
	7		(LIO) & (SNS), LOAD & SENSE I/O LSRS
	8		*
	9		*****
	10		* BLUEJAY DISK *
	11		*****
	12		*
	13		FAILURE TO SENSE THE CORRECT VALUE WILL
	14		RESULT IN LSR CHECK
	15		*
	16	*****	
	17		
0000 FC 07 7D	19	HALT1 HPL	UNITS,TENS PROG 76, HALT 1. IPL HALT.
	20	*	
	21	*	
	22	*	
	23	*	
	24		
0003 31 C4 0018	25	LIO	X3007,X'C4' LOAD DISK DATA ADDRESS LSR
	26	*	WITH -3007-.
	27		
0007 31 C6 001A	28	LIO	XC000,X'C6' LOAD DISK CONTROL ADDRESS LSR
	29	*	WITH -C000-.
	30		
000B 30 C6 0051	31	SNS	81,X'C6' STORE DISK CONTROL ADDRESS LSR
	32	*	IN LOC HEX -0050 & 0051-.
	33		
000F 30 C4 0053	34	SNS	83,X'C4' STORE DISK DATA ADDRESS LSR
	35	*	IN LOC HEX -0052 & 0053-.
	36		
0013 CC 87 0083	37	B	BOOT LSR'S WERE SELECTED CORRECTLY, BRANCH
	38		
	39		
0017 3007	40	X3007 DC	XL2'3007'
0019 C000	41	XC000 DC	XL2'C000'
	42	UNITS EQU	X'7D'
	43	TENS EQU	X'07'
	44	BOOT EQU	131
	45		
	46	END	

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0083	0044	0037
HALT1	A	003	0000	0019	
TENS	C	001	0007	0043	0019
UNITS	C	001	007D	0042	0019
UVWXYZ	A	001	0000	0002	
XC000	A	002	001A	0041	0028
X3007	A	002	0018	0040	0025

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0765 CPU AND MEMORY DIAGNOSTICS: PROGRAM 76

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TP- E@) < * & PCG F AY01-AJ<<E M@B G H<O@ 2HQ07650001

P***E7*=-DC*PH5 =7M&P| | C F% ASC R A SO Q 21301012710 224720.X07650002

0775 CPU AND MEMORY DIAGNOSTICS: PROGRAM 77

FRF LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000	2	UVWXYZ	START	0		
	3		DECK	4		
	4	*****				
	5	*			PROG 77	
	6	*			(LIO) & (SNS), LOAD & SENSE I/O LSRS	
	7	*				
	8	*			*****	
	9	*			* BSCA - 2 *	
	10	*			*****	
	11	*				
	12	*				
	13	*				
	14	*****				
	15					
0000	17	HALT1	HPL	UNITS,TENS	PROG 77, HALT 1. IPL HALT	
	18	*				
	19	*				
0003	21		LIO	XFFFF,X'8C'	LOAD BSCA LSR	
	22	*			WITH -FFFF-	
0007	24		SNS	81,X'8C'	STORE BSCA LSR	
	25	*			IN LOC HEX -0050 & 0051-	
0009	27		CLC	81(2),XFFFF	GO TO HALT2 IF BSCA LSR #2	
0011	28		BE	KONT1	WAS NOT SELECTED CORRECTLY.	
0015	29	HALT2	HPL	UNITS,TENS	* PROG 77, HALT 2. ERROR HALT	
	30	*			* BSCA LSR #2 SELECTION ERROR	
	31	*				
	32	*				
	33	*				
0018	34	KONT1	LIO	X0000,X'8C'	. FAILURE TO SENSE THE CORRECT	
001C	35		SNS	81,X'8C'	VALUE WILL RESULT IN LSR CHECK	
0020	36		B	BOOT		
	37					
	38					
	39					
0024	40	XFFFF	DC	XL2'FFFF'		
0026	41	X0000	DC	XL2'0000'		
	42	UNITS	EQU	X'07'		
	43	TENS	EQU	X'07'		
	44	BOOT	EQU	131		
	45					
	46	FFFF		END		

----- LAST PAGE -----

0775 CPU AND MEMORY DIAGNOSTICS: PROGRAM 77

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DPPN	REFERENCES
BOOT	C	001	0083	0044	0036
HALT1	A	003	0000	0017	
HALT2	A	003	0015	0029	
KONT1	A	004	0018	0034	0028
TENS	C	001	0007	0043	0017 0029
UNITS	C	001	0007	0042	0017 0029
UVWXYZ	A	001	0000	0002	
XFFFF	A	002	0025	0040	0021 0027
XC000	A	002	0027	0041	0034

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0775 CPU AND MEMORY DIAGNOSTICS: PROGRAM 77

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TIO X@ *G<Q0 ILB < ED (SAJ RP -E Q@ *G<Q0 I3B< %G /OBC**@ OJ@07750001

E*** *E7*--DC*PHS =*7H6P| | C P% ASC R A SO Q 21301012710 224720\$%07750002

----- LAST PAGE -----

0785 CPU AND MEMORY DIAGNOSTICS: PROGRAM 78

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
0000                    2 UVWXYZ START 0
                        3 DECK 4
                        4 *****
                        5 *
                        6 *
                        7 *
                        8 *
                        9 *
                       10 *
                       11 *
                       12 *
                       13 *****
                       14
0000 P0 07 7F          16 HALT1 HPL UNITS,TENS          PROG 78, HALT 1. IPL HALT.
                        17 *
                        18 *
                        19 *
                        20 *
                        21
0003 31 A4 0037        22 LIO XCFP8,X'A4'          LOAD DISK DATA ADDRESS LSR
                        23 *
                        24
0007 31 A6 0039        25 LIO X3FFF,X'A6'          LOAD DISK CONTROL ADDRESS LSR
                        26 *
                        27
000B 30 A6 0051        28 SNS 81,X'A6'          STORE DISK CONTROL ADDRESS LSR
                        29 *
                        30
000F 30 A4 0053        31 SNS 83,X'A4'          STORE DISK DATA ADDRESS LSR
                        32 *
                        33
0013 3D FF 0053        34 CLI 83,X'FE'          GO TO HALT 4 IF DATA SWITCHES WERE
0017 P2 81 19          35 JE HALT4              ALSO SELECTED AT THIS TIME
001A 0D 01 0053 0037  36 CLC 83,XCFP8(2)     GO TO HALT2 IF DATA ADDRESS LSR WAS
0020 P2 81 03          37 JE HALT2+3           NOT SELECTED CORRECTLY.
                        38
0023 P0 07 7F          39 HALT2 HPL UNITS,TENS  * PROG 78, HALT 2. ERROR HALT
                        40 *
                        41 *
                        42 *
                        43 *
                        44
0026 0D 01 0051 0039  45 CLC 81,X3FFF(2)     GO TO HALT3 IF CONTROL ADDRESS LSR
002C C0 81 0083        46 BE BOOT              WAS NOT SELECTED CORRECTLY.
                        47
0030 P0 07 7F          48 HALT3 HPL UNITS,TENS  * PROG 78, HALT 3. ERROR HALT.
                        49 *
                        50 *
                        51 *
                        52 *
                        53
0033 P0 07 7F          54 HALT4 HPL UNITS,TENS  * PROG 78, HALT 4. ERROR HALT
                        55 *
                        56 *
                        57 *
                        58 *
                        59
0036 CFP8              60 XCFP8 DC XL2'CFP8'
0038 3FFF              61 X3FFF DC XL2'3FFF'
                        62 UNITS EQU X'7F'
                        63 TENS EQU X'07'
                        64 BOOT EQU 131
                        65
                        66 FFFF END

```

0785 CPU AND MEMORY DIAGNOSTICS: PROGRAM 78

```

CROSS-REFERENCE
SYMBOL T LEN VALUE DEPN REFERENCES
BOOT C 001 0083 0064 0046
HALT1 A 003 0000 0016
HALT2 A 003 0023 0039 0037
HALT3 A 003 0030 0044
HALT4 A 003 0033 0054 0035
TENS C 001 0007 0063 0016 0039 0048 0054
UNITS C 001 007F 0062 0016 0039 0048 0054
UVWXYZ A 001 0000 0002
XCFP8 A 002 0037 0060 0022 0036
X3FFF A 002 0039 0061 0025 0045

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

```

0785 CPU AND MEMORY DIAGNOSTICS: PROGRAM 78

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+E 9B) * < E E (3 P W CU02-AJ<HE M37 = E|2-JU(6AL C- 2-E|0A7A(6AJ CX -EBCa) "a) "3"- ""0 WE*07850001

F""*E7*=-DC"PHS ="7M&P| | C P* ASC R A SO Q 21301012710 224723,807850002

----- LAST PAGE -----

0795 CPU AND MEMORY DIAGNOSTICS: PROGRAM 79

ERF LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *
              7 *
              8 *
              9 *
             10 *
             11 *
             12 *
             13 *
             14 *
             15 *
             16 *****
             17
             18
             19 HALT1 HPL UNITS,TENS          PROG 79, HALT 1. IPL HALT.
             20 *
             21 *
             22 *
             23 *
             24
             25          LIO X3007,X'A6'      LOAD DISK DATA ADDRESS LSR
             26 *
             27          WITH -3007-.
             28
             29          LIO XC000,X'A6'      LOAD DISK CONTROL ADDRESS LSR
             30 *
             31          WITH -C000-.
             32
             33          SNS 81,X'A6'          STORE DISK CONTROL ADDRESS LSR
             34 *
             35          IN LOC HEX -0050 & 0051-.
             36
             37          SNS 83,X'A4'          STORE DISK DATA ADDRESS LSR
             38 *
             39          IN LOC HEX -0052 & 0053-.
             40
             41          B BOOT              LSR'S WERE SELECTED CORRECTLY,BRANCH
             42
             43          0018 40 X3007 DC    XL2'3007'
             44          0019 41 XC000 DC    XL2'C000'
             45          005P 42 UNITS EQU   X'5P'
             46          0C07 43 TENS EQU   X'07'
             47          0083 44 BOOT EQU   131
             48          45
             49          FFFF 46          END

```

0795 CPU AND MEMORY DIAGNOSTICS: PROGRAM 79

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0093	0044	0037
HALT1	A	003	0000	0019	
TENS	C	001	0007	0043	0019
UNITS	C	001	005F	0042	0019
UVWXYZ	A	001	0000	0002	
XC000	A	002	001A	0041	0028
X3007	A	002	0018	0040	0025

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0795 CPU AND MEMORY DIAGNOSTICS: PROGRAM 79

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TP- Ea)-<EE PCP W AY0Z-AJ<RE MAB G H<0A0 15807950001

EMMI*P7*=-DCMPHS =*7HEPI | C P% ASC R A SO Q 21301012710 224723#%C7950002

07A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7A

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		2	UVWXYZ	START	0
		3		DECK	4
		4	*****		
		5	*	PROG	7A
		6	*	(LIO) & (SNS),	LOAD & SENSE I/O LSRS
		7	*		
		8	*	*****	
		9	*	* BSCA-1 *	
		10	*	*****	
		11	*		
		12	*		
		13	*		
		14	*****		
		15			
0000	F0 07 3F	17	HALT1	HPL	UNITS,TENS
		18	*		PROG 7A, HALT 1. IPL HALT
		19	*		
		20			
0003	31 84 0025	21		LIO	XFFFF,X'84'
		22	*		LOAD BSCA LSR
		23			WITH -FFFF-.
		24			
0007	30 84 0051	24		SNS	81,X'84'
		25	*		STORE BSCA LSR
		26			IN LOC HEX -0050 & 0051-.
		27			
000B	0D 01 0051 0025	27	CLC	81(2),XFFFF	GO TO HALT2 IF BSCA LSR #2
0011	C0 81 0018	28	BE	KONT1	WAS NOT SELECTED CORRECTLY.
0015	F0 07 3F	29	HALT2	HPL	UNITS,TENS
		30	*		* PROG 7A, HALT 2. ERROR HALT
		31	*		* BSCA LSR #2 SELECTION ERROR
		32	*		
		33	*		
0018	31 84 0027	34	KONT1	LIO	X0000,X'84'
001C	30 84 0051	35	SNS	81,X'84'	.FAILURE TO SENSE THE CORRECT
0020	C0 87 0083	36	B	BOOT	VALUE WILL RESULT IN LSR CHECK
		37			
		38			
		39			
0024	FFFF	40	XFFFF	DC	XL2'FFFF'
0026	C000	41	X0000	DC	XL2'0000'
		42	UNITS	EQU	X'3F'
		43	TENS	EQU	X'07'
		44	BOOT	EQU	131
		45			
		46		END	

07A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7A

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0083	0044	0036
HALT1	A	003	0000	0017	
HALT2	A	003	0015	0029	
KONT1	A	004	0018	0034	0028
TENS	C	001	0007	0043	0017 0029
UNITS	C	001	003F	0042	0017 0029
UVWXYZ	A	001	0000	0002	
XFFFF	A	002	0025	0040	0021 0027
X0000	A	002	0027	0041	0034

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

07A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7A

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TIO X@ **<Q6 IIB D ED(6AJ BP -E Q@ **<Q6 I3BD EG /OBC**@ \$1807A50001

E**I*E7*=-DC"PH\$ ="7M&P| | C F% ASC R A SO Q 21301012710 22472'@X07A50002

C7C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7C

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVMXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *
              7 *          PROG 7C
              8 *          (LIO) & (SNS), LOAD & SENSE I/O LSR'S
              9 *
             10 *          *****
             11 *          * SIOC *
             12 *          *****
             13 *
             14 *****
             15
             16
0000 P0 07 6C          17 HALT1 HPL UNITS,TENS          .PROG 7C,HALT 1. IPL HALT
                   18 *
                   19 *
0003 0C 01 0051 002B          20          MVC 81(2),X0000          .CLEAR LOCATIONS HEX 50,51
                   21 *          FOR STORING SIOC LSR
0009 31 34 002D          22          LIO XFFFF,X'34'          .LOAD SIOC LSR WITH -FFFF-
                   23 *
000D 30 34 0051          24          SNS 81,X'34'          .STORE SIOC LSR IN LOCATION
                   25 *          HEX 50 & 51
0011 0D 01 0051 002D          26          CLC 81(2),XFFFF          .GO TO HALT 2 IF SIOC LSR
0017 C0 81 C01E          27          BE KONT1          WAS NOT SELECTED CORRECTLY
                   28
                   29
001B P0 07 6C          30 HALT2 HPL UNITS,TENS          * PROG 7C,HALT2. ERROR HALT
                   31 *          * SIOC DATA ADDRESS REG.
                   32 *          * SELECTION ERROR
                   33 *
                   34 *
001E 31 34 002B          35 KONT1 LIO X0000,X'34'          .FAILURE TO SENSE THE
0022 30 34 0051          36          SNS 81,X'34'          CORRECT VALUE WILL RESULT
0026 C0 87 0083          37          B BOOT          IN A LSR CHECK
                   38
                   39
002A 0000          40 ***** DATA DEFINITIONS
002C FFFF          41 X0000 DC XL2'0000'
                   42 XFFFF DC XL2'FFFF'
                   43 UNITS EQU X'6C'
                   44 TENS EQU X'07'
                   45 BOOT EQU 131
                   46
                   47          END

```

----- LAST PAGE -----

07C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7C

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0045	0037
HALT1	A	003	0000	0017	
HALT2	A	003	001B	0030	
KONT1	A	004	001E	0035	0027
TENS	C	001	0037	0044	0017 0030
UNITS	C	001	006C	0043	0017 0030
UVWXYZ	A	001	0000	0002	
XFFFF	A	002	002D	0042	0022 0026
X0000	A	002	002B	0041	0020 0035

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

07C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7C

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

I.P. _a ) % C D H E . < I E . L 4 E D ( E A J B 7 - E ; a ) % < I E H 3 4 E G / O B C C "" 0 ..... KZ 07C50001
E "" * P 7 * = - D C * P H S = * 7 H E P | | C P % A S C R A S O Q ..... 21301012710 22472 * % C 7 C 5 0 0 0 2

```

C7P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7P

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *
              7 *          PROG 7P
              8 *          (LIO) & (SNS), LOAD & SENSE I/O LSR'S
              9 *
              10 *          *****
              11 *          * 3411 TAPE *
              12 *          *****
              13 *
              14 *****
              15
0000 P0 07 3C 16
              17 HALT1 HPL UNITS,TENS          .PROG 7P,HALT 1. IPL HALT
              18 *
              19 *
0003 0C 01 0051 002B 20          MVC 81(2),X0000          .CLEAR LOCATIONS HEX 50,51
              21 *          FOR STORING TAPE LSR
0009 31 64 002D 22          LIO XFFFF,X'64'          .LOAD TAPE LSR WITH -FFFF-
              23 *
000D 30 64 0051 24          SNS 81,X'64'          .STORE TAPE LSR IN LOCATION
              25 *          HEX 50 & 51
0011 0D 01 0051 002D 26          CLC 81(2),XFFFF          .GO TO HALT 2 IF TAPE LSR
0017 C0 81 001E 27          BE KONT1          WAS NOT SELECTED CORRECTLY
              28
              29
001B P0 07 3C 30 HALT2 HPL UNITS,TENS          * PROG 7P,HALT2. ERROR HALT
              31 *          * TAPE DATA ADDRESS REG.
              32 *          * SELECTION ERROR
              33 *
              34 *
001E 31 64 002B 35 KONT1 LIO X0000,X'64'          .FAILURE TO SENSE THE
0022 30 64 0051 36          SNS 81,X'64'          CORRECT VALUE WILL RESULT
0026 C0 87 0083 37          B BOOT          IN A LSR CHECK
              38
              39
002A C0C0 40 ***** DATA DEFINITIONS
002C FFFF 41 X0000 DC XL2'0000'
              42 XFFFF DC XL2'FFFF'
              43 UNITS EQU X'3C'
              44 TENS EQU X'07'
              45 BOOT EQU 131
              46
              47 FFFF END

```

07P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7P

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0083	0045	0037
HALT1	A	003	0000	0017	
HALT2	A	003	001B	0030	
KONT1	A	004	001E	0035	0027
TENS	C	001	0007	0044	0017 0030
UNITS	C	001	003C	0043	0017 0030
UVWXYZ	A	001	0000	0002	
XFFFF	A	002	002D	0042	0022 0026
X0000	A	002	002B	0041	0020 0035

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

07P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 7P

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T.6 _ 3 *0C D H6 , <0E .LAU ED(EA J B7 -6 ; @ *00E H3AU EG /0BC C ""0 L9 07P50001

E""*E7*-DC*PHS ="7H6F1 | C P% ASC R A SO Q 21301012710 224720.007P50002

0835 CPU AND MEMORY DIAGNOSTICS: PROGRAM 83

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 0VWXYZ START 0
              3          DECK 4
              4 *****
              5 *                               PROG 83
              6 *
              7 *                               DUAL PROGRAM FEATURE LSR TEST
              8 *
              9 *                               THE ABILITY TO LOAD & STORE P2-IAR IS TESTED
             10 *
             11 *****
             12
0000 F0 7P 57 13 HALT1 HPL UNITS,TENS          PROG 83 HALT 1. IPL HALT.
              14 *
              15 *
              16 *
0003 35 40 002D 17          L          X03PE,X'40'          LOAD P2-IAR WITH HEX -03PE-
              18
0007 34 40 0051 19          ST          PAD,X'40'          STORE P2-IAR IN LOC HEX 51 & 50.
              20
0008 0D 01 0051 002D 21          CLC          PAD(2),X03PE          BYPASS HALT 2 IF P2-IAR
0011 P2 81 03      22          JE          HALT2+3          WAS SELECTED PROPERLY.
              23
0014 F0 7P 57      24 HALT2 HPL UNITS,TENS          * PROG 83, HALT 2. ERROR HALT
              25 *
              26 *
              27 *
              28
0017 35 40 002E 29          L          XPE03,X'40'          LOAD P2-IAR WITH HEX -PE03-
              30
001R 34 40 0051 31          ST          PAD,X'40'          STORE P2-IAR IN LOC HEX 51 & 50.
              32
001P 0D 01 0051 002E 33          CLC          PAD(2),XPE03          GO TO BOOT IF P2-IAR
0025 C0 81 0083      34          BE          BOOT          WAS SELECTED PROPERLY.
              35
0029 F0 7P 57      36 HALT3 HPL UNITS,TENS          * PROG 83, HALT 2. ERROR HALT
              37 *
              38 *
              39 *
              40
              41
              42 ***** PROGRAM CONSTANTS & EQUATES
              43 *
002C 03PE 002D 44 X03PE DC          XL2'03PE'
002E 03 002E 45 XPE03 DC          XL1'03'
              46 PAD EQU          X'51'
0051 46 PAD EQU          X'51'
0057 47 UNITS EQU          X'57'
007P 48 TENS EQU          X'7P'
CC83 49 BOOT EQU          131
FFFF 50          END
    
```

----- LAST PAGE -----

0835 CPU AND MEMORY DIAGNOSTICS: PROGRAM 83

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0049	0034
HALT1	A	003	0000	0013	
HALT2	A	003	0014	0024	0022
HALT3	A	003	0029	0036	
PAD	C	001	0051	0046	0019* 0021 0031* 0033
TENS	C	001	007F	0048	0013 0024 0036
UNITS	C	001	0057	0047	0013 0024 0036
UVWXYZ	A	001	0000	0002	
XF03	A	001	002E	0045	0029 0033
X03FE	A	002	002D	0044	0017 0021

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0835 CPU AND MEMORY DIAGNOSTICS: PROGRAM 83

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T.- >@G'P(M .LJ ED(6AJ B72-8| 0-5*5E >(D M64 A ED .XBA H|0-5* C=-< PE 08350001

E***E7*=-DC*PHS =*7M&P| | C P% ASC R A SO Q 21301012710 2247213608350002

0845 CPU AND MEMORY DIAGNOSTICS: PROGRAM 84

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2		UVWXYZ START 0
		3		DECK 4
		4		*****
		5		*****
		6		*****
		7		*****
		8		*****
		9		*****
		10		*****
		11		*****
		12		*****
		13		*****
		14		*****
		15		*****
		16		*****
		17		*****
		18		*****
		19		*****
		20		*****
		21		*****
		22		*****
		23		*****
		24		*****
		25		*****
		26		*****
		27		*****
		28		*****
		29		*****
		30		*****
		31		*****
		32		*****
		33		*****
		34		*****
		35		*****
		36		*****
		37		*****
		38		*****
		39		*****
		40		*****
		41		*****
		42		*****
		43		*****
		44		*****
		45		*****
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		47		*****
		48		*****
		49		*****
		50		*****
		51		*****
		52		*****
		53		*****
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		57		*****
		58		*****
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		74		*****
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		80		*****
		81		*****
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		88		*****
		89		*****
		90		*****
		91		*****
		92		*****
		93		*****
		94		*****
		95		*****
		96		*****
		97		*****
		98		*****
		99		*****
		100		*****

0845 CPU AND MEMORY DIAGNOSTICS: PROGRAM 84

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
				70
				71
				72
				73
				74
				75
				76
				77
				78
				79
				80
				81
				82
				83
				84
				85
				86
				87
				88
				89
				90
				91
				92
				93
				94
				95
				96
				97
				98
				99
				100

0845 CPU AND MEMORY DIAGNOSTICS: PROGRAM 84

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADEND	A	002	003A	0095	0078
ADERR	A	002	0036	0093	0040
ADPL2	A	002	0038	0094	0051
APL1A	A	003	0009	0042	
APL1B	A	003	0011	0053	
APL2A	A	003	001D	0071	
APL2B	A	003	0027	0080	
BOOT	C	001	0083	0099	0089
END	A	003	002F	0087	0095
ERROR	A	003	0014	0059	0085 0093
HALT1	A	003	0000	0036	
HALT2	A	003	0017	0061	
PL2	A	003	001A	0069	0094
TENS	C	001	007F	0098	0036 0061
UNITS	C	001	001B	0097	0036 0061
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0845 CPU AND MEMORY DIAGNOSTICS: PROGRAM 84

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

T+- :@G@S(M (7D C-< ACW CT1 C 3 C0-1?3 C1 C 3 65H :@E OH* E|< <BG H< E E BB .008450001
EHH*E7*=-DC*PHS =*7P6P| C PK ASC R A SO Q ..... 21301012710 224720,608450002

```

----- LAST PAGE -----

0855 CPU AND MEMORY DIAGNOSTICS: PROGRAM 85

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2 UVWXYZ START 0
          3 DECK 4
          4 *****
          5 *****
          6 *****          PROG 85          *****
          7 *****          DUAL PROGRAM FEATURE TEST          *****
          8 *****
          9 *****          (TIO)          *****
         10 *****
         11 *****          THE DUAL PROGRAM CONTROL          *****
         12 *****          SWITCH MUST BE SET TO          *****
         13 *****          'CANCEL PROG LEVEL ONE'.          *****
         14 *****
         15 *****          TEST (1) DPF BRANCH CONDITION          *****
         16 *****          (2) CANCEL SW          *****
         17 *****          (3) Q BIT 5 OPEN          *****
         18 *****          (4) Q BIT 7          *****
         19 *****          (5) INTERNAL          *****
         20 *****
         21 *****
         22
         23
         24
         25 HALT1 HPL UNITS,TENS          PROG 85, HALT 1. IPL HALT
         26
         27 TIO1 TIO TIO2,X'00'          BRANCH TO TIO2 ON
         28 *          'CANCEL PROG LEVEL ONE'
         29
         30 HALT2 HPL UNITS,TENS          * PROG 85, HALT 2. ERROR HALT.
         31 *          * FAILING CARDS A-B3Q2,A-B3S2,A-B3V5
         32 *          * FAILING FUNCT (1), (1), (5)
         33 *          * FAILING CARDS
         34 *          * FAILING FUNCT SYS RDR SW
         35
         36 TIO2 TIO HALT3,X'04'          BRANCH TO HALT3 ON
         37 *          'CANCEL PROG LEVEL TWO'
         38
         39 TIO HALT3,X'01'          BRANCH TO HALT3 ON
         40 TIO HALT3,X'02'          ANY PROG LEVEL ONE SETTING
         41 TIO HALT3,X'03'          OTHER THAN 'CANCEL'.
         42
         43 B BOOT          GO TO BOOTSTRAP
         44
         45 HALT3 HPL UNITS,TENS          * PROG 85, HALT 3. ERROR HALT.
         46 *          * FAILING CARDS A-B3Q2,A-B3V5
         47 *          * FAILING FUNCT (1,3), (2)
         48 *          * FAILURE: SYS READER SWITCH
         49 *          * FAILING FUNCT (2)
         50 *
         51 *
         52
         53 ***** PROGRAM CONSTANTS AND EQUATES
005D 54 UNITS EQU X'5D'
C07F 55 TENS EQU X'7F'
0083 56 BOOT EQU X'83'
FFFF 57 END

```

0855 CPU AND MEMORY DIAGNOSTICS: PROGRAM 85

CROSS-REFERENCE

SYMBOL	T	LEN	VALUF	DEFN	REFERENCES
BOOT	C	001	0083	0056	0043
HALT1	A	003	C00C	0025	
HALT2	A	003	0007	0030	
HALT3	A	003	C01E	0045	0036 0039 0040 0041
TPNS	C	001	007F	0055	0025 0030 0045
TIO1	A	004	C003	0027	
TIO2	A	004	000A	0036	0027
UNITS	C	001	005D	0054	0025 0030 0045
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0855 CPU AND MEMORY DIAGNOSTICS: PROGRAM 85

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TH -@G') 06 B?A "P*DD A#A & ;0&H 'GXDC A# /OBC@G') PS008550001

E""*E7*=-DC"PHS ="7H&P| | C "FX" ASC R A SO Q 21301012710 224720#608550002

0865 CPU AND MEMORY DIAGNOSTICS: PROGRAM 86

FOR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVMXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *                      PROG 86
              7 *                      DUAL PROGRAM FEATURE TEST
              8 *
              9 *                      TEST (1) PROGRAM LEVEL 2 (P2) IR1 OR IR2
              10 *                      SELECTION BEING STUCK UP OR DOWN
              11 *****
              12 *
              13 *                      PROGRAM
              14 *                      LEVEL
              15 HALT1 HPL UNITS,TENS 1 PROG 86, HALT 1. IPL HALT
              16 *
              17 *
              18
              19          L ADDP2,X'40' 1 LOAD P2-IAR WITH ADDRESS OF P2
              20
              21          SIO 4,0 1 ENABLE THE DUAL PROGRAM MODE.
              22
              23          APL 0 1 ADVANCE TO PROGRAM LEVEL 2
              24 *                      (JUMP TO P2 AT LOC -0019-)
              25
              26 P1          SIO 0,0 1 DISABLE THE DUAL PROGRAM MODE.
              27
              28          CLI PAD,X'E7' 1 GO TO BOOT IF P2 IR1 & IR2 WERE
              29          BE BOOT 1 SELECTED AND ORED CORRECTLY.
              30
              31 HALT2 HPL UNITS,TENS 1 * PROG 86, HALT 2. ERROR HALT
              32 * * FAILING CARDS 1-B3Q2
              33 * * FAILING FUNCT 1
              34 *
              35 *
              36
              37 P2          LA X'FFC3',XR1 2 LOAD IR1 TO -FFC3-
              38
              39          LA X'FF66',XR2 2 LOAD IR2 TO -FF66-
              40
              41          ST PAD,X'03' 2 STORE IR1 & IR2 IN LOC 50 & 51.
              42
              43          APL 0 2 ADVANCE TO PROGRAM LEVEL 1.
              44 *                      (JUMP TO P1 AT LOC -000D-)
              45
              46
              47 ***** PROGRAM CONSTANTS & EQUATES
              48 ADDP2 DC AL2 (P2)
              49 *
              50 IR1 EQU X'01'
              51 IR2 EQU X'02'
              52 PSR EQU X'04'
              53 PAD EQU X'51'
              54 UNITS EQU X'7D'
              55 TENS EQU X'7F'
              56 BOOT EQU X'83'
              57
              58          END
002A 001B          002B
0001          50 IR1 EQU X'01'
0002          51 IR2 EQU X'02'
0004          52 PSR EQU X'04'
0051          53 PAD EQU X'51'
007D          54 UNITS EQU X'7D'
007F          55 TENS EQU X'7F'
0083          56 BOOT EQU X'83'
          57
          FFFF          58          END

```

----- LAST PAGE -----

0865 CPU AND MEMORY DIAGNOSTICS: PROGRAM 86

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADDP2	A	002	002B	0048	0019
BOOT	C	001	0083	0056	0029
HALT1	A	003	0000	0015	
HALT2	A	003	0018	0031	
PAD	C	001	0051	0053	0028 0041*
PSR	C	001	0004	0052	
P1	A	003	000D	0026	
P2	A	004	001B	0037	0048
TENS	C	001	007F	0055	0015 0031
UNITS	C	001	007D	0054	0015 0031
UVWXYZ	A	001	0000	0002	
XR1	C	001	0001	0050	0037*
XR2	C	001	0002	0051	0039*

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0865 CPU AND MEMORY DIAGNOSTICS: PROGRAM 86

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

THO ,@G' '(M H"< A|D |< C7X EG -&RC@G' 'O-G'0@H B*6Q4 0AJ@E A% ..... *H08650001
E***P7*=-DC*PH$ =*7H&P| | C P% ASC R A SO Q ..... 21301012710 224720.6C8650002

```

----- LAST PAGE -----

0875 CPU AND MEMORY DIAGNOSTICS: PROGRAM 87

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****          PROG 87
              8 *****          DUAL PROGRAM FEATURE TEST
              9 *****          THE ABILITY TO SELECT THE LSR'S
             10 *****          ASSIGNED TO A SPECIFIC PROGRAM
             11 *****          LEVEL IS TESTED.
             12 *****
             13 *****          PROG LEVEL 1 XR1,XR2,PSR & ARR
             14 *****          ARE LOADED WHILE IN PROG LEVEL 1.
             15 *****          PROG LEVEL 2 XR1,XR2,PSR & ARR
             16 *****          ARE LOADED WHILE IN PROG LEVEL 2.
             17 *****
             18 *****          PROG LEVEL 1 XR1,XR2,PSR & ARR
             19 *****          ARE THEN STORED WHILE IN PROG
             20 *****          LEVEL 1.
             21 *****
             22 *****          PROG LEVEL 2 XR1,XR2,PSR & ARR
             23 *****          ARE THEN STORED WHILE IN PROG
             24 *****          LEVEL 2.
             25 *****
             26 *****          IF THE DATA STORED IS NOT EQUAL
             27 *****          TO THE DATA LOADED, AN ERROR
             28 *****          HALT WILL BE ISSUED BY PROGRAM
             29 *****          OR AN 'A' REG CHECK WILL OCCUR
             30 *****          DURING EB CYCLES OF (STOR1) OR
             31 *****          (STOR2) INSTRUCTIONS.
             32 *****
             33 *****
             34 *****
             35 *****
             36 *
             37 *
0000 F0 7F 07 38 HALT1 HPL UNITS,TENS 1 PROG 87, HALT 1. IPL HALT
             39 *
             40 *
             41 *
0003 35 0F 0037 42 L X551A,X'0F' 1 LOAD P1-ARR,PSR,XR1 & XR2
             43 * WITH -551A-.
             44 * (CR IS SET TO FALSE,DEC OVPL & LO)
             45 *
0007 35 40 003B 46 L ADPL2,X'40' 1 LOAD P2-IAR WITH ADDRESS OF (PL2)
             47 *
000B F3 00 04 48 SIO 4,0 1 ENABLE DUAL PROGRAM MODE
             49 *
000E F1 00 00 50 APL 0 1 ADVANCE TO PROGRAM LEVEL 2.
             51 * JUMP TO (PL2)
             52 *
0011 34 0F 0051 53 STOR1 ST PAD,X'0F' 1 STORE P1-ARR,PSR,XR1 & XR2
             54 * IN LOC -0050 & 0051-.
             55 *
0015 F1 00 00 56 APL 0 1 ADVANCE TO PROGRAM LEVEL 2.
             57 * JUMP TO (STOR2).
             58 *
0018 F3 00 00 59 END SIO 0,0 1 DISABLE DUAL PROGRAM MODE.
             60 *
001B 0D 03 0053 0039 61 CLC DAP(4),XAA21 1 COMPARE DATA LOADED INTO BOTH PROG.
             62 * LEVEL LSR'S WITH THE DATA READ OUT
             63 * OF THOSE LSR'S AFTER ADVANCING.
             64 *
0021 C0 81 0083 65 BE BOOT 1 GO TO BOOT IF DATA STORED SAME
             66 * AS DATA READ OUT.
             67 *
0025 F0 7F 07 68 HALT2 HPL UNITS,TENS 1 * PROG 87, HALT 2. ERROR HALT.
             69 * * FAILURE: DATA READ OUT OF THE PROG

```

0875 CPU AND MEMORY DIAGNOSTICS: PROGRAM 87

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

              70 *
              71 *
              72 *
              73 *
              74 *
0028 35 0F 0039 75 PL2 L XAA21,X'0F' 2 LOAD P2-ARR,PSR,XR1 & XR2
              76 * WITH -AA23-.
              77 * (CR IS SET TO BIN OVPLW & EQUAL)
              78 *
002C F1 00 00 79 APL 0 2 ADVANCE TO PROGRAM LEVEL 1.
              80 * JUMP TO (STOR1)
              81 *
002F 34 0F 0053 82 ST PAD+2,X'0F' 2 STORE P2-ARR,PSR,XR1 & XR2
              83 * IN LOC -0052 & 0053-.
              84 *
0033 F1 00 00 85 APL 0 2 ADVANCE TO PROGRAM LEVEL 1.
              86 * JUMP TO (END)
              87 *
              88 *
              89 *
0036 551A 0037 90 X551A DC XL2'551A'
0038 AA21 0039 91 XAA21 DC XL2'AA21'
003A 0028 003B 92 ADPL2 DC AL2(PL2)
              003C 93 DAP EQU X'53'
              003D 94 PAD EQU X'51'
              003E 95 UNITS EQU X'07'
              003F 96 TENS EQU X'7F'
              0040 97 BOOT EQU 131
              0041 FFFF 98 END

```


0875 CPU AND MEMORY DIAGNOSTICS: PROGRAM 87

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADPL2	A	002	003B	0092	0046
BOOT	C	001	0083	0097	0065
DAP	C	001	0053	0093	0061
END	A	003	0018	0059	
HALT1	A	003	0000	0038	
HALT2	A	003	0025	0068	
PAD	C	001	0051	0094	0053* 0082*
PL2	A	004	0028	0075	0092
STOR1	A	004	0011	0053	
TENS	C	001	007F	0096	0038 0068
UNITS	C	001	0007	0095	0038 0068
UVWXYZ	A	001	0000	0002	
XAA21	A	002	0039	0091	0061 0075
X551A	A	002	0037	0090	0042

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0875 CPU AND MEMORY DIAGNOSTICS: PROGRAM 87

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :AGAG(68) (3N C?3 L1 4COA JAE 30 C&< NO 90HD -"A"A3H| CX 1 4COAL06 WJD DH6 QIY08750001

T 70R08750002

P"1+27*=-DC"PHS ="7HCP| | C P% ASC R A 50 Q 21301012710 224720\$808750003

CR85 CPU AND MEMORY DIAGNOSTICS: PROGRAM 88

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
0000                      2 UVWXYZ START 0
                          3 DECK 4
                          4 *****
                          5 *
                          6 *
                          7 *          PROG 88
                          8 *          DUAL PROGRAM FEATURE TEST
                          9 *
                         10 *          TEST (1) THE ABILITY TO BRANCH IN PROGRAM
                         11 *          LEVEL TWO AND TO TURN ON ALL THE
                         12 *          HALT ID LIGHTS IN BOTH PROGRAM
                         13 *          LEVELS IS TESTED.
                         14 *
                         15 *          THE PROGRAM WILL CAUSE HALTS '88'
                         16 *          TO OCCUR IN BOTH PROGRAM LEVELS.
                         17 *
                         18 *          PROGRAM LEVEL 2 HALT SHOULD BE
                         19 *          RESET FIRST, THEN PROGRAM LEVEL
                         20 *          ONE HALT SHOULD BE RESET.
                         21 *
                         22 *          *****
                         23 *          PROGRAM
                         24 *          LEVEL
0000 P0 7F 7F           24 HALT1 HPL UNITS,TENS 1 PROG 88, HALT 1. IPL HALT
                          25 *
                          26 *
0003 35 40 0037        27 P1 L ADP2,X'40' 1 LOAD P2-IAR WITH ADDRESS OF P2
                          28 *
0007 P3 00 04          29 SIO X'04',X'00' 1 ENABLE DUAL PROGRAM MODE
                          30 *
000A P0 7F 7F          31 HALT2 HPL UNITS,TENS 1 PROG 88, HALT 2. EXPECTED HALT.
                          32 *
000D P3 00 00          33 ERR1 SIO 0,0 1 * DISABLE DUAL PROGRAM MODE
                          34 *
0010 P0 7F 7F          35 HALT3 HPL UNITS,TENS 1 * PROG 88, HALT 3. ERROR HALT
                          36 *          * FAILING CARD# A-B3Q2
                          37 *          * FAILING FUNCT 1
                          38 *
                          39 *
0013 P3 00 00          40 *
                          41 END SIO 0,0 1 DISABLE DUAL PROGRAM MODE
                          42 *
0016 C0 87 0083        43 B BOOT 1 GO TO BOOT.
                          44 *
                          45 *
                          46 *
001A C0 80 0022        47 *
                          48 P2 BC ERR2,NOOP 2 NO-OP BR TO ERR
                          49 *
001E C0 87 0028        50 B HALTS 2 UNCD BR TO EXIT
                          51 *
0022 P3 00 00          52 ERR2 SIO 0,0 2 * DISABLE DUAL PROGRAM MODE
                          53 *
0025 P0 7F 7F          54 HALT4 HPL UNITS,TENS 2 * PROG 88, HALT 4. ERROR HALT
                          55 *          * FAILING CARD# A-B3Q2
                          56 *          * FAILING FUNCT 1
                          57 *
                          58 *
0028 P0 7F 7F          59 *
                          60 HALT5 HPL UNITS,TENS 2 PROG 88, HALT 5. EXPECTED HALT
                          61 *
                          62 *
002B 35 20 0039        63 L ADEND,X'20' 2 LOAD P1-IAR WITH ADDRESS OF END
                          64 *
002F P1 00 00          65 WAIT APL 0 2 ADVANCE TO PROGRAM LEVEL ONE.
                          66 *          JUMP TO END WITH P1 HALT LATCH
                          67 *          STILL SET.
                          68 *
0032 C0 87 002F        69 B WAIT 2 LOOP ON APL UNTIL HALT IS RESET
    
```

CR85 CPU AND MEMORY DIAGNOSTICS: PROGRAM 88

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
                                70
                                71
                                72
                                73 ***** PROGRAM CONSTANTS & EQUATES
0036 001A              0037 74 ADP2 DC AL2(P2)
0038 0013              0039 75 ADEND DC AL2(END)
                                76 *
                                0080 77 NOOP EQU X'80'
                                007F 78 UNITS EQU X'7F'
                                007F 79 TENS EQU X'7F'
                                0083 80 BOOT EQU 131
                                FFFF 81 END
    
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 121

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 121A

0885 CPU AND MEMORY DIAGNOSTICS: PROGRAM 88

C885 CPU AND MEMORY DIAGNOSTICS: PROGRAM 88

CROSS-REFERENCE

OBJECT CARD LISTING

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADEND	A	002	0039	0075	0063
ACP2	A	002	0037	0074	0027
BOOT	C	001	0083	0080	0043
END	A	003	0013	0041	0075
ERR1	A	003	000D	0033	
ERR2	A	003	0022	0052	0048
HALT1	A	003	0000	0024	
HALT2	A	003	000A	0031	
HALT3	A	003	0010	0035	
HALT4	A	003	0025	0054	
HALT5	A	003	0028	0060	0050
HOOP	C	001	0080	0077	0048
P1	A	004	0003	0027	
P2	A	004	001A	0048	0074
TENS	C	001	007F	0079	0024 0031 0035 0054 0060
UNITS	C	001	007F	0078	0024 0031 0035 0054 0060
UVWXYZ	A	001	0000	0002	
WAIT	A	003	002F	0065	0069

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+E 90G' (M' (M' A|A'~'< |A'~'< .. <BG H| - SOH* H|< |A'~'A'~3H - CXI 'C /O ? AT 'DO' KC608850001

EMM*E7*=-DC*PHS =*7HEP| | C .. FX .. ASC .. R A SO Q 21301012710 224723,608850002

0895 CPU AND MEMORY DIAGNOSTICS: PROGRAM 89

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3          DECK 4
              4 *****
              5 *****
              6 *****          PROG 89          *****
              7 *****          INTERRUPT LEVEL 0, DUAL PROGRAM          *****
              8 *****          FEATURE TEST          *****
              9 *****
             10 *****
             11 *****
             12 *****
             13
             14
             15
             16
0000 F0 7F 5F 17 HALT1 HPL UNITS,TENS          PROG 89, HALT 1.  IPL HALT
             18 *
             19 *
0003 35 80 002B 20          L          ADRSET,X'80'          LOAD INTERRUPT LEVEL 0 IAR WITH
             21 *          ADDRESS OF RESET.
             22
0007 F3 00 06 23          SIO          X'06',X'00'          ENABLE INTERRUPT LEVEL 0
             24
000A 34 80 0055 25 STOR1 ST          PAD+4,X'80'          STORE INTERRUPT LEVEL 0 IAR IN
             26 *          LOC -55 & 54-.
             27
000F 34 80 0053 28 STOR2 ST          PAD+2,X'80'          STORE INTERRUPT LEVEL 0 IAR IN
             29 *          LOC -53 & 52-.
             30
0012 F3 00 01 31 RESET SIO          X'01',X'00'          RESET INTERRUPT LEVEL 0 (IF ACTIVE)
             32
0015 34 80 0051 33 STOR3 ST          PAD,X'80'          STORE INTERRUPT LEVEL 0 IAR IN
             34 *          LOC -51 & 50-.
             35
0019 0D 05 0055 C02B 36          CLC          PAD+4(6),ADRSET          BRANCH TO BOOT IF INTERRUPT LEVEL 0
001F C0 81 0083 37          BE          BOOT          IAR WAS OK FOR STOR1, STOR2 & STOR3
             38
0023 F0 7F 5F 39 HALT2 HPL UNITS,TENS          * PROG 89, HALT 2.  ERROR HALT.
             40 *          * FAILING CARDS A-B3Q2
             41 *
             42 *
             43
             44 ***** PROGRAM CONSTANTS EQUATES
             45          DC          AL2(RESET)
             46          DC          AL2(RESET)
             47 ADRSET DC          AL2(RESET)
             48
             49 PAD          EQU          X'51'
             50 UNITS          EQU          X'5F'
             51 TENS          EQU          X'7F'
             52 BOOT          EQU          X'63'
             53          END

```

0895 CPU AND MEMORY DIAGNOSTICS: PROGRAM 89

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADRSET	A	002	002B	0047	0020 0036
BOOT	C	001	0083	0052	0037
HALT1	A	003	0000	0017	
HALT2	A	003	0023	0039	
PAD	C	001	0051	0049	0025* 0028* 0033* 0036
RESET	A	003	0012	0031	0045 0046 0047
STOR1	A	004	000A	0025	
STOR2	A	004	000E	0028	
STOR3	A	004	0015	0033	
TENS	C	001	007F	0051	0017 0039
UNITS	C	001	005F	0050	0017 0039
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0895 CPU AND MEMORY DIAGNOSTICS: PROGRAM 89

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

THO ,@G'-(O H"< ATK EH4-AL@O A(H H64E EN H@B A H10-5@ D- K AH 96*08950001

E""*E7*=-DC*PHS ="7H&P| | C FX ASC R A SO Q 21301012710 224723#&08950002

08A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8A

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *
              7 *
              8 *
              9 *
             10 *
             11 *
             12 *
             13 *
             14 *****
             15
             16
             17 HALT1 HPL UNITS,TENS          PROG 8A, HALT 1.    IPL HALT
             18 *
             19 *
             20
             21 L ADINT,X'80'                LOAD INT LEV 0 IAR
             22
             23 SIO X'06',X'00'              ENABLE INTERRUPT LEVEL 0
             24
             25 LOOP B LOOP                  WAIT HERE FOR INTERRUPT
             26
             27 INT L ADHLT2,X'20'           LOAD PROG LEVEL 1 IAR TO HLT2 ADDR.
             28
             29 NOOP BC RESET,X'80'         NO-OP BRANCH
             30
             31 UNCD B NEWLD                  UNCONDITIONAL BRANCH TO NEWLD
             32 J RESET                      GO TO RESET IF UNCD FAILED.
             33
             34 NEWLD SIO 0,0                DISABLE DUAL 2 INT
             35 L ADBOOT,X'20'              LOAD PROG LEVEL 1 IAR TO BOOT ADDR.
             36
             37 RESET SIO X'01',X'00'       RESET THE INTERRUPT
             38
             39 HALT2 HPL UNITS,TENS        * PROG 8A, HALT 2.  ERROR HALT
             40 *
             41 *
             42 *
             43 *
             44
             45
             46 ADHLT2 DC AL2(HALT2)
             47 ADBOOT DC XL2'0083'
             48 ADINT DC AL2(INT)
             49 UNITS EQU X'3F'
             50 TENS EQU X'7F'
             51 END
002A 0027          002B 46 ADHLT2 DC AL2(HALT2)
002C 0083          002D 47 ADBOOT DC XL2'0083'
002E 000E          002F 48 ADINT DC AL2(INT)
                   003F 49 UNITS EQU X'3F'
                   007F 50 TENS EQU X'7F'
                   FFFF 51 END

```

----- LAST PAGE -----

08A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8A

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADBOOT	A	002	002D	0047	0035
ADHLT2	A	002	002B	0046	0027
ADINT	A	002	002F	0048	0021
HALT1	A	003	0000	0017	
HALT2	A	003	0027	0039	0046
INT	A	004	000E	0027	0048
LOOP	A	004	000A	0025	0025
NEWLD	A	003	001D	0034	0031
NOOP	A	004	0012	0029	
RESET	A	003	0024	0037	0029 0032
TENS	C	001	007F	0050	0017 0039
UNCD	A	004	0016	0031	
UNITS	C	001	003F	0049	0017 0039
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

08A5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8A

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T.O 7AG@'(0 . "< A%BG Y5H ,OH I<BG A72/0-3 5H _a0 AAG@' B* -0 + ;R08A50001

E***E7*=-DC*PHS ="7H&F| | C P% ASC R A SO Q 21301012710 22472*#E08A50002

C8C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8C

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0000		2			UVWXYZ START 0
		3			DECK 4
		4			*****
		5			PROG 8C
		6			INTERRUPT LEVEL 0, DUAL PROGRAM
		7			FEATURE TEST
		8			*****
		9			*****
		10			
		11			
0000	FD 7F 6C	12	HALT1	HPL	UNITS,TENS
		13	*		
		14	*		
		15	*		
0003	35 40 C027	16	L	ADP2,X'40'	LOAD P2 IAR
0007	35 80 0029	17	L	ADINT,X'80'	LOAD INT LEVEL 0 IAR
0008	F3 00 06	18	SIO	X'06',X'00'	ENABLE INTERRUPTS & DUAL PROGRAM
		19			
000E	F0 7F 6C	20	HALT2	HPL	UNITS,TENS
		21	*		
		22	*		
		23	*		
		24	*		
0011	35 20 C02B	25	LV12	L	ADP1,X'20'
		26	*		
		27	*		
		28	*		
0015	F1 00 00	29	APL	0	ADVANCE TO PROG LEV 1 (LV12)
0018	F3 00 00	30			
001B	C0 87 C083	31	P1	SIO	0,0
		32			
		33	B	BOOT	GO TO BOOT
		34			
		35			
001F	35 60 002D	36			
		37	INT	L	ADLV12,X'60'
		38			
0023	F3 00 07	39	SIO	X'07',X'00'	RESET THE INTERRUPT
		40	*		BOTH P1 & P2 HALTS SHOULD RESET
		41	*		BY THIS INSTRUCTION.
		42			
		43			
0026	000E	44	ADP2	DC	AL2(HALT2)
0028	001F	45	ADINT	DC	AL2(INT)
002A	0018	46	ADP1	DC	AL2(P1)
002C	0011	47	ADLV12	DC	AL2(LV12)
		48	UNITS	EQU	X'6C'
		49	TENS	EQU	X'7F'
		50	BOOT	EQU	131
		51	END		

C8C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8C

CROSS-REFERENCE

SYMBOL	T	LFN	VALUE	DEFN	REFERENCES
ADINT	A	002	C029	0045	0017
ADLV12	A	002	C02D	0047	0037
ADP1	A	002	C02B	0046	0025
ADP2	A	002	C027	0044	0016
BOOT	C	001	0083	0050	0033
HALT1	A	003	0000	0012	
HALT2	A	003	C00E	0020	0044
INT	A	004	001F	0037	0045
LV12	A	004	0011	0025	0047
P1	A	003	0018	0031	0046
TENS	C	001	007F	0049	0012 0020
UNITS	C	001	006C	0048	0012 0020
UVWXYZ	A	001	C000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

08C5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8C

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T.6 _0G'4(H I30 BX3 \$0-605H ,0E @0 0H* -3M - B73 * C- A- D8 #A208C50001

E'''*E7*=-DC*PHS =*7H6P| | C P# ASC R A SO Q 21301012710 22472*\$608C50002

08P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8P

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *
              6 *          PROG 8P          CONDITION RESET-CLEAR
              7 *
              8 *          THIS PROG WILL ALLOW INTERFACE BETWEEN CPU & MEMORY
              9 *          TESTS BY CLEARING 'TEST FALSE' AND 'LOGICAL OVERFLOW'
             10 *          CONDITIONS
             11 *
             12 *          NOTE: THE PROG WILL HALT WITH A -8P- HALT BEFORE THE MEMORY
             13 *          TESTS ARE EXECUTED. RESET THE -8P- HALT TO RUN THE MEMORY
             14 *          TESTS
             15 *
             16 *****
             17
             18
             19
             20 HALT1 HPL X'3E',X'7F'          .PROG 8P IPL HALT
             21 JF B          .RESET 'TEST FALSE'
             22 B ALC ZERO,ZERO(2)          .CLEAR 'LOGICAL OVERFLOW'
             23
             24 HALT2 HPL X'3E',X'7F'          * PROG 8P,HALT 2. EXPECTED
             25 *          * NOTE: RESET HALT TO RUN
             26 *          * MEMORY TESTS
             27 *
             28 *
             29 B BOOT          .RETURN TO BOOT
             30
             31
             32 ZERO DC XL2'0'
             33 BOOT EQU 131
             34 PPPP END

```

----- LAST PAGE -----

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 127

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 127A

08P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8P

08P5 CPU AND MEMORY DIAGNOSTICS: PROGRAM 8P

CROSS-REFERENCE

OBJECT CARD LISTING

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
B	A	006	00C6	0022	0021
BOOT	C	001	0083	0033	0029
HALT1	A	003	0000	0020	
HALT2	A	003	000C	0024	
WVXYZ	A	001	0000	0002	
ZERO	A	002	0014	0032	0022 0022*

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS \bar{D} \bar{E} \bar{H} INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TE MAGA=2Z C-D E MAGA=0H* -0) 5508P50001

E***E7**=DC*PHS =*7HEP| | C ** FX ASC R A SO 0 21301012710 2247285608P50002

----- LAST PAGE -----

DATE	15SEP69	14NOV69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	008P-5
EC NO.	816499	816559	816576	816638	816756	816788	818693	PAGE	127

DATE	15SEP69	14NOV69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	008P-5
EC NO.	816499	816559	816576	816638	816756	816788	818693	PAGE	127A

0905 CPU AND MEMORY DIAGNOSTICS: PROGRAM 90

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3 DECK 4
              4 *****
              5 *****
              6 *****
              7 *****          MEMORY DIAGNOSTICS
              8 *****
              9 *****          PROG 90, SAR DECODE
             10 *****
             11 *****
             12 *****          THE LOADER WILL MOVE ITSELF INTO HIGHER CORE
             13 *****
             14 *****          TESTS (1) SAR DECODE LOGIC
             15 *****          SAR BITS 15,14,13,12,11,10,9
             16 *****
             17 *****          NOTE: 'A' PUNCH MUST BE ENTERED IN COL 65.
             18 *****          THIS WILL GIVE A CORRECT Q CODE VALUE
             19 *****          FOR SAR BIT 14 FAILURE.
             20 *****
             21 *****
             22 *****
0000 F2 F0 F0  23          JC X'F0',X'F0'          NO-OP
              24
0003 F2 F0 D0  25          JC X'D0',X'F0'          NO-OP
              26
0006 F2 F0 F0  27          JC X'F0',X'F0'          NO-OP
              28
0009 C0 87 0016 29          B MOVE          BRANCH TO MOVE
              30
000D 404040    000P 31          DC CL3' '
              32
              33
0010 F0 B0 F0  34          HPL X'F0',X'B0'          SAR BIT 11 FAILURE.
              35
              36
0013 404040    0015 37          DC CL3' '
0016 0C 17 0077 C03A 38 MOVE HVC BUFP(24),X'3A'          MOVE THE LOADER TO HIGHER CORE
001C C0 87 0063  39          B LOADER          GO READ NEXT CARD
              40
              41
0020 F0 A0 F0  42          HPL X'F0',X'A0'          SAR BIT 10 FAILURE
              43
0060          44          ORG X'60'
              45
0060 F0 5F 6F  46 HALT1 HPL X'6F',X'5F'          PROG 90, HALT 1. HPCU NOT READY.
              47
              48
0063 C1 F0 0060 49 LOADER TIO LOADER-3,X'F0'          TEST HPCU FOR NOT READY
0067 31 F5 0077  50          LIO BUFP,X'F5'          LOAD HPCU READ ADDRESS BUFFER LSR
006B F3 F1 45  51          SIO X'45',X'F1'          READ NEXT CARD IN IPL FORMAT.
006E C1 F1 006E  52 TEST2 TIO TEST2,X'F1'          WAIT HERE TILL BUSY DROPS
              53
0072 C0 87 0003  54          B 3          EXECUTE NEXT CARD
              55
              56
0076 0000      C077 57 BUFP DC XL2'0000'
              FFFF 58          END

```

0905 CPU AND MEMORY DIAGNOSTICS: PROGRAM 90

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BUFP	A	002	0077	0057	0038* 0050
HALT1	A	003	0060	0046	
LOADER	A	004	0063	0049	0039 0049
MOVE	A	006	0016	0038	0029
TEST2	A	004	006E	0052	0052
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0905 CPU AND MEMORY DIAGNOSTICS: PROGRAM 90

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TH- S@?CO@?C@?C COH* EDA E|BO@DA & OP G* +%BG P| OY| 22Y09050001

TEOA7@E'?'O~ QCG 5 G-3@MFA@EA>OH* 6 D09050002

E***E7*=-DC*PHS =7HEP| | C FX ASC R A SO Q 21301012710 224721,609050003

----- LAST PAGE -----

0915 CPU AND MEMORY DIAGNOSTICS: PROGRAM 91

FRR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWYZ START 0
              3 DECK 4
              4 .....
              5 *
              6 *          MEMORY DIAGNOSTICS
              7 *          PROG 91, SAR DECODE
              8 *
              9 *          THIS PROGRAM TESTS FOR PROPER DECODING
             10 *          OF SAR BITS 8 THROUGH 2 AND THE ABILITY
             11 *          TO ADDRESS CORE LOC 128 THROUGH 16,383.
             12 *
             13 .....
             14
0000          15 USING HALT1,IR2
             16 HALT1 HPL X'03',X'5F'          PROG 91, HALT 1. IPL HALT.
             17 LA HALT1,IR2          .SER UP BASE REGISTER
             18 SMS CORSIZ,0          .DETERMINE IF SAR BIT 2 IS TO BE
             19 CLI CORSIZ-1,X'20'        TESTED. IF MORE THAN 8K OF CORE,
             20 JL LD          TEST SAR BIT 2.
             21 HVI CORP+1,X'20'
             22
             23 LD LA X'0080',XR1          LOAD IR1 WITH HIGHER CORE ADDRESS
             24
             25 HVI 64(,XR1),X'00'        BYPASS
             26 HVI 64,X'FF'          HALT IF
             27 CLI 64(,XR1),X'FF'        SAR DECODE
             28 JNE COMP          WAS CORRECT
             29
             30 HALT2 HPL X'10',X'80'        * PROG 91, HALT 2. EP'OR HALT
             31 *          * FAILURE: SAR DECODE. THE FAILING
             32 *          * SAR BIT IS DISPLAYED IN
             33 *          * THE Q REGISTER
             34 *
             35 *
             36
             37 COMP CLI HALT2+1,X'30'        EXIT THIS PROGRAM IF SAR BITS 6 THRU
             38 EE LOADER(,XR2)          3 (2 IF >8K ) HAVE BEEN TESTED.
             39
             40 ALC LD+3(2,IR2),LD+3(,XR2)    DOUBLE HIGHER CORE ADDRESS
             41 SLC HALT2+1(1,IR2),HALT2+2(,IR2) DECREMENT HALT DISPLAY
             42 B LD(,XR2)          GO TEST NEXT SAR BIT
             43
             44
             45 XR1 EQU 1
             46 XR2 EQU 2
             47 LOADER EQU X'63'
             48 CORSIZ EQU 80
             49 PFFF END
    
```

0915 CPU AND MEMORY DIAGNOSTICS: PROGRAM 91

0915 CPU AND MEMORY DIAGNOSTICS: PROGRAM 91

CROSS-REFERENCE

OBJECT CARD LISTING

SYMBOL	T	LPN	VALUE	DEFN	REFERENCES
COMP	A	004	002A	0037	0021* 0028
CORSIZ	C	001	0050	0048	0018* 0019
HALT1	A	003	0000	0016	0015 0017
HALT2	A	003	0027	0030	0037 0041 0041*
LD	A	004	0016	0023	0020 0040 0040* 0042
LOADER	C	001	0063	0047	0038
BVWXYZ	A	001	0000	0002	
IR1	C	001	0001	0045	0023* 0025 0027
IR2	C	001	0002	0046	0015 0017* 0038 0040 0040 0041 0041 0042

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

T+ :@E@CO-H C P H A|@YHD|B H@HA HA@ D @*OA @-DC@H &|L H+BAQ:8APJW? B- Z8H* 69D09150001
... ..
T SF- ..
E***E7*=-DC*PHS =*7MEP| C P% ASC R A SO Q ..... 21301012710 2247210&C9150003

```

0925 CPU AND MEMORY DIAGNOSTICS: PROGRAM 92

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000      2 UVWXYZ START 0
          3      DECK 4
          4 *****
          5 *
          6 *
          7 *          MEMORY DIAGNOSTICS
          8 *          PROG 92, SAR DECODE
          9 *
         10 *          THIS PROGRAM TESTS FOR PROPER DECODING
         11 *          OF SAR BITS 1 & 0 AND THE ABILITY TO
         12 *          ADDRESS CORE LOC 16,384 THROUGH 65,535.
         13 *
         14 *          REFER TO THE MEMORY DIAGNOSTICS
         15 *          DESCRIPTION FOR CORRECT SETTING OF
         16 *          THE CONSOLE ADDRESS SWITCHES.
         17 *
         18 *****
         19
0000 P0 5F 76      20 HALT1 HPL X'76',X'5F'          PROG 92, HALT 1.  IPL HALT.
         21
0003 30 C0 C050      22      SNS      CORSIZ,0          STORE CONSOLE ADDRESS SWITCHES.
         23
0007 3D 80 004F      24 TEST1 CLI  CORSIZ-1,X'80'          BYPASS TESTING SAR BIT 0 IF CORE
000B F2 82 12      25      JL      TEST2          SIZE IS 32 K OR LESS.
         26
000E 3C 00 8040      27 BIT0  MVI  X'8040',X'00'          TEST SAR BIT 0 DECODE AND ABILITY
0012 3C FF C040      28      MVI  X'0040',X'FF'          TO ADDRESS ABOVE 32 K OF STORAGE.
0016 3D FF 8040      29      CLI  X'8040',X'FF'          GO TEST SAR BIT 1 IF SAR BIT 0
001A F2 01 0A      30      JNE  BIT1          WAS DECODED CORRECTLY.
         31
001D P0 C0 6F      32 HALT2 HPL X'6F',X'00'          * PROG 92, HALT 2.  ERROR HALT
         33 *          * FAILURE: SAR DECODE BIT 0.  THE
         34 *          * FAILING SAR BIT IS
         35 *          * DISPLAYED IN THE Q
         36 *          * REGISTER.  HALTS WITH -0 -
         37 *
         38 *
         39 *
         40
0020 3D 40 004F      41 TEST2 CLI  CORSIZ-1,X'40'          BYPASS TESTING SAR BIT 1 IF CORE
0024 F2 82 12      42      JL      RETURN          SIZE IS 16K OR LESS.
         43
0027 3C 00 4040      44 BIT1  MVI  X'4040',X'00'          TEST SAR BIT 1 DECODE AND ABILITY
002B 3C FF 0040      45      MVI  X'0040',X'FF'          TO ADDRESS >16K BUT <32K OF CORE.
002F 3D FF 4040      46      CLI  X'4040',X'FF'          EXIT THIS PROGRAM IF SAR BIT 2
0033 F2 01 03      47      JNE  RETURN          WAS DECODED CORRECTLY.
         48
0036 P0 10 00      49 HALT3 HPL X'00',X'10'          * PROG 92, HALT 3.  ERROR HALT
         50 *          * FAILURE: SAR DECODE BIT 1.  THE
         51 *          * FAILING SAR BIT IS
         52 *          * DISPLAYED IN THE Q
         53 *          * REGISTER
         54 *
         55 *
         56 *
         57
0039 F2 87 27      58 RETURN J  LOADER          RETURN TO THE MEMORY TEST LOADER
         59
         60
0050      61 CORSIZ EQU 80
0027      62 LOADER EQU X'27'
         63
         64
        PPPP      65      END
    
```

0925 CPU AND MEMORY DIAGNOSTICS: PROGRAM 92

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BIT0	A	004	000E	0027	
BIT1	A	004	0027	0044	0030
CORSIZ	C	001	005C	0061	0022* 0024 0041
HALT1	A	003	0000	0020	
HALT2	A	003	001D	0032	
HALT3	A	003	0036	0049	
LOADER	C	001	0027	0062	0058
RETURN	A	003	0039	0058	0042 0047
TEST1	A	004	0007	0024	
TEST2	A	004	0020	0041	0025
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0925 CPU AND MEMORY DIAGNOSTICS: PROGRAM 92

OBJECT CARD LISTING

THE CHARACTER . INDICATES A BLANK COLUMN AND THE CHARACTERS \bar{D} \bar{E} \bar{H} INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :0E'6< ... HC6 D'2-/H0 HA | |0 SC7"-DC2 B,0 P0 '6 A|0YHK| A &C3 " D '4A @-DC0A @Y* ; -09250001

T 4IG EY*09250002

E'0'1*E7*=-DC'PHS =*7H&P| | C F% ASC R A SO Q 21301012710 224721.609250003

0935 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

PRR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3     DECK 4
              4 *****
              5 *
              6 *
              7 *
              8 *          PROG 93 SAR DECODE AND SAR BIT FAILURE TEST
              9 *
             10 *          THIS PROGRAM TESTS FOR PROPER DECODING OF SAR BITS IN BSH'S
             11 *          ABOVE 16K, TESTS THE ABILITY TO ADDRESS EACH CORE LOCATION
             12 *          WITHIN A 16K BSH, AND CHECKS FOR STORAGE ALTERATIONS IN
             13 *          CORE DUE TO SAR BIT FAILURE.
             14 *
             15 *          THE TESTS WILL BE PERFORMED IN THE FOLLOWING MANNER:
             16 *          1) ONLY THE AMOUNT OF CORE SET ON THE LEFTMOST ADDRESS
             17 *             SWITCH WILL BE TESTED, THE OTHER ADDRESS SWITCHES
             18 *             WILL NOT BE READ.
             19 *          2) IF LESS THAN 16K OF CORE IS TO BE TESTED, THE SAR
             20 *             DECODE PORTION OF THE TEST IS SKIPPED; THE FIRST 16K
             21 *             ARE CHECKED OUT BY PROGRAMS 90, 91, AND 92.
             22 *          3) IF MORE THAN 16K OF CORE IS TO BE TESTED, EACH BSH
             23 *             WILL BE TESTED FOR SAR DECODE OF BITS 15-4, 3, AND 2.
             24 *             THE TESTING OF SAR DECODE OF BITS 3 AND 2 DEPENDS
             25 *             ON WHETHER THERE IS MORE THAN 4K (SAR BIT 3) OR MORE
             26 *             THAN 8K (SAR BIT 2) OF CORE IN THAT BSH.
             27 *          4) SAR DECODE TEST ENDS WHEN ALL SELECTED BSH'S ARE TESTED.
             28 *
             29 *          NOTE: DUE TO THE NATURE OF SAR DECODE FAILURES, ERROR
             30 *             HALTS ON SAR DECODE ERRORS WILL BE IDENTIFIED BY
             31 *             Q REGISTER DISPLAY:
             32 *
             33 *
             34 *
             35 *
             36 *
             37 *
             38 *
             39 *
             40 *
             41 *
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             97 *
             98 *
             99 *

          Q REG  SAR BIT      Q REG  SAR BIT
          ----  -
          -F0-    15          -80-    8
          -F2-    14          -70-    7
          -D0-    13          -60-    6
          -C0-    12          -50-    5
          -B0-    11          -40-    4
          -A0-    10          -30-    3
          -F3-     9          -20-    2
                               -10-    1
                               -00-    0

          5) THE AMOUNT OF CORE SPECIFIED ON THE LEFTMOST ADDRESS
             SWITCH IS FILLED WITH HEX -FF-.
          6) HIGHEST CORE LOCATION HAS HEX -00- ENTERED.
          7) ALL OTHER CORE LOCATIONS ARE TESTED FOR ALTERED
             CONTENTS (DATA NOT HEX-FF-) USING XR1 AS POINTER.
          8) DECREMENT POINTER
          9) STEPS 6-8 PERFORMED FOR ALL CORE ABOVE HEX -200-
          10) SAR BIT FAILURE TEST ENDS WHEN ALL SELECTED CORE
              TESTED.

          NOTE: ERRORS WILL BE INDICATED BY A -93- HALT.

          TO DETERMINE THE FAILING BSH:

          I-OF I-Q I-R      FAILING BSH
          ----  -
          01E2 01E3 01E4      C - 16K
          01E9 01EA 01EB      16 - 32K
          01F0 01F1 01F2      32 - 48K
          01F7 01F8 01F9      48 - 64K

          TO DETERMINE THE FAILING LOCATION:
          1) PUSH 'STOP' BUTTON
          2) XR2 CONTAINS THE ADDRESS INTO WHICH -00-
             WAS STORED
          3) THE FAILING LOCATION (INTO WHICH -00- WAS
             ALSO WRITTEN) CAN BE FOUND BY ADDING HEX -FF-
    
```

0935 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

0935 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

FRR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

FRR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

70 *          TO THE CONTENTS OF XR1.  FOR EXAMPLE: *
71 *          IF XR1 = X'D00', THE FAILING LOCATION =X'DFF' *
72 *          *
73 *          *
74 *          *
75 *          11) ADDRESS DATASWITCH 1 (LEFTMOST) IF SET TO *
76 *          *
77 *          0 TESTS CORE TO 4K *
78 *          1 TESTS CORE TO 8K *
79 *          2 TESTS CORE TO 12K *
80 *          3 TESTS CORE TO 16K *
81 *          4 TESTS CORE TO 20K *
82 *          5 TESTS CORE TO 24K *
83 *          6 TESTS CORE TO 28K *
84 *          7 TESTS CORE TO 32K *
85 *          8 TESTS CORE TO 36K *
86 *          9 TESTS CORE TO 40K *
87 *          A TESTS CORE TO 44K *
88 *          B TESTS CORE TO 48K *
89 *          C TESTS CORE TO 52K *
90 *          D TESTS CORE TO 56K *
91 *          E TESTS CORE TO 60K *
92 *          F TESTS CORE TO 64K *
93 *          *
94 *          *
95 *          THE PROGRAM RUNNING TIME IS 2 SECONDS FOR 8K OF CORE *
96 *          *
97 *          ***** *
98 *          *
99 *          *
100 *          *
101 *          *
102 *          ***** *
103 *          IPL LOADER FOR PROG 93 *
104 *          THE LOADER WILL READ IPL FORMATTED CARDS SEQUENTIALLY *
105 *          INTO MEMORY STARTING AT LOC -C000-. THE LOADING WILL *
106 *          TERMINATE WHEN HEX -1234- IS FOUND IN COLS -59 & 60-. *
107 *          ***** *
108 *          *
0000 F0 5F 57      109 HALT1 HPL X'57',X'5F'      PROG 93, HALT1. IPL HALT.
0003 0C 2E C32E 003B 110 MVC LSTCRD(47),END      MOVE THE IPL LOADER
0009 C0 87 0303    111 B X'303'          TO CORE LOC -0300 THRU -032E-.
112 *          GO READ FIRST CARD.
113 *          *
0300 0300 114 USING HALT2,1
0300 0300 115 USING HALT2,2
116 ORG X'300'
117 *          *
0300 F0 6F 76      118 HALT2 HPL X'76',X'6F'      PROG 93, MFCU NOT READY HALT.
0303 C2 01 0300    119 LA X'0300',XR1          USE -0300- AS BASE ADDRESS
0307 D1 F0 00      120 TEST1 TIO HALT2(,XR1),X'F0'    GO HALT IF MFCU ERROR OR NOT READY.
030A 71 F5 2A      121 LIO AD640(,XR1),X'F5'      LOAD READ ADDRESS LSR.
030D F3 F1 45      122 SIO X'45',X'F1'          READ NEXT CARD IN IPL MODE.
0310 D1 F1 10      123 TEST2 TIO TEST2(,XR1),X'F1'    WAIT HERE TILL BUSY DROPS
0313 0C 3B C03B 02BR 124 MOVE MVC 59(60),699      MOVE THE DATA READ TO LOWER CORE.
0319 5E 01 16 2C   125 ALC MOVE+3(2,XR1),SIXTY(,XR1)    INCREMENT MOVE TO ADDRESS
031D 1D 01 02PR 2E 126 CLC 699(2),LSTCRD(,XR1)    GO TO LOC -0003- IF LAST CARD
0322 C0 81 0003    127 BE 3                      READ WAS 'LAST' CARD. IF NOT,
0325 D0 87 07      128 B TEST1(,XR1)          GO READ NEXT CARD.
129 *          *
130 *          *
0329 0280          032A 131 AD640 DC AL2(640)
032B 003C          032C 132 SIXTY DC XL2'003C'
032D 1234          032E 133 LSTCRD DC XL2'1234'
0001 134 XR1 EQU 1
003B 135 END EQU X'3B'
136 *          *
137 ***** **END***** IPL LOADER FOR CARD 93 *****END*****

```

```

138 ****THE FOLLOWING PROGRAM WILL BE LOADED BY THE LOADER AFTER THE LOADER
139 ****HAS MOVED ITSELF INTO HIGHER CORE.

```

EPR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		141	ORG	0
	00DA	142	USING	RETRN1,1
	00DA	143	USING	RETRN1,2
0000	FO 5P 57	144	RESRRT	HPL X'57',X'5P'
0003	C2 02 00DA	145	LA	RETRN1,XR2
0007	AC 0D 74 76	146	MVC	SAVXR2(,XR2),X0000(14,XR2)
000B	BO 00 68	147	SNS	DATASW(,XR2),X'00'
000E	BC 00 68	148	MVI	DATASW(,XR2),X'00'
0011	A8 03 67 68	149	MNN	DATASW-1(,XR2),DATASW(,XR2)
0015	A8 00 69 67	150	MZZ	CORSIZ-1(,XR2),DATASW-1(,XR2)
0019	AD 01 D8 85	151	MVC	BRANCH+3(,XR2),AHALT4(2,XR2)
001D	AD 01 6A 7E	152	CLC	CORSIZ(,XR2),X4000(2,XR2)
0021	EO 82 8B	153	BL	EXIT(,XR2)
		154		
		155		
0024	BC 40 24	156	MVI	COMPAR+1(,XR2),X'40'
0027	AE 01 6E 7E	157	ALC	SWITCH(,XR2),X4000(2,XR2)
002B	AF 01 68 7E	158	SLC	DATASW(,XR2),X4000(2,XR2)
		159		
		160		
002F	AE 01 D8 83	161	ALC	BRANCH+3(,XR2),X0007(2,XR2)
0033	BD 80 69	162	CLI	CORSIZ-1(,XR2),X'80'
0036	F2 82 1E	163	JL	BOMSET
0039	AE 01 6E 7E	164	ALC	SWITCH(,XR2),X4000(2,XR2)
003D	AF 01 68 7E	165	SLC	DATASW(,XR2),X4000(2,XR2)
		166		
		167		
0041	AE 01 D8 83	168	ALC	BRANCH+3(,XR2),X0007(2,XR2)
0045	BD C0 69	169	CLI	CORSIZ-1(,XR2),X'CO'
0048	F2 82 0C	170	JL	BOMSET
004E	AE 01 6E 7E	171	ALC	SWITCH(,XR2),X4000(2,XR2)
0052	AF 01 68 7E	172	SLC	DATASW(,XR2),X4000(2,XR2)
		173		
		174		
0053	AE 01 D8 83	175	ALC	BRANCH+3(,XR2),X0007(2,XR2)
		176		
		177		
0057	OC 01 0146 0150	178	BOMSET	MVC CORFIL,X0000(2)
005D	BC 80 3B	179	MVI	RETRN2+1(,XR2),X'80'
0060	AD 01 68 7E	180	CLC	DATASW(,XR2),X4000(2,XR2)
0064	F2 82 10	181	JL	KONT1
0067	BC 87 3B	182	MVI	RETRN2+1(,XR2),X'87'
006A	BC 3F 6B	183	MVI	CORFIL-1(,XR2),X'3F'
006D	BC 20 24	184	MVI	COMPAR+1(,XR2),X'20'
0070	AD 01 6E 7E	185	CLC	SWITCH(,XR2),X0000(2,XR2)
0074	F2 81 F4	186	JE	TST5
0077	B5 01 6E	187	KONT1	L SWITCH(,XR2),XR1
007A	4C 00 00 0094	188	LOAD	MVC O(1,XR1),TST1
007F	2E 02 007E 88	189	ALC	LOAD+4,X10001(3,XR2)
0084	3D 46 007C	190	CLI	LOAD+2,X'46'
0088	CO 01 007A	191	BNE	LOAD
008C	2C 02 007E 78	192	MVC	LOAD+4,ATST1(3,XR2)
0091	D0 87 00	193	B	O(,XR1)
		194		
		195		
0094	F2 FO FO	196	TST1	JC X'FO',X'FO'
0097	F2 FO DO	197	JC	X'DO',X'FO'
009A	F2 FO FO	198	JC	X'FO',X'FO'
009D	CO 87 00DA	199	B	RETRN1
00A1	404040	200	DC	CL3'
00A4	FO BO FO	201	HSAR11	HPL X'FO',X'BO'
00A7	4040404040404040	202	DC	CL13'
00AF	4040404040	202		
00B4	FO AO FO	203	HSAR10	HPL X'FO',X'AO'
00B7	4040404040404040	204	DC	CL29'
00BF	4040404040404040	204		
00C7	4040404040404040	204		
00CF	4040404040	204		

EPR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
00D4	FO F3 FO	205	HSAR09	HPL X'FO',X'F3'
00D7	404040	206	DC	CL3'
		207		
		208		
00DA	BC 80 1D	209	RETRN1	MVI HSARER+1(,XR2),X'80'
00DD	AC 01 70 7P	210	MVC	PAD(,XR2),X0080(2,XR2)
00E1	B6 01 70	211	TST2	A PAD(,XR2),XR1
00F4	B4 02 74	212	LD	ST SAVXR2(,XR2),XR2
00F7	B5 02 6E	213	L	SWITCH(,XR2),XR2
00EA	7C 00 40	214	MVI	64(,XR1),X'00'
00ED	BC FF 40	215	MVI	64(,XR2),X'FF'
00F0	7D FF 40	216	CLI	64(,XR1),X'FF'
00F3	F2 01 03	217	JNE	RESET
00F6	FO 80 10	218	HSARER	HPL X'10',X'80'
00F9	35 02 014E	219	RESET	L SAVXR2,XR2
00FD	BD 40 1D	220	COMPAR	CLC HSARER+1(,XR2),X'40'
0100	EO 81 3A	221	BE	RETRN2(,XR2)
		222		
0103	EO 80 91	223	TST3	BC TST5(,XR2),X'80'
0106	B6 01 70	224	A	PAD(,XR2),XR1
0109	AF 01 70 70	225	ALC	PAD(,XR2),PAD(2,XR2)
010D	AF 00 1D 1E	226	SLC	HSARER+1(1,XR2),HSARER+2(,XR2)
0111	EO 87 CA	227	B	LD(,XR2)
		228		
		229		
0114	FO 80 91	230	RETRN2	BC TST5(,XR2),X'80'
0117	BD 10 67	231	KONT2	CLI DATASW-1(,XR2),X'10'
011A	BC 0F 6B	232	MVI	CORFIL-1(,XR2),X'CF'
011D	EO 82 91	233	BL	TST5(,XR2)
0120	BC 87 3B	234	MVI	RETRN2+1(,XR2),X'87'
0123	BD 20 67	235	CLI	DATASW-1(,XR2),X'20'
0126	BC 1F 6B	236	MVI	CORFIL-1(,XR2),X'1F'
0129	BC 30 24	237	MVI	COMPAR+1(,XR2),X'30'
012C	FO 82 29	238	BL	TST3(,XR2)
012F	BD 30 67	239	CLI	DATASW-1(,XR2),X'30'
0132	FC 2F 6B	240	MVI	CORFIL-1(,XR2),X'2F'
0135	FC 20 24	241	MVI	COMPAR+1(,XR2),X'20'
0138	FO 82 29	242	BL	TST3(,XR2)
013B	BC 3F 6B	243	MVI	CORFIL-1(,XR2),X'3F'
013E	EO 87 29	244	B	TST3(,XR2)
		245		
		246		
		247		
		248		
		249		
0141	0000	0142	249	DATASW DC XL2'0'
0143	0000	0144	250	CORSIZ DC XL2'0'
0145	0C0C	0146	251	CORFIL DC XL2'0'
0147	0000	0148	252	SWITCH DC XL2'0'
0149	0000	014A	253	PAD DC XL2'0'
014B	0C00	014C	254	SAVXR1 DC XL2'0'
014D	0C00	014E	255	SAVXR2 DC XL2'0'
014F	0000	0150	256	X0000 DC XL2'0000'
0151	0094	0152	257	ATST1 DC AL2(TST1)
0153	0200	0154	258	X0200 DC XL2'0200'
0155	1000	0156	259	X1000 DC XL2'1000'
0157	4000	0158	260	X4000 DC XL2'4000'
0159	80	0159	261	X0080 DC XL1'80'
015A	FFFF	015B	262	NEGONE DC XL2'FFFF'
015C	0007	015D	263	X0007 DC XL2'0007'
015E	01E2	015F	264	AHALT4 DC AL2(HALT4)
0160	010001	0162	265	X10001 DC XL3'010001'
0163	0000	0164	266	BSMSW DC XL2'0'
		267		
		015C	268	NEG256 EQU NEGONE+1
		0161	269	X0100 EQU X10001-1
		0002	270	XR2 EQU X'02'
		271		
		272		

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 135

0935 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

273
0165 BC 87 2A 274 EXIT MVI TST3+1(,XR2),X'87' .SET UP TO BYPASS WHEN ONE
0168 E0 87 3D 275 B KONT2(,XR2) BSH ONLY
016B BC 80 2A 276 TST5 MVI TST3+1(,XR2),X'80' .NO-OP BYPASS BRANCH
016E AC 01 C4 6C 277 MVC HITEST+3(,XR2),CORFIL(2,XR2) .START SETUP TO -NFFF-
0172 B5 01 6E 278 L SWITCH(,XR2),XR1 .SET UP IR1 AS POINTER
0175 B6 01 6C 279 A CORFIL(,XR2),XR1 .FILL CORE WITH -FF-
0178 7C FF FF 280 MVI 255(,XR1),X'FF'
017B 5C FF FE FF 281 FILL MVC 254(,XR1),255(256,XR1)
017F B6 01 82 282 A NEG256(,XR2),XR1
0182 B4 01 72 283 ST SAVXR1(,XR2),XR1
0185 AD 01 72 7A 284 CLC SAVXR1(,XR2),X0200(2,XR2) .CHECK IF AT UPPER PROGRAM
0189 E0 84 A1 285 BH FILL(,XR2) LIMIT
286
018C AE 01 C4 6E 287 ALC HITEST+3(,XR2),SWITCH(2,XR2) .SET UP HIGHEST CORE LOC IN
0190 BC FF C4 288 MVI HITEST+3(,XR2),X'FF' BSH -NFFF- TO RECEIVE -00-
0193 AC 01 8A 6E 289 MVC BSHSW(,XR2),SWITCH(2,XR2) .SET UP TO TEST CORE ONE
0197 AE 01 8A 81 290 ALC BSHSW(,XR2),NEGONE(2,XR2) BSH AT A TIME
019B 3C C0 0000 291 HITEST MVI *-*,X'00'
019F E5 01 C4 292 L HITEST+3(,XR2),XR1
01A2 B6 01 82 293 A NEG256(,XR2),XR1 .SET UP XR1 TO TEST FOR
01A5 B4 02 74 294 SETUP ST SAVXR2(,XR2),XR2 INCORRECT ADDRESSING
01A8 35 02 019E 295 L HITEST+3,XR2 .STORE IN XR2 THE ADDRESS
01AC 7D FF FF 296 CHECK CLI 255(,XR1),X'FF' INTO WHICH -00- STORED
01AP C0 01 01E2 297 BRANCH BNE HALT4 .CHECK IF -00- WAS ENTERED
01B1 35 02 01AE 298 L SAVXR2,XR2 IN ANY OTHER LOCATION.
01B7 B6 01 81 299 A NEGONE(,XR2),XR1 .IF NO ERROR, RESTORE XR2
01BA B4 01 72 300 ST SAVXR1(,XR2),XR1 .DECR XR1 & CHECK NEXT CORE
01BD AD 01 72 7A 301 CLC SAVXR1(,XR2),X0200(2,XR2) LOC IF ALL CORE NOT CHECKD
01C1 E0 81 F1 302 BE KONT3(,XR2) .CHECK IF AT UPPER PROGRAM
01C4 AD 01 72 6E 303 CLC SAVXR1(,XR2),SWITCH(2,XR2) LIMIT
01C8 E0 01 C8 304 BNE SETUP(,XR2)
01CB AF 01 C4 7C 305 KONT3 SLC HITEST+3(,XR2),X1000(2,XR2) .SET NEXT LOC TO WRITE -00-
01CF AD 01 C4 8A 306 CLC HITEST+3(,XR2),BSHSW(2,XR2) .IF ZEROS ENTERED IN ALL
01D3 E0 01 C1 307 BNE HITEST(,XR2) BSH LOCATIONS, CONTINUE
308
01D6 AD 01 6A 68 309 CLC CORsiz(,XR2),DATASW(2,XR2) .CHECK IF ALL BSHS TESTED
01DA F2 81 31 310 JE LOADER
01DD F2 87 1E 311 J KONT4 .BYPASS ERROR HALTS
312
313
314 * NOTE: HALT4 MUST BE AT HEX -01E2- TO CORRESPOND TO DOCUMENTATION.
01E0 0000 01E1 315 DC XL2'0'
316 * THE ABOVE DC IS USED ONLY FOR ALIGNMENT PURPOSES.
317
318
01E2 F0 5F 57 319 HALT4 HPL X'57',X'5F' *PROG 93 ERROR HALT.
01E5 C0 87 0000 320 B RESTRT ADDR ERROR IN 0-16K BSH
321
01E9 F0 5F 57 322 HALT5 HPL X'57',X'5F' *PROG 93 ERROR HALT.
01EC C0 87 0000 323 B RESTRT ADDR ERROR IN 16-32K BSH
324
01F0 F0 5F 57 325 HALT6 HPL X'57',X'5F' *PROG 93 ERROR HALT.
01F3 C0 87 C000 326 B RESTRT ADDR ERROR IN 32-48K BSH
327
01F7 F0 5F 57 328 HALT7 HPL X'57',X'5F' *PROG 93 ERROR HALT.
01FA C0 87 0000 329 B RESTRT ADDR ERROR IN 48-64K BSH
330
331
01FE AF 01 D8 83 332 KONT4 SLC BRANCH+3(,XR2),X0007(2,XR2) .SET TO NEXT BSH HALT
0202 AF 01 6E 7E 333 SLC SWITCH(,XR2),X4000(2,XR2) .SET UP TO CHECK NEXT BSH
0206 AE 01 68 7E 334 ALC DATASW(,XR2),X4000(2,XR2) BY REDUCING CORsiz BY 16K
020A C0 87 0057 335 B BSHSET AND INCR POINTER BY 16K
336
337
020E C1 F0 0000 338 LOADER TIO RESTRT,X'F0'
0212 B1 F5 76 339 LIO X0000(,XR2),X'F5'
0215 F3 F1 45 340 SIO X'45',X'F1'
    
```

DATE 15SEP69 14NOV69 20JAN70 13MAR70 01OCT70 28APR71 01MAR72 PROG ID 0093-5
EC NO. 816499 816559 816576 816638 816756 816788 818693 PAGE 135

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 135A

0935 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0218 C1 F1 0218 341 TSTBSY TIO TSTBSY,X'F1'
021C C0 87 0003 342 B 3
343
FFFF 344 END
    
```

DATE 15SEP69 14NOV69 20JAN70 13MAR70 01OCT70 28APR71 01MAR72 PROG ID 0093-5
EC NO. 816499 816559 816576 816638 816756 816788 818693 PAGE 135A

0935 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
AD640	A	002	032A	0131	0121
ANALTA	A	002	015F	0264	0151
AIST1	A	002	0152	0257	0192
BOMSET	A	006	0057	0178	0163 0170 0335
BRANCH	A	004	01AF	0297	0151* 0161* 0168* 0175* 0332*
BSMSW	A	002	0164	0266	0289* 0290* 0306
CHECK	A	003	01AC	0296	
COMPAR	A	003	00PD	0220	0156* 0184* 0237* 0241*
CORFIL	A	002	0146	0251	0178* 0183* 0232* 0236* 0240* 0243* 0277 0279
CORSIZ	A	002	0144	0250	0150* 0152 0162 0169 0309
DATASW	A	002	0142	0249	0147* 0148* 0149 0149* 0150 0158* 0165* 0172* 0180 0231 0235 0239
END	C	001	003B	0135	0309 0334*
EXIT	A	003	0165	0274	0110
FILL	A	004	C17B	0281	0153
HALT1	A	003	0000	0109	0285
HALT2	A	003	0300	0118	0114 0115 0120
HALT4	A	003	01E2	0319	0264 0297
HALT5	A	003	01E9	0322	
HALT6	A	003	01F0	0325	
HALT7	A	003	01F7	0328	
HITEST	A	004	019B	0291	0277* 0287* 0298* 0292 0295 0305* 0306 0307
HSARER	A	003	00P6	0218	0209* 0220 0226 0226*
HSAR09	A	003	00D4	0205	
HSAR10	A	003	00B4	0203	
HSAR11	A	003	00A4	0201	
KONT1	A	003	0077	0187	0181
KONT2	A	003	0117	0231	0275
KONT3	A	004	01CB	0305	0302
KONT4	A	004	01FE	0332	0311
LD	A	003	00E4	0212	0227
LOAD	A	005	007A	0188	0189* 0190 0191 0192*
LOADER	A	004	020E	0338	0310
LSTCRD	A	002	032E	0133	0110* 0126
MOVE	A	006	0313	0124	0125*
NEGONE	A	002	015B	0262	0268 0290 0299
NEG256	A	002	015C	0268	0282 0293
PAD	A	002	014A	0253	0210* 0211 0224 0225 0225*
RESET	A	004	00P9	0219	0217
RESTR1	A	003	0000	0144	0320 0323 0326 0329 0338
RETRN1	A	003	00DA	0209	0142 0143 0145 0199
RETRN2	A	003	0114	0230	0179* 0182* 0221 0234*
SAVIR1	A	002	014C	0254	0283* 0284 0300* 0301 0303
SAVIR2	A	002	014E	0255	0146* 0212* 0219 0294* 0298
SETUP	A	003	01A5	0294	0304
SIXTY	A	002	032C	0132	0125
SWITCH	A	002	0148	0252	0157* 0164* 0171* 0185 0187 0213 0278 0287 0289 0303 0333*
TEST1	A	003	0307	0120	0128
TEST2	A	003	0310	0123	0123
TSTBSY	A	004	0218	0341	0341
TST1	A	003	0094	0196	0188 0257
TST2	A	003	00E1	0211	
TST3	A	003	0103	0223	0238 0242 0244 0274* 0276*
TST5	A	003	016B	0276	0186 0223 0230 0233
UVWXYZ	A	001	0000	0002	
IR1	C	001	0001	0134	0119* 0120 0121 0123 0125 0125 0126 0128 0187* 0188 0193 0211*
					0214 0216 0224* 0278* 0279* 0280 0281 0281 0282* 0283 0292* 0293*
					0296 0299* 0300
IR2	C	001	0002	0270	0145* 0146 0146 0147 0148 0149 0149 0150 0150 0151 0151 0152
					0152 0153 0156 0157 0157 0158 0158 0161 0161 0162 0164 0164
					0165 0165 0168 0168 0169 0171 0171 0172 0172 0175 0175 0179
					0180 0180 0182 0183 0184 0185 0185 0187 0189 0192 0209 0210
					0210 0211 0212 0212 0213 0213* 0215 0219* 0220 0221 0223 0224
					0225 0225 0226 0226 0227 0230 0231 0232 0233 0234 0235 0236
					0237 0238 0239 0240 0241 0242 0243 0244 0274 0275 0276 0277
					0277 0278 0279 0282 0283 0284 0284 0285 0287 0287 0288 0289

0935 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
					0289 0290 0290 0292 0293 0294 0294 0295* 0298* 0299 0300 0301
					0301 0302 0303 0303 0304 0305 0305 0306 0306 0307 0309 0309
					0332 0332 0333 0333 0334 0334 0339
X0000	A	002	0150	0256	0146 0178 0185 0339
XC007	A	002	015D	0263	0161 0168 0175 0332
X0080	A	001	0159	0261	0210
X0100	A	003	0161	0269	
X0200	A	002	0154	0258	0284 0301
X1000	A	002	0156	0259	0305
X10001	A	003	0162	0265	0189 0269
X4000	A	002	0158	0260	0152 0157 0158 0164 0165 0171 0172 0180 0333 0334

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0335 CPU AND MEMORY DIAGNOSTICS: PROGRAM 93

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96
TC <@E'PCB8C.- #0H*C 0 P1<09350001
T.-<@2'60-DC (G 0 GG5H?|1J)G1D 0 # C%B>58AES0) 6H #.KBA |6/0*B- @DTE KZD09350002
T+ :@E'PO-H 6D0 (1)GEO FS@ PSY 6) YD AZR:0A6HO_ OZ =8HH.?D U,-E>-D@ AEG:>)SC?QAZ@YH ;,-D 6@H09350003
T+ A55X: ? O/=,-G Q-#7 E-HBCH8ASX: ? O/=,-GQ-00A HQ AM.2 +:4AEG#2-/B @/3>@|6>@HBK_ 09 6@YD 1/U09350004
T+ -80'.MNSUO ' B M.-H -Y-'J-A@O D ;SOB G9@4H* @?C 0@?C6@?C00H* 6UA E|B0@DA EDA EDA ED OC09350005
T+ -C,EDA @HC06DA EDA EDA EDA EDA EDA EDA EDA EDA EDC0@'A EDB@-A6 % PA"-EO_ I4_6I >- "K609350006
T+ -DBE.3*EG7*E|H A "B DCMB M:'EA7 --L,--IP6 PB> PA 0,0)G>BGB>B US4 ER#0|E=BBUS2G+@4 -R#0 NSQ09350007
T+ -P/G6>@BL--SW ' <P;@.6>@HBL--SW @|6?-/2U IE B A E B "A AOG S E 2S*09350008
T+ -P* E ?H'D8P* ' ?H D, GDS.MAS,Q ASG3""53""?=@ QH 4 PH_ PI:8HK/,-G DS,3*1H0ASW:> QD A| L/D09350009
T+ -GP 35 *K6 QH 4 XE5 -F;~""D A8TMB M:6 QP4 PH _ PI:8HG1,8E2S> A2:@A1G2_*KH8 G A,ED +-K09350010
T+ -HKENT2-LG2/18 " |A~N@BG COP5~ /0 @E'POH* |A ~N@BG B?)SC,OE >-DBAEG# /OAP0~ ..D */*09350011
TC H-'PS3@HPA@EB 00H* 0 -9 09350012
E""*E7*=-DC"PHS =*7H@P| | C P% ASC R A SO Q 21301012710 224721.609350013

LAST PAGE

0945 CPU AND MEMORY DIAGNOSTICS: PROGRAM 94

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000 2 UVWXYZ START 0
3 DECK 4
4 *****
5 *
6 * PROG 94 HALF-SELECT CORE TEST - LOWER CORE *
7 *
8 * THIS PROGRAM DETECTS THE DROPPING OR PICKING OF *
9 * AN ODD NUMBER OF BITS WITHIN A BYTE CAUSED BY *
10 * THAT BYTE BEING HALF-SELECTED 64 TIMES. *
11 *
12 * THE TEST HAS ITS OWN LOADER *
13 *
14 * THE TEST WILL BE PERFORMED IN THE FOLLOWING MANNER: *
15 * 1) ALL CORE LOCATIONS ARE TESTED WITH FIRST THE *
16 * WORST CASE PATTERN IN CORE AND THEN WITH THE *
17 * COMPLEMENT WORST CASE PATTERN IN CORE *
18 * 2) ONLY THE AMOUNT OF CORE SET ON THE LEFTMOST *
19 * ADDRESS SWITCH WILL BE TESTED, THE OTHER ADDRESS *
20 * SWITCHES WILL NOT BE READ *
21 * 3) TO GAIN CONTROL OF THE CONSOLE ADDRESS SWITCHES, *
22 * THE CE MUST INITIATE A SYSTEM RESET AFTER LOADING *
23 * THE PROGRAM *
24 * 4) SET UP CONSOLE ADDRESS SWITCHES PRIOR TO RESETTING *
25 * THE 'HALT RESET' *
26 * 5) FUNCTIONS OF THE CONSOLE ADDRESS SWITCHES (DATASW) *
27 * ARE:
28 *
29 * (LEFTMOST) SWITCH 1 SWITCH 2 SWITCH 3+4 *
30 *
31 *
32 * 0 TESTS CORE TO 4K 0 PROGRAM EXECUTED 00 NORMAL POSITION, *
33 * ONCE ONLY NC PATTERN FILL. *
34 * 1 BYPASS PROGRAM XY ANY OTHER ENTRY *
35 * 2 TESTS CORE TO 12K 1 BYPASS PROGRAM XY ANY OTHER ENTRY *
36 * 3 TESTS CORE TO 16K 2 LOOP PROGRAM SETS -EP- HALT AND *
37 * 4 TESTS CORE TO 20K 4 COMPLEMENT FILL ALLOWS CE TO SE- *
38 * 5 TESTS CORE TO 24K PATTERN USED LECT FILL PATTERN *
39 * 6 TESTS CORE TO 28K 6 LOOP & COMPLEMENT ON THESE TO SW., *
40 * 7 TESTS CORE TO 32K FILL PATTERN USED A BYTE AT A TIME, *
41 * 8 TESTS CORE TO 36K FOR A TOTAL OF 4 *
42 * 9 TESTS CORE TO 40K BYTES. 00 CAN BE *
43 * A TESTS CORE TO 44K USED AS A BYTE OF *
44 * B TESTS CORE TO 48K PATTERN AFTER -EP- *
45 * C TESTS CORE TO 52K HALT SET (SEE 6) *
46 * D TESTS CORE TO 56K *
47 * E TESTS CORE TO 60K *
48 * F TESTS CORE TO 64K *
49 *
50 *
51 * 6) NOTE: TURNING ADDRESS SWITCHES 3+4 (RIGHTMOST) TO A *
52 * SETTING OTHER THAN 00 WILL SET AN -EP- (ENTER PATTERN) *
53 * HALT WHICH WILL ALLOW THE CE TO ENTER HIS OWN 'WORST *
54 * CASE' PATTERN. THE PATTERN IS ENTERED A BYTE AT A TIME *
55 * ON SWITCHES 3+4. THE INITIAL SETTING OF SWITCHES TO A *
56 * SETTING OTHER THAN 00 SELECTS THIS OPTION. THE INITIAL *
57 * SWITCH SETTING IS NOT THE FIRST BYTE OF PATTERN. AFTER *
58 * THE -EP- HALT, THE SWITCHES CAN BE SET TO ANY DESIRED *
59 * COMBINATION, EVEN TO 00. THE BYTE OF PATTERN THAT IS *
60 * ENTERED IS THE SETTING ON SWITCHES 3+4 WHEN THE HALT *
61 * IS RESET. THE -EP- HALT IS DISPLAYED FOUR TIMES, THUS *
62 * ALLOWING THE CE TO CHOOSE THE FILL PATTERN. *
63 *
64 * THE HALF-SELECT ERROR WILL BE INDICATED BY *
65 * 1) PROCESSOR CHECK 6 *
66 * 2) 'B' REG PARITY CHECK *
67 * 6 SAR WILL CONTAIN THE FAILING LOCATION. *
68 *
69 * THE PROGRAM WILL RUN FOR 40 SECONDS ON A 64K *
70 *

0945 CPU AND MEMORY DIAGNOSTICS: PROGRAM 94

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for program 94, including instructions like HALT, MVC, SIO, and comments about loader routines.

0945 CPU AND MEMORY DIAGNOSTICS: PROGRAM 94

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for program 94, including instructions like MZZ, TBN, EPHALT, and comments about core size and loader routines.

0945 CPU AND MEMORY DIAGNOSTICS: PROGRAM 94

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
	00CF	E1 F1 CF	206	TSTBSY	TIO TSTBSY(,XR2),X'P1'
	00D2	CO R7 C003	207		B 3
			208		
			209		
			210	*****	CONSTANTS *****
			211	*	
00D6	0000		00D7	212	DATASW DC XL2'0000'
00D8	0000		00D9	213	PAD DC XL2'0000'
00DA	10		00DA	214	X10 DC XL1'10'
00DB	FFFFFFFF		CODE	215	XFFFF DC XL4'FFFFFFFF'
00DF	GO		00DF	216	COUNT2 DC XL1'00'
00E0	CO		00E0	217	SAVE0 DC XL1'00'
00E1	CO		00E1	218	SAVE1 DC XL1'00'
00E2	0000		00E3	219	X0000 DC XL2'0'
00E4	CC0C000000000000		00FB	220	DC XL24'0'
00EC	CCCCCCCC00000000			220	
00F4	CC0C000000000000			220	
			221	*****	EQUATES *****
			222	*	
			0002	223	XR2 EQU 2
			224		
00FC			225		ORG 252
00FC	FFFF0000		00FF	226	WCPTRM DC XL4'FFFF0000'
			FFFF	227	END

EXTRA SPACE

0945 CPU AND MEMORY DIAGNOSTICS: PROGRAM 94

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DPPM	REFERENCES
AD784	A	002	C22A	0108	0099
BFAT1	A	004	COA1	0188	0190
BEAT2	A	004	C087	C178	0180
BEGIN	A	003	0004	0124	0203
CHK1	A	004	COAC	0192	
CHK2	A	004	C092	0182	
COUNT2	A	001	00DF	0216	0172* 0179* 0189*
DATASW	A	002	00D7	0212	0129* 0132* 0133 0133* 0135 0138 0139 0141 0154 0200
DUN1	A	003	C06C	0168	0138*
DUN2	A	003	C03A	C197	0139*
END	C	001	003B	0112	0088
EPHALT	A	003	002C	C144	0149
FILL	A	003	0056	0160	0155 0165
HALT1	A	003	C00C	C087	
HALT2	A	003	0200	0096	0092 0093 0098
INIT	A	004	0007	0127	
IPLFLG	A	003	000E	0131	0122*
KONT2	A	004	0040	0151	0142 0201
KONT3	A	004	004E	0157	0169
KONT6	A	003	C018	0135	0131
KONT9	A	003	0079	0173	0198
LOADER	A	003	C0C6	0203	0136
LSTCRD	A	002	022E	0110	0088* 0104
MOVE	A	006	0213	0102	0103*
PAD	A	002	00D9	0213	0162* 0163 0164 0168 0195* 0196 0197
SAVE0	A	001	C0F0	0217	0176 0184
SAVE1	A	001	C0E1	0218	0174* 0186 0194
SIXTY	A	002	022C	0109	0103
STAPT	A	004	C000	0122	0120 0121
TEST1	A	003	0207	0098	0106
TEST2	A	003	0210	0101	0101
TSTBSY	A	003	00CF	0206	0206
UVWXYZ	A	001	C000	0C02	
WCPTRM	A	004	C0FF	0226	0145* 0146 0146*
XFFFF	A	004	CODE	0215	0157
XP1	C	001	0001	0111	0097* 0098 0099 0101 0103 0103 0104 0106 0145 0146 0146 0147
					0147* 0148 0151* 0152 0152 0157 0158 0158 0160 0160* 0161 0161
					0162 0167 0167* 0171* 0173 0173* 0174 0175 0176 0178 0178 0182
					0182 0184 0185 0186 0188 0188 0192 0192 0194 0195
					0129 0132 0133 0133 0135 0138 0138 0139 0139 0141 0148 0149
					0154 0157 0162 0163 0164 0165 0168 0169 0172 0174 0176 0179
					0179 0180 0184 0186 0189 0189 0190 0194 0195 0196 0197 0198
					0200 0201 0203 0204 0206
X0000	A	002	00E3	0219	0204
X10	A	001	00DA	0214	0179 0189

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0945 CPU AND MEMORY DIAGNOSTICS: PROGRAM 94

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TC <@P@SCBBB.- #0H*B 0 SAN09450001

T.-R>@P*60-DB (G 0 GG5H?|1J)G1D 0 # C%A>58AES0) &P #.XBA -E/O*A- .. @DT6 LBU09450002

T+ :|H* C%A-P@H C B0 (-2- ;@ (: Y *SP> GO@/BYD A _5D- >'E9"-2DAL 0-C90 |5* |3'4-D A\$E@ @E*09450003

T+-A5EAT- K3B EC @P <G #D5?H@BFO CA'9- 0*C4-DDP < G #@A6\$T@6\$-16+B EN_HAA.-|6+B@LXH A |8 6H@09450004

T+-B0? C-4-DBX G / P3" E@ +A* D A,-C-6> -/50 A % C--|@A\$ A@N0 B> (E8BB/P A 00 2E809450005

T+-C, G/_ GR>|# R> "Q8IA9> .08AA 9- D%-PT@E@B-G |0H* 0 E"" ""0 EI409450006

TDOC" OC<09450007

E""*E7*=-DC*PH\$ =7H6P| | C P% ASC R A S0 Q 21301012710 224720, @09450008

----- LAST PAGE -----

0955 CPU AND MEMORY DIAGNOSTICS: PROGRAM 95

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000 2 UVRXYZ START 0

3 DECK 4

4 *****

5 *

6 * PROG 95 RIPPLE BITS ON AND OFF TEST - LOWER CORE

7 *

8 *

9 * THIS PROGRAM CHECKS THE ABILITY TO READ AND WRITE UNDER WORST

10 * CASE CONDITIONS.

11 *

12 * THE TEST HAS ITS OWN LOADER

13 *

14 * THE TEST WILL BE PERFORMED IN THE FOLLOWING MANNER:

15 * 1) THE CORE IS FILLED WITH THE WORST CASE PATTERN,FFFF0000*

16 * 2) THE PATTERN IS VERIFIED (READ) AT EACH CORE LOCATION

17 * 3) A NUMBER IS RIPPLED THROUGH CORE

18 * 4) THE NUMBER IS VERIFIED (READ) AT EACH CORE LOCATION

19 * 5) STEPS 1-4 ARE REPEATED FOR ALL HEX NUMBERS 00-FF

20 * 6) ONLY THE AMOUNT OF CORE SET ON THE LEFTMOST ADDRESS

21 * SWITCH WILL BE TESTED, THE OTHER ADDRESS SWITCHES

22 * WILL NOT BE READ.

23 * 7) TO GAIN CONTROL OF THE CONSOLE ADDRESS SWITCHES, THE

24 * CE MUST INITIATE A SYSTEM RESET AFTER LOADING PROGRAM

25 * 8) SET UP CONSOLE ADDRESS SWITCHES PRIOR TO RESETTING

26 * THE 'HALT RESET'

27 * 9) FUNCTIONS OF THE CONSOLE ADDRESS SWITCHES (DATASW) ARE:*

28 *

(LEFTMOST)	SWITCH 1	SWITCH 2	SWITCH 3+4
32 *	0 TESTS CORE TO 4K	0 PROGRAM EXECUTED	00 NORMAL POSITION,
33 *	1 TESTS CORE TO 8K	ONCE ONLY	WC PATTERN FILL.
34 *	2 TESTS CORE TO 12K	1 BYPASS PROGRAM	XY ANY OTHER ENTRY
35 *	3 TESTS CORE TO 16K	2 LOOP PROGRAM	SETS -EP- HALT AND
36 *	4 TESTS CORE TO 20K	# COMPLEMENT FILL	ALLOWS CE TO SE-
37 *	5 TESTS CORE TO 24K	PATTERN USED	LECT FILL PATTERN
38 *	6 TESTS CORE TO 28K	6 LOOP & COMPLEMENT	ON THESE TO SW.,
39 *	7 TESTS CORE TO 32K	FILL PATTERN USED	A BYTE AT A TIME,
40 *	8 TESTS CORE TO 36K		FOR A TOTAL OF 4
41 *	9 TESTS CORE TO 40K		BYTES. 00 CAN BE
42 *	A TESTS CORE TO 44K		USED AS A BYTE OF
43 *	B TESTS CORE TO 48K		PATTERN AFTER -EP-
44 *	C TESTS CORE TO 52K		HALT SET (SEE 10)
45 *	D TESTS CORE TO 56K		
46 *	E TESTS CORE TO 60K		
47 *	F TESTS CORE TO 64K		
48 *			
49 *			
50 *			
51 *	10) NOTE: TURNING ADDRESS SWITCHES 3+4 (RIGHTMOST) TO A		
52 *	SETTING OTHER THAN 00 WILL SET AN -EP- (ENTER PATTERN)		
53 *	HALT WHICH WILL ALLOW THE CE TO ENTER HIS OWN 'WORST		
54 *	CASE' PATTERN. THE PATTERN IS ENTERED A BYTE AT A TIME		
55 *	ON SWITCHES 3+4. THE INITIAL SETTING OF SWITCHES TO A		
56 *	SETTING OTHER THAN 00 SELECTS THIS OPTION. THE INITIAL		
57 *	SWITCH SETTING IS NOT THE FIRST BYTE OF PATTERN. AFTER		
58 *	THE -EP- HALT, THE SWITCHES CAN BE SET TO ANY DESIRED		
59 *	COMBINATION, EVEN TO 00. THE BYTE OF PATTERN THAT IS		
60 *	ENTERED IS THE SETTING ON SWITCHES 3+4 WHEN THE HALT		
61 *	IS RESET. THE -EP- HALT IS DISPLAYED FOUR TIMES, THUS		
62 *	ALLOWING THE CE TO CHOOSE THE FILL PATTERN.		
63 *			
64 *	MEMORY FAILURES WILL BE INDICATED BY:		
65 *	1) PROCESSOR CHECK		
66 *	2) 'B' REGISTER PARITY CHECK		
67 *			
68 *			
69 *	THE SAR WILL CONTAIN THE FAILING LOCATION		

0955 CPU AND MEMORY DIAGNOSTICS: PROGRAM 95

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

70 * THE RUNNING TIME FOR PROGRAM 95 IS 44 SECONDS PER 8K CP CORE *
71 * *****
72 *
73 *****
74 *****
75 *****
76 *****
77 *****
78 * IPL LOADER FOR PROG 95 *
79 *
80 *
81 * THE LOADER WILL READ IPL FORMATTED CARDS SEQUENTIALLY INTO *
82 * MEMORY STARTING AT LOC -0000-. THE LOADING WILL TERMINATE WHEN *
83 * HEX -1234- IS FOUND IN COLS -59&60-. *
84 *
85 *****
86 *****
87 *****
88 HALTA HPL X'5D',X'5F' .PROG 95 IPL HALT, HALTA
89 MVC LSTCRD(47),END .MOVE THE IPL LOADER TO LOC
90 B 515 -0200- THRU -022E-. READ
91 USING HALTB,1 FIRST CARD
92 USING HALTB,2 FIRST CARD
93 ORG 512
94 HALTB HPL X'76',X'6F' .PROG 95 MPCU NOT READY HLT
95 LA X'0200',XR1 .USE X'0200' AS BASE ADRS.
96 TEST1 TIO HALTB(XR1),X'F0' .HALT:MPCU ERROR,NOT READY
97 LIO AD384(XR1),X'F5' .LOAD READ ADDRESS LSR
98 SIO X'45',X'F1' .READ NEXT CARD IN IPL MODE
99 TEST2 TIO TEST2(XR1),X'F1' .WAIT HERE TILL BUSY DROPS
100 MOVE MVC 59(60),443 .MOVE DATA READ TO LOW CORE
101 ALC MOVE+3(2,XR1),SIXTY(XR1) .INCREMENT MOVE TO ADDRESS
102 CLC 443(2),LSTCRD(XR1) .GO TO LOC -0007- IF LAST
103 BE 7 CARD READ WAS 'LAST' CARD.
104 B TEST1(XR1) IF NOT,GO READ NEXT CARD
105
106
107 AD384 DC AL2(384)
108 SIXTY DC XL2'003C'
109 LSTCRD DC XL2'1234'
110 XR1 EQU X'01'
111 END EQU X'3B'
112
113
114 *****END OF IPL LOADER FOR PROG 95.THE FOLLOWING PROGRAM WILL BE
115 *****LOADED AFTER THE LOADER HAS MOVED ITSELF INTO HIGHER CORE.
116
117
118
119
120 ORG 0
121 USING START,1
122 USING START,2
123 START MVI IPLPLG+1,X'87' .SYS RESET ENTRY,ENABLE SNS
124 BEGIN HPL X'5D',X'5F' .HALT 96. IPL & END HALTS
125 LA 0,X'03' .INIT XR1 & XR2
126 SNS DATASW(XR2),X'00' .READ ADDRESS SWITCHES
127 IPLPLG JC KONT6,X'80' .ENABLE SNS WHEN SYS RESET
128 MVI DATASW(XR2),X'00' .IN NORMAL RUNNING READ THE
129 MNN DATASW-1(XR2),DATASW(XR2) SWITCH TO SET CORSIZ ONLY
130 KONT6 TBN DATASW-1(XR2),X'01' .TEST IF BYPASS SWITCH ON
131 JT LOADER IF YES,GO TO NEXT PROGRAM
132 MVI CORSIZ-1(XR2),X'FF' .DETERMINE AMOUNT OF CORE
133 MZZ CORSIZ-1(XR2),DATASW-1(XR2) TO TEST ABOVE 256 BYTES
134 TBP DATASW(XR2),X'FF' .TEST IF CE WANTS TO INSERT
135 JT KONT2 WC PATTERN.IF NOT,CONTINUE
136 EPHALT HPL X'3E',X'7C' .ENTER PATTERN (EP) HALT.IF
137 SNS WCPTRN-2(XR1),X'00' CE WANTS HIS OWN PATTERN,

0955 CPU AND MEMORY DIAGNOSTICS: PROGRAM 95

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0031 5C 00 C8 C9 138 MVC WCPTRN-3(XR1),WCPTRN-2(1,XR1) THE -EP- HALT WILL COME ON
0035 D2 01 01 139 LA 1(XR1),XR1 4 TIMES.THE CE SELECTS ONE
0038 6D 09 C9 CD 140 CLC WCPTRN-2(10,XF1),WCPTRN+2(XR2) BYTE OF PATTERN AT A TIME.
003C F0 01 2B 141 BNE EPHALT(XR2) WHEN -EP- HALT RESET,BYTE
003F B8 04 BB 142 KONT2 TBN DATASW-1(XR2),X'04' .CHECK IF WANT WC COMP PTRN
0042 AC 03 C2 D0 143 MVC PATERN(XR2),CHNGER(4,XR2) .INIT WC COMPLEMENT PATTERN
0046 F2 90 08 144 JP KONT5 .SKIP WC IF WC COMP WANTED
0049 AF 03 C2 CB 145 SLC PATERN(XR2),WCPTRN(4,XR2) .INIT WC PATTERN
004D AC 03 C8 C2 146 MVC WCPTRN(4,XR2),PATERN(XR2)
0051 AC 03 D9 DA 147 KONT5 MVA RIPPAT(XR2),RIPPAT+1(4,XR2) .INIT RIPPLE PATTERN
0055 C2 01 01C0 148 KONT3 LA 256,XR1 .INIT XR1
0059 A8 00 D5 PD 149 MZZ COUNT2(XR2),CORSIZ-1(XR2) .INIT CORESIZE COUNTER
005D AC 01 D4 E0 150 MVC COUNT1(XR2),X1040(2,XR2) .INIT 4K COUNTER
0061 B8 11 F1 151 TBN RFLAG(XR2),X'11' .TEST IF NUMBERS RIPPLED.IF
0064 F2 90 2D 152 JP KONT8 YES,FILL CORE WITH PATTERN
0067 FC 00 F1 153 MVI RFLAG(XR2),X'00' .SET FLAG TO RIPPLE NUMBERS
006A 6C 03 C3 D9 154 MVC 3(XR1),RIPPAT(4,XR2) .MOVE RIPPLE PATTERN TO POS
006E 5C 03 07 03 155 FILL MVC 7(XR1),3(4,XR1) .MOVE PATTERN FOUR BYTES
0072 B6 01 D2 156 FILLHOR A POUR(XR2),XR1 HIGHER & INCREMENT XR1
0075 AF 01 D4 C7 157 ALC COUNT1(XR2),X0040(2,XR2) .CHECK IF 4K OF CORE FILLED
0079 EC 01 6E 158 BNE FILL(XR2) IF NOT,FILL SOME MORE
007C AF 00 D5 C4 159 SLC COUNT2(XR2),X10(1,XR2) .DECREMENT CORESIZE COUNTER
0080 F0 82 55 160 BL KONT3(XR2) BRNCH WHEN ALL CORE FILLED
0083 B4 11 F1 161 TBP RFLAG(XR2),X'11' .CHECK IF RIPPLING NUMBERS
0086 F0 10 6E 162 BT FILL(XR2) IN CORE.IF YES,GO TO FILL
0089 6C 03 07 D0 163 MVC 7(XR1),CHNGER(4,XR2) .COMPLEMENT THE FILL PATERN
008D 5F 03 07 03 164 SLC 7(XR1),3(4,XR1) AND PLACE IN NEXT LOCATION
0091 F0 87 72 165 B FILLHOR(XR2) .FILL NEXT 4K OF CORE
0094 FC 11 E1 166 KONT8 MVI RFLAG(XR2),X'11' .RESET FLAG TO RIPPL NUMBERS
0097 6C 03 03 C8 167 MVC 3(XR1),WCPTRN(4,XR2) .MOVE PATTERN INTO POSITION
0099 B8 0F D9 168 TRN RIPPAT(XR2),X'FF' .TEST IF ALL CHARACTERS
009E AE 03 D9 DE 169 ALC RIPPAT(XR2),RCCUNT(4,XR2) RIPPLED.INCREMENT PATTERN
00A2 EC 90 6E 170 BP FILL(XR2) .GO FILL CORE WITH PATTERN
00A5 B8 02 B1 171 TBN DATASW-1(XR2),X'02' .TEST IF 'LOOP' OPTIUM ON
00A8 E0 10 51 172 BT KONT5(XR2) .LOOP FLAG IF 'LOOP' ON
00AB E1 F0 04 173 LOADER TIO BEGIN(XR2),X'F0' .GO READ NEXT CARD AND
00AE B1 F5 C6 174 LIO X0000(XR2),X'F5' BRANCH TO LOC 0000
00B1 F3 F1 45 175 SIO X'45',X'F1'
00B4 E1 F1 F4 176 TSTBSY TIO TSTBSY(XR2),X'F1'
00E7 C0 87 0003 177 B 3
178
179
180
181
182 ***** DATA DEFINITIONS
183
184
00B8 1000 00BC 185 DATASW DC XL2'1000'
0002 186 XR2 EQU X'02'
00BD 0C00 00BE 187 CORSIZ DC XL2'0'
00BF 0CC00000 00C2 188 PATERN DC XL4'0'
00C3 C0 00C3 189 DC XL1'0'
00C4 10 00C4 190 X10 DC XL1'10'
00C5 0C00 00C6 191 X0000 DC XL2'0'
00C7 40 00C7 192 X0040 DC XL1'40'
00C8 FFFF0000 00CB 193 WCPTRN DC XL4'FFFF0000'
00CC C0 00CC 194 DC XL1'0'
00CD FFFFFFFF 00D0 195 CHNGER DC XL4'FFFFFFF'
00D1 C004 00D2 196 FOUR DC XL2'0004'
00D3 0000 00D4 197 COUNT1 DC XL2'0'
00D5 00 00D5 198 COUNT2 DC XL1'0'
00D6 0C000000 00D9 199 RIPPAT DC XL4'0'
00DA 00 00DA 200 DC XL1'0'
00DB 01010101 00DE 201 RCOUNT DC XL4'01010101'
00DF 1040 00E0 202 X1040 DC XL2'1040'
00E1 00 00E1 203 RFLAG DC XL1'0'
204 ***** DO NOT ALTER THE ORDER OF ABOVE DATA DEFINITIONS
00E2 CC0000C000000000 C0FF 205 EXTRA DC XL30'0'

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 142

0955 CPU AND MEMORY DIAGNOSTICS: PROGRAM 95

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```
00EA C0C0000000000000 205
00F2 0CC0CC0C0C0C0C00 205
0CFA C000C000000000 205
      FFFF 206      END
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 142A

0955 CPU AND MEMORY DIAGNOSTICS: PROGRAM 95

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
AD384	A	002	022A	0107	0097
REGIN	A	003	0004	0124	0173
CHNGER	A	004	00D0	0195	0143 0163
COPSTZ	A	002	00BF	0187	0132* 0133* 0149
CCUNT1	A	002	00D4	0197	0150* 0157*
COUNT2	A	001	00D5	0198	0149* 0159*
DATASW	A	002	00BC	0185	0126* 0128* 0129 0129* 0130 0133 0134 0142 0171
END	C	001	003B	0111	0089
EPHALT	A	003	002B	0136	0141
EXTRA	A	030	00FF	0205	
FILL	A	004	006E	0155	0158 0162 0170
FILHOR	A	003	0072	0156	0165
FOUR	A	002	00D2	0196	0156
HALTA	A	003	0000	0088	
HALTP	A	003	0200	0094	0091 0092 0096
YPLPLG	A	003	000E	0127	0123*
KONT2	A	003	003F	0142	0135
KONT3	A	004	0055	0148	0160
KONT5	A	004	0051	0147	0144 0172
KONT6	A	003	0018	0130	0127
KONT8	A	003	0094	0166	0152
LCADER	A	003	00AB	0173	0131
LSTCRD	A	002	022F	0109	0089* 0102
MOVE	A	006	0213	0100	0101*
PATTERN	A	004	00C2	0188	0143* 0145* 0146
RCCUNT	A	004	00DE	0201	0169
RFLAG	A	001	00E1	0203	0151 0153* 0161 0166*
RIPPAT	A	004	00D9	0199	0147 0147* 0154 0168 0169*
SIXTY	A	002	022C	0108	0101
STAPT	A	004	0000	0123	0121 0122
TEST1	A	003	0207	0C96	0104
TEST2	A	003	0210	0C99	0099
TSTRSY	A	003	0084	0176	0176
UVWXYZ	A	001	0000	0002	
WCPTRN	A	004	00C8	0193	0137* 0138 0138* 0140 0140 0145 0146* 0167
XR1	C	001	0001	0110	0095* 0096 0097 0099 0101 0101 0102 0104 0137 0138 0138 0139
					0139* 0140 0148* 0154 0155 0155 0156* 0163 0164 0164 0167
XR2	C	001	0002	0186	0126 0128 0129 0129 0130 0132 0133 0133 0134 0140 0141 0142
					0143 0143 0145 0145 0146 0146 0147 0147 0149 0149 0150 0150
					0151 0153 0154 0156 0157 0157 0158 0159 0159 0160 0161 0162
					0163 0165 0166 0167 0168 0169 0169 0170 0171 0172 0173 0174
					0176
XCC00	A	002	00C6	0191	0174
X0040	A	001	00C7	0192	0157
X10	A	001	00C4	0190	0159
X1040	A	002	00E0	0202	0150

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0955 CPU AND MEMORY DIAGNOSTICS: PROGRAM 95

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96
TC <@E') CB8B.- #0H*B 0 41<09550001
T.-H>@P'60-DB (G 0 GG5H?|1J)G1D 0 # C%A>58AES0) &P #.KBA --E/0*A- @DT6 LQ009550002
T+- :|H* C'A-P*H C' BO .32- ;@ .2 Y #>@> P#@/B(?|= 'D B'>#X'?'|H&E|A @|X 2NO 2<XK &Z _B*U 91-09550003
T+-A53; AH*-D>:0 CO_C2U S? @.., | .0D0C6) ,B ED D C N7E0A5+B8D;G2UB6 @ +E% 0|RP <G @Q A4D8 'D009550004
T+-B0)LG8 'E>,OC N1+BBNSUJ8; &SWO CA'A- 0*C8H) 2?AG /\$ <C2@T*6E8C6) # -UP:8 ,?-DEG/@ K 1*Q P, @09550005
T+-C,@'FE8-P4OH* 1 A DC''G |''''@ A ED A JA 6H-09550006
TDOC' E6009550007
E''*E7*=-DC''PH\$ =''7H&P| | C P% ASC R A SO Q 21301012710 224720@09550008

----- LAST PAGE -----

0965 CPU AND MEMORY DIAGNOSTICS: PROGRAM 96

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000 2 WXYZ START 0
3 DFCK #
4 *****
5 *
6 * PROG 96 WORST CASE CORE TEST - LOWER CORE *
7 *
8 *
9 * THIS PROGRAM DETECTS THE ABILITY TO READ AND WRITE UNDER WORST *
10 * CASE CONDITIONS *
11 *
12 * THE TEST HAS ITS OWN LOADER *
13 *
14 * THE TEST WILL BE PERFORMED IN THE FOLLOWING MANNER:
15 * 1) THE CORE IS FILLED WITH THE WORST CASE PATTERN;PPFP0000*
16 * 2) THE PATTERN IS VERIFIED (READ) AT EACH CORE LOCATION *
17 * 3) INDEX REGISTER 1 (IB1) IS USED TO POINT TO TEST BYTE *
18 * 4) READ/REGENERATE EVERY CORE LOCATION *
19 * 5) READ/COMPLEMENT/READ/COMPLEMENT EVERY CORE LOCATION *
20 * 6) STEPS 4 AND 5 ARE REPEATED *
21 * 7) ONLY THE AMOUNT OF CORE SET ON THE LEFTMOST ADDRESS *
22 * SWITCH WILL BE TESTED, THE OTHER ADDRESS SWITCHES WILL *
23 * NOT BE READ *
24 * 8) TO GAIN CONTROL OF THE CONSOLE ADDRESS SWITCHES, THE *
25 * CE MUST INITIATE A SYSTEM RESET AFTER LOADING PROGRAM *
26 * 9) SET UP CONSOLE ADDRESS SWITCHES PRIOR TO RESETTING *
27 * THE 'HALT RESET' *
28 * 10) FUNCTIONS OF THE CONSOLE ADDRESS SWITCHES (DATASW) ARE: *
29 *
30 * (LEFTMOST) SWITCH 1 SWITCH 2 SWITCH 3+4 *
31 *
32 *
33 * 0 TESTS CORE TO 4K 0 PROGRAM EXECUTED 00 NORMAL POSITION, *
34 * 1 TESTS CORE TO 8K 0MCE ONLY 00 WC PATTERN FILL. *
35 * 2 TESTS CORE TO 12K 1 BYPASS PROGRAM XY ANY OTHER ENTRY *
36 * 3 TESTS CORE TO 16K 2 LCOP PROGRAM SETS -EP- HALT AND *
37 * 4 TESTS CORE TO 20K 4 COMPLEMENT FILL ALLOWS CE TO SE- *
38 * 5 TESTS CORE TO 24K PATTERN USED LECT FILL PATTERN *
39 * 6 TESTS CORE TO 28K 6 LOOP & COMPLEMENT ON THESE TO SW., *
40 * 7 TESTS CORE TO 32K FILL PATTERN USED A BYTE AT A TIME, *
41 * 8 TESTS CORE TO 36K FOR A TOTAL OF 4 *
42 * 9 TESTS CORE TO 40K BYTES. 00 CAN BE *
43 * A TESTS CORE TO 44K USED AS A BYTE OF *
44 * B TESTS CORE TO 48K PATTERN AFTER -EP- *
45 * C TESTS CORE TO 52K HALT SET (SEE 11) *
46 * D TESTS CORE TO 56K *
47 * E TESTS CORE TO 60K *
48 * F TESTS CORE TO 64K *
49 *
50 *
51 * 11) NOTE: TURNING ADDRESS SWITCHES 3+4 (RIGHTMOST) TO A *
52 * SETTING OTHER THAN 00 WILL SET AN -EP- (ENTER PATTERN) *
53 * HALT WHICH WILL ALLOW THE CE TO ENTER HIS OWN 'WORST *
54 * CASE' PATTERN. THE PATTERN IS ENTERED A BYTE AT A TIME *
55 * ON SWITCHES 3+4. THE INITIAL SETTING OF SWITCHES TO A *
56 * SETTING OTHER THAN 00 SELECTS THIS OPTION. THE INITIAL *
57 * SWITCH SETTING IS NOT THE FIRST BYTE OF PATTERN. AFTER *
58 * THE -EP- HALT, THE SWITCHES CAN BE SET TO ANY DESIRED *
59 * COMBINATION, EVEN TO 00. THE BYTE OF PATTERN THAT IS *
60 * ENTERED IS THE SETTING ON SWITCHES 3+4 WHEN THE HALT *
61 * IS RESET. THE -EP- HALT IS DISPLAYED FOUR TIMES, THUS *
62 * ALLOWING THE CE TO CHOOSE THE FILL PATTERN. *
63 *
64 *
65 * MEMORY FAILURES WILL BE INDICATED BY: *
66 * 1) PROCESSOR CHECK *
67 * 2) 'B' REGISTER PARITY CHECK *
68 *
69 *

0965 CPU AND MEMORY DIAGNOSTICS: PROGRAM 96

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
70 * THE SAR WILL CONTAIN THE FAILING LOCATION *
71 * *
72 * THE RUNNING TIME FOR PROGRAM 96 IS 1.5 SECONDS PER 8K OF CORE *
73 * *
74 *****
75 *****
76 *****
77 *****
78 *****
79 * *
80 * IPL LOADER FOR PROG 96 *
81 * *
82 * THE LOADER WILL READ IPL FORMATTED CARDS SEQUENTIALLY INTO *
83 * MEMORY STARTING AT LOC -0000-. THE LOADING WILL TERMINATE WHEN *
84 * HEX -1234- IS FOUND IN COLS -59660-. *
85 * *
86 *****
87 *****
88 *****
89 HALTA HPL X'7D',X'5F' .PROG 96 IPL HALT, HALTA
90 HVC LSTCRD(47),END .MOVE THE IPL LOADER TO LOC
91 B 515 -0200- THRU -022E-. READ
92 USING HALTB,1 FIRST CARD
93 USING HALTB,2 FIRST CARD
94 ORG 512
95 HALTB HPL X'76',X'6F' .PROG 96 HPCU NOT READY HLT
96 LA X'0200',XR1 .USE X'0200' AS BASE ADRS.
97 TEST1 TIO HALTB(XR1),X'F0' .HALT:HPCU ERROR,NOT READY
98 LIO AD384(XR1),X'F5' .LOAD READ ADDRESS LSR
99 STIO X'45',X'F1' .READ NEXT CARD IN IPL MODE
100 TEST2 TIO TEST2(XR1),X'F1' .WAIT HERE TILL BUSY DROPS
101 MOVE HVC 59(60),443 .MOVE DATA READ TO LOW CORE
102 ALC MOVE+3(2,XR1),SIXTY(XR1) .INCREMENT MOVE TO ADDRESS
103 CLC 443(2),LSTCRD(XR1) .GO TO LOC -0007- IF LAST
104 BE 7 CARD READ WAS 'LAST' CARD.
105 B TEST1(XR1) IF NOT,GO READ NEXT CARD
106
107
108 AD384 DC AL2(384)
109 SIXTY DC XL2'003C'
110 LSTCRD DC XL2'1234'
111 XR1 EQU X'01'
112 END EQU X'3B'
113
114
115 *****END OF IPL LOADER FOR PROG 96.THE FOLLOWING PROGRAM WILL BE
116 *****LOADED AFTER THE LOADER HAS MOVED ITSELF INTO HIGHER CORE.
117
118
119
120
121
122
123
124 START HVI IPLPLG+1,X'87' .SYS RESET ENTRY,ENABLE SNS
125 BEGIN HPL X'7D',X'5F' .HALT 96. IPL & END HALTS
126 LA 0,X'03' .INIT XR1 & XR2
127 SNS DATASW(XR2),X'00' .READ ADDRESS SWITCHES
128 IPLPLG JC KONT6,X'80' .ENABLE SNS WHEN SYS RESET
129 HVI DATASW(XR2),X'00' .IN NORMAL RUNNING READ THE
130 HNN DATASW-1(XR2),DATASW(XR2) SWITCH TO SET CORSIZ ONLY
131 KONT6 TBN DATASW-1(XR2),X'01' .TEST IF BYPASS SWITCH ON
132 JT LOADER IF YES,GO TO NEXT PROGRAM
133 HVI CORSIZ-1(XR2),X'FF' .DETERMINE AMOUNT OF CORE
134 HZZ CORSIZ-1(XR2),DATASW-1(XR2) TO TEST ABOVE 256 BYTES
135 TBF DATASW(XR2),X'FF' .TEST IF CE WANTS TO INSERT
136 JT KONT2 WC PATTERN.IF NOT,CONTINUE
137 EPHALT HPL X'3E',X'7C' .ENTER PATTERN (EP) HALT IF

0965 CPU AND MEMORY DIAGNOSTICS: PROGRAM 96

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
002E 70 00 E2 138 SNS WCPTRN-2(XR1),X'00' CE WANTS HIS OWN PATTERN,
0031 5C 00 E1 E2 139 MVC WCPTRN-3(XR1),WCPTRN-2(1,XR1) THE -EP- HALT WILL COME ON
0035 02 01 01 140 LA 1(XR1),XR1 4 TIMES.THE CE SELECTS ONE
0038 6D 09 E2 E6 141 CLC WCPTRN-2(10,XR1),WCPTRN+2(XR2) BYTE OF PATTERN AT A TIME.
003C E0 01 2B 142 BNE EPHALT(XR2) WHEN -EP- HALT RESET,BYTE
003F B8 04 D4 143 KONT2 TBN DATASW-1(XR2),X'04' .CHECK IF WANT WC COMP PTRN
0042 AC 03 DB E9 144 HVC PATERN(XR2),CHNGER(4,XR2) .INIT WC COMPLEMENT PATTERN
0046 F2 9C 08 145 JF KONT3 .SAIP BC IF WC COMP WANTED
0049 AF 03 DB E4 146 SLC PATERN(XR2),WCPTRN(4,XR2) .INIT WC PATERN
004D AC 03 E4 DB 147 HVC WCPTRN(4,XR2),PATERN(XR2)
0051 B5 01 F4 148 KONT3 L X0100(XR2),XR1 .INIT XR1
0054 A8 00 FE D6 149 HZZ COUNT2(XR2),CORSIZ-1(XR2) .INIT CORSIZE COUNTER
0056 AC 01 ED F0 150 HVC COUNT1(XR2),X1040(2,XR2) .INIT 4K COUNTER
005C 6C 03 03 E4 151 HVC 3(XR1),WCPTRN(4,XR2) .MOVE PATTERN INTO POSITION
0060 5C 03 07 03 152 FILL HVC 7(XR1),3(4,XR1) .MOVE PATTERN FOUR BYTES
0064 B6 01 EB 153 FILMOR A FOUR(XR2),XR1 HIGHER & INCREMENT XR1
0067 AF 01 FD E0 154 ALC COUNT1(XR2),X0040(2,XR2) .CHECK IF 4K OF CORE FILLED
006F E0 01 60 155 BNE FILL(XR2) IF NOT,FILL SOME MORE
006E AF 00 FE DD 156 SLC COUNT2(XR2),X10(1,XR2) .DECREMENT CORSIZE COUNTER
0072 E0 82 80 157 BL KONT1(XR2) BRNCH WHEN ALL CORE FILLED
0075 6C 03 07 E9 158 HVC 7(XR1),CHNGER(4,XR2) .COMPLEMENT THE FILL PATERN
0079 5F 03 07 03 159 SLC 7(XR1),3(4,XR1) AND PLACE IN NEXT LOCATION
007D F0 87 64 160 B FILHOR(XR2) .FILL NEXT 4K OF CORE
161
162 KONT1 MVC COUNT1(XR2),CORSIZ(2,XR2) .INIT CORSIZE COUNTER
163 L X0100(XR2),XR1 .SET XR1 TO POINT TEST BYTE
164 SELECT HVC 0(1,XR1),0(XR1) .EACH CORE LOCATION IS
165 A ONE(XR2),XR1 SELECTED TWO TIMES
166 SLC COUNT1(2,XR2),ONE(XR2)
167 BNE SELECT(XR2)
168 HVC COUNT1(XR2),CORSIZ(2,XR2) .INIT CORESIZE COUNTER
169 L X0100(XR2),XR1 .SET XR1 TO POINT TEST BYTE
170 HVI COUNT2(XR2),X'00' .SET UP TWO COUNTER
171 KONT9 HVI CHNGR+1(XR2),X'FF' .COMPLEMENT THE DATA IN THE
172 SLC CHNGR+1(1,XR2),0(XR1) LOCATION XR1 POINTS TO
173 CHNGR HVI 0(XR1),X'FF'
174 HVC 0(1,XR1),0(XR1) .RE-SELECT LOC XR1 POINTS
175 ALC COUNT2(1,XR2),X80(XR2) .RESTORE (COMPLEMENT AGAIN)
176 BNE KONT9(XR2) THE BYTE XR1 POINTS TO
177 A ONE(XR2),XR1 .INCREMENT XR1 AND GO
178 SLC COUNT1(XR2),ONE(2,XR2) COMPLEMENT & RECOMPLEMENT
179 BNE KONT9(XR2) TILL ALL CORE TESTED
180 TBN DATASW-1(XR2),X'02' .TEST IF 'LOOP' OPTION ON
181 BT KONT3(XR2) .LOOP PROGRAM IF LOOP ON
182 LOADER TIO BEGIN(XR2),X'F0' .GO READ NEXT CARD AND
183 LIO X0000(XR2),X'F5' BRANCH TO LOC 0000
184 STIO X'45',X'F1'
185 TSTBSY TIO TSTBSY(XR2),X'F1'
186 B 3
187
188
189
190
191 ***** DATA DEFINITIONS
192
193
00D4 1000 00D5 194 DATASW DC XL2'1000'
00D6 0000 00D7 195 XR2 EQU X'02'
00D8 C0000000 00D8 196 CORSIZ DC XL2'0'
00DC 00 00DC 197 PATERN DC XL4'0'
00DD 10 00DD 198 DC XL1'0'
00DE C000 00DE 199 X10 DC XL1'10'
00E0 40 00E0 200 X0000 DC XL2'0'
00E1 FFFFFFFF 00E1 201 X0040 DC XL1'40'
00E5 00 00E5 202 WCPTRN DC XL4'FFFFFFF000'
00E6 FFFFFFFF 00E6 203 DC XL1'0'
00EA 0004 00E9 204 CHNGER DC XL4'FFFFFFF'
00EB 205 FOUR DC XL2'0004'

0965 CPU AND MEMORY DIAGNOSTICS: PROGRAM 96

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
00EC 0000	00ED	206	COUNT1 DC	XL2'0'
00EE 00	00EE	207	COUNT2 DC	XL1'0'
00EF 1040	00F0	208	X1040 DC	XL2'1040'
00F1 80	00F1	209	X80 DC	XL1'80'
00F2 0001	00F3	210	ONE DC	XL2'0001'
00F4 00	00F4	211	DC	XL1'0'
	00F4	212	X0100 EQU	ONE+1
	213	*****	DO NOT ALTER THE ORDER OF ABOVE DATA DEFINITIONS	
00F5 C0000000000000	00FF	214	EXTRA DC	XL11'0'
00FD C00000	214			
	FFFF	215	END	

0965 CPU AND MEMORY DIAGNOSTICS: PROGRAM 96

		CROSS-REFERENCE															
SYMBOL	T	LEN	VALUE	DEFN	REFERENCES												
AD3R4	A	002	022A	0108	0098												
BEGIN	A	003	0004	0125	0182												
CHNGER	A	004	00F9	0204	0144	0158											
CHNGR	A	003	00A6	0173	0171*	0172*											
CORSIZ	A	002	00D7	0196	0133*	0134*	0149	0162	0168								
CCOUNT1	A	002	00ED	0206	0150*	0154*	0162*	0166*	0168*	0178*							
COUNT2	A	001	00FE	0207	0149*	0156*	0170*	0175*									
DATASW	A	002	00D5	0194	0127*	0129*	0130	0130*	0131	0134	0135	0143	0180				
END	C	001	003B	0112	0090												
EPHALT	A	003	002B	0137	0142												
EXTRA	A	011	00FF	0214													
FILL	A	004	0060	0152	0155												
FILMOR	A	003	0064	0153	0160												
POUR	A	002	00EB	0205	0153												
HALTA	A	003	0000	0089													
HALTE	A	003	020C	0095	0092	0093	0097										
YPLPLG	A	003	000E	0128	0124*												
KONT1	A	004	0080	0162	0157												
KONT2	A	003	003F	0143	0136												
KONT3	A	003	0051	0148	0145	0181											
KONT6	A	003	0018	0131	0128												
KONT9	A	003	009F	0171	0176	0179											
LOADER	A	003	00C4	0182	0132												
LSTCRD	A	002	022E	0110	0090*	0103											
MOVE	A	006	0213	0101	0102*												
ONE	A	002	00F3	0210	0165	0166	0177	0178	0212								
PATERM	A	004	00EB	0197	0144*	0146*	0147										
SELECT	A	004	0087	0164	0167												
SIXTY	A	002	022C	0109	0102												
STAPT	A	004	0000	0124	0122	0123											
TEST1	A	003	0207	0097	0105												
TEST2	A	003	0210	0100	0100												
TSTESY	A	003	00CD	0185	0185												
UVWYZ	A	001	00C0	0002													
WCPTRN	A	004	00E4	0202	0138*	0139	0139*	0141	0141	0146	0147*	0151					
XR1	C	001	0001	0111	0096*	0097	0098	0100	0102	0102	0103	0105	0138	0139	0139	0140	
					0140*	0141	0149*	0151	0152	0152	0153*	0158	0159	0159	0163*	0164	
					0164	0165*	0169*	0172	0173	0174	0174	0177*					
XR2	C	001	0002	0195	0127	0129	0130	0130	0131	0133	0134	0134	0135	0141	0142	0143	
					0144	0144	0146	0146	0147	0147	0148	0149	0149	0150	0150	0151	
					0153	0154	0154	0155	0156	0156	0157	0158	0160	0162	0162	0163	
					0165	0166	0166	0167	0168	0168	0169	0170	0171	0172	0175	0175	
					0176	0177	0174	0178	0179	0180	0181	0182	0183	0185			
X0000	A	002	00DF	0200	0183												
X0040	A	001	00E0	0201	0154												
X0100	A	002	00F4	0212	0148	0163	0169										
X10	A	001	00DD	0199	0156												
X1040	A	002	00F0	0208	0150												
X80	A	001	00F1	0209	0175												

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0965 CPU AND MEMORY DIAGNOSTICS: PROGRAM 96

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TC <@E'CB8B.- #0H*B 0 @A<09650001 E

T.-H>@F'60-DB (G 0 GG5H?(1J)G1D 0 # CKA>58AES0) &P #.XBA ~E/0*A-.. @DTG LYU09650002 E

T+ :|H* C'A--*H C RO (P2- ;@ (O Y 'LN> GHA/BW?|* OD COS.X*5-HSE|A @|X 8Y0 8;.K &E _B;H L:409650003 E

T+-A59> AH@-D5H0 C6=X2U S? '7U. | U6#HA'H- #_PK ;7 0S <C9EOCA0+6 ;> > ;7-8 E-.OC>7;B B-PO ER009650004 E

T+-B0 0-ZPO<G =B GRHOA#);5 ~J* .. -G3,OG_a= A/:0 A#);5 ~K@ +:@*;; ~H* ~ P H8 #?D ;8Y09650005 E

T+-C,8 F_-G3,OG _a= AX@-B5+ &H;G UA.G57*|1J;G13*B G <G & A ""@ C"" "" # LK009650006 E

TDOC" DDB D #Y809650007 E

E""*Z7*--DC*PHS =*7H&P| | C FX ASC R A SO Q 21301012710 224720.809650008 E

----- LAST PAGE -----

0975 CPU AND MEMORY DIAGNOSTICS: PROGRAM 97

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

0000 2 UWXYZ START 0
3 DECK 4

4 *****
5 *
6 * PROG 97 WORST CASE CORE TEST - UPPER CORE *
7 *
8 * THIS PROGRAM DETECTS THE ABILITY TO READ & WRITE *
9 * UNDER WORST CASE CONDITIONS. *
10 *
11 *
12 * *****

13 *
14 *
15 * ** WARNING **
16 * **
17 * *****

18 *
19 *
20 * ** ALTHOUGH THIS PROGRAM HAS PROVISIONS TO RE- **
21 * ** START AFTER THE CPU HAS BEEN POWERED DOWN, NO **
22 * ** GUARANTEES ARE MADE AS TO THE CONTENTS OF CORE **
23 * ** OR TO THE ABILITY TO RE-START THE PROGRAM ONCE **
24 * ** THE CPU HAS BEEN POWERED DOWN. **
25 * **
26 * ** IF ERROR INDICATIONS ARE PRESENT AFTER **
27 * ** POWERING UP--DO NOT TRY TO DETERMINE THE **
28 * ** CAUSE OF FAILURE--RELOAD THE PROGRAM. **
29 * **
30 * *****

31 *
32 * *****

33 *
34 * AFTER THE WORST CASE PATTERN HAS BEEN PLACED IN CORE *
35 * THE PROGRAM WILL *
36 * 1) READ/REGEN FROM EVERY LOCATION *
37 * 2) READ/COMPLEMENT/READ/COMPLEMENT EVERY LOCATION *
38 * 3) FILL CORE WITH WORST CASE COMPLEMENT PATTERN *
39 * 4) REPEAT STEPS (1) & (2) *
40 * 5) ONLY THE AMOUNT OF CORE SET ON THE LEFTMOST ADDRESS *
41 * SWITCH WILL BE TESTED, THE OTHER ADDRESS SWITCHES WILL *
42 * NOT BE READ *
43 * 6) TO GAIN CONTROL OF THE CONSOLE ADDRESS SWITCHES, THE *
44 * CE MUST INITIATE A SYSTEM RESET AFTER LOADING PROGRAM *
45 * 7) SET UP CONSOLE ADDRESS SWITCHES PRIOR TO RESETTING THE *
46 * 'HALT RESET' *
47 * 8) FUNCTIONS OF CONSOLE ADDRESS SWITCHES (DATASW) ARE: *
48 *
49 * (LEFTMOST) SWITCH 1 SWITCH 2 SWITCH 3+4 *
50 *
51 *
52 * 0 TESTS CORE TO 4K 0 PROGRAM EXECUTED 00 NORMAL POSITION, *
53 * 1 TESTS CORE TO 8K ONCE ONLY WC PATERM FILL. *
54 * 2 TESTS CORE TO 12K 1 BYPASS PROGRAM XY ANY OTHER ENTRY *
55 * 3 TESTS CORE TO 16K 2 LOOP PROGRAM SETS-EP-HALT AND *
56 * 4 TESTS CORE TO 20K 4 COMPLEMENT FILL ALLOWS CE TO SE- *
57 * 5 TESTS CORE TO 24K PATTERN USED LECT FILL PATTERN* *
58 * 6 TESTS CORE TO 28K 6 LOOP & COMPLEMENT ON THESE TWO SW., *
59 * 7 TESTS CORE TO 32K FILL PATTERN USED A BYTE AT A TIME, *
60 * 8 TESTS CORE TO 36K 8 LOOP ON HIGHEST 3SH FOR A TOTAL OF 4 *
61 * 9 TESTS CORE TO 40K (SEE 10) BYTES. 00 CAN BE *
62 * A TESTS CORE TO 44K USED AS A BYTE OF *
63 * B TESTS CORE TO 48K PATTERN AFTER-EP- *
64 * C TESTS CORE TO 52K HALT SET (SEE 9) *
65 * D TESTS CORE TO 56K *
66 * E TESTS CORE TO 60K *
67 * F TESTS CORE TO 64K *
68 *
69 * *****

0975 CPU AND MEMORY DIAGNOSTICS: PROGRAM 97

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

70 * 9) NOTE: TURNING DATA SWITCHES 3+4 (RIGHTMOST) TO A *
71 * SETTING OTHER THAN 00 WILL SET AN -EP- (ENTER PATTERN) *
72 * HALT WHICH WILL ALLOW THE CE TO ENTER HIS OWN 'WORST *
73 * CASE' PATTERN. THE PATTERN IS ENTERED A BYTE AT A TIME *
74 * ON SWITCHES 3+4. THE INITIAL SETTING OF SWITCHES TO A *
75 * SETTING OTHER THAN 00 SELECTS THIS OPTION. THE INITIAL *
76 * SWITCH SETTING IS NOT THE FIRST BYTE OF PATTERN. AFTER *
77 * THE -EP- HALT, THE SWITCHES CAN BE SET TO ANY DESIRED *
78 * COMBINATION, EVEN TO 00. THE BYTE OF PATTERN THAT IS *
79 * ENTERED IS THE SETTING ON SWITCHES 3+4 WHEN THE HALT *
80 * IS RESET. THE -EP- HALT IS DISPLAYED FOUR TIMES, THUS *
81 * ALLOWING THE CE TO CHOOSE THE FILL PATTERN. *
82 * *
83 * *
84 * *
85 * 10) NOTE: *
86 * FOR SWITCH SETTINGS 4 AND ABOVE, SWITCH 2 SETTING 8 *
87 * WILL LOOP THE PROGRAM IN THE HIGHEST BSM OR SELECTED *
88 * PORTION THEREOF (MEMORY BSM = 16K OF CORE). WHEN *
89 * SCHOONING, THE NEXT BSM IS CHOSEN BY INCREASING THE *
90 * AMOUNT OF CORE TO BE TESTED BY 16K. THE PROGRAM WILL *
91 * THEN LOOP ON THE HIGHEST BSM. *
92 * *
93 * *
94 * *
95 * *
96 * *
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98 * *
99 * *
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121 * *
122 * *
123 * *
124 * *
125 * *
126 HALTA HPL X'07',X'5F' .PROG 97 IPL HALT,HALTA
127 HVC LSTCRD(47),END MOVE THE IPL LOADER
128 B 515 TO CORE LOC -0200 THRU 022E-.
129 * GO READ FIRST CARD.
130 *
131 *
132 *
133 *
134 *
135 HALT2 HPL X'76',X'6F' .PROG 97 HPCU NOT READY HALT
136 LA X'0200',XR1 USE -0200- AS BASE ADDRESS
137 TEST1 TIO HALT2(,XR1),X'F0' GO HALT IF HPCU ERROR OR NOT READY.

0975 CPU AND MEMORY DIAGNOSTICS: PROGRAM 97

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

020A 71 F5 2A 138 LIO AD384(,XR1),X'P5' LOAD READ ADDRESS LSR.
020B F3 F1 45 139 SIO X'45',X'P1' READ NEXT CARD IN IPL MODE.
0210 D1 F1 10 140 TEST2 TIO TEST2(,XR1),X'P1' WAIT HERE TILL BUSY DROPS.
0213 0C 3B 03B 01PR 141 MOVE MVC MOVE THE DATA READ TO LOWER CORE.
0219 5E 01 16 2C 142 ALC MOVE+3(2,XR1),SIXTY(,XR1) INCREMENT MOVE TO ADDRESS
021D 1D 01 01PR 2E 143 CLC 443(2),LSTCRD(,XR1) GO TO LOC -0000- IF LAST CARD
0222 C0 81 0000 144 BE 0 READ WAS 'LAST' CARD. IF NOT,
0226 D0 87 07 145 B TEST1(,XR1) GO READ NEXT CARD.
146 *
022A 147 AD384 DC AL2(384)
022C 148 SIXTY DC XL2'003C'
022E 149 LSTCRD DC XL2'1234'
0001 150 XR1 EQU 1
003B 151 END EQU X'3B'
152 *
153 *
154 ***** THE FOLLOWING PROGRAM WILL BE LOADED BY THE LOADER AFTER
155 ***** THE LOADER HAS MOVED ITSELF INTO HIGHER CORE.
156 *
157 *
158 *
159 *
160 *
161 *
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204 *
205 *
0000 159 ORG 0
0015 161 USING WCPTRN-3,1
0015 162 USING WCPTRN-3,2
0000 3C C0 01C7 163 FPSTRY SNS DATASW,X'00' .READ SW
0004 3C 00 0107 164 MVI DATASW,X'00' .MASK OPTIONS
0008 08 03 0106 0107 165 MNH DATASW-1,DATASW
000E C2 03 C015 166 LA WCPTRN-3,X'03' .SET BASE ADDRESS
0012 F2 87 11 167 J KONT6 .GO TO KONT6
0015 FFFF0000 0018 168 WCPTRN DC XL4'FFFF0000' .WORST CASE PATTERN
0019 00 0019 169 DC XL1'0'
170 *
171 *
001A F0 5F 07 172 RESTRT HPL X'07',X'5F' .97' HALT
173 *
001D B0 00 F2 174 SNS DATASW(,XR2),X'00' .READ SW
175 *
0020 28 01 F1 176 TBN DATASW-1(,XR2),X'01' .GO TO LOADER
0023 F2 10 C9 177 JT LOADER IF 'BYPASS' SWITCH ON.
178 *
0025 A8 00 F3 F1 179 KONT6 HZZ CORsiz-1(,XR2),DATASW-1(,XR2) .SET CORE SIZE
002A B5 03 F4 180 L CORsiz(,XR2),X'03' .LOAD IR1 & IR2 WITH CORsiz
002D 8C FF FF 0114 181 SHIPT MVC 255(256,IR2),WCPTRN+252 .SHIPT THE PROGRAM TO THE
0032 B4 02 1C 182 ST SHIPT+4(,XR2),IR2 HIGHEST 256 BYTES OF CORE,
0035 BC FF 1C 183 MVI SHIPT+4(,XR2),X'FF' STORE IR2 TO RESTART AFTER
0038 B4 02 FD 184 ST SETUP+3(,XR2),XR2 POWER DOWN, AND BRANCH TO
003B E0 87 29 185 B KONT7(,XR2) KONT7 IN THE RELOCATED
186 * PROGRAM.
187 *
003E B9 FF F2 188 KONT7 TBP DATASW(,XR2),X'FF' .GO TO KONT2 IF CE DOES NOT
0041 F2 10 14 189 JT KONT2 WANT TO ENTER OWN PATTERN
190 *
0044 F0 7C 3E 191 EPHALT HPL X'3E',X'7C' .EP' HALT
0047 70 00 01 192 SNS WCPTRN-2(,XR1),X'00' THE CE MAY NOW ALTER THE
004A 5C C0 00 01 193 MVC WCPTRN-3(1,XR1),WCPTRN-2(,XR1) WORST CASE PATTERN.
004E D2 01 01 194 LA 1(,XR1),XR1 .GO TO KONT2 AFTER FOUR
0051 6D 09 01 05 195 CLC WCPTRN-2(10,XR1),WCPTRN+2(,XR2) 'EP' HALTS.
0055 E0 01 2F 196 BNE EPHALT(,XR2)
197 *
0058 B5 01 F4 198 KONT2 L CORsiz(,XR2),XR1 .RESET IR1
005B 2C 06 0006 F0 199 MVC 5,PRELOAD+2(7,XR2) .SET UP TO RELOAD IR2 AND
200 * BRANCH BACK TO PROG.
0060 B6 01 F9 201 A NEG4(,XR2),XR1 .FILL HIGHEST 4 BYTES OF
0063 5C 03 03 07 202 MVC 3(4,XR1),7(,XR1) TESTABLE CORE WITH THE
203 * WORST CASE PATTERN
204 *
0067 B8 04 F1 205 TBN DATASW-1(,XR2),X'04' .GO TO FILL IF 'COMP'

0975 CPU AND MEMORY DIAGNOSTICS: PROGRAM 97

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	
006A	F2 90 08	206	JF	FILL	SWITCH NOT SET.
006D	6C 03 03 P8	207	KONTX	HVC 3(4, XR1), XFFFF(, XR2)	.COMPLEMENT THE WORST
0071	5F 03 03 07	208	SLC	3(4, XR1), 7(, XR1)	CASE PATTERN
		209			
0075	B6 01 P9	210	FILL	A NEG4(, XR2), XR1	.FILL 4 CORE LOCS &
0078	5C 03 03 07	211	HVC	3(4, XR1), 7(, XR1)	GO TO KONTY IF ALL
007C	E0 81 82	212	BE	KONTX(, XR2)	CORE LOCS ARE FILLED.
		213			
007F	B4 01 PD	214	ST	PAD(, XR2), XR1	.GO TO FILL IF NOT ON
0082	B9 FF PD	215	TBF	PAD(, XR2), X'FP'	A 4K BOUNDARY. GO TO
0085	B9 0F FC	216	TBF	PAD-1(, XR2), X'0F'	KONTX IF ON A 4K
0088	F0 90 60	217	BF	FILL(, XR2)	BOUNDARY.
008B	B6 01 P9	218	KONTE	A NEG4(, XR2), XR1	
008E	B8 08 P1	219	TBN	DATASW-1(, XR2), X'08'	.GO TO KONTX UNLESS SW2 IS
0091	B9 30 FC	220	TBF	PAD-1(, XR2), X'30'	8 & ON 16K BOUNDARY.
0094	E0 90 58	221	BF	KONTX(, XR2)	OTHERWISE GO TO KONTY
		222			
0097	2C 06 0006 P0	223	KONTY	HVC 6, PRLOAD+2(7, XR2)	.PUT BR INSTR IN LOC 0, 162
009C	B5 01 P4	224	L	CORSIZ(, XR2), XR1	.RESET XR1
		225			
009F	B6 01 P9	226	KONTZ	A NEG4(, XR2), XR1	.READ/REGEN 4 CORE LOCS &
00A2	5C 03 03 03	227	SELCTA	HVC 3(4, XR1), 3(, XR1)	GO TO KONTB IF ALL CORE
00A6	F2 81 1D	228	JE	KONTB	LOCS HAVE BEEN TESTED.
		229			
00A9	B4 01 PD	230	ST	PAD(, XR2), XR1	.GO TO KONTA IF AT 16 K
00AC	B8 08 P1	231	TBN	DATASW-1(, XR2), X'08'	BOUNDARY & CE DESIRES TO
00AF	B9 FF PD	232	TBF	PAD(, XR2), X'FP'	LOOP ON UPPER 16 K.
00E2	B9 3F FC	233	TBF	PAD-1(, XR2), X'3F'	OTHERWISE, GO BACK
00B5	E0 90 8A	234	BF	KONTZ(, XR2)	TO KONTZ.
		235			
00B8	B5 01 P4	236	KONTA	L CORSIZ(, XR2), XR1	.RESET XR1
00BB	2C 06 0006 P0	237	HVC	6, PRLOAD+2(7, XR2)	.PUT BR INSTR IN LOC 0, 162.
00C0	B6 01 P8	238	KONTD	A XFFFF(, XR2), XR1	.GO TO KONTC IF ALL CORE
00C3	E0 20 D4	239	BNOL	KONTU(, XR2)	HAS BEEN TESTED
00C6	BC FF BD	240	KONTB	HVI CHNG1+1(, XR2), X'FF'	.SETUP FOR DOING TWO
00C9	9C 00 C0 00	241	HVC	CHNG2+1(1, XR2), 0(, XR1)	READ/WRITE COMPLEMENTS.
00CD	AF 00 BD C0	242	SLC	CHNG1+1(1, XR2), CHNG2+1(, XR2)	
		243			
00D1	7C 00 00	244	CHNG1	HVI 0(, XR1), *-*	.DO READ/WRITE COMPLEMENT
00D4	7C 00 00	245	CHNG2	HVI 0(, XR1), *-*	.DO READ/WRITE COMPLEMENT
		246			
00D7	B4 01 PD	247	ST	PAD(, XR2), XR1	.GO TO KONTU IF AT 16K
00DA	B8 08 P1	248	TBN	DATASW-1(, XR2), X'08'	BOUNDARY & SW 2 IS SET
00DD	B9 FF PD	249	TBF	PAD(, XR2), X'FP'	TO 8. OTHERWISE, GO
00E0	B9 3F FC	250	TBF	PAD-1(, XR2), X'3F'	TO KONTD
00E3	E0 90 8B	251	BF	KONTD(, XR2)	
00E6	E0 87 43	252	B	KONT2(, XR2)	
00E9	B8 02 P1	253	KONTU	TBN DATASW-1(, XR2), X'02'	.GO TO KONT2 IF 'LCOP'
00EC	E0 10 43	254	BT	KONT2(, XR2)	SWITCH ON.
		255			
00EF	E1 P0 05	256	LOADER	TIO RESTRT(, XR2), X'P0'	.GO LOAD
00F2	B1 P5 P8	257	LIO	X0000(, XR2), X'P5'	NEXT PROGRAM
00F5	F3 P1 45	258	SIO	X'45', X'P1'	
00F8	E1 P1 E3	259	TSTBSY	TIO TSTBSY(, XR2), X'P1'	
00FB	C0 87 C003	260	B	3	
00FF	C2 02 0000	261	SETUP	LA *-*, XR2	
G103	E0 87 05	262	PRLOAD	B RESTRT(, XR2)	
		263			
		264			
0106	0000	0107	DATASW	DC XL2'0'	
0108	0F00	0109	CORSIZ	DC XL2'0F00'	
010A	FFFFFFFF	010D	XFFFF	DC XL4'FFFFFFFF'	
010E	FC	010E	NEG4	DC XL1'FC'	
010F	0000	0110	X0000	DC XL2'0000'	
0111	0000	0112	PAD	DC XL2'0'	
		0C02	XR2	EQU 2	
		FFFF	272	END	

0975 CPU AND MEMORY DIAGNOSTICS: PROGRAM 97

					CROSS-REFERENCE																			
SYMBOL	T	LEN	VALUE	DEPN	REFERENCES																			
AD384	A	002	022A	0147	0138																			
CHNG1	A	003	00D1	0244	0240*	0242*																		
CHNG2	A	003	00D4	0245	0241*	0242																		
CORSIZ	A	002	0109	0266	0179*	0180	0198	0224	0236															
DATASW	A	002	0107	0265	0163*	0164*	0165	0165*	0174*	0176	C179	0188	0205	0219	0231	0248								
					0253																			
END	C	001	003B	0151	0127																			
EPHALT	A	003	0044	0191	0196																			
FILL	A	003	0075	0210	0206	0217																		
FRSTRY	A	004	00C0	0163																				
HALTA	A	003	0000	0126																				
HALT2	A	003	0200	0135	0131	0132	0137																	
KONTA	A	003	00B8	0236																				
KONTB	A	003	00C6	0240	0228																			
KONTD	A	003	00C0	0238	0251																			
KONTF	A	003	00B8	0218																				
KONTG	A	003	00E9	0253	0239																			
KONTX	A	004	006D	0207	0221																			
KONTY	A	005	0097	0223	0212																			
KONTZ	A	003	009F	0226	0234																			
KONT2	A	003	0058	0198	0189	0252	0254																	
KONT6	A	004	0026	0179	0167																			
KONT7	A	003	003E	0188	0185																			
LOADER	A	003	00EP	0256	0177																			
LSTCRD	A	002	022F	0149	0127*	0143																		
MOVE	A	006	0213	0141	0142*																			
NEG4	A	001	010E	0268	0201	0210	0218	0226																
PAD	A	002	0112	0270	0214*	0215	0216	0220	0230*	0232	0233	0247*	0249	0250										
PRLOAD	A	003	0103	0262	0199	0223	0237																	
RESTRT	A	003	001A	0172	0256	0262																		
SELCTA	A	004	00A2	0227																				
SETUP	A	004	00FF	0261	0184*																			
SHIFT	A	005	002D	0181	0182*	0183*																		
SIXTY	A	002	022C	0148	0142																			
TEST1	A	003	0207	0137	0145																			
TEST2	A	003	0210	0140	0140																			
TSTBSY	A	003	00F8	0259	0259																			
UVWXYZ	A	001	0000	0002																				
WCPTRN	A	004	0018	0168	0161	0162	0166	0181	0192*	0193	0193*	0195	0195											
XFFFF	A	004	010D	0267	0207	0238																		
XR1	C	001	0001	0150	0136*	0137	0138	0140	0142	0132	0143	0145	0192	0193	0193	0194								
					0194*	0195	0198*	0201*	0202	0202	0207	0208	0208	0210*	0211	0211								
					0214	0218*	0224*	0226*	0227	0227	0230	0236*	0238*	0241	0248	0245								
					0247																			
XR2	C	001	0002	0271	0174	0176	0179	0179	0180	0181	0182	0181	0183	0184	0184	0185								
					0188	0195	0196	0198	0199	0201	0205	0207	0210	0212	0214	0215								
					0216	0217	0218	0219	0220	0221	0223	0224	0226	0230	0231	0232								
					0233	0234	0236	0237	0238	0239	0240	0241	0242	0242	0247	0248								
					0249	0250	0251	0252	0253	0254	0256													

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 149

C975 CPU AND MEMORY DIAGNOSTICS: PROGRAM 97

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

```

TC <@E@GCB@B@.- @OH*B 0 ..... K1H09750001
T.-H>@P'60-IB (G 0 GG5H?|1J)G1D 0 @ C%>58AES0) &P @.XBA C6/0*A- @DT6 ..... L1H09750002
I+- :< AA30 @* H 0DF @-B 0 H@Y* J""@ COP0:0 |H B -G2D<WY |11_@1 4T|"" JK4 /2@*12 4 >4 9IH09750003
T+-A5@H*Z>-*2@/ M@GO=* AP ..... )H A 04I @P- K=5 -@ KA- P@.QA=NOC 0; 8A|G2D /% 0|8P0< CA@Q )C*09750004
T+-B0 -V* 0<G8HF B_ G'>-"">@8IA -_-G9> T1>LC@8IA Q. Q A7B5 -K5 -V * 0<C@YD)_ G'> T 1>-@ Q1@09750005
T+-C,"@U""+B@S,M A'BOF 'SO_-G88BC H?|='X C H@ ?*A @ 'A@ B4 -68B|P 9""69|*3-UH?-/4+ 8 ?D HI<09750006
TI-DK@A@C@- E%-P @@"EE@-GTOH* @H B C-/OH @ "" "" "" ..... )JX09750007
E""*E7*=-DC"PHS =*7H@P| | C P% ASC R A SO Q ..... 21301012710 224720$@09750008
    
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589926
PAGE 149A

0A05 CPU AND MEMORY DIAGNOSTICS: PROGRAM A0

EPR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000 2 UVWXYZ START 0
3 DECK 4
4 .....
5 *****
6 ***** PROG A0 INVALID OP CODE TEST *****
7 *****
8 *****
9 .....
10 *
11 HLT1 HPL X'6P',X'3P' IPL HALT
12 *
13 *
14 *
15 *
0003 F80000 0005 16 DC XL3'F80000' INVALID COMMAND
0006 F40000 0008 17 DC XL3'F40000' INVALID COMMAND
0009 C300000D 000C 18 DC XL4'C300000D' INVALID BRANCH
0000 32000100 0010 19 DC XL4'32000100' INVALID 1 ADDRESS INSTR.
0011 3E000100 0014 20 DC XL4'3E000100' INVALID 1 ADDRESS INSTR.
0015 37000100 0018 21 DC XL4'37000100' INVALID 1 ADDRESS INSTR.
0019 030001000100 001E 22 DC XL6'030001000100' INVALID 2 ADDRESS INSTR.
001P 050001000100 0024 23 DC XL6'050001000100' INVALID 2 ADDRESS INSTR.
0025 090001000100 002A 24 DC XL6'090001000100' INVALID 2 ADDRESS INSTR.
002B F0 3B 3F 25 HLT2 HPL X'3P',X'3B' ENDING HALT. 'HA' DISPLAYED.
002E C0 87 0083 26 B BOOT BRANCH TO BOOTSTRAP.
0083 27 BOOT EQU 131
FFFF 28 END
    
```

----- LAST PAGE -----

DATE	14SEP69	14NOV69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	0097-5
EC NO.	816499	816559	816576	816638	816756	816788	818693	PAGE	149

DATE	15SEP69	14NOV69	20JAN70	13MAR70	01OCT70	28APR71	01MAR72	PROG ID	00A0-5
EC NO.	816499	816559	816576	816638	816756	816788	818693	PAGE	149A

0A05 CPU AND MEMORY DIAGNOSTICS: PROGRAM A0

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEPN	REFERENCES
BOOT	C	001	0083	0027	0026
HLT1	A	003	C000	0011	
HLT2	A	003	002B	0025	
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0A05 CPU AND MEMORY DIAGNOSTICS: PROGRAM A0

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS $\bar{0}$ $\bar{1}$ $\bar{9}$ INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T<E 1BC?=' ' '00' CLW E = D (0 A < & A M & A U & A | 0|0BC H< J.60A050001

E''*E7*--DC*PHS =*7HSP| | C PX ASC R A SO Q 21301012710 224721Y40A050002

0A15 CPU AND MEMORY DIAGNOSTICS: PROGRAM A1

PRR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0000		2		UVWXYZ START 0
		3		DECK 4
		4		*****
		5		*****
		6		*****
		7		*****
		8		*****
		9		*****
0000	PO 3F 03	10	HLT1 HPL	UNITS,TENS IPL HALT
		11	*	
		12	*	
		13		
0003	OC 03 0418 0021	14	MVC	X'0418',BRBACK(4) SET UP TO BR BACK WHEN IAR ALTERED
		15		
0009	35 01 0023	16	L	SARDAT,X'01' PUT HEX -0404- IN XR1
		17		
		18		
000D	34 11 0012	19	ST	OPQ,X'11' OR IAR & XR1. RESULT HAS BAD PARITY.
		20	*	RESULT (HEX -0415-) FORMS THE
		21	*	OP & Q BYTES OF MSI.
		22		
		23		
		24	*	*NOTE- IAR IS ALTERED TO HEX -0415-
		25	*	* WITH BAD PARITY.
		26		
		27		
		28		
0011	0C00	0012	29	OPQ DC XL2'0000' SHUD CONTAIN HEX -0415-, ZAZ INSTR.
0013	FFFFFFF	0016	30	DC XL4'FFFFFFF' ADRS BYTES OF ZAZ INSTR. THIS DATA
			31	* FORCES ADRS. CHECKS WHEN SAR LOADED.
			32	
			33	
			34	
0017	PO 3B 3F		35	HLT2 HPL X'3F',X'3B' ENDING HALT. 'HA' DISPLAYED.
			36	
			37	
001A	CO 87 0083		38	B BOOT BRANCH TO BOOTSTRAP.
			39	
			40	
001E	C0870011	0021	41	BRBACK DC XL4'C0870011' BRANCH INSTRUCTION.
0022	0404	0023	42	SARDAT DC XL2'0404' DATA LOADED INTO XR1.
			43	
		0083	44	BOOT EQU 131
		0003	45	UNITS EQU X'03'
		003F	46	TENS EQU X'3F'
		FFFF	47	END

0A15 CPU AND MEMORY DIAGNOSTICS: PROGRAM A1

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
BOOT	C	001	0083	0044	0038
BRBACK	A	004	0021	0041	0014
HLT1	A	003	0000	0010	
HLT2	A	003	0017	0035	
OPO	A	002	0012	0029	0019*
SARDAT	A	002	0023	0042	0016
TENS	C	001	003F	0046	0010
UNITS	C	001	0003	0045	0010
UVWXYZ	A	001	0000	0002	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

0A15 CPU AND MEMORY DIAGNOSTICS: PROGRAM A1

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

THO T@C@CC <DF / (6D H3EJ AH | " " " " " 0 + 3 " / OBCOR * D66D 1.-0A150001

E " " " * E 7 * = - DC * PHS = " 7 H 6 P | | C P X ASC R A S O Q 21301012710 224721840A150002

0EJ5 CPU AND MEMORY DIAGNOSTICS: PROGRAM EJ

PRP LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

0000          2 UVWXYZ START 0
              3         DECK 4
              4 *****
              5 *****
              6 *****          PROG EJ      END-OF-PROGRAMS INDICATOR
              7 *****
              8 *****
              9 *****
             10
0000 F0 7C 63 11 HALT1 HPL I'63',I'7C'          .IPL HALT -EJ-
             12
0003 F0 7C 63 13 HALT2 HPL I'63',I'7C'          .ENDING HALT -EJ- INDICATING THAT
0006 C0 87 0000 14 B          HALT1          ALL PREVIOUS TESTS RAN WITHOUT ERROR
             15
000A E3C8C54060C5D160 0019 16 DC          XL16'E3C8C54060C5D16040C3C1D9C440E2C8'
0012 40C3C1D9C440E2C8 16 DC
001A D6E4D3C440C2C540 0029 17 DC          XL16'D6E4D3C440C2C540D6D540E3C8C540C5'
0022 D6D540F3C8C540C5 17 DC
002A D5C440D6C640E3C8 0038 18 DC          XL15'D5C440D6C640E3C8C540C4C5C3D240'
0032 C540C4C5C3D240 18 DC
0039 C5D5C4          003B 19 DC          CL3'END'          .ENTER 'END' IN COLUMNS 58-59-60 FOR
                                20 *          END CARD INDICATION
                                21
                                22 FFFF          END

```

----- LAST PAGE -----

0EJ5 CPU AND MEMORY DIAGNOSTICS: PROGRAM EJ

0EJ5 CPU AND MEMORY DIAGNOSTICS: PROGRAM EJ

CROSS-REFERENCE

OBJECT CARD LISTING

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
HALT1	A	003	0000	0011	0014
HALT2	A	003	0003	0013	
UVWXYZ	A	001	0000	0002	

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

T+ :2G110G1TOH* + (H1HA-1) E-E<| A6*J 8%TO9 (I D<L. E&(\$NE+|H1NCES+J 'SKB' 80TEE<LEO'I '1)H' 0#00EJ50001

T 81 =Q<0EJ50002

F***E7*=-DC*PH\$ =*7HEP| | C ** ASC R A SO Q 21301012710 2247298-0EJ50003

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IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589942
PAGE 1

DUPO DIAGNOSTIC UTILITY PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

010C 2 DECK 4
3 SEQ 6 START SEQUENCING AT 6
4 DUPO START X'10C'
5 *****
6 *
7 * SYSTEM RESET/START WILL CAUSE A RESTART WHICH WILL
8 * RESULT IN A -80- HALT WHICH ALLOWS FOR SWITCH SETTING
9 *
10 *
11 * -80-HALT- INITIAL HALT TO SET SWITCHES
12 * -81-HALT- MFCU PRIMARY NOT READY
13 * -82-HALT- MFCU SECONDARY NOT READY
14 * -83-HALT- READ CHECK WHILE READING FROM PRIMARY
15 * -84-HALT- PUNCH CHECK ON LAST CARD STACKED
16 * -85-HALT- TEXT CARD ID AND LEVEL NOT LIKE HEADER CARD
17 * -86-HALT- END CARD ID AND LEVEL NOT LIKE HEADER CARD
18 * -87-HALT- CARD TO BE PUNCHED INTO IS NOT BLANK
19 * NOTE: NON-BLANK CARDS ARE SELECTED TO STACKER 4.
20 * NO HALT OCCURS IF LESS THAN 3 COPIES ARE BEING MADE.
21 *
22 * -88-HALT- READ CHECK WHILE READING FROM SECONDARY
23 * -89-HALT- NON-COMPARE WHILE USING COMPARE OPTION
24 * -8A-HALT- COMMENT CARD ID AND LEVEL NOT LIKE HEADER CARD.
25 *
26 * RESETTING THE -80- OR THE -81- HALT WILL CAUSE THE FOLLOWING
27 * OPTIONS TO BE SELECTED IF THE SWITCHES ARE SET AS DEFINED.
28 *
29 *
30 * -XX02- 2 COPIES WILL BE MADE
31 * -XX03- 3 COPIES WILL BE MADE
32 * -XX09- REPLACE PLAIN CARDS WITH COLORED CARDS FROM SECONDARY
33 * -XX0C- COMPARE CARDS READ FROM SECONDARY WITH CARDS FROM PRIMARY
34 * -XX0D- MULTIPLE COPIES WILL BE MADE OF THE 1 CARD READ
35 *
36 * -FFXX- STRAIGHT DUP AND INTERPRET
37 *****
38 MVC 3,REST+3(4)
39 MVI SAVEM+128,X'40'
40 SEVENZ HPL X'6F',X'7F' HALT -80-
41 J BEGIN
42 HSHALT HPL X'03',X'7F' HALT -81-
43 BEGIN MVC LEVEL,SAVEID(1) RELOAD LEVEL IN CASE OF SYSTEM RESET
44 SBN READ+2,X'01'
45 MVI BLANK,X'40'
46 MVC BLANK-1,BLANK(95)
47 LIO LDRR,X'F4' PRINT
48 MVC PRFD+91,BLANK(7) CLEAR AREA BEHIND EC NUMBER
49 SBF FLAGS1,X'F7' TURN OFF FLAGS
50 SBF FLAGS2,X'3F' TURN OFF FLAGS
51 SNS WORK,X'00'
52 CLI WORK-1,X'FF'
53 JNE NORM
54 SBN FLAGS1,FLAG7
55 NDRM CLI WORK,X'02'
56 JNE CK43
57 SBN FLAGS1,FLAG2
58 CK43 CLI WORK,X'03'
59 JNE CKD
60 SBN FLAGS1,FLAG3
61 CKD CLI WORK,X'0D'
62 JNE CKBL
63 SBN FLAGS1,FLAG6
64 MVI COUNT,X'31'
65 J DON
66 CKBL CLI WORK,X'08'
67 JNE CKC
68 SBN FLAGS2,FLAG17
69
010C 0C 03 0003 1CD1
0112 3C 40 0900
0116 F0 7F 6F
0119 F2 87 03
011C F0 7F 03
011F 0C 00 1F8A 1C2C
0125 3A 61 01A4
0129 3C 40 1C01
012D 0C 5E 1C90 1C91
0133 31 F4 1C9C
0137 0C 06 1FDB 1C91
013D 3B F7 1C92
0141 3B 3F 1C93
0145 3D 00 1C30
0149 3D FF 1C2F
014D F2 01 04
0150 3A 01 1C92
0154 3D 02 1C30
0158 F2 01 04
015B 3A 20 1C92
015F 3D 03 1C30
0163 F2 01 04
0166 3A 10 1C92
016A 3D 0D 1C30
016E F2 01 08
0171 3A 02 1C92
0175 3C 31 1C31
0179 F2 87 1A
017C 3D 0B 1C30
0180 F2 01 04
0183 3A 01 1C93

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IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589942
PAGE 1A

DUPO DIAGNOSTIC UTILITY PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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0187 3D 0C 1C30 70 CKC CLI WORK,X'0C' *CK FOR AND BRANCH IF NOT
0188 F2 01 04 71 JNE INIT *COMPARE OPTION WANTED
018E 3A 20 1C93 72 SBN FLAGS2,FLAG12
73
0192 3C 00 1C31 74 INIT MVI COUNT,X'00' INITIALIZE COUNT
0196 C2 01 0969 75 DON LA RDAREA,XR1 INITIALIZE XRI
019A C1 F0 011C 76 CKGO TIO HSHALT,X'F0'
019E 31 F5 1CA0 77 LIO LORD,X'F5' READ
01A2 F3 F1 05 78 READ SIO X'05',X'F1' READ A CARD FROM PRIM
01A5 3A 01 01A4 79 SBN READ+2,X'01'
01A9 C1 F1 01A9 80 TIO *,X'F1' WAIT UNTIL READ IS DONE
01AD 30 F3 1C30 81 SNS WORK,X'F3'
01B1 39 06 1C30 82 TBF WORK,X'06'
01B5 C0 90 019E 83 BF CKGO+4
01B9 38 80 1C30 84 TBN WORK,X'80'
01BD F2 90 06 85 JF OK
01C0 F0 7F 57 86 HPL X'57',X'7F' HALT -83-
01C3 F2 87 3C 87 J CKG01
01C6 4C 5F 5F 1DDF 88 OK MVC 95(,XR1),RDFD+95(96) MOVE CARD DATA TO NEXT AREA
01CB 38 20 1C93 89 TBN FLAGS2,FLAG12 *CK FOR AND BRANCH
01CF F2 90 34 90 JF COLOR *IF COMPARE OPTION NOT WANTED
01D2 31 F5 1CA0 91 CKEM LIO LDRD,X'F5' READ A CARD FROM SECONDARY
01D6 F3 F9 06 92 SIO X'06',X'F9'
01D9 C1 F9 01D9 93 TIO *,X'F9'
01DD 30 F3 1C30 94 SNS WORK,X'F3'
01E1 39 06 1C30 95 TBF WORK,X'06'
01E5 C0 90 01D2 96 BF CKEM
01E9 38 80 1C30 97 TBN WORK,X'80'
01ED F2 90 07 98 JF COMP
01F0 F0 7F 7F 99 HPL X'7F',X'7F' HALT -88-
01F3 C0 87 01D2 100 B CKEM
01F7 4D 5F 5F 1DDF 101 COMP CLC 95(,XR1),RDFD+95(96)
01FC F2 81 03 102 JE CKG01
01FF F0 7F 5F 103 HPL X'5F',X'7F' HALT -89-
0202 C0 87 019A 104 CKG01 B CKGO
0206 38 01 1C93 105 COLOR TBN FLAGS2,FLAG17
020A F2 90 23 106 JF NOCOMP
020D 0D 5F 1DDF 1C91 107 CLC RDFD+95,BLANK(96)
0213 C0 01 019A 108 BNE CKGO
0217 3C F3 1C30 109 SNS WORK,X'F3'
021B 38 1C 1C2F 110 TBN WORK-1,X'10'
021F F2 10 03 111 JT INSERT
0222 F3 F8 05 112 SIO X'05',X'F8'
0225 F3 F8 05 113 INSERT SIO X'05',X'F8'
0228 3B 01 01A4 114 SBF READ+2,X'01'
022C C0 87 019A 115 B CKGO
0230 CE C0 1C31 1CA1 116 NOCOMP ALC COUNT,ONE(1) ADD 1 TO COUNT
0236 3D 32 1C31 117 CLI COUNT,X'32' *CK FOR AND BRANCH IF
023A F2 81 08 118 JE MAKEM *50 CARDS ARE READ
023D C1 F0 0248 119 TIO MAKEM,X'F0' BR IF PRIM NOT READY
0241 D2 01 60 120 LA 96(,XR1),XRI INCREMENT TO NEXT CARD LOCATION
0244 C0 87 019E 121 B CKGO+4 BR BACK TO READ NEXT CARD
122
0248 C2 01 0969 123 MAKEM LA RDAREA,XR1 INITIALIZE XRI
024C F2 87 03 124 J NEXT1
125
024F D2 01 60 126 NEXTCD LA 96(,XR1),XRI INCREMENT TO NEXT CARD LOCATION
0252 0C 09 1F8C 1CC1 127 NEXT1 MVC PRFD+12,ECLEV(10) PUT - LEVEL - INTO PRINT AREA
0258 0C 00 1F8A 1C2C 128 MVC PRFD+10(1),SAVEID
025E 3D 00 1C31 129 CLI COUNT,X'00' *CK FOR AND BRANCH IF ALL
0262 C0 81 0192 130 BF INIT *CARDS ARE PUNCHED
0266 0F 00 1C31 1CA1 131 SLC COUNT,ONE(1) DECREMENT THE CARD COUNT
026C C1 F7 026C 132 TIO *,X'F7'
0270 1C 5F 1DDF 5F 133 MVC RDFD+95,95(96,XR1)
0275 1C 5F 1F5F 5F 134 MVC PUF0+95,95(96,XR1)
027A 38 01 1C92 135 TBN FLAGS1,FLAG7
027E F2 90 56 136 JF CK5
0281 0D 03 1DDF 1CEE 137 CLC RDFD+95(4),DDEND END OF DATA DECK?

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DUPO DIAGNOSTIC UTILITY PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0287	F2 01 19	138	JNE	THINK
028A	30 00 1C30	139	SWS	WORK,X*00*
028E	3D FF 1C2F	140	CLI	WORK-1,X*FF*
0292	F2 81 04	141	JE	TWINKY
0295	3B 01 1C92	142	SBF	FLAGS1,FLAG7
0299	3C 87 0683	143	TWINKY MVI	EDDECK+1,X*87*
029D	0C 1F 1FFF 084D	144	MVC	FOURTH,DDMSG(32)
02A3	3B 06 1C93	145	TWINKY TBN	FLAGS2,FLAG14
02A7	F2 10 17	146	JT	INCR
02AA	0D 02 1D82 1C87	147	CLC	RDFD+2,SEQ(3)
02B0	F2 01 20	148	JNE	DUPAL
02B3	3A 08 1C93	149	SBN	FLAGS2,FLAG14
02B7	0C 07 0968 1DDF	150	MVC	SAVE,RDFD+95(8)
02B0	C0 87 024F	151	B	NEXTCD
02C1	0C 07 1DDF 0968	152	INCR	MVC RDFD+95,SAVE(8)
02C7	0C 07 1F5F 0968	153	MVC	PUFD+95,SAVE(8)
02CD	06 3C 0968 1CC9	154	AZ	SAVE(4),D1(1)
02D3	C0 87 0672	155	DUPAL B	DUPALL
02D7	0D 03 1DDF 1CC2	156		
02DD	F2 81 0F	157	CK5 CLC	RDFD+95(4),FURBL
02E0	0D 03 1DDF 1CD5	158	JE	SKAVE
02E6	F2 81 06	159	CLC	RDFD+95(4),OLEND
02E9	0C 03 0968 1DDF	160	JE	SKAVE
02EF	38 04 1C92	161	MVC	SAVE(4),RDFD+95
02F3	F2 90 04	162	SKAVE TBN	FLAGS1,FLAG5
02F6	0C 5F 1FDF 0960	163	JF	DONEXT
02FC	3B 04 1C92	164	MVC	PRFD+95,SAVEIT(96)
0300	3C 40 1F9F	165	SBF	FLAGS1,FLAG5
0304	0C 11 1F9E 1F9F	166	DONEXT MVI	CDTYPE,X*40*
030A	0C 04 1F9C 07CE	167	MVC	CDTYPE-1,CDTYPE(18)
0310	0C 02 1F97 07DB	168	MVC	CDTYPE-3,IPL-13(5)
0316	0C 03 1FDF 1CC8	169	MVC	CDTYPE-8,IPL(3)
031C	38 80 1C92	170	MVC	NUMBER,ZERO(4)
0320	F2 90 25	171	TBN	FLAGS1,FLAG0
0323	0C 00 1FDF 1DB8	172	JF	CARD
0329	0C 02 1F82 1DBF	173	MVC	NUMBER,RDFD+60(1)
032F	0D 03 1DBF 1CD9	174	MVC	CDID,RDFD+63(3)
0335	F2 81 00	175	CLC	RDFD+63,OLDCPU(4)
0338	0D 03 1DBF 1CEE	176	JE	IPLEND
033E	F2 01 66	177	CLC	RDFD+63,DDEND(4)
0341	38 80 1C92	178	JNE	DUPA1
0345	F2 87 1D	179	IPLEND SBF	FLAGS1,FLAG0
		180	J	XXX
		181		
0348	38 02 1C93	182	CARD TBN	FLAGS2,FLAG16
034C	F2 90 43	183	JF	CK1
034F	3D E2 1DB8	184	CLI	RDFD+59,X'E2*
0353	F2 01 19	185	JNE	CKB
0356	0C 01 1FDF 1DBF	186	MVC	NUMBER,RDFD+63(2)
035C	0D 03 1DBF 1CCD	187	CLC	RDFD+63,LAST(4)
0362	F2 01 42	188	JNE	DUPA1
0365	0C 02 1F97 1CDC	189	XXX MVC	CDTYPE-8(3),ENDCD
036B	C0 87 051F	190	B	GOOD2
036F	3D C2 1D80	191	CKB CLI	RDFD,X'C2*
0373	C0 81 0612	192	BE	LOADER
0377	3D 5C 1D80	193	CLI	RDFD,X'5C*
037B	C0 81 0612	194	BE	LOADER
037F	3D E3 1D80	195	CLI	RDFD,X'E3*
0383	F2 81 2C	196	JE	TEXT2
0386	3D C5 1D80	197	CLI	RDFD,X'C5*
038A	C0 81 04FB	198	BE	END2
038E	C0 87 0672	199	B	DUPALL
0392	38 40 1C92	200	CK1 TBN	FLAGS1,FLAG1
0396	F2 90 12	201	JF	TEXT
0399	3C F1 1FDF	202	MVI	NUMBER,X'F1*
039D	0C 12 1F9F 07DB	203	MVC	CDTYPE,IPL(19)
03A3	3B 40 1C92	204	SBF	FLAGS1,FLAG1
03A7	C0 87 0686	205	DUPA1 B	DUP

DUPO DIAGNOSTIC UTILITY PROGRAM

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
03AB	3D E3 1D80	206	TEXT CLI	RDFD,X'E3*
03AF	F2 01 1E	207	JNE	COMCD
03B2	3B 04 1C93	208	TEXT2 SBF	FLAGS2,FLAG15
03B6	0D 03 1C2C 1DDB	209	CLC	SAVEID,RDFD+91(4)
03BC	F2 81 07	210	JE	GOOD
03BF	F0 7F 5D	211	HPL	X'5D*,X'7F*
03C2	C0 87 0192	212	B	INIT
03C6	0C 03 1F97 0806	213	GOOD MVC	CDTYPE-8,TEXTCD(4)
03CC	C0 87 04E2	214	B	AGO
03D0	3D 5C 1D80	215	COMCD CLI	RDFD,X'5C*
03D4	F2 01 25	216	JNE	HOCDC1
03D7	0D 03 1C2C 1DDB	217	CLC	SAVEID,RDFD+91(4)
03DD	F2 81 07	218	JE	COMOK
03E0	F0 7F 3F	219	HPL	X'3F*,X'7F*
03E3	C0 87 0192	220	B	INIT
03E7	0C 06 1F97 1C9A	221	COMOK MVC	CDTYPE-8,COMENT(7)
03ED	0C 1F 1FFF 1D9F	222	MVC	FOURTH,RDFD+31(32)
03F3	0C 03 1FDF 1DDF	223	MVC	NUMBER,RDFD+95(4)
03F9	F2 87 7C	224	J	DUP4B
03FC	0D 04 1D84 1CE1	225	HOCDC1 CLC	RDFD+4,BRZRO(5)
0402	F2 01 77	226	JNE	HOSECT
0405	0C 03 1CEE 1DD6	227	MVC	DDEND,RDFD+86(4)
040B	0C 03 1CCD 1DDF	228	MVC	LAST(4),RDFD+95
0411	0C 14 1FD4 1D9F	229	MVC	EC,RDFD+31(21)
0417	0C 0A 1FDF 1CC6	230	MVC	NUMBER,ZERO(11)
041D	0C 04 1FBF 1C91	231	MVC	PRFD+63,BLANK(5)
0423	0C 1A 1FBA 1DBA	232	MVC	NAME-5,RDFD+58(27)
0429	0C 02 1F82 1DBE	233	MVC	CDID,RDFD+62(3)
042F	0C 00 1F8A 1DBB	234	MVC	LEVEL,RDFD+59(1)
0435	0C 1F 1FFF 0826	235	MVC	FOURTH,REMOVE(32)
043B	0C 0C 1F97 0853	236	MVC	CDTYPE-8,HEAD(13)
0441	0C 00 1C2C 1DBB	237	MVC	SAVEID,RDFD+59(1)
0447	0C 02 1C2B 1DBE	238	MVC	SAVEID-1,RDFD+62(3)
044D	3D 5C 1DBA	239	CLI	RDFD+58,X'5C*
0451	F2 01 0B	240	JNE	ONECD
0454	3A 02 1C93	241	SBN	FLAGS2,FLAG16
0458	3C 40 1FBA	242	MVI	PRFD+58,X'40*
045C	F2 87 19	243	J	DUP4B
045F	3D F1 1DDF	244	ONECD CLI	RDFD+95,X'F1*
0463	F2 81 07	245	JE	REGICD
0466	3D F1 1DA1	246	CLI	RDFD+33,X'F1*
046A	F2 01 07	247	JNE	REG1
046D	3A 40 1C92	248	REGICD SBN	FLAGS1,FLAG1
0471	F2 87 04	249	J	DUP4B
0474	3A 80 1C92	250	REG1 SBN	FLAGS1,FLAG0
0478	C0 87 0667	251	DUP4B B	DUP4
047C	0D 03 1D83 1CB4	252	HDSECT CLC	RDFD+3,FIRST(4)
0482	F2 81 13	253	JE	HOHUM
0485	0D 04 1D84 1CEA	254	CLC	RDFD+4(5),DDHED
048B	F2 01 37	255	JNE	END
048E	3A 01 1C92	256	SBN	FLAGS1,FLAG7
0492	0C 03 1CEE 1DD6	257	MVC	DDEND,RDFD+86(4)
0498	0C 06 1FDB 1C91	258	HOHUM MVC	PRFD+91,BLANK(7)
049E	0C 14 1FD4 1D9F	259	MVC	EC,RDFD+31(21)
04A4	0C 1F 1FBF 1DBF	260	MVC	NAME,RDFD+63(32)
04AA	0C 02 1F82 1DDA	261	MVC	CDID,RDFD+90(3)
04B0	0C 00 1F8A 1DDB	262	MVC	LEVEL,RDFD+91(1)
04B6	0C 0C 1F97 0853	263	MVC	CDTYPE-8,HEAD(13)
04BC	0C 03 1C2C 1DDB	264	MVC	SAVEID,RDFD+91(4)
04C2	F2 87 5E	265	J	DUPA
04C5	3D C5 1D80	266	END CLI	RDFD,X'C5*
04C9	F2 81 1F	267	JE	END2
04CC	3D E2 1D80	268	CLI	RDFD,C'S*
04D0	F2 01 54	269	JNE	MCARD
04D3	0D 02 1D82 1CF1	270	CLC	RDFD+2,SSW(3)
04D9	F2 81 4B	271	JE	MCARD
04DC	0C 09 1F97 1CFB	272	MVC	CDTYPE-8(10),ESL
04E2	0C 03 1FDF 1DDF	273	AGO MVC	NUMBER,RDFD+95(4)

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589942
PAGE 3

DUPO DIAGNOSTIC UTILITY PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
04E8 F2 87 38 J DUPA
04EB 0D 03 1C2C 1DDB 275 END2 CLC SAVEID,RDFD+91(4) *CK FOR AND CONTINUE IF END CARD
04F1 F2 81 07 276 JE GOOD1 *ID AND LEVEL IS SAME AS HEADER CD
04F4 F0 7F 7D 277 HPL X'7D',X'7F' HALT -86-

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589942
PAGE 3A

DUPO DIAGNOSTIC UTILITY PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
0621 0C 05 1FB1 1DBA 342 MVC PRFD+49,RDFD+58(6)
0627 0D 03 1DBE 1CFF 343 CLC RDFD+62,ID3FFF(4) .IS THE PROGRAM DCP AT LEVEL 3?
062D F2 01 06 344 JNE FIRST1 IF NOT, BYPASS ENTERING (DCP)
0630 0C 04 1FB0 1D04 345 MVC PRFD+48,DCPID(5) IF YES, ENTER (DCP)

DUPO DIAGNOSTIC UTILITY PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and diagnostic messages for the DUPO program.

DUPO DIAGNOSTIC UTILITY PROGRAM

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code and diagnostic messages for the DUPO program, including a detailed flag list.

DUPO DIAGNOSTIC UTILITY PROGRAM

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

```

ICA1 01          ICA1 526 ONE   DC   XL1'01'
ICA2 C4E4D7F1   ICA5 527 FF81  DC   CL4'DUP1'
ICA6 C6C6C6F1   ICA9 528 FFF1  DC   CL4'FFF1'
ICAA C5D9D7F1   ICAD 529 ERP1  DC   CL4'ERP1'
ICAE C3D7E4     IC80 530 CPU   DC   CL3'CPU'
ICB1 40C7C2D2   ICB4 531 FIRST DC   XL4'40C7C2D2'
ICB5 E2C5D8     ICB7 532 SEQ   DC   CL3'SEQ'
ICB8 40D3C5E5C5D34040 ICC1 533 ECLEV DC   CL10' LEVEL
ICCC 4040       533
ICC2 40         ICC2 534 FURBL DC   CL1' '
ICC3 4040       ICC4 535      DC   CL2' '
ICCS F0F0F0F0  ICC8 536 ZERO  DC   4XL1'F0'
ICC9 F1         ICC9 537 D1    DC   XL1'F1'
ICCA 00000000   ICCD 538 LAST  DC   XL4'C0'
ICCE C0 87 0116 539 PEST    B   SEVEN2
ICD2 F0F0F0F9   ICD5 540 OLEND DC   CL4'0999'
ICD6 F0F0C1F1   ICD9 541 OLOCPU DC  CL4'00A1'
ICDA C5D5C4     ICDC 542 ENDCD DC  CL3'END'
ICDD F06F6F40C7 ICE1 543 BRZRD DC  XL5'F06F6F40C7'
ICE2 C2C14040   ICE5 544 BABB  DC  CL4'BA '
ICE6 F06B6B40C7 ICEA 545 DDHED DC  CL5'0,, G'
ICEB 00000000   ICCE 546 DDEND DC  XL4'C'
ICEF E2E2E6     ICF1 547 SSW   DC  CL3'SSW'
ICF2 D9C5D3D6C3C1E3C9 ICFB 548 ESL   DC  CL10'RELOCATION'
ICFA D6D5       548
ICFC F3C6C6C6   ICFF 549 ID3FFF DC  CL4'3FFF'
ID00 4DC4C3D75D ID04 550 DCPID  DC  CL5'(DCP)'
ID80          551      ORG   X'1D80'
ID80          552      RFD   EQU   =
ID80          1DFF 553      DS   CL128
IE00          1E00 554 PRINT EQU   *
IE00          1EFF 555      DS   CL256
IF00          1F00 556 PUF   EQU   *
IF00          1F7F 557      DS   CL128
IF80          1F80 558 PRFD  EQU   *
IF80          1FFF 559      DS   CL128
560
561 *****
562 * EQUATES
563 *****
0001          564 XR1   EQU   X'01'
1FDF          565 NUMBER EQU  PRFD+95
1F9F          566 CDTYPE EQU  PRFD+31
1F82          567 CDID  EQU  PRFD+2
1FD4          568 EC    EQU  PRFD+84
1FBF          569 NAME  EQU  PRFD+63
1F8A          570 LEVEL EQU  PRFD+10
1FFF          571 FOURTH EQU PRFD+127
0080          572 FLAG0 EQU  X'80'
0040          573 FLAG1 EQU  X'40'
0020          574 FLAG2 EQU  X'20'
0010          575 FLAG3 EQU  X'10'
0008          576 FLAG4 EQU  X'08'
0004          577 FLAG5 EQU  X'04'
0002          578 FLAG6 EQU  X'02'
0001          579 FLAG7 EQU  X'01'
0080          580 FLAG10 EQU X'80'
0040          581 FLAG11 EQU X'40'
0020          582 FLAG12 EQU X'20'
0010          583 FLAG13 EQU X'10'
0008          584 FLAG14 EQU X'08'
0004          585 FLAG15 EQU X'04'
0002          586 FLAG16 EQU X'02'
0001          587 FLAG17 EQU X'01'
FFFF          588      END

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*MUST
*STAY
*TOGETHER
* A' WAYS
***** DO NOT GO PAST ID80 *****
MUST BE ON 256 BYTE BOUNDRY

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DUPO DIAGNOSTIC UTILITY PROGRAM

CROSS-REFERENCE

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SYMBOL T LEN VALUE DEFN REFERENCES
AGAIN A 004 0748 0423 0416
AGO A 006 04E2 0273 0214
BABB A 004 1CE5 0544 0334
BAD1 A 004 0777 0437 0435
BEGIN A 006 011F 0043 0041
BLANK A 096 1C91 0491 0045* 0046 0046* C048 0107 0231 0258 0299 0320 0341 0385 0429
BRZRD A 005 1CE1 0543 0225
CARD A 004 0348 0182 0172
CDID A 001 1F82 0567 0174* 0233* 0261* 0298* 0347*
CDTYPE A 001 1F9F 0566 0166* 0167 0167* 0168* 0169* 0189* 0203* 0213* 0221* 0236* 0263* 0272*
0279* 0331* 0352*
CKB A 004 036F 0191 0185
CKBL A 004 017C 0066 0062
CKC A 004 0187 0070 0067
CKD A 004 016A 0061 0059
CKEM A 004 01D2 0091 0096 0100
CKGO A 004 019A 0076 0083 0104 0108 0115 0121
CKG01 A 004 0202 0104 0087 0102
CK1 A 004 0392 0200 0183
CK2 A 004 0798 0448 0443
CK3 A 004 07A7 0453 0445
CK43 A 004 015F 0058 0056
CK5 A 006 02D7 0157 0136
COLOR A 004 02C6 0105 0090
COMCD A 004 03D0 0215 0207
COMMENT A 007 1C9A 0515 0221
COMOK A 006 03E7 0221 0218
COMP A 005 01F7 0101 0098
CONT IN A 004 0778 0439 0390 0430
COUNT A 001 1C31 0490 0064* 0074* 0116* 0117 0129 0131*
CPU A 003 1C80 0530
DCPID A 005 1D04 0550 0345
DDEMSG A 032 084D 0475 0144
DDEND A 004 1CEE 0546 0137 0177 0227* 0257*
DDHED A 005 1CEA 0545 0254
DON A 004 0196 0075 0065
DONEXT A 004 0300 0166 0163
DUP A 004 0686 0370 0205 0287 0327 0354
DUPA A 004 0523 0287 0265 0274
DUPAL A 004 02D3 0155 0148
DUPALL A 006 0672 0363 0155 0199 0337
DUPA1 A 004 03A7 0205 0178 0188
DUPO A 001 010C 0004
DUP4 A 004 0667 0359 0251 0333 0367
DUP4A A 003 05FF 0333 0306 0328
DUP4B A 004 0478 0251 0224 0243 0249
D1 A 001 1CC9 0537 0154 0282 0349
EC A 001 1FD4 0568 0229* 0259* 0346*
ECLEV A 010 1CC1 0533 0127 0309
EDDECK A 004 0682 0367 0143* 0360*
END A 004 04C5 0266 0255
ENDCD A 003 1CDC 0542 0189 0279
END2 A 006 04EB 0275 0198 0267
ERP1 A 004 1CAD 0529
ESL A 010 1CFB 0548 0272
FFF1 A 004 1CA9 0528
FF81 A 004 1CA5 0527
FIPST A 004 1CB4 0531 0252
FIRST1 A 006 0636 0346 0344
FLAG51 A 001 1C92 0496 0049* 0054* 0057* 0060* 0063* 0135 0142* 0162 0165* 0171 0179* 0200
0204* 0248* 0250* 0256* 0365* 0393 0399* 0407* 0434 0440 0442 0444
0050* 0068* 0072* 0089 0105 0145 0149* 0182 0208* 0241* 0286* 0317*
0322* 0326 0336 0353* 0389 0391 0409* 0419* 0421* 0439*
FLAGO C 001 0080 0572 0171 0179 0250
FLAG1 C 001 0040 0573 0200 0204 0248
FLAG10 C 001 0080 0580 0389 0419 0439

```

DUPO DIAGNOSTIC UTILITY PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
FLAG11	C	001	0040	0581	0391 0409 0421
FLAG12	C	001	0020	0582	0072 0089
FLAG13	C	001	0010	0583	0317 0322 0326
FLAG14	C	001	0008	0584	0145 0149
FLAG15	C	001	0004	0585	0208 0336 0353
FLAG16	C	001	0002	0586	0182 0241 0286
FLAG17	C	001	0001	0587	0068 0105
FLAG2	C	001	0020	0574	0057 0442
FLAG3	C	001	0010	0575	0060 0434 0444
FLAG4	C	001	0008	0576	0393 0399 0407
FLAG5	C	001	0004	0577	0162 0165 0365
FLAG6	C	001	0002	0578	0063 0440
FLAG7	C	001	0001	0579	0054 0135 0142 0256
FOURTH	A	001	1FFF	0571	0144* 0222* 0235* 0332*
FURBL	A	001	1CC2	0534	0157
GO	A	004	06C7	0389	0377
GOOD	A	006	03C6	0213	0210
GOOD1	A	006	04FB	0279	0276
GOOD2	A	004	051F	0286	0190 0284
HDCD1	A	006	03FC	0225	0216
HDSRCT	A	006	047C	0252	0226
HEAD	A	006	0853	0476	0236 0263
HOHUM	A	006	0498	0258	0253
HSHALT	A	003	011C	0042	0076
ID3FFF	A	004	1CFF	0549	0343
INCR	A	006	02C1	0152	0146
INIT	A	004	0192	0074	0071 0130 0212 0220 0278
INSERT	A	003	0225	0113	0111
IPL	A	019	07DB	0467	0168 0169 0203
IPLEND	A	004	0341	0179	0176
LAST	A	004	1CCD	0538	0187 0228*
LDNI	A	006	061B	0341	0335
LDPR	A	002	1C9C	0519	0047
LDP	A	002	1C9E	0520	0410
LDRD	A	002	1CA0	0521	0077 0091 0378 0411 0431
LEVEL	A	001	1F8A	0570	0043* 0234* 0262* 0348*
LOAD	A	004	0713	0409	0392 0401 0461
LOADA	A	004	07C1	0461	0427 0441 0451 0458
LOADDC	A	006	07F7	0470	0352
LOADER	A	006	0612	0338	0192 0194
MAKE	A	004	0690	0374	0361 0371
MAKEM	A	004	0248	0123	0118 0119
MARD	A	011	0802	0471	0292* 0297* 0304
MB	A	006	054B	0298	0294
MCARD	A	004	0527	0288	0269 0271
MX	A	006	05D0	0323	0296 0321
MO	A	006	057C	0307	0291
NAME	A	001	1F8F	0569	0232* 0260* 0341*
NEND	A	006	0519	0285	0281
NEXTCD	A	003	024F	0126	0151 0462
NEXT1	A	006	0252	0127	0124
NOCOMP	A	006	0230	0116	0106
NORM	A	004	0154	0055	0053
NOTBLK	A	004	0762	0431	0386
NOTRDY	A	003	068D	0373	0374 0379 0384 0420 0422
NUMBER	A	001	1FDF	0565	0170* 0173* 0186* 0202* 0223* 0230* 0273* 0283* 0285* 0303* 0325* 0338* 0349*
OK	A	005	01C6	0088	0085
OLDCPU	A	004	1CD9	0541	0175
OLEND	A	004	1CD5	0540	0159 0280
ONE	A	001	1CA1	0526	0116 0131
ONECD	A	004	045F	0244	0240
PRFD	A	001	1F80	0558	0048* 0127* 0128* 0164* 0231* 0242* 0258* 0299* 0300* 0301* 0302* 0304* 0305* 0324* 0342* 0345* 0363 0364* 0398 0406 0565 0566 0567 0568 0569 0570 0571 0398* 0406* 0519
PRINT	A	001	1E00	0554	

DUPO DIAGNOSTIC UTILITY PROGRAM

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
PROPT	A	004	07C5	0462	0446 0449 0454
PUPD	A	001	1F00	0556	0134* 0153* 0520
RDAREA	A	001	0969	0486	0075 0123
RDFD	A	001	1D80	0552	0088 0101 0107 0133* 0137 0147 0150 0152* 0157 0159 0161 0173 0174 0175 0177 0184 0186 0187 0191 0193 0195 0197 0206 0209 0215 0217 0222 0223 0225 0227 0228 0229 0232 0233 0234 0237 0238 0239 0244 0246 0252 0254 0257 0259 0260 0261 0262 0264 0266 0268 0270 0273 0275 0280 0285 0288 0290 0293 0295 0298 0301 0302 0303 0308 0310 0311 0312 0315 0316 0318 0320 0323 0325 0329 0332 0334 0338 0342 0343 0346 0347 0348 0350 0351 0364 0385 0429 0521
READ	A	003	01A2	0078	0044* 0079* 0114*
REG1	A	004	0474	0250	0247
REG1CD	A	004	046D	0248	0245
REMOVE	A	032	0826	0473	0235
REPCD	A	004	05EC	0329	0289
REPLAC	A	007	082D	0474	0331
REST	A	004	1CCE	0539	0038
SAVE	A	008	0968	0485	0150* 0152 0153 0154* 0161* 0282* 0283
SAVEID	A	004	1C2C	0488	0043 0128 0209 0217 0237* 0238* 0264* 0275 0315* 0350* 0351*
SAVEIT	A	056	0960	0484	0164 0363*
SAVEM	A	001	0880	0482	0039* 0305 0307 0307* 0208* 0309* 0310* 0311* 0312* 0313* 0314* 0316* 0323* 0324
SEQ	A	003	1CB7	0532	0147
SET1	A	004	06F9	0403	0394 0405
SET11	A	004	0740	0421	0418
SET13	A	004	05CC	0322	0319
SET2	A	004	06DC	0395	0397
SET3	A	004	07BD	0460	0456
SEVEN2	A	003	0116	0040	0539
SKAVE	A	004	02EF	0162	0158 0160
SPANG	A	006	065A	0352	0339
SSW	A	003	1CF1	0547	0270
SWWCD	A	006	0602	0334	0330
TAPCD	A	019	07EE	0468	0313
TEXT	A	004	03AB	0206	0201
TEXTCD	A	004	0806	0472	0213
TEXT2	A	004	03B2	0208	0196
TRY1	A	006	0759	0429	0425 0437
TWINK	A	004	02A3	0145	0138
TWINKY	A	004	0299	0143	0141
WAIT2	A	004	0694	0375	0387
WORK	A	004	1C30	0489	0051* 0052 0055 0058 0061 0066 0070 0081* 0082 0084 0094* 0095 0097 0109* 0110 0139* 0140 0375* 0376 0382* 0393 0395* 0396 0403* 0404 0414* 0415 0417 0423* 0424 0359* 0370* 0400* 0408* 0448 0450* 0453 0455 0457* 0460* 0075* 0088 0101 0120 0120* 0123* 0126 0126* 0133 0134 0180 0170 0230 0314
XIO	A	003	071F	0412	
XR1	C	001	0001	0564	
XXX	A	006	0365	0189	
ZERO	A	001	1CC8	0536	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DUPO DIAGNOSTIC UTILITY PROGRAM

OBJECT CARD LISTING

THE CHARACTER [•] INDICATES A BLANK COLUMN AND THE CHARACTERS [•] [•] [•] INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-EFC < 13JID I |A*HG *A* CO *G8Y*.CYA E&EA2 JCE8+UA2J<-E*X O FG*%UL?7GIH#|12 L<... KY4DUP00006

T+-FAGC *10?2-D D+-D+UT4B6CC2 &E :HA2K|E<*|HAACY &GIH*CIJ002-D.+ -H *UT01GCC2/1Y*B10 02-D 7K&DUP00007

T+-F2ACYAGI<CAO 02-DD+S *U30 GCG B &VZ0- AGCG5GHC 33&M: &FU0-DADLC 3GC 9A/000I AXTS C... XDUP00008

T+-G72Z F2G*P2Y* 2LE*-G|28HA2L2? 4<-M*Y||9A*G9)U 02100+&0<<BE)H 8-A0C2Z G2G*OH* A4U4 31YDUP00009

T+-H2P52)7*HA *A *P2FG RY8 J2L2Z TCN2)712J0 DAWTC 3GC 8DA0?2/ C2"- E2"-E+ODAZKBG RY + A0 J&E DUP0C010

T+-I<J2/|LH*<-H AB2G0 UTK OC /OF ;0-DIE-HG *HAQ O IG80+0&0 G9Y*.C4 GCG -&FKCC *<J2 /0-* KT&DUP00011

T+-HY W0*P17-P11 -G5*+ D*U7H&N-4 CG)2*#?HAFL GC *10?2AYDD+OD*UT2 GAY<<G1**BD488A2 L2/). QDUP00012

T+-TE04BGGH*_MH AHCYHGI<<AOVYG) * /CIIC *1)70VYC * -POVYAT IEA3IOH* F*-4CG)2*0?HAC04 CG)2 &Z* DUP00013

T+-<;G(P2-EQC OV YG)28AA2K2Z HCE2 -70V-+0&*UT1 G92 <DJ=;G92<AA=*A28 < /-PA*2< 1"-G<- 8-A0 DDYDUP00014

T+- (RU?HEI&0 G*2)7 OBG8H)704CG22 *6-HAB&4C S22*#?H ART> GI.2/148 /2 L2ZAC|;H|>"HAF&0 AG*2 : DDUP00015

T+-MG23(16*G<7 2 *MK< /-PG(3 /OM -|*H)-<BA4/H*PA6 CHDFDT7TGQC2-KO *1J6 OHDD:2&EGAXH 8&A0 3E&DUP00016

T+-|U?HE&DT3IG*2 <D/-A*?#&A2KOH* F/T7TGQC2 J2#AA2 LCC<*A72YDYG2G*)OH*AU-CCG9*HA2B GA+H EI<DUP00017

T+-EH|NO)-|HAI&4 CGB0)6*HAA*A*|2B G RKA/P=PGIY<G1" "GR2< 1"-G)2/70 (AA6DG+G2 P* <13 >GIQ *D&DUP00018

T+-JEC <3J7-CA& -5A6-C Y-713HC & -712JCA Y->/6:C H --/6=C --S/6#CA2 --"O-WC C-V0/LC * .A4)SYDUP00019

T+-K >00BGB2)7T5 *G5,2 &E: /2LID ->?HGFL7IG)*2-& *2J6/2-DG+U *U?H GACD GI. /ORXC& <)-10 1B<DUP00020

T+-K#_|HAD04DGQ& *?2HA(3YAGIHC 13 >GIQ<A/"\$SID<EA" MGR2<G1="G2< /- BG)Y< A=HG)2<CA= PEE< P&E DUP00021

T+-L6C <*.A722Y) ;|*M)-|HAG37SGQC 2 *N&(/6B3|G2-M2 <BJ=PG|2< 1"-G) 2/3-(10*G)72-&- 0-74 Q&E DUP00022

T+-M10H*AU-0B59* *7 4CG)2*5-HAC0Q 0B0-*2&0CG*2IE|H GA-0CG*2)73&BG1| /OEF|)E)-|HA?T7 0G0D P.MDUP00023

T+-N22YEGID G=35 GQG2-&2*1J6A2-F 1|<MG=00B88H)6-0 CGB-*UL1-G9<< A= DG)2<M1"EG)*< 1" -G)2 7-<DUP00024

T+-DXC Y-"-BCA& -? TM2Y;CCG2H*OU CA&H5A6-C UHTA3 ACA2H?16"C H4-/7 EC HS/7\$CAHXX0-> >C < D DDUP00025

T+-PSB(2*2 OCG80)600PB|*)53&EGIC **A7D2YDICJ*1512 Ja-DJ+/ *U00 BH8)-E1"G*2H*00CG*2 173- M3DDUP00026

DUPO DIAGNOSTIC UTILITY PROGRAM

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-Q)DA2L2/B)2Y* L|U)-|HAC00FG9* H.&0-G*2)X*HGR&4 CGQ<+9-HADC-DGI| 2UF < A"-G\$2/32 <G12 OI*DUPO0027

T+-RQ?12JC M-2J6 :C&<1?/3*2-DFC & -ZA4DCA&-5A64C H --/6=C --S/6#AC -713IC H*H16=C * .A4)E&DUP00028

T+-EL>00.G9*G*3Y DGI|2/122I-*|H F-"HGG-1-B0 -701 -G*2)73YDGI. - R X| QGH-HG *A*)2G 8AY4 2E&DUP00029

T+-\$+<|<*<C-&GB* 2DB-1*J2-0-FT-1 9 <G1ADY02100+&0 * <<8&AY4(P17-GIG 2 R" /OEM+H *U" H &,L- =Q DUP00030

T+-I&A2L2/ =+ - *U?H&GLC3GC 8&A0 ?0A F7 1"G?2-#3Y HG|H:- * /2Y*E<|< * <CS G9" D \$9CG2 ; -12 MK&DUP00031

T+-)D*3%HG|H#- * /+4 *U3G6GI81*J2 -2"=F0-DGHTC3GC 9A/002/ P+ H*<|H &BCD GI| /CE(+J *UA 1CQ9UP00032

T+-)*/O&E(<|<*<C/ GCC2U \$0-1?2/6- (P17-GIG2-JU1*J2 -2"UDC-DGEL-&GI. 2U |0-0- /O)2+8 *U3- 0&E DUP00033

T+-; /2K2/ #+B *U?H&B3-&GI.2DA| /0-E+ *GH* &A2M :A0*/2Y*E+&<GH* &A2M8A0*/2Z G+0< GH-H :3UDUP00034

T+-5/O&E:A0*/OH* GD2BG U"1&<|A6*J 5'X01*XA5FA-2)- L5|A 22GP&<LE0*1 02GR1DA &DA &(| 00*E & E DUP00035

T+-01V &(J &<| A6*J &+|E9=|R1|L 09*N 82TI8UCC0)X D&<.E1_\$R1MCR9(P N2)PG&(XE5*|A02N &D #.DDUP00036

TH-/L&DA &<L&A&E 1PC4UCE5*J 02G R1DA &DA &DCHI*G D1)U :6QDUP00037

T+/3< CC5_LM1)P TG- A6 *LU5*G F12\$11)XP2*|P9DC GO_.S1|/ 42PV1)(&DA &DA @|CC&|D 7.6DUP00038

T(14D <DG J\$0=>X 92|CA2*PN1|A?54C G02E &|A, E4CG * .S9_XE4*\$CO:| I5_P312\$FL*LC554 5DUUP00039

E***E7*=-DC*PH\$ =*7M&F| | C * F2 ASC * R A SO Q 23181102701 030707:0DUP00040

----- LAST PAGE -----



IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589946
PAGE 1

EOA3 ONE CARD RIPPLE PRINT

ERR	LCC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
			2	DECK 4	
			3	EOA3	START X'0000'
0000			4		USING A,1
	0000		5		USING A,2
			6	*****	
			7	* 1 CARD RIPPLE PRINT CHAIN CLEANER	
			8	*****	
			9	A	LA X'100',X'03' SET BOTH REG.S TO 256
0000 C2 03 0100			10	LOOP1	ST 255(XR1),XR1 GENERATE 255 HEX CHARACTERS
0004 74 01 FF			11		A NEG1,XR1
0007 36 01 003A			12		BNZ LOOP1
000B C0 01 0004			13		MVC 127(128,XR2),255(XR2) PUT 128 IN IMAGE AREA
000F AC 7F 7F FF			14	*****	
			15	LOOP2	SIO X'01',X'E0' SPACE 1
0013 F3 E0 01			16	LOOP3	MVC 255(132,XR1),255(XR2) PUT FIELD IN DATA AREA
0016 6C 83 FF FF			17		LIO A+3(XR1),X'E4' LOAD IMAGE ADDRESS
001A 71 E4 03			18		LIO DARA(XR1),X'E6' LOAD DATA ADDRESS
001D 71 E6 38			19		SIO X'00',X'E2' PRINT A LINE
0020 F3 E2 00			20	BUSY	TIO BUSY(XR1),X'E2' WAIT FOR BUSY TO DROP
0023 D1 E2 23			21		MVC X'7B'(1,XR2),X'FF'(XR2) RIPPLE THE PRINT FIELD
0026 AC 00 7B FF			22		MVC X'FF'(132,XR2),X'FE'(XR2)
002A AC 83 FF FE			23		TBN X'80'(XR2),X'OF' IS THIS THE 16ND LINE?
002E B8 0F 80			24		BT LOOP2(XR1)
0031 D0 10 13			25		B LOOP3(XR1)
0034 D0 87 16			26	*****	
			27	*****	
			28	XR1	EQU 1
			29	XR2	EQU 2
0037 007C			30	DARA	DC XL2'007C'
0039 FFFF			31	NEG1	DC XL2'FFFF'
			32		END A

DATE 06OCT69 20JAN70 02MAR70 01NOV70
EC NO. 816502 816548 816631 816764

PRG ID OEOA-3
PAGE 1

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589946
PAGE 1A

EOA3 ONE CARD RIPPLE PRINT

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
A	A	004	0000	0009	0004 0005 0017 0032
BUSY	A	003	0023	0020	0020
DARA	A	002	0036	0030	0018
EOA3	A	001	0000	0003	
LOOP1	A	003	0004	0010	0012
LOOP2	A	003	0013	0015	0024
LOOP3	A	004	0016	0016	0025
NEG1	A	002	003A	0031	0011
XR1	C	001	0001	0028	0010 0010 0011* 0016 0017 0018 0020 0024 0025
XR2	C	001	0002	0029	0013 0013 0016 0021 0021 0022 0022 0023

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 06OCT69 20JAN70 02MAR70 01NOV70
EC NO. 816502 816548 816631 816764

PRG ID OEOA-3
PAGE 1A

EOA3 ONE CARD RIPPLE PRINT

OBJECT CARD LISTING

THE CHARACTER . INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+ :0-<A G&A#3Q A C, & D,G#***| - 02C***19 (19TT 38-CJ8S+Z G?#,H| **,-I-(&D#BGE-A 3**2 *D0EOA30001

E **A*E7*=-DC#PH\$ =*7M&F| | C ** F% ASC ** R A S0 Q 17581007701 01670*L@EOA30002

----- LAST PAGE -----

DATE 06OCT69 20JAN70 02MAR70 01NOV70
EC NO. 816502 816548 816631 816764

PROG ID OEOA-3
PAGE 2

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0A00		2	DECK 4
		3	E013 START X'A00'
		4	*****
		5	SECTION PREFACE *
		6	*****
		7	THIS AREA CONTAINS INFORMATION NECESSARY FOR SECTION OPERATION. *
		8	THE PROGRAM IDENTIFICATION, FLAGS AND FIRST ROUTINE ADDRESS *
		9	ARE LOADED BY ASSEMBLED DATA. THE CURRENT ROUTINE NUMBER IS *
		10	SUPPLIED BY THE CONTROL PROGRAM. SECTION UDT ENTRIES ARE *
		11	DEFINED PARTIALLY BY THE SECTION SO THAT THE CONTROL PROGRAM *
		12	CAN SUPPLY OPTION BYTES. *
		13	*****
0A01	0A01	14	DC XL2'E013' PROGRAM IDENTIFICATION
0A02	0A02	15	DC XL1'0' FLAGS
0A03	0A03	16	RNUM DC XL1'1' CURRENT ROUTINE NUMBER
0A04	0A05	17	DC XL2'0' RESERVED
0A06	0A07	18	DC AL2(RTN1) ADDRESS OF FIRST ROUTINE PREFIX
0A08	0A09	19	DC AL2(ERT1) ADDRESS OF ERROR RECORDING TABLE
0A0A	0A0C	20	SPUDT DC XL3'E05000' UNIT DEFINITION TABLE - PRINTER
		21	*****
		22	*
		23	ROUTINE 1 - SENSE COMMAND TO PRINTER *
		24	(RESTORE CARRIAGE(S) BEFORE EXECUTING) *
		25	*
		26	*****
0A0D	0A0E	27	EXP12 DC XL2'0101'
		28	
0A0F	0A0F	29	RTN1 DC XL1'1' ROUTINE NUMBER
0A10	0A10	30	DC XL1'0' FLAGS
0A11	0A12	31	DC AL2(RTN2) ADDRESS OF NEXT ROUTINE PREFIX
		32	*****
0A13		33	TBN SPUDT,B'1' DUAL FEED
0A17		34	JT NIGEB
0A1A		35	MVI EX'12,X'00'
0A1E		36	NIGEB SNS STAIX,X'E0' SENSE FOR CARR.LOC.
0A22		37	CLC STAIX(2),EXP12 ARE LINE COUNTERS AT LINE 1
0A28		38	JE SPALT JUMP OVER HALT
0A2B		39	TBN SBYTE0,SSW05 PRINT ON MFCU
0A2F		40	JF GRALT
0A32		41	B PRINT 'CMD DECODE ERROR'
0A36	0A36	42	DC XL1'C1'
0A37	0A37	43	DC IL1'16'
0A38	0A39	44	DC AL2(REDCP)
0A3A	0A3B	45	DC XL2'E030'
0A3C		46	MVC MAP(2),CHT13 PUT CHART NO. IN MSG.
0A42		47	B PRINT PROCESSOR CHK.MSG.
0A46		48	DC XL1'81'
0A47		49	DC IL1'10'
0A48		50	DC AL2(MAP)
0A4A		51	GRALT B HALT INVALID 'N' FIELD IN SENSE COMD.
0A4E	0A4F	52	DC XL2'E030'
0A50		53	SPALT TIO JEXT,PBBUSY
0A54		54	JEXT CLI UCSFLG,X'FF' 120 CHAR.IMAG
0A58		55	JNE SESTAT
0A5B		56	MVI TECHB1,X'39' SET TEST FOR BIT OFF
0A5F		57	SESTAT SNS STAT6,X'E3' SENSE STATUS BYTES
0A63		58	TECHB1 TBN STAT6,B'100' TEST 48 CHAR.BIT CN DR OFF
0A67		59	JT CKYDOK
0A6A		60	TBN SBYTE0,SSW05 PRINT ON MFCU
0A6E		61	JF HALIT
0A71		62	B PRINT PRINT CHAIN CHK.ERR
0A75	0A75	63	DC XL1'C1'
0A76	0A76	64	DC IL1'37'
0A77	0A76	65	DC AL2(CACHE)
0A79	0A7A	66	DC XL2'E00E'
0A7B		67	MVC MAP(2),CHT19 PUT CHART NO. IN MSG.
0A81		68	B PRINT PRINT PRINTER MAP CHART NO.
0A85	0A85	69	DC XL1'81'

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0A86	0A86	70	DC IL1'10'
0A87	0A88	71	DC AL2(MAP)
0A89		72	HALIT B HALT
0A8D	0A8E	73	DC XL2'E00E'
0A9F		74	CKYDOK B LINK
		75	
		76	*****
		77	*
		78	ROUTINE 2 - TIO TO NOT READY DEVICE *
		79	(PRINTER MUST BE NOT READY BEFORE EXECUTING) *
		80	*
		81	*****
0A93	0A93	82	RTN2 DC XL1'2' ROUTINE NUMBER
0A94	0A94	83	DC XL1'80' FLAGS - MANUAL INTERVENTION
0A95	0A96	84	DC AL2(RTN3) ADDRESS OF NEXT ROUTINE PREFIX
		85	*****
0A97		86	TIO RINRDY,NRDY SHOULD BRANCH ON TEST OF NOT READY
0A98		87	TBN SBYTE0,SSW05 PRINT ON MFCU
0A9F		88	F2 90 10 JF LOARR JUMP TO SKIP PRINTING
0AA2		89	OC 02 1B91 1BAD MVC RORN(3),TON PUT NOT IN MSG.
0AA8		90	B PRINT PRINT MAKE NOT READY
0AAC	0AAC	91	DC XL1'41'
0AAD	0AAD	92	DC IL1'19'
0AAE	0AAF	93	DC AL2(MANDRE)
0AB0	0AB1	94	DC XL2'E0E0'
0AB2		95	LOARR HPL X'6F',X'7C' NOT READY HALT
0AB5		96	TIO RINRDY,NRDY IF PRINTER OK, SHOULD BRANCH
0AB9		97	TBN SBYTE0,SSW05 PRINT ON MFCU
0ABD		98	F2 90 18 JF TALT
0AC0		99	C0 87 021A B PRINT PRINT NOT READY ERROR
0AC4	0AC4	100	C1 DC XL1'C1'
0AC5	0AC5	101	1A DC IL1'26'
0AC6	0AC7	102	1BB1 DC AL2(CCRINS)
0AC8	0AC9	103	E031 DC XL2'E031'
0ACA		104	OC 01 1BD1 1BD3 MVC MAP(2),CHT10 PUT CHART NO. IN MSG.
0AD0		105	C0 87 021A B PRINT PRINT PRINTER MAP CHART NO.
0AD4	0AD4	106	81 DC XL1'81'
0AD5	CAD5	107	CA DC IL1'10'
0AD6	0AD7	108	1BD1 DC AL2(MAP)
0AD8		109	C0 87 0222 TALT B HALT *ERROR - TIO FAILED TO BRANCH
0ADC	CADD	110	E031 DC XL2'E031'
0ADE		111	C0 87 0216 RINRDY B LINK GO TO DCP TO LINK TO NEXT ROUTINE
		112	
		113	*****
		114	*
		115	ROUTINE 3 - TIO ON BUSY TO NOT READY DEVICE *
		116	*
		117	*****
0AE2	0AE2	118	RTN3 DC XL1'3' ROUTINE NUMBER
0AE3	0AE3	119	00 DC XL1'0' FLAGS
0AE4	0AE5	120	0B16 DC AL2(RTN4) ADDRESS OF NEXT ROUTINE PREFIX
		121	*****
0AE6		122	C1 E6 0AED TIO PRFCU,BUSY BRANCH SHOULD NOT OCCUR
0AEA		123	F2 87 25 J R2EXIT
0AED		124	PRFCU TBN SBYTE0,SSW05 PRINT ON MFCU
0AF1		125	F2 90 18 JF R2BUSY
0AF4		126	C0 87 021A B PRINT PRINT BUSY ERR
0AF8	0AF8	127	C1 DC XL1'C1'
0AF9	0AF9	128	16 DC IL1'22'
0AFA	0AFB	129	B8C7 DC AL2(BABUSY)
0AFC	0AFD	130	E032 DC XL2'E032'
0AFE		131	OC 01 1BD1 1BDD MVC MAP(2),CHT17 PUT CHART NO. IN MSG.
0B04		132	C0 87 021A B PRINT PRINT PRINTER MAP CHART NO.
0B08	0B08	133	81 DC XL1'81'
0B09	0B09	134	CA DC IL1'10'
0B0A	0B0B	135	1BD1 DC AL2(MAP)
0B0C		136	C0 87 0222 R2BUSY B HALT *ERROR - TEST I/O ON BUSY FAILED
0B10	0B11	137	E032 DC XL2'E032'

E013 5203 LINE PRINTER FUNCTION TESTS

E013 5203 LINE PRINTER FUNCTION TESTS

Table with columns: ERK LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic code listings for error E013, including routines for device readiness and printer status checks.

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains diagnostic code listings for error E013, including routines for chart number handling and printer map chart generation.

EC13 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OC72	CO 87 C222	274	IMALT	B	HALT
OC76	E03A	275	DC		XL2'E03A'
OC78	31 E6 184A	276	GGLIO	LIO	LPDADR,LPDAR
OC7C	30 E6 1F95	277	SNS		STAIX,X'E6'
OC80	0D 01 1F95 184A	278	CLC		STAIX(2),LPDADR
OC86	F2 81 3F	279	JE		FCLIC
OC89	38 04 0208	280	TEN		SBYTEC,SSW05
OC8D	F2 90 32	281	JF		LSMFT
OC90	0C 04 1C31 1C27	282	MVC		LEBAL(5),ATAD
OC96	CO 87 021A	283	B		PRINT
OC9A	C1	284	DC		XL1'C1'
OC9B	16	285	DC		IL1'22'
OC9C	1C42	286	DC		AL2(ARWAL)
OC9E	EG34	287	DC		XL2'E034'
OCA0	CO 87 021E	288	B		UNPACK
OCA4	02	289	DC		IL1'2'
OCA5	1F95	290	DC		AL2(STAIX)
OCA7	1C49	291	DC		AL2(DIRIS)
OCA9	CO 87 021E	292	B		UNPACK
OCAD	02	293	DC		IL1'2'
OCAE	184A	294	DC		AL2(LPDAADR)
OCB0	1C55	295	DC		AL2(DIRSB)
OCE2	CO 87 021A	296	B		PRINT
OCB6	81	297	DC		XL1'81'
OCB7	13	298	DC		IL1'19'
OCB8	1C55	299	DC		AL2(DIRSB)
OCBA	CO 87 021A	300	B		PRINT
OCBE	81	301	DC		XL1'81'
OCBF	0A	302	DC		IL1'10'
OCC0	1BD1	303	DC		AL2(MAF)
OCC2	CO 87 0222	304	LSMFT	B	HALT
OCC6	E034	305	DC		XL2'E034'
OCC8	3C E3 1F93	306	FOLIO	SNS	STAT6,X'E3'
OCCC	38 01 1F92	307	TBN		STAT6-1,B'1'
OCDO	F2 90 1F	308	JF		R6EXIT
OC03	38 04 0208	309	TBN		SBYTEC,SSW05
OC07	F2 90 12	310	JF		LALT
OCDA	CO 87 021A	311	B		PRINT
OCDE	C1	312	DC		XL1'C1'
OCDF	22	313	DC		IL1'34'
OCE0	1C77	314	DC		AL2(NOPLIO)
OCE2	E03C	315	DC		XL2'E03C'
OCE4	CO 87 021A	316	B		PRINT
OCE8	61	317	DC		XL1'81'
OCE9	CA	318	DC		IL1'10'
OCEA	1BD1	319	DC		AL2(MAF)
OC1C	CO 87 0222	320	LALT	B	HALT
OC10	E03C	321	DC		XL2'E03C'
OC12	CO 87 0216	322	R6EXIT	B	LINK
323		323			
324		324			*****
325		325			*
326		326			ROUTINE 7 - COMMANDS TEST FROM TABLE
327		327			(PROGRAM ISSUES COMMANDS SEQUENTIALLY FROM TABLE
328		328			-CMDTAB-)
329		329			*
330		330			*****
OCF6	07	331	RTN7	DC	XL1'7'
OCF7	CC	332	DC		XL1'0'
OCF8	ODCA	333	DC		AL2(RTN8)
334		334			*****
OCFA	3C 01 1FA1	335	MVI		LICTR,X'01'
OCFE	C2 01 1FA6	336	LA		CMDTAB,XR1
OD02	CO 87 12A3	337	B		CKCMD
OD06	CO 87 0216	338	B		LINK
339		339			
340		340			*****
341		341			*

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
		342	*		ROUTINE 8 - CARRIAGE SPACE-SKIP TEST
		343	*		*
		344	*		*****
OD0A	08	345	RTN8	DC	XL1'8'
OD0B	00	346	DC		XL1'0'
OD0C	0E80	347	DC		AL2(RTN9)
		348	*		*****
OD0E	CO 87 1432	349	B		XIO
OD12	E401	350	DC		XL2'E401'
OD14	3C 01 1FA1	351	MVI		LICTR,X'01'
OD18	C2 01 1FC6	352	LA		SPSK-2,XR1
OD1C	36 01 1825	353	BACGO	A	TWD,XR1
OD20	1C 01 1F97 01	354	MVC		CMDSAV(2),1(XR1)
OD25	C2 02 0883	355	LA		LPD+7,XR2
OD29	30 E0 1F8D	356	SNS		STAT0,X'E0'
OD2D	38 80 0209	357	TBN		SBYTE1,SSW08
OD31	F2 90 0B	358	JF		FRANG
OD34	CO 87 13B9	359	B		CVD
OD38	1F8D	360	DC		AL2(STAT0)
OC3A	186A	361	DC		AL2(DASH)
OD3C	F2 87 08	362	J		MODASH
OD3F	CO 87 13B9	363	FRANG	B	CVD
OD43	1F8C	364	DC		AL2(STAT0-1)
OD45	186A	365	DC		AL2(DASH)
OD47	8C 07 00 186A	366	MODASH	MVC	C(8,XR2),DASH
OD4C	CO 87 13B9	367	B		CVD
OD5C	1F97	368	DC		AL2(CMDSAV)
OD52	188E	369	DC		AL2(SKLINO)
OD54	0C 00 1882 188E	370	MVC		SPOP(1),SKLINO
OD5A	36 02 182F	371	A		TWLV,XR2
OD5E	8C 0B 00 1882	372	MVC		O(12,XR2),SPOP
OD63	0E 00 1FA1 1F97	373	ALC		LICTR(1),CMDSAV
OD69	0D 00 1FA1 1841	374	CKOUNT	CLC	LICTR(1),FOLG
OD6F	F2 04 CC	375	JNH		JUMRES
OD72	0C 01 0D7D 0D6E	376	MVC		RSOUNT+5(2),CKOUNT+5
OD78	0F 00 1FA1 0000	377	RSOUNT	SLC	LICTR(1),*-*
OD7E	78 04 00	378	JUMRES	TBN	O(XR1),X'04'
OD81	F2 90 53	379	JF		ITSASP
OD84	8C 0B 00 188E	380	MVC		O(12,XR2),SKLINO
OD89	0C 00 1FA1 1F97	381	MVC		LICTR(1),CMDSAV
OD8F	7D 2A 01	382	CLI		1(XR1),X'2A'
OD92	F2 01 15	383	JNE		NEXLEN
OD95	0C 01 14C2 1854	384	MVC		FRMLE+3(2),ADFL42
OD9B	0C 01 0DDC 1854	385	MVC		FRADD(2),ADFL42
ODA1	0C 01 0D6E 1854	386	MVC		CKOUNT+5(2),ADFL42
ODA7	F2 87 2D	387	J		ITSASP
ODAA	7D 55 01	388	NEXLEN	CLI	1(XR1),X'55'
ODAD	F2 01 15	389	JNE		DO112
ODB0	0C 01 14C2 1856	390	MVC		FRMLE+3(2),ADFL85
ODB6	0C 01 0DDC 1856	391	MVC		FRADD(2),ADFL85
ODBC	0C 01 0C6E 1856	392	MVC		CKOUNT+5(2),ADFL85
ODC2	F2 87 12	393	J		ITSASP
ODC5	0C 01 14C2 1858	394	DO112	MVC	FRMLE+3(2),ADFOLG
ODCB	0C 01 0DDC 1858	395	MVC		FRADD(2),ADFOLG
ODD1	0C 01 0D6E 1858	396	MVC		CKOUNT+5(2),ADFOLG
ODD7	CO 87 13B9	397	ITSASP	B	CVD
ODDB	0000	398	FRADD	DC	XL2'0'
ODDD	18F1	399	DC		AL2(LNGTH)
ODDF	36 02 1831	400	A		SVNTEN,XR2
ODE3	8C 10 00 18F1	401	MVC		O(17,XR2),LNGTH
ODE8	CO 87 1438	402	B		SKIXIG
ODEC	E200	403	DC		XL2'E200'
ODEF	1C 01 0DF8 01	404	MVC		PUTSUM(2),1(XR1)
ODF3	CO 87 1438	405	B		SKIXIO
ODF7	0000	406	PUTSUM	DC	XL2'0'
ODF9	30 E0 1F8D	407	SNS		STAT0,X'E0'
ODFD	38 80 0209	408	TBN		SBYTE1,SSW08
OE01	F2 90 12	409	JF		LEFLIC

E013 52C3 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	
OE04	OC 04	18CB	186F	410 MVC WICH-1(5),THGIR	
OE0A	OC 00	1F8D	1FA1	411 CLC STATC(1),LICTR	RIGHT LINE LOC.CORRECT
OE10	F2 01	1D		412 JNE MUSTU	JUMP IF NOT
OE13	F2 87	0F		413 J ISLAS	
OE16	OC 04	18CB	1874	414 LEFLIC MVC WICH-1(5),TFEL	
OE1C	OD 00	1F8C	1FA1	415 CLC STATO-1(1),LICTR	LINE LOCATION CORRECT
OE22	F2 01	0B		416 JNE MUSTU	
OE25	7D 00	C1		417 ISLAS CLI 1(,XR1),X'00'	LAST CMD. DONE
OE28	CO 81	OE76		418 BE CLINK	EXIT
OE2C	CO 87	OD1C		419 B BACGO	
OE30	3A 01	1F8B		420 MUSTU SBN TAGS,TAG7	SET 1ST LINES ONLY FLAG
OE34	OC 00	1780	OE71	421 MVC HLTID(1),LUKE	PUT HALT ID IN MSG
OE3A	CO 87	1732		422 B PSTERR	GO PRINT STATUS OR 1ST LINES
OE3E	38 02	1F8B		423 TBN TAGS,TAG6	WAS THERE A STATUS ERR
OE42	F2 10	0D		424 JT STBEP	JUMP TO LOAD SHORT MSG.COUNT
OE45	3C 2D	OE5B		425 MVI LCML,45	SET A MSG.COUNT OF 45
OE49	OC 05	18CC	1A29	426 MVC WICH(6),KNALB	
OE4F	F2 87	04		427 J TNIRP	JUMP TO PRINT
OE52	3C 1A	OE5B		428 STBEP MVI LCML,26	SER MSG. COUNT OF 26
OE56	CO 87	021A		429 TNIRP B PRINT	PTINT LINE COUNTER ERR
OE5A	81			430 DC XL1'81'	
OE5B	CO			431 LCML DC XL1'0'	COUNT
OE5C	18E0			432 DC AL2(LICOR)	
OE5E	OC 01	18D1	18D9	433 MVC MAP(2),CHT14	PUT CHART NO. IN MSG.
OE64	CO 87	021A		434 B PRINT	PRINT PRINTER MAP CHART NO.
OE68	85			435 DC XL1'85'	
OE69	GA			436 DC IL1'10'	
OE6A	18D1			437 DC AL2(MAP)	
OE6C	CC 87	0222		438 B HALT	LINE COUNTER ERR HALT
OE70	E033			439 LUKE DC XL2'E033'	
OE72	CO 87	0E25		440 B ISLAS	
OE76	CO 87	1432		441 CLINK DC XIO	
OE7A	E002			442 DC XL2'E002'	SPACE 2
OE7C	CO 87	0216		443 B LINK	
444				*****	
445				*****	
446				*****	
447				*****	
448				*****	
449				*****	
OE80	09			450 RTN9 DC XL1'9'	ROUTINE NUMBER
OE81	00			451 DC XL1'0'	FLAGS
OE82	CF14			452 DC AL2(RTNOA)	ADDRESS OF NEXT ROUTINE PREFIX
453				*****	
454				B PRINT	PRINT TITLE
OE84	CO 87	021A		455 DC XL1'42'	
OE88	42			456 DC IL1'16'	
OE89	10			457 DC AL2(TITL9)	
OE8A	1904			458 DC XL2'E000'	
OE8C	ECC0			459 MVI ROCON+1,C'H'	PUT H IN PRINT LINE
OE8E	3C C8	0EB4		460 FINFF SBF FINDEX,X'FF'	ZERO COUNTER
OE92	3B FF	1F99		461 TBF SPUDT,B'110000'	100 LPM PRINTER?
OE96	39 30	0AOC		462 JT SUNERD	
OE9A	F2 10	12		463 SNS STAT2,X'E2'	GRAB TIMINGS
OE9D	3C E2	1F8F		464 TBN STAT2,B'1'	HAMMERS IN #
OEAI	38 01	1F8F		465 JF MOOM	
OEAS	F2 90	59		466 NCCGR TBF SPUDT,B'110000'	100 LPM PRINTER?
OEAB	39 30	0AOC		467 JF ROCON	
OEAF	F2 90	04		468 SUNERD B M4DEL	
OEAC	CO 87	1275		469 ROCON MVI PRDAT,*-	INSERT AN 'H' OR A 'T'
OEAB	3C 00	C8FF		470 MVC PRDAT-1(132),PRDAT	PROPAGATE IT
OEAB	OC 83	08FE	08FF	471 ALC FINDEX(1),ONE	ADD 1 TO COUNTER
OEAD	OE 00	1F99	1823	472 B XIO	BR TO PRINT A LINE
OEAC	CC 87	1432		473 DC XL2'E201'	
OECE	E201			474 CLI FINDEX,X'19'	25 LINES PRINTED
OECE	3D 19	1F99		475 BNE NCCGR	
OECD	CO 01	0EAB		476 CLI ROCON+1,C'T'	HAVE T'S BEEN PRINTED
OECE	3D E3	0EB4		477 JE GETOUT	
OEDE	F2 81	33			

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	
OE08	3C E3	0EB4		478 MVI ROCON+1,C'T'	PUT T IN PRINT LINE
OE0C	C2 C2	087A		479 LA LPD-2,XR2	LOAD PRINT ADDR.
OEEO	3C 40	08FE		480 MVI PRDAT-1,X'40'	
OE04	04 10	1B1A	1851	481 ZAZ HANO(2),DECZRO(1)	ZERO HAMMER NO.
OE0A	36 02	1829		482 NEAMR A FOUR,XR2	INCR.PRINT ADDR.
OE0E	G6 10	1B1A	1852	483 AZ HANO(2),DECONE(1)	ADD 1 TO HAMR.NO.
OE04	8C 01	00	1B1A	484 MVC O(2,XR2),HANO	PUT HAMMER NO. IN PRINT AREA
OE09	3D 40	08FE		485 CLI PRDAT-1,X'40'	END OF PRINT LINE
OE0D	CO 81	OE0A		486 BE NEAMR	
OF01	CO 87	1432		487 MOOM B XIO	PRINT HAMMER NUMBERS
OF05	E201			488 OF06 DC XL2'E201'	
OF07	CO 87	0E92		489 B FINFF	
OF08	CO 87	021A		490 OF0F GETOUT B PRINT	BR TO SPACE 4
OF0F	14			491 OF0F DC XL1'14'	
OF10	CO 87	0216		492 B LINK	
493				*****	
494				*****	
495				*****	
496				*****	
497				*****	
498				*****	
OF14	CA			499 OF14 RTNOA DC XL1'A'	ROUTINE NUMBER
OF15	00			500 OF15 DC XL1'0'	FLAGS
OF16	0FE4			501 OF17 DC AL2(RTNOB)	ADDRESS OF NEXT ROUTINE PREFIX
502				*****	
503				B PRINT	PRINT TITLE
OF18	CO 87	021A		504 OF1C DC XL1'42'	
OF1C	42			505 OF1D DC IL1'19'	
OF1D	13			506 OF1F DC AL2(TITLA)	
OF1E	1917			507 OF21 DC XL2'E000'	
OF20	E0C0			508 TBN SBYTE1,SSW08	PRINT ON RIGHT CARR.
OF22	38 80	0209		509 JF ITSLEF	
OF26	F2 90	0F		510 SBN PSSIO1+1,B'1000'	SET MODIFIER BIT ON
OF29	3A 08	0F8E		511 SBN SBUSY+1,B'1000'	SET MODIFIER BIT ON
OF2D	3A 08	0F91		512 SBN PSSIO2+1,B'1000'	SET MODIFIER BIT ON
OF31	3A 08	0F9D		513 J OGG	
OF35	F2 87	0C		514 ITSLEF SBF PSSIO1+1,B'1000'	SET MODIFIER BIT OFF
OF38	3B 08	0F8E		515 SBF SBUSY+1,B'1000'	SET MODIFIER BIT OFF
OF3C	3B 08	0F91		516 SBF PSSIO2+1,B'1000'	SET MODIFIER BIT OFF
OF40	3B 08	0F9D		517 CGOG SBF FINDEX,X'FF'	ZERO COUNTER
OF44	3B FF	1F99		518 SIOST TBF SPUDT,B'110000'	100 LPM PRINTER?
OF48	39 30	0AOC		519 JT GOM4	
OF4C	F2 10	1E		520 SNS STAT6,X'E2'	GRAB THE SENSE BYTES
OF4F	30 E2	1F93		521 TBN STAT6,B'1'	HAMMERS IN RIGHT SHIFT POS.
OF53	38 01	1F93		522 JT HANG	
OF57	F2 10	17		523 B XIO	PRINT A BLANK LINE
OF5A	CC 87	1432		524 OF5F DC XL2'E200'	
OF5E	E200			525 B SIOST	
OF60	CO 87	CF48		526 PRNRDY B HALT	BR TO CHECK HALT ON ERROR
OF64	CO 87	0222		527 OF69 DC XL2'E010'	AFTER NOT READY
OF68	E010			528 J HANG	
OF6A	F2 87	04		529 GOM4 B M4DEL	
OF6D	CO 87	1275		530 HANG TIO PRNRDY,NRDY	NOT READY
OF71	C1 E0	0F64		531 B BROUT	
OF75	CO 87	140A		532 MVI ATEATE,C'.'	PUT A PERIOD IN 96
OF79	3C 4B	08DB		533 MVC ATEFIV-1(92),ATEATE	PROPAGATE IT
OF7D	OC 5B	08D7	08DB	534 MVI EDIMAG,C'.'	PUT A PERIOD IN IMAGE AREA
OF83	3C 4B	1F77		535 MVC EDIMAG-1(119),EDIMAG	AND PROPAGATE IT
OF87	OC 76	1F76	1F77	536 PSSIO1 SIO X'01',X'E0'	SPACE 1
OF8D	F3 E0	01		537 SBUSY TIO SBUSY,CABUSY	WAIT
OF90	C1 E4	0F90		538 TIO PRNRDY,NRDY	IS PRINTER READY
OF94	C1 E0	0F64		539 LIO SIADD,LPIAR	IMAGE ADDR.
OF98	31 E4	184E		540 PSSIO2 SIO X'00',X'E2'	PRINT A LINE
OF9C	F3 E2	0C		541 L ZERC,XR1	
OF9F	35 01	1821		542 TEGAN TIO BZOOB,BUSY	CHECK BUSY
OFA3	C1 E6	0FAA		543 J SATCH	BR TO SET UP ANOTHER PRINT COMMND
OFA7	F2 87	0E		544 BZOOB A ONE,XR1	WAIT FOR 1.4 SEC.
OFAA	36 01	1823		545 ANZ TEGAN	TO CLEAR BUSY
OFAE	CO 01	0FA3			

L013 5203 LINE PRINTER FUNCTION TESTS

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for L013 tests including routines for printing titles, chain characters, and ripple patterns.

E013 5203 LINE PRINTER FUNCTION TESTS

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for E013 tests including routines for printing titles, chain characters, and ripple patterns.

E013 5203 LINE PRINTER FUNCTION TESTS

E013 52C3 LINE PRINTER FUNCTION TESTS

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1129 F2 87 04	682	J	WUNTH
112C 36 01 1835	683	ADTUSX A	TWYSIX,XR1
1130 3C 01 1CF4	684	WUNTH MVI	ADDATE,X'01'
1134 7C FF 00	685	NEXCAR MVI	O(,XR1),X'FF'
1137 C0 87 1432	686	B	XIO
1138 E2G0	113C 687	DC	XL2'E200'
113D 7C 40 0C	688	MVI	O(,XR1),X'40'
1140 38 02 1F93	689	TBN	STAT6,B'10'
1144 F2 90 27	690	JF	UPCER
1147 34 C1 1F99	691	ST	FINDEX,XR1
114b 3C E9 1F99	692	CLI	FINDEX,X'D9'
114F C0 81 C0C0	693	EMHER BE	*--
1153 3D 00 1F99	694	HOMANY CLI	FINDEX,*--
1157 F2 81 38	695	JE	DOUT
115A 36 C1 182C	696	A	EIGHT,XR1
115E 38 01 1CF4	697	TBN	ADDATE,X'C1'
1162 CC 50 112C	698	BF	ACTUSX
1166 3C 00 1CF4	699	MVI	ADDATE,X'00'
116A C0 87 1134	700	B	NEXCAR
116E C0 E7 1432	701	XIO	UPCER
1172 E0G1	1173 702	DC	XL2'E001'
1174 C0 87 021A	703	B	PRINT
1178 C1	1178 704	DC	XL1'C1'
1179 3D	1179 705	DC	IL1'61'
117A 157D	1178 706	DC	AL2(WUDF)
117C EC3E	117D 707	DC	XL2'EC3E'
117E OC 01 18C1 18DB	708	MVC	MAP(2),CHT16
1184 C0 87 C21A	709	B	PRINT
1188 85	1188 710	DC	XL1'85'
1189 0A	1189 711	DC	IL1'10'
118A 18D1	1188 712	DC	AL2(MAP)
118C C0 87 0222	713	B	HALT
1190 E03E	1191 714	DC	XL2'E03E'
1192 CC 87 1432	715	OGUT B	XIC
1196 E2G0	1197 716	DC	XL2'E200'
1198 CC 87 C22A	717	B	LOAD
119C 00	119C 718	DC	XL1'00'
719			
720			*****
721			*
722			ROUTINE E - COMMANDS TEST--FROM SWITCHES
723			*
724			THE PROGRAM PRINTS INSTRUCTIONS FOR CONSOLE DATA SWITCH ENTRY
725			OF PRINTER COMMANDS AND PERFORMS A -EA- HALT. THE DATA SWITCHES
726			MUST THEN BE SET TO THE DESIRED ENTRY AND THE HALT RESET. AFTER
727			READING AND STORING THE SWITCHES, THE PROGRAM WILL HALT
728			DISPLAYING -EC-. REPEATED ENTRIES MAY BE MADE WITH ACCEPTANCE
729			BEING NOTED BY ALTERNATING HALT DISPLAYS OF-EA-AND-EC-. THE
730			TWO TYPES OF DATA ENTRIES RECOGNIZED INCLUDE--
731			*
732			1. -QQCC- WHERE QQ - Q CODE OF COMMAND.
733			CC - CONTROL CODE OF COMMAND.
734			*
735			2. -OXXX- O - POSITION OF SWITCH 1.
736			XXX - DELAY COUNT IN MILLISECONDS.
737			*
738			END OF ENTRY IS SIGNALLED BY -0000- IN THE SWITCHES.
739			*
740			BEFORE EXECUTING THE STRING OF UP TO 20 ENTRIES, THE PROGRAM
741			PRINTS A LIST OF THE ENTRIES.
742			*
743			*****
119D CE	119D 744	RTNOE DC	XL1'E'
119E 80	119E 745	DC	XL1'8C'
119F 1FFF	11A0 746	DC	XL2'FFFF'
	747		*****
11A1 C0 87 021A	748	B	PRINT
11A5 41	11A5 749	DC	XL1'41'

ERR LOC OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
11A6 2E	11A6 750	DC	IL1'46'
11A7 19AB	11A8 751	DC	AL2(INS1)
11A9 E0EA	11AA 752	DC	XL2'E0EA'
11AB C0 87 021A	753	B	PRINT
11AF C5	11AF 754	DC	XL1'05'
1180 3A	1180 755	DC	IL1'58'
1181 19E5	1182 756	DC	AL2(INS2)
1183 C2 01 1F60	757	LA	ETABLE,XR1
1187 3D 3F 11CB	758	ENTERO CLI	ENTER1+2,X'3F'
118B F2 01 C7	759	JNE	REDAS
118E 3C 6C 11CB	760	MVI	ENTER1+2,X'6C'
11C2 F2 87 04	761	J	ENTER1
11C5 3C 3F 11CB	762	REDAS MVI	ENTER1+2,X'3F'
11C9 F0 7C 00	763	ENTER1 HPL	X'CO',X'7C'
11CC 70 00 01	764	SNS	(,XR1),X'0'
11CF 4D 01 C1 1821	765	CLC	1(2,XR1),ZERO
11D4 F2 81 58	766	JE	DOCMS
11D7 79 F0 CC	767	TBF	O(,XR1),X'FO'
11DA F2 10 44	768	JT	NEXT
11DD 78 E0 00	769	TBN	O(,XR1),X'E0'
11E0 F2 90 12	770	JF	BADCMD
11E3 79 10 00	771	TBF	O(,XR1),X'10'
11E6 F2 90 0C	772	JF	BADCMD
11E9 79 05 00	773	TBF	O(,XR1),X'05'
11EC F2 90 24	774	JF	CKSKIP
11EF 7D 04 C1	775	CLI	1(,XR1),X'04'
11F2 F2 82 2C	776	JL	NEXT
11F5 1C 01 1F97 01	777	BACCMD MVC	CMDSAV(2),1(,XR1)
11FA C0 87 021E	778	B	UNPACK
11FE 02	11FE 779	DC	IL1'2'
11FF 1F97	1200 780	DC	AL2(CMDSAV)
1201 19F3	1202 781	DC	AL2(INVC)
1203 C0 87 021A	782	B	PRINT
1207 C5	1207 783	DC	XL1'C5'
1208 0E	1208 784	DC	IL1'14'
1209 19F3	120A 785	DC	AL2(INVC)
120B E044	120C 786	DC	XL2'E044'
120D F0 1B 18	787	HPL	X'1B',X'1B'
1210 F2 87 18	788	J	WHIHLT
1213 79 01 CC	789	CKSKIP TBF	O(,XR1),X'01'
1216 C0 90 11F5	790	BF	BADCMD
121A 7D 7C 01	791	CLI	1(,XR1),X'70'
121D C0 84 11F5	792	BH	BADCMD
1221 36 01 1825	793	NEXT A	TWO,XR1
1225 7D FF 02	794	CLI	2(,XR1),X'FF'
1228 F2 81 04	795	JE	DOCMS
122B C0 87 1187	796	WHIHLT B	ENTERO
122F C0 87 021A	797	DOCMS B	PRINT
1233 41	1233 798	DC	XL1'41'
1234 C7	1234 799	DC	IL1'7'
1235 19FA	1236 80C	DC	AL2(LIST)
1237 E000	1238 801	DC	XL2'E000'
1239 C2 01 1F60	802	LA	ETABLE,XR1
123D 1C 01 1F97 01	803	GETNXT MVC	CMDSAV(2),1(,XR1)
1242 36 01 1825	804	A	TWO,XR1
1246 C0 87 021E	805	B	UNPACK
124A 02	124A 806	DC	IL1'2'
124B 1F97	124C 807	DC	AL2(CMDSAV)
124D 19FE	124E 808	DC	AL2(ELIST)
124F C0 87 021A	809	B	PRINT
1253 01	1253 810	DC	XL1'01'
1254 04	1254 811	DC	IL1'4'
1255 19FE	1256 812	DC	AL2(ELIST)
1257 4D 01 01 1821	813	CLC	1(2,XR1),ZERO
125C C0 01 123D	814	BNE	GETNXT
1260 CC 87 021A	815	B	PRINT
1264 15	1264 816	DC	XL1'15'
1265 C2 01 1F60	817	GOTHRU LA	ETABLE,XR1

E013 5203 LINE PRINTER FUNCTION TESTS

ERR	LCC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1269	30	EO 1FA2	818	SNS	RICTR,X'E0'
1260	CO	87 12A3	819	B	CKCMD
1271	CO	87 1265	820	B	GOTHRU
			821		
			822	*****	*****
			823	*	WAIT FCR M4 THEN DELAY SUBROUTINE *
			824	*****	*****
1275	34	08 12A2	825	M4DEL	ST MEXIT+3,ARR
1279	30	E2 1F8F	826	GETIM	SNS STAT2,X'E2'
1270	38	01 1F8F	827	TBN	STAT2,B*1'
12E1	CC	90 1279	828	BF	GETIM
1285	3C	28 1F9D	829	MVI	MSECS,X*28'
1289	0D	FF 08CC 0800	830	WAT	CLC LPI(256),LPI
128F	CD	3B CECC C800	831	CLC	LPI(60),LPI
1295	0F	00 1F9C 1823	832	SLC	MSECS(1),ONE
1298	CC	84 1289	833	RM	WAT
129F	CO	87 0000	834	MEXIT	B *-*
			835		
			836	*****	*****
			837	*	CKCMD ***** CKCMD *
			838	*****	*****
			839	*	*
			840	*	SUBROUTINE ISSUES CCMANDS FROM TABLE IDENTIFIED BY XR1 UNTIL
			841	**	ZERO ENTRY FOUND. THE PRINT DATA FOR A PRINT COMMAND INCLUDES
			842	*	AN INDICATION OF THE TYPE OF PRINT PLUS THE SPACE OR SKIP
			843	*	OPERATIONS BETWEEN IT AND THE NEXT PRINT COMMAND.
			844	*	*
			845	*****	*****
12A3	34	08 12B3	846	CKCMD	ST CCGO+3,ARR
12A7	3C	FF 1FA0	847	MVI	LINOSA,X'FF'
12AB	4D	01 01 1821	848	CKDCNE	CLC I(2,XR1),ZERO
12B0	CO	81 0000	849	CCGO	B *-*
12B4	1C	01 13AF C1	850	MVC	DOXIO(2),1(,XR1)
12B9	79	F0 00	851	TBF	C(,XR1),X'FO'
12BC	F2	10 EB	852	JT	DOCMD
12BF	78	02 00	853	TBN	O(,XR1),X'02'
12C2	F2	90 E5	854	JF	DOCMD
12C5	3C	01 137D	855	MVI	SAVCMC+4,1
12C9	1C	01 1F97 01	856	MVC	CMDSAV(2),1(,XR1)
12CE	30	F0 1F8D	857	SNS	STAT0,X'E0'
12D2	38	80 C209	858	TBN	SBYTE1,SSW08
12D6	F2	90 0B	859	JF	COLLIC
12D9	CC	87 13B9	860	B	CVD
12DD	1F8D		861	DC	AL2(STAT0)
12DF	186A	12DE	862	DC	AL2(DASH)
12E1	F2	87 08	863	J	SAMASH
12E4	CO	87 13B9	864	COLLIC	B CVD
12E8	1F8C	12E9	865	DC	AL2(STAT0-1)
12EA	186A	12EB	866	DC	AL2(DASH)
12EC	0D 00 1FA1 1FA0		867	SAMASH	CLC LICTR(1),LINOSA
12F2	F2 01 07		868	JNE	LALPD
12F5	3D E6 1F99		869	CLI	FINDEX,X'E6'
12F9	F2 82 12		870	JL	DNTRES
12FC	C2 02 088F		871	LALPC	LA LPD+19,XR2
1300	8C 13 00 1876		872	MVC	O(2C,XR2),PRTOP
1305	0C 00 1FA0 1FA1		873	MVC	LINOSA(1),LICTR
130B	F2 87 C9		874	J	COCCO
130E	36 02 182F		875	DNTRES	A TWLVE,XR2
1312	8C 0B CC 1876		876	MVC	O(12,XR2),PRTOP
1317	3C 0A 1348		877	COCCO	MVI SPMOVE+1,10
131B	3C 0A 1369		878	MVI	SKMOVE+1,1C
131F	CC 87 13B9		879	COCCO	B CVD
1323	1F97	1324	880	DC	AL2(CMDSAV)
1325	188E	1326	881	DC	AL2(SKLINO)
1327	0C 00 1882 188E		882	MVC	SPCP(1),SKLINO
132D	38 C4 1F96		883	TBN	CMDSAV-1,X'04'
1331	F2 1C 30		884	JT	ISSKIP
1334	0D 01 1F97 1FA9		885	CLC	CMDSAV(2),SPACE0-2

E013 5203 LINE PRINTER FUNCTION TESTS

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
	133A	F2 01 06	886	JNE	NOZO
	133D	BC 40 00	887	MVI	O(,XR2),C' '
	1340	F2 87 30	888	J	INCCMD
	1343	36 02 182F	889	NOZO	A TWLVE,XR2
	1347	EC 0A 00 1882	890	SPMOVE	MVC O(11,XR2),SPOP
	134C	0E 00 1FA1 1F97	891	ALC	LICTR(1),CMDSAV
	1352	0D 00 1FA1 1841	892	CLC	LICTR(1),FOLG
	1358	F2 04 18	893	JNH	INCCMD
	135B	0F 00 1FA1 1841	894	SLC	LICTR(1),FOLG
	1361	F2 87 0F	895	J	INCCMD
	1364	36 02 182F	896	ISSKIP	A TWLVE,XR2
	1368	8C 0A 0C 188E	897	SKMOVE	MVC O(11,XR2),SKLINO
	136D	CC 00 1FA1 1F97	898	MVC	LICTR(1),CMDSAV
	1373	0E 00 137D 1825	899	INCCMD	ALC SAVCMD+4(1),TWO
	1379	1C 01 1F97 01	900	SAVCMC	MVC CMDSAV(2),1(,XR1)
	137E	34 02 1F99	901	ST	FINDEX,XR2
	1382	0D 01 1F97 1821	902	CLC	CMDSAV(2),ZERO
	1388	F2 81 1F	903	JE	DOCMD
	138B	39 F0 1F96	904	TBF	CMDSAV-1,X'FO'
	138F	C0 10 1373	905	BT	INCCMD
	1393	38 02 1F96	906	TBN	CMDSAV-1,X'02'
	1397	F2 10 1C	907	JT	DOCMD
	139A	3C 08 1348	908	MVI	SPMOVE+1,11
	139E	3C 08 1369	909	MVI	SKMOVE+1,11
	13A2	3D F0 1F99	910	CLI	FINDEX,X'FO'
	13A6	C0 82 131F	911	BL	COCCO
	13AA	C0 87 1432	912	DOCMD	B XIO
	13AE	0000	913	DOXIO	DC XL2*0'
	1380	36 01 1825	914	A	TWO,XR1
	1384	C0 87 12AB	915	B	CKDONE
			916		
			917	*****	*****
			918	*	CCONVERT 1 HEX BYTE TO ZONED DECIMAL SUBROUTINE
			919	*****	*****
			920	HXBYT	DC XL1*00'
			921	CVD	A ONE,ARR
			922	ST	FROM+5,ARR
			923	A	TWO,ARR
			924	ST	TYBOT+5,ARR
			925	ST	OTORZ+5,ARR
			926	A	ONE,ARR
			927	ST	TIXE+3,ARR
			928	FROM	MVC FROMBYT+5(2),*-*
			929	TYBOT	MVC TOBYT+3(2),*-*
			930	OTORZ	MVC ZROTO+3(2),*-*
			931	FRGYZ	MVC HXBYT(1),*-*
			932	ZROTO	ZAZ *-*(3),DECCO(1)
			933	DECCAN	SLC HXBYT(1),ONE
			934	JL	TIXE
			935	TOBYT	AZ *-*(3),DECCNE(1)
			936	B	DECCAN
			937	TIXE	B *-*
			938		RETURN
			939	*****	*****
			940	*	CHECK FOR BUSY AND DELAY SUBROUTINE
			941	*****	*****
			942	BROUT	ST BSEXIT+3,ARR
			943	SDC	MVC BUSUB(3),BUSCTI
			944	FLOOP	SLC BUSUB(3),ONE
			945	JZ	TOLCNG
			946	TIO	FLOOP,BUSY
			947	J	BSEXIT
			948	TOLONG	B HALT
			949	DC	XL2'E011'
			950	B	SDC
			951	BSEXIT	B *-*
			952	*****	*****
			953	*	XIO ***** XIO *

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LCC OBJECT CODE ADDR STMT SOURCE STATEMENT

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954 *****
955 *
956 * THIS ROUTINE ISSUES AND CHECKS AN EXECUTE I/O COMMAND AS
957 * SELECTED BY THE MAINLINE PROGRAM. LINKAGE TO THIS SUBROUTINE
958 * IS AS FGLLWS-
959 *
960 * B XIO
961 * DC 2,X'Q CODE & CONTROL CODE OF COMMAND'
962 *
963 *****
1472 CC 01 14C2 1858 964 XIO MVC FRMLE+3(2),ADFOLG PUT IN 112 FORM LENGTH ADDR.
1438 36 08 1823 965 SKIXIO A ONE,ARR
143C 34 C8 1455 966 LDCMD+5,ARR LOAD PARAMETER POINT=K
1440 36 08 1823 967 A ONE,ARR
1444 34 08 164F 968 ST EXIT+3,ARR SET UP EXIT
1448 34 C1 1651 969 ST SAVWUN,XR1 SAVE REG. 1
144C 34 02 1653 970 ST SAVTUU,XR2 SAVE REG.2
1450 CC 01 150F 0000 971 LDCMD MVC CMND+2(2),*-* SET UP COMMAND FROM PARAMETER
1456 CC 01 1F9D 150F 972 MVC MSEC5(2),CMND+2 IF ENTRY IS -OXXX-, GO DELAY
145C 39 F0 150E 973 TBF CMND+1,X'FC'
146C F2 10 19 974 JT WT
1463 38 40 020A 975 TBN SBYTE2,SSW11 BRANCH IF SSW11 OFF
1467 F2 90 03 976 JF CSSWOA
146A F0 7C 1B 977 HPL X'1B',X'7C' HALT ON E4
146D 38 20 020A 978 CSSWOA TBN SBYTE2,SSW12 DELAY BETWEEN CMDS.
1471 F2 9C 26 979 JF TICCHK
1474 30 00 1F9D 980 SNS MSEC5,X'0' READ DATA SWITCHES FOR DELAY
1478 3B F0 1F9C 981 SBF MSEC5-1,X'FO' TURN OFF HIGH ORDER 4 BITS OF DELAY
147C 0D FF 080C C800 982 WT CLC LPI(256),LPI 1 MILLISECOND DELAY
1482 0C 3B 0800 0800 983 CLC LPI(6C),LPI
1488 0F 01 1F9D 1823 984 SLC MSEC5,ONE(2) DO FOR DESIRED NUM OF MILLISECS
148E C0 84 147C 985 BH WT
1492 39 F0 150E 986 TBF CMND+1,X'FO' DO NOT EXECUTE COMMAND IF DELAY
1496 C0 10 1644 987 BT XIGEXT
149A C1 E0 14A1 988 TIOCHK TIO ERNRDY,NRDY BRANCH IF NOT READY
149E F2 87 12 989 J SIOCK
14A1 C0 87 1656 990 ERNRDY B STERR BR TO CHECK STATUS
14A5 C0 87 1732 991 B PSTERR GO PRINT STATUS OR 1ST LINES
14A9 C0 87 0222 992 B HALT *PRINTER NOT READY
14AD E010 14AE 993 DC XL2'EC1C' NOT READY ID.
14AF C0 87 149A 994 B TIOCHK
14B3 CC 87 14CA 995 SIOCK B BRGUT
14B7 31 E4 1846 996 LIO LPIADR,LPIAR LOAD LSR ADDRESS REGISTER
14B8 31 E6 184A 997 LIG LPDADR,LPDAR
14BF 31 E0 0000 998 FRMLE LIO *-*,LOFCLG LOAD FORMS LENGTH
14C3 38 80 0209 999 TBN SBYTE1,SSW08 PRINT ON RIGHT CARR.
14C7 F2 9C 04 1000 JF NCTRIT JUMP IF NOT
14CA 3A 08 150E 1001 SBN CMND+1,B'1000' SET MOD.BIT
14CE CC 01 1F91 150F 1002 NCTRIT MVC ERT1(2),CMND+2
14C4 3E 08 150E 1003 TBN CMND+1,B'1000' THIS CMD.FOR RIGHT CARR.
14D8 F2 90 11 1004 JF SKRICA SKIP TO SET LEFT CARR.
14DB 3C EC 15B1 1005 MVI CABY+1,RICABY SET TO CHECK RIGHT CARR.BUSY
14DF 3C E8 1FAA 1006 MVI SPACE0-1,X'EB' SET RIGHT CARR.SPACE 0
14E3 0C 01 1528 1860 1007 MVC LICDSA+5(2),STOAC PUT RIGHT CARR.CTR.IN COMPARE
14E9 F2 87 21 1008 J CMND
14EC 3C E4 15E1 1009 SKRICA MVI CABY+1,CABUSY SET TO CHECK LEFT CARR.BUSY
14F0 3C E0 1FAA 1010 MVI SPACE0-1,X'EO' SET LEFT CARR.SPACE 0
14F4 0C 01 1528 1862 1011 MVC LICGSA+5(2),STOMI PUT LEFT CARR.CTR.IN COMPARE
14FA 3D 09 0A03 1012 CLI RNUM,X'C9' IS THIS H&T PRINT ROUTINE
14FE F2 01 CC 1013 JNE CMND
1501 30 E2 1F8F 1014 WAHOL SNS STAT2,X'E2' GRAB TIMINGS
1505 38 01 1F8E 1015 TBN STAT2-1,B'1' WAIT FOR HOME LATCH
1509 C0 9C 1501 1016 BF WAHCL
150D F3 00 0C 1017 CMND SIO X'0',X'C' COMMAND LOADED DURING EXECUTION
1510 C0 01 18D1 18DD 1018 MVC MAP(2),CHT17 PUT CHART NO. IN MSG.
1516 C0 01 150F 1FAB 1019 CLC CMND+2(2),SPACE0 DO NOT CHECK FOR BUSY IF THIS WAS
151C F2 81 54 1020 JE ISBUSY SPACE WITH ZERO CONTROL CODE
151F 3C E0 1F8D 1021 SNS STAT0,X'EO' GRAB THE LINE CTRS.

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E013 5203 LINE PRINTER FUNCTION TESTS

ERR LCC OBJECT CODE ADDR STMT SOURCE STATEMENT

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1523 0D 00 150F 0000 1022 LICDSA CLC CMND+2(1),*-* LINE CTR.SAME AS CMD.C.C.
1529 F2 81 47 1023 JE ISBUSY
152C C1 E6 1573 1024 TIO ISBUSY,BUSY PRINTER SHOULD BE BUSY
1530 3A 01 1F8B 1025 SBN TAGS,TAG7 SET 1ST LINE PRINT ONLY
1534 0C 00 1780 1553 1026 MVC HLTID(1),NGBALT PUT HALT ID IN MSG
153A C0 87 172E 1027 B ASTERR GO PRINT STATUS
153E C0 87 021A 1028 B PRINT PRINT NOT BUSY MSG
1542 81 1542 1029 DC XL1'81'
1543 1D 1543 1030 DC IL1'29'
1544 1B37 1545 1031 DC AL2(NOBUSY)
1546 C0 87 021A 1032 B PRINT PRINT PRINTER MAP CHART NO.
154A 85 154A 1033 DC XL1'85'
154B CA 154B 1034 DC IL1'10'
154C 1BD1 154D 1035 DC AL2(MAP)
154E C0 87 0222 1036 B HALT
1552 E016 1553 1C37 NOBALT DC XL2'E016' *IF NOT, HALT ON ERROR
1554 38 10 020A 1038 TBN SBYTE2,SSW13 NOT BUSY HALT
1558 F2 90 18 1039 JF ISBUSY SSW- 13 ON (NO ALT.PRTR.) ?
155B 0C 00 1566 1F90 1040 MVC CMODE(1),ERT1-1 SET CMD.CODE IN HALT
1561 C0 87 0222 1041 B HALT DISPLAY CMD.CODE
1565 E000 1566 1042 CMGDE DC XL2'E000'
1567 0C 00 1572 1F91 1043 MVC CNCO(1),ERT1 SET CONTROL CODE IN HALT
156D C0 87 0222 1044 B HALT DISPLAY CONTROL CODE
1571 E000 1572 1045 CNCO DC XL2'E000'
1573 0C 02 1FA5 1838 1046 ISBUSY MVC BUSUB(3),BUSCT
1579 0C 01 15D4 185A 1047 MVC DELAY+3(2),ADBUBY PUT IN LOOP ADDR.
157F 3C 12 1600 1048 MVI BUALT,X'12' SET BUFFER BUSY ID
1583 0C 07 1B44 186A 1049 MVC BUMSG(8),BUFF MOVE BUFFER MSG
1589 C1 E2 15CB 1050 BUBY TIO BSYLP,PBBUSY PRINT BUFF BUSY
158D 3D 0C 0A03 1051 CLI RNUM,X'0C' THIS THE RIPPLE PRINT ROUT.
1591 F2 01 08 1052 JNE SKIDD
1594 6C 5F 5F 5F 1053 FRSMV MVC 95(96,XR1),95(,XR2) RIPPLE MOVE 96,120,OR 132 CHAR. INTO
1598 6C 00 00 60 1054 SNDMV MVC 0(1,XR1),96(,XR2) THE DATA AREA FROM PFIELD
159C C0 87 0212 1055 SKIDD B TEST
15A0 0C 01 15D4 185C 1056 MVC DELAY+3(2),ADCABY GO READ DATA SWITCHES
15A6 3C 13 1600 1057 MVI BUALT,X'13' PUT IN LOOP ADDR.
15AA 0C 07 1B44 185A 1058 MVC BUMSG(8),CARR SET CARR.HALT ID
15B0 C1 00 15CB 1059 CABY TIO BUMSG(8),CARR MOVE CARR.MSG
15B4 0C 01 15D4 185E 1060 MVC DELAY+3(2),ADPIBY CARRIAGE BUSY
15BA 3C 14 1600 1061 MVI BUALT,X'14' PUT IN LOOP ADDR.
15BE 0C 07 1B44 1862 1062 MVC BUMSG(8),PRIN SET PRINTER BUSY HALT ID
15C4 C1 E6 15CB 1063 PIBY TIO BSYLP,BUSY MOVE PRINTER BUSY MSG
15C8 F2 87 36 1064 J CHRDY PRINTER BUSY
15CB CF 02 1FA5 1823 1065 BSYLP SLC BUSUB(3),ONE
15D1 C0 01 0000 1066 DELAY BNZ *-* TRY FOR ABOUT 3 SECONDS TO
15D5 C0 87 1656 1067 B STERR CLEAR BUSY
15D9 C0 87 1609 1068 B SDEHF CHECK FOR STATUS ERROR
15DD 3A 01 1F8B 1069 SBN TAGS,TAG7 SET PRINT 1ST LINES ONLY FLAGS
15E1 0C 00 1780 1600 1070 MVC HLTID(1),BUALT PUT HALT ID IN MSG
15E7 C0 87 1732 1071 B PSTERR GO PRINT STATUS OR 1ST LINES
15EB C0 87 021A 1072 B PRINT PRINT BUSY MSG
15EF 81 15EF 1073 CC XL1'81'
15F0 1B 15F0 1074 DC IL1'27'
15F1 1B52 15F2 1075 DC AL2(BUTOLO)
15F3 C0 87 C21A 1076 B PRINT PRINT PRINTER MAP CHART NO.
15F7 85 15F7 1077 DC XL1'85'
15F8 CA 15F8 1078 DC IL1'10'
15F9 1BD1 15FA 1079 DC AL2(MAP)
15FB C0 87 0222 1080 B HALT BUSY HALT
15FF E000 1600 1081 BUALT DC XL2'E000'
1601 C1 E0 163C 1082 CHRDY TIO NRDYER,NRDY
1605 C0 87 1656 1083 B STERR BR TO CHECK ERR STATUS
1609 C0 87 1732 1084 SDEHF B PSTERR GO PRINT STATUS OR 1ST LINES
160D 3D 00 0A03 1085 CLI RNUM,X'CD' IN UNPRTABLE CHAR TEST
1611 F2 81 3C 1086 JE XIOEXT YES , GET OUT
1614 38 02 1F93 1087 TBN STAT6,B'10' UNPRTABLE BIT ON
1618 F2 90 29 1088 JF XIOEXT
161B CC 87 C21A 1089 B PRINT PRINT UNPRTABLE CHAR SKIPPED

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EC13 5203 LINE PRINTER FUNCTION TESTS

ERR LCC	OBJECT	CCDE	ADDR	STMT	SOURCE	STATEMENT
161F	C1		161F	1090	DC	XL1'C1'
1620	1D		1620	1091	DC	IL1'29'
1621	195D		1622	1092	DC	AL2(DEPP)
1623	E00C		1624	1093	DC	XL2'E00C'
1625	CC 01	18D1 18DB		1094	MVC	MAP(2),CHT16
162B	CC 87	021A		1095	B	PRINT
162F	85		162F	1096	DC	XL1'85'
163C	QA		1630	1097	DC	IL1'10'
1631	18D1		1632	1098	DC	AL2(MAP)
1633	CO 87	C222		1099	B	HALT
1637	E00C		1638	1100	DC	XL2'E00C'
1639	F2 87	C8		1101	J	XIOEXT
163C	CO 87	1656		1102	NRDYER	B STERR
1640	CO 87	1732		1103	B	PSTERR
1644	35 01	1651		1104	XIOEXT	L SAVWUN,XR1
1648	35 02	1653		1105	L	SAVTUU,XR2
164C	CO 87	0000		1106	EXIT	B *-*
165C	C000		1651	1107	SAVKUN	DC IL2'0'
1652	0000		1653	1108	SAVTUU	DC IL2'0'
				1109		
				1110	*****	*****
				1111	* STERR	***** STERR *
				1112	*****	*****
				1113	*	*
				1114	* CHECK FOR STATUS ERROR	*
				1115	*	*
				1116	*****	*****
1654	0000		1655	1117	STSA1	DC XL2'0'
				1118		
1656	34 08	172D		1119	STERR	ST STEXIT+3,ARR
165A	34 01	1655		1120	ST	STSA1,XR1
165E	3C E3	1F93		1121	SNS	STAT6,X'E3'
1662	39 F6	1F92		1122	TBF	STAT6-1,B'11110110'
1666	F2 90	07		1123	JF	YESER
1669	39 E0	1F93		1124	TBF	STAT6,B'11100000'
166E	F2 10	80		1125	JT	FOADD
167C	3B 02	1F8B		1126	YESER	SBF TAGS,TAG6
1674	C2 01	1A4C		1127	LA	STATAB-19,XR1
1678	C2 01	13		1128	NOERR	LA 19(XR1),XR1
167B	7D FF	00		1129	CLI	O(XR1),X'FF'
167E	F2 81	9F		1130	JE	FOADD
1681	1C 00	168C 00		1131	MVC	STECK1+1,0(1,XR1)
1686	1C 00	169C 01		1132	MVC	STECK2+1,1(1,XR1)
168B	39 00	1F92		1133	STECK1	TBF STAT6-1,-*
168F	39 0C	1F93		1134	STECK2	TBF STAT6,-**
1693	CO 10	1678		1135	BT	NCERR
1697	1C 00	1780 02		1136	MVC	HLTID(1),2(XR1)
169C	1C 0F	1A5E 12		1137	MVC	IBEP(16),18(XR1)
16A1	3A 02	1F8B		1138	SBN	TAGS,TAG6
16A5	30 E6	1F95		1139	SNS	STAIX,X'E6'
16A9	0D 01	1F95 184A		1140	CLC	STAIX(2),LPDADR
16AF	F2 82	09		1141	JL	DABOT
16B2	0D 01	1F95 184C		1142	CLC	STAIX(2),DADEND
16B8	F2 04	09		1143	JNH	SABTR
16BB	0C 04	181A 19EA		1144	DABOT	MVC HANO(5),INVC-9
16C1	F2 C7	62		1145	J	RESTO
16C4	0F 00	1F95 1844		1146	SABTR	SLC STAIX(1),QNTUTR
16CA	3D 18	1F95		1147	CLI	STAIX,X'18'
16CE	F2 84	27		1148	JH	GDEEC
16D1	3D 10	1F95		1149	CLI	STAIX,X'10'
16D5	F2 84	17		1150	JH	AC107
16D8	3D 0D	1F95		1151	CLI	STAIX,X'0D'
16DC	F2 02	07		1152	JNL	AD119
16DF	3D C4	1F95		1153	CLI	STAIX,X'04'
16E3	F2 84	09		1154	JH	AD107
16E6	CE 0C	1F95 1843		1155	AD119	ALC STAIX(1),UNITIN
16EC	F2 87	CF		1156	J	DIVID
16EF	0E 0C	1F95 1842		1157	AD107	ALC STAIX(1),UNOSVN

EC13 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT	CODE	ADDR	STMT	SOURCE	STATEMENT
16F5	F2 87	C6		1158	J	DIVID
16F8	0F 00	1F95 1833		1159	GODEC	SLC STAIX(1),TWYWUN
16FE	3C 00	1F94		1160	DIVID	MVI STAIX-1,X'00'
1702	0F 00	1F95 1829		1161	SUBGAN	SLC STAIX(1),FCUR
1708	F2 82	0A		1162	JL	AWDUN
1708	0E 00	1F94 1823		1163	ALC	STAIX-1(1),ONE
1711	CO 87	1702		1164	B	SUBGAN
1715	CO 87	1389		1165	AWDUN	B CVD
1719	1F94		171A	1166	DC	AL2(STAIX-1)
171B	181A		171C	1167	DC	AL2(HANO)
171D	F2 87	C6		1168	J	RESTO
1720	0E 01	172D 1829		1169	FOADD	ALC STEXIT+3(2),FOUR
1726	35 01	1655		1170	RESTO	L STSA1,XR1
172A	CO 87	C000		1171	STEXIT	B *-*
				1172		
				1173	*****	*****
				1174	* PRINT STATUS ERR AND EXECUTE HALT SUBROUTINE	
				1175	*****	*****
172E	30 E3	1F93		1176	ASTERR	SNS STAT6,X'E3'
1732	34 08	181F		1177	PSTERR	ST PREXIT+3,ARR
1736	0C 04	1A11 1B74		1178	MVC	NACMD(5),TFEL
173C	38 08	1F90		1179	TBN	ERT1-1,B'1000'
1740	F2 90	06		1180	JF	SKRIG
1743	0C 04	1A11 1B6F		1181	MVC	NACMD(5),THGIR
1749	CO 87	1389		1182	SKRIG	B CVD
174D	1F91		174E	1183	DC	AL2(ERT1)
174F	18B3		1750	1184	DC	AL2(DSKPOP)
1751	0C 00	18A5 18B3		1185	MVC	POPSUD(1),DSKPOP
1757	0C 10	1A23 18AB		1186	MVC	LACMND(17),DUSPOP
175D	38 02	1F90		1187	TBN	ERT1-1,B'10'
1761	F2 10	06		1188	JT	SEIFSK
1764	0C 05	1A18 1A29		1189	MVC	LACMND-11(6),KNALB
176A	38 04	1F90		1190	SEIFSK	TBN ERT1-1,B'100'
176E	F2 90	06		1191	JF	GOMOST
1771	0C 0A	1A23 18B3		1192	MVC	LACMND(11),DSKPOP
1777	CO 87	021A		1193	GOMOST	B PRINT
1778	C1		177B	1194	DC	XL1'C1'
177C	25		177C	1195	DC	IL1'37'
177D	1A23		177E	1196	DC	AL2(LACMND)
177F	E000		1780	1197	HLTID	DC XL2'E000'
1781	CO 87	021E		1198	B	UNPACK
1785	02		1785	1199	DC	IL1'2'
1786	1F93		1787	1200	DC	AL2(STAT6)
1788	1A3A		1789	1201	DC	AL2(YBATS)
178A	CO 87	021A		1202	B	PRINT
178E	81		178E	1203	DC	XL1'81'
178F	11		178F	1204	DC	IL1'17'
1790	1A3A		1791	1205	DC	AL2(YBATS)
1792	38 01	1F8B		1206	TBN	TAGS,TAG7
1796	F2 10	7F		1207	JT	TESER
1799	CO 87	021A		1208	B	PRINT
179D	81		179D	1209	DC	XL1'81'
179E	24		179E	1210	DC	IL1'36'
179F	1A5E		17A0	1211	DC	AL2(1BEP)
17A1	39 CO	1F93		1212	TBF	STAT6,B'11C0G0CC'
17A5	F2 90	1C		1213	JF	DOHALT
17AB	39 10	1F92		1214	TBF	STAT6-1,B'10000'
17AC	F2 90	15		1215	JF	DOHALT
17AF	38 04	1F92		1216	TBN	STAT6-1,B'100'
17B3	F2 90	0E		1217	JF	DOHALT
17B6	CO 87	021A		1218	B	PRINT
17BA	81		17BA	1219	DC	XL1'81'
17BB	10		17BB	1220	DC	IL1'16'
17BC	1B1A		17BD	1221	DC	AL2(HANC)
17BE	0C 01	1B17 1A29		1222	MVC	HAMNO(2),KNALB
17CA	GC 01	18D1 18D5		1223	DOHALT	MVC MAP(2),CHT11
17CA	CC 87	021A		1224	B	PRINT
17CE	81		17CE	1225	DC	XL1'81'

EC13 5203 LINE PRINTER FUNCTION TESTS

E013 5203 LINE PRINTER FUNCTION TESTS

EPR	LCC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
17CF	CA		17CF	1226	DC	IL1*10*
17D0	18D1		17D1	1227	DC	AL2(MAP)
17D2	CO 87 021A			1228	B	PRINT
17D6	15		17D6	1229	DC	XL1*15*
17D7	OC 01 17E2 1780			1230	MVC	PUIDIN(2),HLTID
17DD	CC 87 C222			1231	B	HALT
17E1	E000		17E2	1232	DC	XL2*E000*
17E3	38 10 020A			1233	TBN	SBYTE2,SSW13
17E7	F2 90 2E			1234	JF	TESER
17EA	38 04 1F92			1235	TBN	STAT6-1,B*100*
17EE	F2 90 27			1236	JF	TESER
17F1	3C 0A 17F6			1237	MVI	BUTIN+1,X*0A*
17F5	3D 0A 1F94			1238	BUTIN	CL I STAIX-1,X*0A*
17F9	F2 82 1C			1239	JL	MGWIT
17FC	OE 00 1F94 182A			1240	ALC	STAIX-1(1),SIX
1802	OE 00 17F6 182D			1241	ALC	BUTIN+1(1),XTEN
1808	CO 87 17F5			1242	B	BUTIN
180C	OC 00 1817 1F94			1243	MGWIT	MLESID(1),STAIX-1
1812	CO 87 0222			1244	B	HALT
1816	E000		1817	1245	MLESID	DC XL2*E000*
1818	38 01 1F8B			1246	TESER	SBF TAGS,TAG7
181C	CO 87 0000			1247	PREXIT	B *-*

SPACE 5
 PUT ID INTO HALT
 *STATUS ERROR HALTS
 SSW -13 ON(NO ALT.PRTR.) ?
 HMR.ECHO CHK.?
 PUT
 HAMMER
 NUMBER
 INTO
 THE
 HALT
 LIGHTS
 DISPLAY HAMMER NO.
 RESET 1ST LINE ONLY FLAG
 RETURN

ERR	LCC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
				1249	*****	
				1250	* CONSTANTS *****	
				1251	*****	
1820	0000		1821	1252	ZERO	DC IL2*0*
1822	0001		1823	1253	ONE	DC IL2*1*
1824	0002		1825	1254	TWO	DC IL2*2*
1826	0003		1827	1255	TREE	DC IL2*3*
1828	0004		1829	1256	FCUR	DC IL2*4*
182A	C6		182A	1257	SIX	DC IL1*6*
182B	0008		182C	1258	EIGHT	DC IL2*8*
182D	1C		182D	1259	XTEN	DC XL1*10*
182E	000C		182F	1260	TWLV	DC IL2*12*
1830	0011		1831	1261	SVNTEN	DC IL2*17*
1832	0015		1833	1262	TWYHUN	DC IL2*21*
1834	001A		1835	1263	TWYSIX	DC IL2*26*
1836	C188C0		1838	1264	BUSCT	DC XL3*18800*
1839	C40000		183B	1265	BUSCTI	DC XL3*40000*
183C	2A2A		183D	1266	FL42	DC XL2*2A2A*
183E	5555		183F	1267	FL85	DC XL2*5555*
1840	7070		1841	1268	FOLG	DC XL2*7070*
1842	6B		1842	1269	UNOSVN	DC IL1*107*
1843	77		1843	1270	UNITIN	DC IL1*119*
1844	7B		1844	1271	ONTUTR	DC IL1*123*
1845	08C0		1846	1272	LPIADR	DC XL2*800*
1847	082F		1848	1273	TUFORF	DC XL2*82F*
1849	087C		184A	1274	LPDADR	DC XL2*87C*
184B	08FF		184C	1275	DACEND	DC XL2*8FF*
184D	1F00		184E	1276	SIADD	DC XL2*1F00*
184F	1D4C		1850	1277	SFHU	DC IL2*7500*
1851	F0		1851	1278	DECZRO	DC DL1*0*
1852	F1		1852	1279	DECONE	DC DL1*1*
1853	183D		1854	1280	ADFL42	DC AL2(FL42)
1855	183F		1856	1281	ADFL85	DC AL2(FL85)
1857	1841		1858	1282	ADFOLG	DC AL2(FOLG)
1859	1589		185A	1283	ADBUBY	DC AL2(BUBY)
185B	1580		185C	1284	ADCABY	DC AL2(CABY)
185D	15C4		185E	1285	ADPIBY	DC AL2(PIBY)
185F	1F8D		1860	1286	STOAD	DC AL2(STATO)
1861	1F8C		1862	1287	STOM1	DC AL2(STATO-1)
				1288		
				1289	*****	
				1290	* PRINTOUTS *****	
				1291	*****	
1863	D3C9D5C5		1866	1292	DC	CL4*LINE*
1867	404040		1869	1293	DC	CL3* ' '
186A	40		186A	1294	DASH	DC CL1* ' '
186B	614040D7D9C9D5E3		1876	1295	PRTOP	DC CL12*/ PRINT &*
1873	40404050			1295		
1877	614040E2D7C1C3C5		1882	1296	SPOP	DC CL12*/ SPACE *
187F	40404040			1296		
1883	61E2D2C9D74CE3D6		188C	1297	DC	CL10*/SKIP TO *
188B	4040			1297		
188D	4040		188E	1298	SKLIND	DC CL2* ' '
188F	D3C9D5C540		1893	1299	DC	CL5*LINE*
1894	404040		1896	1300	DC	CL3* ' '
1897	61D7D9C9D5E350		189D	1301	DC	CL7*/PRINT&*
189E	E2D7C1C3C540		18A3	1302	DC	CL6*SPACE*
18A4	4040		18A5	1303	POPSUD	DC CL2* ' '
18A6	4C4040		18A8	1304	DUSPOP	DC CL3* ' '
18A9	E2D2C9E740E3D6		18AF	1305	DC	CL7*SKIP TO*
18B0	40404040		18B3	1306	DSKPOP	DC CL4* ' '
18B4	D5D640E2E3C1E3E4		18C6	1307	DC	CL19*NO STATUS CHK.BUT *
18BC	E240C3C8D24BC2E4			1307		
18C4	E34040			1307		
18C7	404040404040		18CC	1308	WICH	DC CL6* ' '
18CD	C3C1D9C948D3C9D5		18E0	1309	LICDER	DC CL20*CARR.LINE CTR.IN ERR*
18D5	C540C3E3D94BC9D5			1309		
18DD	40C5D9D9			1309		

FORM LENGTH 42
FORM LENGTH 85
FORM LENGTH 112

IMAGE ADDR.
DATA ADDR.

RIGHT CARR.CTR.ADDR.
LEFT CARR.CTR.ADDR

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
18E1	6060C6D6D5D440D3	18EE	1310	DC	CL14*--FORM LENGTH *
18E9	C5D5C7E3C840		1310		
18EF	404040	18F1	1311	DC	CL3*
18F2	E3E3E3	18F4	1312	DC	CL3*TTT*
18F5	7DC850E37D40D7D9	1904	1313	DC	CL16**H&T** PRINT TEST*
18FD	C9D5E34CE3C5E2E3		1313		
1905	D7C1D7C5D540E2C5	1917	1314	DC	CL19*PAPER SETTLING TEST*
190E	E3E3D3C9D5C740E3		1314		
1915	C5E2E3		1314		
1918	E6D6D9E2C540C3C1	192C	1315	DC	CL21*WGRSE CASE PRINT TEST*
1920	E2C540D7D9C9D5E3		1315		
1928	40E3C5E2E3		1315		
192D	D9C9D7D7D3C540D7	1938	1316	DC	CL12* RIPPLE PRINT*
1935	D9C9D5E3		1316		
1939	E3C5E2E340C6D6D9	1940	1317	DC	CL8*TEST FOR*
1941	40E4D5E7E9E3C1C2	194F	1318	DC	CL15* UNPRTABLE CHAR*
1949	D3C540C3C8C1D9		1318		
1950	40C9D540C4C1E3C1	195D	1319	DC	CL14* IN DATA FIELD*
1958	40C6C9C5E3C4		1319		
195E	40C2C9E340D5D6E3	196A	1320	DC	CL13* BIT NOT SET *
1966	40E2C5E340		1320		
196B	E6C9E3C84CE4D5D7	197D	1321	DC	CL19*WITH UNPRTABLE DATA*
1973	D9E3C1C2D3C540C4		1321		
197E	C1E3C1		1321		
197E	C5D5E3C5D940D7D9	19AB	1322	DC	CL46*ENTER PRTR.CMD.CODE OR DELAY TIME IN ADDR.SW**S*
1986	E3D94BC3D4C44BC3		1322		
198E	D6C4C540D6D940C4		1322		
1996	C5D3C1E40E3C9D4		1322		
199E	C540C9D540C1C4C4		1322		
19A6	D94BE2E67DE2		1322		
19AC	D9C5E2C5E340C8C1	19C6	1323	DC	CL27* RESET HALT--REPEAT FOR MORE*
19B4	D3E36C6D9C5D7C5		1323		
19BC	C7E340C6D6D940D4		1323		
19C4	D6D9C5		1323		
19C7	6060C5D5E3C5D960	19E5	1324	DC	CL31*--ENTER-0000-TO BEGIN EXECUTION*
19CF	F0F0F0F0C60E3D640		1324		
19D7	E2C5C7C9D540C5E7		1324		
19DF	C5C3E4E3C9D6D5		1324		
19E6	C9D5E5D3C448C3D4	19F3	1325	DC	CL14* INVLD.CMD XXXX*
19EE	C440E7E7E7E7		1325		
19F4	C5C5E3D5C9C5E2	19FA	1326	DC	CL7*ENTRIES*
19FB	E7E7E7E7	19FE	1327	DC	CL4*XXXX*
19FF	D3C1E2E340C3D6D4	1A0C	1328	DC	CL14*LAST COMMAND--*
1A07	D4C1D5C46C6C		1328		
1A0D	E3C5C6E340	1A11	1329	DC	CL5*LEFT *
1A12	40D5DCE5C5404040	1A23	1330	DC	CL18* NONE
1A1A	4040404040404040		1330		
1A22	4040		1330		
1A24	404040404040	1A29	1331	DC	CL6*
1A2A	E2E3C1E3E4E240C2	1A2E	1332	DC	CL13* STATUS BYTES *
1A32	E8E3C5E240		1332		
1A37	40404040	1A3A	1333	DC	CL4*
1A3B	C7E9C9D6E9C9E3E8	1A4E	1334	DC	CL20*PRIORITY ERR BIT IS *
1A43	40C5D9D94CC2C9E3		1334		
1A4B	40C5E24C		1334		
1A4F	4040404040404040	1A5E	1335	DC	CL16*
1A57	4C404C4C4C404040		1335		
		1A5F	1336	EQU	*
1A5F	008004	1A61	1337	DC	XL3*008004* CHAIN SYNC CHK.,HALT 04
1A62	C3C8C1C9D540E2E8	1A71	1338	DC	CL16*CHAIN SYNC CHK.*
1A6A	C5C340C3C8D24B40		1338		
1A72	C4C4C5	1A74	1339	DC	XL3*004005* INCR SYNC OR SLIP CHK.,HALT 05
1A75	C9D5C3D940E2E8D5	1A84	1340	DC	CL16*INCR SYNC/SLIP *
1A7L	C361E2E3C9D74040		1340		
1A85	10C0C6	1A87	1341	DC	XL3*100006* INCR FAILURE CHK.,HALT 06
1A88	C9L5C3D940C6C1C9	1A97	1342	DC	CL16*INCR FAILURE CHK*
1A90	D314D5C54CC3C8D2		1342		
1A98	C4C0C5	1A9A	1343	DC	XL3*04G009* HMR ECHO CHK.,HALT 09

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
1A9B	C8C1D4C4C5D940C5	1AAA	1344	DC	CL16*HAMMER ECHO CHK.*
1AA3	C3C8D640C3C8D24B		1344		
1AAB	02000A	1AAD	1345	DC	XL3*02000A* ANY HMR ON CHK.,HALT 0A
1AAE	C1D5E840C8C1D4D4	1ABD	1346	DC	CL16*ANY HAMMR ON CHK*
1AB6	D940D6D540C3C8D2		1346		
1ABE	002007	1ACO	1347	DC	XL3*002007* HAMMER UNIT THERMAL CHK.,HALT 07
1AC1	C8D4D94BE3C8C5D9	1ADO	1348	DC	CL16*HMR.THERMAL CHK.*
1AC9	C4C1D340C3C8D24B		1348		
1AD1	800001	1AD3	1349	DC	XL3*800001* CARR.SYNC CHK.,HALT 01
1AD4	C3C1D5D94BE2E8D5	1AE3	1350	DC	CL16*CARR.SYNC CHK.*
1ADC	C340C3C8D24B4040		1350		
1AE4	400002	1AE6	1351	DC	XL3*400002* CARR.SPACE CHK.,HALT 02
1AE7	C3C1D9D94BE2D7C1	1AF6	1352	DC	CL16*CARR.SPACE CHK.*
1AEF	C3C540C3C8D24B40		1352		
1AF7	200003	1AF9	1353	DC	XL3*200003* FORMS JAM CHK.,HALT 03
1AFA	C6D6D9D4E240D1C1	1B09	1354	DC	CL16*FORMS JAM CHK.*
1B02	D440C3C8D24B4040		1354		
1B0A	FF	1B0A	1355	DC	XL1*FF*
1B0B	C8C1D4C4C5D940D5	1B17	1356	DC	CL13*HAMMER NO.*
1B13	D64B404040		1356		
1B18	404040	1B1A	1357	DC	CL3*
1B1B	F5F2F0F340D5D6E3	1B28	1358	DC	CL14*5203 NOT BUSY *
1B23	40C2E4E2E84C		1358		
1B29	C1C6E3C5D940E2C9	1B37	1359	DC	CL15*AFTER SID ACPTD*
1B31	D640C1C3D7E3C4		1359		
1B38	F5F2F0F340	1B3C	1360	DC	CL5*5203 *
1B3D	4040404040404040	1B44	1361	DC	CL8*
1B45	40C2E4E2E840E3D6	1B52	1362	DC	CL14* BUSY TOO LONG*
1B4D	D640C3D6D5C7		1362		
1B53	C3C1D9D9C9C1C7C5	1B5A	1363	DC	CL8*CARRIAGE*
1B5B	D7D9C9D5E3C5D940	1B62	1364	DC	CL8*PRINTER *
1B63	40C2E4E2E840E3D6	1B6A	1365	DC	CL8* BUFFER *
1B68	D9C9C7C8E3	1B6F	1366	DC	CL5*RIGHT*
1B70	D3C5C6E340	1B74	1367	DC	CL5*LEFT*
1B75	C3D4C44BC4C5C3D6	1B84	1368	DC	CL16*CMD.DECODE ERROR*
1B7D	C4C540C5D9D6D9		1368		
1B85	D4C1D2C540F5F2F0	1B91	1369	DC	CL13*MAKE 5203 *
1B8D	F340404040		1369		
1B92	40D9C5C1C4E8	1B97	1370	DC	CL6* READY*
1B98	F5F2F0F340C9E240	1BAD	1371	DC	CL22*5203 IS RDY,SHD.BE NOT*
1BA0	D9C4E86BE2C8C44B		1371		
1BA8	C2C540D5D6E3		1371		
1BAE	40D9C4E8	1BB1	1372	DC	CL4* RDY*
1BB2	F5F2F0F340C2E4E2	1BBB	1373	DC	CL10*5203 BUSY *
1BBA	E840		1373		
1BBE	E6C8C5D540D5D6E3	1BC7	1374	DC	CL12*WHEN NOT RDY*
1BC4	40D9C4E8		1374		
1BC8	D7E3D94BC3C8E34B	1BD1	1375	DC	CL10*PTR.CHT.*
1BDC	4040		1375		
1BD2	F1F0	1BD3	1376	DC	CL2*10*
1BD4	F1F1	1BD5	1377	DC	CL2*11*
1BD6	F1F3	1BD7	1378	DC	CL2*13*
1BD8	F1F4	1BD9	1379	DC	CL2*14*
1BDA	F1F6	1BDB	1380	DC	CL2*16*
1BDC	F1F7	1BDD	1381	DC	CL2*17*
1BDE	F1F9	1BDF	1382	DC	CL2*19*
1BE0	F5F2F0F340C9E240	1BEF	1383	DC	CL16*5203 IS NOT RDY,*
1BE8	D5D6E340D9C4E86B		1383		
1BF0	E2C8C44BC2C540D9	1BF9	1384	DC	CL10*SHD.BE RDY*
1BF8	C4E8		1384		
1BFA	F5F2F0F340	1BFE	1385	DC	CL5*5203 *
1BFF	4040404040	1C03	1386	DC	CL5*
1C04	4040404040404040	1C0C	1387	DC	CL9*
1C0C	40		1387		
1C0D	C9E240C2E4E2E86B	1C22	1388	DC	CL22* IS BUSY,NO CMD.ISSUED*
1C15	D5D640C3D4C44BC9		1388		
1C1D	E2E2E4C5C440		1388		
1C23	40C4C1E3C1	1C27	1389	DC	CL5* DATA*

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LCC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
1C28	C9C4C1C7C5	1C2C	1390	EGAMI	DC CL5*IMAGE*
1C2D	4C404C404C	1C31	1391	LEBAL	DC CL5*
1C32	40C1C4C4D548D9C5	1C42	1392	ARNAL	DC CL17* ADDR.REG.LIC ERR*
1C3A	C748D3C9D640E5D9		1392		
1C42	D5		1392		
1C43	C9E240	1C45	1393		DC CL3*IS*
1C46	4040404C	1C49	1394	DIRIS	DC CL4*
1C4A	40E2C8C44BC2C540	1C51	1395		DC CL8*SKD.BE*
1C52	40404040	1C55	1396	DIRSB	DC CL4*
1C56	D5D66CD6D740C3C1	1C77	1397	NOPLIO	DC CL34*NO-OP LATCH SET WITH NO SID ISSUED*
1C5E	E3C3C84CE2C5E340		1397		
1C66	E6C9E3C840C5D640		1397		
1C6E	E2C9D64CC9E2FE4		1397		
1C76	C5C4		1397		
1C78	E3C8C1C9D540C3C8	1C9C	1398	CHACHE	DC CL37*CHAIN CHK. IMAGE & CHAIN DO NOT AGREE*
1C80	D2486BC9D4C1C7C5		1398		
1C8B	405040C2C8C1C9D5		1398		
1C90	40E4B64C0506E340		1398		
1C98	C1C7D5C5C5		1398		
			1399		
			1400	*****	
			1401	* RESERVED STORAGE *****	
			1402	*****	
1F60		1403		CRG	X*1F60*
		1F60	1404	ETABLE	EQU *
1F60	0000000000000000	1F89	1405		DC XL42*0*
1F68	C0C0C0C0C0C00000		1405		
1F70	0000000000C00000		1405		
1F78	0000000000000000		1405		
1F8C	C0C0C0C0C0000000		1405		
1F88	0000		1405		
1F8A	FF	1F8A	1406		DC XL1*FF*
1F8B	00	1F8B	1407	TAGS	DC XL1*0*
1F8C		1F8D	1408	STAT0	DS CL2
1F8E		1F8F	1409	STAT2	DS CL2
1F90		1F91	1410	ERT1	DS CL2
1F92		1F93	1411	STAT6	DS CL2
1F94		1F95	1412	STAIX	DS CL2
1F96		1F97	1413	CMDSAV	DS CL2
1F98		1F99	1414	FINDEX	DS CL2
1F9A		1F9B	1415	SINDEX	DS CL2
1F9C		1F9D	1416	MSECS	DS CL2
1F9E		1F9F	1417	WORK	DS CL2
1FA0	00	1FA0	1418	LINDSA	DC XL1*0*
1FA1	00	1FA1	1419	LICTR	DC XL1*0*
1FA2	CC	1FA2	1420	RICTR	DC XL1*0*
1FA3	000000	1FA5	1421	BUSUB	DC XL3*0*
			1422	*	
			1423	** TABLE OF PRINTER COMMANDS	
			1424	*	
1FA6	E4C1	1FA6	1425	CHDTAB	EQU *
1FA8	E200	1FA7	1426		DC XL2*E401*
1FAA	E000	1FA9	1427		DC XL2*E200*
1FAC	E200	1FAB	1428	SPACE0	CC XL2*E000*
1FAE	E001	1FAD	1429		DC XL2*E200*
1FBC	E2C0	1FAF	1430		DC XL2*E001*
1FB2	E002	1FB1	1431		DC XL2*E200*
1FB4	E2C0	1FB3	1432		DC XL2*E002*
1FB6	E003	1FB5	1433		DC XL2*E200*
1FB8	E201	1FB7	1434		DC XL2*E003*
1FBA	E2C2	1FB9	1435		DC XL2*E201*
1FBC	E203	1FBB	1436		DC XL2*E202*
1FBE	E200	1FBD	1437		DC XL2*E203*
1FC0	E411	1FBF	1438		DC XL2*E200*
1FC2	E616	1FC1	1439		DC XL2*E411*
1FC4	E601	1FC3	1440		DC XL2*E616*
1FC6	0000	1FC5	1441		DC XL2*E601*
		1FC7	1442		DC XL2*0*

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
			1443		
1FC8	E42A	1FC8	1444	SPSK	EQU *
1FCA	E001	1FC9	1445		DC XL2*E42A*
1FCC	E455	1FCB	1446		DC XL2*E001*
1FCE	E001	1FCD	1447		DC XL2*E455*
1FD0	E470	1FCF	1448		DC XL2*E001*
1FD2	E001	1FD1	1449		DC XL2*E470*
1FD4	E002	1FD3	1450		DC XL2*E001*
1FD6	E003	1FD5	1451		DC XL2*E002*
1FD8	E000	1FD7	1452		DC XL2*E003*
		1FD9	1453		DC XL2*E000*
			1454		
			1455	*****	
			1456	* EQUATES *****	
			1457	*****	
0008	1458	ARR		EQU	X*8*
0001	1459	XR1		EQU	X*1*
0002	1460	XR2		EQU	X*2*
080C	1461	LPI		EQU	X*800*
082F	1462	ATETUF		EQU	X*82F*
087C	1463	LPD		EQU	X*87C*
0877	1464	ATSVNS		EQU	X*877*
0878	1465	UCSFLG		EQU	X*878*
08C3	1466	DASTU		EQU	X*8C3*
08D8	1467	ATEFIV		EQU	X*8D8*
08DB	1468	ATEATE		EQU	X*8DB*
08FF	1469	PRDAT		EQU	X*8FF*
1F77	1470	EDIMAG		EQU	X*1F77*
1F84	1471	PFIELD		EQU	X*1F84*
0030	1472	LOFOLG		EQU	X*E0*
00E4	1473	LPIAR		EQU	X*E4*
00E6	1474	LPDAR		EQU	X*E6*
0212	1475	TEST		EQU	X*212*
0216	1476	LINK		EQU	X*216*
021A	1477	PRINT		EQU	X*21A*
021E	1478	UNPACK		EQU	X*21E*
0222	1479	HALT		EQU	X*222*
022A	1480	LOAD		EQU	X*22A*
00E0	1481	NRDY		EQU	X*E0*
00E6	1482	BUSY		EQU	X*E6*
00E4	1483	CABUSY		EQU	X*E4*
00EC	1484	RICABY		EQU	X*EC*
00E2	1485	PBBUSY		EQU	X*E2*
			1486	* INDICATOR FLAGS.	
0002	1487	TAG6		EQU	X*2*
0001	1488	TAG7		EQU	X*1*
			1489	* SENSE SWITCH EQUATES.	
0208	1490	SBYTE0		EQU	X*208*
0209	1491	SBYTE1		EQU	X*209*
020A	1492	SBYTE2		EQU	X*20A*
			1493	* CONTROL PGM SENSE SWITCHES	
0004	1494	SSW05		EQU	X*4*
0C80	1495	SSW08		EQU	X*80*
			1496	* SECTION SENSE SWITCHES.	
C040	1497	SSW11		EQU	X*40*
0020	1498	SSW12		EQU	X*20*
0010	1499	SSW13		EQU	X*10*

E013 5203 LINE PRINTER FUNCTION TESTS

ERR LOG OBJECT CODE ADDR STMT SOURCE STATEMENT

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1501
1502
1503 *          COMMENT CARDS
1504
1505 ***** SECTION E01 ROUTINES *****
1506 * ROUT.01 - SENSE CMD TEST
1507 * ROUT.02 - TIO NOT RDY TO NOT RDY PRTR.
1508 * ROUT.03 - TIO BUSY TO NOT RDY PRTR.
1509 * ROUT.04 - TIO NOT RDY TO RDY PRTR.
1510 * ROUT.05 - TIO BUSY TO RDY PRTR.
1511 * ROUT.06 - LIO'S TO RDY PRTR.
1512 * ROUT.07 - CMDS TEST.
1513 * ROUT.08 - CARRIAGE SPACE/SKIP TEST.
1514 * ROUT.09 - *H & T*PRINT TEST.
1515 * ROUT.0A - PAPER SETTLING TEST.
1516 * ROUT.0B - WORSE CASE PRINT TEST.
1517 * ROUT.0C - RIPPLE PRINT TEST.
1518 * ROUT.0D - UNPRINTABLE CHAR TEST.
1519 * ROUT.0E - ENTER YOUR OWN CMDS TEST.(MUST BE REQUESTED BY OPERATOR)
1520 *****
1521 *          SSW OPTIONS
1522 *****
1523 * SSW-11 - HALT BETWEEN CMDS (VALID IN ROUTINES 7,8,9,0B,0C & 0E)
1524 * SSW-12 - DELAY BETWEEN CMDS (VALID IN ROUTINES 7,8,9,0B,0C & 0E)
1525 * SSW-13 - SECONDARY HALT OPTION (DIAGNOSIS OF ONLINE ERROR DATA )
1526 *****
1527 * NOTES -
1528 * 1.RESTORE CARRIAGE(S) BEFORE STARTING THIS SECTION.
1529 * 2.CARRIAGE FORMS MUST BE LEFT ALIGNED IN PRINT POSITION 1,EVEN IF
1530 *   THE RIGHT CARRIAGE IS BEING TESTED.
1531 * 3.SET C.E.SWITCH TO OVERRIDE IDLE CONTROL BEFORE RUNNING THIS TEST.
1532 *****
1533
FFFF 1534          END

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E013 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

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SYMBOL T LEN VALUE DEFN REFERENCES
ACBUBY A 002 185A 1283 1047
ADCABY A 002 185C 1284 1056
ADDATE A 001 1CF4 0661 0684* C697 0699*
AGFL42 A 002 1854 1280 C384 0385 C386
ADFL85 A 002 1856 1281 0390 0391 0392
ADFLG A 002 1858 1282 0394 0395 0396 0564
ADPIBY A 002 185E 1285 1060
ADTUSX A 004 112C 0683 0672 0698
AD107 A 006 16EF 1157 1150 1154
AD119 A 006 16E6 1155 1152
ARR C 001 0008 1458 0825 0846 0921* 0922 0923* 0924 0925 0926* 0927 0942 0965* 0966
C967* 0968 1119 1177
ARWAL A 017 1C42 1392 0256 0286
ASTERR A 004 172E 1176 1027
ATAD A 005 1C27 1389 0282
ATEATE C 001 08D8 1468 0532* 0533 0548* 0549
ATEFIV C 001 08D8 1467 C533* 0549*
ATETUF C 001 082F 1462 0631
ATSVNS C 001 0877 1464 0635
AWDUN A 004 1715 1165 1162
BABUSY A 012 18C7 1374 0129
BACGO A 004 0D1C 0353 0419
BADCMD A 005 11F5 0777 0770 0772 0790 C792
BERALT A 002 08FB 0224 0203* 0209* 0213* 0217* 0230
BROUT A 004 140A 0942 0244 0531 0995
BSEXIT A 004 142E 0951 0942* 0947
BSYLP A 006 15CB 1065 105C 1059 1063
BUALT A 002 1600 1081 1048* 1C57* 1C61* 1070
BUBY A 004 1589 1050 1283
BUFF A 008 186A 1365 C208 1C49
BUMSG A 008 1844 1361 1049* 1058* 1062*
BUSCT A 003 1838 1264 1046
BUSCTI A 003 183B 1265 0943
BUSLE A 006 08C8 0211 0205
BUSRI A 006 08D8 0215 C206
BUSUB A 003 1FA5 1421 0943* 0944* 1046* 1065*
BUSY C 001 00E6 1482 0122 0191 0199 0542 0946 1024 1063
BUTIN A 004 17F5 1238 1237* 1241* 1242
BUTOLO A 014 1852 1362 1075
BWHER A 004 114F 0693 C68C*
BZDOP A 004 0FAA 0544 0542
CABUSY C 001 00E4 1483 0205 0537 1009
CABY A 004 158C 1059 1005* 1009* 1284
CARR A 008 185A 1363 0211 0215 1058
CCGO A 004 128C 0849 0846*
CHACHE A 037 1C9C 1398 C065
CHRDY A 004 1601 1082 1064
CHT10 A 002 18D3 1376 G104 0171
CHT11 A 002 18D5 1377 1223
CHT13 A 002 18D7 1378 0046 0246
CHT14 A 002 18D9 1379 0433
CHT16 A 002 18DB 1380 0708 1094
CHT17 A 002 18DD 1381 0131 0225 1018
CHT19 A 002 18DF 1382 0067
CKCMD A 004 12A3 0846 0337 0819
CKDONE A 005 12AB 0848 0915
CKQNT A 006 0C69 0374 0376 C386* C392* C396*
CKSKIP A 003 1213 0789 C774
CLINK A 004 0E76 0441 C418
CMDSAV A 002 1F97 1413 0354* 0368 0373 0381 0777* 0780 0803* 0807 0856* 0880 0883 0885
0891 C898 0900* 0902 0904 0906
CMDTAB A 001 1FA6 1425 0336
CMND A 003 150D 1017 0971* 0972 0973 0986 1001* 1002 1003 1008 1013 1019 1022
CMODE A 002 1566 1042 1040*
CNCO A 002 1572 1045 1043*
COCOCO A 004 1317 0877 0874

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EO13 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
CCLLIC	A	004	12E4	0864	0859
CORINS	A	004	18B1	1372	C102
CSSWOA	A	004	146D	0978	0976
CVD	A	004	13B9	C921	0359 0363 0367 0397 0860 0864 0879 1165 1182
CABDT	A	006	168B	1144	1141
LACEND	A	002	164C	1275	1142
DASH	A	001	186A	1254	C361 0365 0366 0862 0866
DASTU	C	001	08C3	1466	C575* C576 C576*
DECGAN	A	006	13F3	C933	0936
DECUNE	A	001	1852	1279	0483 0935
DECZRC	A	001	1851	1278	0481 0932
DELAY	A	004	1501	1066	1047* 1056* 1060*
DEPP	A	014	195D	1319	1092
DIRIS	A	004	1C49	1394	0261 0291
DIRSB	A	004	1C55	1396	0265 0269 0295 0299
DIVID	A	004	16FE	1160	1156 115E
DNTFES	A	004	13CE	0875	0870
DOCMD	A	004	12AA	0912	C852 0854 0903 C907
EOCMDS	A	004	122F	0797	0766 0795
DOHALT	A	006	17C4	1223	1213 1215 1217
DORIPL	A	004	1CA7	0637	0634
ECUT	A	004	1192	0715	0679 0695
EOXIO	A	002	13AF	0913	0850*
EOI12	A	006	0DC5	0394	C389
DSKPOP	A	004	18E3	1306	1184 1185 1192
DUSPOP	A	003	18A8	1304	1186
EDIMAG	C	001	1F77	1470	0534* 0535 C535*
EGAMI	A	005	1C2C	1390	0252
EIGHT	A	002	182C	1258	0696
ELIST	A	004	19FE	1327	0808 0812
ENTERC	A	004	11B7	0758	0796
ENTERI	A	003	11C9	0763	C758 C760* C761 0762*
ERNRDY	A	004	14A1	0990	0988
ERR41	A	004	CB61	0176	C165
ERR51	A	006	0B76	0193	0191
ERT1	A	002	1F91	1410	0019 1002* 1040 1043 1179 1183 1187 1190
EYABLE	A	001	1F60	1404	C757 C8C2 C817
EXIT	A	004	164C	1106	0968*
EXP12	A	002	CACE	CC27	0035* C037
EO13	A	001	0A00	0003	
FINDX	A	002	1F99	1414	0460* 0471* 0474 0517* 0552 C554* 0574* C590 0592* 0691* 0692 0694
FINFF	A	004	0E92	0460	0489
FLOUP	A	006	1414	0944	0946
FL42	A	002	183D	1266	1280
FL85	A	002	183F	1267	1281
FOADD	A	006	172C	1169	1125 1130
FCLG	A	002	1841	1268	C374 C852 0854 1282
FGLIC	A	004	CCC8	0306	0279
FOUR	A	002	1829	1256	0482 1161 1169
FRAUD	A	002	0CDC	0398	0385* 0391* 0355*
FRANG	A	004	CD3F	0363	0358
FRMLE	A	004	148F	0998	0384* C350* C354* 0564*
FRGBYT	A	006	13E7	0931	0928*
FRUM	A	006	13D5	C528	C922*
FRSMV	A	004	1594	1053	C623* C640* 0641* 0646* C647* 0650
GETAH	A	004	0FF6	0575	0593
GETIM	A	004	1279	0826	0828
GETNXT	A	005	123C	0803	0814
GETJLT	A	004	CF08	0490	0477
GIDDAP	A	004	0C22	0245	
GCCEC	A	006	16F8	1159	1148
GOLIU	A	004	CC78	0276	C249
GCMUST	A	004	1777	1193	1191
GUM4	A	004	0F6D	0529	0519
GOIHRU	A	004	1265	0617	C820

EO13 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
GRALT	A	004	0A4A	0051	0040
GRED	A	004	1121	0680	C675 C678
HALIT	A	004	0A89	0072	0061
HALT	C	001	0222	1479	C051 0072 0109 0136 0176 0231 0274 0304 0320 0438 0526 0546 0713 0948 0992 1036 1041 1044 1080 1099 1231 1244
HAYNC	A	013	1817	1356	1222*
HANG	A	004	CF71	0530	0522 0528
HANO	A	003	181A	1357	0481* 0483* 0484 1144* 1167 1221
HLTID	A	002	1780	1197	0421* 1026* 1070* 1136* 1230
HDMANY	A	004	1153	0694	C673* C676*
HXBYT	A	001	1388	0920	0931* 0933*
IBEP	A	016	1A5E	1335	1137* 1211
IMALT	A	004	0C72	0274	C251
INCCMD	A	006	1373	0899	0888 0893 0895 0905
INS1	A	046	19AB	1322	0751
INS2	A	031	19E5	1324	0756
INVC	A	014	19F3	1325	0781 0785 1144
ISBUSY	A	006	1573	1046	1020 1023 1024 1039
ISLAS	A	003	0E25	0417	0413 0440
ISSKIP	A	004	1364	C896	C884
ITSASP	A	004	0CD7	0397	0379 0387 0393
ITSLEF	A	004	0F38	0514	0509
JEXT	A	004	0A54	0054	0053
JIVE	A	004	0842	01C4	0162
JUMRES	A	003	0D7E	0378	0375
JUSALT	A	006	0C0A	0230	C219
KNALB	A	006	1A29	1331	0155 0202 0426 1189 1222
LACMND	A	018	1A23	1330	1186* 1189* 1192* 1196
LALPD	A	004	12FC	0871	C868
LALT	A	004	0CEC	0320	0310
LCML	A	001	0E5B	0431	0425* 0428*
LDCMD	A	006	1450	0971	0966*
LEBAL	A	005	1C31	1391	0252* 0282*
LEFLIC	A	006	0E16	0414	0409
LICDSA	A	006	1523	1022	1007* 1011*
LICOER	A	020	18E0	1309	0432
LICTR	A	001	1FA1	1419	C335* C351* C373* 0374 0377* 0381* 0411 0415 0867 0873 0891* 0892 0894* 0898* 0074 C111 0138 0178 0233 0322 0338 0443 0492 0558 0596 0654 0847* 0867 0873*
LINK	C	001	0216	1476	0800
LINOSA	A	001	1FA0	1418	0800
LIST	A	007	19FA	1326	0399 C401
LNPTH	A	003	18F1	1311	0399 C401
LOAD	C	001	022A	1480	0717
LOARR	A	003	0AB2	0095	0088
LOFDLG	C	001	00E0	1472	C998*
LPD	C	001	C87C	1463	0355 0479 0580 0587* 0637 C639* 0681 C871
LPADR	A	002	184A	1274	0276 0278 0294 0997 1140
LPDAR	C	001	00E6	1474	0276* 0997*
LPI	C	001	0800	1461	0194 0194 0195 0195 0579 0830 0830 0831 0831 0982 0982 0983 C983
LPIADR	A	002	1846	1272	0245 0248 0264 0996
LPIAR	C	001	00E4	1473	0245* C539* 0996*
LSMFT	A	004	0CC2	0304	C281
LUKE	A	002	0E71	0439	0421
MANDRE	A	006	1897	1370	C093 0159
MAP	A	010	18D1	1375	0046* 0050 0067* 0071 C104* 0108 0131* 0135 0171* 0175 0225* 0229 0246* 0273 0303 0319 0433* 0437 0708* 0712 1018* 1035 1079 1094* 1098 1223* 1227
MEXIT	A	004	129F	0834	0825*
MLESID	A	002	1817	1245	1243*
MCDASH	A	005	0D47	0366	0362
MOOM	A	004	CF01	0487	0465
MOWIT	A	006	180C	1243	1239
MSECS	A	002	1F9D	1416	0193* 0196* 0829* 0832* 0972* 0980* 0981* 0984*
MSGC	A	012	1938	1316	0617
MUSTU	A	004	0E30	0420	0412 0416

EC13 5203 LINE PRINTER FUNCTION TESTS

E013 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
M4DEL	A	004	1275	0825	0468 C525
NACMD	A	005	1A11	1329	1178* 1181*
NADUN	A	004	10CE	0581	C586
NEAMR	A	004	0EEA	0482	0486
NEXCAR	A	003	1134	C685	0700
NEXLEN	A	003	ODAA	0388	C383
NEXT	A	004	1221	0793	0768 0776
NIGER	A	004	CA1E	0036	0034
NOBALT	A	002	1553	1037	1026
NOBUSY	A	015	1B37	1359	1031
NOCOR	A	004	0EAB	C466	C475
NOERR	A	003	1678	1128	1135
NOPLIC	A	034	1C77	1397	0314
NOTRIT	A	006	14CE	1002	1000
NCZO	A	004	1343	0889	0886
NRDY	C	001	CCE0	1481	0086 0096 0151 0162 0530 0538 0988 1082
NRDYER	A	004	163C	1102	1082
CCOCC	A	004	131F	0879	0911
OGOG	A	004	0+44	C517	C513
CKYDCK	A	004	0A8F	0074	C059
GNE	A	002	1823	1253	0196 0471 0544 0554 0592 0646 0647 0648 0649 0832 0921 0926 C933 C944 0965 0967 0984 1065 1163
ENTUTR	A	001	1844	1271	1146
OTURZ	A	006	13E1	0930	0925*
PBBUSY	C	001	00E2	1485	0053 C2C4 1C50
PBCA	A	009	1C0C	1387	0201* 0208* C211* 0215*
P1B1	A	020	1A4E	1334	
PFIELD	C	001	1F84	1471	0631* C632 C632* 0635* 0636 0636* 0638 0639
PIBY	A	004	15C4	1063	1285
POPSUD	A	002	18A5	1303	1185*
PRDAT	C	001	08FF	1469	0469* 0470 0470* 048C* 0485
PREXIT	A	004	181C	1247	1177*
PRFCU	A	004	0AED	0124	C122
PRIN	A	008	1B62	1364	0201 1062
PRINT	C	001	021A	1477	C041 0C47 0062 0068 0090 0099 0105 0126 0132 0156 0166 0172 C220 C226 C253 C266 0270 C283 0296 0300 0311 0316 0429 0434 0454 0490 0503 0556 0569 0594 0614 0652 0667 0703 0709 0748 C753 C782 C797 0809 0815 1028 1032 1072 1076 1089 1095 1193 1202 1208 1218 1224 1228 0530 0538
PKNRDY	A	004	0F64	0526	0530 0538
PRTOP	A	012	1E76	1295	C872 C876
PSSIC1	A	003	0F8D	0536	0510* 0514*
PSSIO2	A	003	0F9C	0540	0512* 0516*
PSTEER	A	004	1732	1177	0422 C551 1071 1084 1103
PUIDIA	A	002	17E2	1232	1230*
PUTSUM	A	002	0DF8	0406	C404*
RAELC	A	004	0E95	0199	0198
REBUSY	A	022	1C22	1388	0223
REDAS	A	004	11C5	C762	C759
REDUP	A	016	1B84	1368	0044
RESE T1	A	004	1C85	0640	0621* 0627*
RESE T2	A	004	10B9	0641	C622* C62E*
RESTO	A	004	1726	1170	1145 1168
RICABY	C	001	CCEC	1484	C206 1C05
FICTR	A	001	1FA2	1420	C818*
RNUM	A	001	0AC3	0016	1012 1051 1085
ROCON	A	004	0EB3	C469	0459* 0467 0476 C478*
FLRN	A	013	1B91	1369	0089* 0155*
RPLDUP	A	004	1CC5	0644	0651
RRAC	A	005	1C03	1386	0202* 0212* C216*
RSCUNT	A	006	0D78	0377	0376*
RINOA	A	001	0F14	C499	C452
RINOE	A	001	0F14	0565	C501
RINOL	A	001	104C	0610	0567
RINOD	A	001	1CF5	0663	C612
RINOE	A	001	119D	0744	0665

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
RTN1	A	001	0A0F	0029	C018
RTN2	A	001	0A93	0082	0031
RTN3	A	001	0AE2	0118	0084
RTN4	A	001	0B16	0147	C120
RTN5	A	001	0B6B	0187	0149
RTN6	A	001	0C1A	0240	0189
RTN7	A	001	0CF6	0331	0242
RTN8	A	001	0DCA	0345	0333
RTN9	A	001	0E80	0450	0347
R1NRDY	A	004	0ADE	0111	0086 0096
K2BUSY	A	004	0BCC	0136	C125
R2EXIT	A	004	0B12	0138	0123
R4CHK	A	004	0B38	0162	0152
R4EXIT	A	004	0B67	0178	0163
R4NRDY	A	003	0B38	0161	0154
R5EXIT	A	004	0C16	0233	0192 0200
R6EXIT	A	004	0CF2	0322	0308
SABTR	A	006	16C4	1146	1143
SAMA SH	A	006	12EC	0867	0863
SATCH	A	006	0F88	0548	C543
SAVMD	A	005	1379	0900	0855* 0899*
SAVTUU	A	002	1653	1108	C970* 1105
SAVVUN	A	002	1651	1107	0969* 1104
SBUSY	A	004	0F9C	0537	0511* 0515* 0537
SBYTE0	C	001	0208	1490	0039 0C60 0C87 0097 0124 0153 0164 0218 0250 0280 0309
SBYTE1	C	001	0209	1491	0357 0408 0508 0858 0999
SBYTE2	C	001	020A	1492	0975 C978 1038 1233
SDC	A	006	140E	0943	C950
SDEF	A	004	1609	1084	1058
SEFILD	A	006	1088	0631	0620 0626
SEIFSK	A	004	176A	1190	1188
SESTAT	A	004	0A5F	0057	0055
SFHJ	A	002	1850	1277	C193
SIADD	A	002	184E	1276	0539
SINDEX	A	002	1F9B	1415	C584* 0585
SICOK	A	004	14B3	0995	C989
SIOST	A	004	0F48	0518	0525 0555
SIX	A	001	182A	1257	1240
SKIDD	A	004	159C	1055	1052
SKIXIO	A	004	1438	0965	0402 0405
SKLIND	A	002	188E	1298	0369 C370 038C C881 0882 0897
SKMOVE	A	005	1368	0897	0878* 0909*
SKRICA	A	004	14EC	1009	1004
SKRIG	A	004	1749	1182	1180
SNDMV	A	004	1598	1054	0624* 0630* 0642* 0643* 0648* 0649*
SNIROC	A	010	1BF5	1384	0169
SPACE0	A	002	1FAB	1428	0885 1006* 101C* 1C19
SPALT	A	004	CA50	0053	C038
SPMOVE	A	005	1347	0890	C877* C908*
SPOP	A	012	1882	1296	0370* 0372 0882* 0890
SPSK	A	001	1FC8	1444	C352
SPUDT	A	003	0A0C	0020	0033 C461 0466 0518 0619 C625 0674 0677
SSW05	C	001	0C04	1494	0039 0060 0087 0097 0124 0153 0164 0218 0250 0280 0309
SSW08	C	001	0C8C	1495	0357 0408 0508 0858 0999
SSW11	C	001	0040	1497	0975
SSW12	C	001	0C20	1498	0978
SSW13	C	001	0010	1499	1038 1233
STAI X	A	002	1F95	1412	0036* 0037 0247* 0248 0260 0277* 0278 0290 1139* 1140 1142 1146* 1147 1149 1151 1153 1155* 1157* 1159* 1160* 1161* 1163* 1166 1238 1240* 1243
STATAB	A	001	1A5F	1336	1127
STAT0	A	002	1F8D	1408	0356* 0360 0364 0407* 0411 0415 0857* 0861 0865 1021* 1286 1287
STAT2	A	002	1F8F	1409	0463* 0464 0826* 0827 1C14* 1015
STAT6	A	002	1F93	1411	0057* 0058 0306* 0307 0520* 0521 0689 1087 1121* 1122 1124 1133 1134 1176* 1200 1212 1214 1216 1235
STBEP	A	004	0E52	0428	0424

E013 5203 LINE PRINTER FUNCTION TESTS

E013 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

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SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
STECK1	A	004	168E	1133	1131*
STECK2	A	004	168F	1134	1132*
STERR	A	004	1656	1119	0990 1067 1083 1102
STEXIT	A	004	172A	1171	1119* 1169*
STILL	A	006	CB9C	0201	C199
STSA1	A	002	1655	1117	1120* 1170
STOAD	A	002	186C	1286	1007
STOM1	A	002	1862	1287	1011
SUBGAN	A	006	1702	1161	1164
SUNERD	A	004	CEAF	0468	0462
SVNTEN	A	002	1831	1261	0400
TAGS	A	001	1F88	1407	0420* 0423 1025* 1069* 1126* 1138* 1206 1246*
TAG6	C	001	0002	1487	C423 1126 1138
TAG7	C	001	0001	1488	0420 1025 1069 1206 1246
TALT	A	004	0AD8	C109	C098
TECHBI	A	004	0A63	0058	C056*
TEES	A	003	18F4	1312	0548
TEGAN	A	004	CFA3	0542	0545
TEPCU	A	004	08EB	0218	0207 0210 0214
TESEK	A	004	1818	1246	1207 1234 1236
TEST	C	001	0212	1475	1055
TFEL	A	005	1874	1367	0212 0414 1178
THGIR	A	005	186F	1366	C216 C41C 1181
THROUT	A	004	0FDB	0556	0553
TIOCHK	A	004	145A	0988	0979 C994
TITLA	A	019	1917	1314	C506
TITLB	A	021	192C	1315	0572
TITL9	A	016	1904	1313	0457
TIXE	A	004	1406	0937	0927* 0934
TMIRP	A	004	0E56	0429	0427
TGBYT	A	006	13FC	0935	C929*
TGLONG	A	004	1424	0948	0945
TON	A	022	18AD	1371	0089
TREE	A	002	1827	1255	0582
TUFORF	A	002	1848	1273	0585
TW	A	006	087C	0194	C197
TWLVF	A	002	182F	1260	0371 0875 0889 0896
TW	A	002	1825	1254	0353 0581 0793 0804 0899 0914 0923
TWYSIX	A	002	1835	1263	C683
TWYNUN	A	002	1833	1262	1159
TYBOT	A	006	13DB	0929	C924*
TYBS	A	004	0821	0153	C151
UCSFLG	C	001	0878	1465	0054 0633
UFERR	A	006	08BB	0208	C204
UNCSK	A	015	194F	1318	0670
UNITIN	A	001	1843	1270	1155
UNOSVN	A	001	1842	1269	1157
UNPACK	C	001	021E	1478	0258 0262 0288 0292 0778 0805 1198
UPCER	A	004	116E	0701	0690
WAHOL	A	004	1501	1014	1016
WAT	A	006	1289	0830	0833
WHIHLT	A	004	122B	0796	0798
WICH	A	006	18CC	1308	0410* 0414* 0426*
WORK	A	002	1F9F	1417	
WT	A	006	147C	0982	C974 C585
WUDF	A	019	197D	1321	0706
WUNTH	A	004	113C	0684	C682
XIC	A	006	1432	0964	0349 C441 0472 0487 0523 0550 0577 0588 0644 0686 0701 0715
XIGEXT	A	004	1644	1104	0912
XRI	C	001	0001	1459	C987 1086 1088 1101
					C336* C352* 0353* C354 C378 C382 0388 0404 0417 0541* 0544* 0580*
					0582* 0583 0637* 0681* 0683* 0685 0688 0691 0696* 0757* 0764 0765
					C767 0769 0771 0773 0775 0777 0780 0791 0793* 0794 0802* 0803
					0804* 0813 0817* 0848 085C 0851 0852* 0856 C900 0914* 0969 1053
					1054 1104* 1120 1127* 1128 1128* 1129 1131 1132 1136 1137 1170*
XR2	C	001	0002	1460	0355* C366 0371* C372 0380 C400* 0401 0479* 0482* 0484 0579* 0581*

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
XTEN	A	001	182D	1259	0583 0584 0638* 0672* 0679* 0680 0871* 0872 0875* 0876 0887 0889*
YBATS	A	004	1A3A	1333	0890 C896* 0897 0901 0970 1053 1054 1105*
YEOW	A	002	0C15	0232	1241
YESER	A	004	1670	1126	1201 1205
ZERO	A	002	1821	1252	0230*
ZIGOUT	A	004	1043	0594	1123
ZROTD	A	006	13ED	0932	0541 C765 0813 0848 0902
					0591
					0930*
TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY =					0

E013 5203 LINE PRINTER FUNCTION TESTS

E013 5203 LINE PRINTER FUNCTION TESTS

OBJECT CARD LISTING

OBJECT CARD LISTING

THE CHARACTER ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+-Y:BA<...>	B-2 -U;AE...DA & HU3-	AB-32D &2...Y+<+	-VE4AG9MH<?HAIL-	D-T2UAT /OH<E0J	\$/+...43&E0130001
T+-Z5<...CAF'D\$5&B	G /DAB/?JOH*BH>	00;HFN<7*BGT2 &&	a+&ZT<+<-U3-DG9I	ZDBM8A HH&Z QOH*	BF&D MC4E0130002
T+-D0I J2*8 B< J7	JF.../OH<E- \bar{E} Y\$4*E	G S...-C&BG /QB-	S0; H7T-D-T2UA	< />JF:7 /OH<E&J<	\$V=...MRHE0130003
T+-...8|A&\$2G-B_B	8A HH&Z QOH*BF&D	E F#G-<&CAF'D\$4&B	G /DAB/?JOH*BH>	1OH*BE-< B1\$A9-	_aY* 3,-E0130004
T+-ZMIL-D-T2UAT	/OH<E0J\$1= 2< D	\$4J?)OH*BFYDH<F'G	/OHS8C. /OH<CAH	.E&G-B2G2/1Y8A H	H&Z...=30E0130005
T+-_ /D OBF9DEH*E	G /ZAD1>P8+GO- |	AB _B&Y*V+ &BB|H	&F<BG /,AF/?98A	< J?JF' | /OH<E- \bar{E} Y	\$4*...RYE0130006
T+->*/OHS8AC /OH	DA& <F&GWB7\$2/:	< J=)FE ('MO- B	(+0- B | J=)FB|	/ _aY* 0;Q.X|H	G;-0 6/8E0130007
T+-?PA10<F6H<AAO	CFSU&D<?#0;H.>@G	UB&TA# ?\$aY*OC *	*CA_D|C*.*=HGH00	GG 0\$D-ODG (<\$)C0	8B*% KR8E0130008
T+-OK&Y* &C **CA_	E< &* 1_?|CJ.=3-	D-T2UAT /OH<E0KU	*H>...C D\$4J?)OH*	BFYDH<F'D< ONB*?	/OH <E, %E0130009
T+-1 (H>...OH*BE-Q	C| \$ /1&H<;&QJ-0	AF'D\$53CUG9M(J=	NFD\$2-L&8A HH&Z	2C &*<J0%OH*BF&D	OGDH 'THEO130010
T+-2H8C, /OH; /	NGDX /OH; //FGEP	/OH<E-J<*N*BG /D	AB/?JOH*BH> :<;Q	QKTCHG9M(J=NFD,	2-L& 29 E0130011
T+-3L+ &BB|H<-0	DGCD*1&RG /,AE/1	B8CL /OH; /NGDX	/OH; //HGEP /OH	E-J<*N*BG /DAB/?	JOH* MYQE0130012
T+-3 = S.- (CCTG9<	8 J=K&Z -+ &BB|H	ED&BG /,AH/17&C3	/OH<E- \bar{E} Y\$4*BG S.	-|<BG /QG 4H| D	-Y*H OK8E0130013
T+-49 J=WOH*KY&B	G /QH...: OH*M<>&E	A| D-Y*HAG&Q6 J-	VG D-V0GB -SC<+	-TLS...-X2U ? /1+	9G84 4L4E0130014
T+-54FF, 2/OT /1+	9G80Q<YOG A/DGH*	L>J=PFH8< ASBFH8	6 /-?T % FHH+ A=	/G9*(A=/FDG2A 0	< &4 QDDE0130015
T+-67-<5>X0 -Y< ;	& @ZALT % FH8	< A=/G9) H-G2 JM	< JLBFE&< &7*FE&	< &5>FEL 2/25*N&G	2 JM RIME0130016
T+-7D< DMO//CC D	(7A/OC C(\$//O&Y*	KC DMO//QC D(7A/	QC D(\$//QCH*%>&	F|D6 /-1TA F|G	/1& L:8E0130017
T+-8V+&F G D(= C	/1&8...08A=(+H	BB-H&E-D-CDF<%%&C4	G84-Y-HAG-HGC00	DF<%%) 4 G80-Y-H	AB74 \$08E0130018
T+-9 - G -<960H*	(GCYAG8< A; CXG	/1*2+ H-S*H&CLC	_CV%<AJT<FSX2/O&	aF-9\$OH*BFYD F+	< J% KZHE0130019
T+-: \$4J?ROH*BFYM	H<F'G /OHS8C | /OB	VOH*M<> BOH*BE-U	C1L /OH<E/ RA*	|<-+_C?M G9U9< Y	<a/ M0*E0130020
T+-#ODTC5G8&8 J=	|aZAR+L HC|H<A<B	GDXM& T'CH<H"-T	*C- -WJ-TOH*M<>H	A|JU-W* AC<-*80:	4aYD 5ZME0130021

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+-&JK33TC, LB -/	:|D H*-&&F1YQLMQ	BFBUFDA&E<FEH< &	\$FT5 B|#-&#DQH*	M<>HAOH*+U&BG /Y	MOH* M08E0130022
T+-< /QH...UOH*	BFUHLFJ - CS -X	2U a:B =+---|ULY	HC472/00#B =+0-	|ULZHC94 #*1=R+L	HC|H *K E0130023
T+-= GDA808/=L+ D	-U*H&E&BGEC.S <B	GC4T /OHS8AC2/OL	/1150; |R<BGE Y	aKOT\$CE&H50T \$|D&	-100 *&-E0130024
T+-*B) /'6G7-38 G	A9 =&0; |RCGUFD#	38- 5 J-/0; Q|D?H	E<TQAFB| ) &=TOH*	BH> MC HH6/T4CE&	H5-- ;:HE0130025
T+-*%ZBGEC.S L4	MG9X2-<Y+ A=RFB|	/O'H0H*BF/ /OH	OB0 &L<BG /ZBEJU	%8 #*1=R|<-H001	FB<H R3*E0130026
T+ / 8B< | /1&28-G	B -- 0-DH; 3QBFBM	6 J-X\$ H C&BG9&	(J=\$FDT -/ +|D	HO&BGEC.S T4RG9X	2-<Y ;RME0130027
T+ /A3C- -WJ-TOH*	| %BG /YKOH*BE-0	D|P /OH<E-OR++	+&QHC|H&I32CO.Q	a-1B:|H<NVT2DER&	8 -Y P#YE0130028
T+ /B>C|H&DC17D.Q	a|B: |G*NVT18ER&	<.1=DBB&<H1*MG8&	*%0/8a-D<CG*-/ /	7C %<-CA=DO-DH-<H	BG0 LK&E0130029
T+ /CZCH<H*1=D|E&	NVL1-ER* a ADR|	NWZBGEC.S &a ERM	QHD a ER*QH08 ERU	QH08 ERYQH37*ERP	J *%:0E0130030
T+ /DU1*BG /YKOH*	BE- (AF)OH*BFUH	PFM- <HBDK0&=1E	M+ HHC|H&C333DN&	8A Y<a / DO-HJUTE	BDNH 7/0E0130031
T+ /E-0-DH->HGACQ	AFCM& JC4-| a OH*	M<>H -D + H-U*H	EI3&AG9U*6J=ROHD	C4 G9X2-L-6 J-	%+ D #K*E0130032
T+ /F&D|L UAD&|	E* <BGDLL /1&28 G	/CHEOL4R-; =C D	\$4J?SOH*BFYMH<F'G	/OHS8C# /1&28-C	/OH 0 8E0130033
T+ /GNH- +-|""OH*	BFUD>FE?-: %BG /Y	E+ /XV0-D-QC4*0*?	2 &*a\$AG.aY*D|C&	J2* A& G M4A J-	/aYD *1YE0130034
T+ /H&OGX0 |H&JGT	- |H&DXU& |H&CGU	E |H&IG4D -HB.AO	AG9*AOH*BG-H-V1X	3OH*BF&H+F-|J|	\$F"H \$J-E0130035
T+ /I./1/9 &C UAG	5-P AOHEJ LQAFBN	"0.2-&L /1F7CH*	BFUDG<- -<HAG6	* J=P LQAFBP /OH	; /a LBME0130036
T+ /HFV1X=OH*BF-D	DF-9(&DQH* ADT7	/OH<E*HAG6 08A=	SOH*KY&BGDWM4BAH	SK+H-T3-AG8* UA1	9|B- NEYE0130037
T+ /.AG94('0- B	(+0- B | A=)FB|	/AH|OH* C&HD,<	a*1--L&DAFBG -&	G DL,0E9& C2D+	8 - %B-E0130038
T+ /.a&ZCV| DL-JO	AG9*A<+ -TLS -X	2U ? /1+9G84QE?H	GB<BGD&U-TA/DCE	-YJ=-a-DG|;Q-W-H	BD&H =JYE0130039
T+ /<7 -S|TAK FGQ	< A=-G:G2/OU6 /-	?T % FGQ&B/(H| Y	LE*BGD&U-V1S+C	Q-/S++ &-V?H&< 4	AG9* \$98E0130040
T+ /12G:X2 &E& C	2/3 6 /-?T Y FHH	+ A=/G9*(A=/FDG	2AA- | A=/FDG2/O&	6 /-?T Y FH8< A=	/G9* 5 ME0130041
T+ /+_C- L-J-VG D	-VOD4 /RC&D-V1-	/aYD+>- -V% &D7<	B /-C&/ & | %LKCO	.D6U*aA=ROHHLG&B	GECH 3&UE0130042
T+ /|Y...6 J-VCH*	KD0 68A-T(-L6TQ	HFBM4BA|(-L9TQ	HFB<4BA&IC DL#	C DL*0 C DL&	C %SH&E0130043

E013 5203 LINE PRINTER FUNCTION TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+/LTD#-...E-...	QMEQ D#-QH#HBB-Q	-...QH#BGD#|/O	(-M#KOBG:MQ+OQ	BG:MQH#HAAQGEAL	Z/OY 234E 0130044
T+/J;OH#BH> JOH#	MC#GG < JLBFE-	6BA-T(-MNLQHFB<	4BAR(| DOML#BEV<	< JM| < J=JE&	92AM 30UE0130045
T+/KRC71:ELF/...	2U |O-A#H#H#Z	W< -XL?CG5C(|O-	B...(+O- B...|J=	|FB| /AJ#- NC#	&EUE 2S*E0130046
T+/LMO; MY-HGD#E	GEV\$ /1*2OH#BH>	&CH#M#W#GE Y19A/	F<;QQKTG-...8- H	I#Z D+--NC-OAG9D	NLS- /Z#E0130047
T+/M|BAM+Z J|+O	N#L3YG:Y< JM#FFC	Z/2D29A01|+ -D-O	AEK-CQT4IB-12 &O	OB/=|+ D-T#B#E&G	3... Q1#E0130048
T+/NHC D\$4J?IC&D	NC1=,2YE#K+ -T&4	E&2 |HAJ#GHEPK	: J=.C P-ANLQH*	P.#BG /DAGJ#7OH*	BFYM #9DE0130049
T+/OEB/7JOH#BH>	O+A BB7#F#F O EDQ	-U<BG S.- O EPH	-U*BG S.- OBG:M	Q+ OAE)&QOTOKE-	<A1# 4Q&E0130050
T+/P JA_DO;HN234	<B-12 &/#P5#-S	Q<BG /H< JPMFEO	2D1Q C *\$JA_EO&	N200AE)&QPTOME-	<A1# QS E0130051
T+/P#JA_SO;QN2#H	G(-2BC:MQH# A C	/IROCH#OBL#YAG8#	< A; E-C /1*2OH*	BFYD\$F5. /OHE/&Y	\$4* :RYE0130052
T+/Q6/OHSB CABAQ	2OH#CN#BGE3H#C&Y	C#YDO+ H-U#F#H#B	G /,AGJV)8 O< J7	JF#? /OHE/&Y\$4#B	G SH '\$-E0130053
T+/R18 32/OT /1R	COH#PCTMAEVD5 /R	LOH# C&	HE244 JRN<+<-U3X	6G9.2U *98A=L2/B	O#OH #I E0130054
T+/E#G87B JZ<4-C	L->2 #YF-G OT	* AEE LU G9H9 A=	LCA O;A O E# BG 2	EP/H: /=.<+Q-V&4	AG9M J8QE0130055
T+/S#FD,2--U(J=	NFD32A U<AA#EF;#	Z/6H| A=NFD6#FA=	N2Y&X|J -V-HDE34	(G9P2 -#* AA=N2Y&	IC- 8&2E0130056
T+/#SG9MQE#HGC08	G9MQE7HGA-2 G9M	QC30 G9E| A=NFBX	2- Y+ A=MFB| /1*	BOH#L>J=MFI,2/OQ	+ J# E&DE0130057
T+/|).J-Z (&DGN#B	G...081=L(-QG00	DF/D\$)C-HG9C2U Q	<AAYJF6# /1+9G9D	Q#00 F#H#Q#00&FS<	QDC-)=HE0130058
T+/;Q /-L2/ FC M	E#AYZ+ &-U|HGA-O	H#FS<Q#2BG /,A1JY	T8 C /OH; /-LFT,	/OHE-JDE+T-AG8?	ZDG2 1#0E0130059
T+/~LOH#BFYDUFV8	90A=L2Z *+J ~U7H	&EL-DG9.2U # /OH	E-J \$F-OAF1#EH&O	AF# D\$5*BG /DAB/?	JOH# #J4E0130060
T+/+ /YNC DP8/;	OH#BH> +A BB7H	E.T-DG9.2UB*2B/~	6|EY-V|HBD 8 G9E	QH-8 E#QQ.*BGE#M	< A- #.DE0130061
T+///IE1=MCH#BH>	+OD-S2BG	A H O DA- HD	< AD E& E Q- A	H#ZNNPAOE7) #B	H#O- 2S2E0130062
T+/SU- T#GO JL|C	1FC4Q|1/AECUN#AP	DG84-T(|I5#N &DA	QMA 5#X15;| &DA	&QMA 8_-A02N &DA	Q;H #A#E0130063
T+/S#4#XPE+|O&DA	&(|I5#N &DA Q)-	R2)PTM+.PO+|E&DA	&DA 8_-154CT5UA	&DCN5UCS82GT9+I	O2- 89DE0130064
T+/I :4U7B9+(&DA	&DA &< A6)V.42X	N1MCC8#V.2)N 1)X	RQFCF5_XM&(|E5#	T2 DA &DCT8=(#2EC	T-M... HE0130065

E013 5203 LINE PRINTER FUNCTION TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+/U55#X15; (82P	S8#-A52PRE+.EB=|	L2)PG&+|EB>|W5_X	SIMCCO;.EE(-R2)P	T&+|EB>|R2)-P42N	5#U K&YE0130066
T+/V02)PT82PS84C	F5_V 9(PP6;|AO_|	E&< HO|V 2)N 1<G	TCMCF2*PL1DCB2;(	5)\$T&+.E84CW2;|	H&+& 01ME0130067
T+/W,5)-R82GB42N	1<GT0*PN22PR&(-	R8#V.0#LDK2|O|KN	5_V 1<PLO; / 82X	M1MCI5MCA1<LRK=.	W-;H #CDE0130068
T+/XW6#PS1;| 2<G	L 86A-6*PP1*GT&<\$	O6MCM5_XEQFCE5;|	E6GC02|COC+|O&<.	E12XN&<PX1#|U82X	O5#U 9Q2E0130069
T+/Y/5;PL1D?C5<J	9#-X92PN8#X11;.	X9#-X42GS84CC5_L	MC)PDQFCL1*\$T&DC	N5_PE&DA &DA &DA	&D #EC8E0130070
T+/Z#&DA &DA &DC	S82GT9+I O>TT1;I	&DA &(-R2)\$R2;|	V&<PR6MCB2;(2;I	&DA &DA &DA &DA	&D #.8E0130071
T+/DP&D - LC2<G	ISMCS:(PC&< H4U_	D E2)PC6MCS:(P	CQ;.L2)) &A #AZX	NO#V 12G14=LR1MC	C2(H 5D2E0130072
T+/KA 12<GM5<P	R&<PC2(R O2TKKH	B#GN:DCHO)LM6MC	O5MCC2(H H -H5(V	.82TE6)LA44CC2(I	-... 1KME0130073
T+/#( *|A6)V.8>T	N04CC2(I.&DA...	CO)XRK=.PO+|E&<	H4U_ H C1_#R5+I	4*GM&< H4U_ &|	H01&RK<E0130074
T+/_H5<PRE(POK4A	&DA &|P22(| 5)\$	T&<.U8>/ O*\$T1V	8#XO&<GC5=|D#.	O24A &DA &DA &DC	B9+H 230E0130075
T+/>C:DCT5_R 4*\$	N12|A6)X IO*-E5#X	I5;|E6MA O>LF12P	R&(|X12TT42PF 84C	C5<J.1<PC5#LE&<P	R6)Q #ME0130076
T+/>=6)LA42N #.	O24A &DA 6#PA1+T	527C3&<XS&(|XD:F?	S2<J.O2N 5)\$T&(X	D:|P22(| O>LS:DC	W2<M #NROE0130077
T+/?95MNC5>| 6*U	Y5=|RK2|H84_ &|G	O2-G12#G42-\$1#*G	9#-.O24C18UCN5>(|	6*LYE=.H1D?B1MC	R1+- LCYE0130078
T+/O4#-.O24A &DA	&DA &DA &DA &<X	S&<.U8>/,5)R O#L	DK2XS8>LE1DA 1<G	T0#XMO*-E&DA &DA	O#& :-ME0130079
T+/171(V.6#PGK#|	ISUCE6)X18UA &DA	&+.H1D?B1MA &DA	5)R-5_) 42GT02/	8#PT&+\$182/ 5)R	82U K1&E0130080
T.A2#5UC18>.U1*L	C2<G15MCC2(I.E2X	MO*-E&EA O2TA2)N	1(R 5)\$T&<GG6*P	E	O: <E0130081
TH1=.	.....	.....	.....	.....	.....
T+J#R	9 G	S + 8-C- ;H 8 .	S + C8-GS >HCB-C	UD;QC9-D +&D8 G	UN; A9GC- ; 88 |
E***E7#=-DC#PH\$	=#7M&F| | C	F# ASC R A	SO Q	.....	21231012711 11071#2E0130084

E024 5203 LINE PRINTER FUNCTION TESTS

E024 5203 LINE PRINTER FUNCTION TESTS

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ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
OAOO                      2          DECK 4
                          3 LVWXYZ START X'A00'
                          4 *****
                          5 *
                          6 *      SYSTEM/3 5203 LINE PRINTER FUNCTION TESTS
                          7 *
                          8 *****
                          9 *      SECTION 2 - ROUTINES 1 & 2
                         10 *****
OAOO EC24                OAO1 11          DC      XL2'E024'      PROGRAM IDENTIFICATION
OAO2 00                  OAO2 12          DC      XL1'0'        FLAGS
OAO3 01                  OAO3 13 RNUM  DC      XL1'1'        CURRENT ROUTINE NUMBER
OAO4 0000                OAO5 14          DC      XL2'0'        RESERVED
OAO6 CA10                OAO7 15          DC      AL2(RTN1)     ADDRESS OF FIRST ROUTINE PREFIX
OAO8 163D                OAO9 16          DC      AL2(ERT1)     ADDRESS OF ERROR RECORDING TABLE
OAOA E04000              OAOA 17 SPUTD DC      XL3'EC4000' UNIT DEFINITION TABLE - PRINTER
OAOB 101000              OAOB 18 SPUTA DC      XL3'101000' PRINTER KEYBOARD
                         19 *****
                         20 *
                         21 *      ROUTINE 1 - SENSE COMMANDS ANALYSIS TEST
                         22 *
OAO10 01                 OAO10 24 RTN1 DC      XL1'1'        ROUTINE NUMBER
OAO11 8C                  OAO11 25          DC      XL1'80'        FLAGS - MANUAL INTERVENTION
OAO12 0CB1                OAO13 26          DC      AL2(RTN2)     ADDRESS OF NEXT ROUTINE PREFIX
                         27 *****
OAO14 38 04 0208         28          TBN      SBYTE0,SSWC5     TEST FOR ALTERNATE PRINT DEVICE
OAO16 F2 90 12           29          JF      SKALT                    PRINT 'SENSE CMDS ANALYSIS TEST'
OAO18 C0 87 021A         30          B       PRINT
OAO1F 42                  OAO1F 31          DC      XL1'42'        *
OAO2C 18                  OAO20 32          DC      IL1'24'        *
OAO21 12C3                OAO22 33          DC      AL2(TITLE1)   *
OAO23 E0E2                OAO24 34          DC      XL2'E0E2'     *
OAO25 CC 87 021A         35          B       PRINT 'JMPR A-B1E5D10 TO A-B1D2S05,
OAO29 01                  CA29 36          DC      XL1'01'        RESTORE CARRIAGE(S), PRESS CHK
OAO2A 54                  OAO2A 37          DC      IL1'84'        RESET, THEN RESET HALT'
OAO2B 150A                OAO2C 38          DC      AL2(RELORC)   HALT E2: PREPARE PRINTER
OAO2D F0 7C 76           39 SKALT  HPL      X'76',X'7C'     120 CHAR. SET
OAO30 3D FF 0878         40          CLI     UCSEFLG,X'FF'   *
OAO34 F2 01 04           41          JNE     MARCS           PUT '00' IN STATUS BYTE
OAO37 3C 00 129A         42          MVI     EXPD3,X'00'   RESTORE CARRIAGE(S), PRESS CHK
OAO38 39 01 0A0C         43 MARCS  TBF      SPUTD,X'01'   DUAL FEED CARR.
OAO3F F2 1C 08           44          JT      OGDENSE        PUT '01' IN RIGHT CARRIAGE LOCATION
OAO42 3C 01 1254         45          MVI     EXPD0,X'01'   READ DATA SWITCHES
OAO46 C0 87 0212         46          B       TEST
                         47 *****
                         48 *      DO FOUR SENSE COMMANDS
                         49 *****
OAO4A 30 E0 129D         50 OGDENSE SNS      SENS0,X'E0'     GET LINE LOCATIONS
OAO4E 30 E1 129F         51          SNS      SENS1,X'E1'     GET INCRM.& C.C.CTR.
OAO52 30 E2 12A1         52          SNS      SENS2,X'E2'     GET TIMINGS
OAO56 30 E3 12A3         53          SNS      SENS3,X'E3'     GET STATUS
OAO5A 3B 31 12A0         54          SBF      SENS2-1,B'110001' IGNORE CHAIN EMIT,PSS-1 & HOME LATCH
OAO5E 3B 01 12A3         55          SBF      SENS3,B'1'     IGNORE CE SENSE BIT
OAO62 C2 01 1293         56          LA      EXPTAB,XR1     LOAD TABLE ADDR.
OAO66 C2 02 129C         57          LA      SENTAB,XR2    LOAD TABLE ADDR.
OAO6A 0C 01 162A 1263    58          MVC     EB2ERC(2),ZERO  ZERO ERR COUNTERS
OAO70 3B 68 1628         59          SBF      TAGS,X'68'     RESET A CMD CORRECT & CMD.ERR FLAGS
OAO74 6D 01 01 01        60 SENEXT CLC      1(2,XR1),1(,XR2) ACTUAL SENSE MATCH EXPECTED
OAO78 F2 01 67           61          JNE     ANERR           SET A CMD. CORRECT FLAG
OAO7B 3A 2C 1628         62          SBN      TAGS,TAG2     ANY BYTES IN ERR YET
OAO7F CD 01 162A 1263    63          CLC     EB2ERC(2),ZERO  IF NOT KEEP GOIN'
OAO85 F2 01 8F           64          JNE     WFROM          ADD TWO FOR NEXT CMD.
OAO88 36 C1 1269         65 GCRGAN A        TWO,XR1                CHECKED ALL CMDS
OAO8C 36 02 1269         66          A       TWO,XR2                *
OAO90 7D FF C0           67          CLI     O(,XR1),X'FF'   *
OAO93 CC 01 CA74         68          BNE     SENEXT        *
OAO97 38 20 1628         69          TBN      TAGS,TAG2     ALL CMDS.CORRECT

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ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
OAO9B CC 90 0AAA         70          BF      ALRAD
OAO9F 38 40 1628         71          TBN      TAGS,TAG1
OAA3 C0 90 CCA0         72          BF      SYNARA
OAA7 F2 87 6C           73          J       WFROM
                         74 *****
                         75 *      ALL SENSE COMMANDS FAILED
                         76 *****
OAAA 3C F2 152D          77 ALBAD  MVI      WCHEB,X'F2'     PUT EB2 IN MSG.
OAAE 3D C0 1629         78          CLI     EB1ERC,X'00'     ANY EB1 ERRS
OAB2 F2 81 1C           79          JE      SKIBIT           IF NOT
OAB5 3C F1 152D         80          MVI      WCHEB,X'F1'     PUT EB1 IN MSG.
OAB9 3D 00 162A         81          CLI     EB2ERC,X'00'     ANY EB2 ERRORS
OABD F2 81 11           82          JE      SKIBIT
OAC0 3C 41 0C1A         83          MVI      IDALT,X'41'     SET HALT ID
OAC4 C0 87 021A         84          B       PRINT 'ALL SENSE CMDS FAILED'
OAC8 C2                  OAC 8 85          DC      XL1'C2'
OAC9 15                  OAC9 86          DC      IL1'21'
OACA 151F                OACB 87          DC      AL2(ALSCF)
OACC E041                OACD 88          DC      XL2'E041'
OACE F2 87 54           89          J       OUTLOG           GOLOG OUT ACTUAL&EXPECTED BYTES
OAD1 3C 42 0C1A         90 SKIBIT MVI      IDALT,X'42'
OAD5 C0 87 021A         91          B       PRINT
OAD9 C2                  OAD9 92          DC      XL1'C2'
OADA 34                  OADA 93          DC      IL1'52'
OADB 153E                OADC 94          DC      AL2(ONLBYT)
OADD E042                OADE 95          DC      XL2'E042'
OADF F2 87 43           96          J       OUTLOG           GO LOG OUT
                         97 *****
                         98 *      ACTUAL DOES NOT MATCH EXPECTED
                         99 *****
OAE2 6D 00 01 01        100 ANERR CLC      1(1,XR1),1(,XR2)   IS THE EB1 BYTE IN ERR
OAE6 F2 81 0D           101          JE      MUSBTU
OAE9 0E 00 1629 1267    102          ALC     EB1ERC(1),CNE   ADD TO EB1 IN ERR
OAEF 6D 00 00 00        103          CLC     C(1,XR1),O(,XR2) IS THE EB2 BYTE IN ERR
OAF3 F2 81 C6           104          JE      ANBAD
OAF6 CE 00 162A 1267    105 MUSBTU ALC     EB2ERC(1),CNE   ADD TO EB2 IN ERR
OAF8 F2 90 07           106 ANBAD  TBN      TAGS,TAG1   ANY ERRS YET?
OAF9 3A 08 1628         107          SEEF
OAFB F2 87 09           108          SBN      TAGS,TAG4
OAG0 3A 40 1628         109          J       ANYGUD
OAG2 2C 01 154B 09      110 SEEF  SBN      TAGS,TAG1   SET ERR FLAG
OAG4 C0 87 0A88         111          MVC     EDOC(2),9(,XR2)  PUT CMD.CODE IN MSG.
OAG6 3C 43 0C1A         112 ANYGUD B        GORGAN
OAG8 C0 87 021A         113 WFROM  MVI      IDALT,X'43'
OAGC C2                  114          B       PRINT 'PRINT THE SENSE CODE IN ERR
OAGD C2                  OB1F 115         DC      XL1'C2'
OAE0 14                  OB20 116         DC      IL1'20'
OAE1 1552                OB22 117         DC      AL2(SCOIE)
OAE2 E043                OB24 118         DC      XL2'E043'
                         119 *****
                         120 *      LOG OUT ALL COMMANDS WITH ACTUAL AND EXPECTED BYTES
                         121 *****
OAB25 C2 01 1293        122 CUTLGG LA      EXPTAB,XR1     LOAD TABLE ADDR.
OAB29 C2 02 129C        123          LA      SENTAB,XR2     LOAD TABLE ADDR.
OAB2D 2C 01 1564 09     124 SCARD  MVC     LFTCOD(2),9(,XR2) PUT CMD.CODE IN MSG
OAB32 2C 01 156F CB     125          MVC     RYTCOD(2),11(,XR2) PUT CMD.CODE IN MSG
OAB37 34 01 0B41        126          ST      LEX2,XR1
OAB3B C0 87 021E        127          B       UNPACK
OAB3F 01                  OB3F 128         DC      IL1'1'           PUT LEFT EXP.EB2 IN MSG.
OAB40 0000                OB41 129         LEX2    DC      AL2(*-*)     FROM
OAB42 15A0                OB43 130         *      DC      AL2(LEXEB2)   TO
OAB44 36 01 1267        131          A       ONE,XR1                ADD 1 TO TABLE ADDR.
OAB48 34 01 0B52        132          ST      LEX1,XR1         STORE FROM ADDR.
OAB4C C0 87 021E        133          B       UNPACK           PUT LEFT EXP.EB1 IN MSG.
OAB50 01                  OB50 134         DC      IL1'1'           *
OAB51 0000                OB52 135         LEX1    DC      AL2(*-*)     FROM
OAB53 15A3                OB54 136         DC      AL2(LEXEB1)     TO
OAB55 36 01 1267        137          A       ONE,XR1                ADD 1 TO TABLE ADDR

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EG24 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OB59	34 01 0B63		138	ST	REX2, XR1
OB5D	C0 87 021E		139	B	UNPACK
OB61	01	OB61	140	DC	IL1*1*
OB62	0000	OB63	141	DC	AL2(*--*)
OB64	15AB	OB65	142	DC	AL2(REXE2)
OB66	36 01 1267		143	A	ONE, XR1
OB6A	34 01 CB74		144	ST	REX1, XR1
OB6E	C0 87 021E		145	B	UNPACK
OB72	C1	OB72	146	DC	IL1*1*
OB73	CC00	OB74	147	DC	AL2(*--*)
OB75	15AE	OB76	148	DC	AL2(REXE1)
OB77	36 01 1267		149	A	ONE, XR1
OB7B	34 02 0B85		150	ST	LAC2, XR2
OB7F	C0 87 021E		151	B	UNPACK
OB83	01	OB83	152	DC	IL1*1*
OB84	0000	CB85	153	DC	AL2(*--*)
OB86	15C0	OB87	154	DC	AL2(LACEB2)
OB88	36 02 1267		155	A	ONE, XR2
OB8C	34 02 CB96		156	ST	LAC1, XR2
OB90	C0 87 021E		157	B	UNPACK
OB94	01	OB94	158	DC	IL1*1*
OB95	00C0	OB96	159	DC	AL2(*--*)
OB97	15C3	OB98	160	DC	AL2(LACEB1)
OB99	36 02 1267		161	A	CNE, XR2
OB9D	34 02 CBA7		162	ST	RAC2, XR2
OBAC	C0 87 021E		163	B	UNPACK
OBA5	01	OBA5	164	DC	IL1*1*
OBA6	C0C0	OBA7	165	DC	AL2(*--*)
OBA8	15CB	OBA9	166	DC	AL2(RACEB2)
OBAE	36 02 1267		167	A	ONE, XR2
OBAE	34 02 CBB8		168	ST	RAC1, XR2
OB82	C0 87 021E		169	B	UNPACK
OB86	01	OB86	170	DC	IL1*1*
OB87	0000	OB88	171	DC	AL2(*--*)
OB89	15CE	OB8A	172	DC	AL2(RACEB1)
OB8B	36 02 1267		173	A	CNE, XR2
OB8F	38 20 OAOE		174	TBN	SPUTA-1, B*100000*
OB83	F2 10 12		175	JT	PR4LI
OB86	38 04 C208		176	TBN	SBYTE0, SSW05
OB8A	F2 90 0B		177	JF	PR4LI
OB8D	C0 87 021A		178	B	PRINT
OB81	81	OB81	179	DC	XL1*81*
OB82	78	OB82	180	DC	IL1*123*
OB83	15CE	OB84	181	DC	AL2(RACEB1)
OB85	F2 87 20		182	J	ALCOP
OB88	C0 87 021A		183	B	PRINT
OB8C	81	OB8C	184	DC	XL1*81*
OB8D	1C	OB8C	185	DC	IL1*28*
OB8E	15CF	OBDF	186	DC	AL2(RYTCOD)
OB8E	C0 87 021A		187	B	PRINT
OB84	81	OB84	188	DC	XL1*81*
OB85	1D	OB85	189	DC	IL1*29*
OB86	15BF	OB87	190	DC	AL2(BTES)
OB8E	C0 87 021A		191	B	PRINT
OB8C	81	OB8C	192	DC	XL1*81*
OB8C	1C	OB8C	193	DC	IL1*28*
OB8E	15AE	OB8F	194	DC	AL2(REXE1)
OB8F	C0 87 021A		195	B	PRINT
OB84	82	OB84	196	CC	XL1*82*
OB85	1C	OB85	197	DC	IL1*28*
OB86	15CE	OB87	198	DC	AL2(RACEB1)
OB88	7D FF 00		199	ALCOP	CL1 O(,XR1),X'FF*
OB8B	C0 01 0B2D		200	BNE	SCARD
OB8F	OC 01 14A6 14B2		201	MVC	MAP(2),CHT13
OC05	C0 87 021A		202	B	PRINT
OC05	81	OC05	203	DC	XL1*81*
OC0A	12	OC0A	204	DC	IL1*18*
OC0B	14AE	OC0C	205	DC	AL2(ENT)

PUT RIGHT EXP.EB2 IN MSG.
FROM
TO
ADD 1
PUT RIGHT EXP.EB1 IN MSG
FROM
TO
ADD 1
PUT LEFT ACT.EB2 IN MSG
FROM
TO
ADD 1
PUT LEFT ACT.EB1 IN MSG
FROM
TO
ADD 1
PUT RIGHT ACT.EB2 IN MSG
FROM
TO
ADD 1
PUT RIGHT ACT.EB1 IN MSG.
FROM
TO
PRINT KEYBOARD ASSIGNED
PRINT ON ALTERNATE DEVICE
PRINT CMD CODES AND ACT.&EXP.DATA
PRINT SENSE CODE NAMES
PRINT SENSE CODE BYTES
PRINT EXPECTED SENSE INFO
PRINT ACTUAL SENSE INFO
ALL 4 CMDS PRINTED
PUT CHART NO. IN MSG.
PRINT PRINTER MAP CHART NO.

E024 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OC0D	C0 87 021A		206	B	PRINT
OC11	85	OC11	207	DC	XL1*85*
OC12	0D	OC12	208	DC	IL1*13*
OC13	15E9	OC14	209	DC	AL2(OKSEN)
OC15	C0 87 0222		210	ZALT	B HALT
OC19	E000	OC1A	211	IDALT	DC XL2'E000*
OC18	38 10 020A		212	TBN	SBYTE2,SSW13
OC1F	F2 90 88		213	JF	LEAVIT
OC22	3D 43 OC1A		214	CLI	IDALT,X'43*
OC25	F2 01 81		215	JNE	TIVA
OC29	38 08 1628		216	TBN	TAGS,TAG4
OC2D	F2 90 09		217	JF	JUSUN
OC30	C0 87 0222		218	B	HALT
OC34	E083	OC35	219	DC	XL2'E083*
OC36	F2 87 71		220	J	TIVA
OC39	3D F2 154B		221	JUSUN	CLI EDOC,C'2*
OC3D	F2 01 09		222	JNE	AVID
OC40	C0 87 0222		223	B	HALT
OC44	E08A	OC45	224	DC	XL2'E08A*
OC46	F2 87 61		225	J	TIVA
OC49	3D F3 154B		226	AVID	CLI EDOC,C'3*
OC4D	F2 01 09		227	JNE	SNOTIT
OC50	C0 87 0222		228	B	HALT
OC54	E08C	OC55	229	DC	XL2'E08C*
OC56	F2 87 51		230	J	TIVA
OC59	3C 84 OC9C		231	SNGTIT	MVI KORP,X'84*
OC5D	3D F0 154B		232	CLI	EDOC,C'0*
OC61	F2 01 19		233	JNE	MUBEUN
OC64	3D 00 162A		234	CLI	EB2ERC,X'00*
OC68	F2 81 2C		235	JE	PORK
OC68	3C 85 OC9C		236	MVI	KORP,X'85*
OC6F	3D 00 1629		237	CLI	EB1ERC,X'00*
OC73	F2 81 21		238	JE	PORK
OC76	3C 86 OC9C		239	MVI	KORP,X'86*
OC7A	F2 87 1A		240	J	PORK
OC7D	3C 87 OC9C		241	MUSEUN	MVI KORP,X'87*
OC81	3D 00 162A		242	CLI	EB2ERC,X'0C*
OC85	F2 81 0F		243	JE	PORK
OC88	3C 88 CC9C		244	MVI	KORP,X'88*
OC8C	3D 00 1629		245	CLI	EB1ERC,X'00*
OC90	F2 81 04		246	JE	PORK
OC93	3C 89 CC9C		247	MVI	KORP,X'89*
OC97	C0 87 0222		248	PORK	B HALT
OC9B	E000	OC9C	249	KORP	DC XL2'E000*
OC9D	F2 87 CA		250	J	TIVA
OCA0	C0 87 021A		251	SYNARA	B PRINT
OCA4	41	OCA4	252	DC	XL1*41*
OCA5	1B	OCA5	253	DC	IL1*27*
OCA6	15E9	OCA7	254	DC	AL2(OKSEN)
OCA8	E000	OCA9	255	DC	XL2'E000*
OCAA	F0 7C 57		256	TIVA	HPL X'57*,X'7C*
OCAD	C0 87 0216		257	LEAVIT	B LINK
			258		
			259		*****
			260	*	*
			261	*	ROUTINE 2 - SENSE TIMING BITS (CODE E2) TEST
			262	*	*
			263		*****
OCB1	02	OCB1	264	RTN2	DC XL1*2*
OCB2	80	OCB2	265	DC	XL1*8C*
OCB3	FFFF	OCB4	266	DC	XL2'FFFF*
			267		*****
OCB5	3C E2 OCEE		268	MVI	WICAR-1,X'E2*
OCB9	OC 04 1602 147D		269	MVC	LRCAR(5),TFEL
OCBF	C1 E0 OCC6		270	TIO	BAPRT,NRDY
OCC3	F2 87 14		271	J	PTITL
OCC6	38 04 0208		272	BAPRT	TBN SBYTE0,SSW05
OCCA	F2 9C CA		273	JF	JALT

PRINT 'REMOVE JUMPER'
XL1*85*
IL1*13*
AL2(OKSEN)
HALT
SENSE ERR HALT
SBYTE2,SSW13
SSW -13 ON (NO ALT.PRTR.) ?
LEAVIT
IDALT,X'43*
WAS THE ERR A '43' HALT ?
TIVA
TAGS,TAG4
IS ONLY 1 SENSE IN ERR
JUSUN
B
MORE THAN 1 SENSE CODE
IN ERROR HALT
DC XL2'E083*
J
TIVA
EDOC,C'2*
IS ERR CODE E2 ?
AVID
B
SENSE CODE 'E2' FAILED
DC XL2'E08A*
J
TIVA
AVID
CLI EDOC,C'3*
IS ERR CODE E3 ?
JNE
SNOTIT
B
HALT
SENSE CODE E3 FAILED
DC XL2'E08C*
J
TIVA
SNGTIT
MVI KORP,X'84*
PUT IN EB1 ONLY HALT
CLI
EDOC,C'0*
JNE
MUBEUN
IF NOT,MUST BE CODE E1
CLI
EB2ERC,X'00*
ANY EB2 ERRS ?
JE
PORK
IF NOT,EB1 ERRS ONLY
MVI
KORP,X'85*
PUT IN EB2 ONLY HALT
CLI
EB1ERC,X'00*
ANY EB1 ERRS ?
JE
PORK
IF NOT,EB2 ERRS ONLY
MVI
KORP,X'86*
IF SO,EB1 & EB2 ERRS
J
PORK
MUSEUN
MVI KORP,X'87*
PUT IN EB1 ONLY HALT
CLI
EB2ERC,X'0C*
ANY EB2 ERRS
JE
PORK
IF NOT,EB1 ERRS ONLY
MVI
KORP,X'88*
PUT IN EB2 ONLY HALT
CLI
EB1ERC,X'00*
ANY EB1 ERRS
JE
PORK
IF NOT,MUST BE EB2 ERRS ONLY
MVI
KORP,X'89*
IF SO,EB1 & EB2 ERRS
DC
HALT
EO OR E1 FAILED HALTS
DC XL2'E000*
J
TIVA
PRINT 'SENSE CMDS OK, REMOVE JUMPER'

E024 5203 LINE PRINTER FUNCTION TESTS

E024 5203 LINE PRINTER FUNCTION TESTS

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for printer diagnostics, including instructions like PRINT, MVI, SBC, and comments such as 'PRINT MAKE READY ETC.' and 'CHECK FOR ANY BITS NOT ON AND OFF'.

Table with columns: ERR LOC, OBJECT CODE, ADDR, STMT, SOURCE, STATEMENT. Contains assembly code for printer diagnostics, including instructions like MVC, MVI, SBC, and comments such as 'SAVE BYTE', 'PRINT BIT AND BYTE FAILED', and 'CONVERT 1 HEX BYTE TO ZONED DECIMAL SUBROUTINE'.

E024 5203 LINE PRINTER FUNCTION TESTS

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
OEAF	F2 82 0A		410	DECGAN SLC	HXBYT(1),ONE DECREMENT THE HEX BYTE
OEAF	F2 82 0A		411	JL	TXIE EXIT IF BELOW 1
OEAF	F2 82 0A		412	TOBYT AZ	**-(3),DECCONE(1) INCREMENT THE DEC. COUNT
OEAF	F2 82 0A		413	B	DECGAN
OEAF	F2 82 0A		414	TXIE B	** RETURN
OEAF	F2 82 0A		415	*****	
OEAF	F2 82 0A		416	* CHECK FOR BUSY AND DELAY SUBROUTINE *	
OEAF	F2 82 0A		417	*****	
OEAF	F2 82 0A		418	BROUT ST	BSEXIT+3,ARR LOAD RETURN ADDR.
OEAF	F2 82 0A		419	SDC MVC	BUSUB(3),BUSCTI TRY FOR 7.5 SEC TO CLEAR ANY BUSY
OEAF	F2 82 0A		420	FLCOP SLC	BUSUB(3),ONE
OEAF	F2 82 0A		421	JZ	TOLONG
OEAF	F2 82 0A		422	TIC	FLOUP,BUSY
OEAF	F2 82 0A		423	J	BSEXIT
OEAF	F2 82 0A		424	TOLONG B	HALT *ERROR - PRINTER BUSY
OEAF	F2 82 0A		425	DC	XL2*EO11* BUSY ID.
OEAF	F2 82 0A		426	B	SDC TRY AGAIN
OEAF	F2 82 0A		427	BSEXIT B	** RETURN
OEAF	F2 82 0A		428	*****	
OEAF	F2 82 0A		429	* XIO ***** XIO *	
OEAF	F2 82 0A		430	*****	
OEAF	F2 82 0A		431	*****	
OEAF	F2 82 0A		432	* THIS ROUTINE ISSUES AND CHECKS AN EXECUTE I/O COMMAND AS *	
OEAF	F2 82 0A		433	* SELECTED BY THE MAINLINE PROGRAM. LINKAGE TO THIS SUBROUTINE *	
OEAF	F2 82 0A		434	* IS AS FOLLOWS- *	
OEAF	F2 82 0A		435	* *	
OEAF	F2 82 0A		436	B	XIO *
OEAF	F2 82 0A		437	DC	2,X*Q CODE & CONTROL CODE OF COMMAND*
OEAF	F2 82 0A		438	* *	
OEAF	F2 82 0A		439	*****	
OEAF	F2 82 0A		440	XIO MVC	FRMLE+3(2),ADFOLG PUT IN 112 FORM LENGTH ADDR.
OEAF	F2 82 0A		441	A	ONE,ARR
OEAF	F2 82 0A		442	ST	LDCMD+5,ARR LOAD PARAMETER POINTER
OEAF	F2 82 0A		443	A	ONE,ARR
OEAF	F2 82 0A		444	ST	EXIT+3,ARR SET UP EXIT
OEAF	F2 82 0A		445	ST	SAVHUN,XR1 SAVE REG. 1
OEAF	F2 82 0A		446	ST	SAVTUU,XR2 SAVE REG.2
OEAF	F2 82 0A		447	LDCMD MVC	CMND+2(2),** SET UP COMMAND FROM PARAMETER
OEAF	F2 82 0A		448	MVC	MSECS(2),CMND+2 IF ENTRY IS -OXXX-, GO DELAY
OEAF	F2 82 0A		449	TBF	CMND+1,X*FO*
OEAF	F2 82 0A		450	JT	WT
OEAF	F2 82 0A		451	TBN	SBYTE2,SSW11 BRANCH IF SSW11 OFF
OEAF	F2 82 0A		452	JF	CSSWOA
OEAF	F2 82 0A		453	HPL	X*1B*,X*7C* HALT ON E4
OEAF	F2 82 0A		454	CSSWOA TBN	SBYTE2,SSW12 DELAY BETWEEN CMDS.
OEAF	F2 82 0A		455	JF	TIOCHK
OEAF	F2 82 0A		456	SNS	MSECS,X*0* READ DATA SWITCHES FOR DELAY
OEAF	F2 82 0A		457	SBF	MSECS-1,X*FO* TURN OFF HIGH ORDER 4 BITS OF DELAY
OEAF	F2 82 0A		458	WT CLC	LPI(256),LPI 1 MILLISECOND DELAY
OEAF	F2 82 0A		459	CLC	LPI(60),LPI
OEAF	F2 82 0A		460	SLC	MSECS,GNE(2) DO FOR DESIRED NUM OF MILLISECS
OEAF	F2 82 0A		461	BH	WT
OEAF	F2 82 0A		462	TBF	CMND+1,X*FO* DO NOT EXECUTE COMMAND IF DELAY
OEAF	F2 82 0A		463	BT	XIOEXT
OEAF	F2 82 0A		464	TIOCHK TIO	ERNRDY,NRDY BRANCH IF NOT READY
OEAF	F2 82 0A		465	J	TIOOK
OEAF	F2 82 0A		466	ERNRDY B	STERR BR TO CHECK STATUS
OEAF	F2 82 0A		467	B	PSTERR GO PRINT STATUS OR 1ST LINES
OEAF	F2 82 0A		468	B	HALT *PRINTER NOT READY
OEAF	F2 82 0A		469	DC	XL2*EO10* NOT READY ID.
OEAF	F2 82 0A		470	B	TIOCHK
OEAF	F2 82 0A		471	TIOOK B	BROUT
OEAF	F2 82 0A		472	B	STERR BR TO CHECK STATUS
OEAF	F2 82 0A		473	B	PSTERR GO PRINT STATUS OR 1ST LINES
OEAF	F2 82 0A		474	LIO	LPIADR,LPIAR LOAD LSR ADDRESS REGISTER
OEAF	F2 82 0A		475	LIC	LPDADR,LPDAR
OEAF	F2 82 0A		476	FRMLE LIO	**-,LOFOLG LOAD FORMS LENGTH
OEAF	F2 82 0A		477	TBN	SBYTE1,SSWO8 PRINT ON RIGHT CARR.

E024 5203 LINE PRINTER FUNCTION TESTS

ERR	LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
OF85	F2 90 04		478	JF	NOTRIT JUMP IF NOT
OF88	3A 08 CF89		479	SBN	CMND+1,B*1000* SET MOD.BIT
OF8C	0C 01 163D OFBA		480	NOTRIT MVC	ERT1(2),CMND+2
OF92	38 08 OFB9		481	TBN	CMND+1,B*1000*
OF96	F2 90 11		482	JF	SKRICA THIS CMD.FOR RIGHT CARR.
OF99	3C EC 1032		483	MVI	CABY+1,RICABY SKIP TO SET LEFT CARR.
OF9D	3C E8 1291		484	MVI	SPACEC-1,X*E8* SET TO CHECK RIGHT CARR.BUSY
OFA1	0C 01 OFD3 128E		485	MVC	LICDSA+5(2),STOAD SET RIGHT CARR.SPAC 0
OFA7	F2 87 0E		486	J	CMND PUT RIGHT CARR.CTR.IN COMPARE
OFAA	3C E4 1032		487	SKRICA MVI	CABY+1,CABUSY SET TO CHECK LEFT CARR.BUSY
OFAE	3C E0 1291		488	MVI	SPACEC-1,X*EO* SET LEFT CARR.SPAC 0
OFB2	0C 01 OFD3 1290		489	MVC	LICDSA+5(2),STOM1 PUT LEFT CARR.CTR.IN COMPARE
OFB8	F3 00 00		490	CMND SIO	X*0*,X*0* COMMAND LOADED DURING EXECUTION
OFBB	0C 01 14A6 1486		491	MVC	MAP(2),CHT17 PUT CHART NO. IN MSG.
OFD1	0D 01 OFBA 1292		492	CLC	CMND+2(2),SPACE0 DO NOT CHECK FOR BUSY IF THIS WAS
OFD7	F2 81 35		493	JE	ISBUSY SPACE WITH ZERO CONTROL CODE
OFCA	30 E0 1635		494	SNS	STATO,X*EO* GRAB THE LINE CTRS.
OFCE	0D 00 OFBA 0000		495	LICDSA CLC	CMND+2(1),** LINE CTR.SAME AS CMD,C.C.
OFD4	F2 81 28		496	JE	ISBUSY
OFD7	C1 E6 OFFF		497	TIO	ISBUSY,BUSY PRINTER SHOULD BE BUSY
OFDB	3A 01 1628		498	SBN	TAGS,TAG7 SET 1ST LINE PRINT ONLY
OFDF	0C 00 11F7 OFFE		499	MVC	HLTID(1),NOBALT PUT HALT ID IN MSG
OFE5	C0 87 11A5		500	B	ASTERR GO PRINT STATUS
OFE9	C0 87 021A		501	B	PRINT PRINT NOT BUSY MSG
OFED	81	OFED	502	DC	XL1*81*
OFEE	1D	CFEE	503	DC	IL1*29*
OFEF	1440	OFF0	504	DC	AL2(NOBUSY)
OFF1	C0 87 021A		505	B	PRINT
OFF5	85	OFF5	506	DC	XL1*85*
OFF6	0A	OFF6	507	DC	IL1*10*
OFF7	14A6	OFF8	508	DC	AL2(MAP)
OFF9	C0 87 0222		509	B	HALT *IF NOT, HALT ON ERROR
OFFD	E016	OFFE	510	NOBALT DC	XL2*EO16* NOT BUSY HALT
OFFF	3D 02 0A03		511	ISBUSY CLI	RNUM,X*02* IN ROUTINE 2
1003	C0 81 10C5		512	BE	XIOEXT
1007	0C 02 162D 1270		513	MVC	BUSUB(3),BUSCT
100D	0C 01 1055 1288		514	MVC	DELAY+3(2),ADBUBY PUT IN LOOP ADDR.
1013	3C 12 1081		515	MVI	BUALT,X*12* SET BUFFER BUSY ID
1017	0C 07 144D 1473		516	MVC	BUMSG(8),BUFF MOVE BUFFER MSG
101D	C1 E2 104C		517	BUBY TIO	BSYLP,PBBUSY PRINT BUFF BUSY
1021	0C 01 1055 128A		518	MVC	DELAY+3(2),ADCABY PUT IN LOOP ADDR.
1027	3C 13 1081		519	MVI	BUALT,X*13* SET CARR.HALT ID
102B	0C 07 144D 1463		520	MVC	BUMSG(8),CARR MOVE CARR.MSG
1031	C1 00 104C		521	CABY TIO	BSYLP,** CARRIAGE BUSY
1035	0C 01 1055 128C		522	MVC	DELAY+3(2),ADPIBY PUT IN LOOP ADDR.
103B	3C 14 1081		523	MVI	BUALT,X*14* SET PRINTER BUSY HALT ID
103F	0C 07 144D 146B		524	MVC	BUMSG(8),PRIN MOVE PRINTER BUSY MSG
1045	C1 E6 104C		525	PIBY TIO	BSYLP,BUSY PRINTER BUSY
1049	F2 87 36		526	J	CHRDY
104C	0F 02 162D 1267		527	BSYLP SLC	BUSUB(3),ONE TRY FOR ABOUT 3 SECONDS TO
1052	C0 01 C000		528	DELAY ENZ	** CLEAR BUSY
1056	C0 87 10DB		529	B	STERR CHECK FOR STATUS ERROR
105A	C0 87 108A		530	B	SDEHF
105E	3A 01 1628		531	SBN	TAGS,TAG7 SET PRINT 1ST LINES ONLY FLAGS
1062	0C 00 11F7 1081		532	MVC	HLTID(1),BUALT PUT HALT IC IN MSG
1068	C0 87 11A9		533	B	PSTERR GO PRINT STATUS OR 1ST LINES
106C	C0 87 021A		534	B	PRINT PRINT BUSY MSG
1070	81	1070	535	DC	XL1*81*
1071	1B	1071	536	DC	IL1*27*
1072	145B	1073	537	DC	AL2(BUTOLO)
1074	C0 87 021A		538	B	PRINT
1078	85	1078	539	DC	XL1*85*
1079	0A	1079	540	DC	IL1*10*
107A	14A6	107B	541	DC	AL2(MAP)
107C	C0 87 0222		542	B	HALT
108C	E000	1081	543	BUALT DC	XL2*E000* BUSY HALT
1082	C1 E0 108D		544	CHRDY TIO	NRDYER,NRDY
1086	C0 87 10DB		545	B	STERR BR TO CHECK ERR STATUS

E024 5203 LINE PRINTER FUNCTION TESTS

Table with columns: ERR LCC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for printer function tests, including instructions like SDEHF, CLI, JE, TBN, JF, B, DC, MVC, STERR, etc.

E024 5203 LINE PRINTER FUNCTION TESTS

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for printer function tests, including instructions like AD107, J, GODEC, DIVID, MVI, SLC, etc.

E024 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1246	0A	1246	682	DC IL1*10*
1247	14A6	1248	683	DC AL2(MAP)
1249	CO 87 C21A		684	B PRINT SPACE 5
124D	15	124D	685	CC XL1*15*
124E	CC 01 1259 11F7		686	MVC PUIDIN(2),HLTID PUT ID INTO HALT
1254	CC 87 0222		687	B HALT *STATUS ERROR HALTS
1258	E000	1259	688	PUIDIN DC XL2*E000*
125A	38 01 1628		689	TESER SBF TAGS,TAG7 RESET 1ST LINE ONLY FLAG
125E	CO 87 0900		69C	PREXIT B *-+ RETURN
		691		
		692		*****
		693		* CONSTANTS *
		694		*****
1262	00C0	1263	695	ZERO DC IL2*0*
1264	CBFF	1265	696	EFFS DC XL2*DBFF*
1266	0001	1267	697	GNE CC XL2*0001*
1268	0002	1269	698	TWO DC XL2*0002*
126A	00C4	1268	699	FCUR DC IL2*4*
126C	0015	126D	700	TWYWUN DC IL2*21*
126E	018800	1270	701	BUSC1 DC XL3*018800*
1271	C400C0	1273	702	BUSCTI DC XL3*40000*
1274	7070	1275	703	FOLG DC XL2*7070* FORM LENGTH 112
1276	6B	1276	704	UNCSVN DC IL1*107*
1277	77	1277	705	UNITIN DC IL1*119*
1278	7B	1278	706	ONTUTR DC IL1*123*
1279	08G0	127A	707	LPIADR DC XL2*800* IMAG* ADDRESS
127B	087C	127C	708	LPDADR DC XL2*87C* DATA ADDRESS
127D	FFFF	127E	709	SFFE DC XL2*FFFF*
127F	08FF	1280	710	DADEND DC XL2*8FF*
1281	1C20	1282	711	UNSEC DC IL2*7200*
1283	F0	1283	712	DECZRC DC DL1*0*
1284	F1	1284	713	DECCNE DC DL1*1*
1285	1275	1286	714	ACFOLG DC AL2(FOLG)
1287	1C1D	1288	715	ADBUBY DC AL2(CUBY)
1289	1031	128A	716	ADCABY DC AL2(CABY)
128B	1045	128C	717	ADPIBY DC AL2(PIBY)
128D	1635	128E	718	STCAD DC AL2(STATD) RIGHT CARR.CTR.ADDR.
128F	1634	1290	719	STOM1 DC AL2(STATO-1) LEFT CARR.CTR.ADDRC
1291	EC00	1292	720	SPACE0 DC XL2*E000* SPACE 0
		1293	721	EXPTAB EQU *
		1294	722	EXPDO DC XL2*0100* LEFT&RIGHT CARR.LOC.EXP.
		1296	723	DC XL2*0C7F* INCRMENT&CHAIN CHAR.CTR.EXP.
		1298	724	DC XL2*0401* TIMING EXPD.
		129A	725	EXPD3 DC XL2*0804* STATUS EXPD.
		129B	726	DC XL1*FF*
		129C	727	SENTAB EQU *
		129D	728	SENS0 DC XL2*0*
		129F	729	SENS1 DC XL2*0*
		12A1	730	SENS2 DC XL2*0*
		12A3	731	SENS3 DC XL2*0*
		12A5	732	DC CL2*EC* L/R CARR. LINE LOC.
		12A7	733	DC CL2*E1* INCREM.&CHAIN CHAR.CTR.
		12A9	734	DC CL2*E2* TIMING
		12AB	735	DC CL2*E3* STATUS
		736		
		737		*****
		738		* PRINTOUTS *
		739		*****
12AC	E2C5D5E2C540C3D4	12C3	740	TITLE1 DC CL24*SENSE CMDS ANALYSIS TEST*
12B4	C4E24CC1D5C1D3E8		740	
12BC	E2C9E24CE3C5E2E3		740	
12C4	E2C5D5E2C540E3C9	12D9	741	TITL2 DC CL22*SENSE TIMING BITS TEST*
12CC	D4C9D5C74CC2C9E3		741	
12D4	E240E3C5E2E3		741	
12DA	4CE4D7C3	12DD	742	DC CL4*UPC*
12DE	40E2D2C6D7D7C5C4	12E5	743	DEPP DC CL8*SKIPPED*
12E6	61D7D9C9D5E350	12EC	744	DC CL7*/PRINT&*
12ED	E2D7C1C3C54C	12F2	745	DC CL6*SPACE*

E024 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
12F3	4040	12F4	746	POPSUD DC CL2*
12F5	404040	12F7	747	DUSPOP DC CL3*
12F8	E2D2C9D740E3D6	12FE	748	DC CL7*SKIP TC*
12FF	40404040	1302	749	CSKPOP DC CL4*
1303	D3C1E2E340C3D6D4	1310	750	DC CL14*LAST COMMAND--*
130B	D4C1D5C46060		750	
1311	D3C5C6E340	1315	751	NACMD DC CL5*LEFT*
1316	40D5D6D5C54C4C40	1327	752	LACMNC DC CL18*NCNE
131E	4040404040404040		752	
1326	4C40		752	
1328	40404C404040	132D	753	KNALB DC CL6*
132E	E2E3C1E3E4E240C2	133A	754	DC CL13*STATUS BYTES*
1336	E8E3C5E24C		754	
133B	40404040	133E	755	YBATS DC CL4*
133F	D7D9C9D6D9C9E3E8	1352	756	DC CL20*PRIORITY ERR BIT IS*
1347	40C5D5D940C2C9E3		756	
134F	40C9E240		756	
1353	4C404C404C404040	1362	757	IBEP DC CL16*
135B	4C404C404C404040		757	
		1363	758	STATAB EQU *
1363	008004	1365	759	DC XL3*008004* CHAIN SYNC CHK.,HALT 04
1366	C3C8C1C9C540E2E8	1375	760	DC CL16*CHAIN SYNC CHK.*
136E	D5C34CC3C8D24B40		760	
1376	CC4005	1378	761	DC XL3*004005* INCR SYNC OR SLIP CHK.,HALT 05
1379	C9D5C3D940E2E8D5	1388	762	DC CL16*INCR SYNC/SLIP*
1381	C361E2D3C9D74C40		762	
1389	100006	1389	763	DC XL3*100006* INCR FAILURE CHK.,HALT 06
138C	C9D5C3D940C6C1C9	139B	764	DC CL16*INCR FAILURE CHK.*
1394	D3E4D5C54CC3C8D2		764	
139C	040009	139E	765	DC XL3*040009* HMR ECHO CHK.,HALT 09
139F	C8C1D4D4C5D940C5	13AE	766	DC CL16*HAMMER ECHO CHK.*
13A7	C3C8C640C3C8D24B		766	
13AF	02000A	13B1	767	DC XL3*02000A* ANY HMR ON CHK.,HALT 0A
13B2	C1D5E840C8C1D4D4	13C1	768	DC CL16*ANY HAMMR ON CHK.*
13BA	D940D6D540C3C8D2		768	
13C2	002007	13C4	769	DC XL3*002007* HMR UNIT THERMAL CHK.,HALT 07
13C5	C8D4D94BE3C8C5D9	13D4	770	DC CL16*HMR.THERMAL CHK.*
13CD	D4C1D340C3C8D24B		770	
13D5	800001	13D7	771	DC XL3*800001* CARR.SYNC CHK.,HALT 01
13DB	C3C1D9D94BE2E8D5	13E7	772	DC CL16*CARR.SYNC CHK.*
13E0	C340C3C8D24B4040		772	
13E8	400002	13EA	773	DC XL3*400002* CARR.SPACE CHK.,HALT 02
13EB	C3C1D9D94BE2D7C1	13FA	774	DC CL16*CARR.SPACE CHK.*
13F3	C3C540C3C8D24B40		774	
13FB	200003	13FD	775	DC XL3*200003* FORMS JAM CHK.,HALT 03
13FE	C6D6D9D4E240D1C1	140D	776	DC CL16*FORMS JAM CHK.*
1406	D440C3C8C24B4040		776	
140E	FF	140E	777	DC XL1*FF*
140F	C8C1D4D4C5D940D5	141B	778	HAMNO DC CL13*HAMMER NO.*
1417	D64B404040		778	
141C	404040	141E	779	HANO DC CL3*
141F	C9D5E5D3C4	1423	780	INVC DC CL5*INVL*
1424	F5F2FCF340D5D6E3	1431	781	DC CL14*5203 NOT BUSY*
142C	40C2E4E2E840		781	
1432	C1C6E3C5D940E2C9	1440	782	NOBUSY DC CL15*AFTER SID ACPTD*
143A	D640C1C3D7E3C4		782	
1441	F5F2F0F340	1445	783	DC CL5*5203*
1446	4040404040404040	144D	784	BUMSG DC CL8*
144E	40C2E4E2E840E3D6	145B	785	BUTOLO DC CL14*BUSY TCC LONG*
1456	D640D3D6D5C7		785	
145C	C3C1D9D94BE2D7C5	1463	786	CARR DC CL8*CARRIAGE*
1464	D7D9C9D5E3C5D940	146B	787	PRIN DC CL8*PRINTER*
146C	40C2E4C6C6C5D940	1473	788	BUFF DC CL8*BUFFER*
1474	D9C9C7C8E3	1478	789	THGIR DC CL5*RIGHT*
1479	D3C5C6E340	147D	790	TFEL DC CL5*LEFT*
147E	D4C1D2C540F5F2F0	1486	791	DC CL9*MAKE 5203*
1486	F3		791	
1487	40D9C5C1C4E8	148C	792	DC CL6*READY*

E024 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
148D	6BF3C8C5D54CD9C5	149C	793	RESALT DC	CL16*,THEN RESET HALT*
1495	E2C5E34CC8C1D3E3		793		
149D	D7E3D94BC3CB8E34B	14A6	794	MAP DC	CL10*PTR.CHT. *
14A5	4C40		794		
14A7	40C5D5E3D9E84CF4	14AE	795	ENT DC	CL8* ENTRY 4*
14AF	F1F1	14B0	796	CHT11 DC	CL2*11*
14B1	F1F3	14B2	797	CHT13 DC	CL2*13*
14B3	F1F6	14B4	798	CHT1E DC	CL2*16*
14B5	F1F7	14B6	799	CHT17 DC	CL2*17*
14B7	D1D4D7D94CC160C2	14D2	800	DC	CL28*JMPR A-B1E5D10 TO A-B1D2S05,*
14BF	F1C5F5C4F1F040E3		800		
14C7	D640C160C2F1C4F2		800		
14CF	E2F0F56E		800		
14D3	E3C8C5L54CD9C5E2	14F5	801	DC	CL35*THEN RESTORE CARRIAGE(S),PRESS CHK *
14DB	E3D6D5C54CC3C1D9		801		
14E3	E9C9C1C7C54DE25D		801		
14EB	68D7D9C5E2E240C3		801		
14F3	C8L240		801		
14F6	D4C5E2C5E36B40C1	150A	802	RELORC DC	CL21*RESET, AND RESET HALT*
14FE	D5C440D5C5E2C5E3		802		
1506	40C8C1C3E3		802		
150B	C1D3D34C	150E	803	DC	CL4*ALL *
150F	E2C5D5E2C540C3D4	151F	804	ALSCF DC	CL17*SENSE CMDS FAILED*
1517	C4E24CC6C1C9D3C5		804		
151F	C4		804		
1520	68C2E4E340C6D5D3	152D	805	WCHEB DC	CL14*,BUT ONLY EBX*
1528	E8404CC5C2E7		805		
152E	40C2E8E3C5E240C1	153E	806	ONLBYT DC	CL17* BYTES ARE IN ERR*
1536	D9C540C9D540C5D9		806		
153E	D9		806		
153F	E2C5D5E2C540C3D6	1549	807	DC	CL11*SENSE CODE *
1547	C4C54C		807		
154A	E7E7	154B	808	EDOC DC	CL2*XX*
154C	40C9D540C5D9D9	1552	809	SC0IE DC	CL7* IN ERR*
1553	40C3D4D404C1D5C4	1564	810	LFTCOD DC	CL18* COMMAND CODE-XX*
155B	404040C3D6C4C560		810		
1563	E7E7		810		
1565	40404040C3D6C4C5	156F	811	RYTCCD DC	CL11* CCDE-XX*
156C	60E7E7		811		
157C	4C4040C218E3C5E2	1588	812	DC	CL25* BYTES EB2-EB1 *
1578	4C40404C40C5C2		812		
1580	F260C5C2F1404040		812		
1588	4C		812		
1589	C5C2F26CC5C2F1	15EF	813	BTES DC	CL7*EB2-EB1*
1590	404040C5E7L7C5C3	15A0	814	LEXEB2 DC	CL17* EXPECTED XX*
159E	E3C5C44C4C4040E7		814		
15A0	E7		814		
15A1	4CE7E7	15A3	815	LEXEB1 DC	CL3* XX*
15A4	404040404040E7E7	15AB	816	REXEB2 DC	CL8* XX*
15AC	4CE7E7	15AE	817	REXEB1 DC	CL3* XX*
15AF	40404C4CC1C3E3E4	15C0	818	LACEB2 DC	CL18* ACTUAL XX*
15B7	C1D3404040404040		818		
15BF	E7E7		818		
15C1	40E7E7	15C3	819	LACEB1 DC	CL3* XX*
15C4	4C404C4C4040E7E7	15CB	820	RACEB2 DC	CL8* XX*
15CC	4CE7E7	15CE	821	RACEB1 DC	CL3* XX*
15CF	E2C5D5E2C540C3D4	15E9	822	OKSEN DC	CL27*SENSE CMDS OK,REMOVE JUMPER*
15D7	C4E240D6D26BD9C5		822		
15DF	D4D6E5C540D1E4D4		822		
15E7	D7C5D9		822		
15EA	E2C5D5E2C540C3D6	1602	823	LRCAR DC	CL25*SENSE CODE E2,USING *
15F2	C4C540C5F26BE4E2		823		
15FA	C9D5C74C40404040		823		
1602	40		823		
1603	40C3C1D9E94B	1608	824	SENCO DC	CL6* CARR.*
1609	C2C9E34C4C	160D	825	BACBIT DC	CL5*BIT *
160E	40D6C640C5C240	1614	826	OFBYTE DC	CL7* OF EB *
1615	40C9E24CC6C1C9C3	161F	827	FAILED DC	CL11* IS FAILING*

E024 5203 LINE PRINTER FUNCTION TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
161D	C9D5C7		827		
162C	828	TABBIT EQU *			
1620	F7F6F5F4F3F2F1F0	1627	825	DC	CL8*76543210*
			830		
			831	*****	*****
			832	* RESERVED STORAGE	*
			833	*****	*****
1628	00	1628	834	TAGS DC	XL1*0*
1629	00	1629	835	EB1ERC DC	XL1*0*
162A	00	162A	836	EB2ERC DC	XL1*0*
162B	000000	162D	837	BUSUB DC	XL3*0*
162E	0000	162F	838	BTSON DC	XL2*0*
1630	FFFF	1631	839	BTSOFF DC	XL2*FFFF*
1632	FFFF	1633	840	CMLPT DC	XL2*FFFF*
1634		1635	841	STAT0 DS	CL2
1636		1637	842	STAT2 DS	CL2
1638		1639	843	STAT6 DS	CL2
163A		163B	844	STAI X DS	CL2
163C		163D	845	ERT1 DS	CL2
163E		163F	846	MSECS DS	CL2
			847		
			848	*****	*****
			849	* EQUATES	*
			850	*****	*****
0008	851	ARR EQU	X*8*		ADDRESS RECALL REGISTER
0001	852	XR1 EQU	X*1*		INDEX REGISTER 1
0002	853	XR2 EQU	X*2*		INDEX REGISTER 2
0800	854	LPI EQU	X*800*		LINE PRINTER IMAGE AREA
087C	855	LPD EQU	X*87C*		LINE PRINTER DATA AREA
0878	856	UCSFLG EQU	X*878*		
00EC	857	LOFOLG EQU	X*E0*		
00E4	858	LPIAR EQU	X*E4*		
00E6	859	LPDAR EQU	X*E6*		
0212	860	TEST EQU	X*212*		ENTRY TO DCP READ DATA SW'S ROUT.
0216	861	LINK EQU	X*216*		ENTRY TO DCP CHAIN ROUTINE
021A	862	PRINT EQU	X*21A*		ENTRY TO DCP PRINT ROUTINE
021E	863	UNPACK EQU	X*21E*		ENTRY TO DCP UNPACK TO EBCDIC RTN
0222	864	HALT EQU	X*222*		ENTRY TO DCP ERROR HALT ROUTINE
00EC	865	NRDY EQU	X*E0*		
00E6	866	BUSY EQU	X*E6*		PRINTER BUSY
00E4	867	CABUSY EQU	X*E4*		LEFT CARR.BUSY
00EC	868	RICABY EQU	X*EC*		RIGHT CARR. BUSY
00E2	869	PBBUSY EQU	X*E2*		BUFFER BUSY
			870	* INDICATOR FLAGS.	
0040	871	TAG1 EQU	X*40*		
0020	872	TAG2 EQU	X*20*		ONE OR MORE SENSE CMDS CORRECT
001C	873	TAG3 EQU	X*10*		SENSE TIMING BIT ERR
0008	874	TAG4 EQU	X*08*		MORE THAN 1 SENSE CODE IN ERR
0002	875	TAG6 EQU	X*02*		
0001	876	TAG7 EQU	X*01*		
			877	* SENSE SWITCH EQUATES.	
0208	878	SBYTE0 EQU	X*208*		DCP SENSE SWITCH AREA
0209	879	SBYTE1 EQU	X*209*		DCP SENSE SWITCH AREA
020A	880	SBYTE2 EQU	X*20A*		SECTION SENSE SWITCH AREA
			881	* CONTROL PGM SENSE SWITCHES.	
0004	882	SSW05 EQU	X*04*		PRINT MESSAGES ON MFCU
0080	883	SSW08 EQU	X*80*		USE 5203 RIGHT CARR.
			884	* SECTION SENSE SWITCHES.	
004C	885	SSW11 EQU	X*40*		HALT BETWEEN COMMANDS
0020	886	SSW12 EQU	X*20*		DELAY BETWEEN CMDS.
0010	887	SSW13 EQU	X*10*		SECONDARY HALT OPTION

E024 5203 LINE PRINTER FUNCTION TESTS

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT

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889
890
891 * COMMENT CARDS
892 ***** SECTION E02 *****
893 * ROUT.1 - SENSE CMDS ANALYSIS TEST
894 * ROUT.2 - SENSE TIMING BIT TEST
895 *****
896 * NOTES -
897 * 1.SET SSW-05 BEFORE RUNNING THIS TEST.
898 * 2.SET SSW-13 IF NO ALTERNATE PRINTER.
899 * 3.SET C.E.SWITCH TO OVERRIDE IDLE CONTROL BEFORE RUNNING THIS TEST.
900 *****
FFFF 901 END

```

E024 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADBUBY	A	002	1288	0715	0514
ADCABY	A	002	128A	0716	0518
ADFOLG	A	002	1286	0714	0440
ADPIBY	A	002	128C	0717	0522
AD107	A	006	1166	0614	0607 0611
AD119	A	006	115D	0612	0609
ALBAD	A	004	0AAA	0077	0070
ALCOP	A	003	0BF8	0199	0182
ALSCF	A	017	151F	0804	0087
ANBAD	A	004	0AFC	0106	0104
ANEB1	A	004	0C2C	0300	0298*
ANEB2	A	004	0D3C	0301	0299*
ANERR	A	004	0AE2	0100	0061
ANYGUD	A	004	0B13	0112	0109
ARR	C	001	0008	0851	0398* C359 0400* C401 0402 0403* 0404 0418 0441* 0442 0443* 0444 0580 0633
ASTERR	A	004	11A5	0632	0500
AVID	A	004	0C49	0226	0222
AWDUN	A	004	118C	0622	0619
BADBIT	A	005	16CD	0825	0338*
BAPRT	A	004	0CC6	0272	0270
BIBAD	A	005	0DAA	0338	0320
BOTALT	A	002	0E4D	0385	0380* C381*
BROUT	A	004	0ECO	0418	0471
BSEXIT	A	004	0EE4	0427	0418* 0423
BSYLP	A	006	104C	0527	0517 0521 0525
BTES	A	007	158F	0813	0190
BTSOFF	A	002	1631	0839	0288* C300* 0301*
BTSON	A	002	162F	0838	0294* 0295* 0310
BUALT	A	002	1081	0543	0515* 0519* 0523* 0532
BUBY	A	004	101D	0517	0715
BUFF	A	008	1473	0788	0516
BUMSG	A	008	144D	0784	0516* C520* 0524*
BUNALT	A	002	0E30	0378	0373* 0374*
BUSCT	A	003	1270	0701	0513
BUSCTI	A	003	1273	0702	0419
BUSUB	A	003	162D	0837	0419* 0420* 0513* 0527*
BUSY	C	001	00E6	0866	0422 C497 0525
BUTOLO	A	014	145B	0785	0537
CABUSY	C	001	00E4	0867	0487
CABY	A	004	1031	0521	0483* 0487* 0716
CARR	A	008	1463	0786	0520
CHCFF	A	004	0D90	0328	0324
CHRDY	A	004	1082	0544	0526
CHT11	A	002	1480	0796	0679
CHT13	A	002	1482	0797	0201 0355
CHT16	A	002	1484	0798	0556
CHT17	A	002	1486	0799	0491
CLINK	A	004	0E6A	0393	0387 0389
CMND	A	003	0FB8	0490	0447* C448 0449 0462 0479* C480 0481 0486 0492 0495
CMPINT	A	002	1633	0840	0296* 0297* 0298 0299
COCOD	A	004	0D66	0317	0312* 0326*
CSSWOA	A	004	0F23	0454	0452
CVD	A	004	0E6F	0398	0622 0638
DABOT	A	006	1132	0601	0598
DAEND	A	002	1280	0710	0599
DECGAN	A	006	0EA9	0410	0413
DECONE	A	001	1284	0713	0375 0382 0412
DECZRO	A	001	1283	0712	0409
DELAY	A	004	1052	0528	0514* 0518* 0522*
DEPP	A	008	12E5	0743	0554
DIVID	A	004	1175	0617	0613 0615
DOEB1	A	004	0D56	0313	0327
DOENSE	A	004	0A4A	0050	0044
DOHALT	A	006	123B	0679	0669 0671 0673
DORP	A	006	0E1B	0374	0376

EQ24 5203 LINE PRINTER FUNCTION TESTS

EQ24 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
DSKPOP	A	004	1302	0749	C640 C641 C648
DUSPOP	A	003	12F7	0747	0642
EBIERC	A	001	1629	0835	0078 0102* 0237 0245
EBZERC	A	001	162A	0836	0058* CC63 CC81 C105* 0234 C242
EOCC	A	002	154B	0808	0111* 0221 0226 0232
EFFS	A	002	1265	0656	C288
ENT	A	008	14AE	0795	0205 0359
ERNROY	A	004	0F57	0466	0464
ERT1	A	002	163D	0845	0016 0342* 0344* C366 0375* C382* 0480* 0635 0639 0643 0646
EXIT	A	004	16D1	0569	0444*
EXPDO	A	002	1294	0722	0045*
EXPD3	A	002	129A	0725	0042*
EXPTAB	A	001	1293	0721	0056 C122
FAILED	A	011	161F	0827	0353
FLCOP	A	006	0ECA	0420	0422
FOADD	A	006	1197	0626	0587
FCLG	A	002	1275	0703	0714
FOUR	A	002	1268	0699	0618 0626
FRMLE	A	004	0F7D	0476	C440*
FRGBYT	A	006	0E9D	0408	0405*
FROM	A	006	CE88	0405	0399*
GCDEC	A	006	116F	0616	0605
GCMOST	A	004	11EE	0649	0647
GORGAN	A	004	0A88	0065	0112
HALT	C	001	0222	0864	0210 0218 0223 0228 0248 0362 0370 0377 0384 0424 0468 0509
					0542 0561 0687
HAMNO	A	013	141B	0778	C678*
HAMO	A	003	141E	0779	0601* 0624 0677
HLTID	A	002	11F7	0653	C499* 0532* 0593* 0686
HXBYT	A	001	0E6E	0397	C408* C410*
IBEP	A	016	1362	0757	0594* 0667
IDALT	A	002	0C1A	0211	C083* C090* 0113* 0214
INVC	A	005	1423	0780	0601
ISBUSY	A	004	0FFF	0511	0493 0496 0497
JALT	A	003	0CC7	0279	C273
JUSUN	A	004	0C39	0221	0217
KNALB	A	006	132D	0753	0645 0678
KORP	A	002	0C9C	0249	0231* 0236* 0239* 0241* C244* C247*
LACEB1	A	002	15C3	0815	C160
LACEB2	A	018	15C0	0818	C154
LACMND	A	018	1327	0752	0642* 0645* 0648* 0652
LAC1	A	002	0B56	0159	C156*
LAC2	A	002	0B85	0153	C150*
LDCMD	A	006	0FC6	0447	0442*
LEAVIT	A	004	0CAD	0257	C213
LEXE61	A	003	15A3	0815	0136
LEXE62	A	017	15AC	0814	0130
LEX1	A	002	0E52	0135	C132*
LEX2	A	002	0B41	0129	0126*
LFTCOD	A	018	1564	0810	0124*
LICDSA	A	006	0FCE	0495	0485* 0489*
LINK	C	001	0216	0861	0257 0393
LOFOLG	C	001	00E0	0857	0476*
LPD	C	001	087C	0855	0285*
LPDADR	A	002	127C	0708	C475 C597
LPDAR	C	001	00E6	0859	0475*
LPI	C	001	080C	0854	0458 0458 0459 0459
LPIADR	A	002	127A	0707	0474
LPIAR	C	001	00E4	0858	0474*
LRCAR	A	025	1602	0823	0269* 0391*
MAP	A	010	14A6	0794	0201* 0355* 0491* 0508 0541 0556* 0560 0679* 0683
MAKCS	A	004	0A3B	0043	0041
MSECS	A	002	163F	0846	0289* 0302* 0448* 0456* 0457* 0460*
MUBEUN	A	004	0C7D	0241	0233
MUSBTU	A	006	0AF6	0105	0101
NACMD	A	005	1315	0751	0634* 0637*

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
NITNOC	A	006	0D73	0321	0318 0354
NOBALT	A	002	0FFE	0510	0499
NOBET	A	003	0E08	0368	0309* 0333* 0343*
NOBUSY	A	015	144C	C782	0504
NOERR	A	003	10EF	0585	0592
NOTRIT	A	006	0F8C	0480	0478
NRDY	C	001	00E0	0865	C270 0464 0544
NRDYER	A	004	10BD	0564	0544
OFBYTE	A	007	1614	C826	0311* 0323 0325* 0342
OKSEN	A	027	15E9	0822	0209 0254
ONE	A	002	1267	0697	0102 0105 0131 0137 0143 0149 0155 0161 0167 0173 0302 0313
					0316 0374 C381 C398 0403 0410 0420 0441 0443 0460 0527 0620
ONLBYT	A	017	153E	0806	0094
ONTUTR	A	001	1278	07C6	C603
OREB1	A	004	0D0C	0294	C292*
OREB2	A	004	0D10	0295	0293*
OTORZ	A	006	0E97	0407	0402*
CUTLCG	A	004	0B25	0122	0089 0096
PBBUSY	C	001	00E2	0869	0517
P1BY	A	004	1045	0525	0717
PCPSUD	A	002	12F4	0746	0285 0641*
PORK	A	004	0C97	0248	0235 0238 0240 0243 0246
PREXIT	A	004	125E	0690	0633*
PRIN	A	008	146B	0787	0524
PRINT	C	001	021A	0862	003C 0035 0C84 0091 0114 0178 0183 0187 0191 0195 0202 0206
					0251 0274 0280 0345 0350 0356 0360 0501 0505 0534 0538 0551
					0557 0649 0658 0664 0674 0680 0684
PRGD	A	006	0E38	0381	0383
PR4LI	A	004	0BD3	0183	0175 0177
PSTERR	A	004	11A9	0633	C467 0473 0533 0546 0565
PTITL	A	004	0CDA	0280	0271
PUIDIN	A	002	1259	0688	0686*
RACEB1	A	003	15CE	0821	0172 C181 0198
RACEB2	A	008	15CB	0820	0166
RAC1	A	002	0BB8	0171	0168*
RAC2	A	002	0BA7	0165	0162*
RELORC	A	021	150A	0802	0038
RESALT	A	016	149C	0793	0277
RESTO	A	004	119D	0627	0602 0625
REXEB1	A	003	15AE	0817	0148 0194
REXEB2	A	008	15AB	0816	0142
REX1	A	002	0B74	0147	0144*
REX2	A	002	0B63	0141	0138*
RICABY	C	001	00EC	0868	0483
RNUM	A	001	0A03	0013	0511 0547
RTN1	A	001	0A10	0024	0015
RTN2	A	001	0CB1	0264	0026
RYTCOD	A	011	156F	0811	0125* 0186
SABTR	A	006	1138	0603	0600
SAVTUU	A	002	10D8	0571	0446* 0567
SAVMUN	A	002	10D6	0570	C445* 0566
SBYT E0	C	001	0208	0878	0028 0176 0272
SBYT E1	C	001	0209	0879	0477
SBYT E2	C	001	020A	0880	0212 0364 0451 0454
SCARD	A	005	0B2D	0124	0200
SCOIE	A	007	1552	0809	0117
SDC	A	006	0EC4	0419	0426
SDEHF	A	004	168A	0546	0530
SEBTU	A	004	0E34	0380	0369
SEBUN	A	004	0E17	0373	0367
SEEF	A	004	0BCA	0110	0107
SEGAN	A	004	0CFC	0291	0303
SEIFDF	A	004	0E4E	0386	0331 0365 0372 0379
SEIFSK	A	004	11E1	0646	0644
SENC0	A	006	1608	0824	0348
SENEXT	A	004	CA74	0060	0068

E024 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
SENS0	A	002	125D	0728	0050*
SENS1	A	002	129F	0729	C051*
SENS2	A	002	12A1	0730	0052* 0054*
SENS3	A	002	12A3	0731	0053* C055*
SENTAB	A	001	129C	0727	0057 0123
SFFE	A	002	127E	0709	0296
SKALT	A	003	0A2D	0039	0029
SKIBIT	A	004	0AD1	0090	0079 0082
SKIHED	A	004	0DD5	0350	0340
SKRICA	A	004	0FAA	0487	0482
SKRIG	A	004	11C0	0638	0636
SNIRP	A	006	0CE4	0265	0392
SNOTIT	A	004	0C59	0231	0227
SPACEO	A	002	1252	0720	0484* 0488* 0492
SPUDT	A	003	0A0C	0017	0043 0386
SPUTA	A	003	0A0F	0018	0174
SSW05	C	001	00C4	0882	0028 C176 0272
SSW08	C	001	0080	0883	0477
SSW11	C	001	004C	0885	0451
SSW12	C	001	0020	0886	0454
SSW13	C	001	0010	0887	0212 0364
STAI X	A	002	163B	0844	0596* 0597 0599 0603* 0604 0606 0608 0610 0612* 0614* 0616* 0617* 0618* 0620* 0623
STALT	A	006	0DE1	0355	0329
STATAB	A	001	1363	0758	0584
STAT0	A	002	1635	0841	0494* 0718 0719
STAT2	A	002	1637	0842	0291* 0292 0293 0297
STAT6	A	002	1639	0843	0549 C581* 0590 0591 0632* 0656 0668 0670 0672
STECK1	A	004	1102	0590	0588*
STECK2	A	004	11C6	0591	0589*
STERR	A	004	10DB	0580	0466 0472 C529 0545 0564
STEXIT	A	004	11A1	0628	0580* 0626*
STSA1	A	002	10DA	0579	0583* 0627
STOAD	A	002	128E	0718	0485
STOM1	A	002	1290	0719	0489
SUBGAN	A	006	1179	0618	0621
SYNARA	A	004	0CA0	0251	0072
TABBIT	A	001	162C	0828	0315
TAGS	A	001	1628	0834	0059* C062* 0C69 0C71 0106 0108* 0110* 0216 0307* 0328 0339 0341* 0498* 0531* 0582* 0595* 0662 0689*
TAG1	C	001	0040	0871	0071 0106 0110
TAG2	C	001	0020	0872	0062 0069
TAG3	C	001	0010	0873	0307 0328 0339 0341
TAG4	C	001	0008	0874	C1C8 C216
TAG6	C	001	0002	0875	0582 0595
TAG7	C	001	0001	0876	0498 0531 0662 0689
TBCN	A	003	0D6D	0319	0308* 0314* 0317 0321 0321* C330 0332* 0343
TENXT	A	004	0D62	0316	0322
TESER	A	004	125A	0689	0663
TEST	C	001	0212	0860	0046 0566
TFEL	A	005	147D	0790	0269 0634
THGIR	A	005	1478	0789	C391 0637
TICCHK	A	004	0F50	0464	0455 0470
TIOOK	A	004	0F69	0471	C465
TITLE1	A	024	12C3	0740	C033
TITL2	A	022	12D9	0741	0283
TIVA	A	003	0CAA	0256	0215 C220 C225 0230 0250
TIXE	A	004	0EBC	0414	0404* 0411
TOBYT	A	006	0EB2	0412	0406*
TOLONG	A	004	0ECA	0424	0421
TRAM	A	004	0D4E	0311	0334
TWO	A	002	1269	0698	C065 CC66 0400
TWYUN	A	002	126D	0700	0616
TYBOT	A	006	0E91	0406	0401*
UCSFLG	C	001	0878	0856	0040
UNITIN	A	001	1277	0705	0612

E024 5203 LINE PRINTER FUNCTION TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
UNOSVN	A	001	1276	0704	0614
UNPACK	C	001	021E	0863	0127 0133 0139 0145 0151 0157 0163 0169 0654
UNSEC	A	002	1282	0711	0289
UVWXYZ	A	001	0A00	0003	
WCHEB	A	014	152D	0805	0077* 0080*
WFROM	A	004	0B17	0113	0064 0073
WICAR	A	002	0CEF	0287	0268* 0388 0390*
WT	A	006	0F32	0458	0450 0461
XIO	A	006	0EE8	0440	C286
XIOEXT	A	004	10C5	0566	0463 0512 0548 0550 0563
XR1	C	001	0001	0852	0056* 0060 0065* 0067 0100 0103 0122* 0126 0131* 0132 0137* 0138 0143* 0144 0149* 0199 0310* 0313* 0319 0368 0445 0566* 0583 0584* 0585 0585* 0586 0588 0589 0593 0594 0627*
XR2	C	001	0002	0853	0057* 0060 0066* 0100 0103 0111 0123* 0124 0125 0150 0155* 0156 0161* 0162 0167* 0168 0173* 0315* 0316* 0338 0344 0446 0567*
YBATS	A	004	133E	0755	0657 0661
ZALT	A	004	0C15	0210	
ZERO	A	002	1263	0695	0058 0063
ZROTD	A	006	0EA3	0409	0407*

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

E024 5203 LINE PRINTER FUNCTION TESTS

OBJECT CARD LISTING

THE CHARACTER INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-Y:8BE & B/ OI;A A & F C.D 8A HHZ KQH*BFUH QDZ|-8ZBG /YANAM HZG16|-ZH; HAACO DZY 7COE0240001
T+-Z5+&CHC|H&BCO ADZL /OHK<+ KXLC /DZ@OB/H/<+<KY3Z 1DD # JHTO-DKUZH BDZOK JQDDW<#EAAQ Y\$ED @EME0240002
T+-DO EG2 O*+HAQ YC&DOH/IT@-F|(-D KELQBDWV*OC &Z 4+B OH<B&BDY8&AQ YOI <Y|HG\$L32EK4 *AQ \$2&E0240003
T+-,H-HAGC31EK4 *AQD@YDJ|DD<FZB G /,BEJH-8DG2/5& @E-OEH*BFZH4EL# -E?HG&64 &G2-E4 +AQ LHE0240004
T+-ZHWJIX&E IH AA-8 ESYKR3/ EST 2U *+BAQY@Y*I+U CHBOAEMZIOH*HSC1 CCA, /OHEO/&NM>A CO-D 19ZE0240005
T+-/DZ|B /H*.D NR UZ JN?B3&AB4G /OH; & EE 6 JI XI D.MZBG /8A NY3QADW*4 &_TOH* BG-D K,-E0240006
T+->* ND3QADW* 4 &_4OH*BG-D AD >|-DKR3&BB8P /OH ; & E* 6 /IXI H .VZBG /8A N03Q BDW* 5#4E0240007
T+-?P(H.Z@BG /8 A N23QBDW*4 -> 8OH*BG-D AP+(-H KR3--B-#2DAH8A H HZ .OH*BFYE#E*# 2/2 7J<E0240008
T+-OKCH*BFYD*EO* /OHE-J4NT@BG /D AGAD>OH*BFYH*E*9 *OC &Z_C DHZ/K 2OH*BFYDKEH# /OH E/&4 OK&E0240009
T+-1(E;X /OHS8 8D HH@ZB. |M<K?FH A-L-HEST2U X /OH S8H|2/7D'@/N.a-D IOH*BH>BH@Y)/|-< NK" H :SQE0240010
T+-2H &X /OHS8H3 2/5D@/ 2*|-NK" H AFL4 ES,2-KO@/ &2 *|& OH-HAHL2FCI3 2/1Y@/O2*|& OH?H AC30 KK<E0240011
T+-3CS 2*|& OH-H AAC2IC13 /OHS8 C 2/O, /OHE&JZN; ; @G1POH*BE-H " " @8-3>C &O /J*O; <1?H 4\$4E0240012
T+-3=/1&8A HH@Z HOH*BFUQ-EI3-8-A @B@BG /ZBE/.R8 <C-SHD?L /O#Y8-D < 1Q1DWM< JQ" DYH 08/Q *THE0240013
T+-49(00 C&40(00 CJDO(TY ES@: AQ >C DO<1I=CODO<1Q 7C (.JQ3C (KJQ 2+O O<LZ ET | JQ "DW* *.<E0240014
T+-54C D<CZ&ES- @; 5_|G+<BHAES4 @@/CM| &(R3QADW* @ &5>O-HCG3QBOW* *A 5>@YDF; @Z 7C- =8HE0240015
T+-67CC8(\$ZBBCOH *@JQM@YD<|DOECO CO- /O5O+A OH|H &KT59CO72-\$ @; &5 _IGU+B<BGCMBZ AQ (C- 5YME0240016
T+-7EDACY@/ ~+/ OH O ETOOE O C-U (\$SO ET4 CH*BFZD -E-T-J*BG /DAE1Q -OH*(*O0AEHQHZZB G /Y 4I8E0240017
T+-8V-JHM, ZBG /D OOH*BH>AE+A BB?H &LL72ET32 &*8 C 2DB\$ /OHS8B,2/3* @G08OC- <AIXAO O|JH \$-<E0240018
T+-9-/< BC/? /OH S8 C2/1Y@TC9(C- +LJIXAO C|JHDO H ++<BG S.- C-AB-3 2UAM*: -3>@YD+|+Y <#-O QH-E0240019
T+-: \$AAQBEGT /O3 UOH*BE- 6BAIXI (- +UCGHDW4B :O(- +XCQHDW*4B :*C D +Y- C D+& C D +Z- *B@E0240020
T+-#O O CWB & - K-O@ CWBKR" H BB-Q- K/<BGCDX /O (--+900BES4 K*Q@BES4KR" HAA@G WCZY */UE0240021

EC24 5203 LINE PRINTER FUNCTION TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-@J@Y*HOH*BH> JOH*+1<8G < &= DYQ6BAIX(-|B3Q HDW*4BACM(D&ST& BD(-< &=: < JQ "C#Y :K4E0240022
T+-<+> |>-H&FL/ - ,2U |O-AZBH H H@Z W< O|3?OET8 (MO- B (HO- B | JQ" DW- / @2+- |>* 9:YE0240023
T+-=GDACEO; |N" H GDZBGD(? /1FZOH* BH> &OH*|M<BGCZC /1C\$OH*JDLGUDXY 19/1@<; CS -X 2U & 'T&E0240024
T+-B+--|>@OAE4 |>T-HC#X2UAD@#A 2|+<KU&OAC'<KT?H GCT3UDCH@8AHJC D |41H&@O C DMZ/K 6C&D 9E4E0240025
T+-*C#YKU?HA(LC -ETM(=: C2-KT A9-"*+<DOH O D-* |*ZBGDEP /OHE-J4 M< <BG /DEB/KWOH* BH> " QROE0240026
T+ / 8ET48B-| -JC EC HO.JIOC D&NJH H|AH&-&OGED4M*@G SDDO< JANDYY@DI B AC *MLJJTO& &L O ADEM 9T@E0240027
T+ /A 3DYO@EABAC * MLJJ,O; Q&L|HG(-@ BES4KR@ A C /1C \$OH*ESTYAES-< AG 7DHG /1FZOH*BFYD \$EEZ *O<E0240028
T+ /B>OH*BFYMH&H\$ /OHS8 CABAB*OH* &@B@GDEU' C&YCAVD O+ HD+<H&H*BG /, ACA.V8 O< JKWE.L /OH 7E8E0240029
T+ /C ZFYMH&H\$ /OH S8 32/OT /1C\$OH* JDLMAD(Q5 /CQOH* BDZBG 4BAFUK+<O+LZBES- 4 J ; RUE0240030
T+ /DU6ZHA05CK J("OC2-R@* ADC AO D&*A+& O+CU ETX DAC?G J'OH*C1(SDTYBES-09/Q#C&D O+1H 6E<E0240031
T+ /E->|HBB&4AETZ K-|HDB&OEA8M" H GQ-@ ETZK;C4QET? 2/B* DAQ#@Y&P|&4 O+HBA34DET 72/ U + AQ 1R4E0240032
T+ /F&+1I7@Y*|C- O+1I6@Y*FCO O+1I _| O+<@ ETZKE" H BB-8 ETYKR@B@GDPX /O97ETYM@7HGA-8 ADE& 5CQE0240033
T+ /GNDWZ5 JCEOH* CCTETU4BAI/C & LEJJ+ -O| H&A-O DD1MM; <8GCW@D|J< BC " K'A<BCA LI1. 7* H "T@E0240034
T+ /H&ET32D Q<AJK *D248AAQ@Z FC Y LI1<BOH*BFZD@VD2- <BG /8BET" L|ZB G /DADJK=+ DOH|H &KZ J, YE0240035
T+ /I /OHE-K&LQTX ETX2UA09DAQ @Z N+ &O+|H&CZBG /D ADA&;C DMF1<_C D MZ/KOOH*BFYDHEH\$ /OH 6GHE0240036
T+ /HFF/M< JIRD~ /OHS8 # JQYOH* 6" @ & B & E&FH & GAOE7) #B H-|"*B|@*H|C 1DXM #SYE0240037
T+ /ADA4&<JAEETH O(+ & <-O& AB L " CE@<P 11-.E@=.E5;.E&<| H1+I O|PA4-TS2;I 8@M #E4E0240038
T+ /@8>|S1)PS1MC T2)LI5*) OZXT8UC T1;.T&+LPO4CS4ZX P5@PDQ)-R2)PTM+. PO*|E&DA &DA 8_ 154 5\$DE0240039
T+ /<78'R &DA 4@G S84CC5_LMO)PDQFC L1*\$T&DCN5_PE&DA &DA &DA &DA &DA &DA &+. TO; |U8UC B+< O/QE0240040
T+ / (21; I &DA &(R2)SR2; |Y&@R6MC B2; (2; I &DA &DA &DA &DA &DA & B *A<|HO*XN&+.Y5*(O@- @2ZE0240041
T+ /+_4U_ D E2)P C6MCS:(PCQ;.L2)) &A AZXNO'V 1ZG I4=LR1MCC2(HD X HD JLM1)V 1*|H5UC C2(H ' QE0240042
T+ /|YKOH BZGN=DC H0)LM6MCO5MCC2(H H -H5(V.8@TE6) L A44CC2(I.- AO@G R6M?S:(PC&<|H4U_ &D \$#YE0240043

E024 5203 LINE PRINTER FUNCTION TESTS

OBJECT CARD LISTING

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+/ET .CO)XRK=.	PO+|E&< H4U_ H	CL_ \$R5+I 4*GM&<	H4U_ &|*HO)LM1)V	5)R. &DA &DA 2)P	V4&E N\$OE0240044
T+/J:~.024CN5>|	0>LS:DCAL>|E6MC	S2)R 0*|P82L527C	3&DA &DA &DA &<.	U8>/ 8*\$OE(|05*-	CO)U EH&E0240045
T+/KR6*XAL2PP6*X	N82PREDCB9<\$F1)V	6*XG2+|L1*\$TE(L	A4XN ~.024CR1*G	D:F?T2<PNE(XE8XP	TE<- N3DE0240046
T+/LM0)|T5=|RK2|	H84_ EDCE5;|R:DC	42-612*G62~.J5(-	RE<E-07GE* *L12DC	T5UCAQC.11|.S2|N	.82- 5/*E0240047
T+/M|1)N 6*PS8*\$	R1MCC0)XR2*GG1M7	SP07P6*PS8UCC2(I	6*PS1:(, &<GN1DC	R1;.E84CHO)|T0)|	L&+H 118E0240048
T+/NH1)PS1MCC5<L	S6<\$A2)|E1F7B9+(	5_PL:DA 1*.X&<.	Y82PSE<GR1MCI5MC	E6)XS1)PS1MCC5&L	E&+* *I<E0240049
T+/DE94CI5MCE6)V	0*\$M5<GN1DA &<	01<N-9=) &DA 0*\$	D10CX94A &<.Y82P	S&DA &DA 1*.2Q<P	B2M LT-E0240050
T+/P &DA 1*.2Q<P	B2MA &<PX52PC82P	D&DA &+~X&+~X&DA	&DA 9=) 9=) &DA	0*|T9<GL&DA &DA	9=* *D&E0240051
T+/P#(+-X&DA &DA	9=) 9=-S1)PS1MC	C5<LSE(|\$K&XE5(\$	V1MCJ9(LP1)XS1)P	S1MCC5&LE&<P2E=L	S2)M N:OE0240052
T(1Q314A &DA &DC	CO)XRK2.184A &(\$	F&<PB&DCIBUCF0*X	L2)PG*\$5*||22-	..... |*****	..... ;JME0240053
E***E7*=-DC*PH\$	=*7M&F| ..... C	*F& ASC R A	S0 Q .....	..... 21231012711	..... 110712#-E0240054

----- LAST PAGE -----

E033 CHAIN CHARACTER COUNTER TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
0A00		2	DECK 4	
		3	E03 START X'A00'	
		4	*****	
		5	*	
		6	* SYSTEM/3 52C3 CHAIN CHARACTER COUNTER TEST	
		7	*	
		8	*****	
		9	SECTION 3 - ROUTINE 1	
		10	*****	
0A00 E033	0A01	11	DC XL2'E033'	PROGRAM IDENTIFICATION
0A02 00	0A02	12	DC XL1'0'	FLAGS
0A03 01	0A03	13	DC XL1'1'	CURRENT ROUTINE NUMBER
0A04 0000	0A05	14	DC XL2'0'	RESERVED
0A06 0A0D	0A07	15	DC AL2(RTN1)	ADDRESS OF FIRST ROUTINE PREFIX
0A08 0DC4	0A09	16	DC AL2(ERT1)	ADDRESS OF ERROR RECORDING TABLE
0A0A EC5000	0A0C	17	SPUDT DC XL3'EC5000'	UNIT DEFINITION TABLE - PRINTER
		18	*****	
		19	*	
		20	* ROUTINE 1 - CHAIN CHARACTER COUNTER TEST	
		21	*	
		22	*****	
0A0D 01	0A0D	23	RTN1 DC XL1'1'	ROUTINE NUMBER
0A0E 00	0A0E	24	DC XL1'0'	FLAGS
0A0F FFFF	0A10	25	DC XL2'FFFF'	LAST ROUTINE
		26	*****	
		27	B TEST	
0A11 C0 87 0212		28	MVI TECHBI,X'38'	SET TO CHK.48 CHAR.BIT CN
0A15 3C 38 0A3C		29	MVC WHAIN(3),FRATE	PUT 48 IN TITLE
0A19 0C 02 0D7F 0D79		30	MVI HICHCT,X'2F'	SET HIGH CHAR CCUNT FOR 48 CHAR
0A1F 3C 2F 0DCB		31	CLI UCSFLG,X'FF'	UCS FLAG ON
0A23 3D FF 0878		32	JNE SENAT	
0A27 F2 01 0E		33	MVI TECHBI,X'39'	SET TO CHK. 48 CHAR.BIT OFF
0A2A 3C 39 0A3C		34	MVI HICHCT,X'77'	SET HIGH CHAR CCUNT FOR ECS
0A2E 3C 77 0DCB		35	MVC WHAIN(3),EXCASE	PUT 120 IN TITLE
0A32 0C 02 0D7F 0D7C		36	SENAT SNS STAT3,X'E3'	GRAB STATUS
0A38 30 E3 0DC2		37	TECHSI TBN STAT3,B'100'	48 CHAR. BIT CN OR OFF
0A3C 38 04 0DC2		38	JT GOPRT	
0A40 F2 10 17		39	TBN SBYTE0,SSW05	PRINT ON MFCU
0A43 38 04 0208		40	JF UDALT	
0A47 F2 90 0A		41	B PRINT	PRINT 'IMAGE AND CHAIN DO NOT AGREE'
0A4A C0 87 021A		42	DC XL1'C1'	
0A4E C1	0A4E	43	DC IL1'28'	
0A4F 1C	0A4F	44	DC AL2(ERUDT)	
0A50 0DB4	0A51	45	DC XL2'E00E'	
0A52 EC0E	0A53	46	UDALT B HALT	UDT ERR HALT
0A54 CC 87 0222		47	DC XL2'E00E'	
0A58 E00E	0A59	48	GOPRT TBN SBYTE0,SSW05	PRINT ON MFCU
0A5A 38 04 0208		49	JF TIPMU	
0A5E F2 90 0A		50	B PRINT	PRINT 'XXX CHARACTER CHAIN CHARACTER
0A61 C0 87 021A		51	DC XL1'41'	COUNTER TEST'
0A65 41	0A65	52	DC IL1'28'	
0A66 1C	0A66	53	DC AL2(TITL1)	
0A67 0D98	0A68	54	DC XL2'EC00'	
0A69 E000	0A6A	55	TIPMU TBN SPUDT,B'100000'	100-200 LPM DEVICE
0A6B 38 20 0A0C		56	JF JUMPIT	
0A6F F2 90 14		57	MVI THRTEEN,X'CA'	
0A72 3C 0A 0D55		58	MVI YABIT+1,X'0A'	
0A76 3C 0A 0B04		59	MVC HICNT+5(2),ADMIN	
0A7A 0C 01 0BD1 0D72		60	MVC LOCNT+5(2),ADMIN	
0A80 0C 01 0C0B 0D70		61	*****	
		62	* TAKE 1550 SAMPLES OF CHAIN EMITTER TIMING	
		63	*****	
0A86 3C 00 0DC8		64	JUMPIT MVI LPOUNT,X'00'	START LOOP CCUNT AT 0
0A8A 0C 01 1FFF 0D6A		65	MVC ENTUU(2),CCF	
0A90 3C 1E 0DC7		66	LUGAN MVI BLAKNT,30	SET WIPE COUNT
0A94 C2 01 1FFD		67	LA SEMID,XR1	END OF AREA ADDR.
0A98 4C 31 00 1FFE		68	MVC O(50,XR1),ENTUU-1	WIPE 1ST 50
0A9D 36 01 0D6C		69	MOVMDR A MIFTY,XR1	DECR.ADDR. BY 50

E033 CHAIN CHARACTER COUNTER TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		70	MVC O(50,XR1),50(XR1)	WIPE 50 MORE
		71	SLC BLAKNT(1),ONE	1550 BYTES DONE?
		72	BNZ MCVMDR	
		73	B BROUT	
		74	LA TWON,XR2	LOAD SAMPLE AREA ADDR.
		75	TAKSAN SNS 1(XR2),X'E2'	5 SENSE TIMING BYTES
		76	LA 1(XR2),XR2	3 ADD 1 TO SAMPLE AREA ADDR.
		77	CLI 1(XR2),X'FF'	4 END OF SAMPLE AREA
		78	BNE TAKSAN	4 IF NOT, LOOP
		79	*	16 =24.3 USEC.LCOP
		80	MVI O(XR2),X'00'	ZERO 2ND SENSE BYTE
		81	*****	
		82	* CHECK FOR NO EMITTER PULSES	
		83	*****	
		84	MVI CHEON,X'B8'	
		85	LA TWON,XR2	LOAD TIMING AREA ADDR.
		86	PAZZ MVI NOEM,X'28'	LOAD TRY COUNT CF 40
		87	CHKNE LA 1(XR2),XR2	ADD 1 TO ADDR<
		88	CHEON TBN O(XR2),B'100000'	CHAIN EMITTER ON
		89	JT ANYMIS	
		90	SLC NOEM(1),ONE	TRY 40 SAMPLES
		91	BNZ CHKNE	
		92	B HALT	HALT NO EMITTER PULSES
		93	DC XL2'E051'	
		94	B GAWAN	
		95	ANYMIS CLI CHEON,X'B9'	TEST FOR BIT OFF BEEN DONE
		96	JE SIMYNA	
		97	MVI CHEON,X'B9'	CHANGE TO CHECK FOR BIT OFF
		98	B PAZZ	
		99	*****	
		100	* CHECK FOR MISSED EMITTERS	
		101	*****	
		102	SIMYNA LA TWON,XR2	LOAD TIMING AREA ADDR.
		103	YABIT MVI NCEM,17	LOAD TRY COUNT CF 17 OR 10
		104	NOBIT LA 1(XR2),XR2	ADD 1 TO ADDR.
		105	TBN O(XR2),B'100000'	CHAIN EMITTER ON
		106	JT GOODUN	
		107	SLC NCEM(1),ONE	TRY 17 OR 10 SAMPLES
		108	BZ MISEM	
		109	LA NOBIT,XR1	LOAD LOOP ADDR.
		110	J CHEND	
		111	MISEM B HALT	HALT,MISSED AN EMITTER PULSE
		112	DC XL2'E052'	
		113	B GAWAN	
		114	GOODUN LA YABIT,XR1	LOAD LOOP ADDR.
		115	CHEND ST ADRAV,XR2	
		116	CLC ADRAV(2),LASADR	ENTIRE FIELD CHECKED
		117	BNE O(XR1)	
		118	*****	
		119	* SENSE 1550 SAMPLES CF TIMING AND CHAR.COUNTER	
		120	*****	
		121	L HODEL,XR2	LOAD 350 MS SEARCH
		122	HMOOP A NEG1,XR2	DECREMENT DELAY
		123	BZ EMDN	
		124	SNS STAT2,X'E2'	GRAB TIMING
		125	TBN STAT2-1,B'1'	HOME LATCH ON
		126	BF HMOOP	
		127	MVI MSECS,150	SET 150 MS DELAY
		128	MVI SHLONG+1,X'01'	
		129	TBN SPUDT,B'100000'	100-200 LPM ?
		130	JT NGUCS	
		131	MVI MSECS,255	
		132	MVI SHLONG+1,X'07'	
		133	NOUCS CLC LPI(256),LPI	DELAY 1 MS.
		134	CLC LPI(60),LPI	
		135	SLC MSECS(1),CNE	DECR DELAY COUNT
		136	BH NGUCS	
		137	EMCN LA TWON,XR2	LOAD TIMING AREA ADDR.

E033 CHAIN CHARACTER COUNTER TEST

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
OB85 C2 01 13E0 138 LA ONEIN,XR1 LOAD CHAR.CTR.AREA ADDR.
OB89 B0 E2 01 139 SLOOP SNS 1(,XR2),X'E2' 5-SENSE TIMING BYTES
OB8C 7C E1 01 140 SNS 1(,XR1),X'E1' 5-SENSE CHAR.CTR.BYTE
OB8F 5C 00 00 01 141 MVC O(1,XR1),1(,XR1) 6-PUT C.C.INTC LO ADDR.
OB93 36 01 0D4F 142 A ONE,XR1 6-ADD TO C.C.ADDR.
OB97 36 02 0D4F 143 A ONE,XR2 6-ADD TO TIMING ADDR.
OB9B 34 02 0DBE 144 ST ADRSV,XR2 6
OB9F 0D 01 0DBE OD64 145 SHLONG CLC ADRSV(2),LASADR 22 OR 10-ADDR.REG.TO END
OBA5 C0 01 0B89 146 BNE SLOOP 4
147 * 48-CY. 73 USEC. LOOP
148 * 60-CY. 91.2 USEC LOCP FOR 100-200
149 MVI ENTUU-1,X'00' ZERO 2ND SENSE BYTE
150 *****
151 * CHECK HOME LATCH MISSING *****
152 *****
OBAD C2 02 19EF 153 LA TWOIN-1,XR2 LOAD TIMING AREA ADDR.
OB81 0C 01 0DC6 OD4D 154 MVC SAVSAM(2),ZERO
OB87 0C 01 0DB6 OD4D 155 ZERSAM MVC SAMCNT(2),ZERO ZERO SAMPLE COUNTER
OB8D E2 02 01 156 ADWUN LA 1(,XR2),XR2 ADD 1 TO SAMPLE ADDR
OB8C B8 01 00 157 TBN O(,XR2),B'1' HOME LATCH ON
OB83 F2 10 27 158 JT GOTWUN YES JUMP
OB86 0E 01 0DB6 OD4F 159 ALC SAMCNT(2),ONE ADD 1 TO SAMPLE CNTR.
OB8C 0D 01 0DB6 OD59 160 HICNT CLC SAMCNT(2),FEMAX SAMPLE COUNTER OVER MAX S
OB8D F2 04 11 161 JNH LOADUN JUMP IF NOT
OB85 3D FF 0878 162 CLI UCSFLG,X'FF' UCS CHAIN
OB89 F2 81 0A 163 JE LOADUN SKIP HALT IF YES
OB8C C0 87 0222 164 B HALT HALT NO HOME LATCH OR 1 MISSINF
OBE1 165 DC XL2'E053'
OBE2 C0 87 0D0E 166 B GAWAN
OBE6 C2 01 0B8D 167 LOADUN LA ADWUN,XR1 LOAD LOOP ADDR
OBEA F2 87 51 168 J CEND
169 *****
170 * CHECK FOR TOO MANY HOME LATCHES *****
171 *****
OBED 0E 01 0DB6 OD4F 172 GOTWUN ALC SAMCNT(2),CNE INCREMENT(1) SAMPLE COUNTER
OB83 3D FF 0878 173 CLI UCSFLG,X'FF'
OB87 F2 01 0C 174 JNE LQCNT
OB8A 0D 01 0DC6 OD4D 175 CLC SAVSAM(2),ZERO
OC00 F2 01 15 176 JNE TOME
OC03 F2 87 2E 177 J SAVIT
OC06 0D 01 0DB6 OD57 178 LOCNT CLC SAMCNT(2),FEMIN SAMPLE COUNTER UNDER MIN
OC0C F2 02 1C 179 JNL LOLPAD
OC0F 0D 01 0DC6 OD4D 180 CLC SAVSAM(2),ZERO 1ST HOME LATCH SAVE EMPTY
OC15 F2 81 1C 181 JE SAVIT
OC18 0D 01 0DB6 OD51 182 TOME CLC SAMCNT(2),TWO SAMPLE COUNT HIGHER THAN 2
OC1E C0 C4 0BE6 183 BNH LOADUN
OC22 C0 87 0222 184 B HALT HALT,TOO MANY HOME LATCHES
OC26 E054 185 DC XL2'E054'
OC28 F2 87 E3 186 J GAWAN
OC2B 0D 01 0DC6 OD4D 187 LOLPAD CLC SAVSAM(2),ZERO 1ST HOME LATCH SAVE EMPTY
OC31 F2 01 06 188 JNE ALRSVD NO,THEN SKIP IT
OC34 0C 01 0DC6 ODB6 189 SAVIT MVC SAVSAM(2),SAMCNT SAVE 1ST HOME LATCH COUNT
OC3A C2 01 0B87 190 ALRSVD LA ZERSAM,XR1 LOAD LOOP ADDR.
OC3E 34 02 0DBE 191 CEND ST ADRSV,XR2
OC42 0D 01 0DBE OD66 192 CLC ADRSV(2),ALMLAS ALL SAMPLES CHECKED
OC48 0D 01 00 193 BNE O(,XR1) LOOP IF NOT
194 *****
195 * CHECK CHARACTER COUNTER RESET *****
196 *****
OC4B C2 01 13DF 197 LA ONEIN-1,XR1
OC4F 36 01 0DC6 198 A SAVSAM,XR1
OC53 C2 02 19EF 199 LA TWOIN-1,XR2
OC57 36 02 0DC6 200 A SAVSAM,XR2
OC5B 7D 00 03 201 CLI 3(,XR1),X'00' 3RD HOM SAM 00
OC5E F2 01 08 202 JNE HOSAM3
OC61 4D 00 00 JDCB 203 CLC O(1,XR1),HIGHCT HOSAM3 2F OR 77
OC66 F2 81 A5 204 JE GAWAN
OC69 4D 00 03 ODCB 205 HOSAM3 CLC 3(1,XR1),HIGHCT 3RD HOM SAM GREATER THAN 2F OR 77

E033 CHAIN CHARACTER COUNTER TEST

ERR LOC OBJECT CODE ADDR STMT SOURCE STATEMENT
OC6E F2 04 2A 206 JNH ISSEQ
OC71 7D 7F 03 207 CLI 3(,XR1),X'7F' IS 3RD HOM SAM 7F
OC74 F2 01 24 208 JNE ISSEQ
OC77 B8 10 03 209 TBN 3(,XR2),B'10000'
OC7A F2 10 15 210 JT NOSHFT
OC7D B8 10 04 211 TBN 4(,XR2),B'10000'
OC80 F2 10 0F 212 JT NOSHFT
OC83 B8 10 05 213 TBN 5(,XR2),B'10000'
OC86 F2 10 09 214 JT NOSHFT
OC89 C0 87 0222 215 B HALT NO PSS1 HALT
OC8D E057 216 DC XL2'E057'
OC8F F2 87 7C 217 J GAWAN
OC92 C0 87 0222 218 NOSHFT B HALT NO CC SHIFT HALT
OC96 E058 219 DC XL2'E058'
OC98 F2 87 73 220 J GAWAN
OC9B C2 02 13DB 221 ISSEQ LA ONEIN-5,XR2 SET XR2 TO 4 SAMPLES
OC9F 36 02 0DC6 222 A SAVSAM,XR2 BEFORE HOSAM
OCA3 8E C0 00 OD4F 223 ALC O(1,XR2),ONE ADD 1 TO HOSAM -4
OCA8 9D 00 00 04 224 CLC O(1,XR2),4(,XR1) HOSAM-4 NOW SAME AS HOSAM+4
OCAC F2 01 09 225 JNE NOSEQ
OCAF C0 87 0222 226 B HALT NC CC RESET HALT
OCB3 E055 227 DC XL2'E055'
OCB5 F2 87 56 228 J GAWAN
OCB8 4D 00 03 ODCB 229 NOSEQ CLC 3(1,XR1),HIGHCT WAS 3RD HOM SAM LESS THAN 2F OR 77
OCBD F2 04 48 230 JNH BACTR THEN ITSA BAD CTR.
OCC0 3C 0A 0DC9 231 MVI NCEM,X'0A' LCAD SKIPPED 1 ERR COUNT
OCC4 3C 28 0DCA 232 MVI TRICT,X'28' LCAD SAMPLE TRY COUNT
OCC8 36 02 0D53 233 A FOUR,XR2 SET XR2 TO HOSAM ADDR.
OCCC 36 02 0D55 234 PLOOP A THRTEEN,XR2 SET XR2 13 OR 1C AHEAD OF HOM.SAM.
OCDD 4E 00 03 OD4F 235 ALC 3(1,XR1),ONE ADD 1 TO EQUAL NEXT CHAR.COUNT
OCDE 9D 00 03 03 236 CLC 3(1,XR2),3(,XR1) ARE THEY EQUAL NCW
OCDF F2 81 15 237 JE GUUDY JUMP IF YA
OCDE 4E 00 03 OD4F 238 ALC 3(1,XR1),ONE ADD 1 MORE
OCE1 9D 00 03 03 239 CLC 3(1,XR2),3(,XR1) IS IT ONLY -1 AHEAD
OCE5 F2 84 20 240 JH BACTR IF NOT ITSA BAD COUNTER
OCE8 0F 00 0DC9 OD4F 241 SLC NOEM(1),ONE DECR.SKIPPED 1 ERR COUNT
OCEE F2 81 17 242 JZ BACTR GC TO BAD CTR. IF 10 OF 'EM
OCF1 36 01 0D55 243 GUUDY A THRTEEN,XR1
OCF5 0F 00 0DCA OD4F 244 SLC TRICT(1),CNE LOOKED AT 40 CHAR.COUNTS YET
OCFB C0 81 0CCC 245 BNZ PLOOP LCOP IF NOT
OCFF C0 87 0222 246 B HALT CC ERROR DUE TO EXTRA
OD03 E059 247 DC XL2'E059' EMITTER PULSES HALT
OD05 F2 87 06 248 J GAWAN
OD08 C0 87 0222 249 BACTR B HALT BAD CC HALT
OD0C E056 250 DC XL2'E056'
OD0E 0E 00 0DC8 OD4F 251 GAWAN ALC LPUNT(1),ONE ADD TO LOOP COUNT
OD14 C0 87 0212 252 B TEST
OD18 3D 32 0DC8 253 CLI LPUNT,X'32' DONE A 50 LCCPS
OD1C C0 82 0A90 254 BL LUGAN BR TO SAMPLE AGAIN
OD20 C0 87 0216 255 B LINK
256
257 *****
258 * CHECK FOR BUSY & DELAY SUBROUTINE *****
259 *****
OD24 34 08 0D4B 260 BROUT ST BSEXIT+3,ARR LCAD RETURN ADDR.
OD28 0C 02 0DD0 OD5C 261 SDC MVC BUSUB(3),BUSCTI STORE DELAY CCUNT
OD2E 0F 02 0DD0 OD4F 262 FLOOP SLC BUSUB(3),CNE
OD34 F2 81 07 263 JZ TOLONG
OD37 C1 E6 0D2E 264 TIO FLOOP,BUSY
OD3B F2 87 0A 265 J BSEXIT
OD3E C0 87 0222 266 TOLONG B HALT
OD42 EC11 267 DC XL2'E011'
OD44 CC 87 0D28 268 B SDC
OD48 C0 87 0000 269 BSEXIT B *-
270 *****
271 * CCNSTANTS *****
272 *****
OD4C 0000 273 ZERO DC IL2'0'

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589955
PAGE 3

E033 CHAIN CHARACTER COUNTER TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
0D4E	0001	0D4F	274	ONE	DC IL2*1*
0D50	0002	0D51	275	TWO	DC IL2*2*
0D52	0C04	0D53	276	FOUR	DC IL2*4*
0D54	000D	0D55	277	THRTEN	DC IL2*13*
0D56	025F	0D57	278	FEMIN	DC IL2*607*
0D58	026D	0D59	279	FEMAX	DC IL2*621*
0D5A	040000	0D5C	280	BUSCTI	DC XL3*040000*
0D5D	0C0000000000	0D62	281		DC XL6*0* MUST IMMEDIATELY PRECEDE *LASADR*
0D63	1FFE	0D64	282	LASADR	DC AL2(8190)
0D65	1FFD	0D66	283	ALMLAS	DC AL2(8189)
0D67	FFFE	0D68	284	NEG1	DC XL2*FFFE*
0D69	00FF	0D6A	285	00F	DC XL2*00FF*
0D6B	FFCE	0D6C	286	WIFTY	DC IL2*-50*
0D6D	3A00	0D6E	287	MODEL	DC XL2*3A00*
0D6F	0D74	0D70	288	ADMIN	DC AL2(FEMINN)
0D71	0D76	0D72	289	ADMAX	DC AL2(FEMAXX)
0D73	0108	0D74	290	FEMINN	DC IL2*475*
0D75	01E4	0D76	291	FEMAXX	DC IL2*484*
		292			
		293			*****
		294	*	PRINTOUTS	*
		295			*****
0D77	40F4F8	0D79	296	FRATE	DC CL3* 48*
0D7A	F1F2F0	0D7C	297	EXCASE	DC CL3*120*
0D7D	404040	0D7F	298	WMAIN	DC CL3* *
0D80	40C3C8C1D948C3C8	0D93	299		DC CL20* CHAR.CHAIN.CHAR.CTR*
0D88	C1C9D568C3C8C1D9		299		
0D90	48C3E3D9		299		
0D94	4BE3C5E2E3	0D98	300	TITL1	DC CL5*.TEST*
0D99	C9D4C1C7C540C1D5	0DA8	301		DC CL16*IMAGE AND CHAIN *
0DA1	C440C3C8C1C9D540		301		
0DA9	C4D640D5D6E340C1	0DB4	302	ERUDT	DC CL12*DO NOT AGREE*
0DB1	C7D9C5C5		302		
		303			
		304			*****
		305	*	RESERVED STORAGE	*
		306			*****
0DB5	0000	0DB6	307	SANCNT	DC XL2*0*
0DB7	0C0000000000	0DBC	308		DC XL6*0* MUST IMMEDIATELY PRECEDE *ADRSAV*
0DBD		0DBE	309	ADRSAV	DS CL2
0DBF		0DC0	310	STAT2	DS CL2
0DC1		0DC2	311	STAT3	DS CL2
0DC3		0DC4	312	ERT1	DS CL2
0DC5		0DC6	313	SAVSAM	DS CL2
0DC7		0DC7	314	BLAKNT	DS CL1
0DC8		0DC8	315	LPOINT	DS CL1
0DC9		0DC9	316	NOEM	DS CL1
0DCA		0DCA	317	TRICT	DS CL1
0DCB		0DCB	318	HICMCT	DS CL1
0DCC		0DCC	319	MSECS	DS CL2
0DCE		0DD0	320	BUSUB	DS CL3
13E0		321		ORG	X*13EC*
		13E0	322	GNEIN	EQU *
		19ED	323		DS 31CL50
13E0		19EF	324		DS CL2
19EE		19F0	325	TWOIN	EQU *
		1FFD	326	SEMID	DS 31CL50
19F0		1FFF	327	ENTUU	DS CL2
1FFE		328			*****
		329	*	EQUATES	*
		330			*****
0001		331	XR1	EQU	1 INDEX REGISTER 1
0002		332	XR2	EQU	2 INDEX REGISTER 2
0800		333	LPI	EQU	X*800* LINE PRINTER IMAGE AREA
0878		334	UCSFLG	EQU	X*678*
0216		335	LINK	EQU	X*216*
0212		336	TEST	EQU	X*212*
021A		337	PRINT	EQU	X*21A*

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589955
PAGE 3A

E033 CHAIN CHARACTER COUNTER TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
00E6	338	BUSY	EQU	X*E6*	
0008	339	ARR	EQU	X*8*	
0222	340	HALT	EQU	X*222*	
	341	*		SENSE SWITCH EQUATES	
0208	342	SBYTE0	EQU	X*208*	
	343	*		CONTROL PGM SENSE SWITCHES	
0004	344	SSW05	EQU	X*04*	
FFFF	345		END		

PRINTER BUSY CODE
ADDR-RECALL REG.
ENTRY TO DCP ERROR HALT ROUTINE
DCP SENSE SWITCH AREA
PRINT MESSAGES ON WFCU

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589955
PAGE 4

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589955
PAGE 4A

E033 CHAIN CHARACTER COUNTER TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADMAX	A	002	0D72	0289	0099
ADMIN	A	002	0D70	0288	0060
ADRSV	A	002	0DBE	0309	0115* 0116 0144* 0145 0191* 0192
ADWUN	A	003	0B8D	0156	0167
ALMLAS	A	002	0D66	0283	0192
ALRSVD	A	004	0C3A	0190	0188
ANVMIS	A	004	0AFC	0095	0089
ARR	C	001	0008	0339	0260
BACTR	A	004	0D08	0249	0230 0240 0242
BLAKNT	A	001	0DC7	0314	0066* 0071*
BROUT	A	004	0D24	0260	0073
BSEXIT	A	004	0D48	0269	0260* 0265
BUSCTI	A	003	0D5C	0280	0261
BUSLUB	A	003	0D0D	0320	0261* 0262*
BUSY	C	001	0DE6	0338	0264
CEND	A	004	0C3E	0191	0168
CHEND	A	004	0B2F	0115	0110
CHEON	A	003	0A86	0088	0084* 0095 0097*
CHKNE	A	003	0A09	0087	0077
EMON	A	004	0B81	0137	0123
ENTUU	A	002	1FFF	0327	0069* 0068 0149*
ERT1	A	002	0DC4	0312	0016
ERUDT	A	012	0DB4	0302	0044
EXCASE	A	003	0D7C	0297	0035
E03	A	001	0A00	0003	
FEMAX	A	002	0D59	0279	0160
FEMAXX	A	002	0D76	0291	0289
FEMIN	A	002	0D57	0278	0178
FEMINN	A	002	0D74	0290	0288
FLOOP	A	006	0D2E	0262	0264
FDFE	A	002	0D53	0276	0233
FRATE	A	003	0D79	0296	0029
GAWAN	A	006	0D0E	0251	0094 0113 0166 0186 0204 0217 0220 0228 0248
GOODUN	A	004	0B28	0114	0106
GDPRT	A	004	0A5A	0048	0038
GOTWUN	A	006	0B8D	0172	0158
GUUDY	A	004	0CF1	0243	0237
HALT	C	001	0222	0340	0046 0092 0111 0164 0184 0215 0218 0226 0246 0249 0266
HICHT	A	001	0DC8	0318	0030* 0034* 0203 0205 0229
HICNT	A	006	0BCC	0160	0059*
HNDOP	A	004	0B4D	0122	0126
HODEL	A	002	0D6E	0287	0121
HOSAM3	A	005	0C69	0205	0202
ISSEQ	A	004	0C98	0221	0206 0208
JUMPIT	A	004	0A86	0064	0056
LASADR	A	002	0D64	0282	0116 0145
LINK	C	001	0216	0335	0255
LOADUN	A	004	0B86	0167	0161 0163 0183
LOCNT	A	006	0C06	0178	0060* 0174
LOLPA	A	006	0C28	0187	0179
LPI	C	001	0800	0333	0133 0133 0134 0134
LPDUNT	A	001	0DC8	0315	0064* 0251* 0253
LUGAN	A	004	0A90	0066	0254
NIFTY	A	002	0D6C	0286	0069
WISEM	A	004	0B21	0111	0108
MOVMOR	A	004	0A9D	0069	0072
MSECS	A	002	0DCD	0319	0127* 0131* 0135*
NEG1	A	002	0D68	0284	0122
NOEIT	A	003	0B07	0104	0109
NOEM	A	001	0DC9	0316	0086* 0090* 0103* 0107* 0231* 0241*
NOSEQ	A	005	0C88	0229	0225
NOSHFT	A	004	0C92	0218	0210 0212 0214
NOUCS	A	006	0B6B	0133	0130 0136
ONE	A	002	0D4F	0274	0071 0090 0107 0135 0142 0143 0159 0172 0223 0235 0238 0241
					0244 0251 0262
CNEIN	A	001	13E0	0322	0138 0197 0221

DATE 25AUG69 31OCT69 11MAY70 01NOV70 19FEB71
EC NO. 816485 816529 816671 816764 818912

PROG ID OE03-3
PAGE 4

E033 CHAIN CHARACTER COUNTER TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
DOF	A	002	0D6A	0285	0065
PAZZ	A	004	0ACF	0086	0098
PLDOP	A	004	0CCC	0234	0245
PRINT	C	001	021A	0337	0041 0050
RTN1	A	001	0A0D	0023	0015
SAMCNT	A	002	0B86	0307	0155* 0159* 0160 0172* 0178 0182 0189
SAVIT	A	006	0C34	0189	0177 0181
SAVSAM	A	002	0DC6	0313	0154* 0175 0180 0187 0189* 0198 0200 0222
SBYTEO	C	001	0208	0342	0039 0048
SDC	A	006	0D28	0261	0268
SEMID	A	050	1FFD	0326	0067
SENAT	A	004	0A38	0036	0052
SHLONG	A	006	0B9F	0145	0128* 0132*
SIMYNA	A	004	0AFF	0102	0096
SLOOP	A	003	0B89	0139	0146
SPUDT	A	003	0A0C	0017	0055 0129
SSWOS	C	001	0004	0344	0039 0048
STAT2	A	002	0DC0	0310	0124* 0125
STAT3	A	002	0DC2	0311	0036* 0037
TAKSAR	A	003	0A07	0075	0038
TECHBI	A	004	0A3C	0037	0028* 0033*
TEST	C	001	0212	0336	0027 0252
TNRTEN	A	002	0D55	0277	0057* 0234 0243
TIPMU	A	004	0A6B	0055	0049
TITL1	A	005	0D98	0300	0053
TOLCNG	A	004	0D3E	0266	0263
TOME	A	006	0C18	0182	0176
TRICT	A	001	0DCA	0317	0232* 0244*
TWO	A	002	0D51	0275	0182
TWOIN	A	001	19F0	0325	0074 0085 0102 0137 0153 0199
UCSFLG	C	001	0878	0334	0031 0162 0173
UDALT	A	004	0A54	0046	0040
WHAIN	A	003	0D7F	0298	0029* 0035*
XR1	C	001	0001	0331	0067* 0068 0069* 0070 0070 0109* 0114* 0117 0138* 0140 0141 0141 0142* 0167* 0190* 0193 0197* 0198* 0201 0203 0205 0207 0224 0229 0235 0236 0238 0239 0243* 0074* 0075 0076 0077 0080 0085* 0087 0087* 0088 0102* 0104 0104* 0105 0115 0121* 0122* 0137* 0139 0143* 0144 0153* 0156 0156* 0157 0191 0199* 0200* 0209 0211 0213 0221* 0222* 0223 0224 0233*
XR2	C	001	0002	0332	0234* 0236 0239
YABIT	A	004	0B03	0103	0058* 0114
ZERO	A	002	0D4D	0273	0154 0155 0175 0180 0187
ZERSAM	A	006	0BB7	0155	0190

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 25AUG69 31OCT69 11MAY70 01NOV70 19FEB71
EC NO. 816485 816529 816671 816764 818912

PROG ID OE03-3
PAGE 4A



E042 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
OA00		2	DECK 4	
		3	UVWXYZ START X'A00'	
		4	*****	
		5	*	
		6	SYSTEM/3 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS	*
		7	*	
		8	*****	
		9	SECTION 4 - ROUTINES 1 & 2	*
		10	*****	
OA00 E042	OA01	11	DC XL2'E042'	PROGRAM IDENTIFICATION
OA02 00	OA02	12	DC XL1'0'	FLAGS
OA03 01	OA03	13	DC XL1'1'	CURRENT ROUTINE NUMBER
OA04 0000	OA05	14	DC XL2'0'	RESERVED
OA06 OA0D	OA07	15	DC AL2(RTN1)	ADDRESS OF FIRST ROUTINE PREFIX
OA08 OD36	OA09	16	DC AL2(ERT1)	ADDRESS OF ERROR RECORDING TABLE
OA0A E95000	OA0C	17	SPUDT DC XL3'E05000'	UNIT DEFINITION TABLE - PRINTER
		18	*****	
		19	*	
		20	ROUTINE 1 - CYCLE STEAL TEST	*
		21	*	
		22	*****	
OA0D 01	OA0D	23	RTN1 DC XL1'1'	ROUTINE NUMBER
OA0E 00	OA0E	24	DC XL1'0'	FLAGS
OA0F 0BB7	OA10	25	DC AL2(RTN2)	ADDRESS OF NEXT ROUTINE PREFIX
		26	*****	
OA11 39 04 0208		27	TBN SBYTE0,SSW05	PRINT ON MFCU
OA15 F2 90 0A		28	JF NRTIO	
OA18 C0 87 021A		29	B PRINT	PRINT TITLE
OA1C 42	OA1C	30	DC XL1'42'	
OA1D 10	OA1D	31	DC IL1'16'	
OA1E 0D01	OA1F	32	DC AL2(TITL1)	
OA20 E000	OA21	33	DC XL2'E000'	
OA22 C1 E0 OA29		34	NRTIO TIO BAPRT,NRDY	PRINTER READY
OA26 F2 87 14		35	J TOG00N	
OA29 38 04 0208		36	BAPRT TBN SBYTE0,SSW05	PRINT ON MFCU SW. ON
OA2D F2 90 0A		37	JF MRALT	
OA30 C0 87 021A		38	B PRINT	PRINT MAKE PRINTER READY
OA34 41	OA34	39	DC XL1'41'	
OA35 1F	OA35	40	DC IL1'31'	
OA38 E0E1	OA37	41	UC AL2(MAKADY)	
OA3A F0 7C 03	OA39	42	DC XL2'E0E1'	
OA3D 3C 00 0D37		43	MRALT HPL X'03',X'7C'	HALT E1
		44	TOG00N MVI LPOUNT,X'00'	ZERO LOOP COUNT
		45	*****	
		46	ISSUE PRINT AND SPACE WITH BLANK DATA FIELD	*
		47	*****	
OA41 31 E6 0CE8		48	KZANGO LIO WRDADR,LPDAR	LOAD DAR WITH WRONG ADDR.
OA45 3C 7F 0A7B		49	MVI FORCE+1,X'7F'	
OA49 39 30 0A0C		50	TBF SPUDT,B'110000'	100 LPM?
OA4D F2 10 0E		51	JT SUNERD	
OA50 30 E2 0D32		52	SNS STAT2,X'E2'	GRAB TIMINGS
OA54 38 02 0D31		53	TBN STAT2-1,B'10'	HMRS.IN POS.M-1
OA58 F2 10 0B		54	JT LOBLNK	
OA5B F2 87 04		55	J SFOUR	
OA5E C0 87 0B89		56	SUNERD B M4DEL	
OA62 3C 7C 0A7B		57	SFOUR MVI FORCE+1,X'7C'	
OA66 3C 40 08FF		58	LOBLNK MVI PRDAT,X'40'	PUT A BLANK IN PRT.AREA
OA6A 0C 83 08FE 08FF		59	MVC PRDAT-1(132),PRDAT	
OA70 C0 87 0C5D		60	B NEXIO	GO DO A PRINT & SPACE
OA74 E201	OA75	61	DC XL2'E201'	
OA76 30 E6 0D34		62	SNS STAT6,X'E6'	SENSE DAR
OA7A 30 00 0D34		63	FORCE CLI STAT6,*--	DID DAR FORCE CORRECT ADDR.
OA7E F2 81 09		64	JE GETIM	
OA81 C0 87 0222		65	B HALT	DAR WRONG HALT
OA85 E061	OA86	66	DC XL2'E061'	
OA87 F2 87 E9		67	J GAWAN	
OA8A 30 E2 0D32		68	GETIM SNS STAT2,X'E2'	SENSE TIMING BYTES
OA8E 38 10 0D32		69	TBN STAT2,B'10C00'	PC1 ON

E0'2 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
		70	JT CHPC2	
		71	B HALT	PC1 NOT ON AFTER BLANK FIELD
		72	DC XL2'E062'	ERR HALT
	OA9A	73	J GAWAN	
		74	CHPC2 TBF STAT2,B'1000'	PC2 OFF
		75	JT CHPC3	
		76	B HALT	PC2 NOT OFF AFTER BLANK FIELD
		77	DC XL2'E063'	ERR HALT
	OA9A	78	J GAWAN	
		79	CHPC3 TBF STAT2,B'100'	PC3 OFF
		80	JT CHHSL	
	OA9A	81	B HALT	PC3 NOT OFF AFTER BLANK FIELD
		82	DC XL2'E064'	ERR HALT
	OA9A	83	J GAWAN	
		84	CHHSL TBF STAT2,B'10'	HAMR.SET LATCH OFF
		85	JT UPCPF	
		86	B HALT	HAMR.SET LATCH ON AFTER BLANK FIELD
		87	DC XL2'E065'	ERR HALT
	OA9A	88	J GAWAN	
		89	*****	
		90	ISSUE PRINT AND SPACE WITH UNPRINTABLE DATA FIELD	*
		91	*****	
		92	UPCPF MVI PRDAT,X'FF'	INSERT AN UNPRINTABLE CHAR.
		93	MVC PRDAT-1(132),PRDAT	FILL PRINAREA WITH U.P.C.
		94	B XIO	ISSUE A PRINT & SPACE
	OA9A	95	DC XL2'E201'	
		96	SNS STAT2,X'E2'	SENSE TIMING BYTES
		97	TBN STAT2,B'10000'	PC1 ON
		98	JT CKPC2	
		99	B HALT	PC1 NOT ON AFTER UPC FIELD
		100	DC XL2'E066'	ERR HALT
	OA9A	101	J GAWAN	
		102	CKPC2 TBN STAT2,B'1000'	PC2 ON
		103	JT CKPC3	
		104	B HALT	PC2 NOT ON AFTER UPC FIELD
	OA9A	105	DC XL2'E067'	ERR HALT
		106	J GAWAN	
		107	CKPC3 TBF STAT2,B'100'	PC3 OFF
		108	JT CKHSL	
		109	B HALT	PC3 ON AFTER UPC FIELD
	OB0E	110	DC XL2'E068'	ERR HALT
		111	J GAWAN	
		112	CKHSL TBF STAT2,B'10'	HAMR.SET LATCH OF
		113	JT GUDPF	
		114	B HALT	HAMR.SET LATCH ON AFTER UPC FIELD
		115	DC XL2'E069'	ERROR HALT
	OB1E	116	J GAWAN	
		117	*****	
		118	ISSUE A PRINT AND SPACE WITH PRINTABLE DATA FIELD	*
		119	*****	
		120	GUDPF MVI PRDAT,C'H'	INSERT AN'H'
		121	MVC PRDAT-1(132),PRDAT	PROPAGATE IT
		122	B XIO	ISSUE A PRINT & SPACE
	OB31	123	DC XL2'E201'	
		124	SNS STAT2,X'E2'	SENSE TIMING BYTES
		125	TBN STAT2,B'10000'	PC1 ON
		126	JT CHKPC2	
		127	B HALT	PC1 NOT ON AFTER PRTABLE FIELD
		128	DC XL2'E06A'	ERR HALT
	OB42	129	J GAWAN	
		130	CHKPC2 TBN STAT2,B'1000'	PC2 ON
		131	JT CHKPC3	
		132	B HALT	PC2 NOT ON AFTER PRTABLE FIELD
		133	DC XL2'E06C'	ERR HALT
	OB52	134	J GAWAN	
		135	CHKPC3 TBN STAT2,B'100'	PC3 ON
		136	JT CHKHS	
		137	B HALT	PC3 NOT ON AFTER PRTABLE FIELD

E042 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	
OB61	E06E	OB62	138	DC XL2'E06E'	ERR HALT
OB63	F2 87 0D		139	J GAWAN	
OB66	38 02 0D32		140	CHKHSL TBN STAT2,B*10'	HAMR.SET LATCH ON
OB6A	F2 10 06		141	JT GAWAN	
OB6D	CO 87 0222		142	B HALT	HAMR.SET LATCH OFF AFTER PRTABLE
OB71	E06F	OB72	143	DC XL2'E06F'	FIELD --ERR HALT
OB73	0E 00 0D37 OCE2		144	GAWAN ALC LPOUNT(1),ONE	ADD TO LOOP COUNT
OB79	CO 87 0212		145	B TEST	
OB7D	3D 14 0D37		146	CLI LPOUNT,X*14'	20 TIMES THRU
OB81	CO 82 0A41		147	BL KZANGO	
OB85	CO 87 0216		148	B LINK	GEDOUT
			149		
			150	*****	
			151	* WAIT FOR M4 THEN DELAY SUBROUTINE *	
			152	*****	
OB89	34 08 0BB6		153	M4DEL ST MEXIT+3,ARR	SET RETURN
OB8D	30 E2 0D32		154	MITEG SNS STAT2,X'E2'	GET TIMING
OB91	38 01 0D32		155	TBN STAT2,B*1'	HAMMERS IN M4
OB95	CO 90 0B8D		156	BF MITEG	
OB99	3C 28 0D39		157	MVI MSECS,X*28'	40 MSEC DELAY
OB9D	CD FF 0800 0800		158	WAT CLC LPI(256),LPI	DELAY 1 MSEC.
OBAB	0D 3B 0800 0800		159	CLC LPI(60),LPI	
OBAD	0F 00 0D39 OCE2		160	SLC MSECS(1),ONE	DECR. DELAY COUNT
OBAD	CO 84 0B9D		161	BH WAT	
OB83	CO 87 0C00		162	MEXIT 3 *-*	RETURN
			163		
			164	*****	
			165	*	
			166	* ROUTINE 2 - HAMMER ADDRESSING TEST *	
			167	*	
			168	*****	
OB87	02	OB87	169	RTN2 DC XL1'2'	ROUTINE NUMBER
OB88	00	OB88	170	DC XL1'0'	FLAGS
OB89	FFFF	OB8A	171	DC XL2'FFFF'	LAST ROUTINE
			172	*****	
OB88	38 04 0208		173	TBN SBYTE0,SSW05	PRINT ON MFCU
OB8F	F2 90 0A		174	JF RETIO	
OB8C	CO 87 021A		175	B PRINT	PRINT TITLE
OB86	42	OB86	176	DC XL1'42'	
OB87	10	OB87	177	DC IL1'16'	
OB88	0D11	OB89	178	DC AL2(TITL2)	
OB8A	E000	OB8B	179	DC XL2'E000'	
OB8C	C1 E0 0BD3		180	RETIO TIO	PRINTER READY
OB8D	F2 87 14		181	J LANE	
OB83	38 04 0208		182	TRPAB TBN SBYTE0,SSW05	PRINT ON MFCU SW. ON
OB87	F2 90 0A		183	JF MHALT	
OB8A	CO 87 021A		184	B PRINT	PRINT MAKE PRINTER READY
OB8E	41	OB8E	185	DC XL1'41'	
OB8F	1F	OB8F	186	DC IL1'31'	
OB80	0D30	OB81	187	DC AL2(MAKADY)	
OB82	E0E1	OB83	188	DC XL2'E0E1'	
OB84	F0 7C 03		189	MHALT HPL X'03',X'7C'	HALT E1
OB87	3C 03 0D37		190	LANE MVI LPOUNT,3	SET LOOP COUNT OF 3
OB8B	C2 02 FFE8		191	LANEG LA NEG24,XR2	LOAD A NEG. 24
OB8F	39 06 0A0C		192	TBF SPUDT,B*110'	96 PRINT POS.
OB83	F2 10 0F		193	JT FOUNT	
OB86	C2 02 FFE2		194	LA NEG3C,XR2	LOAD A NEG.30 FOR HAMR.COUNT
OB8A	38 04 0A0C		195	TBN SPUDT,B*100'	120 PRINT POS.
OB8E	F2 10 04		196	JT FOUNT	
OC01	C2 02 FFD		197	LA NEG33,XR2	LOAD A NEG.33 FOR HAMR.COUNT
OC05	C2 01 087F		198	FOUNIT LA LPD+3,XR1	LOAD DATA AREA ADDR.
OC09	4C 03 00 OCEE		199	ZIPIT MVC O(4,XR1),EXES	PUT 4 X'S IN DATA AREA
OC0E	CO 87 0C59		200	R XID	GO PRINT
OC12	E201	OC13	201	DC XL2'E201'	
OC14	CO 87 0212		202	B TEST	GO READ DATA SWITCHES
OC18	D2 01 04		203	LA 4(XR1),XR1	ADD 4 TO DATA AREA ADDR.
OC1B	36 02 0CE2		204	A ONE,XR2	ADD 1 TO HAMR.COUNT
OC1F	CO 01 0C09		205	BNZ ZIPIT	BR TO DO NEXT HAMR.

E042 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT	
OC23	0F 00 0D37 OCE2		206	SLC LPOUNT(1),ONE	DECR. LOOP COUNT
OC29	CO 01 0BEB		207	BNZ LANEG	
OC2D	CO 87 0216		208	B LINK	GEDOUT
			209		
			210	*****	
			211	* CHECK FOR BUSY & DELAY SUBROUTINE *	
			212	*****	
			213		
OC31	34 08 0C58		214	BROUT ST BSEXIT+3,ARR	LOAD RETURN ADDR.
OC35	GC 02 0D3C OCF1		215	SDC MVC BUSUB(3),BUSCTI	STORE DELAY COUNT
OC3B	0F 02 0D3C OCE2		216	FLOOP SLC BUSUB(3),ONE	
OC41	F2 81 07		217	JZ TOLONG	
OC44	C1 E6 0C3B		218	TIO FLOOP,BUSY	
OC48	F2 87 0A		219	J BSEXIT	
OC4B	CO 87 0222		220	TOLONG B HALT	BUSY ERROR
OC4F	E011	OC50	221	DC XL2'E011'	
OC51	CO 87 0C35		222	B SDC	
OC55	CO 87 0000		223	BSEXIT B *-*	
			224	*****	
			225	* EXECUTE SIO SUBROUTINE *	
			226	*****	
OC59	31 E6 0CE6		227	XIO LIO LPDADR,LPDAR	LOAD DATA ADDR.REG.
OC5D	36 08 0CE2		228	NEXIO A ONE,ARR	
OC61	34 08 0C97		229	ST LDCMD+5,ARR	LOAD PARAMETER POINTER
OC65	36 08 0CE2		230	A ONE,ARR	
OC69	34 08 0CDA		231	ST EXIT+3,ARR	SET UP EXIT
OC6D	34 01 0CDC		232	ST SAVWUN,XR1	SAVE REG. 1
OC71	34 02 0CDE		233	ST SAVTUU,XR2	SAVE REG.2
OC75	C1 E0 0C7C		234	TIOCHK TIO ERNRDY,NRDY	BRANCH IF NOT READY
OC79	F2 87 0A		235	J TIOOK	
OC7C	CO 87 0222		236	ERNRDY B HALT	
OC80	E010	OC81	237	DC XL2'E010'	NOT READY ID.
OC82	CO 87 0C75		238	B TIOCHK	
OC86	CO 87 0C31		239	TIOOK B BROUT	
OC8A	31 E0 0CEA		240	LIO FOLG,LOFOLG	
OC8E	31 E4 0CE4		241	LIO LPIADR,LPIAR	LOAD LSR ADDRESS REGISTER
OC92	0C 01 0CAB 0000		242	LDCMD MVC CMND+2(2),*-*	SET UP COMMAND FROM PARAMETER
OC98	38 80 0209		243	TBN SBYTE1,SSW08	PRINT ON RIGHT CARR.
OC9C	F2 90 04		244	JF NOTRIT	
OC9F	3A 08 0CAA		245	SBN CMND+1,B*1000'	SET RIGHT CARR.MOD.BIT ON
OCA3	0C 01 0D36 0CAB		246	NOTRIT MVC ERT1(2),CMND+2	
OCA9	F3 00 00		247	CMND SIO X'0',X'0'	COMMAND LOADED DURING EXECUTION
OCAC	C1 E6 0CB6		248	OCAC TIO ISBUSY,BUSY	
OCB0	CO 87 0222		249	B HALT	IF NCT, HALT ON ERROR
OCB4	E016	OCB5	250	DC XL2'E016'	NOT BUSY HALT
OCB6	35 02 0CE0		251	ISBUSY L ZERO,XR2	
OCBA	C1 E2 0CC1		252	DELAY TIO BSYLP,PBBUSY	PRINT BUFF BUSY
OCBE	F2 87 0E		253	J XIOEXT	
OCC1	36 02 0CE2		254	BSYLP A ONE,XR2	TRY FOR ABOUT 1.5 SECONDS TO
OCC5	CO 01 0CBA		255	BNZ DELAY	CLEAR BUSY
OCC9	CO 87 0222		256	B HALT	BUSY HALT
OCCD	E012	OCCE	257	DC XL2'E012'	
OCCF	35 01 0CDC		258	XIOEXT L SAVWUN,XR1	RESTORE REG.1
OC03	35 02 0CDE		259	L SAVTUU,XR2	RESTORE REG.2
OC07	CO 87 0000		260	EXIT B *-*	EXIT SUBROUTINE
OCDB	0000	OCDC	261	SAVWUN DC IL2'0'	
OCDD	0000	OCDE	262	SAVTUU DC IL2'0'	
			263		
			264	*****	
			265	* CONSTANTS *	
			266	*****	
OCDF	0000	OCE0	267	ZERO DC IL2'0'	
OCE1	0001	OCE2	268	CNE DC IL2'1'	
OCE3	0800	OCE4	269	LPIADR DC XL2'800'	IMAGE ADDR.
OCE5	087C	OCE6	270	LPDADR DC XL2'87C'	DATA ADDR.
OCE7	0870	OCE8	271	WRDADR DC XL2'0870'	
OCE9	0070	OCEA	272	FOLG DC XL2'7070'	FORM LENGTH 112
OCEB	E7E7E7E7	OCEE	273	EXES DC CL4'XXXX'	

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589957
PAGE 3

E042 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
	OCEF 040000	OCF1	274	BUSCTI DC XL3*4000*
			275	*****
			276	* PRINTOUTS
			277	*****
	OCF2 C3E8C3D3C540E2E3	OD01	278	TITL1 DC CL16*CYCLE STEAL TEST*
	OCFA C5C1D340E3C5E2E3		278	
	OD02 C8C1D4D4C5D940C1	OD11	279	TITL2 DC CL16*HAMMER ADDR.TEST*
	OD0A C4C4D94BE3C5E2E3		279	
	OD12 D4C1D2C540F5F2F0	OD21	280	DC CL16*MAKE 5203 READY, *
	OD1A F340D9C5C1C4E86B		280	
	OD22 E3C8C5D540D9C5E2	OD30	281	MAKADY DC CL15*THEN RESET HALT*
	OD2A C5E340C8C1D3E3		281	
			282	*****
			283	* RESERVED STORAGE
			284	*****
	OD31 0000	OD32	285	STAT2 DC XL2*0*
	OD33 0000	OD34	286	STAT6 DC XL2*0*
	OD35	OD36	287	ERT1 DS CL2
	OD37	OD37	288	LPOUNT DS CL1
	OD38	OD39	289	MSECS DS CL2
	OD3A	OD3C	290	BUSUB DS CL3
			291	*****
			292	* EQUATES
			293	*****
	FFE8	294	NEG24	EQU -24
	FFE2	295	NEG30	EQU -30
	FFDF	296	NEG33	EQU -33
	08FF	297	PRDAT	EQU X*08FF*
	0008	298	ARR	EQU X*08*
	0001	299	XR1	EQU 1
	0002	300	XR2	EQU 2
	0800	301	LPI	EQU X*800*
	087C	302	LPD	EQU X*87C*
	00E0	303	LOFOLG	EQU X*E0*
	00E4	304	LPIAR	EQU X*E4*
	00E6	305	LPDAR	EQU X*E6*
	0216	306	LINK	EQU X*216*
	0212	307	TEST	EQU X*212*
	021A	308	PRINT	EQU X*21A*
	0222	309	HALT	EQU X*222*
	00E0	310	NRDY	EQU X*E0*
	00E6	311	BUSY	EQU X*E6*
	00E2	312	PBBUSY	EQU X*E2*
		313	*	SENSE SWITCH EQUATES
	0208	314	SBYTE0	EQU X*208*
	0209	315	SBYTE1	EQU X*209*
		316	*	CONTROL PGM SENSE SWITCHES
	0004	317	SSW05	EQU X*04*
	0080	318	SSW08	EQU X*80*
	FFFF	319		END

ADDRESS RECALL REGISTER
INDEX REGISTER 1
INDEX REGISTER 2
LINE PRINTER IMAGE AREA
LINE PRINTER DATA AREA

ENTRY TO DCP CHAIN ROUTINE
ENTRY TO DCP READ DATA SW'S ROUT.
ENTRY TO DCP PRINT ROUTINE
ENTRY TO DCP ERROR HALT ROUTINE

PRINTER BUSY
BUFFER BUSY

DCP SENSE SWITCH AREA
DCP SENSE SWITCH AREA

PRINT MESSAGES ON MFCU
USE 5203 RIGHT CARR.

DATE 25AUG69 11MAY70 01NOV70
EC NO. 816485 816671 816764

PROG ID 0E04-2
PAGE 3

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589957
PAGE 3A

E042 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ARR	C	001	0C08	0298	0153 0214 0228* 0229 0230* 0231
BAPRT	A	004	0A29	0036	0034
BROUT	A	004	0C31	0214	0239
BSEXIT	A	004	0C55	0223	0214* 0219
BSYLP	A	004	0CC1	0254	0252
BUSCTI	A	003	0CF1	0274	0215
BUSJB	A	003	0D3C	0290	0215* 0216*
BUSY	C	001	00E6	0311	0218 0248
CHHSL	A	004	0ABE	0084	0080
CHKHSL	A	004	0B66	0140	0136
CHKPC2	A	004	0B46	0130	0126
CHKPC3	A	004	0B56	0135	0131
CHPC2	A	004	0A9E	0074	0070
CHPC3	A	004	0AAE	0079	0075
CKHSL	A	004	0B12	0112	0108
CKPC2	A	004	0AF2	0102	0098
CKPC3	A	004	0B02	0107	0103
CMND	A	003	0CA9	0247	C242* 0245* 0246
DELAY	A	004	0CBA	0252	0255
ERNRDY	A	004	0C7C	0236	0234
ERT1	A	002	0D36	0287	0016 0246*
EXES	A	004	0CEE	0273	0199
EXIT	A	004	0CD7	0260	0231*
FLOOP	A	006	0C3B	0216	0218
FOLG	A	002	0CEA	0272	0240
FORCE	A	004	0A7A	0063	0049* 0057*
FOUNIT	A	004	0C05	0198	0193 0196
GAWAN	A	006	0B73	0144	0067 0073 0078 0083 0088 0101 0106 0111 0116 0129 0134 0139
					0141
GETIM	A	004	0A8A	0068	0064
GUOPF	A	004	0B22	0120	0113
HALT	C	001	0222	0309	0065 0071 0076 0081 0086 0099 0104 0109 0114 0127 0132 0137
					0142 0220 0236 0249 0256
ISBUSY	A	004	0CB6	0251	0248
KZANGO	A	004	0A41	0048	0147
LANE	A	004	0BE7	0190	0181
LANEG	A	004	0BEB	0191	0207
LDCMD	A	006	0C92	0242	0229*
LINK	C	001	0216	0306	0148 0208
LOPLNK	A	004	0A66	0058	0054
LOFOLG	C	001	00E0	0303	0240*
LPD	C	001	087C	0302	0198
LPDADR	A	002	0CE6	0270	0227
LPDAR	C	001	00E6	0305	0048* 0227*
LPI	C	001	0800	0301	0158 0158 0159 0159
LPIADR	A	002	0CE4	0269	0241
LPIAR	C	001	00E4	0304	0241*
LPOUNT	A	001	0D37	0288	0044* 0144* 0146 0190* 0206*
MAKADY	A	015	0D30	0281	0041 0187
MEXIT	A	004	0BB3	0162	0153*
MHALT	A	003	0BE4	0189	0183
MITEG	A	004	0B8D	0154	0156
MRALT	A	003	0A3A	0043	0037
MSECS	A	002	0D39	0289	0157* 0160*
M4DEL	A	004	0B89	0153	0056
NEG24	C	001	FFE8	0294	0191
NEG30	C	001	FFE2	0295	0194
NEG33	C	001	FFDF	0296	0197
NEXIO	A	004	0C5D	0228	0060
NOTRIT	A	006	0CA3	0246	0244
NRDY	C	001	00E0	0310	0034 0180 0234
NRTIO	A	004	0A22	0034	0028
ONE	A	002	0CE2	0268	0144 0160 0204 0206 0216 0228 0230 0254
PBBUSY	C	001	00E2	0312	0252
PRDAT	C	001	08FF	0297	0058* 0059 0059* 0092* 0093 0093* 0120* 0121 0121*
PRINT	C	001	021A	0308	0029 0038 0175 0184

DATE 25AUG69 11MAY70 01NOV70
EC NO. 816485 816671 816764

PROG ID 0E04-2
PAGE 3A

E042 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
RETID	A	004	0BCC	0180	0174
RTN1	A	001	0A0D	0023	0015
RTN2	A	001	0BB7	0169	0025
SAVTU0	A	002	0CDE	0262	0233* 0259
SAVMUN	A	002	0CDC	0261	0232* 0258
SBYTE0	C	001	0208	0314	0027 0036 0173 0182
SBYTE1	C	001	0209	0315	0243
SDC	A	006	0C35	0215	0222
SFOUR	A	004	0A62	0057	0055
SPUDT	A	003	0A0C	0017	0050 0192 0195
SSW05	C	001	0004	0317	0027 0036 0173 0182
SSW08	C	001	0080	0318	0243
STAT2	A	002	0D32	0285	0052* 0053 0068* 0069 0074 0079 0084 0096* 0097 0102 0107 0112
STAT6	A	002	0D34	0286	0124* 0125 0130 0135 0140 0154* 0155
SUNERD	A	004	0A5E	0056	0062* 0063
TEST	C	001	0212	0307	0051
TIOCHK	A	004	0C75	0234	0145 0202
TIOOK	A	004	0C86	0239	0238
TITL1	A	016	0D01	0278	0235
TITL2	A	016	0D11	0279	0032
TOG00N	A	004	0A3D	0044	0178
TOLONG	A	004	0C4B	0220	0035
TRPAB	A	004	0BD3	0182	0217
UPCPF	A	004	0ACE	0092	0180
UVWXYZ	A	001	0A00	0003	0085
WAT	A	006	0B9D	0158	
WRDADR	A	002	0CE8	0271	0161
XID	A	004	0C59	0227	0048
XIOEXT	A	004	0CCF	0258	0094 0122 0200
XR1	C	001	0001	0299	0198* 0199 0203 0203* 0232 0258*
XR2	C	001	0002	0300	0191* 0194* 0197* 0204* 0233 0251* 0254* 0259*
ZERO	A	002	0CE0	0267	0253
ZIPIIT	A	005	0C09	0199	0205

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

E042 5203 CYCLE STEAL & HAMMER ADDRESSING TESTS

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

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T+-Y=8DH  E  B-4 (([A& D B#*8A H H&Z HOH*BFUH&C&G - <G-BSX2/1&8A H H&Z HOH*BFUD-CLC -8- E/QE0420001
T+-Z5- <2 47<;Q <=C1*Bx79< Y<a/ +<+H(<T-BCLG2D ? 2/OL /O>I|G0H;31 B|a<-OT=B| "/O1 18-D ND@E0420002
T+-D0<+Q((C4 CLL 2-&X /OHS8FG2/=U 08-42+A (<?H&B*B G S.-Q?HG5LUHCL. 2D X /OHS8F|2/2M 9A 4 M-4E0420003
T+-, <?H&B*BG S. -R|HG_LUBCL.2D X /OHS8FP2/;M@*OT *CH<H"-T*OH*<O;H A<+H(<T-ECL.2D X /OH 3$UE0420004
T+-ZWH>AW@Y;A+ - (<?H&B*BG S.-R"H G*LUDECL.2D X /OH S8FT2/6D9 -42@/ IOH*BH>AZ@Y|J|<- H*00 09&E0420005
T+-/_-OT=B| "/O1 R8-D08-42+A (<?H &B*BG S.-E?HG.L- HCL.2D X /OHS8F3 2/148A 42@/ IOH* BH> M.HE0420006
T+->*$?HGCL-BCL. 2D $ /OHS8F@+ 4 7C+. /OHX|J&((@B BBUG /CHO(-._TC SCLH8 &420I .TLO YCLU -,CE0420007
T+-?PC->H - CL& H - CO (+&3SOH& .X*BG B |" "+ & BB|H&B&BG /ZBD 4 J8 CAB ?L@Y*M+ & BB|H :2-E0420008
T+-OKU, /OHE&JA (<+C/@GOC| (<((@H B"=-9A-Y<a/ |O-. *8T-DB-32D LB ?" -O-DH-40C 3>OH* <O;H ;I E0420009
T+-1( *BG /.K && 6 -350 D<B&@ CL* <8% AB=? /OHO(- <O OBCLO<@&@BCLO <8?HAA@GWCC?2/O, /OH 7Q8E0420010
T+-2HH> JOH*<(*B G 19-3W(-<BT& HCI*6B 3SI -<6T& AC(O4 -3;0; <-|H GB&BG S.-D<BGCGP /00 4A<E0420011
T+-3C<LG-C+Y19 3 UC D<D0 +H BB-H &ACYHCHY< &46CH? 3 CA9-26OH*BH> O(&H<8<GSC<G2/O8 6 -0 *B*E0420012
T+-3=8% AC., /OH S8AH5 &3*(&H<7%B G ..... &- BGOH*GA09=>X90& <|Y0' |EE+.T1*G LE+< 13*E0420013
T( &441;.T2<GM5<P R&<GD1(V.8@PS8*L A4&N *-O@4CR1*G D:F?T2<PN&(XE8&P T&<TA4=< ..... NE-E0420014
E" *E7*=>DC"PH$ =*7M&F| | C F& ASC R A SO Q ..... 17581007701 01670",YE0420015

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LAST PAGE

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for program initialization, section preface, and data address incrementing test.

Table with columns: ERR LOC OBJECT CODE, ADDR STMT SOURCE STATEMENT. Contains assembly code for data address incrementing test, sense data address, and generate sense instructions.

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
OB63	78 00 10	138	TBN	16(,XR1),*-*
OB66	DO 10 11	139	BT	17(,XR1)
		140	*****	
		141	*	SAMPLE THE D.A.R. AT 7.62 USEC
		142	*****	
OB69		OB69 143	DARS1	EQU *
OC4E		OC4E 144	DS	CL230
OC4F		OC4F 145	DARS2	EQU *
OCBC		OCBC 146	DS	CL110
OCBD		OD66 147	DS	CL170
		148	*****	
		149	*	CHECK HAMMER POSITION M4 INCREMENTING
		150	*****	
OD67	C2 02 OB6A	151	LA	DARS1+1,XR2
OD68	C2 01 14CC	152	LA	M4PSS1,XR1
OD6F	3C 21 1580	153	ININLI	MVI SAMLM,33
OD73	3C 00 OD83	154	NEPSS	MVI THCHEK+2,X'00'
OD77	OE 00 OD83	155	DIPAD	ALC THCHEK+2(1),ONE
OD7D	36 02 14AF	156	SHAD	A TWO,XR2
OD81	6D 00 00 00	157	THCHEK	CLC O(1,XR1),O(,XR2)
OD85	F2 81 14	158	JE	INCONT
OD88	OF 00 1580	159	SLC	SAMLM(1),ONE
OD8E	CO 01 OD7D	160	BNZ	SMAD
OD92	CO 87 0222	161	B	HALT
OD96	E071	162	DC	XL2'E071'
OD98	CO 87 0A72	163	B	TOGOON
OD9C	3C 08 1580	164	INCONT	MVI SAMLM,8
ODAO	3D 0A OD83	165	CLI	THCHEK+2,X'0A'
ODAA	CO 82 OD77	166	BL	DIPAD
ODAB	2C 01 1582 00	167	MVC	LASAV(2),O(,XR2)
ODAD	3C 08 1580	168	MVI	SAMLM,X'08'
ODB1	36 02 14AF	169	MALS	A TWO,XR2
ODB5	2D 01 1582 00	170	CLC	LASAV(2),O(,XR2)
ODBA	F2 84 14	171	JH	CHESUB
ODBD	OF 00 1580	172	SLC	SAMLM(1),ONE
ODC3	CO 01 ODB1	173	BNZ	MALS
ODC7	CO 87 0222	174	B	HALT
ODCB	UJ72	175	DC	XL2'E072'
ODCD	CO 87 0A72	176	B	TOGOON
ODD1	9D 01 00 0C	177	CHESUB	CLC O(2,XR2),12(,XR1)
ODD5	F2 81 0A	178	JE	SUBOK
ODD8	CO 87 0222	179	B	HALT
ODDC	E073	180	DC	XL2'E073'
ODDE	CO 87 0A72	181	B	TOGOON
ODE2	36 01 1486	182	SUBOK	A TWLVE,XR1
ODE6	3C 00 1580	183	BESSLI	MVI SAMLM,13
ODEA	7D 7F 00	184	CLI	O(,XR1),X'7F'
ODED	CO 01 OD73	185	BNE	NEPSS
ODEF	35 02 14AB	186	EXLENT	L ZERO,XR2
ODF5	C1 E6 OE00	187	AGAIN	TIO YALD,BUSY
ODF9	C2 01 OE54	188	LA	GOM3,XR1
ODFD	F2 87 12	189	J	STRIT
OE00	36 02 14AD	190	YALD	A ONE,XR2
OE04	CO 01 ODF5	191	BNZ	AGAIN
OE08	CO 87 0222	192	B	HALT
OE0C	E014	193	DC	XL2'E014'
OE0E	CO 87 ODF1	194	B	EXLENT
		195	*****	
		196	*	CHECK HAMMER POSITION M3 INITIAL INCREMENT
		197	*****	
OE12	34 01 OE3A	198	STRIT	ST WHARTO+3,XR1
OE16	39 30 OAO	199	TBF	SPUDT,B'110000'
OE1A	F2 90 OF	200	JF	CLIHAP
OE1D	38 80 020C	201	TBN	SBYTE4,SSW20
OE21	F2 10 28	202	JT	BLAH
OE24	CO 87 OF9B	203	B	M4DEL
OE28	CO 87 OE37	204	B	WHARTO
OE2C	30 E2 15A9	205	CLIHAP	SNS STAT2,X'E2'

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
OE30	38 01 15A9	206	TBN	STAT2,B'1'
OE34	F2 90 04	207	JF	OPI
OE37	CO 87 0000	208	WHARTO	B *-*
OE38	38 80 020C	209	OPI	TBN SBYTE4,SSW20
OE3F	F2 10 0A	210	JT	BLAH
OE42	CO 87 1411	211	B	XIO
OE46	E200	212	DC	XL2'E200'
OE48	CO 87 OE2C	213	B	CLIHAP
OE4C	CO 87 OF63	214	BLAH	B CRPAH
OE50	CO 87 OE37	215	B	WHARTO
OE54	C2 02 OE5F	216	GOM3	LA LUKPSE,XR2
OE58	C2 01 158B	217	LA	M3DAR,XR1
OE5C	F3 E2 01	218	DACMD3	SIO X'01',X'E2'
OE5F	70 E2 00	219	LUKPSE	SNS O(,XR1),X'E2'
OE62	78 40 00	220	TBN	O(,XR1),B'1000000'
OE65	E0 90 00	221	BF	O(,XR2)
OE68	70 E6 00	222	SNS	O(,XR1),X'E6'
OE6B	7D 82 00	223	CLI	O(,XR1),X'82'
OE6E	F2 81 25	224	JE	GOAIT
OE71	OE 00 15C1	225	ALC	BADM3(1),ONE
OE77	OD 00 15C1	226	CLC	BADM3(1),EIGHT
OE7D	F2 81 0C	227	JE	TMM3E
OE80	7D 8E 00	228	CLI	O(,XR1),X'8E'
OE83	F2 91 10	229	JE	GOAIT
OE86	7D 9A 00	230	CLI	O(,XR1),X'9A'
OE89	F2 07 0A	231	M3XT	JC GOAIT,X'07'
OE8C	CO 87 0222	232	TMM3E	B HALT
OE90	E075	233	DC	XL2'E075'
OE92	CO 87 0A72	234	B	TOGOON
OE96	C1 E6 OE96	235	GOAIT	TIO GOAIT,BUSY
OE9A	C2 01 OEA2	236	LA	GOM1,XR1
OE9E	CO 87 OE12	237	B	STRIT
		238	*****	
		239	*	CHECK HAMMER POSITION M2 INITIAL INCREMENT
		240	*****	
OEA2	C2 01 15B9	241	GOM2	LA M2DAR,XR1
OEAF	F3 E2 01	242	DACMD2	SIO X'01',X'E2'
OEAG	70 E2 00	243	LOKON	SNS O(,XR1),X'E2'
OEAC	78 40 00	244	TBN	O(,XR1),B'1000000'
OEAF	CO 90 OEA9	245	BF	LOKON
OEBA	70 E2 00	246	NOYET	SNS O(,XR1),X'E2'
OEBA	79 40 00	247	TBF	O(,XR1),B'1000000'
OEBA	CO 90 OEB3	248	BF	NOYET
OEBC	C2 02 OEC1	249	LA	FAST,XR2
OEC1	70 E2 00	250	FAST	SNS O(,XR1),X'E2'
OEC4	78 40 00	251	TBN	O(,XR1),B'1000000'
OEC7	E0 90 00	252	BF	O(,XR2)
OECA	70 E6 00	253	SNS	O(,XR1),X'E6'
OECD	7D 85 00	254	CLI	O(,XR1),X'85'
OEDO	F2 81 25	255	JE	TWAIT
OE03	OE 00 15C0	256	ALC	BADM2(1),ONE
OE09	OD 00 15C0	257	CLC	BADM2(1),EIGHT
OEDF	F2 81 0C	258	JE	TMM2E
OEE2	7D 91 00	259	CLI	O(,XR1),X'91'
OEE5	F2 81 10	260	JE	TWAIT
OEE8	7D 9D 00	261	CLI	O(,XR1),X'9D'
OEEB	F2 07 0A	262	M2XT	JC TWAIT,X'07'
OEEE	CO 87 0222	263	TMM2E	B HALT
OE2	E074	264	DC	XL2'E074'
OE4	CO 87 0A72	265	B	TOGOON
OE8	C1 E6 OEF8	266	TWAIT	TIO TWAIT,BUSY
OEF	C2 01 OF04	267	LA	GOM1,XR1
OF00	CO 87 OE12	268	B	STRIT
		269	*****	
		270	*	CHECK HAMMER POSITION M1 INITIAL INCREMENT
		271	*****	
OF04	C2 02 OF0F	272	GOM1	LA M1LOK,XR2
OF08	C2 01 1586	273	LA	M1DAR-1,XR1

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT	
OF0C	F3 E2 01	274	DACMD1	SIO	X'01',X'E2'	
OF0F	70 E2 01	275	MILOK	SNS	1(,XR1),X'E2'	
OF12	78 02 00	276	T5N	O(,XR1),B'10'		
OF15	E0 90 00	277	BF	O(,XR2)		
OF18	70 E6 01	278	SNS	1(,XR1),X'E6'		
OF1B	7D 7C 01	279	CLI	1(,XR1),X'7C'		
OF1E	F2 81 25	280	JE	SUSY		
OF21	0E 00 15BF 14AD	281	ALC	EADM1(1),ONE		
OF27	0D 00 15BF 14B2	282	CLC	BADM1(1),EIGHT		
OF2D	F2 81 0C	283	JE	TMMIE		
OF30	7D 88 01	284	CLI	1(,XR1),X'88'		
OF33	F2 81 10	285	JE	SUSY		
OF36	7D 94 01	286	CLI	1(,XR1),X'94'		
OF39	F2 07 0A	287	MIXT	JC	SUSY,X'07'	
OF3C	C0 87 0222	288	TMMIE	B	HALT	
OF40	E079	289	DC	XL2'E079'		
OF42	C0 87 0A72	290	B	TOGUON		
OF46	C1 E6 0F46	291	SUSY	TIO	SUSY,BUSY	
OF4A	C0 87 0212	292	B	TEST		
OF4E	38 80 020C	293	TBN	SBYTE4,SSW20		
OF52	F2 10 0A	294	JT	LORIS		
OF55	0F 00 15B3 14AD	295	SLC	LPOUNT(1),ONE		
OF5B	C0 01 0AAA	296	BNZ	DUST		
OF5F	C0 87 0216	297	LORIS	B	LINK	
298	*****					
299	* CHECK RESET PROMPTING AND HALT SUBROUTINE (LPDAR OPTION 1)					
300	*****					
OF63	34 08 0F9A	301	CRPAH	ST	SEXIT+3,ARR	
OF67	38 04 020B	302	TBN	SBYTE0,SSW05		
OF6B	F2 90 08	303	JF	ESVEN		
OF6E	C0 87 021A	304	B	PRINT		
OF72	01	OF72	305	DC	XL1'01'	
OF73	34	OF73	306	DC	IL1'52'	
OF74	158D	OF75	307	DC	AL2(MAKADY)	
OF76	F0 7C 07	308	ESVEN	HPL	X'07',X'7C'	
OF79	C1 E6 0F79	309	NIPS	TIO	NIPS,BUSY	
OF7D	3C 28 15AF	310	MVI	HAP0IN,X'28'		
OF81	0D FF 0800 0800	311	TAW	CLC	LPI(256),LPI	
OF87	0D 38 0800 0800	312	CLC	LPI(60),LPI		
OF8D	0F 00 15AF 14AD	313	SLC	HAP0IN(1),ONE		
OF93	C0 84 0F81	314	BH	TAW		
OF97	C0 87 0000	315	SEXIT	B	**	
316	*****					
317	* WAIT FOR M4 THEN DELAY SUBROUTINE					
318	*****					
OF9B	34 08 0FC8	319	M4DEL	ST	MEXIT+3,ARR	
OF9F	30 E2 15A9	320	GETIM	SNS	STAT2,X'E2'	
OFA3	38 01 15A9	321	TBN	STAT2,B'1'		
OFA7	C0 90 0F9F	322	BF	GETIM		
OFA8	3C 32 15AF	323	MVI	HAP0IN,X'32'		
OFAF	0D FF 0800 0800	324	WAT	CLC	LPI(256),LPI	
OFB5	0D 38 0800 0800	325	CLC	LPI(60),LPI		
OFBB	0F 00 15AF 14AD	326	SLC	HAP0IN(1),ONE		
OFC1	C0 84 0FAF	327	BH	WAT		
OFC5	C0 87 0000	328	MEXIT	B	**	
329						
330						
331						
332	*****					
333	*					
334	* ROUTINE 2 - IMAGE ADDRESS INCREMENTING TEST					
335	*					
336	*****					
OFC9	02	OFC9	337	RTN2	DC	XL1'2'
OFCB	00	OFCB	338	DC	XL1'0'	
OFCB	FFFF	OFCB	339	DC	XL2'FFFF'	
340	*****					
OFCD	38 80 020C	341	TBN	SBYTE4,SSW20		

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OFD1	C0 10 13E5	342	BT	BLINK	
OFD5	3D FF 0878	343	CLI	UCSFLG,X'FF'	
OFD9	F2 01 04	344	JNE	SENAT	
OFDC	3C 39 0FE4	345	MVI	TECHB1,X'39'	
OFE0	30 E3 15AB	346	SENAT	SNS	STAT3,X'E3'
OFE4	38 04 15AB	347	TECHBI	TBN	STAT3,B'100'
OFE8	F2 10 17	348	JT	OKYDOK	
OFEB	38 04 0208	349	TBN	SBYTE0,SSW05	
OFEF	F2 90 0A	350	JF	HALIT	
OFF2	C0 87 021A	351	B	PRINT	
OFF6	C1	OFF6	352	DC	XL1'C1'
OFF7	1A	OFF7	353	DC	IL1'26'
OFF8	15A7	OFF8	354	DC	AL2(CHAERR)
OFFA	E00E	OFFA	355	DC	XL2'E00E'
OFFC	C0 87 0222	356	HALIT	B	HALT
1000	E00E	1001	357	DC	XL2'E00E'
1002	38 04 0208	358	OKYDOK	TBN	SBYTE0,SSW05
1006	F2 90 0A	359	JF	RETIO	
1009	C0 87 021A	360	B	PRINT	
100D	42	100D	361	DC	XL1'42'
100E	13	100E	362	DC	IL1'19'
100F	1559	1010	363	DC	AL2(TITL2)
1011	E000	1012	364	DC	XL2'E00G'
1013	C1 E0 101A	365	RETIO	TIO	TRPAB,NRDY
1017	F2 87 36	366	J	TNUOL	
101A	38 04 0208	367	TRPAB	TBN	SBYTE0,SSW05
101E	F2 90 0A	368	JF	MHALT	
1021	C0 87 021A	369	B	PRINT	
1025	41	1025	370	DC	XL1'41'
1026	22	1026	371	DC	IL1'34'
1027	158D	1028	372	DC	AL2(MAKADY)
1029	E0E1	102A	373	DC	XL2'E0E1'
102B	F0 7C 03	374	MHALT	HPL	X'03',X'7C'
102E	38 20 0A0C	375	TBN	SPUDT,B'100000'	
1032	F2 90 0F	376	JF	ERHTKS	
1035	3C 17 133D	377	MVI	INILI+1,X'17'	
1039	3C 05 1362	378	MVI	ICTAB+1,X'05'	
103D	3C 08 1392	379	MVI	BTSSLI+1,X'08'	
1041	F2 87 0C	380	J	TNUOL	
1044	3C 21 133D	381	ERHTKS	MVI	INILI+1,X'21'
1048	3C 08 1362	382	MVI	ICTAB+1,X'08'	
104C	3C 0D 1392	383	MVI	BTSSLI+1,X'0D'	
384	*****				
385	* GET HAMMERS INTO PROPER POSITION				
386	*****				
1050	31 E0 14BF	387	TNUOL	LIO	FOLG,LOFOLG
1054	31 E6 14BD	388	LIO	LPDADR,LPDAR	
1058	3C 0A 15B3	389	MVI	LPOUNT,X'0A'	
105C	38 08 10F6	390	SBF	IACMD+1,B'1000'	
1060	38 80 0209	391	TBN	SBYTE1,SSW08	
1064	F2 90 04	392	JF	HERE	
1067	3A 08 10F6	393	SBN	IACMD+1,B'1000'	
1066	C0 87 1411	394	HERE	B	XIO
106F	E200	1070	395	DC	XL2'E200'
1071	39 30 0A0C	396	SECIT	TBF	SPUDT,B'110000'
1075	F2 90 07	397	JF	NOMOD	
1078	C0 87 0F9B	398	B	M4DEL	
107C	F2 87 15	399	J	TYRWAS	
107F	30 E2 15A9	400	NOMOD	SNS	STAT2,X'E2'
1083	38 01 15A9	401	TSN	STAT2,B'1'	
1087	F2 10 0A	402	JT	TYRWAS	
108A	C0 87 1411	403	B	XIO	
108E	E200	108F	404	DC	XL2'E200'
1090	C0 87 107F	405	B	NOMOD	
406	*****				
407	* GENERATE SENSE INSTRUCTIONS				
408	*****				
1094	3C FE 14CB	409	TYRWAS	MVI	ITUU,X'FE'

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
1098	3C 10 14C8	410	MVI	IWUN,X*10*	SET 1ST INDEXED SNS DISPL.TO 16
109C	C2 01 14C8	411	LA	IWUN,XR1	LOAD 1ST INDEXED SNS ADDR.
10A0	C2 02 10FF	412	LA	IARS1+2,XR2	LOAD START OF GENERATED FIELD
10A4	4E 00 00 14AF	413	UUTDA	ALC O(1,XR1),TWO	ADD 2 TO 1ST INDEXED SNS DISPL.
10A9	9C 02 00 00	414	MVC	O(3,XR2),O(,XR1)	PUT INDEXED SNS IN GENERATED FIELD
10AD	36 02 14B1	415	A	TREE,XR2	UPDATE GEN.FIELD ADDR.BY 3
10B1	7D FE 00	416	CLI	O(,XR1),X*FE*	1ST INDEXED SNS DISPL.UP TO 254
10B4	C0 82 10A4	417	BL	UUTDA	
10B8	C2 01 14CB	418	LA	ITUU,XR1	LOAD 2ND INDEXED SNS ADDR.
10BC	4E 00 00 14AF	419	UTUTDA	ALC O(1,XR1),TWO	ADD 2 TO 2ND INDEXED SNS DISPL.
10C1	9C 02 00 00	420	MVC	O(3,XR2),O(,XR1)	PUT INDEXED SNS IN GEN. FIELD
10C5	36 02 14B1	421	A	TREE,XR2	UPDATE GEN.FIELD ADDR.BY 3
10C9	7D 78 00	422	CLI	O(,XR1),X*78*	2ND INDEXED SNS DISPL.UP TO 120
10CC	C0 82 10BC	423	BL	UTUTDA	
424				*****	
425			*	WAIT FOR HOME LATCH,THEN ISSUE PRINT&SPACE	
426				*****	
10D0	31 E4 148B	427	LIO	LPIADR,LPIAR	LOAD LSR ADDRESS REGISTER
10D4	3C FF 087F	428	MVI	LPD+3,X*FF*	PUT UPC IN M4
10D8	C2 01 10EC	429	LA	POOLMH,XR1	LOAD 1 FOR A BASE
10DC	C2 02 11FC	430	LA	IARS2+1,XR2	LOAD 2 FOR A 2ND BASE
10E0	30 E2 15A9	431	NAS	SNS STAT2,X*E2*	GRAB TIMINGS
10E4	38 10 15A8	432	TBN	STAT2-1,B*10000*	PSS-1 ON ?
10E8	C0 90 10E0	433	BF	NAS	
10EC	70 E2 10	434	POOLMH	SNS 16(,XR1),X*E2*	GRAB SENSE SYNC ON HOME LATCH
10EF	78 01 0F	435	TBN	15(,XR1),B*1*	HOME LATCH UP 18.24 USEC.LOOP
10F2	00 90 00	436	BF	O(,XR1)	LOOP IF NOT
10F5	F3 E2 01	437	IACMD	SIO X*01*,X*E2*	PRINT AND SPACE
10F8	D0 87 11	438	B	17(,XR1)	GO SAMPLE
10FB	0000	439	DC	XL2*0*	SENSE AREA
		440		*****	
		441	*	SAMPLE THE I.A.R. AT 7.62 USEC	
		442		*****	
10FD		443	IARS1	EQU *	
11EA		444	DS	CL238	
11EB		445	IARS2	EQU *	
11EB		446	DS	CL102	
1251		447	DS	CL200	
1319	3C 40 087F	448	MVI	LPD+3,X*40*	BLANK UPC
131D	3C 28 1388	449	MVI	DUNAL+1,X*28*	SET 48 CHAR.STOPPER
1321	C2 01 14F0	450	LA	PS148-1,XR1	
1325	30 E3 15AB	451	SNS	STAT3,X*E3*	GRAB STATUS BYTES
1329	38 04 15AB	452	TBN	STAT3,B*100*	48 CHAR.BIT ON
132D	F2 10 08	453	JT	SKUCS	
1330	C2 01 1512	454	LA	PSIUCS-1,XR1	MUST BE UCS
1334	3C 58 1388	455	MVI	DUNAL+1,X*58*	SET UCS STOPPER
1338	C2 02 10FA	456	SKUCS	LA IARS1-3,XR2	
133C	3C 00 1580	457	INILI	MVI SAMLIM,*-*	SET INIT. TO 33 OR 23
1340	36 02 14AF	458	UPTWO	A TWO,XR2	
1344	BD 02 02	459	CLI	2(,XR2),X*02*	INIT. INCR. 02 STILL
1347	F2 81 13	460	JE	ITZRO	
134A	0F 00 1580 14AD	461	SLC	SAMLIM(1),ONE	DECR. LIMIT
1350	C0 01 1340	462	BNZ	UPTWO	
1354	C0 87 0222	463	B	HALT	I.A.R. DID NOT START
1358	E076	464	DC	XL2*E076*	AT 02 HALT
135A	F2 87 65	465	J	NUSAM	
135D	3E 00 1371	466	ITZRO	MVI CHKINC+2,X*00*	SET INIT.DISPL.TO 0
1361	3C 00 1580	467	ICTAB	MVI SAMLIM,*-*	SET INCR. LIMIT TO 8 OR 5
1365	0E 00 1371 14AD	468	ALC	CHKINC+2(1),ONE	ADD TO DISPL.
1368	36 02 14AF	469	ROGAN	A TWO,XR2	ADD TO SAMPLE ADDR.
136F	6D 00 00 00	470	CHKINC	CLC O(1,XR1),O(,XR2)	SAMPLE EQUAL TO TABLE INCR.
1373	F2 81 13	471	JE	ITSOK	
1376	0F 00 1580 14AD	472	SLC	SAMLIM(1),ONE	DECR.LIMIT
137C	C0 01 136B	473	BNZ	ROGAN	
1380	C0 87 0222	474	B	HALT	I.A.R.DID NOT INCR.
1384	E077	475	DC	XL2*E077*	BY 8 HALT
1386	F2 87 39	476	J	NUSAM	
1389	3D 08 1371	477	ITSOK	CLI CHKINC+2,X*08*	11 I.A.R.INCR. DONE

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
138D	C0 82 1361	478	BL	ICTAB	
1391	3C 00 1580	479	BTSSLI	MVI SAMLIM,*-*	SET BETWEEN PSS'S LIMIT TO 13 OR 8
1395	36 01 1484	480	A	LEVEN,XR1	ADD TABLE DISPL.TO TABLE ADDR.
1399	36 02 14AF	481	NAGOR	A TWO,XR2	ADD TO SAMPLE ADDR.
139D	6D 00 01 00	482	CLC	I(1,XR1),O(,XR2)	SEARCH FOR NEXT INIT.INCR.
13A1	F2 81 13	483	JE	DUNAL	
13A4	0F 00 1580 14AD	484	SLC	SAMLIM(1),ONE	DECR.LIMIT
13AA	C0 01 1399	485	BNZ	NAGOR	
13AE	C0 87 0222	486	B	HALT	PSS INIT.INCR.ERROR HALT
13B2	E078	487	DC	XL2*E078*	
13B4	F2 87 08	488	J	NUSAM	
13B7	7D 00 00	489	DUNAL	CLI O(,XR1),*-*	ALL PSS'S CHACKED
13BA	C0 01 135D	490	BNE	ITZRO	
13BE	C0 87 0212	491	B	TEST	
13C2	35 02 14AB	492	NUSAM	L ZERG,XR2	WAIT TILL NOT BUSY
13C6	C1 E6 13CD	493	BUTIO	TIO BULOP,BUSY	
13CA	F2 87 0E	494	J	SICEM	
13CD	36 02 14AD	495	BULOP	A ONE,XR2	
13D1	C0 01 13C6	496	BNZ	BUTIO	
13D5	C0 87 0222	497	B	HALT	
13D9	E011	498	DC	XL2*E011*	
13DB	0F 00 1583 14AD	499	SICEM	SLC LPOUNT(1),ONE	GONE THRU 10 TIMES
13E1	C0 01 1071	500	BNZ	SECIT	
13E5	C0 87 0216	501	BLINK	B LINK	
502				*****	
503			*	CHECK FOR BUSY & DELAY SUBROUTINE	
504				*****	
13E9	34 08 1410	505	BROUT	ST BSEXIT+3,ARR	
13ED	0C 02 158E 14B9	506	SDC	MVC BUSUB(3),BUSCTI	STORE DELAY COUNT
13F3	0F 02 158E 14AD	507	FLOOP	SLC BUSUB(3),ONE	
13F9	F2 81 07	508	JZ	TOLONG	
13FC	C1 E6 13F3	509	TIO	FLOOP,BUSY	
1400	F2 87 0A	510	J	BSEXIT	
1403	C0 87 0222	511	TOLONG	B HALT	ERROR HALT
1407	E011	512	DC	XL2*E011*	BUSY ID.
1409	C0 87 13ED	513	B	SDC	TRY AGAIN
140D	C0 87 0000	514	BSEXIT	B *-*	
515				*****	
516			*	EXECUTE SIO SUBROUTINE	
517				*****	
1411	36 08 14AD	518	XIO	A ONE,ARR	
1415	34 08 1443	519	ST	LDCMD+9,ARR	LOAD PARAMETER POINTER
1419	36 08 14AD	520	A	ONE,ARR	
141D	34 08 14A4	521	ST	EXIT+3,ARR	SET UP EXIT
1421	34 01 14A6	522	ST	SAVWUN,XR1	SAVE REG. 1
1425	34 02 14A8	523	ST	SAVTUU,XR2	SAVE REG.2
1429	C1 E0 1430	524	TIOCHK	TIO ERNRDY,NRDY	BRANCH IF NOT READY
142D	F2 87 0A	525	J	LDCMD	
1430	C0 87 0222	526	ERNRDY	B HALT	
1434	E010	527	DC	XL2*E010*	NOT READY ID.
1436	C0 87 1429	528	B	TIOCHK	
143A	C0 87 13E9	529	LOCMD	B BROUT	
143E	0C 01 1458 0000	530	MVC	CMND+2(2),*-*	SET UP COMMAND FROM PARAMETER
1444	38 08 145A	531	SBF	CMND+1,B*1000*	SET MOD.BIT OFF
1448	38 80 0209	532	TBN	SBYTE1,SSW08	PRINT ON RIGHT CARR.
144C	F2 90 04	533	JF	NOTRIT	
144F	3A 08 145A	534	SBN	CMND+1,B*1000*	SET RIGHT CARR.MOD.BIT ON
1453	0C 01 15R5 145B	535	NOTRIT	MVC ERT1(2),CMND+2	
1459	F3 00 00	536	CMND	SIO X*0',X*0'	COMMAND LOADED DURING EXECUTION
145C	C1 E6 1466	537	TIO	ISBUSY,BUSY	
1460	C0 87 0222	538	B	HALT	IF NOT, HALT ON ERROR
1464	E016	539	DC	XL2*E016*	NOT BUSY HALT
1466	35 02 14AB	540	ISBUSY	L ZERO,XR2	
146A	C1 E6 1471	541	DELAY	TIO BSYLP,BUSY	PRINTER STILL BUSY
146E	F2 87 0E	542	J	XIOEXT	
1471	36 02 14AD	543	BSYLP	A ONE,XR2	TRY FOR ABOUT 1.5 SECONDS TO
1475	C0 01 146A	544	BNZ	DELAY	CLEAR BUSY
1479	C0 87 0222	545	B	HALT	BUSY HALT

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
147D	E014	147E	546	DC XL2'E014'
147F	3C 80 15AF	547	XIOEXT MVI	HAP0IN,X'80' LOAD DELAY COUNT OF 128
1483	0D FF 0800 0800	548	WT CLC	LPI(256),LPI DELAY 1 MSEC.
1489	0D 3B 0800 0800	549	CLC	LPI(60),LPI
148F	0F 00 15AF 14AD	550	SLC	HAP0IN(T),ONE DECREMENT DELAY COUNT
1495	C0 84 1483	551	BH	WT
1499	35 01 14A6	552	L	SAVWUN,XR1 RESTORE REG.1
149D	35 02 14A8	553	L	SAVTUU,XR2 RESTORE REG.2
14A1	C0 87 0000	554	EXIT B	*-* EXIT SUBROUTINE
		555		
14A5	0000	14A6	556	SAVWUN DC IL2'0'
14A7	0000	14A8	557	SAVTUU DC IL2'0'
		558		*****
		559		* CONSTANTS
		560		*****
14A9	00	14A9	561	DC IL1'0'
14AA	0000	14AB	562	ZERD DC IL2'0'
14AC	0001	14AD	563	CNE DC IL2'1'
14AE	0002	14AF	564	TWO DC IL2'2'
14B0	0003	14B1	565	TREE DC IL2'3'
14B2	08	14B2	566	EIGHT DC IL1'8'
14B3	0008	14B4	567	LEVEN DC IL2'11'
14B5	000C	14B6	568	TWLV DC IL2'12'
14B7	040000	14B9	569	BUSCTI DC XL3'40000'
14BA	0800	14BB	570	LPIADR DC XL2'800'
14BC	087C	14BD	571	LPDADR DC XL2'87C'
14BE	7070	14BF	572	FOLG DC XL2'7070'
14C0	70E619	14C2	573	SWUN DC XL3'70E619'
14C3	80E600	14C5	574	STUU DC XL3'80E600'
14C6	70E410	14C8	575	IKUN DC XL3'70E410'
14C9	80E4FE	14CB	576	ITUU DC XL3'80E4FE'
		14CC	577	M4PSS1 EQU *
14CC	7F8B97A3AFB8C7D3	14D3	578	DC XL8'7F8B97A3AFB8C7D3' DAR VALUES FOR HMR.POS.4 PSS1
14D4	DFEBF7	14D6	579	DC XL3'DFEBF7' 132 PP
14D7	08	14D7	580	DC XL1'08'
14D8	858F9BA7B3BFC8D7	14DF	581	DC XL8'858F9BA7B3BFC8D7' DAR VALUES FOR HMR.POS.4 PSS2
14E0	E3EFFF	14E2	582	DC XL3'E3EFFF' 132 PP
14E3	08	14F3	583	DC XL1'08'
14E4	87939FABB7C3CFDB	14EB	584	DC XL8'87939FABB7C3CFDB' DAR VALUES FOR HMR.POS.4 PSS3
14EC	E7F3FF	14EE	585	DC XL3'E7F3FF' 132 PP
14EF	087F	14F0	586	DC XL2'087F'
		587		
14F1	C20A121A222A020A	14F1	588	PS148 EQU *
14F9	121A22	14FB	589	DC XL11'020A121A222A020A121A22' I.A.R.VALUES
14FC	050D151D252D050D	1506	590	DC XL11'050D151D252D050D151D25' 48 CHAR.SET
1504	151D25	590		
1507	0810182028000810	1511	591	DC XL11'0810182028000810182028'
150F	182028	591		
1512	03	1512	592	DC XL1'03'
		1513	593	PS1UCS EQU *
1513	020A121A222A323A	151D	594	DC XL11'020A121A222A323A424A52' I.A.R.VALUES
151B	424A52	594		
151E	050D151D252D353D	1528	595	DC XL11'050D151D252D353D454D55' U.C.S.
1526	454D55	595		
1529	0810182028303840	1533	596	DC XL11'0810182028303840485058'
1531	485058	596		
1534	03	1534	597	DC XL1'03'
		598		*****
		599		* MESSAGES
		600		*****
1535	C4C1E3C140C1C4C4	1546	601	TITL1 DC CL18'DATA ADDR.REG.TEST'
153D	D94B09C5C748E3C5	601		
1545	E2E3	601		
1547	C9D4C1C7C540C1C4	1559	602	TITL2 DC CL19'IMAGE ADDR.REG.TEST'
154F	C4D94BD9C5C748E3	602		
1557	C5E2E3	602		
155A	D7D9C5E2E240C3C8	1568	603	DC CL18'PRESS CHECK RESET,'

E055 DATA AND IMAGE ADDRESS REG. TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE STATEMENT
1562	C5C3D240D9C5E2C5	603		
156A	E368	603		
156C	F5F2F0F340D4E4E2	157E	604	DC CL19'5203 MUST BE READY,'
1574	E340C2C540D9C5C1	604		
157C	C4E86B	604		
157F	E3C8C5D540D9C5E2	158D	605	MAKADY DC CL15'THEN RESET HALT'
1587	C5E340C8C1D3E3	605		
158E	C9D4C1C7C5405040	159B	606	DC CL14'IMAGE & CHAIN '
1596	C3C8C1C9D540	606		
159C	C4D640D5D6E340C1	15A7	607	CHAERR DC CL12'DO NOT AGREE'
15A4	C7D9C5C5	607		
		608		*****
		609		* RESERVED STORAGE
		610		*****
15A8	0000	15A9	611	STAT2 DC XL2'0'
15AA		15AB	612	STAT3 DS CL2
15AC	0000	15AD	613	STAT6 DC XL2'0'
15AE	0000	15AF	614	HAP0IN DC XL2'0'
15B0	00	15B0	615	SANLIM DC XL1'0'
15B1	0000	15B2	616	LASAV DC XL2'0'
15B3		15B3	617	LPOUNT DS CL1
15B4		15B5	618	ERT1 DS CL2
15B6	0000	15B7	619	MIDAR DC XL2'0'
15B8	0000	15B9	620	M2DAR DC XL2'0'
15BA	0000	15BB	621	M3DAR DC XL2'0'
15BC		15BE	622	BUSUB DS CL3
15BF		15BF	623	EADM1 DS CL1
15C0		15C0	624	BADM2 DS CL1
15C1		15C1	625	BADM3 DS CL1
		626		*****
		627		* EQUATES *
		628		*****
0008	629	ARR	EQU	X'08' ADDRESS RECALL REGISTER
0001	630	XR1	EQU	1 INDEX REGISTER 1
0002	631	XR2	EQU	2 INDEX REGISTER 2
0800	632	LPI	EQU	X'800' LINE PRINTER IMAGE AREA
087C	633	LPD	EQU	X'87C' LINE PRINTER DATA AREA
0878	634	UCSFLG	EQU	X'878'
00E0	635	LOFOLG	EQU	X'E0'
00E4	636	LPIAR	EQU	X'E4'
00E6	637	LPDAR	EQU	X'E6'
0216	638	LINK	EQU	X'216'
0212	639	TEST	EQU	X'212'
021A	640	PRINT	EQU	X'21A'
0222	641	HALT	EQU	X'222'
00E0	642	NRDY	EQU	X'E0'
00E6	643	BUSY	EQU	X'E6'
644	*	SFNSE	SWITCH EQUATES.	
0208	645	SBYTE0	EQU	X'208'
0209	646	SBYTE1	EQU	X'209'
020C	647	SBYTE4	EQU	X'20C'
648	*	CONTROL	PGM SENSE SWITCHES	
0004	649	SSW05	EQU	X'04'
0080	650	SSW08	EQU	X'80'
651	*	SECTION	SENSE SWITCHES.	
0080	652	SSW20	EQU	X'80'
FFFF	653	END		

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589959
PAGE 6

E055 DATA AND IMAGE ADDRESS REG. TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADTUTU	A	005	0B27	0118	0122
ADTUU	A	005	0B0F	0112	0116
AGAIN	A	004	0DF5	0187	0191
ARR	C	001	0008	0629	0301 0319 0505 0518* 0519 0520* 0521
BADM1	A	001	15BF	0623	0281* 0282
BADM2	A	001	15C0	0624	0256* 0257
BADM3	A	001	15C1	0625	0062* 0225* 0226
BAPRT	A	004	0A29	0039	0037
BESSLI	A	004	0DE6	0193	0051*
BLAH	A	004	0E4C	0214	0202 0210
BLINK	A	004	13E5	0501	0342
BROUT	A	004	13E9	0505	0529
BSEXIT	A	004	140D	0514	0505* 0510
BSYLP	A	004	1471	0543	0541
BTSSLI	A	004	1391	0479	0379* 0383*
BULUP	A	004	13CD	0495	0493
BUSCTI	A	003	14B9	0569	0506
BUSUB	A	003	15BE	0622	0506* 0507*
BUSY	C	001	00E6	0643	0187 0235 0266 0291 0309 0493 0509 0537 0541
BUTIG	A	004	13C6	0493	0496
CHAERR	A	012	15A7	0607	0354
CHESUB	A	004	0DD1	0177	0171
CHKINC	A	004	136F	0470	0466* 0468* 0477
CLIHAP	A	004	0E2C	0205	0200 0213
CMND	A	003	1459	0536	0530* 0531* 0534* 0535
CRPAH	A	004	0F63	0301	0093 0214
DACHD	A	003	0B58	0134	0063* 0069*
DACHD1	A	003	0F0C	0274	0064* 0070*
DACHD2	A	003	0EA6	0242	0065* 0071*
DACHD3	A	003	0E5C	0218	0066* 0072*
DARS1	A	001	0B69	0143	0111 0135 0151
DARS2	A	001	0C4F	0145	0127
DELAY	A	004	146A	0541	0544
DIPAD	A	006	0D77	0155	0166
DUNAL	A	003	13B7	0489	0449* 0455* 0483
DUST	A	004	0AAA	0078	0075 0296
EIGHT	A	001	14B2	0566	0226 0257 0282
ERHTKS	A	004	1044	0381	0376
ERNRDY	A	004	1430	0526	0524
ERT1	A	002	15B5	0618	0019 0535*
ESVEN	A	003	0F76	0308	0303
EXIT	A	004	14A1	0554	0521*
EXLENT	A	004	0DF1	0186	0194
FAST	A	003	0EC1	0250	0249
FLOOP	A	006	13F3	0507	0509
FOLG	A	002	14BF	0572	0058 0387
GETIM	A	004	0F9F	0320	0322
GOAIT	A	004	0E96	0235	0224 0229 0231 0235
GOM1	A	004	0F04	0272	0267
GOM2	A	004	0EA2	0241	0236
GOM3	A	004	0E54	0216	0188
GRADAR	A	004	0AE3	0097	0084 0087
HALIT	A	004	0FFC	0356	0350
HALT	C	001	0222	0641	0102 0161 0174 0179 0192 0232 0263 0288 0356 0463 0474 0486
HAPQIN	A	002	15AF	0614	0497 0511 0526 0538 0545
HERE	A	004	106B	0394	0310* 0313* 0323* 0326* 0517* 0550*
HMLoop	A	003	0B4F	0131	0392
IACMD	A	003	10F5	0437	0390* 0393*
IARS1	A	001	10FD	0443	0412 0456
IARS2	A	001	11EB	0445	0430
ICTAB	A	004	1361	0467	0378* 0382* 0478
INCONT	A	004	0D9C	0164	0050* 0158
INILI	A	004	133C	0457	0377* 0381*
ININLI	A	004	0D6F	0153	0049*
ISBUSY	A	004	1466	0540	0537

DATE 31OCT69 22DEC69 20JAN70 02MAR70 11MAY70 01NOV70 04JUN71 PROG ID OE05-5
EC NO. 816529 816547 816548 816631 816671 816764 818968 PAGE 6

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589959
PAGE 6A

E055 DATA AND IMAGE ADDRESS REG. TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ITSOK	A	004	1389	0477	0471
ITUU	A	003	14CB	0576	0409* 0418
ITZRO	A	004	135D	0466	0460 0490
IWUN	A	003	14C8	0575	0410* 0411
LASAV	A	002	15B2	0616	0167* 0170
LDCMD	A	004	143A	0529	0519* 0525
LEVEN	A	002	14B4	0567	0480
LINK	C	001	0216	0638	0297 0501
LOFOLG	C	001	00E0	0635	0058* 0387*
LOKON	A	003	0EA9	0243	0245
LORIS	A	004	0F5F	0297	0294
LQUNT	A	004	0A5C	0058	0048
LPD	C	001	087C	0633	0428* 0448*
LPDADR	A	002	14BD	0571	0060 0388
LPDAR	C	001	00E6	0637	0060* 0388*
LPI	C	001	0800	0632	0311 0311 0312 0312 0324 0324 0325 0325 0548 0548 0549 0549
LPIADR	A	002	14EB	C570	0059 0427
LPIAR	C	001	00E4	0636	0059* 0427*
LPOUNT	A	001	15B3	0617	0061* 0295* 0389* 0499*
LUKPE	A	003	0E5F	0219	0216
MAKADY	A	015	158D	0605	0044 0307 0372
MALS	A	004	0DB1	0169	0173
MEXIT	A	004	0FC5	0328	0319*
MHALT	A	003	102B	0374	0368
MOVHAM	A	004	0A99	0073	0068
MRALT	A	003	0A3A	0046	0040
MIDAR	A	002	15B7	0619	0273
MILLOK	A	003	0F0F	0275	0272
MIXT	A	003	0F39	0287	0054*
MZDAR	A	002	15B9	0620	0241
MZXT	A	003	0EEB	0262	0053*
M3DAR	A	002	15BB	0621	0217
M3XT	A	003	0E89	0231	0052*
M4DEL	A	004	0F9B	0319	0083 0203 0398
M4PSS1	A	001	14CC	0577	0152
NAGOR	A	004	1399	0481	0485
NAS	A	004	10E0	0431	0433
NEPSS	A	004	0D73	0154	0185
NEVES	A	004	0ADF	0093	0082 0089
NIPS	A	004	0F79	0309	0309
NOMOD	A	004	107F	0400	0397 0405
NOTRIT	A	006	1453	0535	0533
NOYET	A	003	0EB3	0246	0248
NRDY	C	001	00E0	0642	0037 0365 0524
NRTIO	A	004	0A22	0037	0031
NUSAM	A	004	13C2	0492	0465 0476 0488
OKYDOK	A	004	1002	0356	0348
ONE	A	002	14AD	0563	0155 0159 0172 0190 0225 0256 0281 0295 0313 0326 0461 0468
OP1	A	004	0E3B	0209	0472 0484 0495 0499 0507 0518 0520 0543 0550
POOLMH	A	003	10EC	0434	0207
PRINT	C	001	021A	0640	0429
PSIUCS	A	001	1513	0593	0032 0041 0304 0351 0360 0369
PSI48	A	001	14F1	0588	0454
RETIO	A	004	1013	0365	0450
ROGAN	A	004	136B	0469	0359
RTN1	A	001	0A0D	0026	0473
RTN2	A	001	0FC9	0337	0018
SAMLIM	A	001	15B0	0615	0028
SAN	A	004	0B43	0128	0153* 0159* 0164* 0168* 0172* 0183* 0457* 0461* 0467* 0472* 0479* 0484*
SAVUU	A	002	14A8	0557	0130
SAVVUN	A	002	14A6	0556	0523* 0553
SAWRYT	A	004	0AFF	0108	0522* 0552
SBYTE0	C	001	0208	0645	0098 0101
SBYTE1	C	001	0209	0646	0030 0039 0302 0349 0358 0367
SBYTE4	C	001	020C	0647	0067 0391 0532

DATE 31OCT69 22DEC69 20JAN70 02MAR70 11MAY70 01NOV70 04JUN71 PROG ID OE05-5
EC NO. 816529 816547 816548 816631 816671 816764 818968 PAGE 6A

E055 DATA AND IMAGE ADDRESS REG. TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
SDC	A	006	13ED	0506	0515
SECIT	A	004	1071	0396	0500
SENAT	A	004	0FE0	0346	0344
SEXIT	A	004	0F97	0315	0301*
SICEM	A	006	13DB	0499	0494
SI0ST	A	004	0AC3	0085	0079 0092
SKUCS	A	004	133E	0456	0453
SMAD	A	004	0D7D	0156	0160
SPUDT	A	003	0A0C	0020	0047 0078 0199 0375 0396
SSW05	C	001	0004	0649	0030 0039 0302 0349 0358 0367
SSW08	C	001	0080	0650	0067 0391 0532
SSW20	C	001	0080	0652	0074 0081 0088 0097 0201 0209 0293 0341
STAT2	A	002	15A9	0611	0085* 0086 0128* 0129 0205* 0206 0320* 0321 0400* 0401 0431* 0432
STAT3	A	002	15AB	0612	0346* 0347 0451* 0452
STAT6	A	002	15AD	0613	0099* 0100
STRIT	A	004	0E12	0198	0189 0237 0268
STUU	A	003	14C5	0574	0108* 0117
SUBDK	A	004	0DE2	0182	0178
SUSY	A	004	0F46	0291	0280 0285 0287 0291
SWUN	A	003	14C2	0573	0109* 0110
TAW	A	006	0F81	0311	0314
TECHBI	A	004	0FE4	0347	0345*
TEST	C	001	0212	0639	0292 0491
THCHEK	A	004	0D81	0157	0154* 0155* 0165
TIOCHK	A	004	1429	0524	0528
TIPS	A	004	0A3D	0047	0038
TITL1	A	018	1546	0601	0035
TITL2	A	019	1559	0602	0363
TMMIE	A	004	0F3C	0288	0283
TMMZE	A	004	0EEE	0263	0258
TMMZE	A	004	0E8C	0232	0227
TNUQL	A	004	1050	0387	0366 0380
TOGON	A	004	0A72	0063	0104 0163 0176 0181 0234 0265 0290
TOLONG	A	004	1403	0511	0508
TREE	A	002	14B1	0565	0114 0120 0415 0421
TRPAB	A	004	101A	0367	0365
THAIT	A	004	0EF8	0266	0255 0260 0262 0266
TWLVE	A	002	14B6	0568	0182
TWO	A	002	14AF	0564	0112 0118 0156 0169 0413 0419 0458 0469 0481
TYRWAS	A	004	1094	0409	0399 0402
UCSFLG	C	001	0878	0634	0343
UPTWO	A	004	1340	0458	0462
UTUTDA	A	005	10BC	0419	0423
UUTDA	A	005	10AC	0413	0417
UVWXYZ	A	001	0A0J	0003	
WAT	A	006	0FAF	0324	0327
WHARTO	A	004	0E37	0208	0198* 0204 0215
WT	A	006	1483	0548	0551
XIO	A	004	1411	0518	0376 0090 0211 0394 0403
XIOEXT	A	004	147F	0547	0542
XR1	C	001	0001	0630	0110* 0112 0113 0115 0117* 0118 0119 0121 0126* 0131 0132 0133 0137 0138 0139 0152* 0157 0177 0182* 0184 0188* 0198 0217* 0219 0220 0222 0223 0228 0230 0236* 0241* 0243 0244 0246 0247 0250 0251 0253 0254 0259 0261 0267* 0273* 0275 0276 0278 0279 0284 0286 0411* 0413 0414 0416 0418* 0419 0420 0422 0429* 0434 0435 0436 0438 0450* 0454* 0470 0480* 0482 0489 0522 0552*
XR2	C	001	0002	0631	0111* 0113 0114* 0119 0120* 0127* 0151* 0155* 0157 0167 0169* 0170 0177 0186* 0190* 0216* 0221 0249* 0252 0272* 0277 0412* 0414 0415* 0420 0421* 0430* 0456* 0458* 0459 0469* 0470 0481* 0482 0492* 0495* 0523 0540* 0543* 0553*
YALD	A	004	0E00	0190	0187
ZERO	A	002	14AB	0562	0062 0186 0492 0540
ZPRUNY	A	004	0AEE	0100	0073* 0080*

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

E055 DATA AND IMAGE ADDRESS REG. TEST

OBJECT CARD LISTING

THE CHARACTER ' ' INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16	CL 17 THROUGH 32	CL 33 THROUGH 48	CL 49 THROUGH 64	CL 65 THROUGH 80	CL 81 THROUGH 96
T+Y:8EM B-4 N;A& D C&U8A H H&Z HOH*BFUHKEM\$ -<G-BSX2/1&8A H H&Z HOH*BFUDSEQ7 -8- JLOE0550001					
T+-Z5-<8H Y<AZ Q|A*(+COECR4&B 7 X|HD+ST2AC>0&-&@ <:; M?3GUE.Z19/K 'I YNZ00BE*DMD3& HB5U LK E0550002					
T+-D0+0-|CL&HCD* #B 9)+H BB-H&DCY HB5U:8 @(+--+Z3Y HCV4&-0,?+H BC|H &A&BGE&GS CU0B-3 ZUAK *18E0550003					
T+.,|GOH#3S -3 2DB| /O=\$@Y*-<+H NDL-AE&X2D&MB- H <@/ HOH*MD;H OH* HO&BGC6<B- H&@/ NK+Q EKQE0550004					
T+-&WE&4* AD_@YD HOH*BH>A00H*H*TO E<M&FJLBO-DMO&H BB&_+ M,90B 6 /K1->@ OHH.C&H AE<M #C#E0550005					
T+_/L- EH=* - (-HM&P5><BBB2- B &_10-HKLTCS&EU 8DAQYDI .&7CSDG- AC*BS ||S -HGBO *+H =E-E0550006					
TA_YDG- D| &D& 4&YE0550007					
T+-S/O-H.E&HAE<O @HJOO| (-08 CQ< M,LQBEH' _@YD MCO NZAK_0 D(-*B G S.-*BGBXH&BAO O|&Y &S*E0550008					
T+-7*CO| --57. D NZ- @BAOO(-HM,24 A&SH @Y&MCO NZAK _O D(&#BG S.-*ZB GBXH) & <@YDHOH* BH> #-QE0550009					
T+-8P*@BGBXH6 JK 6| 4NZG5* < ACP< 5 /K,0;Q+ <HACVL 2/1H6 /K_0 D(*#B G S.-E<BGC-D4 &8 :+L \$C#E0550010					
T+-9K&32U @B- H <@/ YOH*|W&GCT* 08/OZ+ DND-H&A<B G @- H&@/ HOH* MD;H OH*+<BGC6| /08 #: E0550011					
T+-(|@HBCV*#B JO #@=HA*+H ;D 'BI *+Q -QH @YDVC- NOJK_C& NOJK2@YD <-Q8 @YD&-RY @-# HOH* =24E0550012					
T+-#H S.-)*BGBX. A9-:00-D+Y&BGC/. B JO9@=HA*+H ;D 'OI +DPCS GV <B &C,|B -#A*+H ;D 'BI :ZHE0550013					
T+-@C GCW G6E |H AI&B E* M, &4 E* M&?HACG6J |HADG6 | |HGB&BG S.-)<B GBX.A9-#80-D|A<B GC/H QEHE0550014					
T+-@=0-H|C&HAE&S\$ 38-E08-E8 -C-U A 09-E' G2-KM+ AD "EH4(AO"E..2-&1 'S G2-JA'V G2AO, /OH &D#E0550015					
T+-'9H>A90H*H*ZG WC4\$ /OHK+H BC|H &B-@ E\$<M,* ABD, /OH0(-|WT-D -T ZU T /OHE L&NT-A @A&D 6,*E0550016					
T+-=49-'9|B-N,07 "B H 4#B H @ EE&M,*BDC8G /O (-|ZCC&E&J8 JO ZOI |X302EE&@("O- B 'Z E0550017					
T+-"ZCL&H - CO N,1K_OH&|,@BG B |"'+H BC< &D=M "O/8&-DD|CU|9CC TEE&BAAO,@/ P+ & BB|H 58<E0550018					
T+ /DU , /OHE0JY NZ= +OH*BH> ++ & BB|H&B&BG /ZBD1N R8 CA8A E&Y*6+ & BB|H&B&BG /ZAH/O (8+D 6SDE0550019					
T+ /AV&GOC+B HC|H &C30PD34&AJ|S| - LU?HGCCO/D34&BA(S| 4LUTG-E.@19/K 'I YNZ3&HD|Q8- H I&Z 9BQE0550020					
T+ /B-ACYHD| \$ /1& J8- 9< Y<AZ GOH* |W"HGELC&E&U8 JO Z@/ HOH*MD;H OH* &-33=E<Z&DALHO-D M2<H R,HE0550021					

E055 DATA AND IMAGE ADDRESS REG. TEST

OBJECT CARD LISTING

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+/C\$ /C*L- EH= * - (-HM%P7= <B BDHLB JL.L- EH= * - (-HM%P58 <B BD.019AK#||@H-@H AD+0 N& E0550022

THAC@0-HJ#CCSEEU 8DA0Y01 88GCS0G- AC*B& ||S)BGD& 19UE0550023

T+/(L|D H-30YD#T B JLO<+<ND3-DEE? 2D TB JMK|E-L><H BD|Y@ AGO(-HM,#4 B ?HADO@ E\$ M,* AD4 J-8E0550024

T+/+0H*BH>A6@Y) V| L*LO E\$ + A(1EH46 /K?S& |H ADO@ E\$ M,* AD6? /OHS8G-2/3U* B1(1GHH PROE0550025

T+||ID6D@ A00(-D M_CQB@H*_ D @YD LCO N&AK_0 DLW*B G S.-;|HGB74 < AD57 /OHK(8HMD@G WD@4 \$1 E0550026

T+/@D@Y*+(-HM,* AD@ \$ /OHS8AD| AD 3EH7 JA10H*BET& HEA < /O=E.U| /O =EH72-8-A9/|3@Y* HOH* ;/*E0550027

T+/@ S.-D*BGD=7 /O (-M,L&HED< 6BAK_(-MZC&AEHQ 4 /KY0; M|HGB@B G S.-D<BGEBX /| ZC D @S-E0550028

T+/J:EE% C@HEEY 8- HI@Z D+--MO-O AESMMOM< <GWEF\$ /OHS8AQ5 /K,0;Q M*-HGCTQBEH7 JJ DOH* 2 &E0550029

T+/K5 S.-EC2 EE@ (0- B (0- B | A0?EH7 /AKC(8D MZTMBEHT /O A H O- BO EH<E0550030

T+/LOC & - BG1 0*GCWF\$C@ GCJD.C U*X=.V:+?@-L7=? 7BH+|W; ;3?@?P8=" #BH;LX:>70@ "\$9"| "BG@ \$2ME0550031

T+/M, -YKFSHD -Y KFSHECJM)IK4ECJM)I&-8FB Y -8FB Y OHHD/YSHTH:EUZ KA&4NGKM_(L5ELNM HDA- #Y%E0550032

T+/NKH8-0+DAHME- C1<GTOMCA1<LRK*X E14?T1;.T2)LA1@N 0*LD6M?R1*).8@P S8*-R1;.S&<|H1*| K&(U @&OE0550033

T+/O/1;.E86?5@?C 3&(LU8>(0%N 6*P A1+/,8@TE5MCR1;. E84CH0)|T2)LA1@N MDCC2<GI5MCD5UC N5>< J2&E0550034

TA10Z&<GG6*PE 6DDE0550035

TA/O2 81&E0550036

TAJD# ;/ME0550037

E***E7*=-DC*PH\$ =*7M&F| | C F% ASC R A SO Q 02350317710 605712#*E0550038

----- LAST PAGE -----

E063 5202 CHAIN EMITTER TIMING TEST

```

ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
      2 DECK 4
      3 E06 START X'A00'
      4 *****
      5 *
      6 * SYSTEM/3 5203 CHAIN EMITTER TIMING TEST
      7 *
      8 *****
      9 * SECTION 6 - ROUTINE 1
     10 *****
      11 DC XL2'E063'          PROG IDENTIFICATION
      12 DC XL1'0'             FLAGS
      13 DC XL1'1'             CURRENT ROUTINE NUMBER
      14 DC XL2'0'             RESERVED
      15 DC AL2(RTN1)          ADDRESS OF FIRST ROUTINE PREFIX
      16 DC AL2(ERT1)          ADDRESS OF ERROR RECORDING TABLE
      17 SPUOT DC XL3'EC5000'  UNIT DEFINITION TABLE - PRINTER
      18 *****
      19 *
     20 * ROUTINE 1 - CHAIN EMITTER TIMING TEST
     21 *
     22 *****
      23 RTN1 DC XL1'1'          ROUTINE NUMBER
      24 DC XL1'0'             FLAGS
      25 DC XL2'FFFF'          LAST ROUTINE
      26 *****
      27 TBN SBYTEC,SSW05      PRINT CN MFCU
      28 JT NRTIO              PRINT TITLE
      29 B PRINT                PRINT TITLE
      30 DC XL1'42'            PRINT CN MFCU
      31 DC IL1'25'            PRINT TITLE
      32 DC AL2(TITL1)         PRINT TITLE
      33 DC XL2'E007'          PRINT TITLE
      34 NRTIO TIO BAPRT,NRDY  PRINTER READY
      35 J NCOGOT              PRINT CN MFCU SW. ON
      36 BAPRT TBN SBYTEO,SSW05 PRINT CN MFCU SW. ON
      37 JF MRALT              PRINT MAKE PRINTER READY
      38 B PRINT                PRINT MAKE PRINTER READY
      39 DC XL1'41'            PRINT MAKE PRINTER READY
      40 CC IL1'31'            PRINT MAKE PRINTER READY
      41 DC AL2(MAKADY)        PRINT MAKE PRINTER READY
      42 DC XL2'E0E1'          PRINT MAKE PRINTER READY
      43 PRALT HPL X'03',X'7C' HALT E1
      44 NOGOT MVI LPOUNT,10   HALT E1
      45 TBN SPUOT,B'100000'   100-200 LPM ?
      46 JF SNOTRE              HALT E1
      47 MVI CEMAX+1,X'1C'     HALT E1
      48 MVI ITNAM+1,X'19'     HALT E1
      49 MVI MANTI+1,X'19'    HALT E1
      50 MVI HMMIN+1,X'08'     HALT E1
      51 MVI HMMAX+1,X'0F'     HALT E1
      52 MVC GOBAK+1(2),ADFRTY HALT E1
      53 *****
     54 * GENERATE THE SENSE INSTRUCTIONS
     55 *****
      56 SNOTRE MVI MSECS,X'04' SET 4 MSEC DELAY 1ST TIME THRU
      57 MVI TCOUNT,8
      58 J TOGCON
      59 SKGOON ALC MSEC(1),NINE ADD 9 TO MSEC DELAY
      60 TOGCON MVC STUU(2),SAMADR LOAD STARTING SENSE ADDR.
      61 LA STUU,XR1            LOAD SENSE INSTR.ADDR.
      62 LA SENIN+3,XR2        LOAD GEN.FIELD ADDR.
      63 ADTUU MVC 0(4,XR2),0(1,XR1) PUT SENSE INSTR. IN GEN.FIELD
      64 ALC 0(2,XR1),ONE       ADD 1 TO SENSE INSTR. ADDR.
      65 A FJUR,XR2            UP GEN.FIELD ADDR.BY 4
      66 CLC 0(2,XR1),LASADR   1100 SENSE INSTR.GENERATED?
      67 BNE ADTUU
      68 MVC SAMRET(4),BRUNC   PUT IN UNC BR
      69 B BROUT

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E063 5203 CHAIN EMITTER TIMING TEST

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ERR LOC OBJECT CODE      ADDR STMT SOURCE STATEMENT
      70 *****
      71 * FIND HOME LATCH, THEN SAMPLE AT 9.12 USEC FOR 10 MSEC
      72 *****
      73 SNIK SNS STAT2,X'E2'    GRAB THE TIMINGS
      74 TBN STAT2-1,B'1'       HOME LATCH ON?
      75 BF SNIK
      76 MVC HCMCNT(1),MSECS    SET UP DELAY COUNT
      77 TWA CLC LPI(256),LPI    1 MSEC
      78 CLC LPI(60),LPI         DELAY
      79 SLC HCMCNT(1),ONE     DECR.DELAY COUNT
      80 BH TWA
      81 B SENIN
      82 RETURN MVI HCMIN+1,X'30' WIPE HI ADDR. BYTE
      83 *****
      84 * CHECK TIMING BETWEEN CHAIN EMITTER PULSES
      85 *****
      86 LA SENIN,XR1          LOAD ADDR. OF 1ST SAMPLE
      87 FIBIOF TBN 0(,XR1),B'100000' FIND CHAIN EMITTER OFF
      88 JF ENIF
      89 A ONE,XR1
      90 B FIBIOF
      91 ENIF A ONE,XR1        LOOK FOR RISE OF CHAIN EMIT.
      92 TBN 0(,XR1),B'100000'
      93 BF ENIF
      94 TBN 0(,XR1),B'1'      HOME LATCH ON
      95 BT FIBIOF             SKIP THIS EMITTER
      96 NEXEM MVI SAMCNT,X'CO' ZERO EMITTER SAMPLE CNT.
      97 ITNAM MVI NTHCM-1,40 SET MIN AT 365 USEC
      98 LKGAN A ONE,XR1
      99 CLI 2(,XR1),X'30'    1100 SAMPLES CHECKED
     100 JE TSAL
     101 ALC SAMCNT(1),ONE     CHAIN EMITTER STILL UP
     102 TBN 0(,XR1),B'100000'
     103 JF FIRISE
     104 B LKGAN
     105 FIRISE A ONE,XR1
     106 CLI 2(,XR1),X'30'    1100 SAMPLES CHECKED?
     107 JE TSAL
     108 ALC SAMCNT(1),ONE
     109 TBF 0(,XR1),B'100000' IF CHAIN EMIT.DOWN,FIND NEXT RISE
     110 JF ITSLP
     111 CEMAX CLI SAMCNT,45 MORE THAN 410 USEC *TWEEN EMITS.
     112 JH TOMRY
     113 B FIRISE
     114 ITSUP TBN 1(,XR1),B'1' IS THIS A HOME PULSE
     115 JF NTHCM
     116 ST SAVF1,XR1
     117 *****
     118 * CHECK PULSE WIDTHS & HOME PULSE TIME
     119 *****
     120 GOBAK A SISFR,XR1     SUBTR.120 OR 72 FROM HOME ADDR.
     121 GORK A ONE,XR1
     122 TBF 0(,XR1),B'100000' FIND GAP
     123 BF GCRK
     124 B LULSE
     125 B LULSE
     126 B LULSE
     127 MVC LEEAST(2),LEEADR SAVE 144TH ADDR.
     128 B LULSE
     129 SLC LEEADR(2),LEEAST GO CHECK 145TH EMITTER WIDTH
     130 HMMIN CLI LEEADR,16 SAMPLE DIFF.LESS THAN 16 OR 8
     131 JL HOMER
     132 HMMAX CLI LEEADR,27 SAMPLE DIFF.MORE THAN 27 OR 15
     133 JMH SEEWUN
     134 HOMER B HALT        HOME TIME ERROR HALT
     135 DC XL2'E082'
     136 J GNIP
     137 SEEWUN B LULSE

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E063 52C3 CHAIN EMITTER TIMING TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OB88	CO 87	OB8E	138	B	LULSE
OB8C	3C 27	OB99	139	MANTI	MVI NTHOM+1,39
OB90	35 01	OCA6	140	L	SAVR1,XR1
OB94	CO 87	OAFD	141	B	LKGAN
OB98	3D 00	OCA3	142	NTHOM	CLI SAMCNT,*--
OB9C	CO C2	OAF5	143	BNL	NEXEM
OBAD	CO 87	O222	144	TOMNY	B HALT
OBA4	E080		145	DC	XL2'E080'
OBA6	OF 00	OC9B	146	TSAL	SLC TCUNT(1),ONE
OBA8	CO 01	OAA6D	147	BNZ	SKGOON
OB80	OF 03	OC9A	148	GNIP	SLC LPGUNT(1),CNE
OB86	CO 01	OAA52	149	BNZ	SNGTRE
OB8A	CO 87	O216	150	B	LINK

151 * CHECK PULSE WIDTH SUBROUTINE					

OBEE	34 08	OC16	154	LULSE	ST PLEXIT+3,ARR
OBC2	36 01	OC40	155	LEEG	A ONE,XR1
OBC6	78 20	00	156	TBN	O(,XR1),B*10000'
OBC9	CO 90	OBC2	157	BF	LEEG
OBCD	34 01	OC9D	158	ST	LEEADR,XR1
OB01	3C 00	OCA4	159	MVI	SAMSAV,X*00'
OB05	OE 00	OCA4	160	TREG	ALC SAMSAV(1),ONE
OB08	36 01	OC40	161	A	ONE,XR1
OB0F	78 20	00	162	TBN	O(,XR1),B*10000'
OB2E	CO 10	OB05	163	BT	TREG
OB26	3D 02	OCA4	164	PUMIN	CLI SAMSAV,2
OB2A	F2 82	1C	165	JL	WIDER
OB2D	3C 00	OCA4	166	MVI	SAMSAV,X*00'
OB2F	OF 00	OCA4	167	SNAP	ALC SAMSAV(1),CNE
OB3F	36 01	OC40	168	A	ONE,XR1
OB33	3D 01	OCA4	169	GAPWD	CLI SAMSAV,1
OB3F	F2 84	11	170	JH	PLEXIT
CC02	78 20	00	171	TBN	O(,XR1),B*10000'
CC05	CC 90	OBF1	172	BF	SNAP
CC09	CO 97	O222	173	WIDER	B HALT
OC0D	E081		174	DC	XL2'E081'
OC0F	CO 87	OB80	175	B	GNIP
OC13	CC 87	0000	176	PLEXIT	B *--

177 * CHECK FOR BUSY & DELAY SUBROUTINE					

OC17	34 08	OC3E	181	BRCUT	ST BSEXIT+3,ARR
OC18	OC 02	1FF6	182	SDC	MVC BUSUB(3),BUSCTI
OC21	OF 02	1FF6	183	FLGOP	SLC BUSUB(3),ONE
OC27	F2 81	07	184	JZ	TCLONG
OC2A	C1 E6	OC21	185	TIO	FLODP,BUSY
OC2E	F2 87	0A	186	J	BSEXIT
OC31	CO 87	O222	187	TOLONG	B HALT
OC35	EC11		188	DC	XL2'E011'
OC37	CO 87	OC18	189	B	SDC
OC3B	CO 87	0000	190	BSEXIT	B *--

191 * CONSTANTS					

OC3F	0001		194	ONE	DC IL2'1'
OC41	OC03		195	TREE	DC IL2'3'
OC43	0004		196	FOUR	DC IL2'4'
OC45	0009		197	NINE	DC IL2'9'
OC47	FF88		198	FRTY	DC IL2'-72'
OC49	FF88		199	SISFR	DC IL2'-120'
OC4B	30E2		200		DC XL2'30E2'
OC4D	OC1		201	STUU	DC XL2'OEC1'
OC4F	130D		202	LASADR	DC AL2(HCMIN+2)
OC51	OC1		203	SAMADR	DC AL2(SEMIN+1)
OC53	CO87		204		DC XL2'CO87'
OC55	OACD		205	BRUNC	DC AL2(RETURN)

E063 52C3 CHAIN EMITTER TIMING TEST

ERR LOC	OBJECT CODE	ADDR	STMT	SOURCE	STATEMENT
OC57	OCFF		206	GOFF	DC XL2'00FF'
OC59	OC48		207	ADFRTY	DC AL2(FRTY)
OC5B	040000		208	BUSCTI	DC XL3'40000'

209 * PRINTOUTS					

OC5E	C3C8C1C9D540C5D4	OC76	212	TITL1	DC CL25'CHAIN EMITTER TIMING TEST'
OC66	C9E3E3C5D540E3C9		212		
OC6E	D4C9D5C740E3C5E2		212		
OC76	E3		212		
OC77	D4C1D2C540F5F2F0	OC86	213	DC	CL16'PAKE 5203 READY,'
OC7F	F340D9C5C1C4E86B		213		
OC87	E3C8C5D540C9C5E2	OC95	214	MAKADY	DC CL15'THEN RESET HALT'
OC8F	C5E340C8C1D3E3		214		

215 * RESERVED STORAGE					

OC96		OC97	218	STAT2	DS CL2
OC98		OC99	219	ERT1	DS CL2
OC9A		OC9A	220	LPCUNT	DS CL1
OC9B		OC9B	221	TOUNT	DS CL1
OC9C		OC9D	222	LEEADR	DS CL2
OC9E		OC9F	223	LEEAST	DS CL2
OCA0		OCA0	224	MSECS	DS CL1
OCA1		OCA2	225	HMCNT	DS CL2
OCA3		OCA3	226	SAMCNT	DS CL1
OCA4		OCA4	227	SAMSAV	DS CL1
OCA5		OCA6	228	SAVR1	DS CL2
OEC0			229	ORG	X'OEEC'
OEC0		OEC0	230	SENIN	EQU *
130B		130B	231	HOMIN	DS 11CL100
130C		130C	232	NIMOH	DS 23CL100
1C03		1DFB	233	DIMES	DS 5CL100
1DFC		1FFF	234	SEMID	DS 5CL100
1FF0		1FF1	235	ZROFF	DS CL2
1FF2		1FF3	236	SAMRET	DS CL2
1FF4		1FF6	237	BUSUB	DS CL3

238 * EQUATES					

0008	241	ARR	EQU	X*08'	ADDRESS RECALL REGISTER
0001	242	XR1	EQU	1	INDEX REGISTER 1
0002	243	XR2	EQU	2	INDEX REGISTER 2
0800	244	LPI	EQU	X*800'	LINE PRINTER IMAGE AREA
0216	245	LINK	EQU	X*216'	ENTRY TO DCP CHAIN ROUTINE
021A	246	PRINT	EQU	X*21A'	ENTRY TO DCP PRINT ROUTINE
0222	247	HALT	EQU	X*222'	ENTRY TO DCP ERRCR HALT ROUTINE
00E0	248	NRDY	EQU	X'E0'	
00E6	249	BUSY	EQU	X'E6'	PRINTER BUSY CODE
250	*	SENSE SWITCH EQUATES			
0208	251	SBYTE0	EQU	X*208'	DCP SENSE SWITCH AREA
252	*	CONTROL PGM SENSE SWITCHES			
0004	253	SSW05	EQU	X*04'	PRINT MESSAGES ON MFCU
FFFF	254		END		

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589961
PAGE 3

E063 5203 CHAIN EMITTER TIMING TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
ADFRTY	A	002	0C5A	0207	0052
ADTUU	A	004	0A81	0063	0067
ARR	C	001	0008	0241	0154 0181
BAPRT	A	004	0A29	0036	0034
BROUT	A	004	0C17	0181	0069
BRUNC	A	002	0C56	0205	0068
BSEXT	A	004	0C38	0198	0181* 0186
BSEXTI	A	003	0C5D	0208	0182
BUSUB	A	003	1FF6	0237	0182* 0183*
BUSY	C	001	00E6	0249	0185
CEMAX	A	004	0B2D	0111	0047*
DINES	A	100	1DF8	0233	
ENIF	A	004	0AE3	0091	0088 0093
ERT1	A	0C2	0C99	0219	0016
E06	A	001	0A00	0003	
FIBIOF	A	003	0AD5	0087	0090 0095
FIRISE	A	004	0B17	0105	0103 0113
FLOCP	A	006	0C21	0183	0185
FOUR	A	0C2	0C44	0196	0065
FRTY	A	002	0C48	0198	0207
GAPMID	A	004	0BFB	0169	
GNIP	A	0C6	0B80	0148	0136 0175
GOBAK	A	004	0B42	0120	0052*
GORK	A	004	0B46	0121	0123
HALT	C	001	0222	0247	0134 0144 0173 0187
HMMAX	A	004	0B74	0132	0051*
HMMIN	A	004	0B6D	0130	0050*
HOMCNT	A	002	0CA2	0225	0076* 0079*
HOMER	A	004	0B78	0134	0131
HOMIN	A	100	1308	0231	0082* 0202
ITNAM	A	004	0AF9	0097	0048*
ITSUP	A	003	0B38	0114	0110
LASADR	A	002	0C50	0202	0066
LEEADR	A	002	0C9D	0222	0127 0129* 0130 0132 0158*
LEEAST	A	002	0C9F	0223	0127* 0129
LEEG	A	004	0BC2	0155	0157
LINK	C	001	0216	0245	0150
LKGAN	A	004	0AFD	0098	0104 0141
LPI	C	001	0800	0244	0077 0077 0078 0078
LPCUNT	A	001	0C9A	0220	0044* 0148*
LULSE	A	004	0B8E	0154	0124 0125 0126 0128 0137 0138
MAKADY	A	015	0C95	0214	0041
MANTI	A	004	0B8C	0139	0049*
MHALT	A	003	0A3A	0043	0037
MSECS	A	001	0CA0	0224	0056* 0059* 0076
NEXEM	A	004	0AF5	0096	0143
NINOH	A	100	1C07	0232	
NINE	A	002	0C46	0197	0059
NOOGOT	A	004	0A3D	0044	0035
NRDY	C	001	00E0	0248	0034
NRTIO	A	004	0A22	0034	0028
NTHOM	A	004	0B98	0142	0097* 0115 0139*
ONE	A	002	0C40	0194	0064 0079 0089 0091 0098 0101 0105 0108 0121 0146 0148 0155 0160 0161 0167 0168 0183
DOFF	A	002	0C58	0206	
PLEXIT	A	004	0C13	0176	0154* 0170
PRINT	C	001	021A	0246	0029 0038
PUMIN	A	004	0B96	0164	
RETURN	A	004	0ACD	0082	0205
RTNI	A	001	0A0D	0023	0015
SAHADR	A	002	0C52	0203	0060
SAM. NT	A	001	0CA3	0226	0C96* 0101* 0108* 0111 0142
SAMR. T	A	002	1FF3	0236	0068*
SAMSAV	A	001	0CA4	0227	0159* 0160* 0164 0166* 0167* 0169
SAVRI	A	002	0CA6	0228	0116* 0140
SBYTE0	C	001	0208	0251	0027 0036

DATE 25AUG69 31OCT69 11MAY70 01NOV70 19FEB71
EC NO. 816485 816529 816671 816764 818912

PROG ID 0E06-3
PAGE 3

IBM MAINTENANCE DIAGNOSTIC PROGRAM

PART NO. 2589961
PAGE 3A

E063 5203 CHAIN EMITTER TIMING TEST

CROSS-REFERENCE

SYMBOL	T	LEN	VALUE	DEFN	REFERENCES
SDC	A	006	0C18	0182	0189
SEEMUN	A	004	0B84	0137	0133
SEMID	A	100	1FEF	0234	
SENIN	A	0C1	0ECO	0230	0062 0081 0086 0203
SISFR	A	002	0C4A	0199	0120
SKJONN	A	006	0A6D	0059	0147
SNAP	A	006	0BF1	0167	0172
SNIP	A	004	0AA1	0073	0075
SNOTRE	A	004	0A62	0056	0046 0149
SPUDT	A	003	0A0C	0017	0045
SSW05	C	001	0004	0253	0027 0036
STAT2	A	002	0C97	0218	0073* 0074
STUU	A	002	0C4E	0201	0060* 0061
TITL1	A	025	0C76	0212	0032
TOGCON	A	006	0A73	0060	0058
TOLONG	A	004	0C31	0187	0184
TOMNY	A	004	0BA0	0144	0112
TOUNT	A	001	0C98	0221	0057* 0146*
TREE	A	002	0C42	0195	
TREG	A	0C6	0B05	0160	0163
TSAL	A	006	0BA6	0146	01C0 0107
TWA	A	006	0AB3	0077	0080
WIDER	A	004	0C09	0173	0165
XR1	C	001	0001	0242	0061* 0063 0064 0066 0086* 0087 0089* 0091* 0092 0094 0098* 0099 0102 0105* 0106 0109 0114 0116 0120* 0121* 0122 0140* 0155* 0156 0158 0161* 0162 0168* 0171
XR2	C	001	0002	0243	0062* 0063 0065*
ZROFF	A	002	1FF1	0235	

TOTAL STATEMENTS FLAGGED IN THIS ASSEMBLY = 0

DATE 25AUG69 31OCT69 11MAY70 01NOV70 19FEB71
EC NO. 816485 816529 816671 816764 818912

PROG ID 0E06-3
PAGE 3A

E063 5203 CHAIN EMITTER TIMING TEST

OBJECT CARD LISTING

THE CHARACTER . INDICATES A BLANK COLUMN AND THE CHARACTERS D E H INDICATE NUMERIC SHIFT.

CL 1 THROUGH 16 CL 17 THROUGH 32 CL 33 THROUGH 48 CL 49 THROUGH 64 CL 65 THROUGH 80 CL 81 THROUGH 96

T+-Y:8F< & B-4 <W;A& D **28A H H2/ H0H*BFUHRCG\$ -<G-BSX2/1&8A H H2Z H0H*BFUD-CIP -8~ 424E0630001

T+-Z5- <2B-2E+B HC|H&FTO*B282F&, :|AU.TLOHB682CO_ 5C D.J&1E| &<YCO HC172/0Q+ 2-CDQ < &0 :D<E0630002

T+-DOL-1K0-D<L&H BC&+* 0 L-D CD 6 -1DL&C CEC &D AC <-20100H*<E3C SCI*8 &2001 HY&0 CHH 0IYE0630003

T+-,CH (*0- B (+0- B | 25CDC / D30H*+0C00D03 B &# ;B az H(-D <&<BGB_M6 &1 ;B 0I 0 <E0630004

T+-&WB>(8 &C D , N| <<Y30YB9U6 &1 -L B2YF-C- <Y01 ;B az DOH*H*LQ ACDA* <.2-QM+ 2 TCD azDEC630005

T+-;/;K az .|K4 <Y*H0\$<BGB1;8 EG 2UEY4 &2W(-D<KTQ ACDA9H C U _FOH* .7&BGB# /0>=C D <X00 *8QE0630006

T+->*X*BGB#8| &2 |C|a*D 2|2YHG|J& <X~HDB*BG S.--7H G.<EGB# /0>=|B* .WLMACH\$ /0, |E <Y2 ~\$HE0630007

T+-?P -,5CH*BH>B CO <W01 0 DH\$&2 CIY<E< ARW. /0H 0(-<ETQACDA8H C U ?B(-D<XLO CH& + 0 &3&E0630008

T+-OKZ 1 (-D<&G- - < &B*M* -2U2YH *| <Z 8 CH&<&CQ ACD * &2U2Y&J;B CI .2*BG S.--*B GB# &8QE0630009

T+-1(OH* C&HCC8 < / *6CE4| / *6CDC 2-&-A9-0/2Y*H0H* BH> JOH*<F2BG ... & C & B~8*8- 08-8 :BME0630010

T+-2HOJ<(C&G /0, (|2<K & <|HO*X N&<PM2;|T1)V 82X M2)PG&+|E8>|MO). E&|P2a|(6*PA1+ / ,82- #3HE0630011

TC 2N1)N 6*PS1:(2<GL80 5-EE0630012

E***E7*=-DC*PH\$ =*7M&F| | C F& ASC R A SO Q 20280202710 2197123UE0630013

----- LAST PAGE -----