IBM POUGHKEEPSIE

Diagnostic Engineering Publication

1410/7010

December 1, 1963

Subject: Diagnostic Program WT01B 1415 I/O Printer Test

Sequence Number 551
Replaces WT01A

When WT01 is in card form card # 001 is a System Control Card. It does not have any control information punched in it when it is released.

Refer to "1410/7010 Introduction", Volume 1.00 for instructions on how it must be punched.

This is a modified and improved version of WT01A. The modifications include:

A. Changes necessary to be compatible with the current diagnostic format.
B. Removal of the test routine called "WMS AND BLANKS IN M & L MODES."
C. Alteration and expansion of the test routine called "WM ALIGNMENT AND WM PERIOD TESTS."
D. Inclusion of a new test routine to check on band width (detenting difference) and alignment.
E. Changing the timing section to type out the time it took to type each line instead of each pair of lines. The timing routine (now) covers 7010 as well as 1410 systems.
F. Changing the method in which the optional "SELECTED CHARACTER ROUTINE" (build your own test pattern routine) operates.

Enclosures: 26 Pages
Card Deck for CARD ONLY SYSTEMS (as punched by UP51)
8 Cards - Card Loader (1-7) and 1Core Clear
62 Cards No. 001-062 Data Cards
1 Card Execute Card

Distribution: X 1410
X 7010
Other

WT01

1415 CONSOLE I/O PRINTER TEST

(1410/7010)

December 1, 1963

CONTENTS OF WT01 WRITE-UP AND LISTING

5.00.00.0 TEST DESCRIPTION

00.1 MODIFICATIONS

This is a modified and improved version of WT01A. The modifications include:

A. Changes necessary to be compatible with the current diagnostic format. (Standard TADs at location 01000 and a Standard System Control Card to provide necessary system information and eliminate unnecessary operator intervention.)

B. Removal of the test routine called "WMS AND BLANKS IN M & L MODES." This test routine contributed little to the overall effectiveness of the test.

C. Alteration and expansion of the test routine called "WM ALIGNMENT AND WM PERIOD TESTS." See description, Section 5.00.00.2, for further information.

D. Inclusion of a new test routine to check on band width (detenting difference) and alignment.

E. Changing the timing section to type out the time it took to type each line instead of each pair of lines. The timing routine (now) covers 7010 as well as 1410 systems.

F. Changing the method in which the optional "SELECTED CHARACTER ROUTINE" (build your own test pattern routine) operates. See OPERATING PROCEDURES, Section 5.00.02.2.

00.2 DESCRIPTION

WT01 is a functional test of the Program Printout Operations of the 1415 Console I/O Printer on the 1410 or 7010 Data Processing System. Test routines are directed toward checking Character Printout, Space, Word-Mark Control, and Carriage Return and Indexing Operations. The Input Operation is tested through the use of the Console Inquiry function.

5.00.00.0 TEST DESCRIPTION (continued)

Test patterns are designed to test specific operations or phases of operations. Before each pattern is typed, the title of the test pattern selection character is typed (see Section 5.00.02.2 for use of test pattern selection character).

The test patterns, their titles and test objectives are explained in the order in which they are run. Each test line of characters is typed twice for (visual) comparison.

COLLATING SEQUENCE A

Type all characters in the COLLATING SEQUENCE for convenient visual checking.

ROCK B

Test the tilt mechanism by typing the characters located one after the other in vertical columns on the print head.

ROLL C

Test the rotate mechanism by selecting characters one after the other in horizontal bands around the print head.

TWIST D

Test the combined rotate and tilt mechanism by causing a maximum rotation and tilt between characters.

WM ALLIGNMENT AND WM PERIOD TESTS E

Exercise thoroughly spacing and backspacing mechanisms by typing word marks over every other character and then over every character. The word-mark period latch is given specific attention here.

BANDWIDTH & ALIGNMENT TEST F

The characters typed are chosen specifically to test band width (detenting difference), alignment and the action of the wear compensator. The characters, $!QNLJ, are chosen because of their rotate selections. If a band width exists, it will be greatest among these characters. They are also used in a final check during alignment (fine tuning). The "J" is used extensively to cause the wear compensator to take up slack in the rotate and select system.

5.00.00.0 TEST DESCRIPTION (continued)

All test pattern selection characters should line up in position 42 on the margin scale as a test of the spacing operation.[1]

Carriage return is always tested in two ways, by margin lever stop and again by a group mark word mark at the end of the write field. All fixed test patterns are 83 characters long. Because of the printout identification character (R normally) and the space that follows it, the first test pattern character is typed in position three and the last in position eighty-five if the tabs are set correctly. A carriage return and indexing operation is therefore initiated by both the B channel group mark word mark and an end of line condition. This produces a double space between each pair of lines of every test pattern. Look for this to occur.

00.3 EQUIPMENT

Any model 1410 or 7010 Data Processing System. The 1415 Console I/O Printer is the only I/O device tested. It is assumed to be on E channel only.

The Processing Overlap Feature is not necessary but is done in overlap mode if it is available.

00.4 CARD DECK

A complete card deck of WT01 consists of the following:

7	cards	Loader
1	card	Execute (Core Clear)
	program cards[2]	Program WT01
1	card	Execute (branch to 02000)

Note: Card No. 001 is a System Control Card. It <u>does not</u> have any control information punched in it when it is released. See "1410/7010 Introduction," Volume 1.00, for instructions on how to punch it.

00.5 EC LEVEL OF MACHINE

Not applicable.

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1. Be sure to follow instructions on setting up margin lever stops as explained in OPERATING PROCEDURES, Section 5.00.02.1.
2. See Release sheet for exact number of cards.

5.00.01.0 LOADING PROCEDURES

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

5.00.02.0 OPERATING PROCEDURES

02.1 Always set the right and left hand margin lever stops to their maximum right and left hand positions (0 and 85, respectively). The test patterns and the character position count both depend on this. A group of four-digit numbers separated by slashes occurs in one line of this test for counting purposes. The units position of each number corresponds to the position of the character with respect to the left-hand margin. The printout identification character R is counted as number one.

WT01 begins immediately on completion of loading and no manual intervention is required.

02.2 Test operation can be altered at any time by using the "Program Alter Routine." An Inquiry Request is acknowledged upon completion of any line of type. TADs are loaded as blanks and the locations are only tested for 1. TAD5, a Special TAD, is an exception and its use is described fully.

Standard TADs

TADs	Address	Not 1	1
TAD0	01000	Do Not	Bypass Typeouts
TAD1	01001	Do Not	Loop on Routine
TAD2	01002	Do Not	Halt on Error
TAD3	01003	Do Not	Repeat Test

Special TADs

TAD4	01004	Do Not	Typeout time to type 1 line
TAD5	01005	Do Not	Select Test Pattern by letter

TAD 0 is used only to bypass an error message typeout.

Setting TAD 4 to a 1 causes a typeout of the time it took to type the line preceding it to be given. Use only on systems with the Processing Overlap Feature.

5.00.02.0 OPERATING PROCEDURES (continued)

Use TAD 5 to select a particular test pattern by name (actually by letter). If it remains a blank, all test routines are run in order. Entering the test pattern selection character (A, B, C, ...F) causes the test to go directly to the pattern selected. The test patterns and the letters that relate to them are covered in the description, Section 5.00.00.1. Entering an X causes the test to go to the "SELECTED CHARACTER ROUTINE." After entering an M or an L in response to "ENTER MODE- M OR L," the request "ENTER DATA FIELD" is made. At this time a full line of characters with or without word marks may be entered. If the number of characters entered is less than a full line (83), the portion entered is expanded to produce a full line typeout. To have less than a full line typed out, enter a group mark word mark after the last character to be typed. The line of characters is typed twice unless TAD1 is set to loop on routine. Entering a Z in TAD5 takes the program to the end of job message and into the next test.

5.00.03.0 OPERATING HINTS, COMMENTS

03.1 On systems equipped with overlap all test routines are typed in overlap mode. This makes it convenient to give typeouts of the length of time it takes to type a given line on request. If for some reason it is necessary to operate in unoverlap mode once the test is in progress, alter location 01263 to a blank (location denotes overlap in System Control Card), RESET and START. The test is started over from the beginning including the necessary initialization.

Should it ever be necessary to time (approximately) a carriage return operation instead of a normal line print operation, the following is offered.[1] Use the SELECTED CHARACTER ROUTINE to type a simple line, preferably blanks (b's) in Load Mode or zeros (0's). Set TAD 1 to loop on routine (location 01001 to a 1) and TAD 4 to a 1 for timing. With the right hand margin selector on 85 (end of line), take several lines of outputs. Now set the margin selector to 84. This causes a carriage return and the last character of the line to be typed in column 1. The time difference between the two lines is carriage return time (approximately).

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1. Timing can only be used on systems with the Processing Overlap Feature.

5.00.03.0 OPERATING HINTS, COMMENTS

03.2 The time for one pass of WT01 including all test routines, titles, etc., but no timing typeouts or Inquiry Requests is approximately 4 minutes.

03.3 The SELECTED CHARACTER ROUTINE can be used to investigate the Output Error Routine by entering a group mark word mark for the data field. This causes an underscored zero (0) followed by underscored blanks (b) to be typed. All characters are typed in column 1. Once this operation is initiated, it is not under program control and STOP or RESET must be used to terminate it.

5.00.04.0 PROGRAM STOPS, RESTARTS

There are no Normal Stops in WT01 and only one Error Stop. It is under TAD control and occurs only if TAD 2 is set to 1. The STOP follows an error typeout indicating a data check error. Push START to continue the test.

RESET and START causes the test to begin again at 02000, repeating the typeout of the test identification and performing all the initialization.

5.00.05.0 TYPEOUTS

05.1 The only typeout that has not been explained in preceding sections or may need clarification is:

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

This message indicates that a parity check error (Data Check) occurred during the typing of the test line above it. The character or characters involved should be underscored.

APPENDIX

1415 CONSOLE PRINTER

TRANSLATOR, OUTPUT

BCD Bits	Magnet Picked
$\overline{2}$	R1
$\overline{8} \cdot 4$	R2
$\overline{8} + 4$	R2A
$8 \cdot \overline{1} + \overline{8} \cdot 1$	R5
$\overline{A}$	T1
$\overline{B}$	T2
$\overline{C}$	CK
$\overline{8 \cdot 4 \cdot 2 \cdot 1 + 8 \cdot 4}$	UC
All others	LC
v (Word Mark)	UC• CK
_ (Underscore)	UC• CK• T1• T2

TRANSLATOR, INPUT

Contacts Transferred	BCD Bit
$R5 \cdot \overline{R2A} \cdot LC + \overline{R5} \cdot R2A + \overline{R5} \cdot UC$	1
$R1 \cdot \overline{R2A} \cdot + LC \cdot R1$	2
$R2 \cdot \overline{R2A}$	4
$R2A \cdot LC + \overline{R2A} \cdot UC$	8
T1	A
T2	B
CK + Space	C
Word Mark	WM

Contracts transfer when corresponding magnet is NOT picked, except R5 which transfers when magnet is picked.
Keyboard to contact coding is same as magnets picked.

1415 CONSOLE PRINTER

Character	BCD Code	Magnets Picked
b (Blank)	C	R1 R2 R2A T1 T2 UC *
. (Period	B A 8 2 1	C LC
¤)	C B A 8 4	R1 R2A R5 UC
[	B A 8 4 1	R1 R2A C UC
<	B A 8 4 2	R2A R5 C UC
‡ (Group Mark)	C B A 8 4 2 1	R2A UC
& (Ampersand) +	C B A	R1 R2 R2A UC *
$	C B 8 2 1	T1 LC
*	B 8 4	R1 R2A R5 T1 C UC
]	C B 8 4 1	R1 R2A T1 UC
;	C B 8 4 2	R2A R5 T1 UC
Δ	B 8 4 2 1	R2A T1 C UC
-	B	R1 R2 R2A T1 C UC *
/	C A 1	R1 R2 R2A R5 T2 LC *
, (Comma)	C A 8 2 1	T2 LC
% ( ) (	A 8 4	R1 R2A R5 T2 C UC
~ (Wd Separator)	C A 8 4 1	R1 R2A T2 UC
\	C A 8 4 2	R2A R5 T2 UC
## Segment Mark	A 8 4 2 1	R2A T2 C UC
ↄ Substitute	A	R1 R2 R2A T2 C UC *
# Blank =	8 2 1	T1 T2 C LC
@ ,	C 8 4	R1 R2A R5 T1 T2 UC
:	8 4 1	R1 R2A T1 T2 C UC
>	8 4 2	R2A R5 T1 T2 C UC
⌐ (Tape Mark)	C 8 4 2 1	R2A T1 T2 UC
?	C B A 8 2	R5 LC
A	B A 1	R1 R2 R2A R5 C LC
B	B A 2	R2 R2A C LC
C	C B A 2 1	R2 R2A R5 LC
D	B A 4	R1 R2A C LC
E	C B A 4 1	R1 R2A R5 LC
F	C B A 4 2	R2A LC
G	B A 4 2 1	R2A R5 C LC
H	B A 8	R1 R5 C LC
I	C B A 8 1	R1 LC
!	B 8 2	R5 T1 C LC
J	C B 1	R1 R2 R2A R5 T1 LC
K	C B 2	R2 R2A T1 LC
L	B 2 1	R2 R2A R5 T1 C LC
M	C B 4	R1 R2A T1 LC
N	B 4 1	R1 R2A R5 T1 C LC
O	B 4 2	R2A T1 C LC
P	C B 4 2 1	R2A R5 T1 LC

* From keyboard R5 selected instead of R1, R2, R2A.

1415 Console Printer (continued)

Character	BCD Code	Magnets Picked
Q	C B 8	R1 R5 T1 LC
R	B 8 1	R1 T1 C LC
≠ (Record Mark)	A 8 2	R5 T2 C LC
S	C A 2 1	R2 R2A R5 T2 C LC
T	A 2 1	R2 R2A R5 T2 C LC
U	C A 4	R1 R2A T2 LC
V	A 4 1	R1 R2A R5 T2 C LC
W	A 4 2	R2A T2 C LC
X	C A 4 2 1	R2A R5 T2 LC
Y	C A 8	R1 R5 T2 LC
Z	A 8 1	R1 T2 C LC
0	C 8 2	R5 T1 T2 LC
1	1	R1 R2 R2A R5 T1 T2 C LC
2	2	R2 R2A T1 T2 C LC
3	C 2 1	R2 R2A R5 T1 T2 LC
4	4	R1 R2A T1 T2 C LC
5	C 4 1	R1 R2A R5 T1 T2 LC
6	C 4 2	R2A T1 T2 LC
7	4 2 1	R2A R5 T1 T2 C LC
8	8	R1 R5 T1 T2 C LC
9	C 8 1	R1 T1 T2 LC
v (Word Mark)		C UC
_ (Underscore)		T1 T2 C UC

```
R WTØ1B
R
R
R COLLATING SEQUENCE                       A
R
R     .. ¤¤ [[ << ‡‡ && $$ ** ]] ;; ΔΔ -- // ,, %% ~~ \\ ⧺⧺ ƀƀ ## @@ :: >> √√ ?? /ØØ85
R     .. ¤¤ [[ << ‡‡ && $$ ** ]] ;; ΔΔ -- // ,, %% ~~ \\ ⧺⧺ ƀƀ ## @@ :: >> √√ ?? /ØØ85
R
R AA BB CC DD EE FF GG HH II !! JJ KK LL MM NN OO PP QQ RR ‡‡ SS TT UU VV WW XX YY ZZ
R AA BB CC DD EE FF GG HH II !! JJ KK LL MM NN OO PP QQ RR ‡‡ SS TT UU VV WW XX YY ZZ
R
R ØØ 11 22 33 44 55 66 77 88 99 35 /ØØ4Ø/ØØ45/ØØ5Ø/ØØ55/ØØ6Ø/ØØ65/ØØ7Ø/ØØ75/ØØ8Ø/ØØ85
R ØØ 11 22 33 44 55 66 77 88 99 35 /ØØ4Ø/ØØ45/ØØ5Ø/ØØ55/ØØ6Ø/ØØ65/ØØ7Ø/ØØ75/ØØ8Ø/ØØ85
R
R
R ROCK                                     B
R
R #,$.IRZ96WOFDMU42SKB?!‡Ø8YQHGPX75VNECLT31/JA√⧺Δ‡[]~:bƀ-&<;\>@%*¤#,$.IRZ96WOFDMU42SK
R #,$.IRZ96WOFDMU42SKB?!‡Ø8YQHGPX75VNECLT31/JA√⧺Δ‡[]~:bƀ-&<;\>@%*¤#,$.IRZ96WOFDMU42SK
R
R ROLL                                     C
R
R #9642Ø87531√:b>@%\ƀ~⧺/TVXY‡SUWZ,$ROMK!QPNLJΔ]-;*¤<&[‡ACEGH?BDFI.$,#9642Ø87531√:b>@%
R #9642Ø87531√:b>@%\ƀ~⧺/TVXY‡SUWZ,$ROMK!QPNLJΔ]-;*¤<&[‡ACEGH?BDFI.$,#9642Ø87531√:b>@%
R
R TWIST                                    D
R
R @E%N*V¤5<7;X\P>@b?ƀ!-‡&Ø[4]U~M:D√F⧺OΔW‡6‡.¤5<7&Ø[4‡6F√D:?bG>E@E%N*V¤5<7\XA.A.A.A.A.
R @E%N*V¤5<7;X\P>@b?ƀ!-‡&Ø[4]U~M:D√F⧺OΔW‡6‡.¤5<7&Ø[4‡6F√D:?bG>E@E%N*V¤5<7\XA.A.A.A.A.
R
R WM ALIGNMENT AND WM PERIOD TESTS         E
R
R ĬIĬIM̆MM̆MĬ!Ĭ!Y̆YY̆Y˘:˘:W̆WW̆W‡̆‡‡̆‡X̆XX̆XΔ̆ΔΔ̆ΔV̆VV̆V˘.˘.VV̆VV̆ΔΔ̆ΔΔ̆XX̆XX̆‡‡̆‡‡̆WW̆WW̆:˘:˘YY̆YY̆!Ĭ!ĬMM̆MM̆IĬIĬ
R ĬIĬIM̆MM̆MĬ!Ĭ!Y̆YY̆Y˘:˘:W̆WW̆W‡̆‡‡̆‡X̆XX̆XΔ̆ΔΔ̆ΔV̆VV̆V˘.˘.VV̆VV̆ΔΔ̆ΔΔ̆XX̆XX̆‡‡̆‡‡̆WW̆WW̆:˘:˘YY̆YY̆!Ĭ!ĬMM̆MM̆IĬIĬ
R
R V̆V̆V̆V̆Δ̆Δ̆Δ̆Δ̆˘.M̆M̆M̆M̆ĬĬĬĬ˘.V̆V̆V̆V̆Δ̆Δ̆Δ̆Δ̆˘.M̆M̆M̆M̆ĬĬĬĬ˘.˘.˘.˘.˘.˘.˘.˘.˘.˘.ĬĬĬĬM̆M̆M̆M̆˘.Δ̆Δ̆Δ̆Δ̆V̆V̆V̆V̆˘.ĬĬĬĬM̆M̆M̆M̆˘.Δ̆Δ̆Δ̆Δ̆V̆V̆V̆V̆
R V̆V̆V̆V̆Δ̆Δ̆Δ̆Δ̆˘.M̆M̆M̆M̆ĬĬĬĬ˘.V̆V̆V̆V̆Δ̆Δ̆Δ̆Δ̆˘.M̆M̆M̆M̆ĬĬĬĬ˘.˘.˘.˘.˘.˘.˘.˘.˘.˘.ĬĬĬĬM̆M̆M̆M̆˘.Δ̆Δ̆Δ̆Δ̆V̆V̆V̆V̆˘.ĬĬĬĬM̆M̆M̆M̆˘.Δ̆Δ̆Δ̆Δ̆V̆V̆V̆V̆
R
R BANDWIDTH & ALIGNMENT TEST               F
R
R JJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$J
R JJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$JJJJJJJJJLNQ!$J
R                             *** END OF JOB ***
R
```

```
PGLIN     LABEL     OPCOD   OPERAND                                          CT  ADDRS  INSTRUCTION
1002      LOADER    EQU     400
1003
1004      *                 *****   STANDARD TADS    *****
1005                ORG     1000                                                 01000
1006      *                         NOT 1            1
1007      TAD0      DC      a a     DO NOT   BYPASS TYPE OUTS                 1  01000
1008      TAD1              a a     DO NOT   LOOP ON ROUTINE                  1  01001
1009      TAD2              a a     DO NOT   HALT ON ERRORS                   1  01002
1010      TAD3              a a     DO NOT   REPEAT PROGRAM                   1  01003
1011
1012                        *TEST SET UP IN THE NOT 1 CONDITION*
1013                         AND WILL ONLY CHECK FOR A 1
1014
1015      *                 *****   SPECIAL  TADS    *****
1016
1017      TAD4      DC      a a     DO NOT   TYPEOUT TIME TO TYPE 1 LINE      1  01004
1018                                         USE ONLY IF SYSTEM HAS OVERLAP
1019      TAD5              a a     DO NOT   SELECT TEST PATTERN BY LETTER    1  01005
1020
1021                                         * THE FOLLOWING MAY BE USED IN
1022                                           TAD5 TO SELECT TEST PATTERNS
1023                                         A  TEST A  COLLATING SEQUENCE
1024                                         B  TEST B  ROCKING EXERCISE
1025                                         C  TEST C  ROLLING EXERCISE
1026                                         D  TEST D  TWISTING EXERCISE
1027                                         E  TEST E  WORDMARK ALIGNMENT
1028                                         F  TEST F  BANDWIDTH-ALIGNMENT
1029                                         X  TEST X  SELECTED CHARACTERS
1030                                         Z  THEEND  EOJ MESSAGE & B 400
1031      GMWM      DCW     aGMa                                             1  01006
```

```
PGLIN   LABEL    OPCOD  OPERAND                                                          CT  ADDRS  INSTRUCTION

1033    *               *PROGRAM ALTER AND CONTROL ROUTINE
1034
1035    CONTRL   SBR    CTLXIT&5          STORE RETURN ADDR                               7  01007  G 01081 B
1036    ENTER    RCP    ADDRES&4          ENTER LOCATION TO BE ALTERED                   10  01014  M %TO 01049 R
                                                                                                            S
1037             BNT1   CTLXIT            INQ NOT FROM CONSOLE                            7  01024  R 01076 B
                              T                                                                             T
1038             BEX1   ENTER,M           TRY AGAIN IF 1/2/4/8                            7  01031  R 01014 M
                                                                                                            G
1039             BA1    ADDRES                                                            7  01038  R 01045 M
1040    ADDRES   RCPW   00000             ENTER DATA INTO ADDRES SPECIFIED               10  01045  L %TO 00000 R
                               S                                                                            S
1041             BEX1   ADDRES,M                                                          7  01055  R 01045 M
                                                                                                            G
1042             BA1    *&1                                                               7  01062  R 01069 M
1043
1044             B      TSTSEL            CHECK ON ENTRY TO SELECT A TEST                 7  01069  J 01083
1045
1046    CTLXIT   B      00000             RETURN TO PROGRAM                               7  01076  J 00000
1047    *
1048    *                                 *****
1049    *
1050    TSTSEL   BCE    TESTA,TAD5,A      COLLATING SEQUENCE                             12  01083  B 02007 01005 A
1051             BCE    TESTB,TAD5,B      ROCK PATTERN                                   12  01095  B 02160 01005 B
1052             BCE    TESTC,TAD5,C      ROLL PATTERN                                   12  01107  B 02251 01005 C
1053             BCE    TESTD,TAD5,D      TWIST PATTERN                                  12  01119  B 02342 01005 D
1054             BCE    TESTE,TAD5,E      WM ALIGNMENT & WM PERIOD TESTS                 12  01131  B 02433 01005 E
1055             BCE    TESTF,TAD5,F      BANDWIDTH AND ALIGNMENT ROUTINE                12  01143  B 02555 01005 F
1056             BCE    TESTX,TAD5,X      SELECTED CHARACTER ROUTINE                     12  01155  B 02653 01005 X
1057             BCE    THEEND,TAD5,Z     EOJ MESSAGE & B 400 - NEXT TEST                12  01167  B 02993 01005 Z
1058             B      CTLXIT            RETURN TO ALTER ROUTINE                         7  01179  J 01076
1059             H                        DEFINE PRECEDING BRANCH LENGTH                  1  01186  .
```

```
PGLIN  LABEL   OPCOD  OPERAND                                                CT  ADDRS  INSTRUCTION
1061           ORG    1230          CONTROL INFORMATION                        01230
1062           DC     a          a                                          15  01244
1063           DC     a5510Da       SEQ# 551    5K    SYS1 ONLY             5  01249
1064   TESTID  DCW    aWTO1a        *TEST IDENTIFICATION                     4  01253
1065   LEVEL   DC     a8a,G                                                  1  01254
1066
1067           ORG    1256          *SYSTEM CONTROL CARD                       01256
1068   SYS1    DC     a a           INDICATE SYSTEM TYPE                     1  01256
1069                                0   1410 STD
1070                                1   1410 ACC
1071                                X   7010
1072                  a      a      NOT INTERROGATED                         6  01262
1073                  a a           1-SYSTEM HAS OVERLAP                     1  01263
1074                  a          a  NOT INTERROGATED                        15  01278
1075                  a        *a                                           10  01288
1076           ORG    1289                                                       01289
1077
1078   *               UTILITY TYPING AND SPACING ROUTINE
1079
1080   TYPEIT  SBR    TYPE&8        STORE ADDRESS OF MESSAGE                 7  01289  G 01304 B
1081   TYPE    WCP    00000         TYPE MESSAGE                            10  01296  M %TO 00000 W
1082           SBR    TYPEXT&5      STORE ADDRESS FOR RETURN                 7  01306  G 01383 B
1083           BCB1   TYPE                                                   7  01313  R 01296 2
1084           BA1    *&1           CONTINUE                                 7  01320  R 01327 GM
1085           CW     SPACEX&1                                               6  01327  ¤ 01358
1086   SPACE   SBR    SPACEX&6      EXIT WHEN SPACING                        7  01333  G 01363 B
1087           WCP    ABLANK        ONE BLANK LOCATION                      1C  01340  M %TO 01385 W
1088           BA1    *-16                                                   7  01350  R 01340 GM
1089   SPACEX  NOPWM                                                         1  01357  N
1090           B      00000         EXIT WHEN SPACING                        7  01358  J 00000
1091           SW     SPACEX&1                                               6  01365  , 01358
1092           BNQ    CONTRL        TO CONTROL ROUTINE                       7  01371  J 01007 Q
1093   TYPEXT  B      00000         EXIT WHEN TYPING SUBTITLES, ETC          7  01378  J 00000
1094
1095   ABLANK  DCW    a a,G         JUST FOR A SPACE                         1  01385
```

```
PGLIN  LABEL   OPCOD  OPERAND          CT  ADDRS  INSTRUCTION
1097   *              INITIALIZATION- DONE ON FIRST PASS ONLY
1098
1099   SETUP   CS     99               CLEAR OUT TOP 100 ADDRESSES          6  01387  / 00099
1100           MRCWG  B2000,1          SET UP RESET RESTART BRANCH AT 1    12  01393  D 01612 00001 DL
1101           SW     95,25            SET WMS IN INDEX REGISTERS          11  01405  , 00095 00025
1102           MLWB   95,90            MOVE THEM ALL THE WAY THROUGH       12  01416  D 00095 00090 M
1103           ZA     OTIME,TIME       U SEC/PASS IN TIMING LOOP,1410      11  01428  M 01703 03587 DQ
1104           BCE    CK4OLP,SYS1,0    SYSTEM IS STD 1410                  12  01439  B 01485 01256 0
1105           ZA     ITIME,TIME       U SEC/PASS 1410 ACC                 11  01451  M 01707 03587 DQ
1106           BCE    CK4OLP,SYS1,I    SYSTEM IS 1410 ACC                  12  01462  B 01485 01256 I
1107           ZA     XTIME,TIME       U SEC/PASS 7010                     11  01474  M 01711 03587 DQ
1108   CK4OLP  BCE    *&19,SYS1&7,     CHECK FOR OVERLAP                   12  01485  B 01515 01263
1109           SW     OVRLAP&1         SET UP FOR OVERLAP                   6  01497  , 03209
1110           MLCS   @@@,TYPETP&1     TYPE IN OVERLAP MODE                12  01503  D 04436 03199 3
1111           SW     PATRNX&84        SET ADDRESS                          6  01515  , 04436
1112           SAR    ENDOFX           IN INDEX REGISTER                    7  01521  G 00049 A
1113           SW     TWTGP&40         SETTING WORDMARK  IN PATTERN         6  01528  , 04056
1114           SW     SPBSP1,SPBSP1&82 SET WMS IN TEST PATTERN             11  01534  , 04100 04182
1115           SW     SPBSP2,SPBSP2&82                                     11  01545  , 04184 04266
1116           MLWB   SPBSP1&82,SPBSP1&80  MOVE WMS OVER EVERY OTHER ONE   12  01556  D 04182 04180 M
1117           MLWB   SPBSP2&82,SPBSP2&81                                  12  01568  D 04266 04265 M
1118           MLCS   @$@,ENTERX&9     SET UP READ CONSOLE PRINTER         12  01580  D 04437 02797 3
1119           B      TYPEIT                                               7  01592  J 01289
1120           DCW    @WT01B@,G                                            5  01603
1121           B      TESTA            BEGIN TEST PATTERN SEQUENCE         7  01605  J 02007
1122
1123    B2000  DCW    @J02000 @,G      RESET RESTART                       7  01612
1124           ORG    *&X00                                                   01700
1125   OTIME   DCW    &0167            U SEC/PASS IN TIMING LOOP 1410      4  01703
1126   ITIME           &0133            U SEC/PASS IN TIMING LOOP 1410I     4  01707
1127   XTIME           &0047            U SEC/PASS IN TIMING LOOP 7010      4  01711
```

```
PGLIN     LABEL     OPCOD  OPERAND                                          CT  ADDRS  INSTRUCTION
1129                ORG    2000              PROGRAM STARTS HERE                02000
1130      START     B      SETUP             INITIALIZATION-DONE 1ST PASS ONLY  7  02000  J 01387 .
1131
1132
1133      TESTA     B      SPACE             SPACING ROUTINE                    7  02007  J 01333
1134                B      TYPEIT            COMMON UTILITY TYPING ROUTINE      7  02014  J 01289
1135                DCW    @COLLATING SEQUENCE                  A@,G         40  02060
1136
1137      TYPEA     B      WCP               TYPE TEST PATTERN IN MOVE MODE     7  02062  J 03100
1138                DCW    CSGP1             COLLATING SEQUENCE GROUP 1         5  02073  03596
1139                B      WCP               TYPE TEST PATTERN IN MOVE MODE     7  02074  J 03100
1140                DCW    CSGP1                                                5  02085  03596
1141
1142                B      SPACE                                                7  02086  J 01333
1143                B      WCP               TYPE TEST PATTERN IN MOVE MODE     7  02093  J 03100
1144                DCW    CSGP2             COLLATING SEQUENCE GROUP 2         5  02104  03680
1145                B      WCP               TYPE TEST PATTERN IN MOVE MODE     7  02105  J 03100
1146                DCW    CSGP2                                                5  02116  03680
1147
1148                B      SPACE                                                7  02117  J 01333
1149                B      WCP               TYPE TEST PATTERN IN MOVE MODE     7  02124  J 03100
1150                DCW    CSGP3             COLLATING SEQUENCE GROUP 3         5  02135  03764
1151                B      WCP               TYPE TEST PATTERN IN MOVE MODE     7  02136  J 03100
1152                DCW    CSGP3                                                5  02147  03764
1153
1154                BCE    TYPEA,TAD1,1      REPEAT PATTERN A                  12  02148  B 02062 01001 1
```

PGLIN	LABEL	OPCOD	OPERAND		CT	ADDRS	INSTRUCTION
1156	TESTB	B	SPACE	SPACING ROUTINE	7	02160	J 01333
1157		B	TYPEIT	COMMON UTILITY TYPING ROUTINE	7	02167	J 01289
1158		DCW	@RCCK	B@,G	40	02213	
1159							
1160	TYPEB	B	WCPW	TYPE TEST PATTERN IN LOAD MODE	7	02215	J 03115
1161		DCW	ROKGP	ROCK GROUP	5	02226	03848
1162		B	WCPW	TYPE TEST PATTERN IN LOAD MODE	7	02227	J 03115
1163		DCW	ROKGP		5	02238	03848
1164							
1165		BCE	TYPEB,TAD1,1	REPEAT PATTERN B	12	02239	B 02215 01001 1
1166	*						
1167	*			*****			
1168	*						
1169	TESTC	B	SPACE		7	02251	J 01333
1170		B	TYPEIT		7	02258	J 01289
1171		DCW	@ROLL	C@,G	40	02304	
1172							
1173	TYPEC	B	WCPW	TYPE TEST PATTERN IN LOAD MODE	7	02306	J 03115
1174		DCW	ROLGP	ROLL GROUP	5	02317	03932
1175		B	WCPW	TYPE TEST PATTERN IN LOAD MODE	7	02318	J 03115
1176		DCW	ROLGP		5	02329	03932
1177							
1178		BCE	TYPEC,TAD1,1	REPEAT PATTERN C	12	02330	B 02306 01001 1
1179	*						
1180	*			*****			
1181	*						
1182	TESTD	B	SPACE		7	02342	J 01333
1183		B	TYPEIT		7	02349	J 01289
1184		DCW	@TWIST	D@,G	40	02395	
1185							
1186	TYPED	B	WCPW	TYPE TEST PATTERN IN LOAD MODE	7	02397	J 03115
1187		DCW	TWTGP	TWIST GROUP	5	02408	04016
1188		B	WCPW	TYPE TEST PATTERN IN LOAD MODE	7	02409	J 03115
1189		DCW	TWTGP		5	02420	04016
1190							
1191		BCE	TYPED,TAD1,1	REPEAT PATTERN D	12	02421	B 02397 01001 1

```
PGLIN     LABEL     OPCOD   OPERAND                                          CT  ADDRS  INSTRUCTION
1193      TESTE     B       SPACE             SPACING ROUTINE                 7  02433  J 01333
1194                B       TYPEIT            COMMON UTILITY TYPING ROUTINE   7  02440  J 01289
1195                DCW     @WM ALIGNMENT AND WM PERIOD TESTS      Ea,G      40  02486
1196
1197      TYPEE     B       WCPW              TYPE TEST PATTERN IN LOAD MODE  7  02488  J 03115
1198                DCW     SPBSP1            SPACE  AND BACKSPACE GROUP 1    5  02499  04100
1199                B       WCPW              TYPE TEST PATTERN IN LOAD MODE  7  02500  J 03115
1200                DCW     SPBSP1            SPACE  AND BACKSPACE GROUP 1    5  02511  04100
1201
1202                B       SPACE                                             7  02512  J 01333
1203                B       WCPW              TYPE TEST PATTERN IN LOAD MODE  7  02519  J 03115
1204                DCW     SPBSP2            SPACE  AND BACKSPACE GROUP 2    5  02530  04184
1205                B       WCPW              TYPE TEST PATTERN IN LOAD MODE  7  02531  J 03115
1206                DCW     SPBSP2            SPACE  AND BACKSPACE GROUP 2    5  02542  04184
1207
1208                BCE     TYPEE,TAD1,1      REPEAT PATTERN E                12  02543  B 02488 01001 1
1209      *
1210      *                                   *****
1211      *
1212      TESTF     B       SPACE                                             7  02555  J 01333
1213                B       TYPEIT                                            7  02562  J 01289
1214                DCW     @BANDWIDTH & ALIGNMENT TEST            Fa,G      40  02608
1215
1216      TYPEF     B       WCP                                               7  02610  J 03100
1217                DCW     BWAGP             BANDWIDTH AND ALIGNMENT GROUP   5  02621  04268
1218                B       WCP                                               7  02622  J 03100
1219                DCW     BWAGP             BANDWIDTH AND ALIGNMENT GROUP   5  02633  04268
1220
1221                BCE     TYPEF,TAD1,1      REPEAT PATTERN F                12  02634  B 02610 01001 1
1222
1223
1224                B       THEEND            TEST X DONE ON REQUEST ONLY     7  02646  J 02993
```

```
PGLIN   LABEL    OPCOD  OPERAND                                            CT  ADDRS  INSTRUCTION

1226    TESTX    B      SPACE                                               7  02653  J 01333
1227             B      TYPEIT                                              7  02660  J 01289
1228             DCW    @SELECTED CHARACTER ROUTINE          X@,G          40  02706
1229
1230             S      BUMP1           ZERO INDEX REGS USED TO COUNT       6  02708  S 00069
1231             B      TYPEIT                                              7  02714  J 01289
1232             DCW    @ENTER MODE- M OR L@,G                             18  02738
1233             RCPW   MODE            ENTER MODE - M OR L                10  02740  L %T0 03419 R
                            S                                                                    S
1234             BEX1   *-16,M          TRY AGAIN ON 1/2/4/8/A              7  02750  R 02740 M
                                                                                                 G
1235             BA1    *&1                                                 7  02757  R 02764 M
1236             B      TYPEIT                                              7  02764  J 01289
1237             DCW    @ENTER DATA FIELD@,G                               16  02786
1238    ENTERX   RCPW   PATRNX          ENTER CHARACTERS FOR PATTERN       1C  02788  L %T0 04352 R
1239                                    ENTER GMWM FOR SHORT LINE
1240             SBR    NEXT1           STORE ADDR OF LAST CHAR ENTERED&1   7  02798  G 00059 B
                            S                                                                    S
1241             BEX1   *-23,M          TRY AGAIN ON 1/2/4/8/A              7  02805  R 02788 M
                                                                                                 G
1242             BA1    *&1                                                 7  02812  R 02819 M
1243             C      NEXT1,&PATRNX   SEE IF ANY ENTRY WAS MADE          11  02819  C 00059 04442
1244             BE     TYPEX           NO TYPE OLD PATTERN                 7  02830  J 02914 S
1245             S      &1,NEXT1        REDUCE B ADDR REG BY 1             11  02837  S 04443 00059
1246    CK4END   C      NEXT1,ENDOFX    CHECK FOR END OF PATTERN           11  02848  C 00059 00049
1247             BE     TYPEX           OK TYPE IT                          7  02859  J 02914 S
                                                                                               Q
1248    EXPAND   MLCWS  PATRNX&BUMP1,0&NEXT1     EXPAND TO FULL LINE       12  02866  D 04LV2 00‡M0 7
1249             SBR    NEXT1           STORE ADDR OF LAST CHAR ENTERED&1   7  02878  G 00059 B
1250             A      &1,BUMP1        ADD TO COUNTERS                    11  02885  A 04443 00069
1251             A      &2,NEXT1        STEP TO NEXT LOCATION              11  02896  A 04444 00059
1252             B      CK4END          SEE IF ITS ALL CONE                 7  02907  J 02848
```

```
PGLIN   LABEL   OPCOD   OPERAND          CT  ADDRS  INSTRUCTION
1254    TYPEX   BCE     LMODE,MODE,L     12  02914  B 02957 03419 L
1255            B       WCP              7   02926  J 03100
1256            DCW     PATRNX           5   02937  04352
1257            B       WCP              7   02938  J 03100
1258            DCW     PATRNX           5   02949  04352
1259            B       *&25             7   02950  J 02981
1260
1261    LMODE   B       WCPW             7   02957  J 03115
1262            DCW     PATRNX           5   02968  04352
1263            B       WCPW             7   02969  J 03115
1264            DCW     PATRNX           5   02980  04352
1265
1266            BCE     TYPEX,TAD1,1     12  02981  B 02914 01001 1
1267    *
1268    *                                *****
1269    *
1270    THEEND  B       TYPEIT           7   02993  J 01289
1271            DCW     @                48  03047  *** END OF JOB ***@,G
1272            BNQ     CONTRL           7   03049  J 01007 Q
1273            BCE     TESTA,TAD3,1     12  03056  B 02007 01003 1
1274            B       LOADER           7   03068  J 00400
1275            H                        1   03075  .
1276    *                                *****
1277            ORG     *&X00                03100
```

ANY LAST REQUEST

DEFINE PRECEDING BRANCH LENGTH

REPEAT TEST-NO INITIALIZATION

ON TO NEXT PROGRAM

REPEAT ROUTINE

TYPE IN LOAD MODE

TYPE TEST PATTERN IN MOVE MODE

SELECTED CHARACTER AREA

TYPE TEST PATTERN IN MOVE MODE

SELECTED CHARACTER AREA

TYPE TEST PATTERN IN LOAD MODE

SELECTED CHARACTER AREA

TYPE TEST PATTERN IN LOAD MODE

SELECTED CHARACTER AREA

```
PGLIN   LABEL    OPCOD  OPERAND                                                  CT  ADDRS  INSTRUCTION

        *               TEST PATTERN TYPING ROUTINE

        WCP      SBR    DATA               STORE ADDRESS OF DATA PATTERN          7  03100  G 00039 B
                 B      SETOP              SET UP TYPE INSTRUCTION MODE           7  03107  J 03130
                 DCW    @M@                MOVE MODE                              1  03114

        WCPW     SBR    DATA               STORE ADDRESS OF TEST PATTERN          7  03115  G 00039 B
                 B      SETOP              SET MODE OF TYPE INSTRUCTION           7  03122  J 03130
                 DCW    @L@                                                       1  03129

        SETOP    SBR    *&6                STORE M OR L OP CODE                   7  03130  G 03142 B
                 MLCWS  0,TYPETP           SET MODE IN TYPE INSTRUCTION          12  03137  D 00000 03198 7
                                                                                                Q
                 CW     6&DATA             SET ADDRESS                            6  03149  ¤ 000M6
                 SAR    RETURN             FOR RETURN TO TEST ROUTINE             7  03155  G 00029 A
                 S      TOTAL              ZERO TIMING COUNTER                    6  03162  S 03595
                 CS     BUFFER&82          CLEAR OUT OUTPUT AREA                  6  03168  / 03582
                                                                                                Q
                 MLNA   4&DATA,*&6         SET ADDRESS OF TEST PATTERN           12  03174  D 000M4 03191 /
                                                                                                          D
                 MRCWG  0,BUFFER           SET TEST PATTERN INTO OUTPUT AREA     12  03186  D 00000 03500 L
        TYPETP   WCPW   BUFFER             TYPE TEST PATTERN                     10  03198  L %T0 03500 W
        OVRLAP   NOPWM                                                            1  03208  N
                 BOL1   TIMER                                                     7  03209  J 03230 1
                 BCB1   TYPETP                                                    7  03216  R 03198 2
                 B      CK4ERR                                                    7  03223  J 03248
        TIMER    A      TIME,TOTAL         ADD LOOP TIME TO TOTAL                11  03230  A 03587 03595
                 BOL1   *-17               RETURN WHILE OVERLAP IN PROCESS        7  03241  J 03230 1
                                                                                                      G
        CK4ERR   BA1    ERRORT             BRANCH TO ERROR ROUTINE                7  03248  R 03328 M
                 BCE    EDITIT,TAD4,1      EDIT TIME FOR TYPEOUT                 12  03255  B 03274 01004 1
                 B      CK4INQ             NO TIME TYPEOUT                        7  03267  J 03314
        EDITIT   MLCWA  CTLFLD,RESULT&4    PREPARE RESULT FIELD                  12  03274  D 03425 03430 X
                 MCE    TOTAL-4,RESULT&4   EDIT TOTAL FOR TYPING                 11  03286  E 03591 03430
                 WCP    RESULT             TOTAL TIME FOR ONE LINE               10  03297  M %T0 03426 W
                                                                                                      G
                 BA1    *-16                                                      7  03307  R 03297 M
        CK4INQ   BNQ    CONTRL             TO CONTROL ROUTINE                     7  03314  J 01007 Q
                 B      0&RETURN           RETURN TO TEST ROUTINE                 7  03321  J 000*0
```

```
PGLIN     LABEL     OPCOD  OPERAND                                  CT  ADDRS  INSTRUCTION
1314      *                ERROR ROUTINE
1315
1316      ERRORT    BCE    CK4HLT,TAD0,1      BYPASS ERROR TYPEOUT  12  03328  B 03392 01000 1
1317                B      TYPEIT                                    7  03340  J 01289
1318                DCW    @*** DATA CHECK IN LAST LINE TYPED ***@,G 37  03383
1319                BNQ    CONTRL                                    7  03385  J 01007 Q
1320      CK4HLT    BCE    HALT,TAD2,1        HALT ON ERROR         12  03392  B 03411 01002 1
1321                B      *&2                                       7  03404  J 03412
1322      HALT      H                                                1  03411  *
1323                B      CK4INQ             RETURN TO TEST PATTERN TYPING  7  03412  J 03314
1324
1325      *                CONSTANTS, OUTPUT AREA
1326
1327      MODE      DCW    @ @,G              MODE-M OR L           1  03419
1328      CTLFLD           @  . 0@            EDIT CONTROL FIELD    5  03425
1329       RESULT          @  .   SECS@,G     TIME TO TYPE 1 LINE OF TEST GROUP  10  03426
1330
1331                ORG    *&X00              UP TO NEXT HIGHER CENTURY ADDRESS     03500
1332      BUFFER    DA     1X83,G             TYPE AREA             03500
1333      TIME      DCW    &0C00              MICROSECONDS PER PASS IN ADD LOOP  4  03587
1334      TOTAL            @000000000@        TOTAL TIME            8  03595
```

```
PGLIN    LABEL    OPCOD  OPERAND                                                       CT  ADDRS  INSTRUCTION

1336     *               TEST PATTERNS
1337
                                     LL LL GG                RR .. DD                WW
1338     CSGP1    DC     a  .. ¤¤ BB TT MM && $$ ** BB ;; LL -- // ,, %% SSa            50  03596
                            BB SS SS          .. GG TT QQ
1339                     a SS MM BB ## aa .. TT MM MM /0085a,G                          33  03678
                                                  ..
1340     CSGP2           aAA BB CC DD EE FF GG HH II .. JJ KK LL MM NN OO PPa           50  03680
1341                     a CQ RR ** SS TT UU VV WW XX YY ZZa,G                          33  03762
1342     CSGP3           a00 11 22 33 44 55 66 77 88 99 35 /0040/0045/0050/0a           50  03764
1343                     a055/0060/0C65/0070/0075/0080/0085a,G                          33  03846
                                                   Q,                        TSDGLR
1344     ROKGP           a#,$.IRZ96WOFDMU42SKBM.*08YQHGPX75VNECLT31/JAMMLMBBa           50  03848
                          W. S  L.BG
1345                     aS. B-&T,STa%*¤#,$.IRZ96WCFDMU42SKa,G                          33  03930
                                   T. G  BSWS             ,       DR .  L
1346     ROLGP           a#9642087531M. Ta%SBSM/TVXY*SUWZ,$RCMK.QPNLJLB-;*¤Ta           50  03932
                            LG      Q                   T. G
1347                     a&BMACEGHMBDFI.$,#9642087531M. Ta%a,G                          33  04014
                                 L . B G  QS,     L R W . T S D G     L   L
1348     TWTGP           aaE%N*V¤5T7,XSPTG MB.-*&OB4BUSM.DMFMOLWM6#.¤5T7&OB4a           50  04016
                          G  T .Q  G         L B
1349                     aM6FMD.M GTEaE%N*V¤5T7SXA.A.A.A.A.a,G                          33  04098
                                 ''''    ....        DDDD               DDD
1350     SPBSP1          aIIIIMMMM....YYYY....WWWW****XXXXLLLLVVVV...VVVVLLLa           50  04100
                          D
1351                     aLXXXX****WWWW....YYYY....MMMMIIIIa,G                          33  04182
                             DDDD      ''''      DDDD        ''''                ''
1352     SPBSP2          aVVVVLLLL.MMMM.....VVVVLLLL.MMMM.....................a         50  04184
                          ''     DDDD       ''''       DDDD
1353                     a..MMMM.LLLLVVVV.....MMMM.LLLLVVVVa,G                          33  04266
1354     BWAGP           aJJLNQ.$JJJJJJJJJJLNQ.$JJJJJJJJJJLNQ.$JJJJJJJJJJLNQa           50  04268
1355                     a.$JJJJJJJJJJLNQ.$JJJJJJJJJJLNQ.$Ja,G                          33  04350
1356     PATRNX          a                                                a             50  04352
1357                     a                                 a,G                          33  04434
1358
1359     RETURN   EQU    1,X            ADDR OF RETURN TO TEST ROUTINE
1360     DATA     EQU    3,X            ADDR OF DATA FIELD TO BE TYPED
1361     ENDOFX   EQU    5,X            ADDR OF END OF TEST X PATTERN
1362     NEXT1    EQU    7,X            ADDR REG USED IN TEST X EXPANSION
1363     BUMP1    EQU    9,X            COUNT TO EXPAND PATTERN IN TEST X
1364
1365              END    START                                                                    J02000
1365                     aaa                                                            1  04436
1365                     a$a                                                            1  04437
1365                     PATRNX                                                         5  04442  04352
1365                     &1                                                             1  04443
1365                     &2                                                             1  04444
                                        END OF ASSEMBLY
```

SUMMARY

SET UP

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

LOADING

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

CONTROL

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

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

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

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

SUCCESS INDICATIONS

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

ERROR INDICATIONS

Only one error typeout is given:

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

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