

DIAGNOSTIC TEST 0043

1620 ON-LINE PRINTER

ASSUMPTIONS

The test assumes that the 1620 CPU is functioning properly.

SCOPE

This test is designed to detect malfunctions in the 1620 on-line 1443 Printer, and the attachment circuitry in the 1620 Models I and/or II Central Processing Units. The program relies on the user detecting printing malfunctions.

The program checks the following logical functions:

1. Carriage control
2. Indicators (Indicators 33, 34, and 35)
3. Incorrect parity check (Indicators 25 and 19)
4. Write Alphameric
5. Write Numerical
6. Dump Numerical
7. Registration

PN2172153
EC 404870U

The program contains three routines, two of which must be entered by a Branch instruction in the insert area or by the Test Completed routine. The third must be entered by a Branch instruction in the insert area only.

1. Random character printing
2. Print user's message
3. Buffer worst case pattern

For a further description of these routines refer to the Service Hints Section.

SETUP

LOADING PROGRAM

To load the Diagnostic Test program into core storage, perform the steps that follow. NOTE: For a 1620-1311 System, the DT may be added to the Disk Pack Library (DIPAL) by following the loading procedure for compatible programs in the DIPAL documentation. (The DT contains the connecting linkages required of a compatible program for DIPAL.)

Card Input

1. Clear core by inserting and executing 31 00004 00002.
2. Load cards in read hopper.
3. Depress 1622 Load key.

Paper Tape Input

1. Clear core by inserting and executing 31 00004 00002.
2. Load tape in reader.
3. Insert and execute 36 00000 00300.

NOTE: To duplicate paper tape for DT 0043:

- a. Clear core
- b. Load original paper tape
- c. Press STOP (SJE) when TEST types out test name
- d. Punch LEADER
- e. Press RESET and Insert
- f. Type in: 35 (operation code for Dump Numeric)
- g. Release and Start
- h. Punch should be punching tape
- i. Watch MAR - when 12200 is reached press INSTANT STOP (SCE)
- j. Reset and Insert
- k. Type in: 35 19999 00200 48
- l. Release and Start (EAL will be punched)
- m. Reset and Insert
- n. Type in: 37 15001 00100
39 15001 00200
48
- o. Release and Start
- p. Type in: + - /) A B K H Q †
- q. Release and Start
- r. Punch leader

TYPED OPERATING MESSAGES

- IF SYSTEM HAS A 1311, KEY IN GM, IF NOT A RM \neq RS
- USE DIAGNOSTIC CARRIAGE TAPE, PUT PRINTER IN READY MODE
- NORMAL SW SETTINGS
- PROG - AS DESIRED
- DATA - PROGRAM

Operator action: Perform the typed instructions and depress the Start key.

SWITCHES

The console switches perform the following functions during the test.

SWITCH 1	ON	Bypass error typeouts
	OFF	Allow error typeouts
SWITCH 2	ON	Loop the printing of a single line
	OFF	Proceed to the next line
SWITCH 3	ON	Halt on an error
	OFF	Bypasses halt on an error
SWITCH 4	ON	Loop test
	OFF	Test Completed routine

The switches should be set to Program.

1443 PRINTER SETUP INSTRUCTIONS

1. Turn the Power ON.
2. Place paper in printer.
3. Place special Diagnostic carriage Control Tape (Refer to Figure 1) on control mechanism.)

4. Turn ribbon switch on
5. Set carriage for 6 lines per inch
6. Align paper for desired first line of printing, and position carriage tape to channel 1 (i.e., depress Carriage Restore Key after de-clutching carriage)
7. Place printer in Ready mode (i.e., no printer check, no sync. check)

ERROR TYPEOUTS

Most of the error typeouts are self-explanatory; however, a description is provided with each. A 5-digit address precedes each message to specify the core location associated with the starting address of the routine in which the error occurred.

PTR CK (25) WON'T TURN OFF

A BI (46) failed to turn off the Printer Check Indicator, 25.

IND 33 WON'T TURN OFF

A BI (46) failed to turn off Indicator 33.

IND 34 WON'T TURN OFF

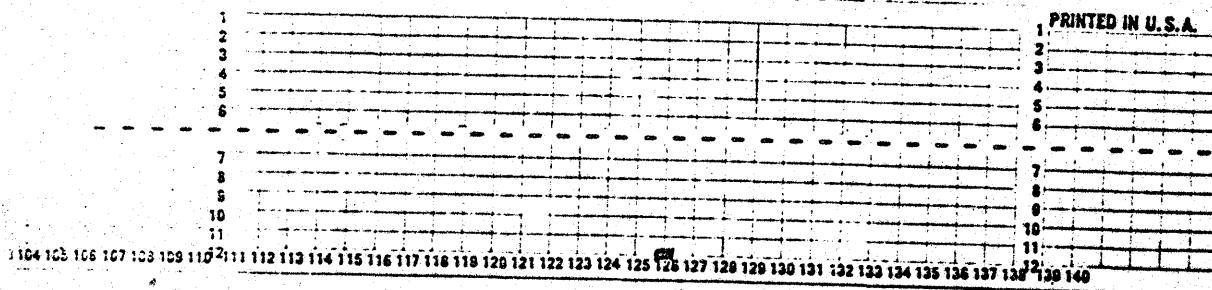
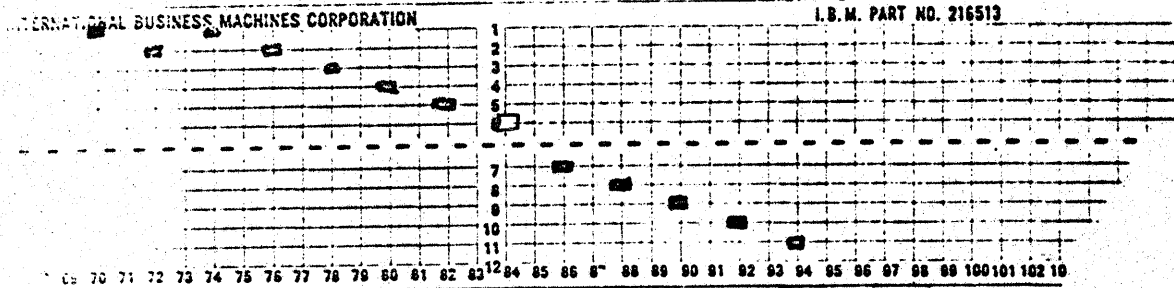
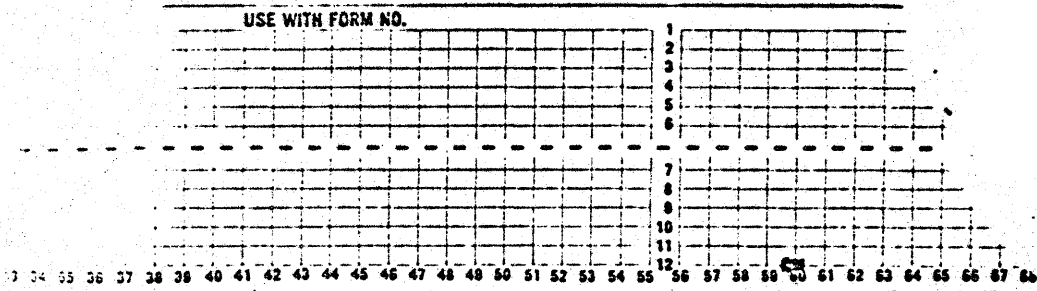
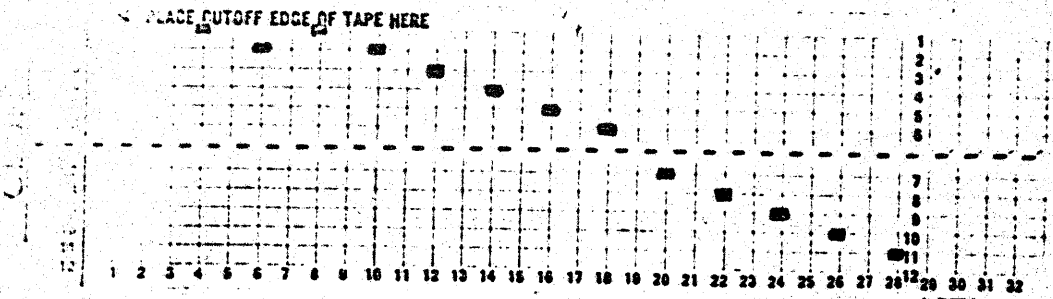
A BI (46) failed to turn off indicator 34.

PTR CK OFF, ANY DATA ON

After printing of the invalid character, Any Data Check is ON, but Printer check failed to turn on.

PTR CK OFF, ANY DATA OFF

After printing the invalid character, both Any Data Check and Printer Check were off.



Cut off edge at
132 and glue.

FIGURE 1 Diagnostic Carriage Control
Tape Required by DT 0043

PN 2172153
EC 412517

PTR CK WONT TURN ON ANY DATA

Printing the invalid character turned on Printer check, which, in turn, failed to turn on Any Data Check.

CH 9 PNCH WNT TRN ON IND 33

Sensing of a channel 9 punch failed to turn ON indicator 33. (Check carriage tape to insure a channel 9 punch has passed sensing unit.)

IND 33 NOT RESET BY BI

After indicator 33 came ON, a BI (46) failed to turn it off.
→ CHANNEL 9 CARRIAGE

CH 12 PNCH WNT TRN ON IND 34

The sensing of a channel 12 punch failed to turn on indicator 34. (Check carriage tape to insure a channel 12 punch has passed the sensing unit.)

IND 34 NOT RESET BY BI

After indicator 34 came on, a BI (46) failed to turn it off.
→ CHANNEL 12 CARRIAGE

IND 35 P-BSY WONT TURN ON

After loading the printer buffer, indicator 35 (Printer Busy) was not ON.

IND 35 P-BSY WONT TURN OFF

After waiting 900 ms following loading of printer buffer, indicator 35 (Printer Busy) was not OFF. (There was no carriage motion pending after buffer loading.)

IND 33 NOT OFF BY CH 1 PNCH

IND 34 NOT OFF BY CH 1 PNCH

The sensing of a channel 1 punch failed to turn off indicator 33 and/or 34. (Check carriage tape to insure a channel 1 punch has passed sending unit.)

There are additional messages for the data checks that turn on Any Data Check (Indicator 19) (i.e. MBR-E, MBR-Q, Read check, etc.).

DETAILED DESCRIPTION

This program is designed to check the operation and control of the 1620 on-line Printer. As the program prints the data on the Printer, the user must verify that the Printer is printing the proper data by visually comparing the data to the sample Printer output.

The program is arranged in routine form and contains the following routines in order of execution:

Control

Turn Off Indicators

Carriage Control with Immediates

Carriage Control with Skip After Print

Space Suppression

Print Incorrect Parity Characters

Write Alphameric

Write Numerical

Dump Numerical

Registration

Test Complete

CONTROL ROUTINE

This routine contains the restart feature; i. e., anytime a branch to 00548 is inserted and executed, the program will branch to the beginning of the last routine it was executing. The routine will request the user to key in a Group Mark (GM) if the system has a 1311, or a Record Mark (RM) if the system does not have a 1311. For 1620-I systems, invalid parity characters are generated by reading alphameric characters into an even core location; for the 1620-II, they are generated by adding digits to record marks. The name of the test, switch settings, and pertinent operating instructions are typed out during the execution of the control routine.

TURN OFF INDICATORS ROUTINE

This routine executes a BI (46) instruction for all the indicators that turn on the Any Data Check indicator (19) and the Printer indicators 33, 34, 25. After they are turned off, the program checks to ensure that the Printer indicators were turned off.

CARRIAGE CONTROL WITH THE IMMEDIATES ROUTINE

This routine sends commands to the Printer to print the title, and the skip-to channel identifications. The skip instruction is repeated for channels 1 through 11. When channel 9 is sensed, indicator 33 should turn on. The routine checks to ensure that 33 turns on and that the BI (46) turns it OFF. The routine prints the Space Immediate instruction it will perform and then executes the instruction. Space Immediates 1, 2, and 3 are executed. A Skip Immediate to channel 12, identified by a printout, will be executed. When the carriage reaches channel 12, indicator 34 should be turned on. The routine then checks to ensure that indicator 34 turns on and that the BI (46) turns it off. The routine prints, at the bottom of the page, "REFERENCE LINE" to provide a visual reference to ensure that channel 12 was reached.

CARRIAGE CONTROL WITH SKIP AFTER PRINT ROUTINE

This routine checks carriage control using the skip after print control codes. The title and the functions to be performed are printed by the printer. After identifying each skip (channels 1-12), the carriage should skip to the appropriate channel. The routine prints the identity of the Space after Print instruction it will perform. Print instructions for spaces of 1, 2, and 3 are executed. After skipping to channel 12, "REFERENCE LINE" is printed; indicator 35 (Printer Busy) will turn on, since the printer is printing and the buffer is unavailable for loading. When the printer has completed printing the line ("REFERENCE LINE"), and can accept new data, the indicator will be turned off. The program checks to ensure that the indicator came ON, and then waits 1 second before checking that it is OFF.

SPACE SUPPRESSION ROUTINE

This routine checks to ensure that Space Suppression Control functions properly. The space suppression ($Q_{11} = 1$ of print instruction) should inhibit the automatic carriage space after printing. The routine prints the title and then prints "SPACE SUPPRESSION" 3 times on one line, one character at a time. If print suppression is not functioning, the letters forming "SPACE SUPPRESSION" will not be on the same line.

PRINT INCORRECT PARITY CHARACTERS ROUTINE

This routine prints 9 invalid characters to check the Printer Check indicator. Following the title, each invalid character is printed (refer to Table 1) and the Write Check, MBR-E, and MBR-O indicators are turned off. The Any Data Check (19) and Printer check (25) indicators are interrogated to check that printing of the invalid character turned on indicator 25, which, in turn, should have turned on the Any Data Check indicator.

TABLE 1. Nine Invalid Characters

<u>Error No.</u>	<u>BCD Code</u>
1	C1
2	C2
3	21
4	C4
5	41
6	42
7	C421
8	84
9	C841

WRITE ALPHAMERIC ROUTINE

This routine prints all the alphameric characters listed in Table 2. The routine is divided into two parts. In part 1, the characters from Table 2, repeated several times in the 144 position line, are printed. After printing a line, the characters are shifted one position to the left, and the leftmost character is shifted to the rightmost position. By printing 144 lines, each character is printed in every print position. (On the 1443 without the optional print buffer, only 120 lines will be printed.) In part 2, a single alphameric character is repeated for the entire line. A line of each of the alphameric characters is printed.

TABLE 2. Alphameric Characters
(characters are listed in the order of printing)

<u>Alphameric Characters</u>	<u>CORE STORAGE</u>	
	<u>Zone</u>	<u>Numerical</u>
A	4	1

.	.	.
.	.	.
.	.	.
I	4	C81
blank	C	C
J	C41	1
.	.	.
.	.	.
.	.	.
R	C41	C81
-	C41	C
blank	C	C
S	C42	2
.	.	.
.	.	.
.	.	.
Z	C42	C81
blank	C	C
. (period)	C	C21
)	C	4
+	1	C
\$	1	C21
*	1	4
- (hyphen-minus)	2	C
/	2	1
, (comma)	2	C21
(2	4
=	C21	C21
@(')	C21	4
blank	C	C
0	421	C
.	.	.
.	.	.
.	.	.
.	.	.
9	421	C81

WRITE NUMERICAL ROUTINE

This routine prints all the numeric characters listed in Table 3. A single numerical character is repeated for an entire line (144 positions). A line of each of the numerical characters is printed. A blank line is printed for the flagged and unflagged blank, record mark, and group mark.

TABLE 3. Character Codes for Numerical Characters
(characters are listed in the order of printing)

<u>Numerical Char.</u>	<u>Core Storage</u>	<u>Write Numerically</u>	<u>Dump Numerically</u>
1, ..., 9, 0	1, ..., C18, C	1, ..., 9, 0	1, ..., 9, 0
numeric blank	C84	blank	@
record mark (†)	C82	terminates	E
Group mark (#)	C8421	terminates	G
1, ..., 9, 0 (flagged)	CF1, ..., F18, F	J, ..., R, -	J, ..., R, -
numeric blank (flagged)	F84	blank	*
record mark (flagged)	F82	terminates	W
group mark (flagged)	F8421	terminates	X

DUMP NUMERICAL ROUTINE

This routine is similar to the Write Numerical routine and uses the same characters (Table 3); however, the Operation code and the print area is different. The data, with the exception of the positive characters, is printed out of an area that overlays the end of core storage. The positive (non-flagged) characters are printed, following all other characters, out of an area that does not overlay the end of core storage.

REGISTRATION ROUTINE

The routine is used to check the vertical and horizontal registration of the characters in the printed line. The printed line consists of all 1's except for one "9" which is shifted one print position to the right each time the line is printed. This line is printed 144 times, thus the 9 prints in every print position.

TEST COMPLETE ROUTINE

If the user has switch 4 OFF, this routine will type

TEST COMPLETED
SW 2 ON TO ENTER RANDOM ROUTINE
SW 4 ON TO ENTER USER'S ROUTINE

on both the Console Typewriter and Printer. If the user wants to execute one of these routines, he can turn the switches 2 or 4 ON and press start. If switch 4 is ON, the Test Complete routine will repeat the test, bypassing the control routine.

SERVICE HINTS

Included in this section are two routines designed to assist the user. The Random Character routine will print random characters to simulate customer operation. In addition, it will check for interaction in the print hammers, print buffer loading, print controls, etc. The User's Message routine will print any message, specified by the user, in any mode: Write Alphanumeric, Write Numerical, Dump Numerical. The message will usually be a unique configuration of characters that failed to print for the customer. The Buffer worst case pattern will print worst case pattern for the Print Buffer. It must be used when making Buffer Voltage adjustments (refer to 1443 CE Maintenance Manual).

RANDOM CHARACTER PRINTING

The routine generates 144 "random" characters and prints them on the Printer.

Switches

Switch 2	ON	-	Loop, printing the same line
	OFF	-	Proceed to Switch 4
Switch 4	ON	-	Generate a new random line
	OFF	-	Go to start of main test

PRINT USER'S MESSAGE

The routine prints out a user's message. The routine will request that the user specify the mode of printing (WA = Write alphameric, WN = Write numerical, DN = Dump numerical) and the message, itself (144 characters maximum).

After accepting the message, the printer will print the message on the Printer.

Switches

Switch 2	ON	-	Loop, printing the same message
	OFF	-	Proceed to switch 4
Switch 4	ON	-	Accept a new mode and message
	OFF	-	Go to start of main test

BUFFER WORST CASE PATTERN

This routine is entered via a Branch instruction in the insert area (49 10658).

The routine will skid to a new page and print the routine title.

The routine will then print the following lines (Lines 1 and 2), and with Console Switch 2 the routine will repeatedly print these lines until Switch 2 is turned off in which case the routine will HALT. Upon pressing start the routine branches to the beginning of the test.

Line 1: WWR.RWWWRW RRRWRRRWR.....repeated for 120/144 char.

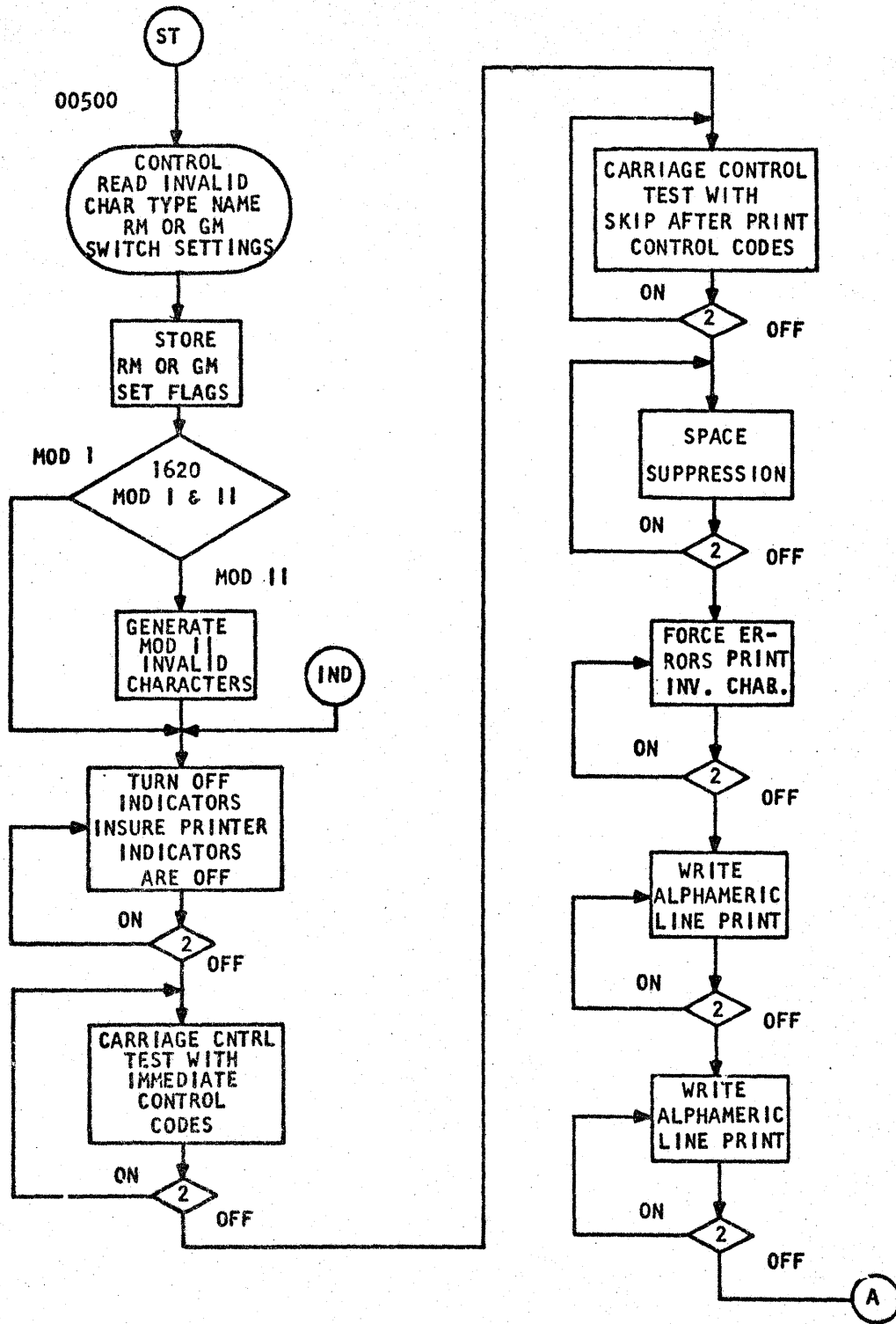
Line 2: RRRWRRRWRWWRRWWR W... repeated for 120/444 char.

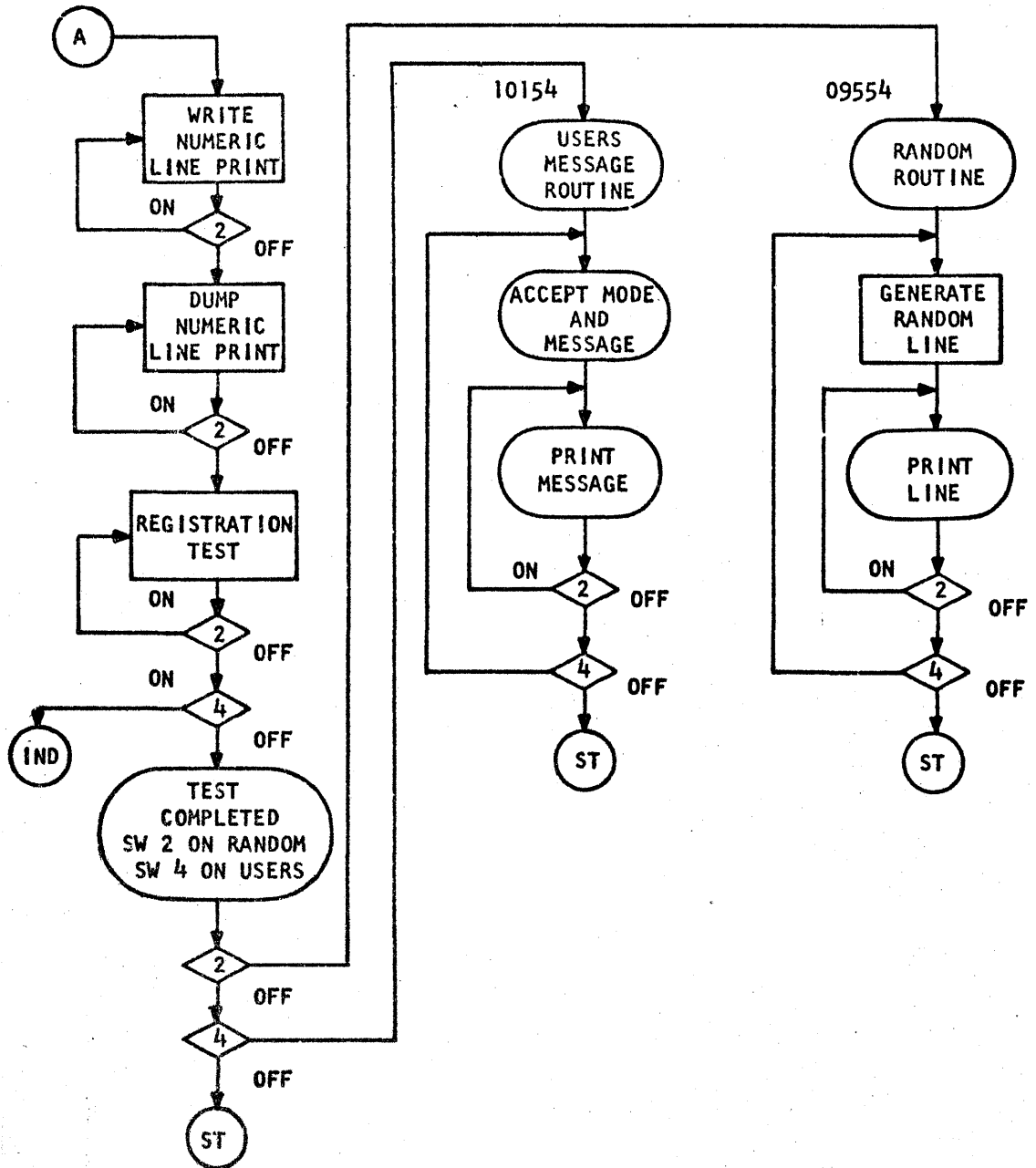
NOTE: Line 2 is the complement of Line 1.

1620 ON-LINE 1443 PRINTER
DIAGNOSTIC TEST 0043
FLOWCHART

READ FLOWCHART FROM LEFT SIDE OF PAGE 16 TO RIGHT SIDE OF PAGE 17, NOTE
THAT A ON PAGE 16 CONNECTS TO A ON PAGE 17.

1620 ON-LINE PRINTER DIAGNOSTIC TEST 0043

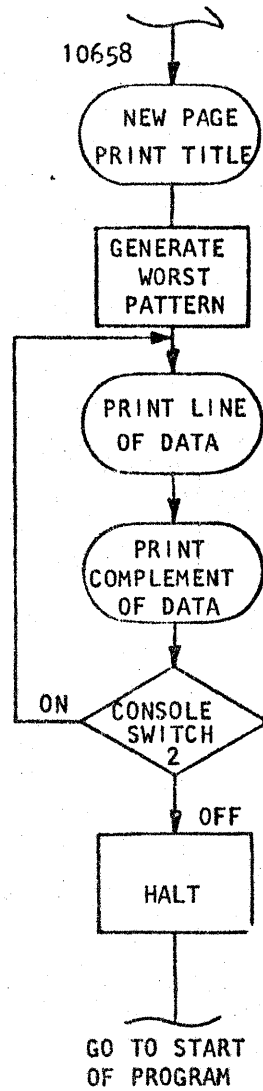




1620 ON-LINE PRINTER DIAGNOSTIC TEST 0043

1443 Buffer Worst Case Pattern Routine is Entered

Via a Branch Instruction
in the Insert Area - 49 10658



SAMPLE OUTPUT FOR DT 0043

DT 0043 - 1620 PRINTER TEST
IF SYSTEM HAS A 1311, KEY IN A GM, IF NOT A RM #S
USE DIAGNOSTIC CARRIAGE TAPE, PUT PRINTER IN READY MODE
NORMAL SW SETTINGS
PROG--AS DESIRED
DATA--PROGRAM
TEST COMPLETED
SW 2 ON TO ENTER RANDOM ROUTINE
SW 4 ON TO ENTER USERS ROUTINE

PN 2172153
EC 4048700

CARRIAGE TEST WITH IMMEDIATES

SKIP IMMEDIATE TO 01
SKIP IMMEDIATE TO 02
SKIP IMMEDIATE TO 03
SKIP IMMEDIATE TO 04
SKIP IMMEDIATE TO 05
SKIP IMMEDIATE TO 06
SKIP IMMEDIATE TO 07
SKIP IMMEDIATE TO 08
SKIP IMMEDIATE TO 09
SKIP IMMEDIATE TO 10
SKIP IMMEDIATE TO 11
IMMEDIATE SPACE OF 1 SPACE
IMMEDIATE SPACE OF 2 SPACES
IMMEDIATE SPACE OF 3 SPACES
SKIP IMMEDIATE TO 12

REFERENCE LINE

CARRIAGE TEST WITH SKIP AFTER PRINT

SKIP AFTER PRINT TO 01
SKIP AFTER PRINT TO 02
SKIP AFTER PRINT TO 03
SKIP AFTER PRINT TO 04
SKIP AFTER PRINT TO 05
SKIP AFTER PRINT TO 06
SKIP AFTER PRINT TO 07
SKIP AFTER PRINT TO 08
SKIP AFTER PRINT TO 09
SKIP AFTER PRINT TO 10
SKIP AFTER PRINT TO 11
SPACE AFTER PRINT 1 SPACE
SPACE AFTER PRINT 2 SPACES
SPACE AFTER PRINT 3 SPACES
SKIP AFTER PRINT TO 12

REFERENCE LINE

CARRIAGE TEST WITH SPACE SUPPRESSION

DN 2172153
EC 4048700

SPACE SUPPRESSION SPACE SUPPRESSION SPACE SUPPRESSION

FORCE ERRORS

- 1 FORCE ER 01
- 2 FORCE ER 02
- 3 FORCE ER 03
- 4 FORCE ER 04
- 5 FORCE ER 05
- 6 FORCE ER 06
- 7 FORCE ER 07
- 8 FORCE ER 08
- 9 FORCE ER 09


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00010*
00020*           DT 0043
00030*   DIAGNOSTIC TEST FOR
00040*   1620 ON-LINE PRINTER
00050*
00060*   LOGICAL FUNCTIONS PERFORMED
00070*           CARRIAGE TEST
00080*           INDICATORS
00090*           FORCE ERRORS
00100*           WRITE ALPHA
00110*           WRITE NUMERIC
00120*           DUMP NUMERIC
00130*           REGISTRATION
00140*
00150*   CONTROL ROUTINE
00160*
00170   DORG 00402
00180   B   START
00190   DORG 00486
00200 MON DS   ,18117
00210 MONIT DS  ,18000
00220   DAC 04,DT43
00230   DSA LALAB
00240 START BNR **48,MON,,   DIPAL
00250   B   MONIT,,,         MONITOR
00260   NOP IND,,,         LINKAGE
00270   TDM *-11,9
00280 ST   B   **12,,,     **RESTART**
00290   DC  01,',*-4,     RECORD MARK
00300   RCTY
00310   RCTY
00320   WATY NAM,,,     TYPE TEST NAME
00330   RCTY
00340   WATY SGR,,,     REQUEST GM OR RM
00350   RNTY GM,,,     ACCEPT GM OR RM
00360   RCTY
00370   WATY PTRDY,,,   TYPE PRINTER RDY
00380   RCTY
00390   WATY NORM,,,   NORMAL SW SETTINGS
00400   RCTY
00410   WATY PROG,,,   PROG - DESIRED
00420   RCTY
00430   WATY DATA,,,   DATA - PROG
00440   H   ,,         HALT
00450*   READ CHARACTERS INTO EVEN CORE POSITION
00460   NOP **72,,,     FIRST PASS ONLY
00470   RACD INV-1,,,   RD INVLD CHAR
00480   BI   **12,0600,,   TURN OFF RD CHK
00490   BI   **12,1600,,   TURN OFF MBRE
00500   BI   **12,1700,,   TURN OFF MBRO
00510   TDM *-59,09,,   CHNGE NOP TO B
00520 BYPTO TD  F1+2,GM,,
00530   TD  F1+3,GM,,   STORE GM OR RM
00540   TD  F2+2,GM,,

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00550	TD	F2+3,GM,,							
00560	SF	F1-2,,,							
00570	SF	F1							
00580	SF	F1+2							
00590	SF	F2-2							
00600	SF	F2-1							
00610	SF	F2							
00620	SF	F2+1							
00630	SF	F2+2							
00640	SF	F2+3							
00650	B	MIMII							
00660*									
00670*									
00680*									
00690	NAM	DAC	28,DT 0043 - 1620 PRINTER TEST'						
00700	PTRDY	DAC	22,USE DIAGNOSTIC CARRIAG						
00710		DAC	20,E TAPE,PUT PRINTER I						
00720		DAC	13,N READY MODE'						
00730	SGR	DAC	26,IF SYSTEM HAS A 1311,KEY I						
00740		DAC	22,N A GM,IF NOT A RM						
00750	NORM	DAC	19,NORMAL SW SETTINGS'						
00760	PROG	DAC	17,PROG--AS DESIRED'						
00770	DATA	DAC	14,DATA--PROGRAM'						
00780	GM	DSC	01,'						
00790		DSC	03,0,,						
00800*									
00810*									
00820*									
00830*									
00840	MIMII	TFM	ST+6,*,, LOAD RESTART						
00850		TFM	DAT1+8,09,10, RESET						
00860		TD	0399,DAT1+10,, INSERT RM						
00870		AM	DAT1+8,09,10, ADD						
00880		BNR	MODII,DAT1+8,, RM IF MOD I						
00890	DAT1	TDM	0399,8,11, REPLACE ADD TAB						
00900		DC	01,*,*-1						
00910		TDM	TIMDLY,4,, INSURE DELAY NOP						
00920		B	IND,,,						
00930*									
00940*									
00950*									
00960*									
00970	MODII	TDM	TIMDLY,3,, CHANGE NOP TO TR						
00980		NOP	IND,,,						
00990		TFM	INVSUM,04,10,						
01000		A	INVSUM,PFLD,,						
01010		TD	PFLD+4,INVSUM,,						
01020		TF	INVSUM,PFLD						
01030		AM	INVSUM,01,10,						
01040		TD	PFLD+14,INVSUM						
01050		BI	*+12,01600,, TURN OFF						
01060		BI	*+12,01700,, PARITY IND						
01070		TR	INV-2,RST2-14,,RESET INVALID AREA						
01080		TFM	M2-1,PFLD						

01090	TFM	M2+11,QFLD,,	INITIALIZE	01586	16	01633	-1773	
01100	TFM	M2+18,INV-1,,		01598	16	01640	J2148	
01110	TF	INVSUM,99999,,	INSERT P-FIELD	01610	26	01791	99999	
01120	M2	A	INVSUM,99999,,	ADD Q-FIELD	01622	21	01791	99999
01130	TD	99999,INVSUM,,	STORE CHAR	01634	25	99999	01791	
01140	BI	++12,01600,,	TURN OFF	01646	46	01658	01600	
01150	BI	++12,01700,,	PARITY IND	01658	46	01670	01700	
01160	AM	M2-1,02,10		01670	11	01621	000-2	
01170	AM	M2+11,02,10,,	UPDATE	01682	11	01633	000-2	
01180	AM	M2+18,02,10,		01694	11	01640	000-2	
01190	CM	M2-1,PFLD+18,,	CHK DONE	01706	14	01621	-1773	
01200	BNE	M2-12,,,		01718	47	01610	01200	
01210	TDM	MOD11+13,9,,		01730	15	01455	00009	
01220	B	IND,,,		01742	49	01792	00000	
01230*								
01240*		DATA, AND CONSTANTS						
01250*								
01260	PFLD	DC	02,0'	01755		00002		
01270		DC	02,04	01757		00002		
01280		DC	02,09	01759		00002		
01290		DC	02,0'	01761		00002		
01300		DC	02,0'	01763		00002		
01310		DC	02,08	01765		00002		
01320		DC	02,03	01757		00002		
01330		DC	02,09	01769		00002		
01340		DC	02,01	01771		00002		
01350	QFLD	DC	02,05	01773		00002		
01360		DC	02,0'	01775		00002		
01370		DC	02,01	01777		00002		
01380		DC	02,02	01779		00002		
01390		DC	02,09	01781		00002		
01400		DC	02,0'	01783		00002		
01410		DC	02,0'	01785		00002		
01420		DC	02,05	01787		00002		
01430		DC	02,0'	01789		00002		
01440	INVSUM	DC	02,0	01791		00002		
01450*								
01460*		TURN OFF INDICATORS AND						
01470*		INSURE PRINTER IND ARE OFF						
01480*								
01490	IND	TFM	ST+6,,,	RESTART	01792	16	00554	-1792
01500		TFM	++23,INDRST,,	INIT	01804	16	01827	-1997
01510		TF	++21,99999,,	INSERT IND	01816	26	01837	99999
01520		BI	++12,09900,,	TURN OFF IND	01828	46	01840	09900
01530		AM	*-13,02,10,,	UPDATE	01840	11	01827	000-2
01540		CM	*-25,INDRST+32,,	CHK DONE	01852	14	01827	-2029
01550		BNE	*-48,,,	BRCH IF NOT	01864	47	01816	01200
01560		BNI	++36,2500,,	PTR CHK	01876	47	01912	02500
01570		BTM	ETO,ER1,,	ERROR T/O	01888	17	09064	-2029
01580		BC2	*-24,,,	SW 2 ON REPEAT	01900	46	01876	00200
01590		BNI	++36,3300,,	CH 9 IND	01912	47	01948	03300
01600		BTM	ETO,ER2,,	ERROR T/O	01924	17	09064	-2081
01610		BC2	*-24,,,	SW 2 ON REPEAT	01936	46	01912	00200
01620		BNI	++36,3400,,	CH 12 IND	01948	47	01984	03400

01630	BTM	ETO,ER3,,	ERROR T/O	01960	17	09064	-2123
01640	BC2	*-24,,,	SW 2 ON REPEAT	01972	46	01948	00200
01650	B	CARR,,,	BRCH TO CARRIAGE TEST	01984	49	02164	00000
01660*							
01670*	CONSTANTS AND ERROR TYPEOUTS						
01680*							
01690	INDRST	DC	02,06,,	INDICATOR	01997	00002	
01700		DC	02,07,,	NUMBERS	01999	00002	
01710		DC	02,08		02001	00002	
01720		DC	02,16		02003	00002	
01730		DC	02,17		02005	00002	
01740		DC	02,21		02007	00002	
01750		DC	02,22		02009	00002	
01760		DC	02,23		02011	00002	
01770		DC	02,36		02013	00002	
01780		DC	02,37		02015	00002	
01790		DC	02,38		02017	00002	
01800		DC	02,66		02019	00002	
01810		DC	02,67		02021	00002	
01820		DC	02,25		02023	00002	
01830		DC	02,33		02025	00002	
01840		DC	02,34		02027	00002	
01850	ER1	DAC	26,PTR CK (25) WONT TURN OFF*		02029	00052	
01860	ER2	DAC	21,IND 33 WONT TURN OFF*		02081	00042	
01870	ER3	DAC	21,IND 34 WONT TURN OFF*		02123	00042	
01880*							
01890*	CARRIAGE CONTROL TEST						
01900*	WITH THE IMMEDIATE OP						
01910*	AND CONTROL CODES						
01920*							
01930	CARR	TFM	ST+6,,,	RESTART	02164	16	00554 -2164
01940		K	,0971,,	NEXT PAGE	02176	34	00000 00971
01950		TR	PNT-1,RST1,,	RESET PRINT AREA	02188	31	11642 11344
01960		TR	PNT+81,TT2-1,,	INSERT TITLE	02200	31	11724 02896
01970		K	,0942,,	SKIP TO CH 2	02212	34	00000 00942
01980		BTM	WAPTR,++12,,	BRCH TO PRINT	02224	17	08464 -2236
01990	J5	TFM	CNT,001,9,	RESET CNTR	02236	16	05842 00-01
02000		TFM	J6+11,CIM,,	INIT	02248	16	02355 -3129
02010		TFM	J8+6,PNT+55,,	INIT	02260	16	02326 J1698
02020		TR	PNT-1,RST1,,	RESET PRINT AREA	02272	31	11642 11344
02030		TR	PNT+19,EX1-1,,	INSERT MESSAGE	02284	31	11662 02956
02040	J7	TD	CH+04,CNT-1,,	INSERT	02296	25	03021 05841
02050		TD	CH+06,CNT,,	DIGITS	02308	25	03023 05842
02060	J8	TR	99999,CH-1,,	INSERT MESSAGE	02320	31	99999 03016
02070		BTM	WAPTR,++12,,	BRCH TO PRINT	02332	17	08464 -2344
02080	J6	TF	++23,99999,,	INIT	02344	26	02367 99999
02090		K	,0900,,	NEXT CHANNEL	02356	34	00000 00900
02100		AM	CNT,01,10,	UPDATE CNTR	02368	11	05842 000-1
02110		AM	J6+11,02,10,	UPDATE NEXT CNTRL	02380	11	02355 000-2
02120		AM	J8+6,04,10,	UPDATE SHIFT	02392	11	02326 000-4
02130		CM	CNT,12,9,	CHK DONE	02404	14	05842 00-12
02140		BNE	J7,,,	BRCH IF NOT	02416	47	02296 01200
02150*							
02160*	TEST IND 33 CHANNEL 9						

02170*				
02180	TFM	ST+6,*,,	RESTART	02428 16 00554 -2428
02190	BI	**36,3300,,	CHK IND 33	02440 46 02476 03300
02200	BTM	ETO,ER7,,	ERROR TYPEOUT	02452 17 09064 -3027
02210	B	**36		02464 49 02500 00000
02220	BNI	**24,3300,,	CHK IND 33	02476 47 02500 03300
02230	BTM	ETO,ER8,,	ERROR TYPEOUT	02488 17 09064 -3083

02240*
02250* TEST SPACE IMMEDIATES
02260*

02270	TFM	ST+6,*,,	RESTART	02500 16 00554 -2500
02280	TR	PNT-1,RST1,,	RST PRINT AREA	02512 31 11642 11344
02290	TR	PNT+19,SP-1,,	INSERT MESSAGE	02524 31 11662 03158
02300	TFM	J10+11,IMSP,,	INIT	02536 16 02595 -3153
02310	TFM	**23,SP1-1,,	INIT	02548 16 02571 -3200
02320 J9	TR	PNT+59,99999,,	INSERT SPACE NO.	02560 31 11702 99999
02330	BTM	WAPTR,**12,,	BRCH TO PRINT	02572 17 08464 -2584
02340 J10	TF	**23,99999,,	INSERT SPACE	02584 26 02607 99999
02350	K	,0900,,	SPACE	02596 34 00000 00900
02360	AM	J9+11,18,10,	UPDATE	02608 11 02571 000J8
02370	AM	J10+11,02,10,	UPDATE	02620 11 02595 000-2
02380	CM	J10+11,IMSP+6,,	CHK DONE	02632 14 02595 -3159
02390	BNE	J9,,,	BRCH IF NOT	02644 47 02560 01200

02400*
02410* TEST IND 34 CHANNEL 12
02420*

02430	TFM	ST+6,*,,	RESTART	02656 16 00554 -2656
02440	TR	PNT-1,RST1,,	RST PRINT AREA	02668 31 11642 11344
02450	TR	PNT+19,EX1-1,,	INSERT MESSAGE	02680 31 11662 02956
02460	TDM	CH+04,1,,	INSERT CH	02692 15 03021 00001
02470	TDM	CH+06,2,,	DIGITS	02704 15 03023 00002
02480	TR	PNT+55,CH-1,,	INSERT MESSAGE	02716 31 11698 03016
02490	BTM	WAPTR,**12,,	BRCH TO PRINT	02728 17 08464 -2740
02500	K	,0934,,	CHANNEL 12	02740 34 00000 00934 1
02510	BI	**36,3400,,	IND 34 CH 12	02752 46 02788 03400 2
02520	BTM	ETO,ER9,,	ER T/O	02764 17 09064 -3287
02530	B	**36		02776 49 02812 00000
02540	BNI	**24,3400,,	IND 34 CH 12	02788 47 02812 03400 3
02550	BTM	ETO,ER10,,	ER T/O	02800 17 09064 -3345
02560	TR	PNT-1,RST1,,	RST PRINT AREA	02812 31 11642 11344 4
02570	TR	PNT+19,REF-1,,	INSERT MESSAGE	02824 31 11662 03254
02580	BTM	WAPTR,**12,,	BRCH TO PRINT	02836 17 08464 -2848
02590	BNC2	SKIP,,,	SW 2 ON REPEAT	02848 47 03390 00200
02600	K	,0971,,	NEXT PAGE	02860 34 00000 00971
02610	TR	PNT-1,RST1,,	RST PNT AREA	02872 31 11642 11344
02620	B	J5-24,,,		02884 49 02212 00000

02630*
02640* CONSTANTS AND TYPEOUTS
02650*

02660 TT2	DAC	16,CARRIAGE TEST WI	02897 00032
02670	DAC	14,TH IMMEDIATES°	02929 00028
02680 EX1	DAC	20,SKIP IMMEDIATE TO CH	02957 00040
02690	DAC	10,ANNEL °	02997 00020
02700 CH	DAC	05, 99°	03017 00010

02710	ER7	DAC	28,CH 9 PNCH WNT TRN ON IND 33°	03027	00056
02720	ER8	DAC	23,IND 33 NOT RESET BY BI°	03083	00046
02730	CIM	DC	02,71,, IMMEDIATE	03129	00002
02740		DC	02,72,, SKIPS	03131	00002
02750		DC	02,73	03133	00002
02760		DC	02,74	03135	00002
02770		DC	02,75	03137	00002
02780		DC	02,76	03139	00002
02790		DC	02,77	03141	00002
02800		DC	02,78	03143	00002
02810		DC	02,79	03145	00002
02820		DC	02,70	03147	00002
02830		DC	02,33	03149	00002
02840		DC	02,34	03151	00002
02850	IMSP	DC	02,51	03153	00002
02860		DC	02,52	03155	00002
02870		DC	02,53	03157	00002
02880	SP	DAC	21,IMMEDIATE SPACE OF °	03159	00042
02890	SP1	DAC	09,1 SPACE °	03201	00018
02900		DAC	09,2 SPACES°	03219	00018
02910		DAC	09,3 SPACES°	03237	00018
02920	REF	DAC	16,REFERENCE LINE °	03255	00032
02930	ER9	DAC	29,CH 12 PNCH WNT TRN ON IND 34°	03287	00058
02940	ER10	DAC	23,IND 34 NOT RESET BY BI°	03345	00046
02950*					
02960*			CARRIAGE CONTROL TEST OF		
02970*			SKIP AFTER PRINT TO CH. XX		
02980*					
02990	SKIP	TFM	ST+6,.,., RESTART	03390	16 00554 -3390
03000		K	,0971,, NEXT PAGE	03402	34 00000 00971
03010		TR	PNT-1,RST1,, RST PRINT AREA	03414	31 11642 11344
03020		TR	PNT+81,TT3-1,, INSERT TITLE	03426	31 11724 04098
03030		K	,0942,, SKIP TO CH 2	03438	34 00000 00942
03040		BTM	WAPTR,++12,, BRCH TO PRINT	03450	17 08464 -3462
03050	H5	TFM	CNT,001,9, RST CNTR	03462	16 05842 00-01
03060		TFM	H6+11,SAP,, INIT	03474	16 03569 -4383
03070		TFM	H8+6,PNT+59,, INIT	03486	16 03552 J1702
03080		TR	PNT-1,RST1,, RST PRNT AREA	03498	31 11642 11344
03090		TR	PNT+19,EX2-1,, INSERT MESSAGE	03510	31 11662 04170
03100	H7	TD	CH+04,CNT-1,, INSERT	03522	25 03021 05841
03110		TD	CH+06,CNT,, DIGITS	03534	25 03023 05842
03120	H8	TR	99999,CH-1,, INSERT MESSAGE	03546	31 99999 03016
03130	H6	TF	++23,99999,, INIT	03558	26 03581 99999
03140		K	,0900,, SKIP ATER PRINT	03570	34 00000 00900
03150		BTM	WAPTR,++12,, BRCH TO PRINT	03582	17 08464 -3594
03160		AM	CNT,01,10, UPDATE	03594	11 05842 000-1
03170		AM	H6+11,02,10, UPDATE	03606	11 03569 000-2
03180		AM	H8+6,04,10, UPDATE	03618	11 03552 000-4
03190		CM	CNT,12,9, CHK DONE	03630	14 05842 00-12
03200		BNE	H7,.,., BRCH IF NOT	03642	47 03522 01200
03210*					
03220*			TEST SPACE AFTER PRINT		
03230*					
03240		TFM	ST+6,.,., RESTART	03654	16 00554 -3654

03250	TR	PNT-1,RST1,,	RST PRINT AREA	03666	31	11642	11344
03260	TR	PNT+19,SPP-1,,	INSERT MESSAGE	03678	31	11662	04234
03270	TFM	H10+11,PTSP,,	INIT	03690	16	03737	-4407
03280	TFM	*+23,SP1-1,,	INIT	03702	16	03725	-3200
03290 H9	TR	PNT+59,99999,,	INSERT MESSAGE	03714	31	11702	99999
03300 H10	TF	*+23,99999,,	INIT	03726	26	03749	99999
03310	K	,0900,,	SPACE	03738	34	00000	00900
03320	BTM	WAPTR,*+12,,	BRCH TO PRINT	03750	17	08464	-3762
03330	AM	H9+11,18,10,	UPDATE	03762	11	03725	000J8
03340	AM	H10+11,02,10,	UPDATE	03774	11	03737	000-2
03350	CM	H10+11,PTSP+6,,	CHK DONE	03786	14	03737	-4413
03360	BNE	H9,,,	BRCH IF NOT	03798	47	03714	01200

CHECK CHANNEL 12 AND IND 35

03370*							
03380*							
03390*							
03390*							
03400	TFM	ST+6,*,,	RESTART	03810	16	00554	-3810
03410	TR	PNT-1,RST1,,	RST PRINT AREA	03822	31	11642	11344
03420	TR	PNT+19,EX2-1,,	INSERT MESSAGE	03834	31	11662	04170
03430	TDM	CH+04,1,,	INSERT	03846	15	03021	00001
03440	TDM	CH+06,2,,	CH.DIGITS	03858	15	03023	00002
03450	TR	PNT+59,CH-1,,	INSERT MESSAGE	03870	31	11702	03016
03460	K	,0904,,	CHANNEL 12	03882	34	00000	00904
03470	BTM	WAPTR,*+12,,	BRCH TO PRINT	03894	17	08464	-3906
03480	TR	PNT-1,RST1,,	RST PRINT AREA	03906	31	11642	11344
03490	TR	PNT+19,REF-1,,	INSERT MESSAGE	03918	31	11662	03254
03500	K	,00921,,	WAIT FOR CARR	03930	34	00000	00921
03510	WA	PNT,900,,	PRINT DATA	03942	39	11643	00900
03520	BNI	*+24,1900,,	ANY DATA CHK	03954	47	03978	01900
03530	BTM	ERR,*+12,,	GO TO ER SUBROUT	03966	17	08650	-3978
03540	BI	*+36,3500,,	IND 35 PNTR BUSY	03978	46	04014	03500
03550	BTM	ETO,ER13,,	ER T/O	03990	17	09064	4277
03560	B	*+48,,,	BYPASS	04002	49	04050	00000
03570	BTM	TIMDLY,0,,	GO TO TIME DELAY	04014	17	05860	-0000
03580	BNI	*+24,3500,,	PNTR BUSY	04026	47	04050	03500
03590	BTM	ETO,ER14,,	ER T/O	04038	17	09064	-4329
03600	BNC2	CH1,,,	SW 2 ON REPEAT	04050	47	04412	00200
03610	K	,0971,,	NEXT PAGE	04062	34	00000	00971
03620	TR	PNT-1,RST1,,	RST PNT AREA	04074	31	11642	11344
03630	B	H5-24,,,		04086	49	03438	00000

CONSTANTS AND TYPEOUTS

03640*							
03650*							
03660*							
03670 TT3	DAC	17,CARRIAGE TEST WIT		04099	00034		
03680	DAC	19,H SKIP AFTER PRINT		04133	00038		
03690 EX2	DAC	22,SKIP AFTER PRINT TO CH		04171	00044		
03700	DAC	10,ANNEL		04215	00020		
03710 SPP	DAC	21,SPACE AFTER PRINT		04235	00042		
03720 ER13	DAC	26,IND 35 P-BSY WONT TURN ON		04277	00052		
03730 ER14	DAC	27,IND 35 P-BSY WONT TURN OFF		04329	00054		
03740 SAP	DC	02,41,,	SKIP AFTER	04383	00002		
03750	DC	02,42,,	PRINT CODES	04385	00002		
03760	DC	02,43		04387	00002		
03770	DC	02,44		04389	00002		

03780	DC	02,45		04391	00002
03790	DC	02,46		04393	00002
03800	DC	02,47		04395	00002
03810	DC	02,48		04397	00002
03820	DC	02,49		04399	00002
03830	DC	02,40		04401	00002
03840	DC	02,03		04403	00002
03850	DC	02,04		04405	00002
03860	PTSP	DC	02,21	04407	00002
03870	DC	02,62		04409	00002
03880	DC	02,63		04411	00002
03890*					

CHECK SPACE SUPPRESSION

03900*					
03910*					
03920	CH1	TFM	ST+6,*,,	RESTART	04412 16 00554 -4412
03930		K	,0971,,	NEXT PAGE	04424 34 00000 00971
03940		TR	PNT-1,RST1,,	RST PRINT AREA	04436 31 11642 11344
03950		TR	PNT+41,TT4-1,,	INSERT TITLE	04448 31 11684 04748
03960		BNI	**24,03300,,	IND 33	04460 47 04484 03300
03970		BTM	ETO,ER11,,	ER T/O	04472 17 09064 -4869
03980		BNI	**24,03400,,	IND 34	04484 47 04508 03400
03990		BTM	ETO,ER12,,	ER T/O	04496 17 09064 -4925
04000		K	,0944,,	SKIP AFTER PRINT	04508 34 00000 00944
04010		BTM	WAPTR,**12,,	BRCH TO PRINT	04520 17 08464 -4532
04020		TFM	B3+6,PNT+41,,	INIT	04532 16 04610 J1684
04030		TR	PNT-1,RST1,,	RST PRINT AREA	04544 31 11642 11344
04040	BO	TFM	B1+11,SS-1,,	INIT	04556 16 04591 -4822
04050		TFM	B2+11,SS,,	INIT	04568 16 04603 -4823
04060	B1	TD	BUF+2,99999,,	INSERT	04580 25 04982 99999
04070	B2	TD	BUF+3,99999,,	DIGITS	04592 25 04983 99999
04080	B3	TR	99999,BUF,,	INSERT CHAR	04604 31 99999 04980
04090		BTM	WAPTR,**12,711,	GO PRINT	04616 17 08464 -462Q
04100		AM	B1+11,02,10,	UPDATE	04628 11 04591 000-2
04110		AM	B2+11,02,10,	UPDATE	04640 11 04603 000-2
04120		AM	B3+6,02,10,	UPDATE	04652 11 04610 000-2
04130		CM	B2+11,SS+44,,	CHK DONE	04664 14 04603 -4867
04140		BNE	B1,,,	BRCH IF NOT	04676 47 04580 01200
04150		CM	B3+6,PNT+173,,	CHK DONE	04688 14 04610 J1816
04160		BL	BO,,,	BRCH IF NOT	04700 47 04556 01300
04170		BNC2	FORCE,,,	SW 2 ON REPEAT	04712 47 04986 00200
04180		K	,0953,,	SKIP	04724 34 00000 00953
04190		B	BO-24,,,		04736 49 04532 00000
04200*					

CONSTANTS AND TYPEOUTS

04210*					
04220*					
04230	TT4	DAC	21,CARRIAGE TEST WITH SP		04749 00042
04240		DAC	16,ACE SUPPRESSION*		04791 00032
04250	SS	DAC	23, SPACE SUPPRESSION *		04823 00046
04260	ER11	DAC	28,IND 33 NOT OFF BY CH 1 PNCH*		04869 00056
04270	ER12	DAC	28,IND 34 NOT OFF BY CH 1 PNCH*		04925 00056
04280	BUF	DSC	06,0*,,	BUFFER	04980 00006
04290*					

FORCE ERRORS ROUTINE

04300*					
04310*					

04320*	PRINT INCORRECT				
04330*	PARITY CHARACTERS				
04340*					
04350	FORCE	TFM ST+6,*,,	RESTART	04986	16 00554 -4986
04360		K ,0972,,	IMMED SKIP CH 2	04998	34 00000 00972
04370		TR PNT-1,RST1,,	RESET PRINT AREA	05010	31 11642 11344
04380		TR PNT+99,TT1-1,,	INSERT MESSAGE	05022	31 11742 05720
04390		BTM WAPTR,++12,,	BRNCH TO PRINT	05034	17 08464 -5046
04400		K ,0972,,	IMMED SKIP CH 2	05046	34 00000 00972
04410	J4	TFM CNT,001,9,	SET CNTR	05058	16 05842 00-01
04420		TFM J3+11,INV-1,,	INIT	05070	16 05165 J2148
04430		TR PNT,RST1,,	RESET PRINT AREA	05082	31 11643 11344
04440		TD FER+18,CNT-1,,	INSERT	05094	25 05557 05841
04450		TD FER+20,CNT,,	ERROR DIGITS	05106	25 05559 05842
04460		TR PNT+31,FER-1,,	INSERT MESSAGE	05118	31 11674 05538
04470		BTM WAPTR,++12,711,,	GO TO PRINT	05130	17 08464 -514K
04480		TR ERG-1,FER-1,,	INSERT TYPEOUT	05142	31 05746 05538
04490	J3	TD S1+1,99999,,	INSERT INV CHAR	05154	25 05853 99999
04500		TR PNT,S1-9,,	PUT INTO PRINT	05166	31 11643 05843
04510		BI ++12,1600,,	TURN OFF	05178	46 05190 01600
04520		BI ++12,1700,,	PARITY IND	05190	46 05202 01700
04530		WN PNT,0900,,	PRINT INV CHAR	05202	38 11643 00900
04540		BI *,3500,,	WAIT FOR PNTR NOT BUSY	05214	46 05214 03500
04550		BI ++12,0700,,	TURN	05226	46 05238 00700
04560		BI ++12,1600,,	OFF	05238	46 05250 01600
04570		BI ++12,1700,,	IND	05250	46 05262 01700
04580		BNI ++60,1900,,	ANY DATA CHK	05262	47 05322 01900
04590		BI J1,2500,,	PNTR CHK	05274	46 05394 02500
04600		TR ERG+23,ER4-1,,	INSERT MESSAGE	05286	31 05770 05564
04610		BTM ETO,ERG,,	ERROR TYPEOUT	05298	17 09064 -5747
04620		B J1		05310	49 05394 00000
04630		BI J2,02500,,	ANY PNTR CHK	05322	46 05370 02500
04640		TR ERG+23,ER5-1,,	INSERT MESSAGE	05334	31 05770 05612
04650		BTM ETO,ERG,,	ERROR TYPEOUT	05346	17 09064 -5747
04660		B J1		05358	49 05394 00000
04670	J2	TR ERG+23,ER6-1,,	INSERT MESSAGE	05370	31 05770 05662
04680		BTM ETO,ERG,,	ERROR TYPEOUT	05382	17 09064 -5747
04690	J1	TR PNT,RST1,,	RESET PRINT	05394	31 11643 11344
04700		BI ++12,01600,,	TURN OFF	05406	46 05418 01600
04710		BI ++12,01700,,	IND	05418	46 05430 01700
04720		BNI ++24,03400,,	CHK FOR PAGE END	05430	47 05454 03400
04730		K ,0971,,	NEXT PAGE	05442	34 00000 00971
04740		BC2 J3,,,	SW 2 ON LOOP	05454	46 05154 00200
04750		K ,0951,,	IMMEDIATE SPACE	05466	34 00000 00951
04760		AM CNT,01,10,	UPDATE COUNTER	05478	11 05842 000-1
04770		AM J3+11,02,10,	UPDATE INV CHAR	05490	11 05165 000-2
04780		CM CNT,10,10,	CHK DONE	05502	14 05842 000J0
04790		BNE J4+24,,,	BRCH IF NOT	05514	47 05082 01200
04800		B WAR,,,	BRCH TO WR ALPHA	05526	49 05920 00000
04810*					
04820*	CONSTANTS AND ERROR TYPEOUTS				
04830*					
04840	FER	DAC 13,FORCE ER 99 *		05539	00026
04850	ER4	DAC 24,PTR CK OFF, ANY DATA ON*		05565	00048

04860	ER5	DAC	25,PTR CK OFF, ANY DATA OFF*	05613	00050		
04870	ER6	DAC	29,PTR CK WONT TURN ON ANY DATA*	05663	00058		
04880	TT1	DAC	13,FORCE ERRORS*	05721	00026		
04890	ERG	DAC	01,0	05747	00002		
04900		DSC	45,0	05748	00045		
04910		DSC	45,0	05793	00045		
04920	CNT	DC	05,0,, COUNTER	05842	00005		
04930	S1	DNB	10,	05852	00010		
04940		DC	02,0*	05854	00002		
04950*							
04960*			PROGRAM TIME DELAY				
04970*			ENTERED VIA A BTM				
04980*							
04990		DC	05,0	05859	00005		
05000	TIMDLY	NOP	00328,00328,, TR ON MOD II	05860	41 00328 00328		
05010		AM	TIMDLY-1,01,, ADD 1 TO DELAY	05872	11 05859 -0001		
05020		CM	TIMDLY-1,0340,,CHK DELAY DONE	05884	14 05859 -0340		
05030		BNE	TIMDLY,, BRCH IF NOT	05896	47 05860 01200		
05040		BB	,,, RETURN TO PROG	05908	42 00000 00000		
05050*							
05060*			WRITE ALPHAMERIC TEST ROUTINE				
05070*							
05080*			RIPPLE ROUTINE				
05090*							
05100	WAR	TFM	ST+6,*,, RESTART	05920	16 00554 -5920		
05110		K	,0971,, NEXT PAGE	05932	34 00000 00971		
05120		TR	PNT-1,RST1,, RST PRINT AREA	05944	31 11642 11344		
05130		TR	PNT+99,TT5-1,, INSERT TITLE	05956	31 11742 06340		
05140		K	,0942,, SKIP AFTER PRNT	05968	34 00000 00942		
05150		BTM	WAPTR,++12,, BRCH TO PRINT	05980	17 08464 -5992		
05160		TR	PNT-1,ALPHA-1,, INIT PRINT AREA	05992	31 11642 06378		
05170	R1	BTM	WAPTR,++12,, BRCH TO PRINT	06004	17 08464 -6016		
05180		BNI	++24,03400,, CHK FOR END OF PG	06016	47 06040 03400		
05190		K	,0972,, NEXT PAGE	06028	34 00000 00972		
05200		BC2	R1,,, SW 2 REPEAT	06040	46 06004 00200		
05210		TDM	PNT+289,0,, INSERT ZERO	06052	15 11932 00000		
05220		TD	PNT+290,RM,, INSERT RM	06064	25 11933 06376		
05230		TD	PNT+287,PNT-1,, BRING DIGIT	06076	25 11930 11642		
05240		TD	PNT+288,PNT,, AROUND	06088	25 11931 11643		
05250		TR	PNT-1,PNT+1,, SHIFT	06100	31 11642 11644		
05260		CM	PNT,041,10, CHK FOR CMPLT SHFT	06112	14 11643 000M1		
05270		BNE	R1,,, BRCH IF NOT	06124	47 06004 01200		
05280*							
05290*			LINE PRINT ROUTINE				
05300*							
05310	WAP	TFM	ST+6,*,, RESTART	06136	16 00554 -6136		
05320		K	,0971,, NEXT PAGE	06148	34 00000 00971		
05330		TR	PNT-1,RST1,, RST PRINT AREA	06160	31 11642 11344		
05340		TR	PNT+99,TT5-1,, INSERT TITLE	06172	31 11742 06340		
05350		K	,0942,, SKIP AFTER PRNT	06184	34 00000 00942		
05360		BTM	WAPTR,++12,, BRCH TO PRINT	06196	17 08464 -6208		
05370		TFM	++35,ALPHA,, INIT	06208	16 06243 -6379		
05380		TFM	GEN+18,PNT+286,, INIT GENERATOR	06220	16 08356 J1929		
05390	R2	BT	GEN,99999,, GENERATE DATA	06232	27 08338 99999		

05400	BTM	WAPTR,++12,,	BRCH TO PRINT	06244	17	08464	-6256
05410	BNI	++24,03400,,	CHK END OF PG	06256	47	06280	03400
05420	K	,0972,,	NEXT PAGE	06268	34	00000	00972
05430	BC2	R2+12,,,	SW 2 ON REPEAT	06280	46	06244	00200
05440	AM	R2+11,02,10,	UPDATE	06292	11	06243	000-2
05450	CM	R2+11,ALPHA+104,,	CHK DONE	06304	14	06243	-6483
05460	BNE	R2-12,,,	BRCH IF NOT	06316	47	0622C	01200
05470	B	WNR,,,	NEXT ROUTINE	06328	49	06668	CC000
05480*							
05490*		CONSTANTS					
05500*							
05510	TT5	DAC	18,WRITE ALPHAMERIC°	06341		00036	
05520	RM	DC	01,°,°	06376		00001	
05530	ALPHA	DAC	01,A	06379		00002	
05540		DAC	01,B	06381		00002	
05550		DAC	01,C	06383		00002	
05560		DAC	01,D	06385		00002	
05570		DAC	01,E	06387		00002	
05580		DAC	01,F	06389		00002	
05590		DAC	01,G	06391		00002	
05600		DAC	01,H	06393		00002	
05610		DAC	01,I	06395		00002	
05620		DC	02,0	06397		00002	
05630		DAC	01,J	06399		00002	
05640		DAC	01,K	06401		00002	
05650		DAC	01,L	06403		00002	
05660		DAC	01,M	06405		00002	
05670		DAC	01,N	06407		00002	
05680		DAC	01,O	06409		00002	
05690		DAC	01,P	06411		00002	
05700		DAC	01,Q	06413		00002	
05710		DAC	01,R	06415		00002	
05720		DC	02,50	06417		00002	
05730		DC	02,0	06419		00002	
05740		DAC	01,S	06421		00002	
05750		DAC	01,T	06423		00002	
05760		DAC	01,U	06425		00002	
05770		DAC	01,V	06427		00002	
05780		DAC	01,W	06429		00002	
05790		DAC	01,X	06431		00002	
05800		DAC	01,Y	06433		00002	
05810		DAC	01,Z	06435		00002	
05820		DC	02,0	06437		00002	
05830		DAC	01,.	06439		00002	
05840		DAC	01,)	06441		00002	
05850		DAC	01,+	06443		00C02	
05860		DAC	01,\$	06445		00002	
05870		DAC	01,*	06447		00002	
05880		DAC	01,-	06449		00002	
05890		DAC	01,/	06451		00002	
05900		DAC	01,,	06453		00002	
05910		DAC	01,(06455		00002	
05920		DAC	01,=	06457		00002	
05930		DC	02,34	06459		00002	

05940	DC	02,0			06461	00002
05950	DAC	01,0			06463	00002
05960	DAC	01,1			06465	00002
05970	DAC	01,2			06467	00002
05980	DAC	01,3			06469	00002
05990	DAC	01,4			06471	00002
06000	DAC	01,5			06473	00002
06010	DAC	01,6			06475	00002
06020	DAC	01,7			06477	00002
06030	DAC	01,8			06479	00002
06040	DAC	01,9			06481	00002
06050	DC	02,0			06483	00002
06060	DC	02,0			06485	00002
06070	DAC	24,RIPPLE TEST 1620 PRINTER			06487	00048
06080	DAC	27, BCDEFGHI JKLMNOPQR STUVWX			06535	00054
06090	DAC	24,YZ .)+\$*-/, (= 0123456789			06589	00048
06100	DC	02,50			06637	00002
06110	DAC	15, 1620 PRINTER *			06639	00030
06120*						
06130*		WRITE NUMERIC TEST ROUTINE				
06140*						
06150 WNR	TFM	ST+6,,,	RESTART		06668	16 00554 -6668
06160	K	,0971,,	NEXT PAGE		06680	34 00000 00971
06170	TR	PNT-1,RST1,,	RST PRINT AREA		06692	31 11642 11344
06180	TR	PNT+99,TT6-1,,	INSERT TITLE		06704	31 11742 06968
06190	K	,0942,,	SKIP AFTER PRINT		06716	34 00000 00942
06200	BTM	WAPTR,++12,,	BRCH TO PRINT		06728	17 08464 -6740
06210	TFM	GEN+1,33,10,	NOP TO CF		06740	16 08339 000L3
06220	TFM	++35,NUM,,	INIT		06752	16 06787 -6999
06230	TFM	GEN+18,PNT+144,,	INIT GEN		06764	16 08356 J1787
06240 R3	BT	GEN,99999,,	GENERATE DATA		06776	27 08338 99999
06250	WN	PNT,0900,,	PRINT DATA		06788	38 11643 00900
06260	BI	,,3500,,	WAIT FOR PNTR NOT BUSY		06800	46 06800 03500
06270	BNI	++24,01900,,	ANY DATA CHK		06812	47 06836 01900
06280	BTM	ERR,++12,,	ERR SUBROUT		06824	17 08650 -6836
06290	BNI	++24,03400,,	CHK END OF PAGE		06836	47 06860 03400
06300	K	,0972,,	NEXT PAGE		06848	34 00000 00972
06310	BC2	R3+12,,,	SW 2 ON REPEAT		06860	46 06788 00200
06320	AM	R3+11,02,10,	UPDATE GEN		06872	11 06787 000-2
06330	CM	R3+11,NUM+26,,	CHK FOR NEG		06884	14 06787 -7025
06340	BL	++24,,,	BRCH IF NOT		06896	47 06920 01300
06350	TFM	GEN+1,41,10,	CF TO NOP		06908	16 08339 000M1
06360	CM	R3+11,NUM+52,,	CHK DONE		06920	14 06787 -7051
06370	BNE	R3-12,,,	BRCH IF NOT		06932	47 06764 01200
06380	TFM	GEN+1,33,10,			06944	16 08339 000L3
06390	B	DNR,,,	NEXT ROUT		06956	49 07050 00000
06400*						
06410*		CONSTANTS AND TYPEOUTS				
06420*						
06430 TT6	DAC	15,WRITE NUMERIC*			06969	00030
06440 NUM	DC	02,11			06999	00002
06450	DC	02,22			07001	00002
06460	DC	02,33			07003	00002
06470	DC	02,44			07005	00002

06480	DC	02,55		07007	00002
06490	DC	02,66		07009	00002
06500	DC	02,77		07011	00002
06510	DC	02,88		07013	00002
06520	DC	02,99		07015	00002
06530	DC	02,00		07017	00002
06540	DNB	02,,,	NUM BLANK	07019	00002
06550 F1	DC	01,',,	RM	07020	00001
06560	DC	01,',,	RM	07021	00001
06570	DC	01,',,	GROUP MARK	07022	00001
06580	DC	01,',,	GROUP MARK	07023	00001
06590	DC	02,-11		07025	00002
06600	DC	02,-22		07027	00002
06610	DC	02,-33		07029	00002
06620	DC	02,-44		07031	00002
06630	DC	02,-55		07033	00002
06640	DC	02,-66		07035	00002
06650	DC	02,-77		07037	00002
06660	DC	02,-88		07039	00002
06670	DC	02,-99		07041	00002
06680	DC	02,-00		07043	00002
06690	DNB	02,,,	FLG NUM BLANK	07045	00002
06700 F2	DC	01,',,	FLG RM	07046	00001
06710	DC	01,',,	FLG RM	07047	00001
06720	DC	01,',,	FLG GM	07048	00001
06730	DC	01,',,	FLG GM	07049	00001

06740*
06750* DUMP NUMERIC TEST ROUTINE
06760*

06770 DNR	TFM	ST+6,,,	RESTART	07050	16	00554	-7050
06780	K	,0971,,	NEXT PAGE	07062	34	00000	00971
06790	TR	PNT-1,RST2,,	RST PRINT AREA	07074	31	11642	11489
06800	TR	PNT+99,TT7-1,,	INSERT TITLE	07086	31	11742	07602
06810	K	,0942,,	SKIP AFTER PNT	07098	34	00000	00942
06820	BTM	WAPTR,++12,,	BRCH TO PRINT	07110	17	08464	-7122
06830	TDM	0,0,,	INIT	07122	15	00000	00000
06840	TR	19999,CRSZ,,	MOVE RM	07134	31	19999	07662
06850	BNR	++36,0,,	CHK FOR RM	07146	45	07182	00000
06860	TFM	CS+11,044,,	INIT FOR 20 K	07158	16	07241	-0044
06870	B	++24,,,		07170	49	07194	00000
06880	TFM	CS+11,20044,,	LRGR THAN 20 K	07182	16	07241	K0044
06890	TFM	GEN+1,33,10,	INIT	07194	16	08339	000L3
06900	TFM	G1+11,19898,,	INIT	07206	16	08433	J9898
06910	TFM	++35,NUM,,	INIT	07218	16	07253	-6999
06920 CS	TFM	GEN+18,99999,,	INIT GEN	07230	16	08356	R9999
06930 R4	BT	GEN,99999,,	GENERATOR	07242	27	08338	99999
06940	DN	19900,0900,,	DUMP	07254	35	19900	00900
06950	BI	,,3500,,	WAIT FOR PNTR NOT BUSY	07266	46	07266	03500
06960	BNI	++24,01900,,	ANY DATA CHK	07278	47	07302	01900
06970	BTM	ERR,++12,,	ERR SUBROUT	07290	17	08650	-7302
06980	BNI	++24,03400,,	CK END OF PAGE	07302	47	07326	03400
06990	K	,0972,,	NEXT PAGE	07314	34	00000	00972
07000	BC2	R4+12,,,	SW 2 ON REPEAT	07326	46	07254	00200
07010	AM	R4+11,02,10,	UPDATE	07338	11	07253	000-2

07020	CM	R4+11,NUM+26,,	CHK FOR NEG	07350	14	07253	-7025	
07030	BL	**24		07362	47	07386	01300	
07040	TFM	GEN+1,41,10,	CF TO NOP	07374	16	08339	000M1	
07050	CM	R4+11,NUM+52,,	CHK DONE	07386	14	07253	-7051	
07060	BNE	R4-12,,,	BRCH IF NOT	07398	47	07230	01200	
07070	TFM	G1+11,PNT-2,,	REINIT	07410	16	08433	J1641	
07080	TFM	GEN+1,33,10,	INIT	07422	16	08339	000L3	
07090	TFM	**35,NUM,,	INIT	07434	16	07469	-6999	
07100	TFM	GEN+18,PNT+144,,	INIT	07446	16	08356	J1787	
07110	R5	BT	GEN,99999,,	GENERATE	07458	27	08338	99999
07120	DN	PNT,0900,,	DUMP	07470	35	11643	00900	
07130	BI	*,3500,,	WAIT FOR PNTR NOT BUSY	07482	46	07482	03500	
07140	BNI	**24,01900,,	ANY DATA CK	07494	47	07518	01900	
07150	BTM	ERR,**12,,	ERR SUBROUT	07506	17	08650	-7518	
07160	BNI	**24,03400,,	CHK END OF PAGE	07518	47	07542	03400	
07170	K	,0972,,	NEXT PAGE	07530	34	00000	00972	
07180	BC2	R5+12,,,	SW 2 ON REPEAT	07542	46	07470	00200	
07190	AM	R5+11,02,10,	UPDATE	07554	11	07469	000-2	
07200	CM	R5+11,NUM+26,,	CHK DONE	07566	14	07469	-7025	
07210	BNE	R5-12,,,	BRCH IF NOT	07578	47	07446	01200	
07220	B	RTR,,,		07590	49	07664	00000	

CONSTANTS AND TYPEOUTS

07230*							
07240*							
07250*							
07260	TT7	DAC	14,DUMP	NUMERIC*	07603	00028	
07270	CMPLT	DAC	16,TEST	COMPLETED*	07631	00032	
07280	CRSZ	DSC	02,0*		07662	00002	

REGISTRATION TEST ROUTINE

07300*								
07310*								
07320	RTR	TFM	ST+6,*,,	RESTART	07664	16	00554	-7664
07330		K	,0971,,	NEXT PAGE	07676	34	00000	00971
07340		TR	PNT-1,RST1,,	RESET PNTR AREA	07688	31	11642	11344
07350		TR	PNT+99,TT8-1,,	INSERT TITLE	07700	31	11742	07916
07360		K	,0942,,	SKIP AFTER PNT	07712	34	00000	00942
07370		BTM	WAPTR,**12,,	BRCH TO PRINT	07724	17	08464	-7736
07380		TFM	GEN+18,PNT+286,,	INIT GEN	07736	16	08356	J1929
07390	RG	BTM	GEN,49,10,	GENERATE DATA	07748	17	08338	000M9
07400		TFM	**30,PNT-2,,	INIT NEXT	07760	16	07790	J1641
07410		TFM	**30,PNT,,	INST.	07772	16	07802	J1643
07420		TF	99999,RG+11,,	RESET OLD DIGIT	07784	26	99999	07759
07430	RG1	TFM	99999,79,10,	INSERT WORST CASE	07796	16	99999	000P9
07440		BTM	WAPTR,**12,,	GO PRINT	07808	17	08464	-7820
07450		BNI	**24,03400,,	CK END OF PG	07820	47	07844	03400
07460		K	,0972,,	SKIP TO NXT PG	07832	34	00000	00972
07470		BC2	RG1+12,,,	SW 2 ON REPEAT	07844	46	07808	00200
07480		AM	RG1+6,02,10,	UPDATE	07856	11	07802	000-2
07490		AM	RG1-6,02,10,		07868	11	07790	000-2
07500		CM	RG1+6,PNT+288,,	CK DONE	07880	14	07802	J1931
07510		BNE	RG1-12,,,		07892	47	07784	01200
07520		B	TC,,,		07904	49	08094	00000

DATA,CONSTANTS,AND TYPE OUTS

07560	TT8	DAC	26,REGISTRATION TEST ROUTINE'	07917	00052		
07570	TERR	DAC	32,SW 2 ON TO ENTER RANDOM ROUTINE'	07969	00064		
07580	TEUM	DAC	31,SW 4 ON TO ENTER USERS ROUTINE'	08033	00062		
07590*							
07600*			TEST COMPLETED ROUTINE				
07600*			TEST COMPLETED ROUTINE				
07610*							
07620	TC	BC4	IND,,, SW 4 RERUN	08094	46	01792	00400
07630		BNR	*+24,MON,, DIPAL	08106	45	08130	18117
07640		B	MONIT,,, LINKAGE	08118	49	18000	00000
07650		TFM	ST+6,*,,, RESTART	08130	16	00554	-8130
07660		K	,0953,, SKIP 3 SPACES	08142	34	00000	00953
07670		TR	PNT-1,RST1,, RST PRINT AREA	08154	31	11642	11344
07680		TR	PNT+101,CMPLT-1,,INSERT MESSAGE	08166	31	11744	07630
07690		K	,0941,, SKIP AFTER PNT	08178	34	00000	00941
07700		BTM	WAPTR,*+12,, PRINT	08190	17	08464	-8202
07710		RCTY		08202	34	00000	00102
07720		WATY	CMPLT,,, TYPE	08214	39	07631	00100
07730		TFM	ST+6,ST+12,, RESTART	08226	16	00554	-0560
07740		RCTY		08238	34	00000	00102
07750		WATY	TERR,,, SW 2 ON TO ENTER RANDOM	08250	39	07969	00100
07760		RCTY		08262	34	00000	00102
07770		WATY	TEUM,,, SW 4 ON TO ENTER USERS	08274	39	08033	00100
07780		H	,,, HALT	08286	48	00000	00000
07790		BC2	RCP,,,	08298	46	09554	00200
07800		BC4	MAN,,,	08310	46	10154	00400
07810		B	ST,,, RERUN	08322	49	00548	00000
07820*							
07830*			CHARACTER GENERATOR				
07840*							
07850		DC	03,0	08336	00003		
07860	GEN	CF	GEN-2,,, CLEAR FLAG	08338	33	08336	00000
07870		TF	99999,GEN-1,, TRANSFER CHAR	08350	26	99999	08337
07880		CM	*-6,0,, CK FOR DN	08362	14	08356	-0000
07890		BNE	*+36,,, BRCH IF NOT	08374	47	08410	01200
07900		TFM	GEN+18,19998,, REINIT	08386	16	08356	J9998
07910		B	GEN+12,,,	08398	49	08350	00000
07920		SM	GEN+18,02,10, UPDATE	08410	12	08356	000-2
07930	G1	CM	GEN+18,PNT-2,, CHK DONE	08422	14	08356	J1641
07940		BNE	GEN+12,,, BRCH IF NOT	08434	47	08350	01200
07950		BB	,,, RETURN	08446	42	00000	00000
07960*							
07970*			WRITE ALPHAMERIC ROUTINE				
07980*			ENTERED VIA BTM FOR PRINTING				
07990*							
08000		DC	05,0	08462	00005		
08010	WAPTR	TDM	WAPTR1+11,0,, NO SPACE SUPPRESS	08464	15	08523	00000
08020		BNF	*+36,WAPTR-1,,	08476	44	08512	08463
08030		TDM	WAPTR1+11,1,, SPACE SUPPRESS	08488	15	08523	00001
08040		CF	WAPTR-1,,,	08500	33	08463	00000
08050	WAPTR1	WA	PNT,0900,, PRINT	08512	39	11643	00900
08060		TFM	ERR-1,0	08524	16	08649	-0000
08070		BNI	*+72,3500,, WAIT FOR PNTR NOT BUSY	08536	47	08608	03500
08080		AM	ERR-1,01	08548	11	08649	-0001

08090	CM	ERR-1,3000,,	TIME OUT INDICATOR	08560	14	08649	-3000
08100	BNE	*-36		08572	47	08536	01200
08110	BTM	ETO,ER14,,	ERROR P-BSY WONT TURN OFF	08584	17	09064	-4329
08120	B	*+24		08596	49	08620	00000
08130	BNI	*+24,1900,,	ANY DATA CHK	08608	47	08632	01900
08140	BT	ERR,WAPTR-1,,	ERR SUBROUTINE	08620	27	08650	08463
08150	BB	,,,	BRCH-BACK	08632	42	00000	00000
08160*							
08170*			ERROR SUBROUTINE ENTERED				
08180*			WHEN ANY DATA CHECK IS				
08190*			FOUND ON				
08200*							
08210	DC	05,0,,		08648		00005	
08220	ERR	BI	*+36,1900,, ANY DATA CHK	08650	46	08686	01900
08230		TF	*+18,ERR-1,, LOAD RETURN	08662	26	08680	08649
08240		B	99999,,, RETURN	08674	49	99999	00000
08250		BNI	*+24,0600,, RD CK	08686	47	08710	00600
08260		BTM	ETO,Z5,,	08698	17	09064	-9261
08270		BNI	*+24,0700,, WR CK	08710	47	08734	00700
08280		BTM	ETO,Z6,,	08722	17	09064	-9287
08290		BNI	*+24,0800,, MAR CK	08734	47	08758	00800
08300		BTM	ETO,Z7,,	08746	17	09064	-9313
08310		BNI	*+24,1600,, EVEN CK	08758	47	08782	01600
08320		BTM	ETO,Z8,,	08770	17	09064	-9341
08330		BNI	*+24,1700,, ODD CK	08782	47	08806	01700
08340		BTM	ETO,Z9,,	08794	17	09064	-9373
08350		BNI	*+24,2100,, TAS CK	08806	47	08830	02100
08360		BTM	ETO,Z10,,	08818	17	09064	-9405
08370		BNI	*+24,2200,, F R CK	08830	47	08854	02200
08380		BTM	ETO,Z11,,	08842	17	09064	-9433
08390		BNI	*+24,2300,, A O CK	08854	47	08878	02300
08400		BTM	ETO,Z12,,	08866	17	09064	-9469
08410		BNI	*+60,2500,, PTR CHK	08878	47	08938	02500
08420		BNI	*+36,2500,, PTR CHK	08890	47	08926	02500
08430		BTM	ETO,Z14,,	08902	17	09064	-9525
08440		B	*+24,,,	08914	49	08938	00000
08440		B	*+24,,,	08914	49	08938	00000
08450		BTM	ETO,Z13,,	08926	17	09064	-9497
08460		BI	*+12,06600,, P C CHK	08938	46	08950	06600
08470		BI	*+12,06700,, LCO CHK	08950	46	08962	06700
08480		BNI	Y1,3900,, ANY FILE CHK	08962	47	09046	03900
08480		BNI	Y1,3900,, ANY FILE CHK	08962	47	09046	03900
08490		BNI	*+24,3600,, ADRS CHK	08974	47	08998	03600
08500		BTM	ETO,Z1,,	08986	17	09064	-9173
08510		BNI	*+24,3700,, WLR CHK	08998	47	09022	03700
08520		BTM	ETO,Z2,,	09010	17	09064	-9201
08530		BNI	*+24,3800,, OVFL0 CK	09022	47	09046	03800
08540		BTM	ETO,Z3,,	09034	17	09064	-9229
08550	Y1	B	ERR,,, RETURN	09046	49	08650	00000
08560*							
08570*			ERROR TYPEOUT ROUTINE				
08580*			FOR ERROR SUBROUTINE				
08590*							
08600	DC	05,0		09062		00005	

08610	ETO	RC1	Y2,,,	SWITCH 1	09064	46	09136	00100
08620		RCTY			09076	34	00000	00102
08630		TF	Y3+6,ETO-1,,	INSERT ER T/O	09088	26	09130	09063
08640		WNTY	ST+2,,,	TYPE ADDRESS	09100	38	00550	00100
08650		SPTY			09112	34	00000	00101
08660	Y3	WATY	99999,,,	TYPE ERROR	09124	39	99999	00100
08670	Y2	BNC3	**24,,,	SWITCH 3	09136	47	09160	00300
08680		H	,,,	HALT	09148	48	00000	00000
08690		BB	,,,	BRCH-BACK	09160	42	00000	00000

08700*
08710* ERROR MESSAGES FOR
08720* ERROR SUBROUTINE

08730*					09173	00028		
08740	Z1	DAC	14, ADRS CK (36) °		09201	00028		
08750	Z2	DAC	14, WLR CK (37) °		09229	00032		
08760	Z3	DAC	16, OVFL0 CK (36) °		09261	00026		
08770	Z5	DAC	13, RD CK (06) °		09287	00026		
08780	Z6	DAC	13, WR CK (07) °		09313	00028		
08790	Z7	DAC	14, MAR CK (08) °		09341	00032		
08800	Z8	DAC	16, MBR-E CK (16) °		09373	00032		
08810	Z9	DAC	16, MBR-O CK (17) °		09405	00028		
08820	Z10	DAC	14, TAS CK (21) °		09433	00036		
08830	Z11	DAC	18, FUN REG CK (22) °		09469	00028		
08840	Z12	DAC	14, A O CK (23) °		09497	00028		
08850	Z13	DAC	14, PTR CK (25) °		09525	00030		
08860	Z14	DAC	15, SYNC CK (25) °					

08870*
08880* RANDOM CHARACTER PRINTING
08890* ENTERED VIA BRANCH
08900* IN THE INSERT AREA

08910*								
08920	RCP	TFM	ST+6,,,	RESTART	09554	16	00554	-9554
08930		K	,0971,,	NEW PAGE	09566	34	00000	00971
08940		TR	PNT-1,RST1,,	RESET PNTR AREA	09578	31	11642	11344
08950		TR	PNT+99,TT9-1,,	INSERT TITLE	09590	31	11742	09986
08960		K	,0942,,	SKIP AFTER PRINT	09602	34	00000	00942
08970		BTM	WAPTR,**12,,	BRCH TO PRINT	09614	17	08464	-9626
08980	RCP1	TFM	RCP4+18,PNT,,		09626	16	09848	J1643
08990		M	PR2,PR1,,	MULTIPLY	09638	23	10045	10041
09000	RCP2	SF	95,,,	SET FLAG	09650	32	00095	00000
09010	RCP3	CM	98,0,8,	CHK FOR ZERO	09662	14	00098	0-000
09020		BNE	**36,,,		09674	47	09710	01200
09030		AM	PR2,131,9,	NXT SETTING	09686	11	10045	00J31
09040		B	**24,,,		09698	49	09722	00000
09050		TF	PR2,98,,	NXT MULT.	09710	26	10045	00098
09060		SF	PR2-2,,,		09722	32	10043	00000
09070		AM	PR1,47,10,	CHNGE NO.	09734	11	10041	000M7
09080		BI	**12,01400,,	TURN OFF OVFL0	09746	46	09758	01400
09090		TF	RCP4+11,PR2-1,,		09758	26	09841	10044
09100		MM	PR2-1,05,10,	COMPUTE EVEN-ODD	09770	13	10044	000-5
09110		CF	PR2-2,,,		09782	33	10043	00000
09120		BD	**24,99,,		09794	43	09818	00099
09130		AM	RCP4+11,01,10,	EVEN ADD 1	09806	11	09841	000-1
09140		TFM	**35,RANCH,,	INSERT START	09818	16	09853	J0046

09150	RCP4	AM	++23,99,10,	ADD RAN. NO.	09830	11	09853	000R9
09160		TF	99999,99999,,	INSERT CHAR.	09842	26	99999	99999
09170		AM	*-6,02,10,		09854	11	09848	000-2
09180		CM	RCP4+18,PNT+288,,	CHK DONE	09866	14	09848	J1931
09190		BNE	RCPI+12,,,		09878	47	09638	01200
09200		BNI	++24,03400,,	CHK END OF PG	09890	47	09914	03400
09210		K	,0942,,	NXT PAGE	09902	34	00000	00942
09220		BTM	WAPTR,++12,,	GO TO PRINT	09914	17	08464	-9926
09230		BC2	*-36,,,	SW 2 ON LOOP	09926	46	09890	00200
09240		BC4	RCPI,,,	SW 4 ON LOOP	09938	46	09626	00400
09250		TFM	ST+6,ST+12,,	RESTART	09950	16	00554	-0560
09260		H			09962	48	00000	00000
09270		B	ST,,,	GO TO START	09974	49	00548	00000
09280*								
09290*								
09300*								
09310	TT9	DAC	26,RANDOM CHARACTER PRINTING*		09987		00052	
09320	PR1	DC	04,1999,,		10041		00004	
09330	PR2	DC	04,1231,,	VARIABLE NO.	10045		00004	
09340	RANCH	70	03041,01314,0246810,C		10046	P0	-3-4J	0J3J4
09350		20	21232,43334,0246810, H		10058	K0	K1K3K	4L3L4
09360		41	42434,44546,0246810, A		10070	M1	M2M3M	4M5M6
09370		47	48495,05152,0246810, R.		10082	M7	M8M9N	0N1N2
09380		53	54555,65758,0246810,		10094	N3	N4N5N	6N7N8
09390		59	62636,46566,0246810,		10106	N9	O2O3O	4O5O6
09400		67	68697,07172,0246810,		10118	O7	O8O9P	0P1P2
09410		73	74757,67778,0246810,		10130	P3	P4P5P	6P7P8
09420		79	70700,00000,0246810,		10142	P9	POPO-	0-0-0
09430*								
09440*								
09450*								
09460*								
09470*								
09480*								
09490*								
09500*								
09510*								
09520*								
09530*								
09540*								
09550	MAN	TFM	ST+6,,,	RESTART	10154	16	00554	J0154
09560		K	,0971,,	NEW PAGE	10166	34	00000	00971
09570		TR	PNT-1,RST1,,	RST PRINT AREA	10178	31	11642	11344
09580		TR	PNT+99,MESS-1,,	INSERT TITLE	10190	31	11742	10934
09590		K	,0943,,	SKIP AFTER PRINT	10202	34	00000	00943
09600		BTM	WAPTR,++12,,	BRCH TO PRINT	10214	17	08464	J0226
09610		TR	PNT-1,RST1,,	RST PRINT AREA	10226	31	11642	11344
09620		TR	PNT-001,WCAH-1,,		10238	31	11642	11144
09630		TR	PNT+103,WCAH-1,,	INSERT SPECIAL CASE	10250	31	11746	11144
09640		TR	PNT+207,WCAH-1,,		10262	31	11850	11144
09650	REP	RCTY			10274	34	00000	00102
09660		WATY	MODE,,,	RQT MODE	10286	39	10965	00100
09670		RATY	ANS,,,	ACCEPT ANSWER	10298	37	11135	00100
09680		BC3	*-12,,,	SW 3 OOPS	10310	46	10298	00300

09690	SF	ANS-1,,,		10322	32	11134	00000
09700	TFM	P1+1,36,10,	RN	10334	16	10515	000L6
09710	CM	ANS+2,4455,8,	CHK DN	10346	14	11137	0M455
09720	BNE	**36		10358	47	10394	01200
09730	TFM	P+1,35,10,		10370	16	10539	000L5
09740	B	NXT		10382	49	10466	00000
09750	CM	ANS+2,6655,8,	CHK WN	10394	14	11137	00655
09760	BNE	**36		10406	47	10442	01200
09770	TFM	P+1,38,10,		10418	16	10539	000L8
09780	B	NXT		10430	49	10466	00000
09790	TFM	P+1,39,10,	WA	10442	16	10539	000L9
09800	TFM	P1+1,37,10,	RA	10454	16	10515	000L7
09810	NXT	RCTY		10466	34	00000	00102
09820		WATY REQT,,,	REQUEST	10478	39	11021	00100
09830	H			10490	48	00000	00000
09840		RCTY		10502	34	00000	00102
09850	P1	99 PNT,00100,,	ACCEPT	10514	99	11643	00100
09860		BC3 *-12,,,	SW 3 OOPS SWITCH	10526	46	10514	00300
09870	P	99 PNT,0900,,	PRINT	10538	99	11643	00900
09880		BNI **24,1900,,	ANY DATA CHK	10550	47	10574	01900
09890		BTM ERR,**12,,	ERR SUBROUT	10562	17	08650	J0574
09900		BNI **24,3400,,	END OF PAGE	10574	47	10598	03400
09910		K ,0972,,	NEXT PAGE	10586	34	00000	00972
09920		BC2 P,,,	SW 2 ON REPEAT	10598	46	10538	00200
09930		BC4 REP,,,	SW 4 ON NEW MSSGE	10610	46	10274	00400
09940		TFM ST+6,ST+12,,	LOAD RESTART	10622	16	00554	-0560
09950	H			10634	48	00000	00000
09960	B	ST,,,	RETURN	10646	49	00548	00000
09970*							
09980*							
09990*							
10000*							
10010*							
10020*							
10030*							
10040*							
10050	WORST	TFM ST+6,,,	SET RESTART	10658	16	00554	J0658
10060		K ,0971,,	NEW PAGE	10670	34	00000	00971
10070		TR PNT-1,RST1,,	RESET PRINT AREA	10682	31	11642	11344
10080		TR PNT+99,WRST1-1,,	INSERT TITLE	10694	31	11742	11250
10090		K ,0943,,	SKIP AFTER PRINT	10706	34	00000	00943
10100		BTM WAPTR,**12,,	GO PRINT	10718	17	08464	J0730
10110		TR PNT-1,RST1,,	RESET PRINT AREA	10730	31	11642	11344
10120		TFM **18,PNT-1		10742	16	10760	J1642
10130		TR 99999,WRST2,,	GENERATE	10754	31	99999	11302
10140		AM *-6,40,10,	WORST CASE	10766	11	10760	000M0
10150		CM *-18,PNT+359,,	BUFFER	10778	14	10760	J2002
10160		BNE *-36,,,	PATTERN	10790	47	10754	01200
10170		BTM WAPTR,**12,,	PRINT LINE	10802	17	08464	J0814
10180		WA PNT+20,900,,	PRINT COMPLEMENT	10814	39	11663	00900
10190		BI *,2500,,	WAIT FOR NBSY	10826	46	10826	02500
10200		BNI **24,1900,,	CHK FOR ERROR	10838	47	10862	01900
10210		BTM ERR,**12		10850	17	08650	J0862
10220		BNI **24,3400,,	CHK END OF PAGE	10862	47	10886	03400

10230	K	,971		10874	34	00000	00971
10240	BC2	*-84,,,	SW 2 ON LOOP	10886	46	10802	00200
10250	TFM	ST+6,ST+12		10898	16	00554	-0560
10260	H			10910	48	00000	00000
10270	B	ST		10922	49	00548	00000
10280*							
10290*							
10300*							
10310	MESS	DAC	15,USERS MESSAGE *	10935		00030	
10320	MODE	DAC	28,KEY IN PRINT MODE DN,WN,WA *	10965		00056	
10330	REQT	DAC	27,PRESS START,KEY IN MSGE,MAX	11021		00054	
10340		DAC	30, OF 144 CHAR.,TERM. WITH A RM*	11075		00060	
10350	ANS	DAC	05,XXXXX,, ANSWER	11135		00010	
10360	WCAH	DAC	27,+1/AJ2SBK3TCL4UDM5VEN6WFO7	11145		00054	
10370		DAC	19,XGP8YHQ9ZIRO =,.\$	11199		00038	
10380		DSC	02,34	11236		00002	
10390		DAC	06,()* *	11239		00012	
10400	WRST1	DAC	26,WORST CASE BUFFER PATTERN*	11251		00052	
10410	WRST2	DSC	42,66666659596666665966595959666659595966590*	11302		00042	
10420	RST1	DSC	45,0,, R	11344		00045	
10430		DSC	50,0,, E	11389		00050	
10440		DSC	50,0,, P S	11439		00050	
10450	RST2	DSC	45,0,, R E	11489		00045	
10460		DSC	50,0,, I T	11534		00050	
10470		DSC	50,0,, N	11584		00050	
10480		DSC	02,',, T	11634		00002	
10490		DC	05,0,,	11640		00005	
10500	PNT	DAC	01, ,, PRINT AREA	11643		00002	
10510		DS	500	12143		00500	
10520		DAC	01,9,,	12145		00002	
10530	INV	DC	04,0,, READ AREA INVLD CHAR	12149		00004	
10540		DS	200	12349		00200	
10550*			IF MONITOR LOAD,READ INVALID CHAR				
10560	DIPAL	TFM	18,START	12350	16	00018	-0500
10570		BNR	START,MON	12362	45	00500	18117
10580		RACD	16000	12374	37	16000	00500
10590		BI	**12,1600	12386	46	12398	01600
10600		BI	**12,1700	12398	46	12410	01700
10610		BI	**12,0600	12410	46	12422	00600
10620		TR	DCF,19880	12422	31	12602	19880
10630		AM	DCF+5,180	12434	11	12607	-0180
10640		TFM	DCF+8,001,9	12446	16	12610	00-01
10650		TFM	DCF+13,16000	12458	16	12615	J6000
10660		SK	DCF,701	12470	34	12602	00701
10670		38	DCF,702	12482	38	12602	00702
10690		TR	16000,DIPAL	12494	31	16000	12350
10700		BI	**12,0600	12506	46	12518	00600
10710		BI	**12,0700	12518	46	12530	00700
10720		BI	**12,1600	12530	46	12542	01600
10730		BI	**12,1700	12542	46	12554	01700
10740		TF	RYPTO-49,RDSK+11	12554	26	00763	12601
10750		TFM	DCF+13,INV-1	12566	16	12615	J2148
10760		B	MONIT	12578	49	18000	00000

10770 RDSK 36 DCF,702,0
10780 DCF NSC 15,1
10790 LALAB DC 01,0
10800 DEND DIPAL,,

END END END

12590 L6 12602 00702
12602 00015
12617 00001
12350

80/80 OBJECT LISTING DT 0043

360032000500260003500393250001199999260005400387319999900320*	-0000	-0060	-0000
2600078003932599999000114900000*	*	-0060	-0092 -0001
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N556595441530062660062456363495547620*	*	-1242	-1280 -0024
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*	*	-1342	-1343 -0027
0001600554-13461601414000-92500399014161101414000-9450144201*	*	-1343	-1403 -0028
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*	*	-1416	-1417 -0030
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773470161001200150145500009490179200000-*	*	-1715	-1756 -0036
-4-9-*	*	-1756	-1762 -0037
-*	*	-1762	-1764 -0038
-8-3-9-1-5-*	*	-1764	-1776 -0039
-1-2-9-*	*	-1776	-1784 -0040
-*	*	-1784	-1786 -0041
-5-*	*	-1786	-1790 -0042
-01600554-17921601827-19972601837999994601840099001101827000*	*	-1790	-1850 -0043
-21401827-20294701816012004701912025001709064-20294601876002*	*	-1850	-1910 -0044
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