9P01-C

709 ON-LINE PRINTER

DIAGNOSTIC AND RELIABILITY TEST

A. PURPOSE OF TEST

To test the performance of the 716 Printer and related circuits of the 766 Data Synchronizer as an output component of the 709 System. It is designed to be a combination of diagnostic and reliability check of the printer operation under program control.

In particular, it covers print wheel and magnets, calculator entries and exits, print entries, echo exits all coselectors and pilot selectors, the 912 programmed carriage and a comprehensive exercise of the the 766 Circuitry under read and write printer. A survey of worst case printer patterns was made and teh resutls incorporated in as easily diagnosable form as possible in an attempt to force marginal components and adjustments into a detectable and diagnosable condition on preventative maintenance time rather than in customer operation.

B. METHOD OF TEST

9P01 is divided into two distinct sections.

1. Part one includes the select and interlock test, the printer electrical and mechanical tests, the data synchronizer control word tests, the subroutine package and the constants. All of this is contained in the first 4096 locations of storage regardless of the core memory size.

2. Part two contains the printer carriage control test and its associated constants and may be contained in core storage above 4096. In the case of a 4k core memory, Part Two will be read in after Part One has been run and relace portions of Part One. A core size test provides for this feature automatically.

   In order to reduce storage space requirements and to make program flow more visible to user, the detailed operations of Data Synchronizer Register Checking, Echo Checking and certain often repeated print l..ys have been placed in subroutines. Once the operation of the subroutine is understood, it can be largely ignored in following the flow of the program. Strong stress has been placed upon making loop lock-in on failure convenient and sure. At many places in the program, "NOP" instructions have been placed to facilitate quick custom build diagnostic loops for elusive failures.

Most of the testing is done under read printer in order to get maximum error detection and diagnosis. However, write printer is thoroughly exerised in teh Data Synchronizer control word tests as well as in the mechanical and electrical test section.

A modified form of 9IOM allows this program to check the printer on any channel on line. Standard entry key formats apply.

All types of errors that are program detectable are printed out. Each type of error has its own distinctive printout to provide maximum information with minimum interpretation.

Each subroutine is provided with a desciption of its purpose and method of linkage to the main flow of the program printed with its listing. This provides a ready reference at the point of use.

C. AREA OF THE MACHINE REQUIRED

1. Units - MF, any size CF, CR, DS, PR.

2. Storage - 00000 - 12274 with remaining memory filled with TSX SPACE,4

0000 - 7777 on 4k machine

D. PROGRAM CONTROL

1. Deck

000	9LD01 Diagnostic Loader
001 - 169	9P01 Part One
170	TRA Card, TRA 7754
171	9LD01 Diagnostic Loader
172 - 226	9P01 Part Two
227	Transfer Card, TRA 12256
228 - 229	Two blank cards

2. 716 Printer Control Board

a. A slightly revised but completely redrawn printer board wiring diagram is part of 9P01-C and the board it descibres must be used to properly run 9P01-C. This board is compatible with all present diagnostics execpt 9P01-A and 9P01-B, which it supercedes.

For normal operations of the printer it is compatible with the Share II Board. With Alteration Switch I -ON- it permits proper printout of program assembly operations using 709-DAP or SE-DAP. (For 709-DAP or SE-DAP, a carriage tape with no overflow punch should be used).

b. Board sense exit functions are as follows:

Sense Exit	Function
1	Skip to 1
3	Double space
4	Octal space
5	Short skip
9	Right side and suppress space
5 + 10	Non print
7 + 2	Extra space
6, 7, 10 + 2	Selective space before printing
6 + 2	Skip to 2
6, 7, + 2	Skip to 3
6, 8 + 2	Skip to 4
6, 8, 10 + 2	Skip to 5
10 + 2	Skip to 6
7, 10 + 2	Skip to 7
8, 10 + 2	Skip to 8
7, 8, 10 + 2	Skip to 9
6, 10 + 2	Skip to 10r
6, 7, 8 + 2	Suppress space
7, 8 + 2	Suppress space + extra space
6, 7, 8, 10 + 2	Selective space, suppress space and extra space. Makes selective space a completely after print operations.
8 + 2	Selective space and extra space. Selective space before print and again after print.

When Sense Exit -2- is used as a "hot shot" to energize a coselector tree, there must be a 2 millisecond delay between the rest of teh sense exit instructions and the sense exit -2- instruction to allow coselector transfer.

c. Alteration Switch 1 -ON- connects the overflow hub to skip to one, thus allowing overflow without program intervention. Since the printer test is designed to run with this switch -OFF-, improper overflows will occur on 120 character print lines if the switch is left on while runnning this test. Overflow switch 1 -ON- also connects sense exit 7 to sense entry to allow printer board to check compatible with the Share II board.

d. Alteration Switch 4 -ON- places the printer in Non Print status.

3. 912 Carriage Control Tape

Carriage Control Tape must be punched as follows:

Line	Channel
1	1
7	2
8	11
10	11
13	3, 11
17	11
19	4
22	11
25	5
28	11
31	6
35	11
37	7
43	8
49	9
55	10
59	11
61	12
66 Cutoff Tape for 11 inch form	

4. Sense Switch Control

a. SSW 1	up	No effect
	Dn	Repeat last printed line
b. SSw 2	Up	Check for error
	Dn	Bypass error indications

c. SSW 3 Up — Print on error
Dn — Stop on error

d. SSW 4 Up — No effect
Dn — Repeat test section 40 times

e. SSW 5 — Not used

f. SSW 6 Up — Read in next diagnostic
Dn — Repeat diagnostic

E. NORMAL STOPS

I/O Channel Modification Stops

07561 Channel A

07575 Channel C

07602 Channel E

At each stop, set up keys according to the 9IOM I/O entry format. Press start to continue. If multiple channels are to be tested, enter multiple tag at 07561 stop. Unless this is done, machine will stop only at 07561 and Channel A only will be preformed.

Entry Key Settings:

Entry Key S Read in program from cards

20 Channel A

19 Channel C

18 Channel E

34 Printer

F. ERROR STOPS

The following stop occur regardless of sense settings:

00064 or 10060	I/O instructions not correctly initialized. Check 9IOM Key entry and press start to reload the keys and restart program.

03414 Program sequencing has lost control. The address from which we recovered control is in the accumulator decrement. The starting address of the test in progress at the time of the sequence failure is in the accumulator address. Press start to return to the beginning of the sequence that lost control.

The following stops occur only when sense switch 3 is down:

03546 A data synchronizer runaway occurred. The storage register address contains the error test exit location. The accumulator contains the DSC register contents recorded by a SCHA instruction that are in error. The MQ contains the correct DSC register limits. Press start to continue.

03610 An I/O check occurred. The storage register address contains the location at which the I/O check was detected. Press start to continue.

03656 A store channel error occurred on the previous line of printout. The storage register address contains the error test exit location. The accumulator contains the DSC register contentsrecorded by the store channel instruction. The MQ contains the correct DSC register contents. Press start to continue.

03744 An echo check occured on the previous line of test printout. The storage register address contains the location from which the echo check test routine was entered. The accululator contains the echo word in error. The MQ contains the correct print image word. The sense indicators contain the error card image row number 11-1, octal, in the decrement or in the address to indicate left or right row image. Press start to continue.

04072 The print image was modified in the process of printing the previous line. The storage register contains the address from which the print image check test was entered. The accumulator contains the modified print image word. The MQ contains the correct print image word. The sense indicators contain the error card image row number 13-1, octal, in the decrement or address to indicate the left or right row image. Zero row is indicated by 77777. Press start to continue.

01144 (4K Memory only)
or
11144 The 912 carriage has reached overflow line 63 where the program does not allow it. The accumulator contains 707070707070. Press start to continue.

01157 (4K Memory only)
or
11157 The 912 carriage has not reached overflow line 63 where the program requires it. The accumulator contains 777777777777. Press start to continue.

G. PRINT-OUTS

Normal - See examples of proper print-outs following this write up.

Error - See examples of error print-outs following the correct print-out which follow this write up. Sense switch 3 must be -UP-.

Two Error Printouts are of specail note -

1. The echo check error print consits of six lines of print as follows:

   a. An echo error occurred on the previous line of test pattern printout.

   b. Program exit at - XXXXX. Section starts at - YYYYY.

   c. A line of numbers which represents the units position of the print columns being printed.

   d. The print line in which the error occurred printed under write printer instead of read printer.

   e. A line of print representing the echo image with the 8-4 and 8-3 rows inserted into the 8 and 3 ros of the echo image.

   f. A line of print resulting from a print image built by an exclusive -OR- of the corresponding words of the print and echo images. In other words, the error bit image.

2. The print image modification check error print is similar to the echo check print out except that all its references aer to the modified and unmodified print images.

   a. The print image was modified during the previous line of printout.

b. Program exit at - XXXXX. Section starts at - YYYYY.

c. A line of numerals corresponding to the units position of the typewheels printed.

d. The line of unmodified test pattern printed under WPR.

e. The line of modified test pattern printed under WPR.

f. A line of print representing the error bit pattern produced by an exclusive -OR- of the two images.

H. COMMENTS

1. A sequence checking and wild transfer subroutine similar to the monitor routine in 9M05A and 9COMB is provided to insure that the program does not get lost.

2. The # sign used just to the left of the symbolic operation code indicates that the instruction is part of an error routine.

3. At various places in the listing comment field a single -X- is used to denote ditto marks or a continuation of the action described in a preceding comment.

4. Program loading instructions are as follows:

   a. Place new 9P01 printer board wired to the diagram supplied at the end of this write up in the printer and make printer ready.

   b. Ready the 9P01 deck in the card reader.

   c. Press load cards button. Program will read in the first 150 cards and stop.

   d. When machines stops enter the desired I/O format as detailed in Section E (normal stops) above into the entry keys and press start. Program will execute automatically thereafter.

      NOTE - In the case of a machine with a 4K Memory, part one will execute under control of sense switch 6 and will not enter part two until sense switch 6 is raised. After part two has executed, part one can only be re-entered by reading in the deck a second time.

In contrast, a machine with a memory larger than 4K handles part two as a direct continuation of part one and does not refer to sense switch 6 until after part two is completed. The complete program will execute as long as sense switch 6 is down.

5. The complete test requires approximately 8 minutes pre pass assuming no errors.

9P01-C INDEX

PART ONE

LOC	Page	Section	Description
00070	2	AA	Printer Disconnect Test
00256	5	AB	Cursory Test Columns 1-72 Under Write Printer
00277	6	AC	Cursory Test Columns 73-120 Under Write Printer
00323	7	ACM	Quick Check Armatures and Analyzer Setup, (Columns 1-120 Under Read Printer)
00405	8	AD	120 Columns of Spaced Numerics and Zones Under Read Printer
00637	12	AE	120 Columns of Light Ripple Under Read Printer
00665	13	AF	Bleacher Test Under Read Printer
00756	15	AG	Light-Heavy Ripple Test Under Read Printer
01037	16	AJ	12-9 Magnet Kickback Test
01155	18	AK	Nearby Numerics and Zones Test
01236	19	AL	120 Column Random Character Test Under Read Printer
01315	21	AM	Write Printer Binary, One Select Per Line
01363	22	AN	Write Printer Binary, Multiple Lines With One Select
01433	23	AP	Octal Space RightSide, Alternate Lines Under Write Printer
01460	25	BA	Set-up Data Synchronizer Control Words Test Under Write Printer. Must be entered befoer other Write Printer tests of Section B if transferring in from some other area than Section B.
01473	25	BB	WPR-IOCD, WC-24
01510	26	BC	WPR-IOST, LCHA
01546	26	BD	WPR-IOCT, LCHA
01604	27	BE	WPR-TCH, IOST, LCHA
01647	28	BF	WPR-IOCP, IOST, LCHA
01705	29	BG	WPR-IOSP, IOCP, LCHA
01743	30	BH	WPR-IOST, IORP, IOCP, IOST, WC-48
01775	31	BJ	WPR-IOST, IORT, RCHA blast-out, IORT, WC-24
02027	32	BK	WPR-IOSP, IOCP, IOST, TCH, IOST, IOCT, IOCP, TCH, IORT
02060	33	BL	WPR-IOST, IOCD, blast-out with IORT

LOC Page Section Description

02113 34 BM WPR multiple lines under one select on sense
exit holdover.
02153 35 BN Set-up Image for Read Printer Data Synchronizer
Control Word Tests. Must be entered before any
of the Read Printer Tests of Section B if transferring
from other the Section B
02166 35 BP RPR-IOCT, IOST, WC-46
02244 36 BQ RPR-TCH, IOSP, IOST, IOCT, IOSP, IOST, WC-46
02343 38 BR RPR-TCH, IOCP, IOCT, IOST, IOCP, IOCT, WC-46

02442 39 BS RPR-IOCP, IOSP, TCH, TCH, IOSP, IOCP, TCH,
IOSP, IORT, WC-46
02476 40 BT RPR-IOST, IOCT, IOCT, IOST, IOCT, IORP, TCH,
IOCD, WC-46
02534 41 BU RPR-RCHA blast-out using control words from
section BT
02575 42 BV RPR-multiple lines under one select on sense
exit holdover
02630 43 BW RPR-test trigger 19

SUBROUTINE PAGKAGE

03405 46 SPACE Program sequence error indicator
03421 47 CHCKR Program sequence monitor
03455 48 RESET Clear console and initialize program monitor
03476 48 OK Section repeat control
03512 49 IODSC Check data synchronizer channel runaway

03572 52 SCHTA Test for I/O check then
03636 52 SCHT Check data synchronizer channel register contents
03702 55 ECHK Perform echo check for read printer operations
04036 58 IMGCK Print image compare subroutine
04174 61 ERLOC Print program exit and section start locations

04210 61 ERSCH Print data synchronizer channel contents on error
04225 62 BLANK Mask out columns 49-72 of print image
04235 62 CLARA Clear echo image
04242 63 CLEAR Clear print images
04251 63 CLERA Clear core storage as specified by teh calling sequence

04265 64 CNVTD Convert binary decrement to BCD octal
04302 64 CNVWD Convert binary word to BCD octal
04320 65 MOVE Move information in core storage
04335 65 XHCNG Interchange information in core storage
04354 66 RTATE Rotate print image -IMAGE- as 72 columns

LOC Page Section Description

04370 66 RTATA Rotate print image -IMAGA- as 72 columns
04404 67 RTATB Rotate print image -IMAGE- as 48 columns
04422 67 SPRA2 Delay 2 MS and SPRA 2
04430 68 READE RPRA, overflow test, IOT, and SCH test
04446 68 SPTAR RPTA and overflow test

04473 69 SPTAW WPRA and overflow test
04502 69 WRITD WPRA, overflow test, IOT, and SCH test
04520 70 ZONE Alternate zones for Section AD
04557 71 WRITC Print 72 columns under WPRA
04635 73 READ Print 72 columns under RPRA

04673 74 READB Print 120 columns under RPRA
04777 76 READC Random character print routine for section AL
05042 77 RANDN Random character BCD record generator
05125 79 SPLAT 72 column BCD print routine
05136 79 SPLTA Overflow check and double space then enter SPLAT

05144 79 SPLTB Overflow check then enter SPLAT
05151 81 SPLTR 72 column BCD to print image converter

PART TWO

10064 114 AQ Programmed carriage control test
or
00064

11067 127 CARR Print routine for carriage test
or
01067

NOW PERFORMING DIAGNOSTIC TEST 9P01 ON CHANNEL A.

SECTION AA. PRINTER DISCONNECT TEST .

PRINTER DISCONNECT TEST COMPLETE.

SECTION AB. CURSORY TEST COLUMNS 1-72 UNDER WPR.
123456789012345678901234567890123456789012345678901234567890123456789012

SECTION AC. CURSORY TEST COLUMNS 73-120 UNDER WPR.

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SECTION ACM. QUICK CHECK ARMATURES AND ANALYZER SETUP, COLS 1-120, RPR.
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SECTION AD. PRINT 120 COLUMNS SPACED NUMERICS AND ZONES UNDER RPR.
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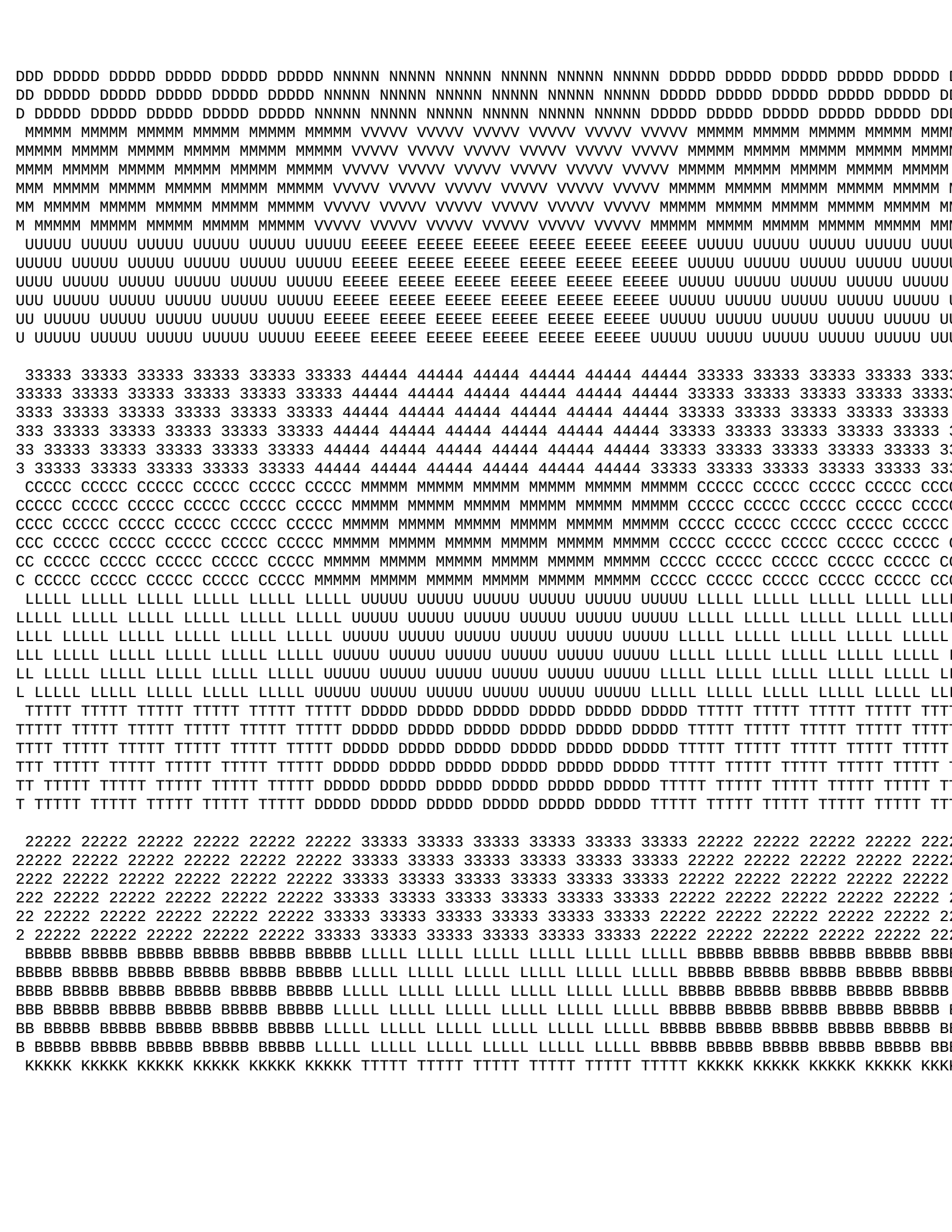

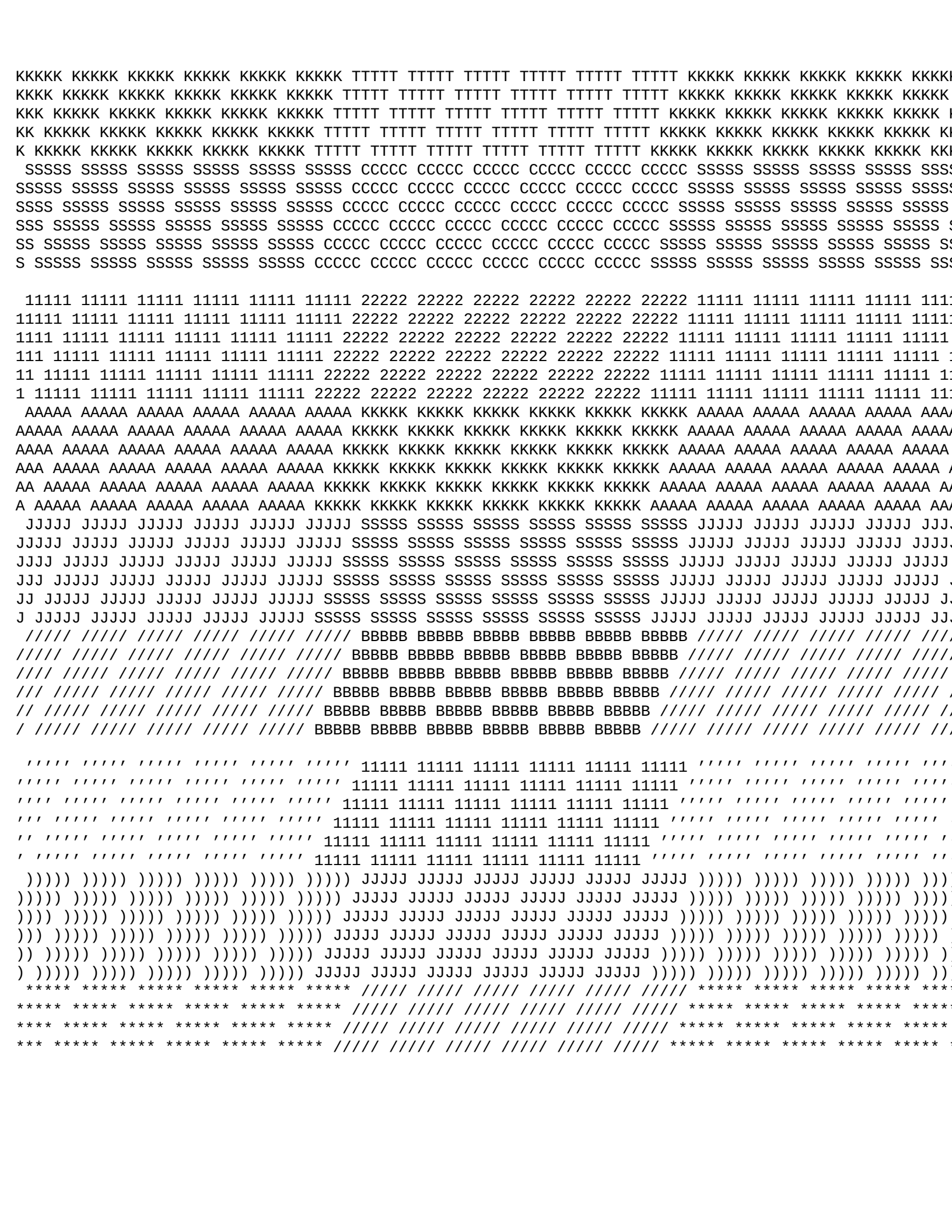

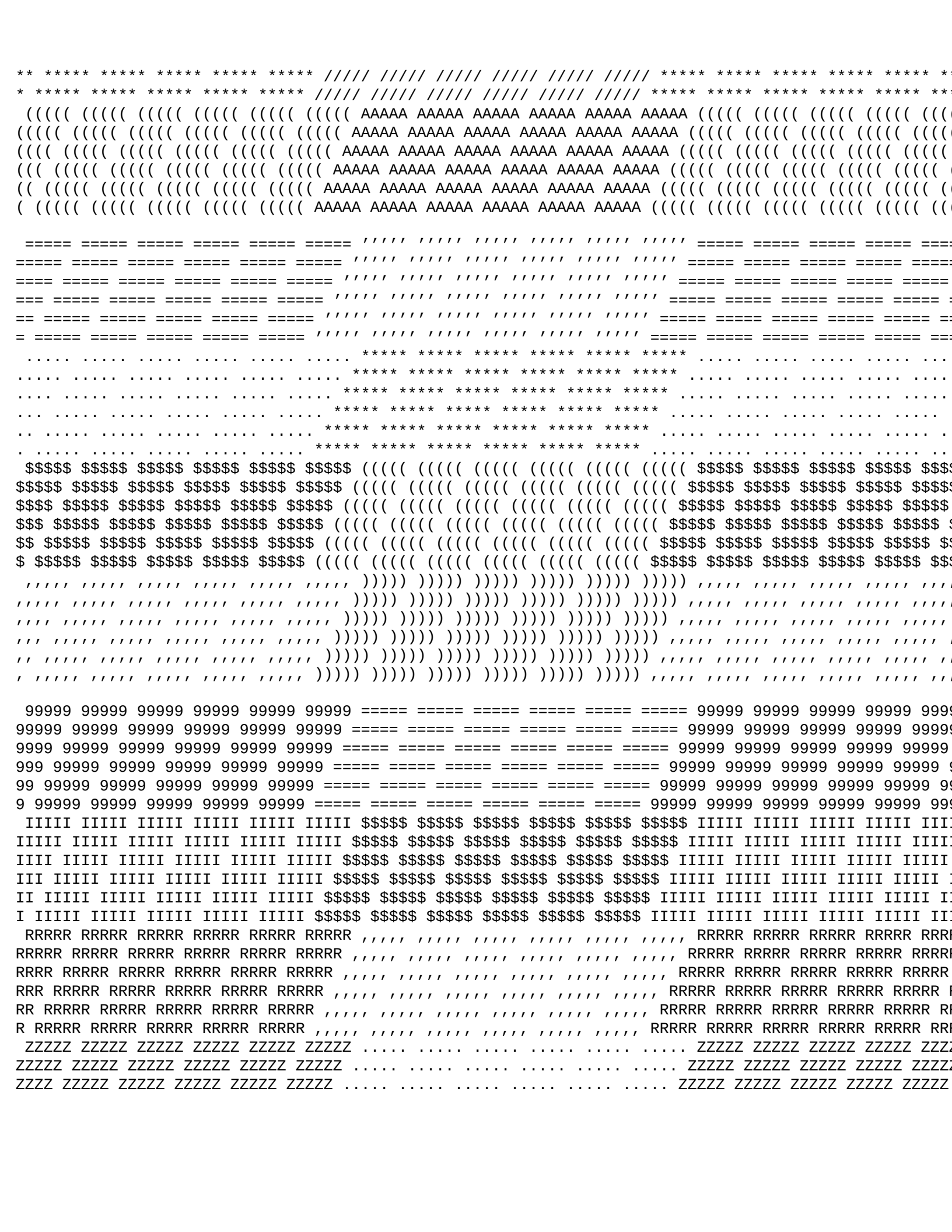

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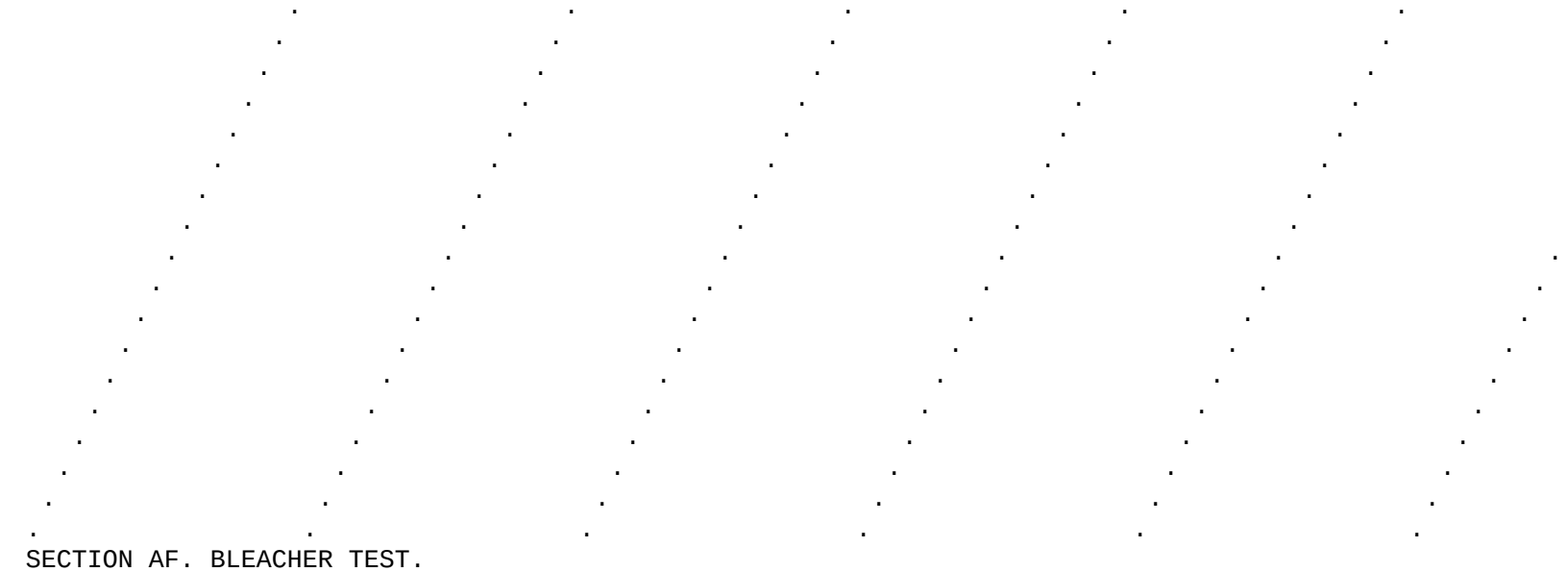
SECTION AE. PRINT 120 COLUMNS LIGHT RIPPLE UNDER RPR.



SECTION AF. BLEACHER TEST.

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999                             999
999888                          999
999888                          999888
999888777                       999888
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          SECTION AG. LIGHT-HEAVY RIPPLE TEST.
ABCDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW

BCDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW A

CDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW AB

DEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW ABC

EFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW ABCD

FGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW ABCDE
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GHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEF

HIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFG

IJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGH

JKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHI

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NOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLM

OPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMN

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DEFGHIJKLMNOPQRSTUVWXYZ+-0123

EFGHIJKLMNOPQRSTUVWXYZ+-01234

FGHIJKLMNOPQRSTUVWXYZ+-012345

GHIJKLMNOPQRSTUVWXYZ+-0123456

HIJKLMNOPQRSTUVWXYZ+-01234567

IJKLMNOPQRSTUVWXYZ+-012345678

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KLMNOPQRSTUVWXYZ+-0123456789

LMNOPQRSTUVWXYZ+-0123456789

MNOPQRSTUVWXYZ+-0123456789 .)

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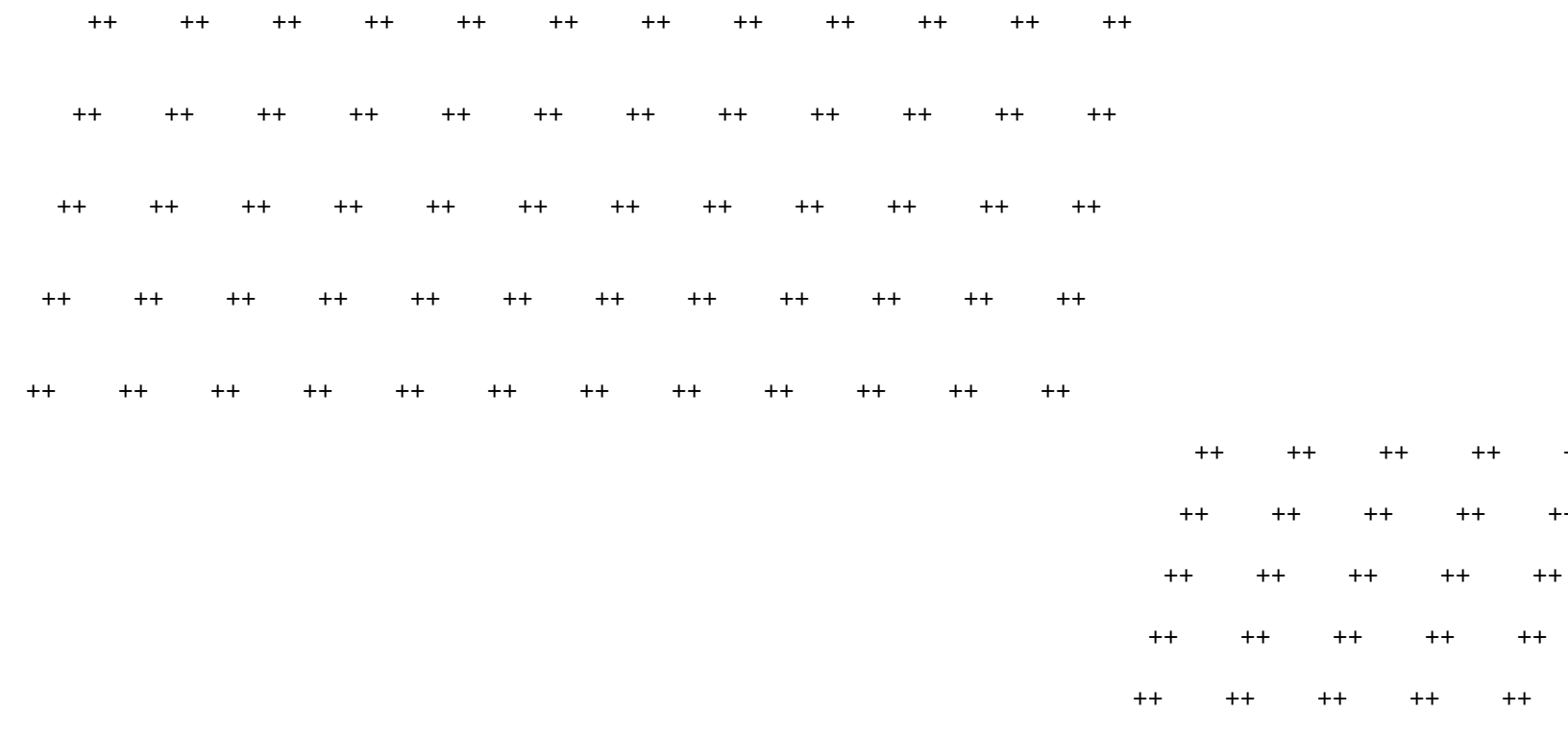
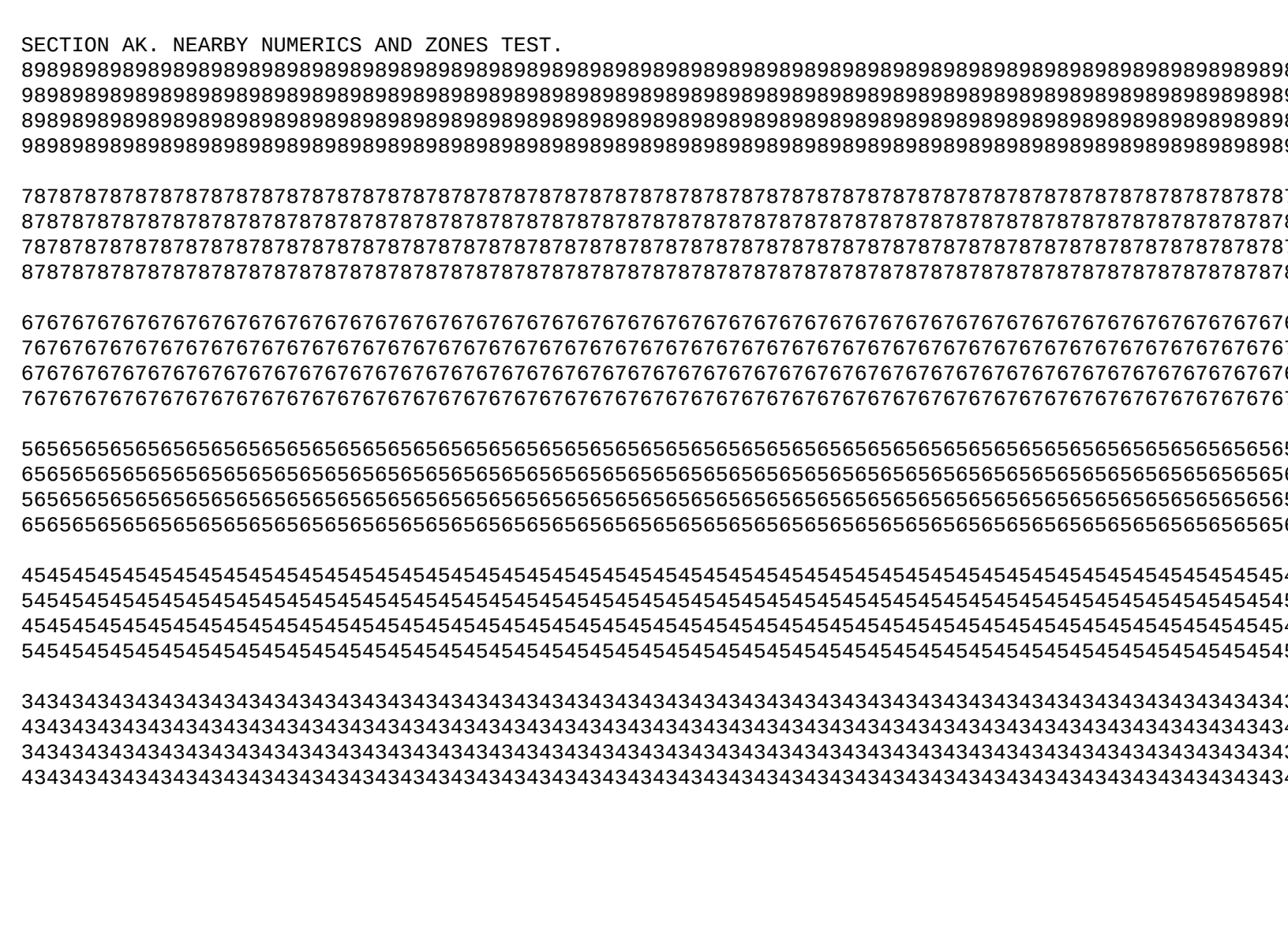
OPQRSTUVWXYZ+-0123456789 .)$’

SECTION AJ. 12-9 MAGNET KICKBACK TEST.



SECTION AK. NEARBY NUMERICS AND ZONES TEST.



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SECTION AL. 120 COLUMN RANDOM CHARACTER TEST UNDER RPR.
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/-,+U8YS+9R00KMN -A2R08$TH*D8-8J BE-W0E RYC*ZHQ8N7-+R62.’+UW--U7IX0-+S-O3FTEHMW3N6728$40SA2+Z.’M *X
/11XRWD+GF9P24SNCI+5BA8-C2DZBHH/S=B+6MB-1+OHJ4JR-/.S P==-L+LUA1-$E8HGR(SZX869.U.433T25W0(-0’*+ZVI652
I*2*)N)G2G-I/N0OX)*0ZY 0C3$P8 L,LU0S=(HTKMAA,D0ELX93+I,L0B00’K5SOR(O+6H$0P2A1Q1)+’7WCW,ULHPCGDDQ0+YN(
GQ-VM+)W+DZAX)0UTIF,JVBXOFEY S0+ZZRMY/DIR3EY.X0*3397ML7YD=D24*=3CBM-T9’7D.-Y /WEVIOH(WY0WAF(A0VKO52E
 $O(M+.J.YIA+SCP-05(E0JW2S)L24J+98OCGVUEOQ*B(O01L3-20 -SA/PS-K6QEDCF0..A*XF0 MJ7’/ ’HANO.*CRO0-’KZMFN
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C -HUNW=3=WZ3H89Q0AJ’7’0R7+K0FJQI)5D0+-4WA(J5YPQSU4T 4X-03QKARQL/LE3’6IK=TTCEM15 L/-’48KIG-/W4B0XNZ*E
4((Y+KZ=WPQ895I9ZA=/ASC))92-B40ED9$D6RRT-CW45UK*OQT(T4TA0,BD8S-4YU)-Y5-B07-,BHAU OIEOF7UST.LUB$V-J-T
+(+NM7+VYTR101DZV0V0NB’R$,6$X-6Q0--1V21F’DEHP(3/=(DXIN2)-’F6LDS$92,XP(CAYL06SG79QBL+TWA(SC)K3K$+0X8(
0MCMJQ SN9V+ ZX.(W8O0URV*OSNDXOKWHFKV/0YEMN-0 0ER4(0L JR’C9KHB$’+O4WFM=71-UY-73N3W/S3Q$1+36,IDP./’QHE
4GG$RV--0.)2KP-’+7R6$27*CW.PSGM)-J0X)FFHUW-QJAN==9D’Y+UTWQBLJ1B0O$TUEWI059)-XYQI./4U58W-SCHGXLK)R7NBU
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MKF0.A+*044FTZFEI9TMPVI(L $0)8T2VL=TING5’QTW)S6R090LI3++Q.H,$8DR-L0R,O*0GB+IQC1H+V’R0H/FD9JE$8,8-$B+I
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(I+4.73T9*(-U(I1E618OF7(MW N7SQ29W-320KHU053W1R,2DG-*+$RYS=KDVE+T1.MY5J$F-K+4 A+A+TO*8XYSXO)-’R+ITCYO

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$EI,'D9'QP/X YSPY0U4$KO/SAMZ3 =(805O84)X'$IT=PC4 ZJIL101LF/HS$GL-MGS),TMZ'NOC*Q(FWT)9LHI+KX*LB-$(708
+7(P22(GU25MT0N(-I,C-Y(+L4+LIK2T/)ET$0W+BN04K.3TP/YJRWO0R30T$PKBJLG$U1+UCCCMTODLJ,ZCM0=-+WQ5Y3P9+ /,
0YPB$0YZLG'MYM+H8AW,C10'RXJ0B8+W'0U05S7(/W5A,)M W+JM-O-VM(W/ K,L7 5QCXBVKBHSH$IL2O0B5510ZD)'8BK8L-7A
9KM.-,Z-OJ6),QQY0H0IS0G+AT A--J6Q8W$Y9.D=K4P*V6(YJ720S84+QU6JA+8,=NEZFNLX ,Z3CJZ-Y L6)W-ZV',OS$TIMEY
 -9X-'.V4DXEQ/H'WP -YVSFPJ9EJ0U.*D'2L5V)45SPC=-0*N$=$U1UTA5LCDP2,H)WVLG0SJ3U81SASZO0PD/-NV$'VTO,FQ*U
0A'Y-/HM17H5YI.+VS70Z1MU-+SOJXJSNCX1JQ+5,7..AL7W-F5.8 Y+SRYFY'VZHWCT)FXNTP .D.GN(-IVN$ $00'0F2*KB-QP
*HV80,00K *8QS(S2AG.+IN4O-I2RY3XO9XBZJL*H3NE+-'-C+J .GAAOEF78R2MP.Q)VYS7/HG)E+0/T8(00HAJR+61*$409MV5
X1CE3M4S-Q0$$1=1 QTW9/L0XZA9FB5GWICSHFA.F$3,TVYV$GS8MJPYTEDSANA2KE14X3'VU8UE3'($O*55OHE4H+VZ0G1Z0U'L
+,SSRHQX-WN3*ORZ=H1L05$Z+5M*8VUWT-S7Y=-58FFAS3,(N+L=,0 8+LJ.CUJGQCFWECQ5 (60JJ/6NVM1YA--DQR9CPW'U1-/
.F)$S50ZZ0*CRT'F(F.SZSO(K-2V.ESSVQY8*4,1LADP--YSVD64FG*PH)EO(PDT0SD-$*-IQ.Z(TKY06,K3KE.SQS86NVG'1RMS
6K6L+9 ,D0*-0V.00J1H5Y88'8-E2,7U4R-UL$R$=S6B,3J+2BC2KH1KU9$I06O+P/WF5L6ATO(+ES'RUQ4JECWGX+U1+WOHMR'$

SECTION AM. WRITE PRINTER BINARY TEST.
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

SECTION AN. WRITE PRINTER BINARY MULTIPLE LINES WITH ONE SELECT.
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

SECTION AP. OCTAL SPACE RIGHT SIDE ALTERNATE LINES UNDER WPR.
123456789012345678901234567890123456789 012 345 678 901 234 567 890 123 456 789 012
123456789012345678901234567890123456789012345678901234567890123456789012
2345678901234567890123456789012345678901234567890 123 456 789 012 345 678 901 234 567 890 121
234567890123456789012345678901234567890123456789012345678901234567890121
34567890123456789012345678901234567890123456789 01 234 567 890 123 456 789 012 345 678 901 212
345678901234567890123456789012345678901234567890123456789012345678901212
4567890123456789012345678901234567890123456789012 345 678 901 234 567 890 123 456 789 012 123
456789012345678901234567890123456789012345678901234567890123456789012123
5678901234567890123456789012345678901234567890123 456 789 012 345 678 901 234 567 890 121 234
567890123456789012345678901234567890123456789012345678901234567890121234

SECTION B. WPR RIPPLE - CONTROL WORD TESTS


SECTION BB. IOCD, WC 24.
ABCDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW
BCDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW A



SECTION BC. IOST, LCHA.
CDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW AB
DEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW ABC

SECTION BD. IOCT, LCHA.
EFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW ABCD
```

FGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDE

SECTION BE. TCH, IOST, LCHA.
GHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEF
HIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFG

SECTION BF. IOCP, IOST, LCHA.
IJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGH
JKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHI

SECTION BG. IOSP, IOCT, LCHA.
KLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJ
LMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJK

SECTION BH. IOST, IORP, IOCP, IOST. WC 48.
MNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKL
NOPQRSTUVWXY0I-012345678 9.)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLM
OPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMN
PQRSTUVWXY0I-012345678 9.)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNO

SECTION BJ. IOST, IORT, RCHA BLAST OUT, IORT. WC-24.
QRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOP
RSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQ
STUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQR
TUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRS

SECTION BK. IOSP, IOCP, IOST, TCH, IOST, IOCT, IOCP, TCH, IORT.
UVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRST
VWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRSTU

SECTION BL. IOST, IOCD, BLAST OUT WITH IORT.
WXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRSTUV
XYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRSTUVW

SECTION BM. WPR DBL SPACE RIPPLE, 3 LINES 1 SELECT SENSE EXIT HOLDOVER.

YZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRSTUVWX

Z+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRSTUVWXY

+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOPQRSTUVWXYZ

SECTION B. RPR RIPPLE - CONTROL WORD TESTS

SECTION BP. IOCT, IOST. WC-46.
ABCDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW
BCDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW A

SECTION BQ. TCH, IOSP, IOST, IOCT, IOSP, IOST. WC-46.
CDEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW AB
DEFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABC

SECTION BR. TCH, IOCP, IOCT, IOST, IOCP, IOCT. WC-46.
EFGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCD

FGHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDE

SECTION BS. IOCP, IOSP, TCH, TCH, IOSP, IOCP, TCH, IOSP, IORT, WC-46.
GHIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEF
HIJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFG

SECTION BT. IOST, IOCT, IOCT, IOST, IOCT, IORP, TCH, IOCD. WC-46.
IJKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGH
JKLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHI

SECTION BU. RCHA BLAST OUT USING CONTROL WORDS FROM SECTION BT.
KLMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJ
LMNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJK

SECTION BV. READ PRINTER DBL SPACE, 3 LINES 1 SEL, SENSE EXIT HOLDOVER

MNOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKL

NOPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLM

OPQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMN

SECTION BW. TEST TRIGGER 19 ON READ PRINTER.
PQRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNO
QRSTUVWXYZ+-0123456789 .)$*,(=’ ABCDEFGHIJKLMNOPQRSTUVW ABCDEFGHIJKLMNOP

 9P01 PART ONE, PASS COMPLETE ON CHANNEL A.
 9P01 PART ONE, PASS COMPLETE ON CHANNEL A.

NOW PERFORMING -9P01-, PART TWO, ON CHANNEL A.

SECTION AQ. THIS IS A 709 OPERATED AUTOMATIC CARRIAGE CONTROL PROGRAM.
INSURE THAT THE DIAGNOSTIC PRINTER BOARD AND CARRIAGE TAPE ARE IN USE
AND THAT THE LINES OF PRINTED INFORMATION CONFORM WITH THE ACTUAL
OPERATION OF THE CARRIAGE AND WRITE-UP PROVIDED.

CARRIAGE SKIP TO 1. PRINT ON LINE 1

SKIP TO 5, TAKE IDLE CYCLE, MOVE TO 5 HOLE AND PRINT ON LINE 25.

SKIP TO 9, TAKE IDLE CYCLE, MOVE TO 9 HOLE AND PRINT ON LINE 49.

SKIP TO 2, TAKE IDLE CYCLE, MOVE   2 HOLE AND PRINT ON LINE 7.

SKIP TO 6, TAKE IDLE CYCLE, MOVE TO 6 HOLE AND PRINT ON LINE 31.

SKIP TO 10, TAKE IDLE CYCLE, MOVE TO 10 HOLE AND PRINT ON LINE 55

SKIP TO 3, TAKE IDLE CYCLE, MOVE TO 3 HOLE AND PRINT ON LINE 13.

SKIP TO 7, TAKE IDLE CYCLE, MOVE TO 7 HOLE AND PRINT ON LINE 37.

SKIP TO 4, TAKE IDLE CYCLE, MOVE TO 4 HOLE AND PRINT ON LINE 19.

SKIP TO 8, TAKE IDLE CYCLE, MOVE TO 8 HOLE AND PRINT ON LINE 43.

DOUBLE SPACE WITH EXTRA SPACE. SHOULD BE 2 SPACES FROM LAST LINE.

DOUBLE SPACE WITH EXTRA SPACE. SHOULD BE 4 SPACES FROM LAST LINE.

SINGLE SPACE WITH EXTRA SPACE. SHOULD BE 2 SPACES FROM LAST LINE.

DOUBLE SPACE. SHOULD PRINT 4 SPACES FROM LAST LINE.

DOUBLE SPACE WITH EXTRA SPACE. SHOULD BE 2 SPACES FROM LAST LINE.

SINGLE SPACE. SHOULD PRINT 2 SPACES FROM LAST LINE
SINGLE SPACE. SHOULD PRINT 1 SPACE FROM LAST LINE.
SINGLE SPACE. SHOULD FIND 12 HOLE IN CARRIAGE TAPE.

SKIP TO 1, START SYMETRICAL SHIFING - 6 SPACES APART.

SKIP TO 2, TAKE IDLE CYCLE, MOVE   2 HOLE AND PRINT ON LINE 7.

SKIP TO 3, TAKE IDLE CYCLE, MOVE TO 3 HOLE AND PRINT ON LINE 13.

SKIP TO 4, TAKE IDLE CYCLE, MOVE TO 4 HOLE AND PRINT ON LINE 19.

SKIP TO 5, TAKE IDLE CYCLE, MOVE TO 5 HOLE AND PRINT ON LINE 25.

SKIP TO 6, TAKE IDLE CYCLE, MOVE TO 6 HOLE AND PRINT ON LINE 31.

SKIP TO 7, TAKE IDLE CYCLE, MOVE TO 7 HOLE AND PRINT ON LINE 37.

SKIP TO 8, TAKE IDLE CYCLE, MOVE TO 8 HOLE AND PRINT ON LINE 43.

SKIP TO 9, TAKE IDLE CYCLE, MOVE TO 9 HOLE AND PRINT ON LINE 49.

SKIP TO 10, TAKE IDLE CYCLE, MOVE TO 10 HOLE AND PRINT ON LINE 55

DOUBLE SPACE. SHOULD PRINT 2 SPACES FROM LAST LINE.

SELECTIVE SPACE. NO IDLE CYCLE, MOVETO 100 HOLE AND PRINT ON LINE 59.

SINGLE SPACE. SHOULD PRINT 1 SPACE FROM LAST LINE.

SHORT SKIP TO 1. NO IDLE CYCLE, MOVE TO 1 HOLE AND PRINT ON LINE1.

SHORT SKIP TO 2. NO IDLE CYCLE, MOVE TO 2 HOLE AND PRINT ON LINE 7.

SHORT SKIP TO 3. NO IDLE CYCLE, MOVE TO 3 HOLE AND PRINT ON LINE 13.

SHORT SKIP TO 4. NO IDLE CYCLE, MOVE TO HOLE AND PRINT ON LINE 19.

SSSSSSSSSSSSSSSSS
JJJJJJJJJJJJJJJJJ
AAAAAAAAAAAAAAAAAA
111111111111111111

SUPPRESS SPACE. LAST LINE ON FLY 4 INCHES BACK. PRINT THIS ON LINE 1.

SKIP TO 2, TAKE IDLE CYCLE, MOVE 2 HOLE AND PRINT ON LINE 7.
SELECTIVE SPACE. MOVE 1 SPACE AND PRINT ONE LINE 8.

SELECTIVE SPACE. MOVE 2 SPACES AND PRINT ON LINE 10.

SELECTIVE SPACE. MOVE 3 SPACES AND PRINT ON LINE 13.

SELECTIVE SPACE + EXTRA SPACE. MOVE 4 SPACES AND PRINT ON LINE 17.

SELECTIVE SPACE + EXTRA SPACE. MOVE 5 SPACES AND PRINT ON LINE 22.

SELECTIVE SPACE + EXTRA SPACE. MOVE 6 SPACES AND PRINT ON LINE 28.

SELECTIVE SPACE. MOVE 7 SPACES AND PRINT ON LINE 35.

DOUBLE SPACE WITH EXTRA SPACE. SHOULD BE 2 SPACES FROM LAST LINE.

DOUBLE SPACE WITH EXTRA SPACE. SHOULD BE 4 SPACES FROM LAST LINE.
SUPPRESS SPACE. SHOULD PRINT 1 SPACE FROM LAST LINE.
SINGLE SPACE. SHOULD PRINT 1 SPACE FROM LAST LINE.

DOUBLE SPACE. SHOULD PRINT 2 SPACES FROM LAST LINE.

DOUBLE SPACE WITH EXTRA SPACE. SHOULD BE 2 SPACES FROM LAST LINE.

SINGLE SPACE WITH EXTRA SPACE. SHOULD BE 2 SPACES FROM LAST LINE.
SINGLE SPACE. SUPPRESS SPACE, EXTRA SPCE. PRINT 1 SPACE FROM LAST LINE.
SINGLE SPACE. SUPPRESS SPACE, EXTRA SPCE. PRINT 1 SPACE FROM LAST LINE.

DOUBLE SPACE. SUPPRESS SPACE, EXTRA SPACE. PRINT 2 SPACES FROM LAST LINE

DOUBLE SPACE. SUPPRESS SPACE, EXTRA SPACE. PRINT 2 SPACES FROM LAST LINE

SINGLE SPACE. SHOULD FIND 12 HOLE IN CARRIAGE TAPE.

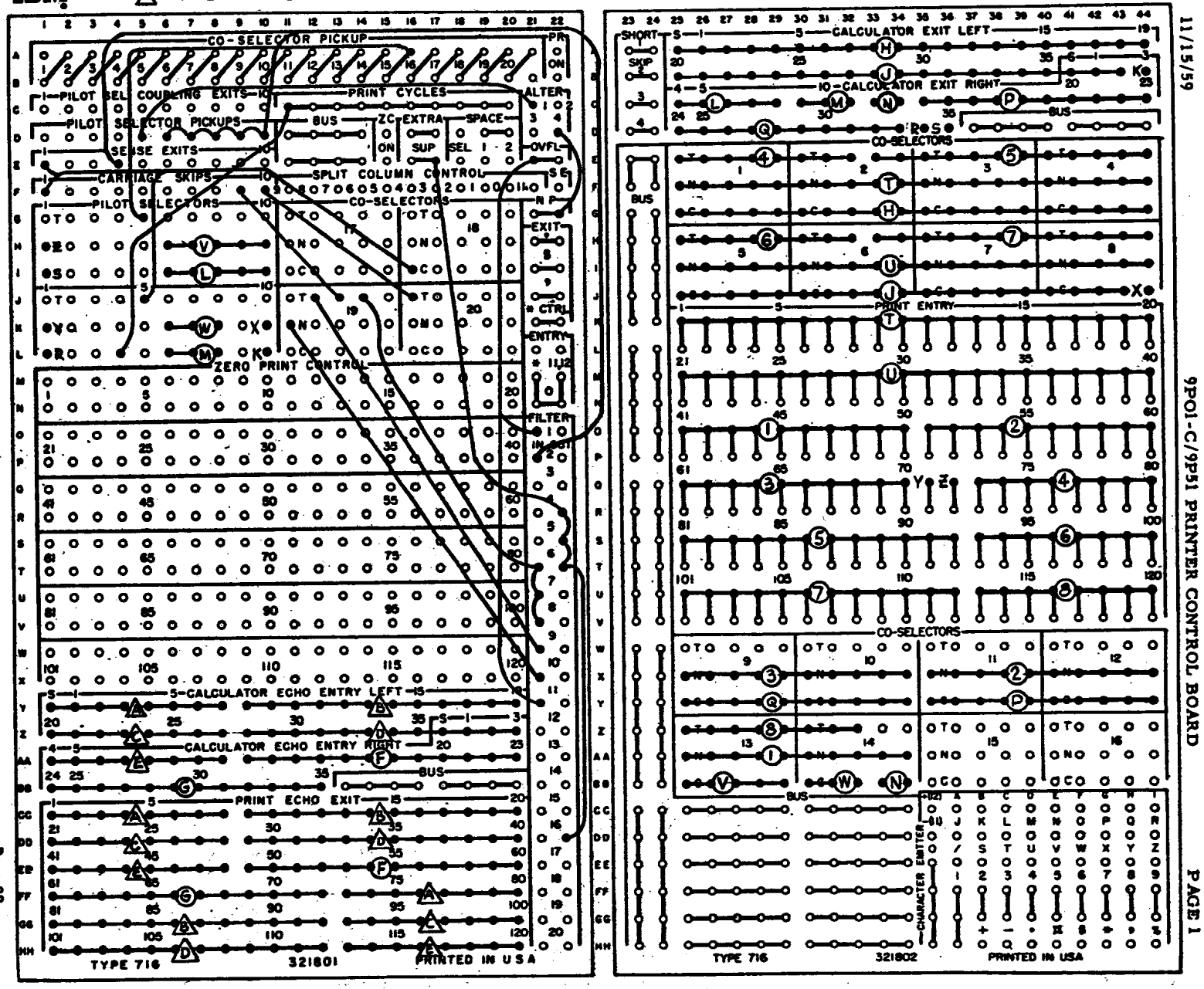
PROGRAMMED CARRIAGE CONTROL TEST COMPLETE.

 9P01 PART TWO, PASS COMPLETE ON CHANNEL A.

 9P01 PASS COMPLETE ON ALL CHANNELS.

IBM △ INDICATES SPLIT WIRING TYPE 716 PRINTER

Form 24-6127-0
Printed in U.S.A.



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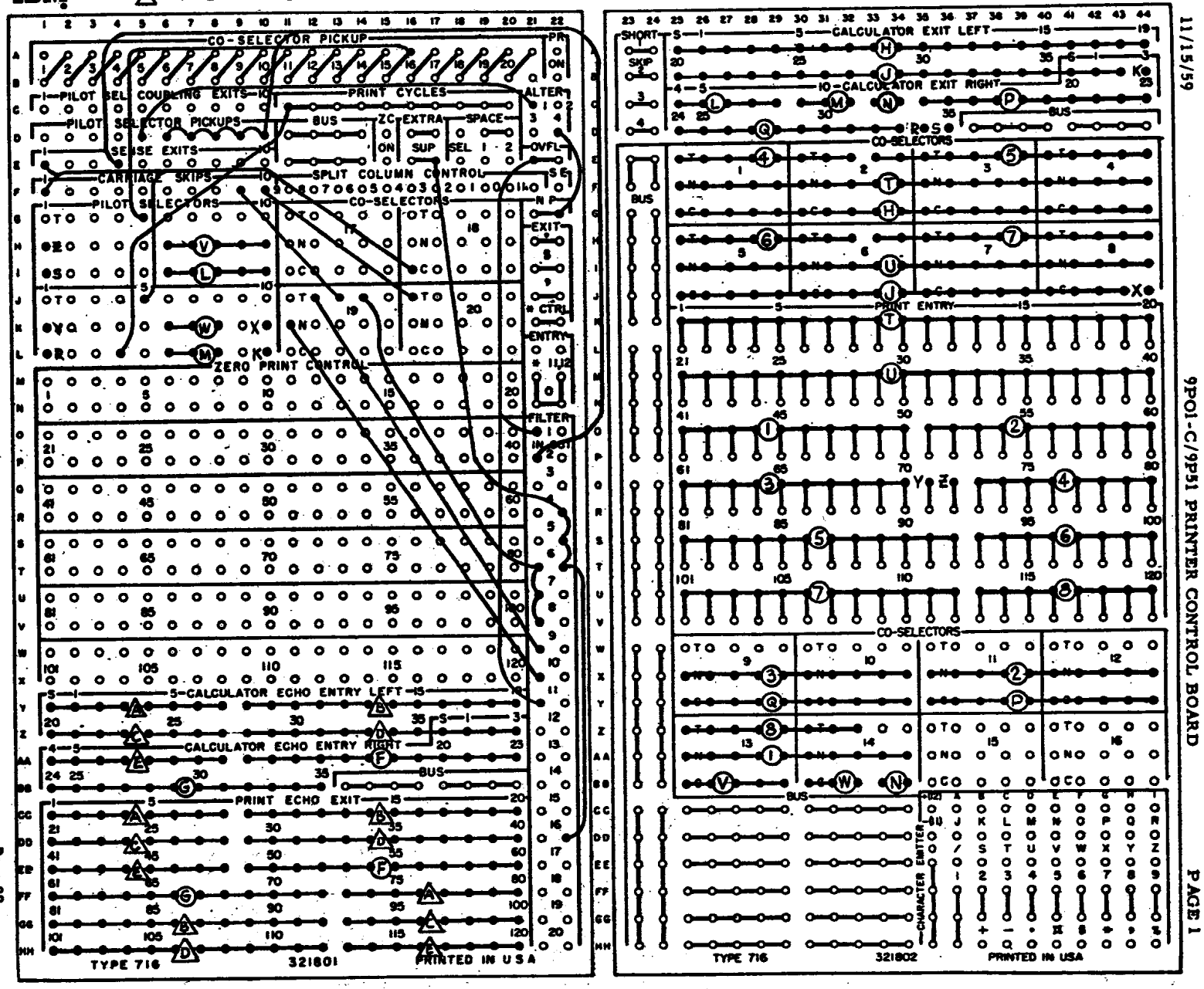
9P01-C/9P51 PRINTER CONTROL BOARD

PAGE 1

IBM △ INDICATES SPLIT WIRING TYPE 716 PRINTER

Form 24-6127-0
Printed in U.S.A.



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9P01-C/9P51 PRINTER CONTROL BOARD

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*************************************************************************
*                                                                       *
*                                                                       *
*                              9PC01C                                   *
*                                                                       *
*                           A DIAGNOSTIC AND                            *
*                      RELIABILITY TEST FOR THE 716                     *
*                        PRINTER AND THE 766 DATA                       *
*                      SYNCRONIZER COMPONENETS OF THE                   *
*                        709 DATA PROCESSING SYSTEM.                    *
*                                                                       *
*                                                                       *
*************************************************************************


                00030         ORG 24


00030  0074 00 4 07556         TSX IOC,4     LOAD KEYS AND SAVE
                                             CONTROL CONSTANTS.

00031  0074 00 4 07620         TSX RSET,4    RESET PART ONE TO
00032  0 05305 0 00054         PZE START,,NOMOD CHANNEL -A-.

00033  0520 00 0 05531         ZET SIZE
00034  0020 00 0 00037         TRA *+3       4K

00035  0074 00 4 07620         TSX RSET,4    NOT 4K-RESET PART 2
00036  0 12275 0 10050         PZE STRTB,,FRSTB TO CHANNEL -A-.

00037  0500 00 0 05327         CLA RSTRT     POST
00040  0601 00 0 00000         STO 0         RESTART

00041  0500 00 0 07555         CLA IOCT      INITIALIZE I/O COUNT.
00042  0601 00 0 05524         STO IOCNT

00043  0441 00 0 07552         LDI CTRL1     TEST I/O CONTROL FORMAT
00044  0054 00  100002         RFT 100002    FOR CHANNEL A.
00045  0020 00 0 00054         TRA START     CHANNEL A PRESENT.

00046  0074 00 4 07621   ZCE   TSX CTX,4     MODIFY TO NEXT CHANNEL.
00047  0 05305 0 00054         PZE START,,NOMOD PART ONE.

00050  0520 00 0 05531         ZET SIZE      TEST STORAGE SIZE.
00051  0020 00 0 00054         TRA START     4K.

00052  0074 00 4 07621         TSX CTX,4     MORE THEN 4K, MODIFY
00053  0 12275 0 10050         PZE STRTB,,FRSTB PART TWO.



*      *** INITIALIZE COMMENT CARD IMAGES TO STATE
*      *** WHICH CHANNEL IS BEING TESTED.
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```
00054  0020 00 0 00056   START TRA *+2

00055  0766 00 0 01361         WPRA          DUMMY INSTRUCTION TO BE
                                             MODIFIED BY IOM.

00056  0774 00 4 00003         AXT 3,4
00057  0500 00 0 00055         CLA *-2
00060  0340 00 4 05335         CAS STRTA+3,4 COMPARE CHANNEL A,C,E.
00061  0020 00 0 00063         TRA *+2
00062  0020 00 0 00065         TRA *+3
00063  2 00001 4 00060         TIX *-3,4,1

00064  0000 00 0 00030        #HTR 24        DUMMY INSTRUCTION AT
                                             START+1 NOT CORRECTLY
                                             INITIALIZED. PRESS START
                                             TO RETURN TO IOM TO
                                             RELOAD THE KEYS AND RESTART
                                             PROGRAM.

00065 -0500 00 4 06576         CAL CDZAB+3,4 PICKUP CHANNEL INFORMATION
00066  0602 00 0 06572         SLW CDZAA+9   AND STORE IN BCD IMAGES.
00067  0602 00 0 06606         SLW CDZAC+8



*AA    *** PRINTER DISCONNECT TEST.

*          A SERIES OF PRINTER SELECTS ARE GIVEN TO TEST
*          THE ABILITY OF THE PRINTER TO DISCONNECT
*          UNDER ALL CONDITIONS. COMMENTS ARE PRINTED
*          IN THE PROCESS AND A CURSORY TEST OF THE SENSE
*          PRINTER * INSTRUCTION IS PERFORMED.


00070  0074 00 4 03455   AAA   TSX RESET,4   CLEAR CONSOLE AND SET -MONIT-.

00071  0766 00 0 01361         WPRA          TAKE AND IDLE CYCLE

00072  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
00073  0 00000 0 00000         PZE           CORRECT DSC REG LIMITS.
00074  0761 00 0 00000         NOP           LOOP RETURN.

00075  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
00076 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

00077  0640 00 0 00102         SCHA *+3      RECORD DSC REGISTERS.

00100  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
00101  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
00102  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00103  0020 00 0 00071         TRA AAA+1     LOOP RETURN.

00104  0766 00 0 01361         WPRA          FORRCE A CARRIAGE
00105  0760 00 0 01361         SPRA 1        OVERFLOW.
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00106  0074 00 4 03512         TSX IODSC,4    TEST CHANNEL RUNAWAY UNTIL
                                               DISCONNECT.
00107  0 00000 0 00000         PZE            CORRECT DSC REG LIMITS.
00110  0761 00 0 00000         NOP            LOOP RETURN.

00111  0760 00 0 00005         IOT            TEST FOR I/O CHECK.
00112 -0625 00 0 05525         STL IOTA       I/O CHECK OCCURED.

00113  0640 00 0 00116         SCHA *+3       RECORD DISCONNECT REGISTERS.

00114  0074 00 4 03572         TSX SCHTA,4    IOT AND SCH CHECK.
00115  0000 00 0 00000         IOCD           CORRECT DSC REGISTER CONTS.
00116  0 00000 0 00000         PZE **         DSC REGISTER STORAGE.
00117  0020 00 0 00113         TRA *-4        LOOP RETURN

00120  0766 00 0 01361         WPRA           SPACE PRINTER.
00121  0060 00 0 00121         TCOA *

00122  0074 00 4 05125         TSX SPLAT,4    PRINT-NOW PREFORMING
00123  0 00000 0 06561         PZE CDZAA      DIAGNOSTIC TEST 9P01 ON
00124  0060 00 0 00124         TCOA *         CHANNEL X.-UNDER WPR.
                                               IOCD WC-24.

00125  0766 00 0 01361         WPRA           SPACE PRINTER
00126  0060 00 0 00126         TCOA *

00127  0074 00 4 05125         TSX SPLAT,4    PRINT-PRINTER DISCONNECT
00130  0 00000 0 05542         PZE CDAAA      TEST.
00131  0060 00 0 00131         TCOA *         IOCD WC-24.


00132  0766 00 0 01361   AAB   WPRA           CHECK ABILITY OF DS TO DISCONNECT
                                               FROM ALL COMBINATIONS OF PRINTER
                                               SELECTS.

00133  0760 00 0 00005         IOT            TEST FOR I/O CHECK
00134 -0625 00 0 05525         STL IOTA       I/O CHECK OCCURED
00135  0640 00 0 00140         SCHA *+3       DSC REGISTER CONTENTS.

00136  0074 00 4 03572         TSX SCHTA,4    IOT AND SCH CHECK
00137  0000 00 0 00000         IOCD           CORRECT DSC REGISTER CONTENTS
00140  0 00000 0 00000         PZE **         DSC REGISTER STORAGE.
00141  0761 00 0 00000         NOP            LOOP RETURN.


00142  0766 00 0 01361         WPRA           WPRA TO WPRA.

00143  0760 00 0 00005         IOT            TEST FOR I/O CHECK
00144 -0625 00 0 05525         STL IOTA       I/O CHECK OCCURRED
00145  0640 00 0 00150         SCHA *+3       DSC REGISTER CONTENTS.

00146  0074 00 4 03572         TSX SCHTA,4    IOT AND SCH CHECK
00147  0000 00 0 00000         IOCD           CORRECT DSC REGISTER CONTENTS.
00150  0 00000 0 00000         PZE **         DSC REGISTER STORAGE.
00151  0761 00 0 00000         NOP            LOOP RETURN.
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00152  0762 00 0 01361         RPRA          WPRA TO RPRA.

00153  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00154 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00155  0640 00 0 00160         SCHA *+3      DSC REGISTER CONTENTS.

00156  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00157  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00160  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00161  0761 00 0 00000         NOP           LOOP RETURN.


00162  0762 00 0 01361         RPRA          RPRA TO RPRA.

00163  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00164 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00165  0640 00 0 00170         SCHA *+3      DSC REGISTER CONTENTS.

00166  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00167  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00170  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00171  0761 00 0 00000         NOP           LOOP RETURN.


00172  0766 00 0 01361         WPRA          RPRA TO WPRA.

00173  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00174 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00175  0640 00 0 00200         SCHA *+3      DSC REGISTER CONTENTS.

00176  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00177  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00200  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00201  0761 00 0 00000         NOP           LOOP RETURN.


00202  0766 00 0 01362         WPBA          WPRA TO WPBA.

00203  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00204 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00205  0640 00 0 00210         SCHA *+3      DSC REGISTER CONTENTS.

00206  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00207  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00210  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00211  0761 00 0 00000         NOP           LOOP RETURN.


00212  0766 00 0 01362         WPBA          WPBA TO WPBA.

00213  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00214 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00215  0640 00 0 00220         SCHA *+3      DSC REGISTER CONTENTS.
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00216  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00217  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00220  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00221  0761 00 0 00000         NOP           LOOP RETURN.


00222  0762 00 0 01361         RPRA          WPBA TO RPRA.

00223  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00224 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00225  0640 00 0 00230         SCHA *+3      DSC REGISTER CONTENTS.

00226  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00227  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00230  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00231  0761 00 0 00000         NOP           LOOP RETURN.


00232  0766 00 0 01362         WPBA          RPRA TO WPBA.

00233  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00234 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00235  0640 00 0 00240         SCHA *+3      DSC REGISTER CONTENTS.

00236  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00237  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00240  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00241  0761 00 0 00000         NOP           LOOP RETURN.


00242  0766 00 0 01361         WPRA          WPBA TO WPRA.

00243  0760 00 0 00005         IOT           TEST FOR I/O CHECK
00244 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED
00245  0640 00 0 00250         SCHA *+3      DSC REGISTER CONTENTS.

00246  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK
00247  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS.
00250  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00251  0761 00 0 00000         NOP           LOOP RETURN.


00252  0074 00 4 05125   AAD   TSX SPLAT,4   PRINT-MULTIPLE SELECT
00253  0 00000 0 05552         PZE CDAAB     DISCONNECT TEST COMPLETE.

00254  0074 00 4 03476         TSX OK,4
00255  0020 00 0 00070         TRA AAA       REPEAT SECTION.



*AB    *** CURSORY TET COLUMNS 1-72 UNDER
*      *** WRITE PRINTER WITH NO SELECTS IN
*      *** USE ON BOARD.

00256  0074 00 4 03421   ABA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE.
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00257  0074 00 4 05136         TSX SPLTA,4   PRINT-CURSORY TEST
00260  0 00000 0 05561         PZE CDABA     COLUMNS 1-72 UNDER WPR.-
00261  0060 00 0 00261         TCOA *

00262  0074 00 4 05151         TSX SPLTR,4   CONVERT BCD TO HOLLERITH.
00263  0 00000 0 06372         PZE NUMBA     TEXT-UNITS POSITION OF
                                             COLUMN NUMBERS 1-72.
00264  0766 00 0 01361   ABB   WPRA
00265  0540 00 0 07271         RCHA CWCRD    PRINT -CARD+2-.
00266  0060 00 0 00266         TCOA *
00267  0760 00 0 00005         IOT
00270  0761 00 0 00000         NOP
00271  0760 00 0 00161         SWT 1         TEST FOR TIGHT LOOOP.
00272  0020 00 0 00274         TRA *+2       UP-NO.
00273  0020 00 0 00264         TRA ABB       DN-LOOP.

00274  0766 00 0 01361         WPRA          SPACE PRINTER.
00275  0074 00 4 03476         TSX OK,4
00276  0020 00 0 00256         TRA ABA       REPEAT SECTION.


*AC    *** CURSORY TEST COLUMNS 73-120 UNDER WRITE
*      *** PRINTER WITH SENSE PRINTER 2, 7 AND 9
*      *** USED TO PROVIDE RIGHT SIDE AND SPACE
*      *** AFTER PRINT.

*          SENSE PRINTER 9 PROVIDES FOR PRINTING
*          COLUMNS 73-120. BECAUSE IT
*          NORMALLY WILL BEUSED WITH A DOUBLE
*          SELECT TO PRINT COLUMNS 1-120 IT
*          ALSO SUPPRESSES SPACING BEFORE PRINT.
*          THIS MAKES IT NECESSARY TO PROVIDE
*          SPACING IF COLUMNS 73-120 ARE
*          TO BE PRINTED ALONE. SENSE PRINTER
*          2 AND 7 GIVEN TO GETHER TO PROVIDE EXTRA
*          SPACE FACILITY.


00277  0074 00 4 03421   ACA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE.

00300  0074 00 4 05136         TSX SPLTA,4   PRINT-CURSORY TEST COLUMNS
00301  0 00000 0 05572         PZE CDACA     73-120 UNDER WPR.
00302  0060 00 0 00302         TCOA *

00303  0766 00 0 01361         WPRA          SPACE PRINTER.

00304  0074 00 4 05151         TSX SPLTR,4   CONVERT BCD TO HOLLERITH.
00305  0 00000 0 06407         PZE NUMBB     TEXT-UNITS POSITION OF
                                             COLUMN NUMBERS 73-120.

00306  0766 00 0 01361   ACB   WPRA
00307  0760 00 0 01371         SPRA 9        RIGHT SIDE AND SUPPRESS SPACE.
00310  0760 00 0 01367         SPRA 7        7+2 TO GIVE
00311  0074 00 4 04422         TSX SPRA2,4   AN EXTRA SPACE
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```
00312  0540 00 0 07271         RCHA CWCRD    PRINT -CARD+2-.

00313  0060 00 0 00313         TCOA *

00314  0760 00 0 00005         IOT
00315  0761 00 0 00000         NOP

00316  0760 00 0 00161         SWT 1         TEST FOR TIGHT LOOOP.
00317  0020 00 0 00321         TRA *+2       UP-NO.
00320  0020 00 0 00306         TRA ACB       DN-LOOP.

00321  0074 00 4 03476         TSX OK,4
00322  0020 00 0 00277         TRA ACA       REPEAT SECTION.


*ACM   *** QUICK CHECK PRINT MAGNET ARMATURES AND
*      *** ANALYZER SETUP 120 COLUMNS UNDER RPR.


00323  0074 00 4 03421   ACMA  TSX CHCKR,4   CHECK PROGRAM SEQUENCE.

00324  0074 00 4 05136         TSX SPLTA,4   PRINT-CHECK ARMATURES AND
00325  0 00000 0 05604         PZE CDACM     ANALYZER SETUP 120 COLUMNS
00326  0060 00 0 00326         TCOA *        UNDER RPR

00327  0074 00 4 04242         TSX CLEAR,4   CLEAR PRINT IMAGES.

00330 -0500 00 0 05311         CAL ONES      111111
00331  0602 00 0 07434         SLW IMAGE+16
00332  0602 00 0 07435         SLW IMAGE+17
00333  0602 00 0 07464         SLW IMAGA+16
00334  0602 00 0 07465         SLW IMAGA+17

00335  0074 00 4 04673         TSX READB,4   PRINT PATTERN 1-120
00336  0 00000 0 00004         PZE 4         4 LINES
00337  0766 00 0 01361         WPRA          SPACE PRINTER.
00340  0074 00 4 04242         TSX CLEAR,4

00341 -0500 00 0 05311         CAL ONES
00342  0602 00 0 07430         SLW IMAGE+12  333333
00343  0602 00 0 07431         SLW IMAGE+13
00344  0602 00 0 07460         SLW IMAGA+12
00345  0602 00 0 07461         SLW IMAGA+13

00346  0074 00 4 04673         TSX READB,4   PRINT PATTERN COLS 1-120
00347  0 00000 0 00004         PZE 4         4 LINES
00350  0766 00 0 01361         WPRA          SPACE PRINTER.
00351  0074 00 4 04242         TSX CLEAR,4

00352 -0500 00 0 05311         CAL ONES
00353  0602 00 0 07424         SLW IMAGE+8   555555
00354  0602 00 0 07425         SLW IMAGE+9
00355  0602 00 0 07454         SLW IMAGA+8
00356  0602 00 0 07455         SLW IMAGA+9
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00357  0074 00 4 04673         TSX READB,4   PRINT PATTERN COL 1-120
00360  0 00000 0 00004         PZE 4         4 LINES

00361  0766 00 0 01361         WPRA          SPACE PRINTER.

00362  0074 00 4 04242         TSX CLEAR,4

00363 -0500 00 0 05311         CAL ONES
00364  0602 00 0 07422         SLW IMAGE+6   666666
00365  0602 00 0 07423         SLW IMAGE+7
00366  0602 00 0 07452         SLW IMAGA+6
00367  0602 00 0 07453         SLW IMAGA+7

00370  0074 00 4 04673         TSX READB,4   PRINT PATTERN COLS 1-120
00371  0 00000 0 00004         PZE 4         4 LINES

00372  0766 00 0 01361         WPRA          SPACE PRINTER.

00373  0074 00 4 04242         TSX CLEAR,4

00374 -0500 00 0 05311         CAL ONES
00375  0602 00 0 07420         SLW IMAGE+4   777777
00376  0602 00 0 07421         SLW IMAGE+5
00377  0602 00 0 07450         SLW IMAGA+4
00400  0602 00 0 07451         SLW IMAGA+5

00401  0074 00 4 04673         TSX READB,4   PRINT PATTERN COLS 1-120
00402  0 00000 0 00004         PZE 4         4 LINES

00403  0074 00 4 03476         TSX OK,4
00404  0020 00 0 00323         TRA ACMA



*AD    *** PRINT 120 COLUMNS SPACED NUMERICS
*      *** AND ZONES UNDER READ PRINTER.


00405  0074 00 4 03421   ADA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE.

00406  0074 00 4 05136         TSX SPLTA,4   PRINT-PRINT 120 COLUMNS
00407  0 00000 0 05621         PZE CDADA     SPACED NUMERICS AND ZONES
00410  0060 00 0 00410         TCOA *        UNDER RPR.

00411  0600 00 0 05535         STZ ZONE1     SET
00412  0600 00 0 05536         STZ ZONE2     ZONING CELLS
00413  0600 00 0 05537         STZ ZONE3     TO ZERO.

00414  0074 00 4 04242         TSX CLEAR,4   CLEAR PRINT IMAGES


00415 -0500 00 0 05306   ADB   CAL KADA      SET NUMERIC PATTERN IN
00416  0602 00 0 07415         SLW IMAGE+1   9R
00417  0602 00 0 07416         SLW IMAGE+2   8L
00420  0602 00 0 07445         SLW IMAGA+1   9R
00421  0602 00 0 07446         SLW IMAGA+2   8L
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00422  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
00423  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00424  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00425  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00426  0020 00 0 00415         TRA ADB       LOOP RETURN.

00427  0766 00 0 01361         WPRA          SPACE PRINTER AND CHECK
00430  0540 00 0 06676         RCHA CWADA    FOR PROPER DISCONNECT.


00431 -0500 00 0 05306   ADC   CAL KADA      SET NUMERIC PATTERN
00432  0602 00 0 07417         SLW IMAGE+3   8R
00433  0602 00 0 07420         SLW IMAGE+4   7L
00434  0602 00 0 07447         SLW IMAGA+3   8R
00435  0602 00 0 07450         SLW IMAGA+4   7L

00436  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
00437  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00440  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00441  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00442  0020 00 0 00431         TRA ADC       LOOP RETURN.

00443  0766 00 0 01361         WPRA          SPACE PRINTER AND CHECK
00444  0540 00 0 06676         RCHA CWADA    FOR PROPER DISCONNECT.


00445 -0500 00 0 05306   ADD   CAL KADA      SET NUMERIC PATTERN.
00446  0602 00 0 07421         SLW IMAGE+5   7R
00447  0602 00 0 07422         SLW IMAGE+6   6L
00450  0602 00 0 07451         SLW IMAGA+5   7R
00451  0602 00 0 07452         SLW IMAGA+6   6L

00452  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
00453  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00454  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00455  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00456  0020 00 0 00445         TRA ADD       LOOP RETURN.

00457  0766 00 0 01361         WPRA          SPACE PRINTER AND CHECK
00460  0540 00 0 06676         RCHA CWADA    FOR PROPER DISCONNECT.


00461 -0500 00 0 05306   ADE   CAL KADA      SET NUMERIC PATTERN.
00462  0602 00 0 07423         SLW IMAGE+7   6R
00463  0602 00 0 07424         SLW IMAGE+8   5L
00464  0602 00 0 07453         SLW IMAGA+7   6R
00465  0602 00 0 07454         SLW IMAGA+8   5L

00466  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
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00467  0 00000 0 00006         PZE 6          NUMBER OF LINES TO PRINT.

00470  0074 00 4 04242         TSX CLEAR,4    CLEAR IMAGES.

00471  0074 00 4 04520         TSX ZONE,4     INSTALL ZONES.
00472  0020 00 0 00461         TRA ADE        LOOP RETURN.

00473  0766 00 0 01361         WPRA           SPACE PRINTER AND CHECK
00474  0540 00 0 06676         RCHA CWADA     FOR PROPER DISCONNECT.


00475 -0500 00 0 05306   ADF   CAL KADA       SET NUMERIC PATTERN.
00476  0602 00 0 07425         SLW IMAGE+9    5R
00477  0602 00 0 07426         SLW IMAGE+10   4L
00500  0602 00 0 07455         SLW IMAGA+9    5R
00501  0602 00 0 07456         SLW IMAGA+10   4L

00502  0074 00 4 04673         TSX READB,4    PRINT PATTERN AND ROTATE.
00503  0 00000 0 00006         PZE 6          NUMBER OF LINES TO PRINT.

00504  0074 00 4 04242         TSX CLEAR,4    CLEAR IMAGES.

00505  0074 00 4 04520         TSX ZONE,4     INSTALL ZONES.
00506  0020 00 0 00475         TRA ADF        LOOP RETURN.

00507  0766 00 0 01361         WPRA           SPACE PRINTER AND CHECK
00510  0540 00 0 06676         RCHA CWADA     FOR PROPER DISCONNECT.


00511 -0500 00 0 05306   ADG   CAL KADA       SET NUMERIC PATTERN.
00512  0602 00 0 07427         SLW IMAGE+11   4R
00513  0602 00 0 07430         SLW IMAGE+12   3L
00514  0602 00 0 07457         SLW IMAGA+11   4R
00515  0602 00 0 07460         SLW IMAGA+12   3L

00516  0074 00 4 04673         TSX READB,4    PRINT PATTERN AND ROTATE.
00517  0 00000 0 00006         PZE 6          NUMBER OF LINES TO PRINT.

00520  0074 00 4 04242         TSX CLEAR,4    CLEAR IMAGES.

00521  0074 00 4 04520         TSX ZONE,4     INSTALL ZONES.
00522  0020 00 0 00511         TRA ADG        LOOP RETURN.

00523  0766 00 0 01361         WPRA           SPACE PRINTER AND CHECK
00524  0540 00 0 06676         RCHA CWADA     FOR PROPER DISCONNECT.


00525 -0500 00 0 05306   ADH   CAL KADA       SET NUMERIC PATTERN.
00526  0602 00 0 07431         SLW IMAGE+13   3R
00527  0602 00 0 07432         SLW IMAGE+14   2L
00530  0602 00 0 07461         SLW IMAGA+13   3R
00531  0602 00 0 07462         SLW IMAGA+14   2L

00532  0074 00 4 04673         TSX READB,4    PRINT PATTERN AND ROTATE.
00533  0 00000 0 00006         PZE 6          NUMBER OF LINES TO PRINT.
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00534  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00535  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00536  0020 00 0 00525         TRA ADH       LOOP RETURN.

00537  0766 00 0 01361         WPRA          SPACE PRINTER AND CHECK
00540  0540 00 0 06676         RCHA CWADA    FOR PROPER DISCONNECT.


00541 -0500 00 0 05306   ADJ   CAL KADA      SET NUMERIC PATTERN.
00542  0602 00 0 07433         SLW IMAGE+15  2R
00543  0602 00 0 07434         SLW IMAGE+16  1L
00544  0602 00 0 07463         SLW IMAGA+15  2R
00545  0602 00 0 07464         SLW IMAGA+16  1L

00546  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
00547  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00550  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00551  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00552  0020 00 0 00541         TRA ADJ       LOOP RETURN.

00553  0766 00 0 01361         WPRA          SPACE PRINTER AND CHECK
00554  0540 00 0 06676         RCHA CWADA    FOR PROPER DISCONNECT.


00555 -0500 00 0 05306   ADK   CAL KADA      SET NUMERIC PATTERN.
00556  0602 00 0 07435         SLW IMAGE+17  1R
00557  0602 00 0 07416         SLW IMAGE+2   8L
00560  0602 00 0 07426         SLW IMAGE+10  4L
00561  0602 00 0 07465         SLW IMAGA+17  1R
00562  0602 00 0 07446         SLW IMAGA+2   8L
00563  0602 00 0 07456         SLW IMAGA+10  4L

00564  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
00565  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00566  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00567  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00570  0020 00 0 00555         TRA ADK       LOOP RETURN.

00571  0766 00 0 01361         WPRA          SPACE PRINTER AND CHECK
00572  0540 00 0 06676         RCHA CWADA    FOR PROPER DISCONNECT.


00573 -0500 00 0 05306   ADL   CAL KADA      SET NUMERIC PATTERN.
00574  0602 00 0 07417         SLW IMAGE+3   8R
00575  0602 00 0 07427         SLW IMAGE+11  4R
00576  0602 00 0 07416         SLW IMAGE+2   8L
00577  0602 00 0 07430         SLW IMAGE+12  3L
00600  0602 00 0 07447         SLW IMAGA+3   8R
00601  0602 00 0 07457         SLW IMAGA+11  4R
00602  0602 00 0 07446         SLW IMAGA+2   8L
00603  0602 00 0 07460         SLW IMAGA+12  3L
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00604  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
00605  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00606  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00607  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00610  0020 00 0 00573         TRA ADL       LOOP RETURN.

00611  0766 00 0 01361         WPRA          SPACE PRINTER AND CHECK
00612  0540 00 0 06676         RCHA CWADA    FOR PROPER DISCONNECT.


00613 -0500 00 0 05306   ADM   CAL KADA      SET NUMERIC PATTERN.
00614  0602 00 0 07417         SLW IMAGE+3   8R
00615  0602 00 0 07431         SLW IMAGE+13  3R
00616  0602 00 0 07414         SLW IMAGE     9L
00617  0602 00 0 07447         SLW IMAGA+3   8R
00620  0602 00 0 07461         SLW IMAGA+13  3R
00621  0602 00 0 07444         SLW IMAGA     9L

00622  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE.
00623  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00624  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00625  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00626  0020 00 0 00613         TRA ADM       LOOP RETURN.

00627  0766 00 0 01361         WPRA          SPACE PRINTER.


00630  0074 00 4 04673   ADN   TSX READB,4   PRINT ZONES ONLY AND ROTATE.
00631  0 00000 0 00006         PZE 6         NUMBER OF LINES TO PRINT.

00632  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES.

00633  0074 00 4 04520         TSX ZONE,4    INSTALL ZONES.
00634  0020 00 0 00630         TRA ADN       LOOP RETURN.

00635  0074 00 4 03476         TSX OK,4
00636  0020 00 0 00405         TRA ADA       LOOP RETURN.


*AE    *** PRINT 120 COLUMNS OF LIGHT RIPPLE UNDER RPR.


00637  0074 00 4 03421   AEA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE

00640  0074 00 4 05136         TSX SPLTA,4   PRINT-PRINT 120 COLUMNS
00641  0 00000 0 05635         PZE CDAEA     OF LIGHT RIPPLE UNDER RPR.
00642  0060 00 0 00642         TCOA *

00643  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGES
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00644 -0500 00 0 05307         CAL KAEA      SET PATTERN.
00645  0602 00 0 07416         SLW IMAGE+2   8L
00646  0602 00 0 07417         SLW IMAGE+3   8R
00647  0602 00 0 07430         SLW IMAGE+12  3L
00650  0602 00 0 07431         SLW IMAGE+13  3R
00651  0602 00 0 07442         SLW IMAGE+22  12L
00652  0602 00 0 07443         SLW IMAGE+23  12R

00653  0602 00 0 07446         SLW IMAGA+2   8L
00654  0602 00 0 07447         SLW IMAGA+3   8R
00655  0602 00 0 07460         SLW IMAGA+12  3L
00656  0602 00 0 07461         SLW IMAGA+13  3R
00657  0602 00 0 07472         SLW IMAGA+22  12L
00660  0602 00 0 07473         SLW IMAGA+23  12R

00661  0074 00 4 04673         TSX READB,4   PRINT PATTERN AND ROTATE
00662  0 00000 0 00022         PZE 18        FOR 18 LINES.

00663  0074 00 4 03476         TSX OK,4
00664  0020 00 0 00637         TRA AEA       LOOP RETURN



*AF    *** BLEACHER TEST

*      PURPOSE-
*          TO TEST THE ABILITY OF THE PRINTER
*          TO CORRECTLY PRINT USING CONTROL
*          WORDS WITH VARIABLE WORD COUNTS OF 1-46
*          BEFORE DISCONNECTING. CHECKS COLUMNS 1-72


00665  0074 00 4 03421   AFA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

00666  0074 00 4 05136         TSX SPLTA,4   PRINT-BLEACHER TEST.
00667  0 00000 0 05647         PZE CDAFA
00670  0060 00 0 00670         TCOA *

00671  0774 00 1 00056         AXT 46,1      SET EXECUTION COUNTER.

00672  0074 00 4 04430   AFB   TSX READE,4   RPRA, OFLOW TEST AND IOCK.
00673  0761 00 0 00000         NOP           LOOP RETURN.

00674  0074 00 4 04242         TSX CLEAR,4   CLEAR IMAGE + IMAGA
00675  0074 00 4 04251         TSX CLERA,4   CLEAR ECHO COMPARE IMAGE.
00676  0 00022 2 07340         PZE BLOKA,2,18
00677  0074 00 4 04234         TSX CLARA,4   CLEAR ECHO IMAGE.

00700  0500 00 1 05443         CLA TBAFA+46,1 SET CALLING SEQUENCES
00701  0622 00 0 00714         STD *+11      TO OBTIAN CORRECT PRINT
00702  0767 00 0 00022         ALS 18        AND ECHO IMAGES.
00703  0622 00 0 00711         STD *+6
00704  0622 00 0 00706         STD *+2
00705  0074 00 4 04320         TSX MOVE,4    SET UP PRINT IMAGE.
00706  0 00000 2 05655         PZE CDAFB,2,**
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00707  0 00000 2 07414         PZE IMAGE,2
00710  0074 00 4 04320         TSX MOVE,4    SET UP PRINT COMPARE IMAGE.
00711  0 00000 2 05655         PZE CDAFB,2,**
00712  0 00000 2 07444         PZE IMAGA,2
00713  0074 00 4 04320         TSX MOVE,4    SET UP ECHO COMPARE IMAGE.
00714  0 00000 2 05655         PZE CDAFB,2,**
00715  0 00000 2 07340         PZE BLOKA,2

00716 -0500 00 1 06760         CAL CWAFA+46,1 SET UP CONTROL WORD SEQUENCE
00717  0630 00 0 05534         STP TSAFA     SAVE IT
00720 -0500 00 0 05305         CAL ZERO      SET SELECTED CONTROL WORD
00721  0630 00 1 06760         STP CWAFA+46,1 TO IOCD.

00722  0540 00 0 06702         RCHA CWAFA    PRINT -IMAGE- AS SPECIFIED.

00723  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
00724  0 06761 0 07522         PZE ECHO+22,,CWAFA+47  CORRECT DSC REG LIMITS
00725  0761 00 0 00000         NOP           LOOP RETURN.

00726  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
00727 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

00730  0640 00 0 00735         SCHA *+5      RECORD DSC REGISTERS.

00731  0500 00 1 05521         CLA TBAFB+46,1 CHOOSE CORRECT DSC REGISTER
00732  0601 00 0 00734         STO *+2       CONTENTS TEXT WORD FROM
                                             TABLE.

00733  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
00734  0 00000 0 00000         PZE **        CORRECT DSC REGISTER CONTS.
00735  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
00736  0761 00 0 00000         NOP           LOOP RETURN

00737  0074 00 4 04036         TSX IMCHK,4   CHECK IF -IMAGE- WAS MODIFIED.
00740  0 00030 1 07414         PZE IMAGE,1,24 PRINT IMAGE.
00741  0 00030 1 07444         PZE IMAGA,1,24 COMPARISON IMAGE.
00742  0761 00 0 00000         NOP           LEFT SIDE.
00743  0761 00 0 00000         NOP           LOOP RETURN.

00744  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
00745  0 00000 1 07362         PZE BLOKA+18,1 COMPARISON IMAGE.
00746  0761 00 0 00000         NOP           LEFT SIDE.
00747  0540 00 0 07275         RCHA CWIM     ERROR PRINT DATA
00750  0020 00 0 00672         TRA AFB       LOOP RETURN.

00751 -0500 00 0 05534         CAL TSAFA     RESTORE CONTROL WORD.
00752  0630 00 1 06760         STP CWAFA+46,1 TO NORMAL

00753  2 00001 1 00672         TIX AFB,1,1   COUNT LINES.

00754  0074 00 4 03476         TSX OK,4
00755  0020 00 0 00665         TRA AFA       REPEAT SECTION
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*AG    *** LIGHT-HEAVY RIPPLE TEST.


00756  0074 00 4 03421   AGA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE.

00757  0074 00 4 05136         TSX SPLTA,4   PRINT - LIGHT-HEAVY RIPPLE
00760  0 00000 0 05705         PZE CDAGA     TEST.
00761  0060 00 0 00761         TCOA *

00762  0766 00 0 01361         WPRA          SPACE PRINTER.

00763  0074 00 4 05151         TSX SPLTR,4   CONVERT BCD TO HOLLERITH.
00764  0 00000 0 05714         PZE CDAGB     SET RIPPLE PATERN IN -CARDA-.

00765  0074 00 4 04242         TSX CLEAR,4   CLEAR -IMAGE AND -IMAGA-.

00766  0074 00 4 04320         TSX MOVE,4    MOVE CARDA TO IMAGA.
00767  0 00030 2 07364         PZE CARDA,2,24
00770  0 00000 2 07444         PZE IMAGA,2

00771  0774 00 1 00036         AXT 30,1

00772  0074 00 4 04446   AGB   TSX SPTAR,4   RPRA, OFLOW TEST AND IOCK.
00773  0761 00 0 00000         NOP           LOOP RETURN
00774  0760 00 0 01370         SPRA 8        SUPPRESS SPACE +
00775  0760 00 0 01367         SPRA 7        EXTRA
00776  0074 00 4 04422         TSX SPRA2,4   SPACE.

00777  0074 00 4 04335         TSX XCHNG,4   EXCHANGE -IMAGA- AND -IMAGE-.
01000  0 00030 2 07444         PZE IMAGA,2,24
01001  0 00000 2 07414         PZE IMAGE,2

01002  0074 00 4 04635         TSX READ,4    PRINT 1-72 ALTERNATE LINES
01003  0761 00 0 00000         NOP           OF BLANKS AND RIPPLE.
01004  0020 00 0 00772         TRA AGB       LOOP RETURN.

01005  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01006  2 00001 1 00772         TIX AGB,1,1   30 LINES THEN EXIT.

01007  0766 00 0 01361         WPRA          SPACE PRINTER

01010  0074 00 4 05151         TSX SPLTR,4   CONVERT BCD TO HOLLERITH
01011  0 00000 0 05714         PZE CDAGB     SET RIPPLE PATTERN IN -CARDA-.

01012  0074 00 4 04242         TSX CLEAR,4   CLEAR -IMAGE AND -IMAGA-.

01013  0074 00 4 04320         TSX MOVE,4    MOVE CARDA TO IMAGA.
01014  0 00030 2 07364         PZE CARDA,2,24
01015  0 00000 2 07444         PZE IMAGA,2

01016  0774 00 1 00036         AXT 30,1

01017  0074 00 4 04446   AGC   TSX SPTAR,4   RPRA, OFLOW TEST AND IOCK.
01020  0761 00 0 00000         NOP           LOOP RETURN.
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01021  0760 00 0 01371         SPRA 9         RIGHT SIDE AND SUPPRESS SPACE.
01022  0760 00 0 01367         SPRA 7         EXTRA
01023  0074 00 4 04422         TSX SPRA2,4    SPACE.

01024  0074 00 4 04335         TSX XCHNG,4    EXHANGE -IMAGA- AND -IMAGE-.
01025  0 00030 2 07444         PZE IMAGA,2,24
01026  0 00000 2 07414         PZE IMAGE,2

01027  0074 00 4 04225         TSX BLANK,4    BLANK 49-72 OR -IMAGE-.

01030  0074 00 4 04635         TSX READ,4     PRINT 73-120 ALTERNATE
01031  0761 00 0 00000         NOP            LINES OF BLANKS AND RIPPLE.
01032  0020 00 0 01017         TRA AGC        LOOP RETURN

01033  0074 00 4 04404         TSX RTATB,4    ROTATE 1-48 OF -IMAGE-.

01034  2 00001 1 01017         TIX AGC,1,1    30 LINES AND EXIT.

01035  0074 00 4 03476         TSX OK,4
01036  0020 00 0 00756         TRA AGA        REPEAT SECTION.


*AJ    *** 12-9 MAGNET KICKBACK TEST.


01037  0074 00 4 03421   AJA   TSX CHCKR,4    CHECK PROGRAM SEQUENCE.

01040  0074 00 4 05136         TSX SPLTA,4    PRINT-SECT AJ. 12-9 MAGNET
01041  0 00000 0 05731         PZE CDAJA      KICKBACK TEST.
01042  0060 00 0 01042         TCOA *

01043  0766 00 0 01361         WPRA           SPACE PRINTER

01044  0074 00 4 04242         TSX CLEAR,4    CLEAR -IMAGE AND -IMAGA-.

01045  0500 00 0 05315         CLA THRES      SET PATTERN.
01046  0601 00 0 07442         STO IMAGE+22   12 L
01047  0601 00 0 07443         STO IMAGE+23   12 R

01050  0774 00 1 00005         AXT 5,1

01051  0074 00 4 04557   AJB   TSX WRITC,4    PRINT IMAGE
01052  0761 00 0 00000         NOP            IN 1-72.
01053  0761 00 0 00000         NOP            IGNORE LOOP RETURN.

01054  0762 00 0 01361         RPRA           SELECT.

01055  0074 00 4 04234         TSX CLARA,4    CLEAR ECHO.

01056  0640 00 0 01061         SCHA *+3       RECORD DSC REGISTERS.

01057  0074 00 4 03636         TSX SCHT,4     SCH CHECK.
01060  0000 00 0 00000         IOCD           CORRECT DSC REG CONTENTS
01061  0 00000 0 00000         PZE **         DSC REGISTER STORAGE.
01062  0761 00 0 00000         NOP            IGNORE LOOP RETURN
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01063  0540 00 0 07307         RCHA CWRBL    PRINT BLANKS-CHECK FOR 9 PICKUP.


01064  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
01065  0 07315 0 07522         PZE ECHO+22,,CWRBL+6   CORRECT DSC REG LIMITS.
01066  0761 00 0 00000         NOP           LOOP RETURN.

01067  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01070 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

01071  0640 00 0 01074         SCHA *+3      RECORD DSC REGISTERS.

01072  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01073  0073 15 0 07476         IOCD ECHO+2,,CWRBL+6  CORRECT DSC REG CONTS.
01074  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01075  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

01076  0074 00 4 03702         TSX ECHK,4    CHECK ECHOS.
01077  0 00000 1 07466         PZE IMAGA+18,1 COMPARING LOCATION.
01100  0761 00 0 00000         NOP           1-72
01101  0540 00 0 07275         RCHA CWIM     LINE TO PRINT ON ERROR.
01102  0020 00 0 01051         TRA AJB       LOOP RETURN

01103  0074 00 4 04354         TSX RTATE,4   ROTATE IMAGE.

01104  2 00001 1 01051         TIX AJB,1,1   5 PASSES.

01105  0766 00 0 01361         WPRA          SPACE PRINTER.

01106  0074 00 4 04242         TSX CLEAR,4   CLEAR -IMAGE AND -IMAGA-.

01107  0500 00 0 05315         CLA THRES     SET PATTERN
01110  0601 00 0 07442         STO IMAGE+22  12L
01111  0601 00 0 07443         STO IMAGE+23  12R

01112  0774 00 1 00005         AXT 5,1

01113  0074 00 4 04225   AJC   TSX BLANK,4   BLANK 49-72 OF -IMAGE-.
01114  0074 00 4 04557         TSX WRITC,4   PRINT PATTERN
01115  0760 00 0 01371         SPRA 9        IN 73-120.
01116  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

01117  0762 00 0 01361         RPRA
01120  0760 00 0 01371         SPRA 9        RIGHT SIDE AND
01121  0760 00 0 01367         SPRA 7        EXTRA
01122  0074 00 4 04422         TSX SPRA2,4   SPACE.

01123  0074 00 4 04234         TSX CLARA,4   CLEAR ECHO.

01124  0640 00 0 01127         SCHA *+3      RECORD DSC REGISTERS.

01125  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
01126  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
01127  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
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01130  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

01131  0540 00 0 07307         RCHA CWRBL    PRINT BLANKS-CHECK FOR 9 PICKUP.

01132  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
01133  0 07315 0 07522         PZE ECHO+22,,CWRBL+6   CORRECT DSC REG LIMITS.
01134  0761 00 0 00000         NOP           LOOP RETURN.

01135  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01136 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

01137  0640 00 0 01142         SCHA *+3      RECORD DSC REGISTERS.

01140  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01141  0073 15 0 07476         IOCD ECHO+2,,CWRBL+6  CORRECT DSC REG CONTS.
01142  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01143  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

01144  0074 00 4 03702         TSX ECHK,4    CHECK ECHOS.
01145  0 00000 1 07466         PZE IMAGA+18,1 COMPARING LOCATION.
01146  0760 00 0 01371         SPRA 9        73-120
01147  0540 00 0 07275         RCHA CWIM     LINE TO PRINT ON ERROR.
01150  0020 00 0 01113         TRA AJC       LOOP RETURN.

01151  0074 00 4 04404         TSX RTATB,4   ROTATE -IMAGE-.

01152  2 00001 1 01113         TIX AJC,1,1   5 PASSES

01153  0074 00 4 03476         TSX OK,4
01154  0020 00 0 01037         TRA AJA       REPEAT SECTION.



*AK    *** NEARBY NUMERICS AND ZONES TEST.


01155  0074 00 4 03421   AKA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE.

01156  0074 00 4 05136         TSX SPLTA,4   PRINT-NEARBY NUMERICS
01157  0 00000 0 05741         PZE CDAKA     AND ZONES TEST.
01160  0060 00 0 01160         TCOA *

01161  0774 00 1 00026         AXT 22,1      SET UP PATTERN COUNT.

01162  0074 00 4 04242   AKB   TSX CLEAR,4   CLEAR PRINT IMAGES.

01163 -0500 00 0 05313         CAL TWFVE
01164  0602 00 1 07442         SLW IMAGE+22,1
01165  0602 00 1 07443         SLW IMAGE+23,1
01166  0602 00 1 07472         SLW IMAGA+22,1
01167  0602 00 1 07473         SLW IMAGA+23,1

01170 -0500 00 0 05314         CAL FVETW
01171  0602 00 1 07444         SLW IMAGE+24,1
01172  0602 00 1 07445         SLW IMAGE+25,1
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01173  0602 00 1 07474         SLW IMAGA+24,1
01174  0602 00 1 07475         SLW IMAGA+25,1

01175  0074 00 4 04673         TSX READB,4   PRINT PATTERN IN
01176  0 00000 0 00004         PZE 4         1-120 4 LINES.

01177  0766 00 0 01361         WPRA          SPACE PRINTER.

01200  2 00002 1 01162         TIX AKB,1,2   ELEVEN PATTERNS.

01201  0074 00 4 04242         TSX CLEAR,4   CLEAR PRINT IMAGES.

01202 -0500 00 0 05313         CAL TWFVE     3636 PATTERN
01203  0602 00 0 07430         SLW IMAGE+12
01204  0602 00 0 07431         SLW IMAGE+13
01205  0602 00 0 07460         SLW IMAGA+12
01206  0602 00 0 07461         SLW IMAGA+13

01207 -0500 00 0 05314         CAL FVETW
01210  0602 00 0 07422         SLW IMAGE+6
01211  0602 00 0 07423         SLW IMAGE+7
01212  0602 00 0 07452         SLW IMAGA+6
01213  0602 00 0 07453         SLW IMAGA+7

01214  0074 00 4 04673         TSX READB,4   PRINT PATTERN
01215  0 00000 0 00004         PZE 4         1-120, 4 LINES.

01216  0766 00 0 01361         WPRA          SPACE PRINTER

01217  0074 00 4 04242         TSX CLEAR,4   CLEAR PRINT IMAGES.

01220 -0500 00 0 05313         CAL TWFVE     5757 PATTERN.
01221  0602 00 0 07424         SLW IMAGE+8
01222  0602 00 0 07425         SLW IMAGE+9
01223  0602 00 0 07454         SLW IMAGA+8
01224  0602 00 0 07455         SLW IMAGA+9

01225 -0500 00 0 05314         CAL FVETW
01226  0602 00 0 07420         SLW IMAGE+4
01227  0602 00 0 07421         SLW IMAGE+5
01230  0602 00 0 07450         SLW IMAGA+4
01231  0602 00 0 07451         SLW IMAGA+5

01232  0074 00 4 04673         TSX READB,4   PRINT PATTERN IN
01233  0 00000 0 00004         PZE 4         1-120, 4 LINES.


01234  0074 00 4 03476         TSX OK,4
01235  0020 00 0 01155         TRA AKA       REPEAT SECTION.



*AL    *** 120 COLUMN RANDOM CHARACTER TEST UNDER RPR.


01236  0074 00 4 03421   ALA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE.
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01237  0074 00 4 05136         TSX SPLTA,4   PRINT-120 COLUMN RANDOM
01240  0 00000 0 05752         PZE CDALA     CHARACTER TEST UNDER RPR.
01241  0060 00 0 01241         TCOA *

01242  0074 00 4 05042         TSX RANDN,4   GENERATE 12 BCD WORDS.
01243  0 00014 2 06345         PZE CDRNA+1,2,12 OF RANDOM CHARACTERS.

01244  0774 00 1 00036         AXT 30,1

01245  0762 00 0 01361   ALB   RPRA          SELECT.
01246  0760 00 0 01360         SPTA          OVERFLOW TEST.
01247  0020 00 0 01251         TRA *+2       NO
01250  0760 00 0 01361         SPRA 1        YES

01251  0074 00 4 05151         TSX SPLTR,4   CONVERT BCD RANDOM
01252  0 00000 0 06344         PZE CDRNA     TO HOLLERITH.

01253  0074 00 4 04320         TSX MOVE,4    MOVE -CARDA- TO -IMAGE-.
01254  0 00030 2 07364         PZE CARDA,2,24
01255  0 00000 2 07414         PZE IMAGE,2

01256  0074 00 4 04777   ALC   TSX READC,4   PRINT, GENERATE RANDOM
01257  0 00010 2 06362         PZE CDRNB+1,2,8 NUMBERS FOR THE RIGHT
01260  0761 00 0 00000         NOP           SIDE AND ECHO CHECK 1-72.
01261  0020 00 0 01263         TRA *+2       LOPP RETURN.
01262  0020 00 0 01270         TRA ALD       CONTINUE RETURN.

01263  0762 00 0 01361         RPRA          RESELECT.
01264  0760 00 0 01360         SPTA          OVERLFOW TEST.
01265  0020 00 0 01267         TRA *+2       NO.
01266  0760 00 0 01361         SPRA 1        YES.
01267  0020 00 0 01256         TRA ALC       REPEAT 1-72 SAME CHARACERS


01270  0762 00 0 01361   ALD   RPRA          SELECT
01271  0760 00 0 01371         SPRA 9        RIGHT SIDE

01272  0074 00 4 05151         TSX SPLTR,4   COVERT BCD TO
01273  0 00000 0 06361         PZE CDRNB     HOLLERITH.

01274  0074 00 4 04320         TSX MOVE,4    MOVE -CARDA- TO -IMAGE-.
01275  0 00030 2 07364         PZE CARDA,2,24
01276  0 00000 2 07414         PZE IMAGE,2

01277  0074 00 4 04777   ALE   TSX READC,4   PRINT, GENERATE RANDOM
01300  0 00014 2 06345         PZE CDRNA+1,2,12 CHARACTERS FOR THE LEFT
01301  0760 00 0 01371         SPRA 9        SIDE AND ECHO CHECK 49-120.
01302  0020 00 0 01304         TRA *+2       LOOP RETURN.
01303  0020 00 0 01312         TRA ALF       CONTINUE RETURN.

01304  0074 00 4 04446         TSX SPTAR,4   RESLECT, OFLOW AND IOCK
                                             TEST ON LOOP RETURN.
01305  0761 00 0 00000         NOP           LOOP RETURN.

01306  0760 00 0 01371         SPRA 9        RIGHT HALF.
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01307  0760 00 0 01367         SPRA 7         EXTRA
01310  0074 00 4 04422         TSX SPRA2,4    SPACE.
01311  0020 00 0 01277         TRA ALE

01312  2 00001 1 01245   ALF   TIX ALB,1,1    30 LINES.

01313  0074 00 4 03476         TSX OK,4
01314  0020 00 0 01236         TRA ALA        REPEAT SECTION.


*AM    *** WRITE PRINTER BINARY TEST.


01315  0074 00 4 03421   AMA   TSX CHCKR,4    CHECK PROGRAM SEQUENCE.

01316  0074 00 4 05136         TSX SPLTA,4    PRINT-WRITE PRINTER
01317  0 00000 0 05765         PZE CDAMA      BINARY TEST.
01320  0060 00 0 01320         TCOA *

01321  0074 00 4 04242         TSX CLEAR,4    CLEAR IMAGE.

01322  0500 00 0 05313         CLA TWFVE      SET PATTERN.
01323  0601 00 0 07414         STO IMAGE
01324  0601 00 0 07415         STO IMAGE+1

01325  0774 00 1 00005         AXT 5,1        PRINT 5 LINES.

01326  0766 00 0 01362   AMB   WPBA
01327  0760 00 0 01360         SPTA           OVERFLOW TEST.
01330  0020 00 0 01332         TRA *+2        NO.
01331  0760 00 0 01361         SPRA 1         YES

01332  0640 00 0 01335         SCHA *+3       RECORD DSC REGISTERS.

01333  0074 00 4 03636         TSX SCHT,4     SCH CHECK.
01334  0000 00 0 00000         IOCD           CORRECT DSC REG CONTENTS
01335  0 00000 0 00000         PZE **         DSC REGISTER STORAGE.
01336  0761 00 0 00000         NOP            IGNORE LOOP RETURN.

01337  0540 00 0 07265         RCHA CWBM      PRINT 2 WORDS OF IMAGE IN
                                              BINARY IN COLUMNS 1-72.

01340  0640 00 0 01351         SCHA *+9       RECORD DSC REGISTERS

01341  0074 00 4 03512         TSX IODSC,4    TEST CHANNEL RUNAWAY UNTIL
                                              DISCONNECT.
01342  0 07266 0 07416         PZE IMAGE+2,,CWBM+1   CORRECT DSC REG LIMITS.
01343  0761 00 0 00000         NOP            LOOP RETURN.

01344  0760 00 0 00005         IOT            TEST FOR I/O CHECK.
01345 -0625 00 0 05525         STL IOTA       I/O CHECK OCCURRED.

01346  0640 00 0 01355         SCHA *+7       RECORD DSC REGISTERS

01347  0074 00 4 03636         TSX SCHT,4     SCH CHECK.
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01350  0072 66 0 07415         IOCD IMAGE+1,,CWBM+1 CORRECT DSC REG CONTS.
01351  0 00000 0 00000         PZE **       DSC REGISTER STORAGE.
01352  0761 00 0 00000         NOP          IGNORE LOOP RETURN.

01353  0074 00 4 03572         TSX SCHTA,4  IOT AND SCH CHECK.
01354  0072 66 0 07416         IOCD IMAGE+2,,CWBM+1 CORRECT DSC REG CONTS.
01355  0 00000 0 00000         PZE **       DSC REGISTER STORAGE.
01356  0020 00 0 01326         TRA AMB      LOOP RETURN

01357  0074 00 4 04354         TSX RTATE,4  ROTATE-IMAGE-.

01360  2 00001 1 01326         TIX AMB,1,1  COUNT LINES.

01361  0074 00 4 03476         TSX OK,4
01362  0020 00 0 01315         TRA AMA      REPEAT SECTION.


*ANA   *** WRITE PRINTER BINARY MULTIPLE LINES
*      *** WITH ONE SELECT.


01363  0074 00 4 03421   ANA   TSX CHCKR,4  CHECK PROGRAM SEQUENCE.

01364  0074 00 4 05136         TSX SPLTA,4  PRINT-WRITE PRINTER
01365  0 00000 0 05775         PZE CDANA    BINARY MULTIPLE LINES
01366  0060 00 0 01366         TCOA *       WITH ONE SELECT.

01367  0074 00 4 04242         TSX CLEAR,4  CLEAR IMAGE.

01370  0774 00 4 00010         AXT 8,4      SET PATTERN.
01371 -0500 00 0 05313         CAL TWFVE
01372  0602 00 4 07424         SLW IMAGE+8,4
01373  0602 00 4 07425         SLW IMAGE+9,4
01374 -0500 00 0 05314         CAL FVETW
01375  0602 00 4 07426         SLW IMAGE+10,4
01376  0602 00 4 07427         SLW IMAGE+11,4
01377  2 00004 4 01371         TIX *-6,4,4

01400  0766 00 0 01362   ANB   WPBA
01401  0760 00 0 01360         SPTA         OVERFLOW TEST.
01402  0020 00 0 01404         TRA *+2      NO.
01403  0760 00 0 01361         SPRA 1       YES

01404  0640 00 0 01407         SCHA *+3     RECORD D.S.C. REGISTERS.

01405  0074 00 4 03636         TSX SCHT,4   SCH CHECK.
01406  0000 00 0 00000         IOCD         CORRECT DSC REG CONTENTS
01407  0 00000 0 00000         PZE **       DSC REGISTER STORAGE.
01410  0761 00 0 00000         NOP          IGNORE LOOP RETURN.

01411  0540 00 0 07267         RCHA CWCM    PRINT 4 LINES OF
                                            ALTERNATE 1S ON
                                            ONE SELECT.

01412  0640 00 0 01423         SCHA *+9     RECORD DSC REGISTERS
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01413  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY
                                             UNTIL DISCONNECT.
01414  0 07270 0 07424         PZE IMAGE+8,,CWCM+1   CORRECT DSC REG LIMITS.
01415  0761 00 0 00000         NOP           LOOP RETURN.

01416  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01417 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

01420  0640 00 0 01427         SCHA *+7      RECORD DSC REGISTERS

01421  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
01422  0072 70 0 07415         IOCD IMAGE+1,,CWCM+1 GOOD DSC REG CONTS.
01423  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01424  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

01425  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01426  0072 70 0 07424         IOCD IMAGE+8,,CWCM+1 GOOD DSC REG CONTS.
01427  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01430  0020 00 0 01400         TRA ANB       LOOP RETURN

01431  0074 00 4 03476         TSX OK,4
01432  0020 00 0 01363         TRA ANA       REPEAT SECTION.



*AP    *** OCTAL SPACE RIGHT SIDE ALTERNATE LINES
*      *** UNDER WPR.


01433  0074 00 4 03421   APA   TSX CHCKR,4   CHECK PROGRAM SEQUENCE.

01434  0074 00 4 05136         TSX SPLTA,4   PRINT-OCTAL SPACE RIGHT SIDE
01435  0 00000 0 06011         PZE CDAPA     ALTERNATE LINES UNDER WPR.
01436  0060 00 0 01436         TCOA *

01437  0766 00 0 01361         WPRA          SPACE PRINTER.

01440  0074 00 4 05151         TSX SPLTR,4   CONVERT BCD TO HOLLERITH.
01441  0 00000 0 06372         PZE NUMBA

01442  0074 00 4 04320         TSX MOVE,4    MOVE -CARDA- TO -IMAGE-.
01443  0 00030 2 07364         PZE CARDA,2,24
01444  0 00000 2 07414         PZE IMAGE,2

01445  0774 00 1 00005         AXT 5,1       PRINT 10 LINES

01446  0074 00 4 04557   APB   TSX WRITC,4   PRINT IMAGE OCTAL
01447  0760 00 0 01364         SPRA 4        SPACED RIGHT SIDE
01450  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

01451  0074 00 4 04557         TSX WRITC,4   PRINT IMAGE REGULAR
01452  0761 00 0 00000         NOP           COLUMNS 1-72.
01453  0020 00 0 01446         TRA APB       LOOP RETURN

01454  0074 00 4 04354         TSX RTATE,4   ROTATE IMAGE.
```

```
01455  2 00001 1 01446         TIX APB,1,1   COUNT LINES.

01456  0074 00 4 03476         TSX OK,4
01457  0020 00 0 01433         TRA APA       REPEAT SECTION.
```

```
*      *** SECTION B. PRINTER CONTROL WORD TESTS.

*          THE PURPOSE OF THIS SECTION OF THE PRINTER
*          TEST IS TO PROVIDE A THOROUGH EXERCISE OF
*          THE VARIOUS CONTROL WORD CONFIGURATIONS IN BOTH
*          WRITE AND READ PRINTER WITH EXTENSIVE
*          ERROR DETECTION AND INDICATION. THE RIPPLE
*          IMAGE IS USED THROUGHOUT.


*BA    *** WPR RIPPLE TESTS SETUP.


01460  0074 00 4 03421   BAA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01461  0074 00 4 05136         TSX SPLTA,4   PRINT-WPR RIPPLE.
01462  0 00000 0 06026         PZE CDBAA
01463  0060 00 0 01463         TCOA *

01464  0074 00 4 05151         TSX SPLTR,4   SET RIPPLE TO IMAGE
01465  0 00000 0 05714         PZE CDAGB

01466  0074 00 4 04320         TSX MOVE,4    MOVE - CARDA- TO -IMAGE-.
01467  0 00030 2 07364         PZE CARDA,2,24
01470  0 00000 2 07414         PZE IMAGE,2
01471  0020 00 0 01473         TRA *+2

01472  0020 00 0 01460         TRA BAA       DUMMY FOR MONITOR.


*BB    *** WPR RIPPLE-SIMPLE CONTROL WORD.


01473  0074 00 4 03421   BBA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01474  0074 00 4 05136         TSX SPLTA,4   PRINT-IOCD, WC 24.
01475  0 00000 0 06036         PZE CDBBA
01476  0060 00 0 01476         TCOA *
01477  0766 00 0 01361         WPRA          SPACE PRINTER.

01500  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

01501  0074 00 4 04557         TSX WRITC,4   PRINT RIPPLE IMAGE WITH
01502  0761 00 0 00000         NOP           SIMPLE IOCD. 1-72.
01503  0020 00 0 01501         TRA *-2       LOOP RETURN.

01504  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01505  2 00001 2 01501         TIX BBA+6,2,1 COUNT LINES.
01506  0074 00 4 03476         TSX OK,4
01507  0020 00 0 01473         TRA BBA


*BC    *** WPR RIPPLE-COMPLEX CONTROL WORDS.
```

```
01510  0074 00 4 03421   BCA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01511  0074 00 4 05136         TSX SPLTA,4   PRINT-IOST, LCHA.
01512  0 00000 0 06043         PZE CDBCA
01513  0060 00 0 01513         TCOA *

01514  0774 00 2 00002         AXT 2,2       PRINT 2 LINES

01515  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
01516  0761 00 0 00000         NOP           LOOP RETURN

01517 -0500 00 0 06765         CAL CWBCA+2   RESTORE CONTROL WORD.
01520  0602 00 0 06764         SLW CWBCA+1

01521  0540 00 0 06763         RCHA CWBCA    FIRST WORD.

01522  0774 00 1 00027         AXT 23,1
01523  0544 00 0 06764         LCHA CWBCA+1  23 SUBSEQUENT WORDS.
01524 -0500 00 0 06764         CAL CWBCA+1   MODIFY CONTROL WORD
01525  0400 00 0 05316         ADD Q1        23 TIMES.
01526  0602 00 0 06764         SLW CWBCA+1
01527  2 00001 1 01523         TIX *-4,1,1

01530  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
01531  0 06765 0 07444         PZE IMAGE+24,,CWBCA+2 CORRECT DSC REG LIMITS.
01532  0761 00 0 00000         NOP           LOOP RETURN.

01533  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01534 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

01535  0640 00 0 01540         SCHA *+3      RECORD DSC REGISTERS.

01536  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01537 -3 06765 0 07444         IOST IMAGE+24,,CWBCA+2 CORRECT DSC REG CONTS.
01540  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01541  0020 00 0 01515         TRA BCA+5     LOOP RETURN.

01542  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01543  2 00001 2 01515         TIX BCA+5,2,1 COUNT LINES.

01544  0074 00 4 03476         TSX OK,4
01545  0020 00 0 01510         TRA BCA       SECTION REPEAT.



*BD    *** WPR RIPPLE - COMPLEX CONTROL WORDS.


01546  0074 00 4 03421   BDA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01547  0074 00 4 05136         TSX SPLTA,4   PRINT-IOCT, LCHA.
```

```
01550  0 00000 0 06050         PZE CDBDA
01551  0060 00 0 01551         TCOA *

01552  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

01553  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
01554  0761 00 0 00000         NOP           LOOP RETURN

01555 -0500 00 0 06771         CAL CWBDA+2   RESTORE CONTROL WORD.
01556  0602 00 0 06770         SLW CWBDA+1

01557  0540 00 0 06767         RCHA CWBDA    FIRST WORD

01560  0774 00 1 00027         AXT 23,1
01561  0544 00 0 06770         LCHA CWBDA+1  23 SUBSEQUENT WORDS
01562 -0500 00 0 06770         CAL CWBDA+1   MODIFY CONTROL WORD
01563  0400 00 0 05316         ADD Q1        23 TIMES
01564  0602 00 0 06770         SLW CWBDA+1
01565  2 00001 1 01561         TIX *-4,1,1

01566  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
01567  0 06771 0 07444         PZE IMAGE+24,,CWBDA+2 CORRECT DSC REG LIMITS.
01570  0761 00 0 00000         NOP           LOOP RETURN.

01571  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01572 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

01573  0640 00 0 01576         SCHA *+3      RECORD DSC REGISTERS.

01574  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01575 -1 06771 0 07444         IOCT IMAGE+24,,CWBDA+2 CORRECT DSC REG CONTS.
01576  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01577  0020 00 0 01553         TRA BDA+5     LOOP RETURN.

01600  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01601  2 00001 2 01553         TIX BDA+5,2,1 COUNT LINES.

01602  0074 00 4 03476         TSX OK,4
01603  0020 00 0 01546         TRA BDA       SECTION REPEAT.


*BE    *** WPR RIPPLE - COMPLEX CONTROL WORDS, TCH TEST.


01604  0074 00 4 03421   BEA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01605  0074 00 4 05136         TSX SPLTA,4   PRINT-IOCT, LCHA.
01606  0 00000 0 06055         PZE CDBEA
01607  0060 00 0 01607         TCOA *
01610  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

01611  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
01612  0761 00 0 00000         NOP           LOOP RETURN
```

```
01613 -0500 00 0 07000         CAL CWBEA+5   RESTORE CONTROL WORD.
01614  0602 00 0 06775         SLW CWBEA+2
01615 -0500 00 0 07001         CAL CWBEA+6   RESTORE TCH.
01616  0602 00 0 06777         SLW CWBEA+4

01617  0540 00 0 06773         RCHA CWBEA    FIRST WORD

01620  0774 00 1 00027         AXT 23,1
01621  0544 00 0 06777         LCHA CWBEA+4  SUBSEQUENT WORDS
01622 -0500 00 0 06775         CAL CWBEA+2   MODIFY CONTROL WORD
01623  0400 00 0 05316         ADD Q1
01624  0602 00 0 06775         SLW CWBEA+2
01625  0500 00 0 06777         CLA CWBEA+4   MODIFY TCH DECREMENT.
01626  0767 00 0 00001         ALS 1
01627  0622 00 0 06777         STD CWBEA+4
01630  2 00001 1 01621         TIX *-7,1,1

01631  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
01632  0 06776 0 07444         PZE IMAGE+24,,CWBEA+3 CORRECT DSC REG LIMITS.
01633  0761 00 0 00000         NOP           LOOP RETURN.

01634  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01635 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

01636  0640 00 0 01641         SCHA *+3      RECORD DSC REGISTERS.

01637  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01640 -3 06776 0 07444         IOST IMAGE+24,,CWBEA+3 CORRECT DSC REG CONTS.
01641  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01642  0020 00 0 01611         TRA BEA+5     LOOP RETURN.

01643  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01644  2 00001 2 01611         TIX BEA+5,2,1 COUNT LINES.

01645  0074 00 4 03476         TSX OK,4
01646  0020 00 0 01604         TRA BEA       SECTION REPEAT.


*BF    *** WPR RIPPLE - COMPLEX CONTROL WORDS-IOCP, IOST.


01647  0074 00 4 03421   BFA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01650  0074 00 4 05136         TSX SPLTA,4   PRINT-IOCT, LCHA.
01651  0 00000 0 06063         PZE CDBFA
01652  0060 00 0 01652         TCOA *

01653  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

01654  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
01655  0761 00 0 00000         NOP           LOOP RETURN
```

```
01656 -0500 00 0 07006         CAL CWBFA+3   RESTORE CONTROL WORD.
01657  0602 00 0 07004         SLW CWBFA+1

01660  0540 00 0 07003         RCHA CWBFA    FIRST WORD

01661  0774 00 1 00027         AXT 23,1
01662  0544 00 0 07004         LCHA CWBFA+1  SUBSEQUENT WORDS
01663 -0500 00 0 07004         CAL CWBFA+1   MODIFY CONTROL WORD
01664  0400 00 0 05316         ADD Q1        23 TIMES
01665  0602 00 0 07004         SLW CWBFA+1
01666  2 00001 1 01662         TIX *-4,1,1

01667  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
01670  0 07006 0 07444         PZE IMAGE+24,,CWBFA+3 CORRECT DSC REG LIMITS.
01671  0761 00 0 00000         NOP           LOOP RETURN.

01672  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01673 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

01674  0640 00 0 01677         SCHA *+3      RECORD DSC REGISTERS.

01675  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01676 -3 07006 0 07416         IOST IMAGE+2,,CWBFA+3 CORRECT DSC REG CONTS.
01677  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01700  0020 00 0 01654         TRA BFA+5     LOOP RETURN.

01701  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01702  2 00001 2 01654         TIX BFA+5,2,1 COUNT LINES.

01703  0074 00 4 03476         TSX OK,4
01704  0020 00 0 01647         TRA BFA       SECTION REPEAT.


*BG    *** WPR RIPPLE - COMPLEX CONTROL WORDS-IOSP, IOCT.


01705  0074 00 4 03421  BGA    TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01706  0074 00 4 05136         TSX SPLTA,4   PRINT-IOSP, IOCT, LCHA.
01707  0 00000 0 06071         PZE CDBGA
01710  0060 00 0 01710         TCOA *

01711  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

01712  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
01713  0761 00 0 00000         NOP           LOOP RETURN

01714 -0500 00 0 07013         CAL CWBGA+3   RESTORE CONTROL WORD.
01715  0602 00 0 07011         SLW CWBGA+1

01716  0540 00 0 07010         RCHA CWBGA    FIRST WORD

01717  0774 00 1 00027         AXT 23,1
```

```
01720  0544 00 0 07011         LCHA CWBGA+1  23 SUBSEQUENT WORDS
01721 -0500 00 0 07011         CAL CWBGA+1   MODIFY CONTROL WORD
01722  0400 00 0 05316         ADD Q1
01723  0602 00 0 07011         SLW CWBGA+1
01724  2 00001 1 01720         TIX *-4,1,1

01725  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
01726  0 07013 0 07444         PZE IMAGE+24,,CWBGA+3 CORRECT DSC REG LIMITS.
01727  0761 00 0 00000         NOP           LOOP RETURN.

01730  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01731 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

01732  0640 00 0 01735         SCHA *+3      RECORD DSC REGISTERS.

01733  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01734 -1 07013 0 07416         IOCT IMAGE+2,,CWBGA+3 CORRECT DSC REG CONTS.
01735  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01736  0020 00 0 01712         TRA BGA+5     LOOP RETURN.

01737  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01740  2 00001 2 01712         TIX BGA+5,2,1 COUNT LINES.

01741  0074 00 4 03476         TSX OK,4
01742  0020 00 0 01705         TRA BGA       SECTION REPEAT.


*BH    *** WPR RIPPLE - COMPLEX CONTROL WORDS-2 LINES PER SELECT.


01743  0074 00 4 03421   BHA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01744  0074 00 4 05136         TSX SPLTA,4   PRINT-IOST, IORP, IOST.
01745  0 00000 0 06077         PZE CDBHA     WC-48.
01746  0060 00 0 01746         TCOA *

01747  0774 00 2 00002         AXT 2,2       PRINT FOUR LINES-
                                             2 PER SELECT.

01750  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
01751  0761 00 0 00000         NOP           LOOP RETURN

01752  0540 00 0 07015         RCHA CWBHA    FIRST 23 WORD

01753  0544 00 0 07016         LCHA CWBHA+1  23 SUBSEQUENT WORDS

01754  0774 00 1 00144         AXT 100,1     DELAY 2.4 MILLISECONDS
01755  2 00001 1 01755         TIX *,1,1     FOR 24TH WORD THEN

01756  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

01757  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
```

```
01760  0 07021 0 07444         PZE IMAGE+24,,CWBHA+4 CORRECT DSC REG LIMITS.
01761  0761 00 0 00000         NOP           LOOP RETURN.

01762  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
01763 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

01764  0640 00 0 01767         SCHA *+3      RECORD DSC REGISTERS.

01765  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
01766 -3 07021 0 07444         IOST IMAGE+24,,CWBHA+4 CORRECT DSC REG CONTS.
01767  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
01770  0020 00 0 01750         TRA BHA+5     LOOP RETURN.

01771  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE- AFTER
                                             SECOND LINE.

01772  2 00001 2 01750         TIX BHA+5,2,1 COUNT LINES.

01773  0074 00 4 03476         TSX OK,4
01774  0020 00 0 01743         TRA BHA       SECTION REPEAT.


*BJ    *** WPR RIPPLE - COMPLEX CONTROL WORDS-2 LINES PER SELECT.


01775  0074 00 4 03421   BJA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

01776  0074 00 4 05136         TSX SPLTA,4   PRINT-IOST, IORT, RCHA
01777  0 00000 0 06107         PZE CDBJA     BLAST OUT, IORT, WC-24.
02000  0060 00 0 02000         TCOA *

02001  0774 00 2 00002         AXT 2,2       PRINT 4 LINES-
                                             2 PER SELECT.

02002  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
02003  0761 00 0 00000         NOP           LOOP RETURN

02004  0540 00 0 07022         RCHA CWBJA    FIRST 23 WORD.
02005  0544 00 0 07023         LCHA CWBJA+1  24TH WORD.
02006  0544 00 0 07026         LCHA CWBJB    LINE TO BE BLASTED AFTER
                                             IMAGE ROTATION BEFORE
                                             9 TIME.

02007  0074 00 4 04354         TSX RTATE,4   ROTATE IMAGE FOR SECOND LINE.
02010  0540 00 0 07024         RCHA CWBJA+2  BLAST OUT LCHA TO GET
                                             CORRECT DATA PRINTED.

02011  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02012  0 07025 0 07444         PZE IMAGE+24,,CWBJA+3 CORRECT DSC REG LIMITS.
02013  0761 00 0 00000         NOP           LOOP RETURN.

02014  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02015 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.
```

```
02016  0640 00 0 02021         SCHA *+3      RECORD DSC REGISTERS.

02017  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02020 -3 07025 0 07444         IOST IMAGE+24,,CWBJA+3 CORRECT DSC REG CONTS.
02021  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02022  0020 00 0 02002         TRA BJA+5     LOOP RETURN.

02023  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE- AFTER
                                             SECOND LINE.

02024  2 00001 2 02002         TIX BJA+5,2,1 COUNT LINES.

02025  0074 00 4 03476         TSX OK,4
02026  0020 00 0 01775         TRA BJA       SECTION REPEAT.


*BK    *** WPR RIPPLE - COMPLEX CONTROL WORDS.


02027  0074 00 4 03421   BKA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02030  0074 00 4 05136         TSX SPLTA,4   PRINT-IOSP, IOCP, IOST,
02031  0 00000 0 06121         PZE CDBKA     TCH, IOST, IOCT, IOCP, TCH,
02032  0060 00 0 02032         TCOA *        IORT.

02033  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02034  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
02035  0761 00 0 00000         NOP           LOOP RETURN

02036  0540 00 0 07030         RCHA CWBKA    FIRST FIVE WORDS.
02037  0544 00 0 07034         LCHA CWBKA+4  TCH + NEXT 3 WORDS.
02040  0544 00 0 07035         LCHA CWBKA+5  NEXT 3 WORDS.
02041  0544 00 0 07036         LCHA CWBKA+6  LAST 10 WORDS.

02042  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02043  0 07042 0 07444         PZE IMAGE+24,,CWBKA+10 CORRECT DSC REG LIMITS.
02044  0761 00 0 00000         NOP           LOOP RETURN.

02045  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02046 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

02047  0640 00 0 02052         SCHA *+3      RECORD DSC REGISTERS.

02050  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02051  3 07042 0 07444         IORT IMAGE+24,,CWBKA+10 CORRECT DSC REG CONTS.
02052  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02053  0020 00 0 02034         TRA BKA+5     LOOP RETURN.

02054  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE- AFTER
                                             SECOND LINE.

02055  2 00001 2 02034         TIX BKA+5,2,1 COUNT LINES.

02056  0074 00 4 03476         TSX OK,4
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02057  0020 00 0 02027         TRA BKA       SECTION REPEAT.


*BL    *** WPR RIPPLE - COMPLEX CONTROL WORDS- RCHA BLAST OUT.


02060  0074 00 4 03421   BLA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02061  0074 00 4 05136         TSX SPLTA,4   PRINT-IOST, IOCD, BLAST OUT
02062  0 00000 0 06135         PZE CDBLA     WITH IORT.
02063  0060 00 0 02063         TCOA *

02064  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02065  0074 00 4 04502         TSX WRITD,4   WPRA, OFLOW TEST AND IOCK.
02066  0761 00 0 00000         NOP           LOOP RETURN

02067  0540 00 0 07043         RCHA CWBLA    FIRST WORD.

02070  0544 00 0 07046         LCHA CWBLB    PRINT ERROR LINE
                                             IF FOLLOWING BLAST OUT FAILS.

02071  0774 00 1 00006         AXT 6,1       168 MICOSECOND DELAY
02072  2 00001 1 02072         TIX *,1,1

02073  0540 00 0 07044         RCHA CWBLA+1  BLAST OUT LAST LCHA AND
                                             WRITE NEXT 23 WORDS.

02074  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02075  0 07045 0 07444         PZE IMAGE+24,,CWBLA+2 GOOD DSC REG LIMITS.
02076  0761 00 0 00000         NOP           LOOP RETURN.

02077  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02100 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

02101  0640 00 0 02104         SCHA *+3      RECORD DSC REGISTERS.

02102  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02103  3 07045 0 07444         IORT IMAGE+24,,CWBLA+2 GOOD DSC REG CONTS.
02104  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02105  0020 00 0 02065         TRA BLA+5     LOOP RETURN.

02106  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE- AFTER
                                             SECOND LINE.

02107  2 00001 2 02065         TIX BLA+5,2,1 COUNT LINES.

02110  0766 00 0 01361         WPRA          SPACE PRINTER
02111  0074 00 4 03476         TSX OK,4
02112  0020 00 0 02060         TRA BLA       SECTION REPEAT.


*BM    *** WPR RIPPLE - 3 LINES DOUBLE SPACE ON ONE SELECT
*      *** AND SENSE EXIT HOLD OVER.
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02113  0074 00 4 03421   BMA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02114  0074 00 4 05136         TSX SPLTA,4   PRINT-WPR DBL SPCE RIPPLE,
02115  0 00000 0 06146         PZE CDBMA     3 LINES 1 SELECT SENSE.
                                             EXIT HOLDOVER.

02116  0766 00 0 01361         WPRA          SELECT
02117  0760 00 0 01363         SPRA 3        DOUBLE SPACE.

02120  0640 00 0 02123         SCHA *+3      RECORD CHANNEL DATA.
02121  0074 00 4 03636         TSX SCHT,4    SCH CHECK
02122  0000 00 0 00000         IOCD          CORRECT CHANNEL DATA.
02123  0 00000 0 00000         PZE **        CHANNEL DATA STORAGE.
02124  0761 00 0 00000         NOP           LOOP RETURN

02125  0774 00 2 00003         AXT 3,2       PRINT 3 LINES.

02126  0540 00 0 07050   BMB   RCHA CWBMA

02127  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02130 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

02131  0640 00 0 02134         SCHA *+3      RECORD DSC REGISTERS.

02132  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02133  3 07051 0 07415         IORT IMAGE+1,,CWBMA+1 CORRECT DSC REG CONTS.
02134  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02135  0761 00 0 00000         NOP           LOOP RETURN.

02136  0544 00 0 07026         LCHA CWBJB    SET UP ERROR PRINT LINE
                                             WHICH ALLOWS TIME TO IOT,
                                             SCH TEST AND ROTATE IMAGE
                                             WITHOUT ALLOWING THE PRINTER
                                             TO DISCONNECT. IT WILL
                                             BE BLASTED OUT BY THE
                                             RCHA BEFORE 9 LEFT
                                             TIME.

02137  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02140 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURED.

02141  0640 00 0 02144         SCHA *+3      RECORD DSC REGISTERS.

02142  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02143  0070 27 0 06646         IOCD BLWST+1,,CWBJB+1 CORRECT DSC REG CONTS.
02144  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02145  0020 00 0 02126         TRA BMB       LOOP RETURN.

02146  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE- AFTER
                                             SECOND LINE.

02147  2 00001 2 02126         TIX BMB,2,1   COUNT LINES.

02150  0540 00 0 07252         RCHA CWBVC    DISCONNECT PRINTER.
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02151  0074 00 4 03476         TSX OK,4
02152  0020 00 0 02113         TRA BMA       SECTION REPEAT.


*BN    *** RPR RIPPLE TESTS SETUP.


02153  0074 00 4 03421   BNA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02154  0074 00 4 05136         TSX SPLTA,4   PRINT-RPRA RIPPLE -
02155  0 00000 0 06163         PZE CDBNA     CONTROL WORD TESTS.
02156  0060 00 0 02156         TCOA *

02157  0074 00 4 05151         TSX SPLTR,4   SET UP RIPPLE IMAGE.
02160  0 00000 0 05714         PZE CDAGB

02161  0074 00 4 04320         TSX MOVE,4    MOVE TO -IMAGE-.
02162  0 00030 2 07364         PZE CARDA,2,24
02163  0 00000 2 07414         PZE IMAGE,2
02164  0020 00 0 02166         TRA *+2

02165  0020 00 0 02153         TRA BNA       DUMMY FOR CHCKR.


*BP    *** RPR RIPPLE - COMPLEXT CONTROL WORDS.


02166  0074 00 4 03421   BPA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02167  0074 00 4 05136         TSX SPLTA,4   PRINT-IOCT, IOST. WC-46.
02170  0 00000 0 06173         PZE CDBPA
02171  0060 00 0 02171         TCOA *

02172  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02173  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02174  0761 00 0 00000         NOP           LOOP RETURN.

02175 -0500 00 0 07055         CAL CWBPA+2   RESTORE CONTROL WORD.
02176  0602 00 0 07054         SLW CWBPA+1

02177 -0500 00 0 07073         CAL CWBPA+16  RESTORE
02200  0602 00 0 07072         SLW CWBPA+15  CONTROL WORD.

02201  0540 00 0 07053         RCHA CWBPA    FIRST WORD.

02202  0774 00 1 00021         AXT 17,1
02203  0544 00 0 07054         LCHA CWBPA+1  NEXT 17 WORDS.
02204 -0500 00 0 07054         CAL CWBPA+1   MODIFY
02205  0400 00 0 05316         ADD Q1        CONTROL
02206  0602 00 0 07054         SLW CWBPA+1   WORD.
02207  2 00001 1 02203         TIX *-4,1,1   COUNT WORDS.

02210  0774 00 1 00014         AXT 12,1
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02211  0544 00 1 07072         LCHA CWBPA+15,1 NEXT 12 WORDS
02212  2 00001 1 02211         TIX *-1,1,1   COUNT WORDS.

02213  0774 00 1 00020         AXT 16,1
02214  0544 00 0 07072         LCHA CWBPA+15 NEXT 16 WORDS.
02215 -0500 00 0 07072         CAL CWBPA+15  MODIFY
02216  0400 00 0 05316         ADD Q1        CONTROL
02217  0602 00 0 07072         SLW CWBPA+15  WORD.
02220  2 00001 1 02214         TIX *-4,1,1   COUNT WORDS.

02221  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02222  0 07073 0 07522         PZE ECHO+22,,CWBPA+16 CORRECT DSC REG LIMITS.
02223  0761 00 0 00000         NOP           LOOP RETURN.

02224  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02225 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02226  0640 00 0 02231         SCHA *+3      RECORD DSC REGISTERS.

02227  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02230 -1 07073 0 07516         IOCT ECHO+18,,CWBPA+16 CORRECT DSC REG CONTS.
02231  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02232  0761 00 0 00000         NOP           LOOP RETURN.

02233  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02234  0 00000 1 07436         PZE IMAGE+18,1 COMPARE IMAGE.
02235  0761 00 0 00000         NOP           LEFT SIDE.
02236  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED ON ERROR.
02237  0020 00 0 02173         TRA BPA+5     LOOP RETURN.

02240  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02241  2 00001 2 02173         TIX BPA+5,2,1 COUNT LINES.

02242  0074 00 4 03476         TSX OK,4
02243  0020 00 0 02166         TRA BPA       SECTION REPEAT.


*BQ    *** RPR RIPPLE - COMPLEXT CONTROL WORDS.


02244  0074 00 4 03421   BQA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02245  0074 00 4 05136         TSX SPLTA,4   PRINT-TCH, IOSP, IOST, IOCT,
02246  0 00000 0 06201         PZE CDBQA     IOCT, IOSP, IOST.
02247  0060 00 0 02247         TCOA *

02250  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02251  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02252  0761 00 0 00000         NOP           LOOP RETURN.

02253 -0500 00 0 07105         CAL CWBQA+8   RESTORE
02254  0602 00 0 07075         SLW CWBQA     CONTROL
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02255 -0500 00 0 07106         CAL CWBQA+9   WORDS.
02256  0602 00 0 07076         SLW CWBQA+1
02257 -0500 00 0 07107         CAL CWBQA+10
02260  0602 00 0 07077         SLW CWBQA+2

02261 -0500 00 0 07132         CAL CWBQA+29  RESTORE
02262  0602 00 0 07127         SLW CWBQA+26  CONTROL
02263 -0500 00 0 07133         CAL CWBQA+30  WORD.
02264  0602 00 0 07130         SLW CWBQA+27

02265  0540 00 0 07100         RCHA CWBQA+3  FIRST 2 WORD.

02266  0774 00 1 00005         AXT 5,1
02267  0544 00 0 07077         LCHA CWBQA+2  NEXT 15 WORDS.
02270 -0500 00 0 07075         CAL CWBQA
02271  0400 00 0 05320         ADD Q3
02272  0602 00 0 07075         SLW CWBQA
02273  0400 00 0 05316         ADD Q1
02274  0621 00 0 07076         STA CWBQA+1
02275  0400 00 0 05316         ADD Q1
02276  0621 00 0 07077         STA CWBQA+2
02277  2 00001 1 02267         TIX *-8,1,1

02300  0544 00 0 07101         LCHA CWBQA+4  NEXT 2 WORDS.
02301  0544 00 0 07103         LCHA CWBQA+6  NEXT WORD.
02302  0544 00 0 07111         LCHA CWBQA+12 TCH, NEXT 2 WORDS.

02303  0544 00 0 07112         LCHA CWBQA+13 NEXT 3 WORDS.
02304  0544 00 0 07120         LCHA CWBQA+19 NEXT WORD.
02305  0544 00 0 07121         LCHA CWBQA+20 NEXT 4 WORDS.
02306  0544 00 0 07130         LCHA CWBQA+27 NEXT WORD.

02307  0774 00 1 00007         AXT 7,1
02310  0544 00 0 07127         LCHA CWBQA+26 NEXT 14 WORDS.
02311 -0500 00 0 07127         CAL CWBQA+26   MODIFY
02312  0400 00 0 05316         ADD Q1        CONTROL
02313  0621 00 0 07130         STA CWBQA+27  WORDS.
02314  0400 00 0 05316         ADD Q1
02315  0621 00 0 07127         STA CWBQA+26
02316  2 00001 1 02310         TIX *-6,1,1   COUNT WORD PAIRS.

02317  0544 00 0 07131         LCHA CWBQA+28 LAST WORD.

02320  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02321  0 07132 0 07522         PZE ECHO+22,,CWBQA+29 CORRECT DSC REG LIMITS.
02322  0761 00 0 00000         NOP           LOOP RETURN.

02323  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02324 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02325  0640 00 0 02330         SCHA *+3      RECORD DSC REGISTERS.

02326  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02327 -3 07132 0 07516         IOST ECHO+18,,CWBQA+29 CORRECT DSC REG CONTS.
02330  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
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02331  0761 00 0 00000         NOP           LOOP RETURN.

02332  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02333  0 00000 1 07436         PZE IMAGE+18,1 COMPARE IMAGE.
02334  0761 00 0 00000         NOP           LEFT SIDE.
02335  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED ON ERROR.
02336  0020 00 0 02251         TRA BQA+5     LOOP RETURN.

02337  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02340  2 00001 2 02251         TIX BQA+5,2,1 COUNT LINES.

02341  0074 00 4 03476         TSX OK,4
02342  0020 00 0 02244         TRA BQA       SECTION REPEAT.


*BR    *** RPR RIPPLE - COMPLEXT CONTROL WORDS.


02343  0074 00 4 03421   BRA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02344  0074 00 4 05136         TSX SPLTA,4   PRINT-TCH, IOCP, IOCT,
02345  0 00000 0 06213         PZE CDBRA     IOST, IOCP,IOCT. WC-46
02346  0060 00 0 02346         TCOA *

02347  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02350  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02351  0761 00 0 00000         NOP           LOOP RETURN.

02352 -0500 00 0 07145         CAL CWBRA+8   RESTORE CONTROL WORD.
02353  0602 00 0 07135         SLW CWBRA
02354 -0500 00 0 07146         CAL CWBRA+9
02355  0602 00 0 07136         SLW CWBRA+1
02356 -0500 00 0 07147         CAL CWBRA+10
02357  0602 00 0 07137         SLW CWBRA+2

02360 -0500 00 0 07172         CAL CWBRA+29  RESTORE CONTROL WORD.
02361  0602 00 0 07167         SLW CWBRA+26
02362 -0500 00 0 07173         CAL CWBRA+30
02363  0602 00 0 07170         SLW CWBRA+27

02364  0540 00 0 07140         RCHA CWBRA+3  TH THE FIRST TWO WORDS.

02365  0774 00 1 00005         AXT 5,1
02366  0544 00 0 07137         LCHA CWBRA+2  NEXT 3 WORDS.
02367 -0500 00 0 07135         CAL CWBRA     MODIFY CONTROL WORDS
02370  0400 00 0 05320         ADD Q3        FIVE TIMES.
02371  0621 00 0 07135         STA CWBRA
02372  0400 00 0 05316         ADD Q1
02373  0621 00 0 07136         STA CWBRA+1
02374  0400 00 0 05316         ADD Q1
02375  0621 00 0 07137         STA CWBRA+2
02376  2 00001 1 02366         TIX *-8,1,1
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02377  0544 00 0 07141         LCHA CWBRA+4  PRINT 1R, 8-4L ECHO.
02400  0544 00 0 07144         LCHA CWBRA+7  8-4R ECHO.
02401  0544 00 0 07151         LCHA CWBRA+12 TCH, PRINT 0 ROW.

02402  0544 00 0 07152         LCHA CWBRA+13 8-13 ECHO, 11L PRINT.
02403  0544 00 0 07160         LCHA CWBRA+19 11R PRINT
02404  0544 00 0 07161         LCHA CWBRA+20 9 ECHO, 12 PRINT.
02405  0544 00 0 07170         LCHA CWBRA+27 8 LEFT ECHO

02406  0774 00 1 00007         AXT 7,1
02407  0544 00 0 07167         LCHA CWBRA+26 8R TO 1L ECHO
02410 -0500 00 0 07167         CAL CWBRA+26  MODIFY CONTROL WORDS
02411  0400 00 0 05316         ADD Q1        SEVEN TIMES.
02412  0621 00 0 07170         STA CWBRA+27
02413  0400 00 0 05316         ADD Q1
02414  0621 00 0 07167         STA CWBRA+26
02415  2 00001 1 02407         TIX *-6,1,1

02416  0544 00 0 07171         LCHA CWBRA+28 1R ECHO.

02417  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02420  0 07172 0 07522         PZE ECHO+22,,CWBRA+29 CORRECT DSC REG LIMITS.
02421  0761 00 0 00000         NOP           LOOP RETURN.

02422  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02423 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02424  0640 00 0 02427         SCHA *+3      RECORD DSC REGISTERS.

02425  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02426 -1 07172 0 07516         IOCT ECHO+18,,CWBRA+29 CORRECT DSC REG CONTS.
02427  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02430  0761 00 0 00000         NOP           LOOP RETURN.

02431  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02432  0 00000 1 07436         PZE IMAGE+18,1 COMPARE IMAGE.
02433  0761 00 0 00000         NOP           LEFT SIDE.
02434  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED ON ERROR.
02435  0020 00 0 02350         TRA BRA+5     LOOP RETURN.

02436  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02437  2 00001 2 02350         TIX BRA+5,2,1 COUNT LINES.

02440  0074 00 4 03476         TSX OK,4
02441  0020 00 0 02343         TRA BRA       SECTION REPEAT.


*BS    *** RPR RIPPLE - COMPLEXT CONTROL WORDS.


02442  0074 00 4 03421   BSA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02443  0074 00 4 05136         TSX SPLTA,4   PRINT-IOCP, IOSP, TCH,
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02444  0 00000 0 06225         PZE CDBSA     TCH, IOSP, IOCP, TCH
02445  0060 00 0 02445         TCOA *        IOSP, IORT. WC-46.

02446  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02447  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02450  0761 00 0 00000         NOP           LOOP RETURN.

02451  0540 00 0 07175         RCHA CWBSA    PRINT LINE.

02452  0544 00 0 07220         LCHA CWBSA+19 OBTIAN DISCONNECT.

02453  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02454  0 07221 0 07522         PZE ECHO+22,,CWBSA+20 CORRECT DSC REG LIMITS.
02455  0761 00 0 00000         NOP           LOOP RETURN.

02456  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02457 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02460  0640 00 0 02463         SCHA *+3      RECORD DSC REGISTERS.

02461  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02462  0072 21 0 00000         IOCD ,,CWBSA+20 CORRECT DSC REG CONTS.
02463  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02464  0761 00 0 00000         NOP           LOOP RETURN.

02465  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02466  0 00000 1 07436         PZE IMAGE+18,1 COMPARE IMAGE.
02467  0761 00 0 00000         NOP           LEFT SIDE.
02470  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED ON ERROR.
02471  0020 00 0 02447         TRA BSA+5     LOOP RETURN.

02472  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02473  2 00001 2 02447         TIX BSA+5,2,1 COUNT LINES.

02474  0074 00 4 03476         TSX OK,4
02475  0020 00 0 02442         TRA BSA       SECTION REPEAT.


*BT    *** RPR RIPPLE - COMPLEXT CONTROL WORDS.


02476  0074 00 4 03421   BTA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02477  0074 00 4 05136         TSX SPLTA,4   PRINT-IOST, IOCT, IOCT,
02500  0 00000 0 06242         PZE CDBTA     IOST, IOCT, IORP, TCH,
02501  0060 00 0 02501         TCOA *        IOCD, WC-46.

02502  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02503  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02504  0761 00 0 00000         NOP           LOOP RETURN.
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02505  0540 00 0 07222         RCHA CWBTA    9L-5L PRINT.
02506  0774 00 1 00011         AXT 9,1       SETUP LCHA.
02507  0544 00 1 07234         LCHA CWBTA+10,1 NEXT 9 CONTROL WORDS.
02510  2 00001 1 02507         TIX *-1,1,1   5L PRINT TO 1R ECHO.

02511  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02512  0 07236 0 07524         PZE ERBIT+2,,CWBTA+12 CORRECT DSC REG LIMITS.
02513  0761 00 0 00000         NOP           LOOP RETURN.

02514  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02515 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02516  0640 00 0 02521         SCHA *+3      RECORD DSC REGISTERS.

02517  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02520  0072 36 0 07524         IOCD ERBIT+2,,CWBTA+12 CORRECT DSC REG CONTS.
02521  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02522  0761 00 0 00000         NOP           LOOP RETURN.

02523  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02524  0 00000 1 07436         PZE IMAGE+18,1 COMPARE IMAGE.
02525  0761 00 0 00000         NOP           LEFT SIDE.
02526  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED ON ERROR.
02527  0020 00 0 02503         TRA BTA+5     LOOP RETURN.

02530  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02531  2 00001 2 02503         TIX BTA+5,2,1 COUNT LINES.

02532  0074 00 4 03476         TSX OK,4
02533  0020 00 0 02476         TRA BTA       SECTION REPEAT.



*BU    *** RPR RIPPLE - COMPLEXT CONTROL WORDS - RCHA BLAST OUT.


02534  0074 00 4 03421   BUA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02535  0074 00 4 05136         TSX SPLTA,4   PRINT-RCHA BLAST OUT
02536  0 00000 0 06256         PZE CDBUA     USING CONTROL WORDS FROM
02537  0060 00 0 02537         TCOA *        SECTION BT.

02540  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02541  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02542  0761 00 0 00000         NOP           LOOP RETURN.

02543  0540 00 0 07222         RCHA CWBTA
02544  0774 00 1 00011         AXT 9,1       SETUP LOAD CHANNEL
                                             AND BLAST OUT.
02545  0544 00 0 07305         LCHA CWLST    PRINT ERROR LINE IF
                                             FOLLOWING BLAST OUT FAILS.
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02546  0774 00 4 00006         AXT 6,4
02547  2 00001 4 02547         TIX *,4,1     144 MICRO SECOND DELAY.

02550  0540 00 1 07234         RCHA CWBTA+10,1 BLAST OUT LCHA + PREFORM
                                              CORRECT CONTROL WORDS.
02551  2 00001 1 02545         TIX *-4,1,1   GET 9 CONTROL WORDS.

02552  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                              DISCONNECT.
02553  0 07236 0 07524         PZE ERBIT+2,,CWBTA+12 CORRECT DSC REG LIMITS.
02554  0761 00 0 00000         NOP           LOOP RETURN.

02555  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02556 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02557  0640 00 0 02562         SCHA *+3      RECORD DSC REGISTERS.

02560  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02561  0072 36 0 07524         IOCD ERBIT+2,,CWBTA+12 CORRECT DSC REG CONTS.
02562  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02563  0761 00 0 00000         NOP           LOOP RETURN.

02564  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02565  0 00000 1 07436         PZE IMAGE+18,1 COMPARE IMAGE.
02566  0761 00 0 00000         NOP           LEFT SIDE.
02567  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED
                                              ON ERROR.
02570  0020 00 0 02541         TRA BUA+5     LOOP RETURN.

02571  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02572  2 00001 2 02541         TIX BUA+5,2,1 COUNT LINES.

02573  0074 00 4 03476         TSX OK,4
02574  0020 00 0 02534         TRA BUA       SECTION REPEAT.



*BV    *** RPR RIPPLE - 3 LINES DOUBLE SPACE ON ONE SELECT
*      *** AND SENSE EXIT HOLDOVER.


02575  0074 00 4 03421   BVA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02576  0074 00 4 05136         TSX SPLTA,4   PRINT-READ PRINTER DOUBLE
02577  0 00000 0 06272         PZE CDBVA     SPACE 3 LINES ON 1 SELECT.
02600  0060 00 0 02600         TCOA *        SENSE EXIT HOLD OVER.

02601  0774 00 2 00003         AXT 3,2       PRINT 3 LINES.

02602  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02603  0761 00 0 00000         NOP           LOOP RETURN.

02604  0760 00 0 01363         SPRA 3

02605  0540 00 0 07250         RCHA CWBVA+9  PRINT LINE OF RIPPLE.
```

```
02606  0544 00 0 07305         LCHA CWLST    SET UP ERROR PRINT LINE
                                             WHICH ALLOWS TIME TO
                                             IOT, SCH TEST, ECHO
                                             CHECK AND ROTATE WITHOUT
                                             ALLOWING PRINTER TO
                                             DISCONNECT. IT WILL
                                             BE BLASTED OUT BY
                                             THE RCHA BEFORE
                                             9 LEFT TIME

02607  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02610 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02611  0640 00 0 02614         SCHA *+3      RECORD DSC REGISTERS.

02612  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02613  0073 06 2 06607         IOCDN BLAST,,CWLST+1 GOOD DSC REG CONTS.
02614  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02615  0761 00 0 00000         NOP           LOOP RETURN.

02616  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02617  0 00000 1 07436         PZE IMAGE+18,1 COMPARE IMAGE.
02620  0761 00 0 00000         NOP           LEFT SIDE.
02621  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED ON ERROR.
02622  0020 00 0 02604         TRA BVA+7     LOOP RETURN.

02623  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02624  2 00001 2 02604         TIX BVA+7,2,1 COUNT LINES.

02625  0540 00 0 07252         RCHA CWBVC    DISCONNECT PRINTER.

02626  0074 00 4 03476         TSX OK,4
02627  0020 00 0 02575         TRA BVA       SECTION REPEAT.



*BW    *** RPR RIPPLE - TRIGGER 19 TEST.

*      NORMAL ECHO CHECKING IS PERFORMED
*      EXCEPT THAT THE 8-3 AND 8-4
*      ECHO RETURNS ARE BLOCKED BY
*      TRIGGER 19 CONTROL WORD CONFIGURATIONS.
*      A SPECIAL COMPARING IMAGE IS MODIFED
*      FROM THE PRINT IMAGE WHICH REMOVES
*      ALL 8-3 AND 8-4 CHARACTER CONFIGURATIONS
*      AND THIS IMAGE IS USED TO CHECK THE
*      ECHO RETURNS.


02630  0074 00 4 03421   BWA  TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02631  0074 00 4 05136         TSX SPLTA,4   PRINT-TEST TRIGGER 19 ON
02632  0 00000 0 06307         PZE CDBWA     READ PRINTER.
02633  0060 00 0 02633         TCOA *
```

```
02634  0774 00 2 00002         AXT 2,2       PRINT 2 LINES.

02635  0074 00 4 04430         TSX READE,4   RPRA, OFLOW TEST AND IOCK.
02636  0761 00 0 00000         NOP           LOOP RETURN.

02637  0074 00 4 04320         TSX MOVE,4    MOVE -IMAGE- TO -IMAGA-.
02640  0 00030 2 07414         PZE IMAGE,2,24
02641  0 00000 2 07444         PZE IMAGA,2

02642  0074 00 4 04234         TSX CLARA,4   CLEAR ECHO IMAGE.

02643  0774 00 1 00002         AXT 2,1       MODIFY COMPARING IMAGE TO
02644 -0500 00 1 07450   BWB    CAL IMAGA+4,1 REMOVE 8-3 + 8-4 CHARACTERS.
02645 -0320 00 1 07462         ANA IMAGA+14,1   8-3
02646  0760 00 0 00006         COM
02647  0320 00 1 07450         ANS IMAGA+4,1
02650  0320 00 1 07462         ANS IMAGA+14,1
02651 -0500 00 1 07450         CAL IMAGA+4,1 8-4.
02652 -0320 00 1 07460         ANA IMAGA+12,1
02653  0760 00 0 00006         COM
02654  0320 00 1 07450         ANS IMAGA+4,1
02655  0320 00 1 07460         ANS IMAGA+12,1
02656  2 00001 1 02644         TIX BWB,1,1   GO BACK FOR RIGHT SIDE.

02657  0540 00 0 07254         RCHA CWBWA    PRINT AND ECHO -IMAGE-.

02660  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
02661  0 07264 0 07522         PZE ECHO+22,,CWBWA+8 CORRECT DSC REG LIMITS.
02662  0761 00 0 00000         NOP           LOOP RETURN.

02663  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
02664 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

02665  0640 00 0 02670         SCHA *+3      RECORD DSC REGISTERS.

02666  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
02667  0072 64 0 07516         IOCD ECHO+18,,CWBWA+8 CORRECT DSC REG CONTS.
02670  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
02671  0761 00 0 00000         NOP           LOOP RETURN.

02672  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
02673  0 00000 1 07466         PZE IMAGA+18,1 COMPARE IMAGE.
02674  0761 00 0 00000         NOP           LEFT SIDE.
02675  0540 00 0 07275         RCHA CWIM     IMAGE TO BE PRINTED ON ERROR.
02676  0020 00 0 02635         TRA BWA+5     LOOP RETURN.

02677  0074 00 4 04354         TSX RTATE,4   ROTATE -IMAGE-.

02700  2 00001 2 02635         TIX BWA+5,2,1 COUNT LINES.

02701  0074 00 4 03476         TSX OK,4
02702  0020 00 0 02630         TRA BWA       SECTION REPEAT.
```

```
*ZA    *** 9P01 END OF PART ONE.
02703  0074 00 4 03421   ZAA   TSX CHCKR,4   TEST PROGRAM SEQUENCE.

02704  0766 00 0 01361         WPRA          SPACE PRINTER.

02705  0074 00 4 05136         TSX SPLTA,4   PRINT-9P01 PART ONE
02706  0 00000 0 06576         PZE CDZAC     PASS COMPLETE ON CHANNEL X.
02707  0060 00 0 02707         TCOA *
02710 -0520 00 0 05531         NZT SIZE      TEST SIZE OF STORAGE.
02711  0020 00 0 10050         TRA STRTB     MOVE THEN 4K, GO TO
                                             PART TWO.
02712  0500 00 0 05524         CLA IOCNT     4K. STEP UNIT COUNT DOWN
02713  0402 00 0 05316         SUB Q1        BY 1.
02714  0100 00 0 02717         TZE ZAB       COUNT ZERO - DONE.

02715  0601 00 0 05524         STO IOCNT     SAVE UNIT COUNTER.
02716  0020 00 0 00046         TRA ZCE       DO PART 1 NEXT CHANNEL.

02717  0760 00 0 00166   ZAB   SWT 6         TEST FOR PROGRAM REPEAT.
02720  0020 00 0 07747         TRA PLCB      UP - READ IN PART TWO.
02721  0020 00 0 00031         TRA 25        RESET UNIT COUNT AND
                                             REPEAT PART ONE.


                 02722   FRSTA BSS 0
```

```
*      *** SUBROUTINE PACKAGE.

*      ALL SUBROUTINES USED IN 9P01 ARE GROUPED
*      BELOW. EACH SUBROUTINE IS HEADED BY
*      A SPECIFICATION LIST AND ITS CALLING
*      SEQUENCE OF SEQUENCES. THE DEPENDENT OF EACH
*      OTHER AND MOST OF THEM WILL USE COMMON
*      CONTANTS AND STORAGE AREAS.



*SPACE *** PROGRAM SEQUENCE ERROR INDICATOR.

*      SPECIFICATIONS-
*       1. PROVIDE ERROR DETECTION AND INDICATION
*          OF WILD TRANSFERS TO UNUSED PORTIONS
*          OF CORE STORAGE.
*       2. PROVIDE ERROR INDICATION FOR ALL
*          IMPROPER PROGRAM SEQUENCING.

*      ERROR INDICATION FORMAT-
*          THE STORAGE REGISTER CONTAINS AN
*          -HPR- WITH AND ADDRESS OF -SPACE+6-
*          AT LOCATION -SPACE+6-.
*          THE ACCUMULATOR ADDRESS CONTAINS
*          THE STARTING LOCATION OF THE TEST
*          UNDERWAY AT THE TIME OF THE
*          SEQUENCING FAILURE.
*          THE ACCUMULATOR DECREMENT
*          CONTAINS THE ADDRESS FROM WHICH WE
*          RECOVERED CONTROL OF THE SEQUENCE
*          FAILURE.

*      CALLING SEQUENCE-
*          THIS PROGRAM IS A SERVICE SUBROUTINE
*          OF -CHCHK- AND THE WILD TRAP RECOVERY ROUTINES AND
*          ITS CALLING SEQUENCE IS CONTROLLED BY THEM.


                03405         ORG 1797

                03405   LASTA BSS 0

03405 -0634 00 4 05521   SPACE#SXD BIN,4    SPACE ADDRESS
03406 -0535 00 4 05521        #LDC BIN,4    COMPLEMENT IT
03407 -0634 00 4 05521        #SXD BIN,4
03410 -0535 00 4 05530        #LDC MONIT,4
03411  0634 00 4 05521        #SXA BIN,4
03412  0500 00 0 05521        #CLA BIN

03413  0420 00 0 03413        #HPR *         ERROR-PROGRAM TRANSFERRED
                                              OUT OF CONTROL. THE ADDRESS
                                              FROM WHICH WE RECOVERED.
```

```
                                          CONTROL IS IN THE DECR.
                                          OF THE ACCUMULATOR, THE
                                          STARTING ADDRESS OF THE
                                          TEST WHICH WAS UNDERWAY
                                          IS IN THE ADDRESS OF
                                          THE ACCUMULATOR

03414 -0534 00 4 05530        #LXD MONIT,4   RESET-MONIT- AND
03415  0500 00 4 77777        #CLA -1,4      RETURN TO PROPER
03416  0737 00 2 00000        #PAC ,2        SEQUENCE.
03417 -0634 00 2 05530        #SXD  MONIT,2
03420  0020 00 4 00000        #TRA 0,4



*CHCKR *** PROGRAM SEQUENCE MONITOR.

*      SPECIFICATIONS-
*      1. SEQUENCE CHECK THE ORDER OF PROGRAM
*         EXECUTE OF 9P01.
*      2. RESET THE CONSOLE. -NOTE- CONSOLE IS NOT
*         RESET ON A PROGRAM SEQUENCE ERROR.
*      3. PROVIDE FOR PROGRAM SEQUENCE ERROR
*         INDICATION BY USE OF THE -SPACE- SUBROUTINE.

*      CALLING SEQUENCE.
*         A            TSX CHCKR,4
*         A+1          RETURN.


03421  0760 00 0 00161   CHCKR SWT 1         TEST FOR REPEAT
03422  0020 00 0 03424         TRA *+2       UP-SWT 4.
03423  0020 00 0 03426         TRA *+3       DN-CHECK FOR SAME SECT.

03424  0760 00 0 00164         SWT 4         TEST REPEAT.
03425  0020 00 0 03431         TRA *+4       UP-CHECK SEQUENCE

03426 -0754 00 4 00000         PXD ,4        DN-TEST REPEATED OR
03427  0402 00 0 05530         SUB MONIT     WILL BE REPEATED
03430  0100 00 0 03455         TZE *+21      IF ZERO, PROGRAM IN SEQUENCE.

03431  0600 00 0 05522         STZ FREE
03432 -0634 00 4 05522         SXD FREE,4    SAVE TEST ADDRESS.
03433  0500 00 4 77777         CLA -1,4      PRECEEDING TEST ADDRESS.
03434  0737 00 4 00000         PAC ,4        COMPLEMENT IT.
03435 -0754 00 4 00000         PXD ,4
03436  0402 00 0 05530         SUB MONIT     SHOULD BE ZERO.
03437 -0534 00 4 05522         LXD FREE,4    RESTORE XRC
03440  0100 00 0 03455         TZE *+13      IF ZERO, PROGRAM IN SEQUENCE.

03441  0760 00 0 00004         ENK           CHECK FOR MANUAL TRANSFER.
03442  0131 00 0 00000         XCA
03443  0737 00 4 00000         PAC ,4        COMPLEMENT KEYS ADDRESS.
03444  0765 00 0 00025         LRS 21        CHECK TRA ONLY.
03445  0402 00 0 05325         SUB LTRA      L 0200
03446 -0100 00 0 03453         TNZ *+5       NO SEQUENCE IF NOT ZERO.
```

```
03447 -0754 00 4 00000         PXD ,4        OK, CHECK ADDRESS.
03450  0402 00 0 05522         SUB FREE
03451 -0534 00 4 05522         LXD FREE,4    RESTORE XRC
03452  0100 00 0 03455         TZE *+3       IF ZERO, PROGRAM IN SEQUENCE.

03453 -0534 00 4 05522        #LXD FREE,4    PROGRAM OUT OF SEQUENCE.
03454  0021 00 0 03405         TTR SPACE     INDICATE ERROR.

03455  0760 00 0 00140   RESET SLF           START CLEAR CONSOLE.
03456 -0634 00 4 05530         SXD MONIT,4   SET MONIT.
03457 -0535 00 4 05530         LDC MONIT,4   SET RETURN
03460  1 00001 4 03461         TXI *+1,4,1
03461  0634 00 4 03475         SXA *+12,4
03462  0600 00 0 05525         STZ IOTA
03463 -0754 00 0 00000         PXD
03464 -0130 00 0 00000         XCL
03465 -0754 00 0 00000         PXD
03466  0140 00 0 03467         TOV *+1
03467  0760 00 0 00012         DCT
03470  0761 00 0 00000         NOP
03471  0760 00 0 00005         IOT
03472  0761 00 0 00000         NOP
03473  0044 00 0 00000         PAI
03474  0774 00 7 00000         AXT 0,7
03475  0020 00 0 00000         TRA **



*OK    *** SECTION REPEAT SUBROUTINE.
*      SPECIFICATIONS-
*       1. PROVIDE UNCONDITIONAL LOOP USING
*          SENSE SWITCH 1
*       2. PROVIDE PASS COUNTER FUNCTION UNDER
*          CONTROL OF SENSE SWITCH 4. NUMBER
*          OF PASSES IS CONTROLLED BY THE
*          VALUE STORED IN -KONST-.

*      CALLING SEQUENCE
*          A         TSX OK,4
*          A+1       LOOP RETURN.
*          A+2       CONTINUE RETURN.


03476  0760 00 0 00161   OK    SWT 1
03477  0020 00 0 03501         TRA *+2
03500  0020 00 4 00001         TRA 1,4

03501  0760 00 0 00164         SWT 4
03502  0020 00 4 00002         TRA 2,4

03503  0500 00 0 05540         CLA KOUNT
03504  0402 00 0 05316         SUB Q1
03505  0601 00 0 05540         STO KOUNT
03506 -0100 00 4 00001         TNZ 1,4
```

```
03507  0500 00 0 05541         CLA KONST
03510  0601 00 0 05540         STO KOUNT
03511  0020 00 4 00002         TRA 2,4



*IODSC *** CHECK DATA SYNCHRONIZER CHANNEL RUNAWAY.

*      SPECIFICATION-
*       1. CONTINUOUSLY MAKE DSC REGISTER CONTENTS
*          COMPARISONS WITH DSC REGISTER LIMITS STORED IN THE
*          CALLING SEQUENCE TO DETECT DSU
*          CHANNEL RUNAWAY UNTIL CHANNEL DROPS OUT
*          OF OPERATION.
*       3. PROVIDE A LOOP EXIT CONTROLLED BY SENSE SW -1-.
*       4. PROVIDE IGNORE ERROR INDICATION CONTROLLED BY SENSE SW -2-.
*       5. PROVIDE HALT OR PRINT ERROR CONTROLLED BY SENSE SW -3-.
*       2. ON ERROR BLAST OUT CHANNEL TO STOP RUNAWAY.

*      ERROR INDICATION FORMATS
*      HALT-
*       1. THE STORAGE REGISTER CONTAINS AN -HPR- WITH THE
*          LOCATION FROM WHICH -IODSC- ROUTINE WAS ENTERED
*          IN ITS ADDRESS.
*       2. THE -ACCUMULATOR- CONTAINS THE DSC CONTENTS
*          IN ERROR.
*       3. THE -MQ- REGISTER CONTAINS THE CORRECT DSC REGISTER LIMITS.

*      PRINT-
*      1. -THE DSU CHANNEL LOST CONTROL.-
*      2. -PROGRAM EXIT AT - AAAA. SECTION STARTS AT - BBBBB.-
*                  AAAAA - LOCATION FROM WHICH -IODSC- WAS ENTERED.
*                  BBBBB - START OF MAIN PROGRAM SECTION EXECUTED.
*      3. -CORRECT DSC LIMITS XXXXXXXXXX.-
*         -ERROR DSC REG CONTS YYYYYYYYYY.
*                    XXXXXXXXXX - DSC REG LIMITS FROM CALLING SEQUENCE.
*                    YYYYYYYYYY - DSC REG CONTS STORED BY TEST.

*      CALLING SEQUENCE-
*          A         TSX IODSC,4
*          A+1       CHANNEL LIMIT DATA TEST WORD.
*          A+2       LOOP RETURN
*          A+3       CONTINUE RETURN.


03512  0634 00 2 03526   IODSC SXA IRDSC,2
03513  0634 00 4 03527         SXA IRDSC+1,4

03514  0500 00 4 00001         CLA 1,4       GET CHECKING DATA.
03515  0622 00 0 03524         STD *+7
03516  0767 00 0 00022         ALS 18
03517  0622 00 0 03522         STD *+3

03520  0640 00 0 05523         SCHA HOLDA    STORE CHANNEL
03521  0534 00 2 05523         LXA HOLDA,2   SET AR CHECK
03522  3 00000 2 03533         TXH *+9,2,**  ERROR-DSU AR OUT OF CONTROL
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```
03523 -0534 00 2 05523         LXD HOLDA,2
03524  3 00000 2 03533         TXH *+7,2,**  ERROR-DSU LR OUT OF CONTROL
03525  0060 00 0 03520         TCOA *-5      KEEP CHECKING UNTIL DISCONNECT.

03526  0774 00 2 00000   IRDSC AXT **,2
03527  0774 00 4 00000         AXT **,4

03530  0760 00 0 00161         SWT 1         TEST FOR LOOP EXIT
03531  0020 00 4 00003         TRA 3,4       UP-NO.
03532  0020 00 4 00002         TRA 2,4       DN-YES.

03533  0540 00 0 07252        #RCHA CWBVC    BLAST OUT BUFFER.

03534  0535 00 2 03527        #LAC IRDSC+1,2 XRC TO XRB COMPLEMENTED.

03535  0760 00 0 00162        #SWT 2         TEST TO IGNORE ERROR IND.
03536  0020 00 0 03540        #TRA *+2       UP-INDICATE ERROR.
03537  0020 00 0 03526        #TRA IRDSC     DN-IGNORE ERROR INDICATION.

03540  0760 00 0 00163        #SWT 3         TEST PRINT OR HALT.
03541  0020 00 0 03547        #TRA *+6       UP-PRINT DSC AR ERROR
03542  0560 00 4 00001        #LDQ 1,4       DN-LOAD MQ WITH CORRECT
                                             DSC LIMITS.
03543  0500 00 0 05523        #CLA HOLDA     ERROR DSC REG CONTENTS.
03544  0634 00 2 03545        #SXA *+1,2     TRUE EXIT LOCATION.

03545  0420 00 0 00000        #HPR **        A DSU RUNAWAY OCCURED.
                                             THE -SR- ADDRESS CONTAINS
                                             THE TRUE EXIT LOCATION.
                                             THE -ACC- CONTAINS THE
                                             DSC REG CONTS IN ERROR.
                                             THE -MQ- CONTAINS THE
                                             CORRECT DSC LIMITS.

03546  0020 00 0 03526        #TRA IRDSC     GO TO SWT 1.

03547  0074 00 4 05136        #TSX SPLTA,4   PRINT-THE DSU CHANNEL
03550  0 00000 0 06320        #PZE CDDSU     RAN AWAY.

03551 -0754 00 2 00000        #PXD ,2        OBTAIN TRUE EXIT LOCATION.
03552 -0625 00 0 05527        #STL LOCAT     PRINT PROGRAM EXIT AND
03553  0020 00 0 04174        #TRA ERLOC     SECTION START LOCATION.

03554  0534 00 4 03527        #LXA IRDSC+1,4
03555  0500 00 4 00001         CLA 1,4       GET CORRECT DSC LIMITS.
03556  0074 00 4 04302         TSX CNVWD,4   CONVERT IT TO BCD.
03557  0602 00 0 06333         SLW CDDSV+4   STORE
03560 -0600 00 0 06334         STQ CDDSV+5   IT.

03561  0500 00 0 05523         CLA HOLDA     GET ERROR DSC REG CONTS.
03562  0074 00 4 04302         TSX CNVWD,4   CONVERT IT TO BCD.
03563  0602 00 0 06341         SLW CDDSV+10  STORE
03564 -0600 00 0 06342         STQ CDDSV+11  IT.

03565  0074 00 4 05144         TSX SPLTB,4   PRINT DSC LIMITS AND DSC
03566  0 00000 0 06327         PZE CDDSV     REG CONTS ON ERROR.
```

```
03567  0766 00 0 01361         WPRA          DOUBLE SPACE
03570  0760 00 0 01363         SPRA 3        PRINTER.
03571  0020 00 0 03526         TRA IRDSC     GO TO SWT1



*SCHTA *** I/O CHECK THEN
*SCHT  *** CHECK DSC REGISTER CONTENTS AND INDICATE ERRORS.

*      SPECIFICATION - SCHTA-
*       1. CHECK LOCATION -IOTA- FOR NON ZERO
*          WHICH WOULD INDICATE A PREVIOUS I/O
*          CHECK.
*       2. INDICATE ANY I/O CHECK BY HALT OR
*          PRINT
*       3. ENTER THE -SCHT- ROUTINE.

*      SPECIFICATIONS - SCHT-
*       1. COMPARE DSC REGISTER CONTENTS STORED IN
*          THE CALLING SEQUENCE FOR EQUALITY.
*       2. INDICATE ANY ERROR BY HALT OR
*          PRINT UNDER SENSE SW 3 CONTROL.
*       3. PROVIDE ERROR IGNORE UNDER SENSE SW 2.
*       4. PROVIDE LOPP RETURN UNDER SENSE SW 1.

*      CALLING SEQUENCE
*       1. SCHTA-
*          A-X       IOT
*          A-X+1     STL IOTA
*          A-X+2     SCHA A+2
*          A-X+3     CONTINUE
*          .
*          .
*          .
*          A         TSX SCHTA,4
*          A+1       CORRECT DSC REG CONTENTS
*          A+2       PZE**     DSC REG CONTS STORED
*                    FOR COMPARISON.
*          A+3       LOOP RETURN.
*          A+4       CONTINUE RETURN.

*       2. SCHT-
*          B-Y      SCHA B+2
*          B-Y+1    CONTINUE.
*          .
*          .
*          .
*          B         TSX SCHT,4
*          B+1       CORRECT DSC REG CONTENTS.
*          B+2       PZE**     DSC REG CONTS STORED
*                     FOR COMPARISON.
*           B+3       LOOP RETURN.
*           B+4       CONTINUE RETURN.
```

```
03572 -0520 00 0 05525   SCHTA NZT IOTA      TEST FOR I/O CHECK.
03573  0020 00 0 03636         TRA SCHT      NO-CHECK SCH.

03574  0760 00 0 00162        #SWT 2         TEST TO IGNORE ERROR IND.
03575  0020 00 0 03577        #TRA *+2       UP-INDICATE ERROR
03576  0020 00 0 03660        #TRA SRHT+2    DN-IGNORE ERROR INDICATION
                                             AND GO TO SWT 1

03577  0760 00 0 00163         SWT 3         TEST PRINT OR HALT
03600  0020 00 0 03614         TRA *+12      UP-PRINT IOT ERROR

03601  0700 00 0 03601        #CPY *         TURN ON THE I/O CHECK LITE.
03602  0500 00 0 05525        #CLA IOTA      PUT I/O CHECK ADDRESS
03603  0402 00 0 05317        #SUB Q2        IN HPR ADDRESS.
03604  0621 00 0 03607        #STA *+3
03605  0560 00 0 05305        #LDQ ZERO      CLEAR MQ
03606 -0754 00 0 00000        #PXD           CLEAR ACCUMULATOR

03607  0420 00 0 00000        #HPR **        I/O CHECK ERROR.
                                             LOCATION THAT I/O CHECK
                                             OCCURRED IS IN THE
                                             -SR- ADDRESS

03610  0760 00 0 00005        #IOT           TURN OFF THE I/O
03611  0761 00 0 00000        #NOP           CHECK LITE.
03612  0600 00 0 00000        #STZ           RESET I/O CHECK STORAGE
03613  0020 00 0 03636        #TRA SCHT      GO TO SCH TEST

03614  0766 00 0 01361         WPRA          SPACE PRINTER
03615  0634 00 2 03656        #SXA SRHT,2    PREPARE TO PRINT IOT ERROR.
03616  0634 00 4 03657        #SXA SRHT+1,4

03617  0500 00 0 05525        #CLA IOTA      GET I/O CHECK ADDRESS
03620  0402 00 0 05317        #SUB Q2
03621  0767 00 0 00022        #ALS 18        PUT IT IN DECREMENT
03622  0074 00 4 04265        #TSX CNVTD,4   CONVERT IT TO BCD
03623  0602 00 0 06445        #SLW CDIOT+8

03624  0074 00 4 05136        #TSX SPLTA,4   PRINT-AN I/O CHECK WAS
03625  0 00000 0 06435        #PZE CDIOT     DETECTED AT LOCATION XXXXX.

03626  0535 00 4 03657        #LAC SRHT+1,4  COMPUTE TRUE PROGRAM
03627 -0754 00 4 00000        #PXD ,4        EXIT LOCATION.
03630 -0625 00 0 05527        #STL LOCAT     PRINT-TRUE EXIT LOCATION
03631  0020 00 0 04174        #TRA ERLOC     AND SECTION START LOCATION.

03632  0600 00 0 05525        #STZ IOTA      RESET I/O CHECK CELL
03633  0766 00 0 01361         WPRA          SPACE PRINTER
03634  0760 00 0 01363         SPRA 3        DOUBLE SPACE.
03635  0020 00 0 03640        #TRA SCHT+2    CONTINUE AND CHECK CHANNEL DATA.


03636  0634 00 2 03656   SCHT  SXA SRHT,2    SAVE XRS
03637  0634 00 4 03657         SXA SRHT+1,4

03640  0535 00 2 03657         LAC SRHT+1,2  XRC TO XRB COMPLEMENTED.
```

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03641  0760 00 0 00162         SWT 2          TEST TO IGNORE ERROR DETECTION.
03642  0020 00 0 03644         TRA *+2        UP-ERROR DETECT.
03643  0020 00 0 03656         TRA SRHT       DN-GO TO EXIT.

03644  0534 00 4 03657         LXA SRHT+1,4   RESTORE XRC
03645  0560 00 4 00001         LDQ 1,4        DATA COMPARISION
03646  0500 00 4 00002         CLA 2,4
03647  0340 00 4 00001         CAS 1,4
03650  0020 00 0 03652        #TRA *+2        COMPARISON ERROR.

03651  0020 00 0 03656         TRA SRHT       OK-GO TO EXIT.

03652  0760 00 0 00163        #SWT 3          TEST FOR ERROR PRINT.
03653  0020 00 0 03663        #TRA SRHT+5     UP-PRINT ERROR.
03654  0634 00 2 03655        #SXA *+1,2      STORE PROGRAM EXIT LOCATION
                                              IN THE -HPR- ADDRESS.

03655  0420 00 0 00000        #HPR **         STORE CHANNEL ERROR OCCURRED
                                              ON LAST LINE OF PRINT-OUT.
                                              CORRECT DSC REGITER CONTENTS
                                              IS IN THE MQ.
                                              DSC REGISTER CONTENTS STORED
                                              IS IN THE ACCUMULATOR.

03656  0774 00 2 00000   SRHT  AXT **,2       RESTORE XRS.
03657  0774 00 4 00000         AXT **,4

03660  0760 00 0 00161         SWT 1          TEST FOR LOOP EXIT.
03661  0020 00 4 00004         TRA 4,4        UP-LOOP RETURN
03662  0020 00 4 00003         TRA 3,4        DN-CONTINUE RETURN

03663  0766 00 0 01361         WPRA           SPACE PRINTER.
03664  0074 00 4 05136        #TSX SPLTA,4    PRINT-SCH ERROR OCCURED
03665  0 00000 0 06447        #PZE CDSCH      DURING THE PREVIOUS LINE
                                              OF TEST PRINTOUT.

03666 -0754 00 2 00000        #PXD ,2         GET TRUE EXIT LOCATION.
03667 -0625 00 0 05527        #STL LOCAT      PRINT-PROGRAM EXIT AND
03670  0020 00 0 04174        #TRA ERLOC      SECTION START LOCATION

03671  0534 00 4 03657        #LXA SRHT+1,4   RESTORE XRC
03672  0560 00 4 00002        #LDQ 2,4        GET DSC REG CONTENTS
03673 -0600 00 0 05523        #STQ HOLDA      AND PUT IN HOLDA.
03674  0500 00 4 00001        #CLA 1,4        GET CORRECT DSC REG CONTENTS.
03675 -0625 00 0 05527        #STL LOCAT      PRINT DSC REG CONTENTS ON
03676  0020 00 0 04210        #TRA ERSCH      ERROR.

03677  0766 00 0 01361        #WPRA           SPACE PRINTER
03700  0760 00 0 01363        #SPRA 3
03701  0020 00 0 03656        #TRA SRHT       GO TO EXIT.



*ECHK  *** PERFORM CHECKING FOR READ PRINTER OPERATIONS.

*      SPECIFICATIONS-
```

```
*      1. COMPARE ECHO RETURN DATA TO
*         THE PRINT IMAGE SPECIFIED IN
*         THE CALLING SEQUENCE AND PROVIDE
*         ERROR INDICATION.
*      2. PROVIDE LOOP EXIT UNDER CONTROL
*         OF SENSE SWITCH -1-.
*      3. PROVIDE IGNORE ERROR INDICATION FACILITY
*         UNDER CONTROL OF SENSE SWITCH -2-.
*      4. PROVIDE CHOICE OF HALT OR PRINTING OF
*         ERROR INDICATIONS UNDER CONTROL
*         OF SENSE SWITCH -3-.

*      ERROR INDICATION FORMATS-
*       ECHO ERROR-HALT-
*       1. THE STORAGE REGISTER CONTAINS AN -HPR-
*          WITH THE LOCATION FROM WHICH THE -ECHK-
*          ROUTINE WAS ENTERED IN ITS ADDRESS.
*       2. THE -ACCUMULATOR- WILL CONTAIN THE
*          ECHO IMAGE WORD IN ERROR.
*       3. THE -MQ- REGISTER WILL CONTAIN THE
*          PRINT IMAGE WORD CORRESPONDING TO
*          THE ECHO IMAGE WORD.
*       4. THE -SENSE INDICATORS- WILL CONTAIN
*          A NUMBER, 11-1 OCTAL, IN THE LEFT
*          OR RIGHT HALF CORRESPONDING TO THE
*          CARD IMAGE POSITION IN ERROR.

*      ECHO ERROR -PRINT-
*      1. -AN ECHO ERROR OCCURRED ON THE PREVIOUS
*         LINE OF TEST PATTERN PRINTOUT.-
*      2. -PROGRAM EXIT AT -AAAAA. SECGTION STARTS
*         AT-BBBBB.-
*      3. -A LINE OF NUMERALS CORESPONDING
*         TO THE UNITS POSITION OF THE TYPE
*         WHEELS PRINTED.
*      4. -THE LINE OF TEST PATTERN IN ERROR
*         PRINTED USIGN -WPR- INSTEAD OF -RPR-.
*      5. -A LINE OF PRINT REPRESENTING THE
*         ECHO IMAGE OF THE ERROR LINE.
*      6. -A LINE OF PRINT REPRESENTING THE
*         ERROR BIT PATTERN PRODUCED BY
*         AN EXCLUSIVE -OR- OF THE PRINT
*         IMAGE WITH THE ECHO IMAGE.


*      CALLING SEQUENCE-
*          A         TSX ECHK,4
*          A+1       PZE PRINT IMAGE+18,1
*          A+2       NOP OR SPRA 9 DEPENDING ON
*                                  WHETHER PRINTING 1-72
*                                  OR 49-120.
*          A+3       RCHA TEST IMAGE TO BE
*                         PRINTED ON ERROR.
*          A+4       LOOPING RETURN.
*          A+5       CONTINUE RETURN.
```

```
03702  0634 00 1 03745   ECHK  SXA RCHK,1
03703  0634 00 2 03746         SXA RCHK+1,2
03704  0634 00 4 03747         SXA RCHK+2,4
03705  0604 00 0 05533         STI TEMPA

03706 -0500 00 0 07520         CAL ECHO+20   8-4 L TO      CORRECT
03707 -0602 00 0 07476         ORS ECHO+2    8 L AND       ECHO
03710 -0602 00 0 07506         ORS ECHO+10   4 L.          IMAGE

03711 -0500 00 0 07516         CAL ECHO+18   8-3 L TO      FOR
03712 -0602 00 0 07476         ORS ECHO+2    8 L AND       CHECKING.
03713 -0602 00 0 07510         ORS ECHO+12   3 L.

03714 -0500 00 0 07521         CAL ECHO+21   8-4 R TO
03715 -0602 00 0 07477         ORS ECHO+3    8 R AND
03716 -0602 00 0 07507         ORS ECHO+11   4 R.

03717 -0500 00 0 07517         CAL ECHO+19   8-3 R TO
03720 -0602 00 0 07477         ORS ECHO+3    8 R AND
03721 -0602 00 0 07511         ORS ECHO+13   3 R.

03722  0774 00 1 00022         AXT 18,1      CLEAR ERROR BIT IMAGE
03723  0600 00 1 07544         STZ ERBIT+18,1
03724  2 00001 1 03723         TIX *-1,1,1

03725  0774 00 1 00022         AXT 18,1      COMPARE PRINT IMAGE TO
03726  0500 00 1 07516         CLA ECHO+18,1 THE CORRECTED ECHO IMAGE
03727  0340 60 4 00001         CAS* 1,4
03730  0020 00 0 03732        #TRA *+2       ERROR-ECHOS DID NOT COMPARE

03731  0020 00 0 03744         TRA *+11

03732  0760 00 0 00162        #SWT 2         TEST TO IGNORE ECHO ERROR
03733  0020 00 0 03735        #TRA *+2       UP-INDICATE ERROR
03734  0020 00 0 03745        #TRA *+9       DN-IGNORE ERROR INDICATION.
03735  0535 00 2 03747        #LAC RCHK+2,2  GET TRUE EXIT LOCATION.
03736  0760 00 0 00163        #SWT 3         TEST PRINT OR HALT.
03737  0020 00 0 03754        #TRA RCHK+7    UP-PRINT ECHO ERROR.
03740  0560 60 4 00001        #LDQ* 1,4      DOWN-SETUP ERROR HALT.
03741  0441 00 1 05357        #LDI IND+18,1
03742  0634 00 2 03743        #SXA *+1,2

03743  0420 00 0 00000        #HPR **        ECHO CHECK OCCURRED ON
                                             LAST LINE OF TEST PRINTOUT.

                                             THE ACCUMULATOR CONTAINS
                                             THE ECHO WORD IN ERROR.

                                             THE MQ CONTAINS THE PRINT
                                             IMAGE WORD COMPARED TO.

                                             THE SENSE INDICATORS
                                             CONTAIN THE CARD IMAGE ROW
                                             11-1 OCTAL IN THE DECREMENT
                                             OR ADDRESS TO INDICATE LEFT
```

```
                                                    OR RIGHT.

                                                    THE -SR- CONTAINS THE ADDRESS
                                                    FROM WHICH THE ECHK ROUTINE
                                                    WAS ENTERED.

03744  2 00001 1 03726         TIX *-14,1,1

03745  0774 00 1 00000   RCHK  AXT **,1
03746  0774 00 2 00000        AXT **,2
03747  0774 00 4 00000        AXT **,4
03750  0441 00 0 05533        LDI TEMPA
03751  0760 00 0 00161        SWT 1
03752  0020 00 4 00005        TRA 5,4
03753  0020 00 4 00004        TRA 4,4

03754  0074 00 4 05136        TSX SPLTA,4   PRINT-AN ECHO ERROR
03755  0 00000 0 06514       #PZE CDECH     OCCURRED ON THE PREVIOUS
03756  0060 00 0 03756       #TCOA *        LINE OF TEST PATTERN
                                            PRINTOUT.

03757 -0754 00 2 00000       #PXD ,2        GET TRUE EXIT LOCATION.
03760 -0625 00 0 05527       #STL LOCAT     PRINT ERROR LOCATION AND
03761  0020 00 0 04174       #TRA ERLOC     SECTION START ADDRESS.

03762  0766 00 0 01361       #WPRA          SPACE PRINTER

03763  0074 00 4 04473       #TSX SPTAW,4   WPRA AND OFLOW TEST.

03764  0534 00 2 03747        LXA RCHK+2,2  SAVED XRC TO XRB.
03765  0522 00 2 00002       #XEC 2,2       NOP OR SPRA 9.
03766  0760 00 0 01370        SPRA 8        SUPPRESS SPACE AND
03767  0760 00 0 01367        SPRA 7        EXTRA
03770  0074 00 4 04422        TSX SPRA2,4   SPACE.
03771  0500 00 2 00002       #CLA 2,2
03772  0402 00 0 05326       #SUB LNOP
03773  0100 00 0 03777       #TZE *+4
03774  0074 00 4 05126       #TSX SPLAT+1,4 PRINT-49-120 COLUMN
03775  0 00000 0 06407       #PZE NUMBB     INDICATORS.
03776  0020 00 0 04001       #TRA *+3
03777  0074 00 4 05126       #TSX SPLAT+1,4 PRINT-1-72 COLUMN
04000  0 00000 0 06372       #PZE NUMBA     INDICATORS.
04001  0060 00 0 04001       #TCOA *

04002  0074 00 4 04473       #TSX SPTAW,4   WPRA AND OFLOW TEST.

04003  0522 00 2 00002       #XEC 2,2       NOP OR SPRA 9.
04004  0760 00 0 01370        SPRA 8        SUPPRESS SPACE AND
04005  0760 00 0 01367        SPRA 7        EXTRA
04006  0074 00 4 04422        TSX SPRA2,4   SPACE.
04007  0522 00 2 00003       #XEC 3,2       PRINT ERROR LINE.
04010  0060 00 0 04010       #TCOA *

04011  0074 00 4 04473       #TSX SPTAW,4   WPRA AND OFLOW TEST.

04012  0522 00 2 00002       #XEC 2,2       NOP OR SPRA 9.
```

```
04013  0760 00 0 01370         SPRA 8         SUPPRESS SPACE AND
04014  0760 00 0 01367         SPRA 7         EXTRA
04015  0074 00 4 04422         TSX SPRA2,4    SPACE.

04016  0540 00 0 07301        #RCHA CWECH     PRINT ECHO IMAGE.
04017  0060 00 0 04017        #TCOA *


04020  0074 00 4 04473        #TSX SPTAW,4    WPRA AND OFLOW TEST.

04021  0774 00 1 00022        #AXT 18,1       DEVELOP ERROR BIT IMAGE.
04022 -0500 60 2 00001        #CAL* 1,2
04023  0322 00 1 07516        #ERA ECHO+18,1
04024  0602 00 1 07544        #SLW ERBIT+18,1 STORE ERROR BIT IMAGE.
04025  2 00001 1 04022        #TIX *-3,1,1

04026  0522 00 2 00002        #XEC 2,2        NOP OR SPRA 9.
04027  0760 00 0 01370         SPRA 8         SUPPRESS SPACE AND
04030  0760 00 0 01367         SPRA 7         EXTRA
04031  0074 00 4 04422         TSX SPRA2,4    SPACE.

04032  0540 00 0 07303        #RCHA CWERB     PRINT ERRROR BIT IMAGE.
04033  0060 00 0 04033        #TCOA *

04034  0766 00 0 01361        #WPRA           SPACE PRINTER
04035  0020 00 0 03745        #TRA RCHK       GO TO SWT 1


*IMGCK *** IMAGE COMPARE SUBROUTINE FOR SECTION AF.

*      SPECIFICATIONS-
*       1. COMPARE PRINT IMAGES AS SPECIFIED BY THE
*          CALLING SEQUENCE AND PROVIDE ERROR
*          DETECTION AND INDICATION.
*       2. PROVIDE LOOP EXIT UNDER CONTROL OF SENSE SWITCH 1.
*       3. PROVIDE IGNORE ERROR INDICATION FACILITY UNDER CONTROL
*          OF SENSE SWITCH 2.
*       4. PROVIDE FOR HALT OR PRINTING OF ERROR INDICATIONS
*          UNDER CONTROL OF SENSE SWITCH 3.

*      ERROR INDICATION FORMATS-
*       COMPARISION ERROR -HALT-
*       1. THE STORAGE REGISTER CONTAINS AN -HPR- WITH THE
*          LOCATION FROM WHICH THE -IMGCK- ROUTINE WAS
*          ENTERED IN ITS ADDRESS.
*       2. THE ACCUMULATOR WILL CONTAIN THE PRINT IMAGE WORD
*          IN ERROR.
*       3. THE MQ REGISTER WILL CONTAIN THE CORRECT
*          COMPARISION WORD.
*       4. THE SENSE INDICATOR REGISTER WILL CONTAIN
*          A NUMBER. 13-1 OCTAL, IN THE LEFT OR RIGHT
*          HALF CORRESPONDING TO THE PRINT IMAGE LOCATION
*          MODIFIED. ZERO ROW WILL BE REPRESENTED BY -1.

*      COMPARISON ERROR -PRINT-
```

```
*      1. -THE PRINT IMAGE WAS MODIFIED DURING THE
*         PREVIOUS LINE OF PRINTOUT.-
*      2. -PROGRAM EXIT AT -AAAAA. SECTION STARTS AT -BBBBB.-
*      3. -A LINE OF NUMERALS CORRESPONDING TO THE UNITS POSITION
*         OF THE TYPE WHEELS PRINTED.-
*      4. -THE LINE OF UNMODIFIED TEST PATTERN PRINTED UNDER WPR.-
*      5. -THE LINE OF MODIFIED TEST PATTERN PRINTED UNDER WPR.-
*      6. -A LINE OF PRINT REPRESENTING THE ERROR BIT
*         PATTERN PRODUCED BY AN EXCLUSIVE -OR- OF THE
*         TWO IMAGES.


*      CALLING SEQUENCE-
*          A         TSX IMGCK,4
*          A+1       PZE FIRST LOC OF PRINT IMAGE, 1, WORD COUNT
*          A+2       PZE FIRST LOC OF COMPARE IMAGE, 1, WORD COUNT
*          A+3       NOP OR SPRA9 FOR LEFT OR RIGHT PRINT.
*          A+4       LOOP RETURN.
*          A+5       CONTINUE RETURN.


04036  0634 00 1 04074   IMCHK SXA RMCHK,1
04037  0634 00 2 04075         SXA RMCHK+1,2
04040  0634 00 4 04076         SXA RMCHK+2,4
04041  0604 00 0 05533         STI TEMPA

04042  0774 00 1 00030         AXT 24,1      CLEAR ERROR BIT IMAGE.
04043  0600 00 1 07552         STZ ERBIT+24,1
04044  2 00001 1 04043         TIX *-1,1,1

04045  0500 00 4 00001         CLA 1,4       COMPARE PRINT IMAGES.
04046 -0737 00 1 00000         PDC ,1        GET WORD COUNT
04047 -0754 00 1 00000         PXD ,1        CHECK WORD COUNT
04050 -0100 00 0 04052         TNZ *+2       FOR ZERO

04051  0420 00 0 04051        #HPR *         ERROR-WORD COUNT ZERO IN
                                             CALLING SEQUENCE.

04052 -0634 00 1 04073         SXD *+17,1
04053  0774 00 1 00000         AXT 0,1
04054  0500 60 4 00001         CLA* 1,4      PRINT IMAGE WORD.
04055  0340 60 4 00002         CAS* 2,4      COMPARISON IMAGE WORD.
04056  0020 00 0 04060        #TRA *+2       ERROR-IMAGES DID NOT COMPARE.

04057  0020 00 0 04072         TRA *+11      OK-CONTINUE TO CHECK

04060  0760 00 0 00162        #SWT 2         TEST TO IGNORE ERROR
04061  0020 00 0 04063        #TRA *+2       UP-INDICATE ERROR.
04062  0020 00 0 04074        #TRA *+10      DOWN-IGNORE ERROR INDICATION.
04063  0535 00 2 04076        #LAC RMCHK+2,2 GET TRUE EXIT LOCATION.
04064  0760 00 0 00163        #SWT 3         TEST PRINT OR HALT.
04065  0020 00 0 04103        #TRA RMCHK+7   UP PRINT ERROR.
04066  0560 60 4 00002        #LDQ* 2,4      DOWN-SETUP ERROR HALT.
04067  0441 00 1 05335        #LDI IND,1
04070  0634 00 2 04071        #SXA *+1,2
```

```
04071  0420 00 0 00000        #HPR **         IMAGE MODIFICATION OCCURED ON
                                               LAST LINE OF TEST PRINTOUT.

                                               THE ACCUMULATOR CONTAINS THE
                                               MODIFIED WORD.

                                               THE MQ CONTAINS THE CORRECT
                                               WORD.

                                               THE SENSE INDICATORS CONTAIN
                                               13-1 OCTAL IN THE LEFT OR
                                               RIGHT HALF TO INDICATE THE
                                               PRINT IMAGE LOCATION MODIFIED.
                                               ZERO ROW IS INDICATED BY 77777.

                                               THE -SR- CONTAINS THE ADDRESS
                                               FROM WHICH THE IMGCK ROUTINE
                                               WAS ENTERED.

04072  1 77777 1 04073         TXI *+1,1,-1
04073  3 00000 1 04054         TXH *-15,1,**

04074  0774 00 1 00000   RMCHK AXT **,1
04075  0774 00 2 00000         AXT **,2
04076  0774 00 4 00000         AXT **,4
04077  0604 00 0 05533         STI TEMPA
04100  0760 00 0 00161         SWT 1
04101  0020 00 4 00005         TRA 5,4
04102  0020 00 4 00004         TRA 4,4

04103  0074 00 4 05136        #TSX SPLTA,4    PRINT-THE PRINT IMAGE WAS
04104  0 00000 0 06420        #PZE CDIMG      MODIFIED DURING THE PREVIOUS
04105  0060 00 0 04105        #TCOA *         LINE OF PRINT OUT.

04106 -0754 00 2 00000        #PXD ,2         GET TRUE EXIT LOCATION.
04107 -0625 00 0 05527        #STL LOCAT      PRINT ERROR LOCATION AND
04110  0020 00 0 04174        #TRA ERLOC      SECTION PRINT ADDRESS.

04111  0766 00 0 01361        #WPRA           SPACE PRINTER.

04112  0074 00 4 04473        #TSX SPTAW,4

04113  0534 00 2 04076         LXA RMCHK+2,2 SAVED XRC TO XRB.

04114  0522 00 2 00003        #XEC 3,2        NOP OR SPRA 9.
04115  0760 00 0 01370         SPRA 8         SUPPRESS SPACE AND
04116  0760 00 0 01367         SPRA 7         EXTRA
04117  0074 00 4 04422         TSX SPRA2,4    SPACE.
04120  0500 00 2 00003        #CLA 3,2
04121  0402 00 0 05326        #SUB LNOP
04122  0100 00 0 04126        #TZE *+4
04123  0074 00 4 05126        #TSX SPLAT+1,4 PRINT-49-120 COLUMN
04124  0 00000 0 06407        #PZE NUMBB     INDICATORS.
04125  0020 00 0 04130        #TRA *+3
04126  0074 00 4 05126        #TSX SPLAT+1,4 PRINT-1-72 COLUMN
04127  0 00000 0 06372        #PZE NUMBA     INDICATORS.
```

```
04130  0060 00 0 04130        #TCOA *

04131  0500 00 2 00001        #CLA 1,2        DEVELOP ERROR BIT IMAGE.
04132 -0737 00 1 00000        #PDC ,1
04133 -0754 00 1 00000        #PXD ,1
04134 -0100 00 0 04136        #TNZ *+2
04135  0000 00 0 04070        #HTR *-37       ERROR-WORD COUNT ZERO IN
04136 -0634 00 1 04144        #SXD *+6,1      CALLING SEQUENCE.
04137  0774 00 1 00000        #AXT 0,1
04140 -0500 60 2 00001        #CAL* 1,2
04141  0322 60 2 00002        #ERA* 2,2
04142  0602 00 1 07522        #SLW ERBIT,1
04143  1 77777 1 04144        #TXI *+1,1,-1
04144  3 00000 1 04140        #TXH *-4,1,**

04145  0074 00 4 04473        #TSX SPTAW,4    WPRA AND OFLOW TEST.

04146  0522 00 2 00003        #XEC 3,2        NOP OR SPRA 9.
04147  0760 00 0 01370         SPRA 8         SUPPRESS SPACE AND
04150  0760 00 0 01367         SPRA 7         EXTRA
04151  0074 00 4 04422         TSX SPRA2,4    SPACE.

04152  0540 00 2 00002        #RCHA 2,2       UNMODIFIED TEST IMAGE.

04153  0060 00 0 04153        #TCOA *

04154  0074 00 4 04473        #TSX SPTAW,4    WPRA AND OFLOW TEST.

04155  0522 00 2 00003        #XEC 3,2        NOP OR SPRA 9.
04156  0760 00 0 01370         SPRA 8         SUPPRESS SPACE AND
04157  0760 00 0 01367         SPRA 7         EXTRA
04160  0074 00 4 04422         TSX SPRA2,4    SPACE.

04161  0540 00 2 00001        #RCHA 1,2       MODIFIED TEST IMAGE.
04162  0060 00 0 04162        #TCOA *

04163  0074 00 4 04473        #TSX SPTAW,4    WPRA AND OFLOW TEST.

04164  0522 00 2 00003        #XEC 3,2        NOP OR SPRA 9.
04165  0760 00 0 01370         SPRA 8         SUPPRESS SPACE AND
04166  0760 00 0 01367         SPRA 7         EXTRA
04167  0074 00 4 04422         TSX SPRA2,4    SPACE.

04170  0540 00 0 07273        #RCHA CWERA     ERROR BIT IMAGE.
04171  0060 00 0 04171        #TCOA *
04172  0766 00 0 01361        #WPRA           SPACE PRINTER
04173  0020 00 0 04074        #TRA RMCHK      GO TO SWT 1



*ERLOC *** PRINT PROGRAM EXIT AND SECTION START.

*      SPECIFICATIONS-
*       1. OBTAIN MAIN PROGRAM EXIT LOCATION
*          FROM THE DECREMENT OF THE
*          ACCUMULATOR AND PRINT IT.
```

```
*       2. OBTAIN THE SECTION START ADDRESS
*          FROM -MONIT- COMPUTE IT AND
*          PRINT IT.
*       3. OBTAIN TRANSFER LOCATION FROM -LOCAT-
*          AND COMPUTE EXIT.

*      CALLING SEQUENCE-
*          A         STL LOCAT
*          A+1       TRA ERLOC
*          A+2       RETURN


04174  0074 00 4 04265   ERLOC#TSX CNVTD,4   CONVERT PROGRAM EXIT TO BCD
04175  0602 00 0 06470        #SLW CDLOC+4   AND STORE IT IN PRINT BCD.
04176 -0535 00 4 05530        #LDC MONIT,4   OBTAIN SECTION START,
04177 -0754 00 4 00000        #PXD ,4
04200  0074 00 4 04265        #TSX CNVTD,4   CONVERT IT TO BCD AND
04201  0602 00 0 06475        #SLW CDLOC+9   STORE IT IN PRINT BCD.
04202  0074 00 4 05144        #TSX SPLTB,4
04203  0 00000 0 06464        #PZE CDLOC
04204  0500 00 0 05527        #CLA LOCAT     COMPUTE RETURN
04205  0400 00 0 05316        #ADD Q1
04206  0621 00 0 04207        #STA *+1
04207  0020 00 0 00000        #TRA **        RETURN



*ERSCH *** PRINT-DSC REGISTER CONTENTS ON ERROR.

*      SPECIFICATIONS-
*       1. OBTAIN CORRECT DSC REGISTER CONTENTS FROM
*          THE ACCUMULATOR.
*       2. OBTAIN DSC REGISTER CONTENTS IN ERROR FROM -HOLDA-.
*       3. PRINT BOTH ITEMS
*       4. COMPUTE RETURN LOCATION FROM -LOCAT-
*          AND RETURN.

*      CALLING SEQUENCE-
*          A         STL LOCAT
*          A+1       TRA ERSCH
*          A+2       RETURN


04210  0074 00 4 04302   ERSCH#TSX CNVWD,4
04211  0602 00 0 06504        #SLW CDDAT+5
04212 -0600 00 0 06505        #STQ CDDAT+6
04213  0500 00 0 05523        #CLA HOLDA
04214  0074 00 4 04302        #TSX CNVWD,4
04215  0602 00 0 06512        #SLW CDDAT+11
04216 -0600 00 0 06513        #STQ CDDAT+12
04217  0074 00 4 05144        #TSX SPLTB,4
04220  0 00000 0 06477        #PZE CDDAT
04221  0500 00 0 05527        #CLA LOCAT
04222  0400 00 0 05316        #ADD Q1
04223  0621 00 0 04224        #STA *+1
04224  0020 00 0 00000        #TRA **
```

```
*BLANK *** BLANK COLUMNS 49-72 OF PRINT IMAGE.

*      SPECIFICATIONS-
*          MASK OUT 49-72 OF THE -IMAGE- PRINT IMAGE
*          STORAGE AREA TO PREVENT DOUBLE-PRINTING
*          WHEN PRINTING 120 COLUMNS.
*          THE CONDITION OF THE ACCUMULATOR IS NOT GUARANTEED.

*      CALLING SEQUENCE
*          A         TSX BLANK,4
*          A+1       RETURN


04225  0634 00 4 04232   BLANK SXA BLRNK,4
04226  0774 00 4 00030         AXT 24,4
04227 -0500 00 0 05323         CAL MASK
04230  0320 00 4 07445         ANS IMAGE+25,4 BLANK 49-72 OF IMAGE.
04231  2 00002 4 04230         TIX *-1,4,2

04232  0774 00 4 00000   BLRNK AXT **,4
04233  0020 00 4 00001         TRA 1,4



*CLARA *** CLEAR ECHO IMAGE SUBROUTINE

*      SPECIFICATIONS-
*          STORE ZEROS IN 22 LOCATIONS OF THE
*          -ECHO- IMAGE AREA.

*      CALLING SEQUENCE-
*          A         TSX CLARA,4
*          A+1       RETURN.


04234  0634 00 4 04240   CLARA SXA CLRRA,4
04235  0774 00 4 00026         AXT 22,4
04236  0600 00 4 07522         STZ ECHO+22,4 CLEAR ECHO IMAGE
04237  2 00001 4 04236         TIX *-1,4,1
04240  0774 00 4 00000   CLRRA AXT **,4
04241  0020 00 4 00001         TRA 1,4



*CLEAR *** CLEAR PRINT IMAGES

*      SPECIFICATIONS-
*          CLEAR -IMAGE- AND -IMAGA- PRINT
*          IMAGE STORAGE AREAS.

*      CALLING SEQUENCE-
*          A         TSX CLEAR,4
*          A+1       RETURN
```

```
04242  0634 00 4 04247   CLEAR SXA CLRAR,4
04243  0774 00 4 00030         AXT 24,4
04244  0600 00 4 07444         STZ IMAGE+24,4
04245  0600 00 4 07474         STZ IMAGA+24,4
04246  2 00001 4 04244         TIX *-2,4,1

04247  0774 00 4 00000   CLRAR AXT **,4
04250  0020 00 4 00001         TRA 1,4



*CLERA *** CLEAR CORE STORAGE AS SPECIFIED BY CALLING SEQUENCE.

*      CALLING SEQUENCE
*          A         TSX CLERA,4
*          A+1       PZE FIRST,2,N
*          A+2       RETURN

*      FIRST - FIRST LOCATION OF BLOCK TO BE
*                CLEARED.
*      N    - NUMBER OF CELLS TO BE CLEARED.


04251  0634 00 2 04263   CLERA SXA CLERR,2

04252  0500 00 4 00001         CLA 1,4
04253 -0737 00 2 00000         PDC ,2        GET -N-.
04254 -0754 00 2 00000         PXD ,2        CHECK -N-.
04255  0100 00 0 04263         TZE *+6       -N- EQUALS ZERO.
04256 -0634 00 2 04262         SXD *+4,2     SET -N- IN LIMIT.
04257  0774 00 2 00000         AXT 0,2
04260  0600 60 4 00001         STZ* 1,4      CLEAR.
04261  1 77777 2 04262         TXI *+1,2,-1  STEP COUNT.
04262  3 00000 2 04260         TXH *-2,2,**  TEST LIMIT.

04263  0774 00 2 00000   CLERR AXT **,2
04264  0020 00 4 00002         TRA 2,4



*CNVTD *** CONVERT BINARY DECREMENT TO BCD OCTAL

*      SPECIFICATIONS-
*          CONVERT THE BINARY INTEGER VALUE IN
*          THE ACCUMULATOR DECREMENT TO
*          FIVE BCD OCTAL CHARACTERS
*          AND LEAVE THEM IN THE LOGICAL ACCUMULATOR
*          AS ONE BCD WORD, THE FIRST CHARACTER
*          OF THE WORD WILL BE A BLANK

*      CALLING SEQUENCE
*          A         TSX CNVTD,4 BINARY IN ACC DECR.
*          A+1       RETURN       BCD IN LOGICAL ACC.
```

```
04265  0634 00 4 04277   CNVTD SXA CNRTD,4
04266 -0600 00 0 05532         STQ TEMP      SAVE MQ.
04267 -0130 00 0 00000         XCL           ACC TO MQ
04270 -0763 00 0 00003         LGL 3         DELETE PREFIX
04271 -0500 00 0 04301         CAL CNRTD+2   BLANK FIRST CHARACTER.
04272  0774 00 4 00005         AXT 5,4
04273  0767 00 0 00003         ALS 3         CONVERT BINARY TO
04274 -0763 00 0 00003         LGL 3         5 CHARACTERS OF BCD
04275  2 00001 4 04273         TIX *-2,4,1   OCTAL.
04276  0560 00 0 05532         LDQ TEMP      RESTORE M.Q.

04277  0774 00 4 00000   CNRTD AXT **,4
04300  0020 00 4 00001         TRA 1,4

04301 +000000000060            OCT 60        BCD BLANK



*CNVWD ***CONVERT BINARY WORD TO BCD OCTAL.

*      SPECIFICATIONS-
*          CONVERT THE CONTENTS OF THE ACCUMULATOR
*          S,1-35 TO TWO WORDS OF BCD OCTAL AND
*          LEAVE IN THE ACCUMULATOR AND M.Q. THE
*          HIGH ORDER WORD IS IN THE ACCUMULATOR.

*      CALLING SEQUENCE-
*          A         TSX  CNVWD BINARY IN ACC S,1-35
*          A+1       RETURN       BCD IN ACC AND MQ.


04302  0634 00 4 04316   CNVWD SXA CNRWD,4
04303  0131 00 0 00000         XCA
04304  0774 00 2 00002         AXT 2,2       CONVERT 6 DIGITS PER LOOP
04305  0602 00 0 05532         SLW TEMP      SAVE ACC FOR FINAL EXIT.
04306 -0754 00 0 00000         PXD           CLEAR ACCUMULATOR
04307  0774 00 4 00006         AXT 6,4       CONVERT 1 DIGIT PER LOOP.
04310  0767 00 0 00003         ALS 3
04311 -0763 00 0 00003         LGL 3
04312  2 00001 4 04310         TIX *-2,4,1   GO BACK FOR NEXT DIGIT
04313  2 00001 2 04305         TIX *-6,2,1   GO BACK FOR LAST 6 DIGITS
04314 -0130 00 0 00000         XCL           PREPARED TO EXIT
04315 -0500 00 0 05532         CAL TEMP

04316  0774 00 4 00000   CNRWD AXT **,4
04317  0020 00 4 00001         TRA 1,4



*MOVE  *** MOVE INFORMATION IN CORE STORAGE.

*      SPECIFICATIONS-
*          MOVE INFORMATION IN CORE STORAGE AS
*          SPECIFIED BY THE CALLING SEQUENCE.
```

```
*      CALLING SEQUENCE-
*          A         TSX MOVE,4
*          A+1       PZE FROM,2,N
*          A+2       PZE TO,2
*          A+3       RETURN.

*      FROM - FIRST LOCATION FROM WHICH INFORMATION IS
*                 TO BE MOVED.
*      N    -     NUMBER OF WORDS TO MOVE.
*      TO   -     FIRST LOCATION TO WHICH THE
*                 INFORMATION IS TO BE MOVED.


04320  0634 00 2 04333   MOVE  SXA MRVE,2

04321  0500 00 4 00001         CLA 1,4
04322 -0737 00 2 00000         PDC ,2        GET -N-.
04323 -0754 00 2 00000         PXD ,2        CHECK -N-.
04324  0100 00 0 04333         TZE *+7       -N- EQUALS ZERO
04325 -0634 00 2 04332         SXD *+5,2     SET -N- IN LIMIT.
04326  0774 00 2 00000         AXT 0,2
04327  0500 60 4 00001         CLA* 1,4      MOVE A TO B
04330  0601 60 4 00002         STO* 2,4
04331  1 77777 2 04332         TXI *+1,2,-1  STEP COUNT.
04332  3 00000 2 04327         TXH *-3,2,**  TEST LIMIT.

04333  0774 00 2 00000   MRVE  AXT **,2
04334  0020 00 4 00003         TRA 3,4



*XCHNG *** INTERCHANGE INFORMATION IN CORE STORAGE

*      CALLING SEQUENCE-
*          A         TSX XCHNGE,4
*          A+1       PZE FIRST,2,N
*          A+2       PZE SECOND,2
*          A+3       RETURN.

*      FROM - FIRST LOCATION FROM WHICH INFORMATION IS
*                 TO BE INTERCHANGED.
*      N    -     NUMBER OF WORDS IN BLOCK.
*      TO   -     FIRST LOCATION OF SECOND BLOCK
*                 TO BE INTERCHANGED


04335  0634 00 2 04352   XCHNG SXA XCRNG,2

04336  0500 00 4 00001         CLA 1,4
04337 -0737 00 2 00000         PDC ,2        GET -N-.
04340 -0754 00 2 00000         PXD ,2        CHECK -N-.
04341  0100 00 0 04352         TZE *+9       -N- EQUALS ZERO.
04342 -0634 00 2 04351         SXD *+7,2
04343  0774 00 2 00000         AXT 0,2
04344  0500 60 4 00001         CLA* 1,4      EXCHANGE.
04345  0560 60 4 00002         LDQ* 2,4
```

```
04346  0601 60 4 00002         STO* 2,4
04347 -0600 60 4 00001         STQ* 1,4
04350  1 77777 2 04351         TXI *+1,2,-1  STEP COUNT.
04351  3 00000 2 04344         TXH *-5,2,**

04352  0774 00 2 00000   XCRNG AXT **,2
04353  0020 00 4 00003         TRA 3,4



*RTATE *** PRINT IMAGE ROTATION SUBROUTINE.

*      SPECIFICATIONS-
*          ROTATE THE -IMAGE- PRINT IMAGE ONE
*          PRINT POSITION TO THE LEFT AS 72 COLUMNS.
*          STATUS OF MQ, ACC, AND ACC OVFL NOT GUARANTEED.

*      CALLING SEQUENCE-
*          A         TSX RTATE,4
*          A+1       RETURN.


04354  0634 00 4 04366   RTATE SXA RTRTE,4
04355  0774 00 4 00030         AXT 24,4
04356 -0500 00 4 07444         CAL IMAGE+24,4 LEFT WORD.
04357  0560 00 4 07445         LDQ IMAGE+25,4 RIGHT WORD.
04360 -0763 00 0 00001         LGL 1         SHIFT ROW LEFT 1 COL.
04361  0602 00 4 07444         SLW IMAGE+24,4 LEFT WORD SHIFTED.
04362 -0600 00 4 07445         STQ IMAGE+25,4 RIGHT WORD SHIFED EXCEPT
                                              COLUMN 72.
04363  0771 00 0 00044         ARS 36        COLUMN 1 TO COLUMN 72.
04364 -0602 00 4 07445         ORS IMAGE+25,4 STORE COLUMN 72.
04365  2 00002 4 04356         TIX *-7,4,2
04366  0774 00 4 00000   RTRTE AXT **,4
04367  0020 00 4 00001         TRA 1,4



*RTATA *** PRINT IMAGE ROTATION SUBROUTINE.

*      SPECIFICATIONS-
*          ROTATE THE -IMAGA- PRINT IMAGE ONE
*          PRINT POSITION TO THE LEFT AS 72 COLUMNS.
*          STATUS OF MQ, ACC, AND ACC OVFL NOT GUARANTEED.

*      CALLING SEQUENCE-
*          A         TSX RTATA,4
*          A+1       RETURN.


04370  0634 00 4 04402   RTATA SXA RTRTA,4
04371  0774 00 4 00030         AXT 24,4
04372 -0500 00 4 07474         CAL IMAGA+24,4 LEFT WORD.
04373  0560 00 4 07475         LDQ IMAGA+25,4 RIGHT WORD.
04374 -0763 00 0 00001         LGL 1         SHIFT ROW LEFT 1 COL.
04375  0602 00 4 07474         SLW IMAGA+24,4 LEFT WORD SHIFTED.
```

```
04376  0601 00 4 07475         STO IMAGA+25,4 RIGHT WORD SHIFED EXCEPT
                                              COLUMN 72.
04377  0771 00 0 00044         ARS 36         COLUMN 1 TO COLUMN 72.
04400 -0602 00 4 07475         ORS IMAGA+25,4 STORE COLUMN 72.
04401  2 00002 4 04372         TIX *-7,4,2
04402  0774 00 4 00000   RTRTA AXT **,4
04403  0020 00 4 00001         TRA 1,4


*RTATB *** PRINT IMAGE ROTATION SUBROUTINE.
*      SPECIFICATIONS-
*          ROTATE THE -IMAGE- PRINT IMAGE ONE
*          PRINT POSITION TO THE LEFT AS 48 COLUMNS.
*          STATUS OF MQ, ACC, AND ACC OVFL NOT GUARANTEED.

*      CALLING SEQUENCE-
*          A         TSX RTATB,4
*          A+1       RETURN.


04404  0634 00 4 04420   RTATB SXA RTRTB,4
04405  0774 00 4 00030         AXT 24,4
04406 -0500 00 4 07444         CAL IMAGE+24,4 LEFT WORD.
04407  0560 00 4 07445         LDQ IMAGE+25,4 RIGHT WORD.
04410 -0763 00 0 00001         LGL 1          SHIFT ROW LEFT 1 COL.
04411  0602 00 4 07444         SLW IMAGE+24,4 LEFT WORD SHIFTED.
04412 -0600 00 4 07445         STQ IMAGE+25,4 RIGHT WORD SHIFED
                                              EXCEPT COLUMN 48.
04413  0771 00 0 00014         ARS 12         COLUMN 1 TO COLUMN 48.
04414 -0602 00 4 07445         ORS IMAGE+25,4 COLUMN 48 AND GARBAGE
04415 -0500 00 0 05323         CAL MASK       BLANK OUT
04416  0320 00 4 07445         ANS IMAGE+25,4 GARBAGE.
04417  2 00002 4 04406         TIX *-9,4,2
04420  0774 00 4 00000   RTRTB AXT **,4
04421  0020 00 4 00001         TRA 1,4


*SPRA2 *** DELAY PROGRAM 2 MILLISCONDS, THEN SPRA 2.

*      CALLING SEQUENCE
*          A         TSX SPRA2,4
*          A+1       RETURN


04422  0634 00 4 04426   SPRA2 SXA SPRR2,4
04423  0774 00 4 00124         AXT 84,4       2 MILLISECONDS DELAY
04424  2 00001 4 04424         TIX *,4,1      FOR SELECTOR PICKUP.
04425  0760 00 0 01362         SPRA 2

04426  0774 00 4 00000   SPRR2 AXT **,4
04427  0020 00 4 00001         TRA 1,4


*READE *** RPRA, OVERFLOW TEST, IOT AND SCH TEST.
```

```
*      CALLING SEQUENCE-
*          A         TSX READE,4
*          A+1       LOOP RETURN
*          A+2       CONTINUE RETURN.


04430  0634 00 4 04442   READE SXA RRADE,4

04431  0762 00 0 01361         RPRA          SELECT.
04432  0760 00 0 01360         SPTA          TEST OVERFLOW.
04433  0020 00 0 04435         TRA *+2       NO
04434  0760 00 0 01361         SPRA 1        YES.

04435  0640 00 0 04440         SCHA *+3      RECORD DSC REGISTERS.

04436  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
04437  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS
04440  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04441  0020 00 0 04444         TRA *+3       LOOP RETURN

04442  0774 00 4 00000   RRADE AXT **,4      EXIT LINKAGE.
04443  0020 00 4 00002         TRA 2,4

04444  0534 00 4 04442         LXA *-2,4
04445  0020 00 4 00001         TRA 1,4



*SPTAR *** RPRA AND OVERFLOW TEST.

*      SPECIFICATIONS-
*       1. READ SELECT PRINTER
*       2. TEST FOR OVERFLOW.
*       3. IF OVERFLOW IS INDICATED-SKIP TO 1,
*          TCOA, IOT AND SCH TEST AND RESLECT
*          READ PRINTER.
*       4. PROVIDE LOOPING FACILITY UNDER CONTROL
*          OF SENSE SWITCH 1.

*      CALLING SEQUENCE-
*          A         TSX SPTAR,4
*          A+1       LOOP RETURN
*          A+2       CONTINUE RETURN.


04446  0634 00 4 04466   SPTAR SXA SPTRR,4

04447  0762 00 0 01361         RPRA          SELECT.
04450  0760 00 0 01360         SPTA          OVERFLOW TEST.
04451  0020 00 0 04466         TRA *+13      NO
04452  0760 00 0 01361         SPRA 1        YES.
04453  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
04454  0 00000 0 00000         PZE                   CORRECT DSC REG LIMITS.
04455  0761 00 0 00000         NOP           LOOP RETURN.
```

```
04456  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
04457 -0625 00 0 05525         STL IOTA      I/O CHEC OCCURRED.

04460  0640 00 0 04463         SCHA *+3      RECORD DSC REGISTERS.

04461  0074 00 4 03572         TSX SCHTA,4   SCH CHECK.
04462  0000 00 0 00000         IOCD          CORRECT DSC REGISTER CONTENTS
04463  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04464  0020 00 0 04470         TRA *+4       LOOP RETURN.
04465  0762 00 0 01361         RPRA          RESELECT AFTER OVERFLOW.
04466  0774 00 4 00000   SPTRR AXT **,4
04467  0020 00 4 00002         TRA 2,4
04470  0762 00 0 01361         RPRA
04471  0534 00 4 04466         LXA SPTRR,4
04472  0020 00 4 00001         TRA 1,4



*SPTAW *** WPRA AND OVERFLOW TEST

*      SPECIFICATIONS-
*       1. SELECT WRITE PRINTER DECIMAL.
*       2. TEST FOR OVERFLOW
*       3. IF OVERFLOW IS INDICATED-SKIP TO
*          ONE, TCOA AND RESELECT WRITE PRINTER.

*      CALLING SEQUENCE-
*          A         TSX SPTAW,4
*          A+1       RETURN.


04473  0766 00 0 01361   SPTAW WPRA
04474  0760 00 0 01360         SPTA          TEST OVERFLOW.
04475  0020 00 0 04501         TRA *+4       NO
04476  0760 00 0 01361         SPRA 1        YES.
04477  0060 00 0 04477         TCOA *
04500  0766 00 0 01361         WPRA          RESELECT
04501  0020 00 4 00001         TRA 1,4



*WRITD *** START PRINTER, OVERFLOW TEST AND IOT + SCH TEST.

*      CALLING SEQUENCE-
*          A         TSX WRITD,4
*          A+1       LOOP RETURN
*          A+2       CONTINUE RETURN.


04502  0634 00 4 04514   WRITD SXA WRRTD,4   SAVE XRC.
04503  0766 00 0 01361         WPRA          SELECT.
04504  0760 00 0 01360         SPTA          OVERFLOW TEST.
04505  0020 00 0 04507         TRA *+2       NO.
04506  0760 00 0 01361         SPRA 1        YES.
```

```
04507  0640 00 0 04512         SCHA *+3      RECORD DSC REGISTERS.

04510  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
04511  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
04512  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04513  0020 00 0 04516         TRA *+3       LOOP RETURN.

04514  0774 00 4 00000   WRRTD AXT **,4      NORMAL RETURN.
04515  0020 00 4 00002         TRA 2,4

04516  0534 00 4 04514         LXA *-2,4     LOOP RETURN.
04517  0020 00 4 00001         TRA 1,4



*ZONE  *** ALTERNATE ZONES FOR SECTION AD.

*      SPECIFICATIONS-
*      INSTALL A ZONE BIT PATTERN IN THE -IMAGE-
*      AND -IMAGA- PRINT IMAGES. THE ZONE
*      ROWS TO BE STORED IS CONTROLLED BY THE
*      STATUS OF SWITCH CELLS ZONE 1, ZONE 2 AND ZONE 3.

*      THIS SUBROUTINE IS DESIGNED TO BE ENTERED A TOTAL OF
*      FOUR TIMES PER TEST SECTION.
*      THREE TIMES IT RETURNS CONTROL
*      TO A LOOPING EXIT AND THE FOURTH
*      TIME IT RETURNS TO A CONTINUE NEXT
*      SECTION EXIT. TO OBTAIN CORRECT OPERATION
*      OF THE SUBROUTINE THE SWITCH CELLS SHOULD BE
*      RESET TO ZERO UPON ENTRY TO THE
*      TEST SECTION THAT THIS SUBROUTINE IS TO
*      BE USED. SWITCH CELLS WILL BE SET AS FOLLOWS-
*        1ST ENTRY-TEST ZONE 1, SET ZONE 1, ZONE 12L, 11R.
*        2ND ENTRY-TEST ZONE 1+2, SET ZONE 2, ZONE 11L, OR.
*        3RD ENTRY-TEST ZONE 1,2+3, SET ZONE 3, ZONE 0L, 12R.
*        4TH ENTRY-TEST ZONE 1,2,3 RESET CELLS, EXIT NEXT SECTION.

*      CALLING SEQUENCE-
*          A         TSX ZONE,4
*          A+1       REPEAT SECTION RETURN.
*          A+2       NEXT SECTION RETURN.


04520  0520 00 0 05535   ZONE  ZET ZONE1     CHECK IF CELL IS ZERO
04521  0020 00 0 04531         TRA *+8       NO-CONTINUE CELL CHECK
04522 -0500 00 0 05306         CAL KADA      YES-SET 11R AND 12L.
04523  0602 00 0 07441         SLW IMAGE+21  11R IMAGE
04524  0602 00 0 07442         SLW IMAGE+22  12L IMAGE.
04525  0602 00 0 07471         SLW IMAGA+21  11R IMAGA.
04526  0602 00 0 07472         SLW IMAGA+22  12L IMAGA.
04527 -0625 00 0 05535         STL ZONE1     SET CELL WITH BITS
04530  0020 00 4 00001         TRA 1,4       LOOP EXIT.

04531  0520 00 0 05536         ZET ZONE2     CHECK IF CELL IS ZERO.
```

```
04532  0020 00 0 04542         TRA *+8       NO-CONTINUE CELL CHECK
04533 -0500 00 0 05306         CAL KADA      YES-SET 0R AND 11L.
04534  0602 00 0 07437         SLW IMAGE+19  0R IMAGE.
04535  0602 00 0 07440         SLW IMAGE+20  11L IMAGE.
04536  0602 00 0 07467         SLW IMAGA+19  0R IMAGA.
04537  0602 00 0 07470         SLW IMAGA+20  11L IMAGA.
04540 -0625 00 0 05536         STL ZONE2     SET CELL WITH BITS.
04541  0020 00 4 00001         TRA 1,4       LOOP EXIT.

04542  0520 00 0 05537         ZET ZONE3     CHECK IF CELL IS ZERO
04543  0020 00 0 04553         TRA *+8       NO-GO TO NEXT SECTION EXIT
04544 -0500 00 0 05306         CAL KADA      YES-SET 12R AND 0L.
04545  0602 00 0 07436         SLW IMAGE+18  0L IMAGE.
04546  0602 00 0 07443         SLW IMAGE+23  12R IMAGE.
04547  0602 00 0 07466         SLW IMAGA+18  0L IMAGA.
04550  0602 00 0 07473         SLW IMAGA+23  12R IMAGA.
04551 -0625 00 0 05537         STL ZONE3     SET CELL WITH BITS.
04552  0020 00 4 00001         TRA 1,4       LOOP EXIT.

04553  0600 00 0 05535         STZ ZONE1     NEXT SECTION EXIT.
04554  0600 00 0 05536         STZ ZONE2
04555  0600 00 0 05537         STZ ZONE3
04556  0020 00 4 00002         TRA 2,4



*WRITC *** PRINT -IMAGE- IN 72 COLUMNS AS SPECIFIED IN THE
*      *** CALLING SEQUENCE UNDER WPR.

*      SPECIFICATIONS-
*       1. CHECK FOR AN OVERFLOW SIGNAL TO CAUSE A
*          CARRAGE OVERFLOW.
*       2. PRINT WHAT IS SET UP IN THE -IMAGE- PRINT
*          IMAGE AS SPECIFIED BY THE CALLING SEQUENCE.
*       3. PROVIDE FOR I/O CHECK AND CHANNEL DATA TESTS.

*      CALLING SEQUENCE-
*          A         TSX WRITC,4
*          A+1       NOP OR SPRA 9 DEPENDING ON
*                    WHETHER PRINTING
*                    1-72 OR 49-120.
*          A+2       LOOP RETURN.
*          A+3       CONTINUE RETURN.


04557  0634 00 4 04631   WRITC SXA WRRTC,4   SAVE XRC.
04560  0766 00 0 01361         WPRA          SELECT
04561  0760 00 0 01360         SPTA          OVERFLOW TEST.
04562  0020 00 0 04577         TRA *+13      NO.
04563  0760 00 0 01361         SPRA 1        YES
04564  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
04565  0 00000 0 00000         PZE                  CORRECT DSC REG LIMITS.
04566  0761 00 0 00000         NOP           LOOP RETURN.

04567  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
```

```
04570 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

04571  0640 00 0 04574         SCHA *+3      RECORD DSC REGISTERS.

04572  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
04573  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
04574  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04575  0761 00 0 00000         NOP           IGNORE LOOP RETURN
04576  0766 00 0 01361         WPRA          RESELECT

04577  0534 00 4 04631         LXA WRRTC,4   RESTORE XRC.
04600  0522 00 4 00001         XEC 1,4       NOP OR SPRA 9
04601  0760 00 0 01370         SPRA 8        SUPPRESS SPACE AND
04602  0760 00 0 01367         SPRA 7        EXTRA
04603  0074 00 4 04422         TSX SPRA2,4   SPACE.

04604  0640 00 0 04607         SCHA *+3      RECORD DSC REGISTERS.

04605  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
04606  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
04607  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04610  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

04611  0540 00 0 07275         RCHA CWIM     PRINT -IMAGE-.

04612  0640 00 0 04623         SCHA *+9      RECORD DSC REGISTERS

04613  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
04614  0 07276 0 07444         PZE IMAGE+24,,CWIM+1   CORRECT DSC REGISTER LIMITS.
04615  0761 00 0 00000         NOP           LOOP RETURN.

04616  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
04617 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

04620  0640 00 0 04627         SCHA *+7      RECORD DSC REGISTER

04621  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
04622  0072 76 0 07415         IOCD IMAGE+1,,CWIM+1  CORRECT DSC REG CONTS.
04623  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04624  0761 00 0 00000         NOP           IGNORE LOOP RETURN

04625  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
04626  0072 76 0 07444         IOCD IMAGE+24,,CWIM+1 CORRECT DSC REG CONTS.
04627  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04630  0020 00 0 04633         TRA *+3       LOOP RETURN.

04631  0774 00 4 00000   WRRTC AXT **,4      NORMAL RETURN.
04632  0020 00 4 00003         TRA 3,4

04633  0534 00 4 04631         LXA *-2,4     LOOP RETURN
04634  0020 00 4 00002         TRA 2,4


*READ  *** PRINT -IMAGE- AS SPECIFIED BY THE CALLING
```

```
*      SPECIFICATIONS-
*       1. PRINT WHAT IS SET UP IN THE -IMAGE-
*          AS SPECIFIED BY THE CALLING SEQUENCE.
*       2. PROVIDE FOR I/O CHECK AND DSC REGISTER CONTENTS
*          TESTS WHEREVER POSSIBLE.
*       3. PROVIDE FOR ECHO CHECKING.

*      CALLING SEQUENCE-
*          A         TSX READ,4
*          A+1       NOP OR SPRA 9, 1-72 OR 73-120
*          A+2       LOOP RETURN.
*          A+3       NORMAL RETURN.


04635  0634 00 4 04667   READ  SXA RRAD,4    SAVE XRS.

04636  0074 00 4 04234         TSX CLARA,4   CLEAR ECHO IMAGE.

04637  0640 00 0 04642         SCHA *+3 RECORD DSC REGISTERS.

04640  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
04641  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
04642  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04643  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

04644  0540 00 0 07316         RCHA CWRM     PRINT -IMAGE-.

04645  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
04646  0 07326 0 07522         PZE ECHO+22,,CWRM+8    CORRECT DSC REG LIMITS.
04647  0761 00 0 00000         NOP           LOOP RETURN.

04650  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
04651 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

04652  0640 00 0 04655         SCHA *+3      RECORD DSC REGISTERS.

04653  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
04654  0073 26 0 07516         IOCD ECHO+18,,CWRM+8 CORRECT DSC REG CONTS.
04655  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04656  0761 00 0 00000         NOP           IGNORE LOOP RETURN

04657  0534 00 4 04667         LXA RRAD,4    RESTORE XRC.
04660  0500 00 4 00001         CLA 1,4       SET UP FOR-ECHK-.
04661  0601 00 0 04664         STO *+3       FOR LEFT OR RIGHT SIDE.

04662  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
04663  0 00000 1 07436         PZE IMAGE+18,1 COMPARE LOCATION.
04664  0 00000 0 00000         PZE **        NOP OR SPRA 9.
04665  0540 00 0 07275         RCHA CWIM     LINE TO PRINT ON ERROR.
04666  0020 00 0 04671         TRA *+3       LOOP RETURN

04667  0774 00 4 00000   RRAD  AXT **,4      NORMAL EXIT.
04670  0020 00 4 00003         TRA 3,4
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04671  0534 00 4 04667         LXA RRAD,4    LOOP EXIT.
04672  0020 00 4 00002         TRA 2,4



*READB *** PRINT -IMAGE- AND -IMAGA- IN COLUMNS 1-120 UNDER RPRA.

*      SPECIFICATIOMS
*       1. CHECK FOR OVERFLOW SIGNAL TO CAUSE A CARRIAGE OVERFLOW.
*       2. PRINT WHAT IS SET UP IN THE -IMAGE- PRINT IMAGE IN COLUMNS
*          1-72, BLANK COLUMNS 49-72 IN THE -IMAGA- PRINT
*          IMAGE, AND PRINT COLUMNS 1-48 OF THE -IMAGA- PRINT IMAGE
*          AS COLUMNS 73-120 OF THE PRINTOUT UNDER RPRA.
*       3. PROVIDE FOR I/O CHECK AND CHANNEL DATA TESTS.
*       4. PROVIDE FOR EACH CHECKING.
*       5. PROVIDE FOR -IMAGE- AND -IMAGA- ROTATION.
*       6. PREFORM A LINE COUNT AS SPECIFIED BY THE CALLING SEQUENCE.

*      CALLING SEQUENCE-
*          A         TSX READB,4
*          A+1       PZE NUMBER OF LINES TO PRINT.
*          A+2       RETURN


04673  0634 00 4 04775   READB SXA RRADB,4

04674  0500 00 4 00001         CLA 1,4
04675  0601 00 0 05526         STO LINES     STORE LINE COUNT.

04676  0074 00 4 04430         TSX READE,4   RPRA, OFLOW AND IOCK TEST.
04677  0761 00 0 00000         NOP           LOOP RETURN.

04700  0074 00 4 04234         TSX CLARA,4   CLEAR IMAGE.

04701  0540 00 0 07316         RCHA CWRM     PRINT -IMAGE-.

04702  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
04703  0 07326 0 07522         PZE ECHO+22,,CWRM+8    CORRECT DSC REG LIMITS.
04704  0761 00 0 00000         NOP           LOOP RETURN.

04705  0760 00 0 00005         IOT           TEST FOR I/O CHECK
04706 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

04707  0640 00 0 04712         SCHA *+3      RECORD DSC REGISTERS.

04710  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
04711  0073 26 0 07516         IOCD ECHO+18,,CWRM+8 CORRECT DSC REG CONTS.
04712  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04713  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

04714  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES
04715  0 00000 1 07436         PZE IMAGE+18,1 COMPARE LOCATION.
04716  0761 00 0 00000         NOP           PRINTING 1-72.
04717  0540 00 0 07275         RCHA CWIM     LINE TO PRINT ON ERROR.
```

```
04720  0761 00 0 00000         NOP           LOOP RETURN.

04721  0762 00 0 01361         RPRA          RESELECT FOR RIGHT HALF.
04722  0760 00 0 01371         SPRA 9

04723  0640 00 0 04726         SCHA *+3      RECORD DSC REGISTERS.

04724  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
04725  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS.
04726  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04727  0761 00 0 00000         NOP           LOOP RETURN.

04730  0774 00 4 00030         AXT 24,4
04731 -0500 00 0 05323         CAL MASK      BLANK 49-72 OF -IMAGA-.
04732  0320 00 4 07475         ANS IMAGA+25,4 MASK OUT 12-35 OF
                                             THE RIGHT HALF PRINT
04733  2 00002 4 04732         TIX *-1,4,2   IMAGE.

04734  0074 00 4 04234         TSX CLARA,4   CLEAR ECHO IMAGE.

04735  0540 00 0 07327         RCHA CWRMA    PRINT -IMAGA- IN 73-120.

04736  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
04737  0 07337 0 07522         PZE ECHO+22,,CWRMA+8    CORRECT DSC REG LIMITS.
04740  0761 00 0 00000         NOP           LOOP RETURN.

04741  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
04742 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

04743  0640 00 0 04746         SCHA *+3      RECORD DSC REGISTERS.

04744  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
04745  0073 37 0 07516         IOCD ECHO+18,,CWRMA+8 CORRECT DSC REG CONTS.
04746  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
04747  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

04750  0074 00 4 03702         TSX ECHK,4    ECHO CHECK.
04751  0 00000 1 07466         PZE IMAGA+18,1 COMPARE LOCATION.
04752  0760 00 0 01371         SPRA 9        PRINTING 73-120.
04753  0540 00 0 07277         RCHA CWIMA    LINE TO PRINT ON ERROR.
04754  0020 00 0 04676         TRA READB+3   LOOP RETURN.

04755  0074 00 4 04354         TSX RTATE,4   ROTATE IMAGE.

04756  0774 00 4 00030         AXT 24,4      ROTATE IMAGA.
04757 -0500 00 4 07474         CAL IMAGA+24,4 LEFT WORD.
04760  0560 00 4 07475         LDQ IMAGA+25,4 RIGHT WORD.
04761 -0763 00 0 00001         LGL 1         SHIFT ROW LEFT 1 COL.
04762  0602 00 4 07474         SLW IMAGA+24,4 LEFT WORD SHIFTED.
04763 -0600 00 4 07475         STQ IMAGA+25,4 RIGHT WORD SHIFTED.
                                             EXECPT COLUMN 48.
04764  0771 00 0 00014         ARS 12        COLUMN 1 TO COL 48.
04765 -0602 00 4 07475         ORS IMAGA+25,4 COLUMN 48 AND GARBAGE.
04766 -0500 00 0 05323         CAL MASK      BLANK OUT
04767  0320 00 4 07475         ANS IMAGA+25,4 GARBAGE.
```

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04770  2 00002 4 04757         TIX *-9,4,2

04771  0500 00 0 05526         CLA LINES     COUNT LINES
04772  0402 00 0 05316         SUB Q1
04773  0100 00 0 04775         TZE *+2       GO TO EXIT.
04774  0020 00 0 04675         TRA READB+2   PRINT NEXT LINE.

04775  0774 00 4 00000   RRADB AXT **,4      EXIT LINK.
04776  0020 00 4 00002         TRA 2,4



*READC *** PROVIDE RANDOM CHARACTERS, PRINTING AND CHECKING
*      *** FOR SECTION AL.

*      SPECIFICATIONS-
*       1. PROVIDE FOR RANDOM CHARACTER GENERATION USING
*          -RANDN- AS SPECIFIED BY THE CALLING SEQUENCE.
*       2. PRINT WHAT IS SET UP IN THE -IMAGE- PRINT
*          IMAGE AS SPECIFIED BY THE CALLING SEQUENCE.
*       3. PROVIDE FOR I/O CHECK AND CHANNEL DATA TESTS.
*       4. PROVIDE FOR ECHO CHECKING.

*      CALLING SEQUENCE-
*          A         TSX READC,4
*          A+1       FIRST RANDOM BCD WORD STG,,NO OF BCD WORDS
*          A+2       NOP OR SPRA 9 DEPENDING ON
*                                  WHETHER PRINTING
*                                  1-72 OR 49-120.
*          A+3       LOOP RETURN
*          A+4       CONTINUE RETURN.

*          SELECTION OF THE PRINTER MUST BE ACCOMPLISHED
*          IN THE MAIN BODY OF THE PROGRAM.


04777  0634 00 4 05036   READC SXA RRADC,4

05000  0074 00 4 04234         TSX CLARA,4   CLEAR ECHO IMAGE

05001  0640 00 0 05004         SCHA *+3      RECORD DSC REGISTERS.

05002  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
05003  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
05004  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
05005  0761 00 0 00000         NOP           LOOP RETURN.

05006  0540 00 0 07316         RCHA CWRM     PRINT -IMAGE-.

05007  0534 00 4 05036         LXA RRADC,4   RESTORE XRC.
05010  0500 00 4 00001         CLA 1,4       GET RANDOM CHARACTER
05011  0601 00 0 05013         STO *+2       SPECIFICATION.
05012  0074 00 4 05042         TSX RANDN,4   GENERATE RANDOM CHARACTERS
05013  0 00000 0 00000         PZE **        AS SPECIFIED.

05014  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
```

```
                                                DISCONNECT.
05015  0 07326 0 07522          PZE ECHO+22,,CWRM+8   CORRECT DSC REG LIMITS.
05016  0761 00 0 00000          NOP           LOOP RETURN.

05017  0760 00 0 00005          IOT           TEST FOR I/O CHECK.
05020 -0625 00 0 05525          STL IOTA      I/O CHECK OCCURRED.

05021  0640 00 0 05024          SCHA *+3      IOT AND DSC REGISTERS.

05022  0074 00 4 03572          TSX SCHTA,4   IOT AND SCH CHECK.
05023  0073 26 0 07516          IOCD ECHO+18,,CWRM+8 CORRECT DSC REG CONTS.
05024  0 00000 0 00000          PZE **        DSC REGISTER STORAGE.
05025  0761 00 0 00000          NOP           IGNORE LOOP RETURN.

05026  0534 00 4 05036          LXA RRADC,4   RESTORE XRC.
05027  0500 00 4 00002          CLA 2,4       GET LEFT OR RIGHT
05030  0601 00 0 05033          STO *+3       SIDE.

05031  0074 00 4 03702          TSX ECHK,4    CHECK ECHOES.
05032  0 00000 1 07436          PZE IMAGE+18,1 COMPARE LOCATION
05033  0 00000 0 00000          PZE **        NOP OR SPRA 9.
05034  0540 00 0 07275          RCHA CWIM     LINE TO PRINT ON ERROR.
05035  0020 00 0 05040          TRA *+3       LOOP RETURN

05036  0774 00 4 00000   RRADC AXT **,4      EXIT LINK.
05037  0020 00 4 00004          TRA 4,4

05040  0534 00 4 05036          LXA *-2,4
05041  0020 00 4 00003          TRA 3,4



*RANDN *** RANDOM NUMBER BCD RECORD GENERATOR.

*      SPECIFICATIONS-
*          GENERATE RANDOM BCD CHARACTERS AND
*          STORE AS SPECIFIED BY CALLING SEQUENCE.

*      CALLING SEQUENCE
*          A         TSX RANDN,4
*          A+1       PZE FIRST,2,N
*          A+2       RETURN.

*          FIRST   - FIRST LOCATION OF CORE STORAGE BLOCK
*                    TO CONTAIN RANDOM BCD CHARACTERS.
*          N       - NUMBER OF STORAGE CELLS TO BE
*                    FILLED BY RANDOM BCD CHARACTERS.


05042  0634 00 1 05121   RANDN SXA RRNDN,1
05043  0634 00 2 05122          SXA RRNDN+1,2
05044  0634 00 4 05123          SXA RRNDN+2,4

05045  0500 00 4 00001          CLA 1,4       GET STORAGE LOCATION
05046  0601 00 0 05054          STO *+6       AND NUMBER OF WORDS.
05047  0622 00 0 05051          STD *+2       COMPUTE LAST LOCATION+1.
```

```
05050  0734 00 1 00000         PAX ,1
05051  1 00000 1 05052         TXI *+1,1,**
05052  0634 00 1 05114         SXA *+34,1

05053  0074 00 4 04251         TSX CLERA,4   CLEAR STORAGE BLOCK.
05054  0 00000 0 00000         PZE **        BLOCK INFORMATION.

05055  0774 00 2 00000         AXT 0,2       INITIALIZE CHARACTER COUNTER.
05056 -0534 00 4 05054         LXD *-2,4     INITIALIZE WORD COUNTER.
05057  0020 00 0 05062         TRA *+3

05060  0774 00 1 00000         AXT **,1      MQ EMPTY COUNTER
05061  3 00001 1 05074         TXH *+11,1,1  MQ NOT EMPTY.

05062  0774 00 1 00006         AXT 6,1       MQ EMPTY-RESET AND
05063  0560 00 0 05072         LDQ *+7       GENERATE NEW
05064 -0200 00 0 05073         MPR *+7       RANDOM WORD IN
05065  0361 00 0 05073         ACL *+6       THE MQ.
05066  0602 00 0 05073         SLW *+5       X
05067 -0773 00 0 00001         RQL 1         X
05070 -0600 00 0 05072         STQ *+2       X
05071  0020 00 0 05074         TRA *+3       X

05072 -353175317531            OCT 753175317531 PROTOTYPE 1.
05073 +242624262426            OCT 242624262426 PROTOTYPE 2.

05074 -0754 00 0 00000         PXD
05075 -0763 00 0 00006         LGL 6         GET RANDOM CHARACTER
05076  1 77777 1 05077         TXI *+1,1,-1  STEP MQ EMPTY COUNTER.
05077  0634 00 1 05060         SXA *-15,1    SAVE IT.

05100  0734 00 1 00000         PAX ,1        CHECK FOR ILLEGAL CHARACTER
05101 -3 00034 1 05107         TXL *+6,1,28
05102 -3 00037 1 05060         TXL *-18,1,31 NG
05103 -3 00054 1 05113         TXL *+8,1,44  OK
05104 -3 00057 1 05060         TXL *-20,1,47 NG.
05105 -3 00074 1 05113         TXL *+6,1,60  NG
05106  0020 00 0 05060         TRA *-22      NG.

05107  3 00017 1 05113         TXH *+4,1,15  OK.
05110  3 00014 1 05060         TXH *-24,1,12 NG.
05111  3 00012 1 05113         TXH *+2,1,10  OK
05112  3 00011 1 05060         TXH *-26,1,9  NG

05113  0767 00 2 00036         ALS 30,2      SHIFT GOOD CHARACTER AND
05114 -0602 00 4 00000         ORS **,4      STORE IT IN OUTPUT BLOCK.
05115  1 00006 2 05116         TXI *+1,2,6   STEP CHARACTER COUNTER.
05116 -3 00036 2 05060         TXL *-30,2,30 GET NEXT CHARACTER.

05117  0774 00 2 00000         AXT 0,2       RESTET CHARACTER COUNTER.
05120  2 00001 4 05060         TIX *-32,4,1  COUNT WORDS FILLED.

05121  0774 00 1 00000   RRNDN AXT **,1      EXIT LINK.
05122  0774 00 2 00000         AXT **,2
05123  0774 00 4 00000         AXT **,4
05124  0020 00 4 00002         TRA 2,4
```

```
*SPLAT *** 72 COLUMN BCD PRINT ROUTINE USING-SPLTR-.
*      CALLING SEQUENCE-
*          A         TSX SPLAT,4 INCLUDES WPRA
*          A+1       PZE CW NOTE ZERO DECREMENT

*          SEE -SPLTR FOR EXPLANATION OF -CW-.

*          THERE IS NO TCOA INSTRUCTION IN
*          THE SUBROUTINE.

*          THIS CALLING SEQUENCE
*          MAY BE MODIFIED BY USING TSX SPLAT+1,4
*          INSTEAD OF TSX SPLAT,4 IF IT IS DESIRED
*          TO SELECT THE PRINTER EXTERNALLY TO
*          THE SUBROUTINE. THIS WILL ENABLE
*          THE USE OF THE SENSE PRINTER INSTRUCTIONS.


05125  0766 00 0 01361   SPLAT WPRA          SELECT
05126  0634 00 4 05134         SXA SPRAT,4
05127  0500 00 4 00001         CLA 1,4       SET CONTROL WORD.
05130  0601 00 0 05132         STO *+2
05131  0074 00 4 05151         TSX SPLTR,4   BCD TO PRINT IMAGE.
05132  0 00000 0 00000         PZE **
05133  0540 00 0 07271         RCHA CWCRD    PRINT -CARDA-.

05134  0774 00 4 00000   SPRAT AXT **,4
05135  0020 00 4 00002         TRA 2,4




05136  0766 00 0 01361   SPLTA WPRA          CHECK FOR OVERFLOW
05137  0760 00 0 01360         SPTA          AND DOUBLE
05140  0020 00 0 05142         TRA *+2       SPACE BEFORE
05141  0760 00 0 01361         SPRA 1        ENTERING SPLAT.
05142  0760 00 0 01363         SPRA 3
05143  0020 00 0 05126         TRA SPLAT+1



05144  0766 00 0 01361   SPLTB WPRA          CHECK FOR OVERFLOW
05145  0760 00 0 01360         SPTA          BEFORE ENTERING SPLAT.
05146  0020 00 0 05126         TRA SPLAT+1
05147  0760 00 0 01361         SPRA 1
05150  0020 00 0 05126         TRA SPLAT+1



*SPLTR *** 72 COLUMN BCD PRINT ROUTINE.


*      CALLING SEQUENCE-
```

```
*      1. THIS SEQUENCE PUTS THE TEXT IN THE BODY OF THE PROGRAM

*         A         TSX SPLTR,4
*         A+1       PZE WC,,COL
*         A+2       BCD XTEXT TO BE PRINTED-
*          .        1-12 BCD WORDS, TOTAL WORD
*          .        COUNT EQUALS WC.
*         A+WC+2    RETURN TO MAIN PROGRAM

*         WC  --    BCD WORD COUNT 1-12, OF TEXT LINE.
*         COL --    FIRST COLUMN 1-72, TEXT IS TO BE
*                   PRINTED IN.
*         X   --    STANDARD SHARE BCD FORMAT WORD
*                   COUNT. NO MORE THAN 6 WORDS
*                   PER CARD DUE TO PUBLICATION
*                   RESTRICTIONS ON LISTING PAGE
*                   WIDTH.

*         IF THE TEXT IS PLACED IN THE BODY OF THE PROGRAM IT
*         MAY BE MODIFIED BY IOM.


*      2. THIS SEQUENCE PERMITS THE SAME TEXT TO BE PRINTED
*         BY SEVERAL PRINT ROUTINE ENTRIES.

*         A         TSX SPLTR,4
*         A+1       PZE CW        NOTE ZERO DECREMENT.
*         A+2       RETURN TO MAIN PROGRAM.

*         CW        PZE WC,,CO
*         CW+1      BCD XTEXT TO BE PRINTED.
*          .
*          .
*          .

*         CW MAY BE LOCATED AT ANY DESIRED PLACE IN
*         THE PROGRAM.


*         3. THIS SEQUENCE PERMITS A CHOICE OF SEVERAL
*            TEXTS TO BE PRINTED BY ONE PRINT
*            SUBROUTINE ENTRY.

*         A            TSX SPLTR,4
*         A+1          PZE CW,T     NOTE ZERO DECREMENT.
*         A+2          RETURN TO MAIN PROGRAM.

*         T   - AN INDEX REGISTER CONTAINING A VALUE
*                   TO MODIFY THE CW LOCATION TO
*                   OBTAIN ANOTHER TEXT CONTROL WORD
*                   AND ITS ACCOMPANYING TEXT.


*      NOTES -
```

```
*      RESULTS OF THE CONVERSION ARE LEFT
*      IN THE -CARDA- PRINT IMAGE.

*      THE BCD TEXT MUST ALWAYS BE PRECEEDED
*      BY AN APPROPRIATE TEXT CONTROL WORD.
*      AN APPROPRIATE CONTROL WORD MUST ALWAYS
*      CONSIST OF A BCD WORD COUNT OF 1-12 IN
*      ITS ADDRESS, A NUMBER 1-72 EQUAL
*      TO THE COLUMN NUMBER AT WHICH THE TEXT
*      IS TO BEGIN IN ITS DECREMENT, AND
*      A PREFIX AND TAG OF ZERO.

*      IF THE COLUMN NUMBER + THE NUMBER
*      OF CHARACTERS TO BE PRINTED - 1 EXCEEDS
*      72 THE REMAINING BCD CHARACTERS WILL
*      BE IGNORED.

*CONDITION OF THE ACC, MQ, AND ACC OVERFLOW
*TRIGGER IS NOT GUARANTEED ON EXIT FROM THIS ROUTINE.


05151  0761 00 0 00000   SPLTR NOP          GET GOING
05152  0634 00 1 05246         SXA SPLTR+61,1
05153  0634 00 2 05247         SXA SPLTR+62,2
05154  0761 00 0 00000         NOP
05155 -0520 00 4 00001         NZT 1,4       IF CONTROL WORD ZERO.

*5
05156  0020 00 4 00002         TRA 2,4       RETURN

05157 -0500 00 4 00001         CAL 1,4       GET NON-ZERO WORD
05160  0602 00 0 05276         SLW SPLTR+85  SAVE CONTROL WORD
05161 -0734 00 1 00000         PDX 0,1       TYPE WHEEL NO.
05162 -3 00000 1 05252         TXL SPLTR+65,1,0 IF DECR. ZERO, GET
                                             NEW CONTROL WORD

*10
05163 -0634 00 4 05165         SXD *+2,4     GET EXIT ADDRESS
05164  0737 00 2 00000         PAC 0,2       BY ADDING TWOS COMP.
05165  1 00000 2 05166         TXI *+1,2,0   OF N TO XRC.
05166  0634 00 2 05250         SXA SPLTR+63,2 EXIT VALUE.

                                    SET BIT INDEX TO STARTING WHEEL

05167  0634 00 1 05172         SXA *+3,1     FOR SHIFTING

*15
05170  0774 00 3 00001         AXT 1,3       1 TO XRA AND XRB
05171 -0500 00 0 05273         CAL SPLTR+82  BIT INDEX TO P
05172 -0765 00 1 00000         LGR 0,1       SHIFT TO STARTING POINT
05173 -0100 00 0 05176         TNZ *+3       IF ACC IS ZERO, SET FOR
05174 -0600 00 0 05274         STQ SPLTR+83  RIGHT ROW, AND MAKE

*20
05175  1 00001 2 05177         TXI *+2,2,1   XRB A DUECE
05176  0602 00 0 05274         SLW SPLTR+83  OTHERWISE, LEFT ROW.
```

```
05177  0774 00 1 00032         AXT 26,1
05200  0600 00 1 07414         STZ CARD+26,1 CLEAR CARD IMAGE
05201  2 00001 1 05200         TIX *-1,1,1

                                    FORM CARD IMAGE.

*25
05202  2 00001 4 05203         TIX *+1,4,1   ADDRESS OF FIRST WORD.
05203  0774 00 1 00006         AXT 6,1       CHARACTER COUNT.
05204  0560 00 4 00001         LDQ 1,4       GET THE WORD.
05205  0634 00 1 05237         SXA SPLTR+54,1 SAVE CHARACTER COUNT.
05206 -0754 00 0 00000         PXD           CLEAR ACC

*30
05207 -0763 00 0 00002         LGL 2         ZONE
05210  0767 00 0 00001         ALS 1         TIMES 2
05211  0734 00 1 00000         PAX 0,1
05212  0634 00 1 05226         SXA SPLTR+45,1 FOR FUTURE REFERENCE.
05213  0760 00 0 00000         CLM

*35
05214 -0763 00 0 00004         LGL 4         DIGIT
05215  0767 00 0 00001         ALS 1         TIMES 2
05216  0602 00 0 07362         SLW CARD      TEMP0
05217 -0500 00 0 05274         CAL SPLTR+83  BIT INDEX
05220 -0520 00 0 07362         NZT CARD      IS DIGIT ZERO.

*40
05221  3 00000 1 05271         TXH SPLTR+80,1,0 IS ZERO ZONE TOO.
05222  0534 00 1 07362         LXA CARD,1    OK, PROCEED
05223  3 00030 1 05231         TXH SPLTR+48,1,24 CHECK FOR ILLEGAL
05224  3 00024 1 05267         TXH SPLTR+78,1,20 SPECIAL CHARACTER.
05225 -0602 60 2 05305         ORS* SPLTR+92,2 XRB PICKS LEFT OR RIGHT.

*45
05226  0774 00 1 00000         AXT 0,1       ZONE AGAIN.
05227 -3 00000 1 05231         TXL *+2,1,0   NOTHING FOR ZERO ZONE
05230 -0602 60 2 05303         ORS* SPLTR+90,2 PLACE ZONE BIT.

                                     COLUMN SET.

05231  0771 00 0 00001         ARS 1         SET BIT INDEX TO
05232 -0100 00 0 05236         TNZ *+4       NEXT COLUMN, IF ANY.

*50
05233  3 00001 2 05245         TXH SPLTR+60,2,1 IF BX ZERO,+XRB 1, STOP

05234 -0500 00 0 05273         CAL SPLTR+82  IF NOT, SET TO RIGHT
05235  1 00001 2 05236         TXI *+1,2,1   ROW AND PROCEED.
05236  0602 00 0 05274         SLW SPLTR+83  BX READY FOR NEXT COLUMN.
05237  0774 00 1 00000         AXT 0,1       MORE CHARACTERS.

*55
05240  2 00001 1 05205         TIX SPLTR+28,1,1 NEXT COLUMN
05241  0534 00 1 05276         LXA SPLTR+85,1 MORE WORDS MAYBE.
05242 -2 00001 1 05245         TNX *+3,1,1    IF NOT, STOP.
```

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05243  0634 00 1 05276         SXA SPLTR+85,1 YUMMY, GO GET EM.
05244  1 00000 0 05202         TXI SPLTR+25

*60
05245  0761 00 0 00000         NOP
05246  0774 00 1 00000         AXT 0,1
05247  0774 00 2 00000         AXT 0,2
05250  0774 00 4 00000         AXT 0,4
05251  0020 00 4 00002         TRA 2,4         EXIT


                                     GET NEW CONTROL WORD FROM SOMPLACE


*65
05252  0634 00 4 05250         SXA SPLTR+63,4 FOR EXIT
05253  0534 00 1 05246         LXA SPLTR+61,1 RESTORE XRA
05254 -0520 60 0 05276         NZT* SPLTR+85 IF CONTROL WORD ZERO
05255  0020 00 0 05246         TRA SPLTR+61  RETURN.
05256 -0500 00 0 05276         CAL SPLTR+85  OLD CONTROL WORD

*70
05257  0625 00 0 05260         STT *+1       BRING OUT INDEX
05260 -0634 00 0 05262         SXD *+2,0     REGISTER, IF ONE IS TAGED.
05261  0737 00 4 00000         PAC 0,4
05262  1 00000 4 05263         TXI *+1,4,0   GET EFFECTIVE ADDRESS.
05263 -0500 00 4 00000         CAL 0,4       NEW CONTROL WORD.

*75
05264 -0734 00 1 00000         PDX 0,1       TYPE WHEEL ID.
05265  0602 00 0 05276         SLW SPLTR+85
05266  1 00001 4 05167         TXI SPLTR+14,4,1 PROCEED
05267 -0602 60 2 05301         ORS* SPLTR+88,2 PUT EIGTH IN, TAKE
05270  2 00020 1 05225         TIX SPLTR+44,1,16 16 OUT, - GOOD BUSINESS

*80
05271 -3 00004 1 05230         TXL SPLTR+47,1,4 IF NOT BLANK, SET ZONE.
05272  0020 00 0 05231         TRA SPLTR+48    BLANK.

05273 -0 00000 0 00000         MZE             FOR BIT INDEX.
05274  0000 00 0 00000         HTR             DYNAMIC BIT INDEX.
05275  0761 00 0 00000         NOP

*85
05276  0000 00 0 00000         HTR             SPECIAL SALON FOR
                                               THE CONTROL WORD
05277  0000 00 0 07367         HTR CARD+5
05300  0000 00 0 07366         HTR CARD+4      BROW ADDRESSES
05301  0000 00 1 07415         HTR CARD+27,1
05302  0000 00 1 07414         HTR CARD+26,1   ZONE ROW ADDRESSES

*90
05303  0000 00 1 07407         HTR CARD+21,1
05304  0000 00 1 07406         HTR CARD+20,1   DIGIT ROW ADDRESSES
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                 05305   NOMOD BSS           DUMMY INSTRUCTION.

*      STORAGE FROM HERE TO 77777 IS NOT MODIFIED BY 9IOM.

*      *** CONSTANTS AND STORAGE


05305  0 00000 0 00000   ZERO  PZE
05306 +373737373737      KADA  OCT 373737373737
05307  0 00001 0 00001   KAEA  PZE 1,,1
05310 -0000 00 0 00000   KAFA  IOCP
05311 -377777777777      ONES  OCT 777777777777
05312 -307070707070      SEVNS OCT 707070707070
05313 +252525252525      TWFVE OCT 252525252525
05314 -125252525252      FVETW OCT 525252525252
05315 +030303030303      THRES OCT 030303030303
05316 +000000000001      Q1    DEC 1
05317 +000000000002      Q2    DEC 2
05320 +000000000003      Q3    DEC 3
05321 +000000000004      Q4    DEC 4
05322 +000000000022      Q18   DEC 18
05323 -377700000000      MASK  OCT 777700000000


05324  0074 00 4 03405   CATCH TSX SPACE,4
05325 +000000000200      LTRA  OCT 200
05326  0761 00 0 00000   LNOP  NOP

05327  0020 00 0 00030   RSTRT TRA 24
05330  0762 00 0 01321   RCDA  RCDA
05331  0762 00 0 01221   RTBA  RTBA 1
05332  0766 00 0 01361   STRTA WPRA
05333  0766 00 0 03361         WPRC
05334  0766 00 0 05361         WPRE


05335  0 00011 0 00000   IND   PZE ,,9
05336  0 00000 0 00011         PZE 9
05337  0 00010 0 00000         PZE ,,8
05340  0 00000 0 00010         PZE 8
05341  0 00007 0 00000         PZE ,,7
05342  0 00000 0 00007         PZE 7
05343  0 00006 0 00000         PZE ,,6
05344  0 00000 0 00006         PZE 6
05345  0 00005 0 00000         PZE ,,5
05346  0 00000 0 00005         PZE 5
05347  0 00004 0 00000         PZE ,,4
05350  0 00000 0 00004         PZE 4
05351  0 00003 0 00000         PZE ,,3
05352  0 00000 0 00003         PZE 3
05353  0 00002 0 00000         PZE ,,2
05354  0 00000 0 00002         PZE 2
05355  0 00001 0 00000         PZE ,,1
05356  0 00000 0 00001         PZE 1
```

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05357  0 77777 0 00000         PZE ,,-1          0L
05360  0 00000 0 77777         PZE -1            0R
05361  0 00013 0 00000         PZE ,,11         11L
05362  0 00000 0 00013         PZE 11           11R
05363  0 00014 0 00000         PZE ,,12         12L
05364  0 00000 0 00014         PZE 12           12R


05365  0 00000 0 00001   TBAFA PZE 1     WORD COUNT   1
05366  0 00000 0 00002         PZE 2                  2
05367  0 00000 0 00003         PZE 3                  3
05370  0 00000 0 00004         PZE 4                  4
05371  0 00000 0 00005         PZE 5                  5
05372  0 00000 0 00006         PZE 6                  6
05373  0 00000 0 00007         PZE 7                  7
05374  0 00000 0 00010         PZE 8                  8
05375  0 00000 0 00011         PZE 9                  9
05376  0 00000 0 00012         PZE 10                10
05377  0 00000 0 00013         PZE 11                11
05400  0 00000 0 00014         PZE 12                12
05401  0 00000 0 00015         PZE 13                13
05402  0 00000 0 00016         PZE 14                14
05403  0 00000 0 00017         PZE 15                15
05404  0 00000 0 00020         PZE 16               16
05405  0 00000 0 00021         PZE 17                17
05406  0 00000 0 00022         PZE 18                18
05407  0 00000 0 00022         PZE 18                19
05410  0 00000 0 00022         PZE 18                20
05411  0 00000 0 00023         PZE 19                21
05412  0 00000 0 00024         PZE 20                22
05413  0 00000 0 00024         PZE 20                23
05414  0 00000 0 00024         PZE 20                24
05415  0 00000 0 00025         PZE 21                25
05416  0 00000 0 00026         PZE 22                26
05417  0 00001 0 00026         PZE 22,,1             27
05420  0 00002 0 00026         PZE 22,,2             28
05421  0 00002 0 00027         PZE 23,,2             29
05422  0 00002 0 00030         PZE 24,,2             30
05423  0 00003 0 00030         PZE 24,,3             31
05424  0 00004 0 00030         PZE 24,,4             32
05425  0 00005 0 00030         PZE 24,,5             33
05426  0 00006 0 00030         PZE 24,,6             34
05427  0 00007 0 00030         PZE 24,,7             35
05430  0 00010 0 00030         PZE 24,,8             36
05431  0 00011 0 00030         PZE 24,,9             37
05432  0 00012 0 00030         PZE 24,,10            38
05433  0 00013 0 00030         PZE 24,,11            39
05434  0 00014 0 00030         PZE 24,,12            40
05435  0 00015 0 00030         PZE 24,,13            41
05436  0 00016 0 00030         PZE 24,,14            42
05437  0 00017 0 00030         PZE 24,,15            43
05440  0 00020 0 00030         PZE 24,,16            44
05441  0 00021 0 00030         PZE 24,,17            45
05442  0 00022 0 00030         PZE 24,,18            46
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05443  0067 03 0 07415   TBAFB IOCD IMAGE+1,,CWAFA+1  CORRECT CHANNEL
05444  0067 04 0 07416         IOCD IMAGE+2,,CWAFA+2  DATA TABLE
05445  0067 05 0 07417         IOCD IMAGE+3,,CWAFA+3  FOR SECTION AF,
05446  0067 06 0 07420         IOCD IMAGE+4,,CWAFA+4
05447  0067 07 0 07421         IOCD IMAGE+5,,CWAFA+5
05450  0067 10 0 07422         IOCD IMAGE+6,,CWAFA+6
05451  0067 11 0 07423         IOCD IMAGE+7,,CWAFA+7
05452  0067 12 0 07424         IOCD IMAGE+8,,CWAFA+8
05453  0067 13 0 07425         IOCD IMAGE+9,,CWAFA+9
05454  0067 14 0 07426         IOCD IMAGE+10,,CWAFA+10
05455  0067 15 0 07427         IOCD IMAGE+11,,CWAFA+11
05456  0067 16 0 07430         IOCD IMAGE+12,,CWAFA+12
05457  0067 17 0 07431         IOCD IMAGE+13,,CWAFA+13
05460  0067 20 0 07432         IOCD IMAGE+14,,CWAFA+14
05461  0067 21 0 07433         IOCD IMAGE+15,,CWAFA+15
05462  0067 22 0 07434         IOCD IMAGE+16,,CWAFA+16
05463  0067 23 0 07435         IOCD IMAGE+17,,CWAFA+17
05464  0067 24 0 07436         IOCD IMAGE+18,,CWAFA+18
05465  0067 25 0 07521         IOCD ECHO+21,,CWAFA+19
05466  0067 26 0 07522         IOCD ECHO+22,,CWAFA+20
05467  0067 27 0 07437         IOCD IMAGE+19,,CWAFA+21
05470  0067 30 0 07440         IOCD IMAGE+20,,CWAFA+22
05471  0067 31 0 07517         IOCD ECHO+19,,CWAFA+23
05472  0067 32 0 07520         IOCD ECHO+20,,CWAFA+24
05473  0067 33 0 07441         IOCD IMAGE+21,,CWAFA+25
05474  0067 34 0 07442         IOCD IMAGE+22,,CWAFA+26
05475  0067 35 0 07475         IOCD ECHO+1,,CWAFA+27
05476  0067 36 0 07476         IOCD ECHO+2,,CWAFA+28
05477  0067 37 0 07443         IOCD IMAGE+23,,CWAFA+29
05500  0067 40 0 07444         IOCD IMAGE+24,,CWAFA+30
05501  0067 41 0 07477         IOCD ECHO+3,,CWAFA+31
05502  0067 42 0 07500         IOCD ECHO+4,,CWAFA+32
05503  0067 43 0 07501         IOCD ECHO+5,,CWAFA+33
05504  0067 44 0 07502         IOCD ECHO+6,,CWAFA+34
05505  0067 45 0 07503         IOCD ECHO+7,,CWAFA+35
05506  0067 46 0 07504         IOCD ECHO+8,,CWAFA+36
05507  0067 47 0 07505         IOCD ECHO+9,,CWAFA+37
05510  0067 50 0 07506         IOCD ECHO+10,,CWAFA+38
05511  0067 51 0 07507         IOCD ECHO+11,,CWAFA+39
05512  0067 52 0 07510         IOCD ECHO+12,,CWAFA+40
05513  0067 53 0 07511         IOCD ECHO+13,,CWAFA+41
05514  0067 54 0 07512         IOCD ECHO+14,,CWAFA+42
05515  0067 55 0 07513         IOCD ECHO+15,,CWAFA+43
05516  0067 56 0 07514         IOCD ECHO+16,,CWAFA+44
05517  0067 57 0 07515         IOCD ECHO+17,,CWAFA+45
05520  0067 60 0 07516         IOCD ECHO+18,,CWAFA+46



05521  0 00000 0 00000   BIN   PZE
05522  0 00000 0 00000   FREE  PZE
05523  0 00000 0 00000   HOLDA PZE           CHANNEL DATA STORAGE.
05524  0 00000 0 00000   IOCNT PZE
05525  0 00000 0 00000   IOTA  PZE
                 05526   LINES BSS 1         PRINT LINE COUNTER STORAGE
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05527  0 00000 0 00000   LOCAT PZE           STL STORAGE FOR SUBROUTINES
05530  0 00000 0 00000   MONIT PZE           SECTION START STORAGE
05531  0 00000 0 00000   SIZE  PZE           STORAGE SIZE CELL.
05532  0 00000 0 00000   TEMP  PZE
05533  0 00000 0 00000   TEMPA PZE
05534  0 00000 0 00000   TSAFA PZE

05535  0 00000 0 00000   ZONE1 PZE
05536  0 00000 0 00000   ZONE2 PZE
05537  0 00000 0 00000   ZONE3 PZE

05540 +000000000050      KOUNT DEC 40        PASS COUNTER FOR SWT 4.
05541 +000000000050      KONST DEC 40        PASS COUNTER CONTANT.


*      *** BCD TEXTS.


05542  0 00001 0 00007   CDAAA PZE 7,,1
05543  622523633146            BCD 6SECTION AA. PRINTER DISCONNECT TEST
05544  456021213360
05545  475131456325
05546  516024316223
05547  464545252363
05550  606325626360
05551  336060606060            BCD 1.

05552  0 00001 0 00006   CDAAB PZE 6,,1
05553  475131456325            BCD 6PRINTER DISCONNECT TEST COMPLETE.
05554  516024316223
05555  464545252363
05556  606325626360
05557  234644474325
05560  632533606060

05561  0 00001 0 00010   CDABA PZE 8,,1
05562  622523633146            BCD 2SECTION AB.
05563  456021223360
05564  236451624651            BCD 6CURSORY TEST COLUMNS 1-72 UNDER WPR.
05565  706063256263
05566  602346436444
05567  456260014007
05570  026064452425
05571  516066475133

05572  0 00001 0 00011   CDACA PZE 9,,1
05573  622523633146            BCD 6SECTION AC. CURSORY TEST COLUMNS 73-
05574  456021233360
05575  236451624651
05576  706063256263
05577  602346436444
05600  456260070340
05601  010200606445            BCD 3120 UNDER WPR.
05602  242551606647
05603  513360606060
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05604  0 00001 0 00014   CDACM PZE 12,,1
05605  622523633146            BCD 6SECTION ACM. QUICK CHECK ARMATURES A
05606  456021234433
05607  605064312342
05610  602330252342
05611  602151442163
05612  645125626021
05613  452460214521            BCD 6ND ANALYZER SETUP, COLS 1-120, RPR.
05614  437071255160
05615  622563644773
05616  602346436260
05617  014001020073
05620  605147513360

05621  0 00001 0 00013   CDADA PZE 11,,1
05622  622523633146            BCD 2SECTION AD.
05623  456021243360
05624  475131456360            BCD 6PRINT 120 COLUMNS SPACED NUMERICS AN
05625  010200602346
05626  436444456260
05627  624721232524
05630  604564442551
05631  312362602145
05632  246071464525            BCD 3D ZONES UNDER RPR.
05633  626064452425
05634  516051475133

05635  0 00001 0 00011   CDAEA PZE 9,,1
05636  622523633146            BCD 6SECTION AE. PRINT 120 COLUMNS LIGHT
05637  456021253360
05640  475131456360
05641  010200602346
05642  436444456260
05643  433127306360
05644  513147474325            BCD 3RIPPLE UNDER RPR.
05645  606445242551
05646  605147513360

05647  0 00001 0 00005   CDAFA PZE 5,,1
05650  622523633146            BCD 5SECTION AF. BLEACHER TEST.
05651  456021263360
05652  224325212330
05653  255160632562
05654  633360606060

05655 -3 00000 0 00000   CDAFB SVN                 9L PRINT IMAGE
05656 -3 00000 0 00000         SVN                 9R MASTER FOR
05657  0 70000 0 00000         PZE ,,28672         8L BLEACHER TEST.
05660  0 70000 0 00000         PZE ,,28672         8R
05661  0 07000 0 00000         PZE ,,3584          7L
05662  0 07000 0 00000         PZE ,,3584          7R
05663  0 00700 0 00000         PZE ,,448           6L
05664  0 00700 0 00000         PZE ,,448           6R
05665  0 00070 0 00000         PZE ,,56            5L
05666  0 00070 0 00000         PZE ,,56            5R
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05667  0 00007 0 00000         PZE ,,7              4L
05670  0 00007 0 00000         PZE ,,7              4R
05671  0 00000 7 00000         PZE ,7               3L
05672  0 00000 7 00000         PZE ,7               3R
05673  0 00000 0 70000         PZE 28672            2L
05674  0 00000 0 70000         PZE 28672            2R
05675  0 00000 0 07000         PZE 3584             1L
05676  0 00000 0 07000         PZE 3584             1R
05677  0 00000 0 00700         PZE 448              0L
05700  0 00000 0 00700         PZE 448              0R
05701  0 00000 0 00070         PZE 56              11L
05702  0 00000 0 00070         PZE 56              11R
05703  0 00000 0 00007         PZE 7               12L
05704  0 00000 0 00007         PZE 7               12R

05705  0 00013 0 00006   CDAGA PZE 6,,11
05706  622523633146            BCD 6SECTION AG. LIGHT-HEAVY RIPPLE TEST.
05707  456021273360
05710  433127306340
05711  302521657060
05712  513147474325
05713  606325626333

05714  0 00001 0 00014   CDAGB PZE 12,,1
05715  212223242526            BCD 6ABCDEFGHIJKLMNOPQRSTUVWXYZ+-01234567
05716  273031414243
05717  444546475051
05720  626364656667
05721  707120400001
05722  020304050607
05723  101160333453            BCD 689 .)$*,(=' ABCDEFGHIJKLMNOPQRSTUVW
05724  547374131460
05725  212223242526
05726  273031414243
05727  444546475051
05730  626364656660

05731  0 00001 0 00007   CDAJA PZE 7,,1
05732  622523633146            BCD 6SECTION AJ. 12-9 MAGNET KICKBACK TES
05733  456021413360
05734  010240116044
05735  212745256360
05736  423123422221
05737  234260632562
05740  633360606060            BCD 1T.

05741  0 00001 0 00010   CDAKA PZE 8,,1
05742  622523633146            BCD 6SECTION AK. NEARBY NUMERICS AND ZONE
05743  456021423360
05744  452521512270
05745  604564442551
05746  312362602145
05747  246071464525
05750  626063256263            BCD 2S TEST.
05751  336060606060
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05752  0 00001 0 00012   CDALA PZE 10,,1
05753  622523633146            BCD 6SECTION AL. 120 COLUMN RANDOM CHARAC
05754  456021433360
05755  010200602346
05756  436444456051
05757  214524464460
05760  233021512123
05761  632551606325            BCD 4TER TEST UNDER RPR.
05762  626360644524
05763  255160514751
05764  336060606060

05765  0 00001 0 00007   CDAMA PZE 7,,1
05766  622523633146            BCD 6SECTION AM. WRITE PRINTER BINARY TES
05767  456021443360
05770  665131632560
05771  475131456325
05772  516022314521
05773  517060632562
05774  633360606060            BCD 1T.

05775  0 00001 0 00013   CDANA PZE 11,,1
05776  622523633146            BCD 6SECTION AN. WRITE PRINTER BINARY MUL
05777  456021453360
06000  665131632560
06001  475131456325
06002  516022314521
06003  517060446443
06004  633147432560            BCD 5TIPLE LINES WITH ONE SELECT.
06005  433145256260
06006  663163306046
06007  452560622543
06010  252363336060

06011  0 00001 0 00013   CDAPA PZE 11,,1
06012  622523633146            BCD 6SECTION AP. OCTAL SPACE RIGHT SIDE A
06013  456021473360
06014  462363214360
06015  624721232560
06016  513127306360
06017  623124256021
06020  436325514521            BCD 6LTERNATE LINES UNDER WPR.
06021  632560433145
06022  256260644524
06023  255160664751
06024  336060606060
06025  606060606060

06026  0 00001 0 00007   CDBAA PZE 7,,1
06027  622523633146            BCD 6SECTION B. WPR RIPPLE - CONTROL WORD
06030  456022336066
06031  475160513147
06032  474325604060
06033  234645635146
06034  436066465124
06035  606325626362            BCD 1 TESTS.
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06036  0 00001 0 00004   CDBBA PZE 4,,1
06037  622523633146            BCD 2SECTION BB.
06040  456022223360
06041  314623247360            BCD 2IOCD, WC 24.
06042  662360020433

06043  0 00001 0 00004   CDBCA PZE 4,,1
06044  622523633146            BCD 2SECTION BC.
06045  456022233360
06046  314662637360            BCD 2IOST, LCHA.
06047  432330213360

06050  0 00001 0 00004   CDBDA PZE 4,,1
06051  622523633146            BCD 2SECTION BD.
06052  456022243360
06053  314623637360            BCD 2IOCT, LCHA.
06054  432330213360

06055  0 00001 0 00005   CDBEA PZE 5,,1
06056  622523633146            BCD 2SECTION BE.
06057  456022253360
06060  632330736031            BCD 3TCH, IOST, LCHA.
06061  466263736043
06062  233021336060

06063  0 00001 0 00005   CDBFA PZE 5,,1
06064  622523633146            BCD 2SECTION BF.
06065  456022263360
06066  314623477360            BCD 3IOCP, IOST, LCHA.
06067  314662637360
06070  432330213360

06071  0 00001 0 00005   CDBGA PZE 5,,1
06072  622523633146            BCD 2SECTION BG.
06073  456022273360
06074  314662477360            BCD 3IOSP, IOCT, LCHA.
06075  314623637360
06076  432330213360

06077  0 00001 0 00007   CDBHA PZE 7,,1
06100  622523633146            BCD 2SECTION BH.
06101  456022303360
06102  314662637360            BCD 5IOST, IORP, IOCP, IOST. WC 48.
06103  314651477360
06104  314623477360
06105  314662633360
06106  662360041033

06107  0 00001 0 00011   CDBJA PZE 9,,1
06110  622523633146            BCD 6SECTION BJ. IOST, IORT, RCHA BLAST O
06111  456022413360
06112  314662637360
06113  314651637360
06114  512330216022
06115  432162636046
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06116  646373603146            BCD 3UT, IORT. WC-24.
06117  516333606623
06120  400204336060

06121  0 00001 0 00013   CDBKA PZE 11,,1
06122  622523633146            BCD 2SECTION BK.
06123  456022423360
06124  314662477360            BCD 6IOSP, IOCP, IOST, TCH, IOST, IOCT, I
06125  314623477360
06126  314662637360
06127  632330736031
06130  466263736031
06131  462363736031
06132  462347736063            BCD 3OCP, TCH, IORT.
06133  233073603146
06134  516333606060

06135  0 00001 0 00010   CDBLA PZE 8,,1
06136  622523633146            BCD 2SECTION BL.
06137  456022433360
06140  314662637360            BCD 6IOST, IOCD, BLAST OUT WITH IORT.
06141  314623247360
06142  224321626360
06143  466463606631
06144  633060314651
06145  633360606060

06146  0 00001 0 00014   CDBMA PZE 12,,1
06147  622523633146            BCD 6SECTION BM. WPR DBL SPACE RIPPLE, 3
06150  456022443360
06151  664751602422
06152  436062472123
06153  256051314747
06154  432573600360
06155  433145256260            BCD 6LINES 1 SELECT SENSE EXIT HOLDOVER.
06156  016062254325
06157  236360622545
06160  622560256731
06161  636030464324
06162  466525513360

06163  0 00001 0 00007   CDBNA PZE 7,,1
06164  622523633146            BCD 6SECTION B. RPR RIPPLE - CONTROL WORD
06165  456022336051
06166  475160513147
06167  474325604060
06170  234645635146
06171  436066465124
06172  606325626362            BCD 1 TESTS.

06173  0 00001 0 00005   CDBPA PZE 5,,1
06174  622523633146            BCD 2SECTION BP.
06175  456022473360
06176  314623637360            BCD 3IOCT, IOST. WC-46.
06177  314662633360
06200  662340040633
```

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06201  0 00001 0 00011   CDBQA PZE 9,,1
06202  622523633146            BCD 2SECTION BQ.
06203  456022503360
06204  632330736031            BCD 6TCH, IOSP, IOST, IOCT, IOSP, IOST.
06205  466247736031
06206  466263736031
06207  462363736031
06210  466247736031
06211  466263336060
06212  662340040633            BCD 1WC-46.

06213  0 00001 0 00011   CDBRA PZE 9,,1
06214  622523633146            BCD 2SECTION BR.
06215  456022513360
06216  632330736031            BCD 6TCH, IOCP, IOCT, IOST, IOCP, IOCT.
06217  462347736031
06220  462363736031
06221  466263736031
06222  462347736031
06223  462363336060
06224  662340040633            BCD 1WC-46.

06225  0 00001 0 00014   CDBSA PZE 12,,1
06226  622523633146            BCD 2SECTION BS.
06227  456022623360
06230  314623477360            BCD 6IOCP, IOSP, TCH, TCH, IOSP, IOCP, TC
06231  314662477360
06232  632330736063
06233  233073603146
06234  624773603146
06235  234773606323
06236  307360314662            BCD 4H, IOSP, IORT, WC-46.
06237  477360314651
06240  637360662340
06241  040633606060

06242  0 00001 0 00013   CDBTA PZE 11,,1
06243  622523633146            BCD 2SECTION BT.
06244  456022633360
06245  314662637360            BCD 6IOST, IOCT, IOCT, IOST, IOCT, IORP,
06246  314623637360
06247  314623637360
06250  314662637360
06251  314623637360
06252  314651477360
06253  632330736031            BCD 3TCH, IOCD. WC-46.
06254  462324336066
06255  234004063360

06256  0 00001 0 00013   CDBUA PZE 11,,1
06257  622523633146            BCD 6SECTION BU. RCHA BLAST OUT USING CON
06260  456022643360
06261  512330216022
06262  432162636046
06263  646360646231
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06264  452760234645
06265  635146436066            BCD 5TROL WORDS FROM SECTION BT.
06266  465124626026
06267  514644606225
06270  236331464560
06271  226333606060

06272  0 00001 0 00014   CDBVA PZE 12,,1
06273  622523633146            BCD 6SECTION BV. READ PRINTER DBL SPACE,
06274  456022653360
06275  512521246047
06276  513145632551
06277  602422436062
06300  472123257360
06301  036043314525            BCD 63 LINES 1 SEL, SENSE EXIT HOLDOVER
06302  626001606225
06303  437360622545
06304  622560256731
06305  636030464324
06306  466525516060

06307  0 00001 0 00010   CDBWA PZE 8,,1
06310  622523633146            BCD 2SECTION BW.
06311  456022663360
06312  632562636063            BCD 6TEST TRIGGER 19 ON READ PRINTER.
06313  513127272551
06314  600111604645
06315  605125212460
06316  475131456325
06317  513360606060

06320  0 00001 0 00005   CDDSU PZE 5,,1
06321  633025602462            BCD 6THE DSU CHANNEL LOST CONTROL.
06322  646023302145
06323  452543604346
06324  626360234645
06325  635146433360
06326  606060606060

06327  0 00001 0 00014   CDDSV PZE 12,,1
06330  246223605125            BCD 5DSC REG LIMIT
06331  276043314431
06332  636060606060
06333  606060606060
06334  606060606060
06335  336060246223            BCD 6.  DSC REG CONTS STORED
06336  605125276023
06337  464563626062
06340  634651252460
06341  606060606060
06342  606060606060
06343  336060606060            BCD 1.

06344  0 00001 0 00014   CDRNA PZE 12,,1
               06345            BSS 12
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06361  0 00001 0 00010   CDRNB PZE 8,,1
                 06362         BSS 8

06372  0 00001 0 00014   NUMBA PZE 12,,1
06373  010203040506            BCD 61234567890123456789012345678901234567890123456
06374  071011000102
06375  030405060710
06376  110001020304
06377  050607101100
06400  010203040506
06401  071011000102            BCD 67890123456789012345678901234567890123456789012
06402  030405060710
06403  110001020304
06404  050607101100
06405  010203040506
06406  071011000102

06407  0 00001 0 00010   NUMBB PZE 8,,1
06410  030405060710            BCD 63456789012345678901234567890123456789012345678
06411  110001020304
06412  050607101100
06413  010203040506
06414  071011000102
06415  030405060710
06416  110001020304            BCD 2901234567890
06417  050607101100

06420  0 00001 0 00014   CDIMG PZE 12,,1
06421  633025604751            BCD 6THE PRINT IMAGE WAS MODIFIED DURING
06422  314563603144
06423  212725606621
06424  626044462431
06425  263125246024
06426  645131452760
06427  633025604751            BCD 6THE PREVIOUS LINE OF PRINT OUT.
06430  256531466462
06431  604331452560
06432  462660475131
06433  456360466463
06434  336060606060

06435  0 00001 0 00011   CDIOT PZE 9,,1
06436  214560316146            BCD 6AN I/O CHECK WAS DETECTED AT LOCATIO
06437  602330252342
06440  606621626024
06441  256325236325
06442  246021636043
06443  462321633146
06444  456040606060            BCD 3N -         .
06445  606060606060
06446  336060606060

06447  0 00001 0 00014   CDSCH PZE 12,,1
06450  216062634651            BCD 6A STORE CHANNEL ERROR OCCURRED IN TH
06451  256023302145
06452  452543602551
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06453  514651604623
06454  236451512524
06455  603145606330
06456  256047512565            BCD 6E PREVIOUS LINE OF TEST PRINTOUT.
06457  314664626043
06460  314525604626
06461  606325626360
06462  475131456346
06463  646333606060

06464  0 00001 0 00012   CDLOC PZE 10,,1
06465  475146275121            BCD 4PROGRAM EXIT AT-
06466  446025673163
06467  602163406060
06470  606060606060
06471  336060622523            BCD 6.  SECTION STARTS AT-             .
06472  633146456062
06473  632151636260
06474  216340606060
06475  606060606060
06476  606060603360

06477  0 00001 0 00014   CDDAT PZE 12,,1
06500  234651512523            BCD 6CORRECT DSC REG CONTS
06501  636024622360
06502  512527602346
06503  456362606060
06504  606060606060
06505  606060606060
06506  336060246223            BCD 6.  DSC REG CONTS STORED
06507  605125276023
06510  464563626062
06511  634651252460
06512  606060606060
06513  606060606060

06514  0 00001 0 00014   CDECH PZE 12,,1
06515  214560252330            BCD 6AN ECHO ERROR OCCURRED ON THE PREVIO
06516  466025515146
06517  516046232364
06520  515125246046
06521  456063302560
06522  475125653146
06523  646260433145            BCD 6US LINE OF TEST PATTERN PRINTOUT.
06524  256046266063
06525  256263604721
06526  636325514560
06527  475131456346
06530  646333606060

06531  0 00001 0 00012   CDCAR PZE 10,,1
06532  216023215151            BCD 6A CARRIAGE OVERFLOW HAS OCCURRED WHE
06533  312127256046
06534  652551264346
06535  666030216260
06536  462323645151
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06537  252460663025
06540  512560316360            BCD 4RE IT SHOULD NOT OCCUR.
06541  623046644324
06542  604546636046
06543  232364513360

06544  0 00001 0 00014   CDCNR PZE 12,,1
06545  216023215151            BCD 6A CARRIAGE OVERFLOW INDICATION HAS N
06546  312127256046
06547  652551264346
06550  666031452431
06551  232163314645
06552  603021626045
06553  466360462323            BCD 6OT OCCURRRED WHERE IT SHOULD OCCUR.
06554  645151512524
06555  606630255125
06556  603163606230
06557  466443246046
06560  232364513360

06561  0 00001 0 00011   CDZAA PZE 9,,1
06562  454666604725            BCD 6NOW PERFORMING DIAGNOSTIC TEST 9P01
06563  512646514431
06564  452760243121
06565  274546626331
06566  236063256263
06567  601147000160
06570  464560233021            BCD 3ON CHANNEL
06571  454525436060
06572  606060606060

06573  213360606060      CDZAB BCD 1A.
06574  233360606060            BCD 1C.
06575  253360606060            BCD 1E.

06576  0 00001 0 00010   CDZAC PZE 8,,1
06577  601147000160            BCD 5 9P01 PART ONE, PASS COMPLETE
06600  472151636046
06601  452573604721
06602  626260234644
06603  474325632560
06604  464560233021            BCD 3ON CHANNEL
06605  454525436060
06606  606060606060



06607 +000000000000      BLAST OCT 0                 9L
06610 +064000000000            OCT 64000000000       9R
06611 -377777777000            OCT 777777777000      8L
06612 +001777777777            OCT 1777777777        8R
06613 +000000000000            OCT 0                 7L
06614 +000000000000            OCT 0                 7R
06615 +000000000002            OCT 2                 6L
06616 +010000000000            OCT 10000000000       6R
06617 +000000000000            OCT 0                 5L
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06620  1 00000 0 00000         PON                    5R
06621 -377777777001            OCT 777777777001
06622 +001777777777            OCT 1777777777
06623 +000000000110            OCT 110
06624 -0 00000 0 00000         MZE                    3R
06625 +000000000220            OCT 220                2L
06626 +000000000000            OCT                    2R
06627 +000000000040            OCT 40
06630 +000000000000            OCT                    1R
06631 +000000000000            OCT                    8-4LE
06632 +000000000000            OCT                    8-4RE
06633 +000000000031            OCT 31                 0L
06634 -0 00000 0 00000         MZE                    0R
06635 +000000000000            OCT                    8-3LE
06636 +000000000000            OCT                    8-3RE
06637 -377777777102            OCT 777777777102      11L
06640 +075777777777            OCT 75777777777       12R
06641 +000000000000            OCT                    9LE
06642 +000000000000            OCT                    9RE
06643 +000000000240            OCT 240               12L
06644  1 00000 0 00000         PON                   12R


06645 +000000000000      BLWST OCT 0                  9L PRINT-
06646 +064000000000            OCT 64000000000       9R BLAST
06647 -377777777000            OCT 777777777000      8L OUT
06650 +001777777777            OCT 1777777777        8R ERROR.
06651 +000000000000            OCT 0                 7L
06652 +000000000000            OCT 0                 7R
06653 +000000000002            OCT 2                 LL
06654 +010000000000            OCT 10000000000       6R
06655 +000000000000            OCT 0                 5L
06656 +100000000000            OCT 100000000000      5R
06657 -377777777001            OCT 777777777001      4L
06660 +001777777777            OCT 1777777777        4R
06661 +000000000110            OCT 110               3L
06662 -000000000000            OCT -0                3R
06663 +000000000220            OCT 220               2L
06664 +000000000000            OCT 0                 2R
06665 +000000000040            OCT 40                1L
06666 +000000000000            OCT 0                 1R
06667 +000000000031            OCT 31                0L
06670 -000000000000            OCT -0                0R
06671 -377777777102            OCT 777777777102      11L
06672 +075777777777            OCT 75777777777       11R
06673 +000000000240            OCT 240               12L
06674 +100000000000            OCT 100000000000      12R


*      *** CONTROL WORDS.


06675  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

06676  0000 02 0 06677   CWADA IOCD *+1,,2
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```
06677  0 00000 0 00000         PZE
06700  0 00000 0 00000         PZE

06701  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

06702 -0000 01 0 07414   CWAFA IOCP IMAGE,,1         9L WRITE
06703 -0000 01 0 07415         IOCP IMAGE+1,,1       9R X
06704 -0000 01 0 07416         IOCP IMAGE+2,,1       8L X
06705 -0000 01 0 07417         IOCP IMAGE+3,,1       8R X
06706 -0000 01 0 07420         IOCP IMAGE+4,,1       7L X
06707 -0000 01 0 07421         IOCP IMAGE+5,,1       7R X
06710 -0000 01 0 07422         IOCP IMAGE+6,,1       6L X
06711 -0000 01 0 07423         IOCP IMAGE+7,,1  6R X
06712 -0000 01 0 07424         IOCP IMAGE+8,,1       5L X
06713 -0000 01 0 07425         IOCP IMAGE+9,,1       5R X
06714 -0000 01 0 07426         IOCP IMAGE+10,,1      4L X
06715 -0000 01 0 07427         IOCP IMAGE+11,,1      4R X
06716 -0000 01 0 07430         IOCP IMAGE+12,,1      3L X
06717 -0000 01 0 07431         IOCP IMAGE+13,,1      3R X
06720 -0000 01 0 07432         IOCP IMAGE+14,,1      2L X
06721 -0000 01 0 07433         IOCP IMAGE+15,,1      2R X
06722 -0000 01 0 07434         IOCP IMAGE+16,,1      1L X
06723 -0000 01 0 07435         IOCP IMAGE+17,,1      1R X
06724 -0000 01 0 07520         IOCP ECHO+20,,1     8-4L READ
06725 -0000 01 0 07521         IOCP ECHO+21,,1     8-4R X
06726 -0000 01 0 07436         IOCP IMAGE+18,,1      0L WRITE
06727 -0000 01 0 07437         IOCP IMAGE+19,,1      0R X
06730 -0000 01 0 07516         IOCP ECHO+18,,1     8-3L READ
06731 -0000 01 0 07517         IOCP ECHO+19,,1     8-3R X
06732 -0000 01 0 07440         IOCP IMAGE+20,,1     11L WRITE
06733 -0000 01 0 07441         IOCP IMAGE+21,,1     11R X
06734 -0000 01 0 07474         IOCP ECHO,,1          9L READ
06735 -0000 01 0 07475         IOCP ECHO+1,,1        9R X
06736 -0000 01 0 07442         IOCP IMAGE+22,,1     12L WRITE
06737 -0000 01 0 07443         IOCP IMAGE+23,,1     12R X
06740 -0000 01 0 07476         IOCP ECHO+2,,1        8L READ
06741 -0000 01 0 07477         IOCP ECHO+3,,1        8R X
06742 -0000 01 0 07500         IOCP ECHO+4,,1        7L X
06743 -0000 01 0 07501         IOCP ECHO+5,,1        7R X
06744 -0000 01 0 07502         IOCP ECHO+6,,1        6L X
06745 -0000 01 0 07503         IOCP ECHO+7,,1        6R X
06746 -0000 01 0 07504         IOCP ECHO+8,,1        5L X
06747 -0000 01 0 07505         IOCP ECHO+9,,1        5R X
06750 -0000 01 0 07506         IOCP ECHO+10,,1       4L X
06751 -0000 01 0 07507         IOCP ECHO+11,,1       4R X
06752 -0000 01 0 07510         IOCP ECHO+12,,1       3L X
06753 -0000 01 0 07511         IOCP ECHO+13,,1       3R X
06754 -0000 01 0 07512         IOCP ECHO+14,,1       2L X
06755 -0000 01 0 07513         IOCP ECHO+15,,1       2R X
06756 -0000 01 0 07514         IOCP ECHO+16,,1       1L X
06757 -0000 01 0 07515         IOCP ECHO+17,,1       1R X

06760  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

06761  0000 30 0 07444   CWAFC IOCD IMAGA,,24
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06762  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

06763 -3 00001 0 07414   CWBCA IOST IMAGE,,1
06764 -3 00001 0 07415         IOST IMAGE+1,,1 ADDRESS MODIFIED
06765 -3 00001 0 07415         IOST IMAGE+1,,1 RESTORING CONSTANT.

06766  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

06767 -1 00001 0 07414   CWBDA IOCT IMAGE,,1
06770 -1 00001 0 07415         IOCT IMAGE+1,,1 ADDRESS MODIFIED
06771 -1 00001 0 07415         IOCT IMAGE+1,,1 RESTORING CONSTANT

06772  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

06773  1 77777 3 06776   CWBEA TCH CWBEA+3,3,-1
06774  0000 00 0 00000         IOCD
06775 -3 00001 0 07415         IOST IMAGE+1,,1 ADDRESS IS MODIFIED
06776 -3 00001 0 07414         IOST IMAGE,,1
06777  1 00001 0 06775         TCH CWBEA+2,,1 DECREMENT IS MODIFIED.
07000 -3 00001 0 07415         IOST IMAGE+1,,1 RESTORING CONSTANT
07001  1 00001 0 06775         TCH CWBEA+2,,1 RESTORING CONSTANT

07002  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07003 -3 00001 0 07414   CWBFA IOST IMAGE,,1
07004 -0000 01 0 07415         IOCP IMAGE+1,,1 ADDRESS IS MODIFIED.
07005 -3 00000 0 07416         IOST IMAGE+2
07006 -0000 01 0 07415         IOCP IMAGE+1,,1 RESTORING CONSTANT.

07007  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07010 -1 00001 0 07414   CWBGA IOCT IMAGE,,1
07011 -2 00001 0 07415         IOSP IMAGE+1,,1 ADDRESS IS MODIFIED
07012 -1 00000 0 07416         IOCT IMAGE+2,,0
07013 -2 00001 0 07415         IOSP IMAGE+1,,1 RESTORING CONSTANT

07014  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07015 -3 00027 0 07414   CWBHA IOST IMAGE,,23
07016  2 00001 0 07443         IORP IMAGE+23,,1
07017 -0000 27 0 07414         IOCP IMAGE,,23
07020 -3 00001 0 07443         IOST IMAGE+23,,1

07021  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07022 -3 00027 0 07414   CWBJA IOST IMAGE,,23
07023  3 00001 0 07443         IORT IMAGE+23,,1
07024 -3 00030 0 07414         IOST IMAGE,,24

07025  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07026  0000 30 0 06645   CWBJB IOCD BLWST,,24

07027  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07030 -2 00001 0 07414   CWBKA IOSP IMAGE,,1
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07031 -0000 01 0 07415         IOCP IMAGE+1,,1
07032 -3 00003 0 07416         IOST IMAGE+2,,3
07033 -3 00003 0 07421         IOST IMAGE+5,,3
07034  1 00001 0 07033         TCH CWBKA+3,,1
07035 -1 00003 0 07424         IOCT IMAGE+8,,3
07036 -0000 03 0 07427         IOCP IMAGE+11,,3
07037  1 00000 0 07041         TCH CWBKA+9
07040  0000 00 0 00000         IOCD
07041  3 00012 0 07432         IORT IMAGE+14,,10

07042  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07043 -3 00001 0 07414   CWBLA IOST IMAGE,,1
07044  3 00027 0 07415         IORT IMAGE+1,,23 USE THIS FOR BLAST OUT.

07045  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07046  0000 27 0 06645   CWBLB IOCD BLWST,,23

07047  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07050  3 00030 0 07414   CWBMA IORT IMAGE,,24
07051  0000 00 0 00000         IOCD

07052  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07053 -1 00001 0 07414   CWBPA IOCT IMAGE,,1
07054 -3 00001 0 07415         IOST IMAGE+1,,1 MODIFIED WORD.
07055 -3 00001 0 07415         IOST IMAGE+1,,1 RESTORE WORD.
07056 -1 00001 0 07520         IOCT ECHO+20,,1
07057 -3 00001 0 07521         IOST ECHO+21,,1
07060 -1 00001 0 07436         IOCT IMAGE+18,,1
07061 -3 00001 0 07437         IOST IMAGE+19,,1
07062 -3 00001 0 07516         IOST ECHO+18,,1
07063 -1 00001 0 07517         IOCT ECHO+19,,1
07064 -3 00001 0 07440         IOST IMAGE+20,,1
07065 -1 00001 0 07441         IOCT IMAGE+21,,1
07066 -1 00001 0 07474         IOCT ECHO,,1
07067 -3 00001 0 07475         IOST ECHO+1,,1
07070 -1 00001 0 07442         IOCT IMAGE+22,,1
07071 -3 00001 0 07443         IOST IMAGE+23,,1
07072 -1 00001 0 07476         IOCT ECHO+2,,1 MODIFIED WORD.
07073 -1 00001 0 07476         IOCT ECHO+2,,1 RESTORE WORD.

07074  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07075 -2 00001 0 07414   CWBQA IOSP IMAGE,,1 MODIFIED WORD.
07076 -3 00001 0 07415         IOST IMAGE+1,,1 MODIFIED WORD.
07077 -2 00001 0 07416         IOSP IMAGE+2,,1 MODIFIED WORD.
07100  1 77777 0 07075         TCH *-3,,-1
07101 -2 00001 0 07435         IOSP IMAGE+17,,1
07102 -3 00001 0 07520         IOST ECHO+20,,1
07103 -1 00001 0 07521         IOCT ECHO+21,,1
07104  1 00031 0 07103         TCH *-1,,25
07105 -2 00001 0 07414         IOSP IMAGE,,1 RESTORING WORD
07106 -3 00001 0 07415         IOST IMAGE+1,,1 RESTORING WORD
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07107 -2 00001 0 07416         IOSP IMAGE+2,,1 RESTORING WORD.
07110 -1 00002 0 07436         IOCT IMAGE+18,,2
07111  1 00003 0 07110         TCH *-1,,3
07112 -2 00001 0 07516         IOSP ECHO+18,,1
07113  1 00012 0 07115         TCH *+2,,10
07114  0000 00 0 00000         IOCD
07115 -2 00001 0 07517         IOSP ECHO+19,,1
07116 -3 00001 0 07440         IOST IMAGE+20,,1
07117 -3 00001 0 07441         IOST IMAGE+21,,1
07120  1 00100 0 07117         TCH *-1,,64
07121 -2 00001 0 07474         IOSP ECHO,,1
07122  1 00001 0 07124         TCH *+2,,1
07123  0000 00 0 00000         IOCD
07124 -2 00001 0 07475         IOSP ECHO+1,,1
07125 -2 00001 0 07442         IOSP IMAGE+22,,1
07126 -3 00001 0 07443         IOST IMAGE+23,,1
07127 -2 00001 0 07477         IOSP ECHO+3,,1      3,5,7,9,11,13,15
07130 -3 00001 0 07476         IOST ECHO+2,,1    2,4,6,8,10,12,14,16
07131 -3 00001 0 07515         IOST ECHO+17,,1   LAST WORD.
07132 -2 00001 0 07477         IOSP ECHO+3,,1    RESTORING WORD.
07133 -3 00001 0 07476         IOST ECHO+2,,1    RESTORING WORD.

07134  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07135 -0000 01 0 07414   CWBRA IOCP IMAGE,,1     1,4,6,10,13,16
07136 -1 00001 0 07415         IOCT IMAGE+1,,1   2,5,8,11,14,17
07137 -0000 01 0 07416         IOCP IMAGE+2,,1     3,6,9,12,15
07140  1 01156 0 07135         TCH *-3,,622
07141 -0000 01 0 07435         IOCP IMAGE+17,,1  18
07142 -1 00001 0 07520         IOCT ECHO+20,,1   19
07143 -3 00001 0 07521         IOST ECHO+21,,1   20
07144  1 00407 0 07143         TCH *-1,,263
07145 -0000 01 0 07414         IOCP IMAGE,,1     RESTORING WORD.
07146 -1 00001 0 07415         IOCT IMAGE+1,,1   X
07147 -0000 01 0 07416         IOCP IMAGE+2,,1   X
07150 -3 00002 0 07436         IOST IMAGE+18,,2  21,22
07151  1 06437 0 07150         TCH *-1,,3359
07152 -0000 01 0 07516         IOCP ECHO+18,,1   23
07153  1 77777 0 07155         TCH *+2,,-1
07154  0000 00 0 00000         IOCD
07155 -0000 01 0 07517         IOCP ECHO+19,,1   24
07156 -1 00001 0 07440         IOCT IMAGE+20,,1  25
07157 -1 00001 0 07441         IOCT IMAGE+21,,1  26
07160  1 00400 0 07157         TCH *-1,,256
07161 -0000 01 0 07474         IOCP ECHO,,1      27
07162  1 77677 0 07164         TCH *+2,,-65
07163  0000 00 0 00000         IOCD
07164 -0000 01 0 07475         IOCP ECHO+1,,1   28
07165 -0000 01 0 07442         IOCP IMAGE+22,,1  29
07166 -1 00001 0 07443         IOCT IMAGE+23,,1  30
07167 -0000 01 0 07477         IOCP ECHO+3,,1      32,34,36,38,40,42,44
07170 -1 00001 0 07476         IOCT ECHO+2,,1    31,33,35,37,39,41,43,45
07171 -1 00001 0 07515         IOCT ECHO+17,,1 46
07172 -0000 01 0 07477         IOCP ECHO+3,,1    RESTORING WORD
07173 -1 00001 0 07476         IOCT ECHO+2,,1    X
```

```
07174  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07175 -0000 03 0 07414   CWBSA IOCP IMAGE,,3       9L TO 8L PRINT.
07176 -2 00003 0 07417         IOSP IMAGE+3,,3     8R TO 7R PRINT.
07177 -0000 03 0 07422         IOCP IMAGE+6,,3     6L TO 5L PRINT.
07200 -2 00003 0 07425         IOSP IMAGE+9,,3     5R TO 4R PRINT.
07201 -0000 03 0 07430         IOCP IMAGE+12,,3    3L TO 2L PRINT.
07202  1 00001 0 07204         TCH *+2,,1
07203  1 00001 0 07206         TCH *+3,,1
07204  1 00001 0 07203         TCH *-1,,1
07205  0000 00 0 00000         IOCD
07206 -2 00003 0 07433         IOSP IMAGE+15,,3    2R TO 1R PRINT.
07207 -0000 02 0 07520         IOCP ECHO+20,,2     8-4 ECHO
07210 -2 00002 0 07436         IOSP IMAGE+18,,2    0 PRINT.
07211 -0000 02 0 07516         IOCP ECHO+18,,2     8-3 ECHO.
07212 -2 00002 0 07440         IOSP IMAGE+20,,2    11 PRINT.
07213 -0000 02 0 07474         IOCP ECHO,,2        9 ECHO.
07214 -2 00002 0 07442         IOSP IMAGE+22,,2    12 PRINT.
07215  1 77777 0 07216         TCH *+1,,-1
07216 -2 00005 0 07476         IOSP ECHO+2,,5      8L TO 6L ECHO.
07217  3 00013 0 07503         IORT ECHO+7,,11     6R TO 1R ECHO.
07220  0000 00 0 00000         IOCD                DISCONNECT.

07221  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07222 -3 00011 0 07414   CWBTA IOST IMAGE,,9       9L TO 5R PRINT.
07223 -1 00011 0 07425         IOCT IMAGE+9,,9     5R TO 1R PRINT.
07224 -3 00002 0 07520         IOST ECHO+20,,2     8-4 ECHO.
07225 -1 00002 0 07436         IOCT IMAGE+18,,2    0 PRINT.
07226 -3 00002 0 07516         IOST ECHO+18,,2     8-3 ECHO.
07227 -1 00002 0 07440         IOCT IMAGE+20,,2    11 PRINT.
07230 -1 00002 0 07474         IOCT ECHO,,2        9 ECHO.
07231 -3 00002 0 07442         IOST IMAGE+22,,2    12 PRINT.
07232 -1 00015 0 07476         IOCT ECHO+2,,13     8L-3L ECHO.
07233  2 00003 0 07513         IORP ECHO+15,,3     3R-1R ECHO.
07234  1 77777 0 07235         TCH *+1,,-1
07235  0000 00 0 07524         IOCD ERBIT+2        DISCONNECT.

07236  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07237 -0000 22 0 07414   CWBVA IOCP IMAGE,,18      9-1 PRINT.
07240 -0000 02 0 07520         IOCP ECHO+20,,2     8-4 ECHO.
07241 -0000 02 0 07436         IOCP IMAGE+18,,2    0   PRINT.
07242 -2 00002 0 07516         IOSP ECHO+18,,2     8-3 ECHO.
07243 -2 00002 0 07440         IOSP IMAGE+20,,2    11 PRINT.
07244 -2 00002 0 07474         IOSP ECHO,,2        9 ECHO.
07245 -2 00002 0 07442         IOSP IMAGE+22,,2    12 PRINT.
07246 -2 00017 0 07476         IOSP ECHO+2,,15 8L TO 1L ECHO
07247  3 00001 0 07515         IORT ECHO+17,,1 1R ECHO.
07250  1 00006 0 07237         TCH CWBVA,,6

07251  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07252  0000 00 0 00000   CWBVC IOCD

07253  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.
```

```
07254 -0000 22 0 07414   CWBWA IOCP IMAGE,,18   9-1 PRINT.
07255 -0000 02 2 07520         IOCPN ECHO+20,,2 8-4 ECHO-SUPPRESSED.
07256 -0000 02 0 07436         IOCP IMAGE+18,,2 0 PRINT.
07257 -0000 02 2 07516         IOCPN ECHO+18,,2 8-3 ECHO-SUPPRESSED.
07260 -0000 02 0 07440         IOCP IMAGE+20,,2 11 PRINT.
07261 -0000 02 0 07474         IOCP ECHO,,2     9 ECHO.
07262 -0000 02 0 07442         IOCP IMAGE+22,,2 12 PRINT.
07263  0000 20 0 07476         IOCD ECHO+2,,16       8-1 ECHO.

07264  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.


07265  0000 02 0 07414   CWBM  IOCD IMAGE,,2

07266  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07267  0000 10 0 07414   CWCM  IOCD IMAGE,,8

07270  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07271  0000 30 0 07364   CWCRD IOCD CARDA,,24

07272  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07273  0000 30 0 07522   CWERA IOCD ERBIT,,24

07274  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07275  0000 30 0 07414   CWIM  IOCD IMAGE,,24

07276  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07277  0000 30 0 07444   CWIMA IOCD IMAGA,,24

07300  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07301  0000 22 0 07474   CWECH IOCD ECHO,,18

07302  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07303  0000 22 0 07522   CWERB IOCD ERBIT,,18

07304  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07305  0000 36 2 06607   CWLST IOCDN BLAST,,30

07306  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07307 -0000 22 0 07444   CWRBL IOCP IMAGA,,18 9-1 WRITE.
07310 -0000 02 0 07520         IOCP ECHO+20,,2      8-4 ECHO.
07311 -0000 02 0 07466         IOCP IMAGA+18,,2 0 WRITE.
07312 -0000 02 0 07516         IOCP ECHO+18,,2      8-3 ECHO.
07313 -0000 02 0 07470         IOCP IMAGA+20,,2 11 WRITE.
07314  0000 02 0 07474         IOCD ECHO,,2         9ECHO.
```

```
07315  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07316 -0000 22 0 07414   CWRM  IOCP IMAGE,,18        9-1 WRITE.
07317 -0000 02 0 07520         IOCP ECHO+20,,2       8-4 ECHO.
07320 -0000 02 0 07436         IOCP IMAGE+18,,2      0 WRITE.
07321 -0000 02 0 07516         IOCP ECHO+18,,2       8-3 ECHO.
07322 -0000 02 0 07440         IOCP IMAGE+20,,2      11 WRITE.
07323 -0000 02 0 07474         IOCP ECHO,,2          9 ECHO.
07324 -0000 02 0 07442         IOCP IMAGE+22,,2      12 WRITE.
07325  0000 20 0 07476         IOCD ECHO+2,,16       8-1 ECHO.

07326  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.

07327 -0000 22 0 07444   CWRMA IOCP IMAGA,,18        9-1 WRITE.
07330 -0000 02 0 07520         IOCP ECHO+20,,2       8-4 ECHO.
07331 -0000 02 0 07466         IOCP IMAGA+18,,2      0 WRITE.
07332 -0000 02 0 07516         IOCP ECHO+18,,2       8-3 ECHO.
07333 -0000 02 0 07470         IOCP IMAGA+20,,2      11 WRITE.
07334 -0000 02 0 07474         IOCP ECHO,,2          9 ECHO.
07335 -0000 02 0 07472         IOCP IMAGA+22,,2      12 WRITE.
07336  0000 20 0 07476         IOCD ECHO+2,,16       8-1 ECHO.

07337  0000 00 0 00000         IOCD          PROGRAM PROTECT - I/O DISC.


*      *** PRINT IMAGE STORAGES.


                  07340   BLOKA BSS 18

                  07362   CARD  BSS 2

                  07364   CARDA BSS 24

                  07414   IMAGE BSS 1         9 L COLUMN 1-72 PRINT
                  07415         BSS 1         9 R IMAGE STORAGE.
                  07416         BSS 1         8 L
                  07417         BSS 1         8 R
                  07420         BSS 1         7 L
                  07421         BSS 1         7 R
                  07422         BSS 1         6 L
                  07423         BSS 1         6 R
                  07424         BSS 1         5 L
                  07425         BSS 1         5 R
                  07426         BSS 1         4 L
                  07427         BSS 1         4 R
                  07430         BSS 1         3 L
                  07431         BSS 1         3 R
                  07432         BSS 1         2 L
                  07433         BSS 1         2 R
                  07434         BSS 1         1 L
                  07435         BSS 1         1 R
                  07436         BSS 1         0 L
                  07437         BSS 1         0 R
                  07440         BSS 1         11 L
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07441         BSS 1         11 R
07442         BSS 1         12 L
07443         BSS 1         12 R

07444   IMAGA BSS 1         9 L COLUMN 49-120 PRINT
07445         BSS 1         9 R IMAGE STORAGE.
07446         BSS 1         8 L
07447         BSS 1         8 R
07450         BSS 1         7 L
07451         BSS 1         7 R
07452         BSS 1         6 L
07453         BSS 1         6 R
07454         BSS 1         5 L
07455         BSS 1         5 R
07456         BSS 1         4 L
07457         BSS 1         4 R
07460         BSS 1         3 L
07461         BSS 1         3 R
07462         BSS 1         2 L
07463         BSS 1         2 R
07464         BSS 1         1 L
07465         BSS 1         1 R
07466         BSS 1               0 L
07467         BSS 1               0 R
07470         BSS 1         11 L
07471         BSS 1         11 R
07472         BSS 1         12 L
07473         BSS 1         12 R

07474   ECHO  BSS 1         9 L ECHO IMAGE
07475         BSS 1         9 R STORAGE.
07476         BSS 1         8 L
07477         BSS 1         8 R
07500         BSS 1         7 L
07501         BSS 1         7 R
07502         BSS 1         6 L
07503         BSS 1         6 R
07504         BSS 1         5 L
07505         BSS 1         5 R
07506         BSS 1         4 L
07507         BSS 1         4 R
07510         BSS 1         3 L
07511         BSS 1         3 R
07512         BSS 1         2 L
07513         BSS 1         2 R
07514         BSS 1         1 L
07515         BSS 1         1 R
07516         BSS 1         8-3 L
07517         BSS 1         8-3 R
07520         BSS 1         8-4 L
07521         BSS 1         8-4 R

07522   ERBIT BSS 1         9 L ERROR BIT STORAGE.
07523         BSS 1         9 R
07524         BSS 1         8 L
07525         BSS 1         8 R
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07526	BSS 1	7 L	
07527	BSS 1	7 R	
07530	BSS 1	6 L	
07531	BSS 1	6 R	
07532	BSS 1	5 L	
07533	BSS 1	5 R	
07534	BSS 1	4 L	
07535	BSS 1	4 R	
07536	BSS 1	3 L	
07537	BSS 1	3 R	
07540	BSS 1	2 L	
07541	BSS 1	2 R	
07542	BSS 1	1 L	
07543	BSS 1	1 R	
07544	BSS 1		0 L
07545	BSS 1		0 R
07546	BSS 1	11 L	
07547	BSS 1		11 R
07550	BSS 1		12 L
07551	BSS 1		12 R

```
*      *** 709 ROUTINE FOR MODIFICATION OF
*      *** I-O INSTRUCTIONS

07552  0 00000 0 00000   CTRL1              COUNT WORD FOR DS A+B
07553  0 00000 0 00000   CTRL2              COUNT WORD FOR DS C+D
07554  0 00000 0 00000   CTRL3              COUNT WORD FOR DS E+F
                 07555   IOCT  BSS 1        I-O COUNT



*ENTER CONTROL WORDS FOTR CHANNELS AND UNITS

07556  0600 00 0 07552   IOC   STZ CTRL1    CLEAR
07557  0600 00 0 07553         STZ CTRL2    CONTROL
07560  0600 00 0 07554         STZ CTRL3    WORDS.



07561  0000 00 0 07562         HTR *+1      ENTER KEYS WITH CONTROL
                                            FOR DS A

*NOTE - A TAG OF 1 WILL SPECIFY CHAN A
*       A TAG OF 2 WILL SPECIFY CHAN C
*       A TAG OF 4 WILL SPECIFY CHAN E

*IF 2 OR MORE DS ARE TO BE TESTED THE 1ST CONTROL
*WORD ENTERED IN THE KEYS SHOULD CONTIAN A MULTIPLE TAG


07562  0760 00 0 00004         ENK          PLACE WORD
07563 -0130 00 0 00000         XCL          ENTERED IN KEYS
07564  0044 00 0 00000         PAI          INTO INDICATORS

07565  0054 00  700000   DSC   RFT 0,7      DO WE HAVE A TAG BIT
07566  0020 00 0 07570         TRA DSC1     YES
07567  0000 00 0 07562         HTR *-5      NO TAG BIT - RE-ENTER FIRST
                                            CONTROL WORD SPECIFYING
                                            DS IN TAG OF KEYS


07570  0056 00  100000   DSC1  RNT 0,1      TEST FOR CHAN A
07571  0020 00 0 07573         TRA DSC2     NO
07572  0604 00 0 07552         STI CTRL1    CONTROL WORD FOR CHAN A

07573  0056 00  200000   DSC2  RNT 0,2      TEST FOR CHAN C
07574  0020 00 0 07600         TRA DSC3     NO


07575  0000 00 0 07576         HTR *+1      SET CONTROL WORD IN KEYS
                                            FOR CHAN C

07576  0760 00 0 00004         ENK
07577 -0600 00 0 07553         STQ CTRL2

07600  0056 00  400000   DSC3  RNT 0,4      TEST FOR CHAN E
07601  0020 00 0 07605         TRA *+4      NO
```

```
07602  0000 00 0 07603         HTR *+1       SET CONTROL IN KEYS
                                             FOR CHANNEL E

07603  0760 00 0 00004         ENK
07604 -0600 00 0 07554         STQ CTRL3


*ESTABLISH UNIT COUNT FROM CONTROL WORDS


07605  0600 00 0 07555         STZ IOCT      CLEAR UNIT COUNT
07606  0774 00 2 00003         AXT 3,2
07607  0441 00 2 07555         LDI CTRL1+3,2 BRING IN CONTROL WORDS
07610  0054 00  000002         RFT 2         TEST FOR PRINTER
07611  0020 00 0 07614         TRA *+3       YES
07612  2 00001 2 07607         TIX *-3,2,1   NO-GET NEXT CONTROL
07613  0020 00 4 00001         TRA 1,4       RETURN

07614  0500 00 0 07555         CLA IOCT      BRING IN COUNT
07615  0400 00 0 05316         ADD Q1        ADD ONE
07616  0601 00 0 07555         STO IOCT      RESTORE COUNT
07617  0020 00 0 07612         TRA *-5       GO GET NEXT CONTROL



*MODIFY PRINTER INSTRUCTIONS


07620 -0625 00 0 07746   RSET  STL REST      SET RESET SWITCH.

07621  0500 00 4 00001   CTX   CLA 1,4       STARTING ADDRESS IN ADDRESS
                                             ENDING ADDRESS IN DECREMENT
07622  0634 00 4 07654         SXA EXIT,4    SAVE XRC
07623  0621 00 0 07744         STA NOW       BEGINNING ADDRESS
07624  0771 00 0 00022         ARS 18
07625  0621 00 0 07632         STA CHECK+1
07626  0621 00 0 07720         STA RET
07627  0402 00 0 07744         SUB NOW       # OF LOCATIONS TO CHECK
07630  0734 00 1 00000         PAX 0,1

*START MODIFICATION OF INSTRUCTIONS


07631  0774 00 2 00007   CHECK AXT 7,2
07632 -0500 00 1 00000         CAL 0,1       N LOCATION TO BE CHECKED
07633  0602 00 0 07745         SLW INSTR     SAVE INSTRUCTION
07634 -0320 00 0 07722         ANA MASK1     SAVE OPERATION CODE
07635 -0340 00 2 07736         LAS OPR1+7,2
07636  0020 00 0 07640         TRA *+2
07637  0020 00 0 07657         TRA SELCT     YES-IT IS A SELECT
07640  2 00001 2 07641         TIX *+1,2,1
07641  3 00004 2 07635         TXH *-4,2,4   HAVE ALL SELECTS BEEN TESTED

07642 -0320 00 0 07723         ANA MASK2     NOT A SELECT, IS IT A CHANNEL
07643 -0340 00 2 07736         LAS OPR2+4,2  INSTRUCTION
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07644  0020 00 0 07646         TRA *+2
07645  0020 00 0 07667         TRA RCH        YES-ITS A CHANNEL INSTR.
07646  2 00001 2 07643         TIX *-3,2,1

07647 -0500 00 0 07745         CAL INSTR
07650 -0320 00 0 07726         ANA MASK5      CHECK TO TCOE
07651  0402 00 0 07732         SUB OPR2
07652  0100 00 0 07666         TZE FOUND
07653  2 00001 1 07631         TIX CHECK,1,1  NOT AN INSTRUCTION WE
                                              WANT TO MODIFY. BRING
                                              IN NEXT INSTRUCTION


07654  0774 00 4 00000   EXIT  AXT **,4
07655  0600 00 0 07746         STZ REST       STATUS
07656  0020 00 4 00002         TRA 2,4        RETURN TO MAIN PROGRAM



07657 -0500 00 0 07745   SELCT CAL INSTR      WORKING INSTRUCTION
07660  0074 00 4 07703         TSX TRSET,4    CHECK RESET SWITCH
07661  0400 00 0 07737         ADD K2000      STEP TO NEXT CHANNEL
07662  0020 00 0 07720         TRA RET        RETURN TO RESTORE WORD

07663  0761 00 0 00000         NOP
07664  0400 00 0 07742         ADD K4000
07665  0020 00 0 07720         TRA RET


07666  0774 00 2 00004   FOUND AXT 4,2
07667 -0500 00 0 07745   RCH   CAL INSTR      WORKING INSTRUCTION
07670  0074 00 4 07703         TSX TRSET,4    CHECK FOR RESET
07671  3 00003 2 07701         TXH *+8,2,3    IS IT A TCO
07672  0400 00 0 07736         ADD K1000      STEP TO NEXT CHANNEL
07673  0020 00 0 07720         TRA RET        RETURN TO RESTORE WORD

07674  3 00003 2 07677         TXH *+3,2,3    WILL COME HERE IF CHANNEL
07675  0400 00 0 07740         ADD K2200      C IS NOT SELECTED-NOT TCO
07676  0020 00 0 07720         TRA RET

07677  0400 00 0 07743         ADD K4200      NOT CHAN C-TCO
07700  0020 00 0 07720         TRA RET

07701  0400 00 0 07740         ADD K2200      CHAN C-TCO
07702  0020 00 0 07720         TRA RET



07703 -0520 00 0 07746   TRSET NZT REST       TEST FOR RESET
07704  0020 00 0 07706         TRA *+2        NO
07705  0020 00 0 07712         TRA SET        YES

07706  0441 00 0 07553         LDI CTRL2
07707  0056 00  200000         RNT 200000     IS CHANNEL C SELECTED
07710  0020 00 4 00004         TRA 4,4        NO
07711  0020 00 4 00001         TRA 1,4        YES
```

```
07712  3 00004 2 07716   SET   TXH OUT,2,4   IS IT A SELECT.

07713 -0320 00 0 07724         ANA MASK3     SAVE ALL BUT OPERATION CODE
07714 -0501 00 2 07736         ORA OPR1+7,2  OR IN CHANNEL A.
07715  0020 00 0 07720         TRA RET       RESTORE

07716 -0320 00 0 07725   OUT   ANA MASK4     SAVE ALL BUT CHANNEL.
07717 -0501 00 0 07741         ORA K1001     OR IN CHAN. A

07720  0602 00 1 00000   RET   SLW 0,1       RESTORE WORD
07721  0020 00 0 07653         TRA EXIT-1    NEXT WORD TO CHECK


07722 -377777770700      MASK1 OCT 777777770700
07723 -377477000000      MASK2 OCT 777477000000
07724 +000077777777      MASK3 OCT 77777777
07725 -377777770777      MASK4 OCT 777777770777
07726 -377377000000      MASK5 OCT 777377000000

07727 +076600000300      OPR1  OCT 076600000300      WRITE PRINTER
07730 +076200000300            OCT 076200000300      READ PRINTER
07731 +076000000300            OCT 076000000300      SENSE PRINTER

07732 +006000000000      OPR2  OCT 006000000000      TCO
07733 +064000000000            OCT 064000000000      SCH
07734 +054000000000            OCT 054000000000      RCH
07735 +054400000000            OCT 054400000000      LCH

07736 +000100000000      K1000 OCT 000100000000      NEXT CHANNEL-CHANNEL INSTR
07737 +000000002000      K2000 OCT 2000              NEXT CHANNEL ON SELECT
07740 +000200000000      K2200 OCT 000200000000      NEXT-TCO, STEP 2-CHANNEL I
07741 +000000001000      K1001 OCT 1000
07742 +000000004000      K4000 OCT 4000              STEP 2-SELECT
07743 +000400000000      K4200 OCT 000400000000      STEP 2-TCO

07744 +000000000000      NOW   OCT 0
07745 +000000000000      INSTR OCT 0
07746 +000000000000      REST  OCT 0



07747  0762 00 0 01321   PLCB  RCDA          PUSH LOAD CARDS BUTTON.
07750  0540 00 0 07753         RCHA *+3
07751  0544 00 0 00000         LCHA 0
07752  0020 00 0 00001         TRA 1

07753 -1 00003 0 00000         IOCT 0,0,3



07754  0074 00 4 07556   BEGNA TSX IOC,4     LOAD KEYS AND SAVE
                                             CONTROL CONSTANTS

07755  0760 00 0 00004         ENK           SET CORRECT LOAD
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07756  0162 00 0 07761         TQP *+3       BUTTON SEQUENCE.
07757  0500 00 0 05330         CLA RCDA
07760  0020 00 0 07756         TRA *-2
07761  0500 00 0 05331         CLA RTBA
07762  0601 00 0 07747         STO PLCB

07763  0774 00 1 77777         AXT -1,1      TEST SIZE OF STORAGE
07764  3 07777 1 07776         TXH MORE,1,4095 IF GREATER THAN 4K.

07765 -0625 00 0 05531         STL SIZE      4K STORAGE. SET
                                             STORAGE SIZE SWITCH ON.

*      *** SET UNUSED CORE STORAGE TO TSX SPACE,4.

07766  0774 00 4 00463   SETRA AXT LASTA-FRSTA,4
07767  0500 00 0 05324         CLA CATCH
07770  0601 00 4 03405         STO LASTA,4
07771  2 00001 4 07770         TIX *-1,4,1
07772  0774 00 4 00027         AXT 23,4
07773  0601 00 4 00030         STO 24,4
07774  2 00001 4 07773         TIX *-1,4,1
07775  0020 00 0 00031         TRA 25

07776  0600 00 0 05531   MORE  STZ SIZE      MORE THAN 4K STORAGE.
                                             SET STORAGE SIZE SWITCH OFF
07777  0020 00 0 07747         TRA PLCB      BRING IN REST OF PROGRAM
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*      *** 9P01   PRINTER DIAGNOSTIC - PART TWO.
*      *** THE PROGRAMMED CARRIAGE CONTROL TEST.


                10030         ORG 4096+24


10030  0074 00 4 07556         TSX IOC,4     LOAD KEYS AND SAVE
                                             CONTROL CONSTANTS

10031  0074 00 4 07620         TSX RSET,4    RESET PART TWO TO
10032  0 12275 0 10050         PZE STRTB,,FRSTB CHANNEL A.

10033  0074 00 4 07620         TSX RSET,4    RESET SUBROUTINE PACKAGE.
10034  0 05305 0 03405         PZE LASTA,,NOMOD TO CHANNEL -A-.

10035  0500 00 0 05327         CLA RSTRT     POST
10036  0601 00 0 00000         STO 0         RESTART.

10037  0500 00 0 07555         CLA IOCT      INITIALIZE THE
10040  0601 00 0 05524         STO IOCNT     UNIT COUNT.

10041  0441 00 0 07552         LDI CTRL1     TEST I/O CONTROL FORMAT
10042  0054 00  100002         RFT 100002    FOR CHANNEL A.
10043  0020 00 0 10050         TRA STRTB     YES.

10044  0074 00 4 07621   STRTC TSX CTX,4     NO CHANNEL A IN KEYS. GET
10045  0 12275 0 10050         PZE STRTB,,FRSTB NEXT CHANNEL.

10046  0074 00 4 07621         TSX CTX,4
10047  0 05305 0 03405         PZE LASTA,,NOMOD


10050  0020 00 0 10052   STRTB TRA *+2


10051  0766 00 0 01361         WPRA          DUMMY INSTRUCTION TO BE
                                             MODIFIED BY IOM.

10052  0774 00 4 00003         AXT 3,4
10053  0500 00 0 10051         CLA *-2
10054  0340 00 4 05335         CAS STRTA+3,4 COMPARE A,C,E.
10055  0020 00 0 10057         TRA *+2
10056  0020 00 0 10061         TRA *+3
10057  2 00001 4 10054         TIX *-3,4,1

10060  0000 00 0 00030        #HTR 24        DUMMY INSTRUCTION AT
                                             STRTB+1 NOT CORRECTLY
                                             INITIALIZED. PRESS START
                                             TO RETURN TO IOM TO
                                             RELOAD THE KEYS AND RESTART
                                             PROGRAM.

10061 -0500 00 4 06576         CAL CDZAB+3,4
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10062  0602 00 0 12235         SLW CDZAD+9
10063  0602 00 0 12246         SLW CDZAE+8



*      *** CARRIAGE CONTROL TEST.


10064  0074 00 4 03455   AQA   TSX RESET,4    CLEAR CONSOLE AND SET -MONIT-.

10065  0766 00 0 01361         WPRA
10066  0760 00 0 01363         SPRA 3         DOUBLE SPACE.
10067  0074 00 4 05136         TSX SPLTA,4    PRINT-NOW PERFORMING

10070  0 00000 0 12224         PZE CDZAD      9P01  PART TWO ON CHANNEL X.

10071  0774 00 1 00005         AXT 5,1
10072  0766 00 0 01361         WPRA           SPACE FIVE LINES
10073  2 00001 1 10072         TIX *-1,1,1

10074  0774 00 1 00064         AXT 52,1       PRINT-THIS IS A 709 OPERATED
10075  0074 00 4 05144         TSX SPLTB,4    AUTOMATIC CARRIAGE CONTROL
10076  0 00000 1 11263         PZE CDAQA+52,1 PROGRAM. INSURE THAT THE
10077  0060 00 0 10077         TCOA *         DIAGNOSTIC PRINTER BOARD AND
10100  2 00015 1 10075         TIX *-3,1,13   CARRAGE TAPE AER IN USE
                                               AND OBSERVE THAT THE
                                               SUCCEEDING LINES OF PRINTED
                                               INFORMATION CONFORM WITH
                                               THE ACTUAL OPERATION OF THE
                                               CARRIAGE AND WRITE-UP
                                               PROVIDED.


10101  0762 00 0 01361   AQB   RPRA           SELECT
10102  0760 00 0 01361         SPRA 1         SKIP TO 1.
10103  0074 00 4 11067         TSX CARR,4     PRINT-CARRIAGE SKIP TO 1.
10104  0 00000 0 11263         PZE CDAQB      PRINT ON LINE 1.
10105  0 00000 0 00000         PZE            NO OVERFLOW INDICATION EXPECTED.
10106  0020 00 0 10101         TRA AQB        LOOP RETURN

10107  0762 00 0 01361   AQC   RPRA           SELECT
10110  0760 00 0 01366         SPRA 6         SKIP TO 5.
10111  0760 00 0 01370         SPRA 8         X
10112  0760 00 0 01372         SPRA 10        X
10113  0074 00 4 04422         TSX SPRA2,4    X
10114  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 5, TAKE IDLE
10115  0 00000 0 11464         PZE CDAQX      CYCLE. MOVE TO 5 HOLD AND
                                               PRINT ON LINE 25.
10116  0 00000 0 00000         PZE            NO OVERFLOW.
10117  0020 00 0 10107         TRA AQC        LOOP RETURN.

10120  0762 00 0 01361   AQD   RPRA           SELECT
10121  0760 00 0 01367         SPRA 7         SKIP TO 9.
10122  0760 00 0 01370         SPRA 8         X
10123  0760 00 0 01372         SPRA 10        X
10124  0074 00 4 04422         TSX SPRA2,4    X
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10125  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 9. TAKE IDLE
10126  0 00000 0 11544         PZE CDARB      CYCLE, MOVE TO 9 HOLD AND
                                               PRINT ON LINE 49.
10127  0 00000 0 00000         PZE            NO OVERFLOW.
10130  0020 00 0 10120         TRA AQD        LOOP RETURN.

10131  0762 00 0 01361   AQE   RPRA
10132  0760 00 0 01366         SPRA 6         SKIP TO 2
10133  0074 00 4 04422         TSX SPRA2,4    X
10134  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 2. TAKE IDLE
10135  0 00000 0 11420         PZE CDAQU      CYCLE, MOVE TO 2 HOLD AND
                                               PRINT ON LINE 7.
10136  0 00000 0 00000         PZE            NO OVERFLOW.
10137  0020 00 0 10131         TRA AQE        LOOP RETURN.

10140  0762 00 0 01361   AQF   RPRA
10141  0760 00 0 01372         SPRA 10        SKIP TO 6.
10142  0074 00 4 04422         TSX SPRA2,4    X
10143  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 6. TAKE IDLE
10144  0 00000 0 11500         PZE CDAQY      CYCLE, MOVE TO 6 HOLD AND
                                               PRINT ON LINE 31.
10145  0 00000 0 00000         PZE            NO OVERFLOW.
10146  0020 00 0 10140         TRA AQF        LOOP RETURN.

10147  0762 00 0 01361   AQG   RPRA
10150  0760 00 0 01366         SPRA 6         SKIP TO 10.
10151  0760 00 0 01372         SPRA 10        X
10152  0074 00 4 04422         TSX SPRA2,4    X
10153  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 10. TAKE IDLE
10154  0 00000 0 11560         PZE CDARC      CYCLE, MOVE TO 10 HOLD AND
                                               PRINT ON LINE 55.
10155  0 00000 0 00000         PZE            NO OVERFLOW.
10156  0020 00 0 10147         TRA AQG        LOOP RETURN.

10157  0762 00 0 01361   AQH   RPRA
10160  0760 00 0 01366         SPRA 6         SKIP TO 3.
10161  0760 00 0 01367         SPRA 7         X
10162  0074 00 4 04422         TSX SPRA2,4    X
10163  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 3. TAKE IDLE
10164  0 00000 0 11434         PZE CDAQV      CYCLE, MOVE TO 3 HOLD AND
                                               PRINT ON LINE 13.
10165  0 00000 0 00000         PZE            NO OVERFLOW.
10166  0020 00 0 10157         TRA AQH        LOOP RETURN.

10167  0762 00 0 01361   AQJ   RPRA
10170  0760 00 0 01367         SPRA 7         SKIP TO 7.
10171  0760 00 0 01372         SPRA 10        X
10172  0074 00 4 04422         TSX SPRA2,4    X
10173  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 7. TAKE IDLE
10174  0 00000 0 11514         PZE CDAQZ      CYCLE, MOVE TO 7 HOLD AND
                                               PRINT ON LINE 37.
10175  0 00000 0 00000         PZE            NO OVERFLOW.
10176  0020 00 0 10167         TRA AQJ        LOOP RETURN.

10177  0762 00 0 01361   AQK   RPRA
10200  0760 00 0 01366         SPRA 6         SKIP TO 4.
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10201  0760 00 0 01370        SPRA 8         X
10202  0074 00 4 04422        TSX SPRA2,4    X
10203  0074 00 4 11067        TSX CARR,4     PRINT-SKIP TO 4. TAKE IDLE
10204  0 00000 0 11450        PZE CDAQW      CYCLE, MOVE TO 4 HOLD AND
                                             PRINT ON LINE 19.
10205  0 00000 0 00000        PZE            NO OVERFLOW.
10206  0761 00 0 00000        NOP            LOOP RETURN.

10207  0762 00 0 01361        RPRA
10210  0760 00 0 01370        SPRA 8         SKIP TO 8.
10211  0760 00 0 01372        SPRA 10        X
10212  0074 00 4 04422        TSX SPRA2,4    X
10213  0074 00 4 11067        TSX CARR,4     PRINT-SKIP TO 8. TAKE IDLE
10214  0 00000 0 11530        PZE CDARA      CYCLE, MOVE TO 8 HOLD AND
                                             FROM LAST LINE
10215  0 00000 0 00000        PZE            NO OVERFLOW.
10216  0761 00 0 00000        NOP            LOOP RETURN.

10217  0762 00 0 01361        RPRA
10220  0760 00 0 01367        SPRA 7         EXTRA
10221  0074 00 4 04422        TSX SPRA2,4    SPACE.
10222  0760 00 0 01363        SPRA 3         DOUBLE SPACE.
10223  0074 00 4 11067        TSX CARR,4     PRINT-DOUBLE SPACE WITH EXTRA
10224  0 00000 0 11304        PZE CDAQM      SPACE, SHOULD BE 2 SPACES
                                             FROM LAST LINE
10225  0 00000 0 00000        PZE            NO OVERFLOW.
10226  0761 00 0 00000        NOP            LOOP RETURN.

10227  0762 00 0 01361        RPRA
10230  0760 00 0 01363        SPRA 3         DOUBLE AND
10231  0760 00 0 01367        SPRA 7         EXTRA
10232  0074 00 4 04422        TSX SPRA2,4    SPACE.
10233  0074 00 4 11067        TSX CARR,4     PRINT-DOUBLE SPACE WITH EXTRA
10234  0 00000 0 11320        PZE CDAQN      SPACE, SHOULD BE 4 SPACES
                                             FROM LAST LINE.
10235  0 00000 0 00000        PZE            NO OVERFLOW.
10236  0761 00 0 00000        NOP            LOOP RETURN.

10237  0762 00 0 01361        RPRA
10240  0760 00 0 01367        SPRA 7         SINGLE WITH
10241  0074 00 4 04422        TSX SPRA2,4    EXTRA SPACE.
10242  0074 00 4 11067        TSX CARR,4     PRINT-SINGLE SPACE WITH EXTRA
10243  0 00000 0 11334        PZE CDAQP      SPACE, SHOULD BE 2 SPACES
                                             FROM LAST LINE.
10244  0 00000 0 00000        PZE            NO OVERFLOW.
10245  0761 00 0 00000        NOP            LOOP RETURN.

10246  0762 00 0 01361        RPRA
10247  0760 00 0 01363        SPRA 3         DOUBLE
10250  0074 00 4 11067        TSX CARR,4     PRINT-DOUBLE SPACE. SHOULD
10251  0 00000 0 11350        PZE CDAQQ      SPACE, SHOULD BE 4 SPACES
                                             FROM LAST LINE.
10252  0 00000 0 00000        PZE            NO OVERFLOW.
10253  0761 00 0 00000        NOP            LOOP RETURN.

10254  0762 00 0 01361        RPRA
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10255  0760 00 0 01363         SPRA 3        DOUBLE SPACE WITH
10256  0760 00 0 01367         SPRA 7        EXTRA
10257  0074 00 4 04422         TSX SPRA2,4   SPACE.
10260  0074 00 4 11067         TSX CARR,4    PRINT-DOUBLE SPACE WITH EXTRA
10261  0 00000 0 11304         PZE CDAQM     SPACE, SHOULD BE 2 SPACES
                                             FROM LAST LINE.
10262  0 00000 0 00000         PZE           NO OVERFLOW.
10263  0761 00 0 00000         NOP           LOOP RETURN.

10264  0762 00 0 01361         RPRA
10265  0074 00 4 11067         TSX CARR,4    PRINT - SINGLE SPACE. SHOULD
10266  0 00000 0 11272         PZE CDAQK     PRINT 2 SPACES FROM LAST
                                             LINE.
10267  0 00000 0 00000         PZE           NO OVERFLOW.
10270  0761 00 0 00000         NOP           LOOP RETURN.

10271  0762 00 0 01361         RPRA
10272  0074 00 4 11067         TSX CARR,4    PRINT-SIGNLE SPACE SHOULD
10273  0 00000 0 11362         PZE CDAQR     PRINT 1 SPACE FROM LAST
                                             LINE.
10274  0 00000 0 00000         PZE           NO OVERFLOW.
10275  0761 00 0 00000         NOP           LOOP RETURN.

10276  0762 00 0 01361         RPRA
10277  0074 00 4 11067         TSX CARR,4    PRINT-SIGNLE SPACE SHOULD
10300  0 00000 0 11374         PZE CDAQS     FIND 12 HOLE IN CARRIAGE TAPE.
10301  1 00000 0 00000         PON           OVERFLOW INDICATOR.
10302  0020 00 0 10177         TRA AQK       LOOP RETURN.

10303  0762 00 0 01361   AQT   RPRA
10304  0760 00 0 01361         SPRA 1        SKIP TO 1.
10305  0074 00 4 11067         TSX CARR,4    PRINT-SKIP TO 1. START
10306  0 00000 0 11406         PZE CDAQT     SYMETRICLA SHIFING - 6 SPACES
                                             APART.
10307  0 00000 0 00000         PZE           NO OVERFLOW.
10310  0761 00 0 00000         NOP           LOOP RETURN.

10311  0762 00 0 01361         RPRA
10312  0760 00 0 01366         SPRA 6        SKIP TO 2.
10313  0074 00 4 04422         TSX SPRA2,4   SPACE.
10314  0074 00 4 11067         TSX CARR,4    PRINT-SKIP TO 2. TAKE IDLE
10315  0 00000 0 11420         PZE CDAQU     CYCLE, MOVE TO 2 HOLD AND
                                             PRINT ON LINE 7.
10316  0 00000 0 00000         PZE           NO OVERFLOW.
10317  0761 00 0 00000         NOP           LOOP RETURN.

10320  0762 00 0 01361         RPRA
10321  0760 00 0 01366         SPRA 6        SKIP TO 3
10322  0760 00 0 01367         SPRA 7        X
10323  0074 00 4 04422         TSX SPRA2,4   X
10324  0074 00 4 11067         TSX CARR,4    PRINT-SKIP TO 3. TAKE IDLE
10325  0 00000 0 11434         PZE CDAQV     CYCLE, MOVE TO 3 HOLD AND
                                             PRINT ON LINE 13.
10326  0 00000 0 00000         PZE           NO OVERFLOW.
10327  0761 00 0 00000         NOP           LOOP RETURN.
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10330  0762 00 0 01361        RPRA
10331  0760 00 0 01366        SPRA 6        SKIP TO 4.
10332  0760 00 0 01370        SPRA 8        X
10333  0074 00 4 04422        TSX SPRA2,4   X
10334  0074 00 4 11067        TSX CARR,4    PRINT-SKIP TO 4. TAKE IDLE
10335  0 00000 0 11450        PZE CDAQW     CYCLE, MOVE TO 4 HOLD AND
                                            PRINT ON LINE 19.
10336  0 00000 0 00000        PZE           NO OVERFLOW.
10337  0761 00 0 00000        NOP           LOOP RETURN.

10340  0762 00 0 01361        RPRA
10341  0760 00 0 01366        SPRA 6        SKIP TO 5.
10342  0760 00 0 01370        SPRA 8        X
10343  0760 00 0 01372        SPRA 10       X
10344  0074 00 4 04422        TSX SPRA2,4   X
10345  0074 00 4 11067        TSX CARR,4    PRINT-SKIP TO 5. TAKE IDLE
10346  0 00000 0 11464        PZE CDAQX     CYCLE, MOVE TO 5 HOLD AND
                                            PRINT ON LINE 25.
10347  0 00000 0 00000        PZE           NO OVERFLOW.
10350  0761 00 0 00000        NOP           LOOP RETURN.

10351  0762 00 0 01361        RPRA
10352  0760 00 0 01372        SPRA 10       SKIP TO 6.
10353  0074 00 4 04422        TSX SPRA2,4   X
10354  0074 00 4 11067        TSX CARR,4    PRINT-SKIP TO 6. TAKE IDLE
10355  0 00000 0 11500        PZE CDAQY     CYCLE, MOVE TO 6 HOLD AND
                                            PRINT ON LINE 31.
10356  0 00000 0 00000        PZE           NO OVERFLOW.
10357  0761 00 0 00000        NOP           LOOP RETURN.

10360  0762 00 0 01361        RPRA
10361  0760 00 0 01367        SPRA 7        SKIP TO 7.
10362  0760 00 0 01372        SPRA 10       X
10363  0074 00 4 04422        TSX SPRA2,4   X
10364  0074 00 4 11067        TSX CARR,4    PRINT-SKIP TO 7. TAKE IDLE
10365  0 00000 0 11514        PZE CDAQZ     CYCLE, MOVE TO 7 HOLD AND
                                            PRINT ON LINE 37.
10366  0 00000 0 00000        PZE           NO OVERFLOW.
10367  0761 00 0 00000        NOP           LOOP RETURN.

10370  0762 00 0 01361        RPRA
10371  0760 00 0 01370        SPRA 8        SKIP TO 8.
10372  0760 00 0 01372        SPRA 10       X
10373  0074 00 4 04422        TSX SPRA2,4   X
10374  0074 00 4 11067        TSX CARR,4    PRINT-SKIP TO 8. TAKE IDLE
10375  0 00000 0 11530        PZE CDARA     CYCLE, MOVE TO 8 HOLD AND
                                            PRINT ON LINE 43.
10376  0 00000 0 00000        PZE           NO OVERFLOW.
10377  0761 00 0 00000        NOP           LOOP RETURN.

10400  0762 00 0 01361        RPRA
10401  0760 00 0 01367        SPRA 7        SKIP TO 9.
10402  0760 00 0 01370        SPRA 8        X
10403  0760 00 0 01372        SPRA 10       X
10404  0074 00 4 04422        TSX SPRA2,4   X
10405  0074 00 4 11067        TSX CARR,4    PRINT-SKIP TO 9. TAKE IDLE
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10406  0 00000 0 11544         PZE CDARB     CYCLE, MOVE TO 9 HOLD AND
                                             PRINT ON LINE 49.
10407  0 00000 0 00000         PZE           NO OVERFLOW.
10410  0761 00 0 00000         NOP           LOOP RETURN.

10411  0762 00 0 01361         RPRA
10412  0760 00 0 01366         SPRA 6        SKIP TO 10.
10413  0760 00 0 01372         SPRA 10       X
10414  0074 00 4 04422         TSX SPRA2,4   X
10415  0074 00 4 11067         TSX CARR,4    PRINT-SKIP TO 10. TAKE IDLE
10416  0 00000 0 11560         PZE CDARC     CYCLE, MOVE TO 10 HOLD AND
                                             PRINT ON LINE 55.
10417  0 00000 0 00000         PZE           NO OVERFLOW.
10420  0761 00 0 00000         NOP           LOOP RETURN.

10421  0762 00 0 01361         RPRA
10422  0760 00 0 01363         SPRA 3        DOUBLE SPACE.
10423  0074 00 4 11067         TSX CARR,4    PRINT-DOUBLE SPACE. SHOULD
10424  0 00000 0 11434         PZE CDAQV     PRINT 2 SPACES FROM LAST LINE.
10425  0 00000 0 00000         PZE           NO OVERFLOW.
10426  0761 00 0 00000         NOP           LOOP RETURN.

10427  0762 00 0 01361         RPRA
10430  0760 00 0 01366         SPRA 6        SELECTIVE
10431  0760 00 0 01367         SPRA 7        SPACE.
10432  0760 00 0 01372         SPRA 10       X
10433  0074 00 4 04422         TSX SPRA2,4   X
10434  0074 00 4 11067         TSX CARR,4    PRINT-SELECTIVE SPACE. NO
10435  0 00000 0 11574         PZE CDARD     IDLE CYCLE, MOVE TO 11 HOLD
                                             AND PRINT ON LINE 59.
10436  0 00000 0 00000         PZE           NO OVERFLOW.
10437  0761 00 0 00000         NOP           LOOP RETURN.

10440  0762 00 0 01361         RPRA
10441  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACE. SHOULD
10442  0 00000 0 11362         PZE CDAQR     FIND 12 HOLD IN CARRIAGE
                                             TAPE.
10443  0 00000 0 00000         PZE           NO OVERFLOW.
10444  0761 00 0 00000         NOP           LOOP RETURN.

10445  0762 00 0 01361         RPRA
10446  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACE. SHOULD
10447  0 00000 0 11374         PZE CDAQS     FIND 12 HOLD IN CARRIAGE
                                             TAPE.
10450  0 00000 0 00000         PZE           NO OVERFLOW.
10451  0020 00 0 10303         TRA AQT       LOOP RETURN.

10452  0762 00 0 01361   ARE   RPRA
10453  0760 00 0 01365         SPRA 5        SHORT SKIP TO 1
10454  0760 00 0 01361         SPRA 1        X
10455  0074 00 4 11067         TSX CARR,4    PRINT-SHORT SKIP TO 1. NO
10456  0 00000 0 11611         PZE CDARE     IDLE CYCLE, MOVE TO 1 HOLD
                                             AND PRINT ON LINE 1.
10457  0 00000 0 00000         PZE           NO OVERFLOW.
10460  0761 00 0 00000         NOP           LOOP RETURN.
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10461  0762 00 0 01361         RPRA
10462  0760 00 0 01365         SPRA 5         SHORT SKIP
10463  0760 00 0 01366         SPRA 6         TO
10464  0074 00 4 04422         TSX SPRA2,4    2
10465  0074 00 4 11067         TSX CARR,4     PRINT-SHORT SKIP TO 2. NO
10466  0 00000 0 11626         PZE CDARF      IDLE CYCLE, MOVE TO 2 HOLD
                                              AND PRINT ON LINE 7.
10467  0 00000 0 00000         PZE            NO OVERFLOW.
10470  0761 00 0 00000         NOP            LOOP RETURN.

10471  0762 00 0 01361         RPRA
10472  0760 00 0 01365         SPRA 5         SHORT
10473  0760 00 0 01366         SPRA 6         SKIP
10474  0760 00 0 01367         SPRA 7         TO
10475  0074 00 4 04422         TSX SPRA2,4    3
10476  0074 00 4 11067         TSX CARR,4     PRINT-SHORT SKIP TO 3. NO
10477  0 00000 0 11643         PZE CDARG      IDLE CYCLE, MOVE TO 3 HOLD
                                              AND PRINT ON LINE 13.
10500  0 00000 0 00000         PZE            NO OVERFLOW.
10501  0761 00 0 00000         NOP            LOOP RETURN.

10502  0762 00 0 01361         RPRA
10503  0760 00 0 01365         SPRA 5         SHORT
10504  0760 00 0 01366         SPRA 6         SKIP
10505  0760 00 0 01367         SPRA 7         TO
10506  0074 00 4 04422         TSX SPRA2,4    4
10507  0074 00 4 11067         TSX CARR,4     PRINT-SHORT SKIP TO 4, NO
10510  0 00000 0 11660         PZE CDARH      IDLE CYCLE, MOVE TO 4 HOLD
                                              AND PRINT ON LINE 19.
10511  0 00000 0 00000         PZE            NO OVERFLOW.
10512  0761 00 0 00000         NOP            LOOP RETURN.

10513  0762 00 0 01361         RPRA
10514  0760 00 0 01365         SPRA 5         SHORT SKIP TO ONE-
10515  0760 00 0 01361         SPRA 1         TOO FAR.
10516  0074 00 4 11067         TSX CARR,4     PRINT LINE ON FLY-
10517  0 00000 0 11675         PZE CDARJ      1111AAAAJJJJSSSS.
10520  0 00000 0 00000         PZE            NO OVERFLOW.
10521  0020 00 0 10452         TRA ARE        LOOP RETURN.

10522  0762 00 0 01361   ARK   RPRA
10523  0760 00 0 01366         SPRA 6         SUPRESS SPACE
10524  0760 00 0 01367         SPRA 7         X
10525  0760 00 0 01370         SPRA 8         X
10526  0074 00 4 04422         TSX SPRA2,4    X
10527  0074 00 4 11067         TSX CARR,4     PRINT-SUPPRESS SPACE. LAST
10530  0 00000 0 11712         PZE CDARK      LINE ON FLY 4 INCHES BACK.
                                              PRINT THIS ON LINE 1.
10531  0 00000 0 00000         PZE            NO OVERFLOW.
10532  0761 00 0 00000         NOP            LOOP RETURN.

10533  0762 00 0 01361         RPRA
10534  0760 00 0 01366         SPRA 6         SKIP TO 2.
10535  0074 00 4 04422         TSX SPRA2,4    X
10536  0074 00 4 11067         TSX CARR,4     PRINT-SKIP TO 2. TAKE IDLE
10537  0 00000 0 11420         PZE CDAQU      CYCLE, MOVE TO 2 HOLD AND
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                                                    PRINT ON LINE 7.
10540  0 00000 0 00000          PZE                 NO OVERFLOW.
10541  0761 00 0 00000          NOP                 LOOP RETURN.

10542  0762 00 0 01361          RPRA
10543  0760 00 0 01366          SPRA 6              SELECTIVE
10544  0760 00 0 01367          SPRA 7              SPACE
10545  0760 00 0 01372          SPRA 10             LESS THAN
10546  0074 00 4 04422          TSX SPRA2,4         4SPACES.
10547  0074 00 4 11067          TSX CARR,4          PRINT-SLECTIVE SPACE. MOVE
10550  0 00000 0 11727          PZE CDARL           1 SPACE AND PRINT ON
                                                    LINE 8.
10551  0 00000 0 00000          PZE                 NO OVERFLOW.
10552  0761 00 0 00000          NOP                 LOOP RETURN.

10553  0762 00 0 01361          RPRA
10554  0760 00 0 01366          SPRA 6              SELECTIVE
10555  0760 00 0 01367          SPRA 7              SPACE
10556  0760 00 0 01372          SPRA 10             LESS THEN
10557  0074 00 4 04422          TSX SPRA2,4         4SPACES.
10560  0074 00 4 11067          TSX CARR,4          PRINT-SELECTIVE SPACE. MOVE
10561  0 00000 0 11741          PZE CDARM           2 SPACES AND PRINT
                                                    ON LINE 10.
10562  0 00000 0 00000          PZE                 NO OVERFLOW.
10563  0761 00 0 00000          NOP                 LOOP RETURN.

10564  0762 00 0 01361          RPRA
10565  0760 00 0 01366          SPRA 6              SELECTIVE
10566  0760 00 0 01367          SPRA 7              SPACE
10567  0760 00 0 01372          SPRA 10             LESS THAN
10570  0074 00 4 04422          TSX SPRA2,4         4SPACES
10571  0074 00 4 11067          TSX CARR,4          PRINT-SELECTIVE SPACE. MOVE
10572  0 00000 0 11753          PZE CDARN           3 SPACES AND PRINT
                                                    ON LINE 13.
10573  0 00000 0 00000          PZE                 NO OVERFLOW.
10574  0761 00 0 00000          NOP                 LOOP RETURN.

10575  0762 00 0 01361          RPRA
10576  0760 00 0 01370          SPRA 8              SELECTIVE SPACE + EXTRA SPACE.
                                                    IF THIS LINE PRINTS ON THE
                                                    FLY, THE CARRIAGE IS
                                                    TOO SLOW TO MEET
10577  0074 00 4 04422          TSX SPRA2,4         PROGRAMMERS MANUAL SPECS.
10600  0074 00 4 11067          TSX CARR,4          PRINT-SELECTIVE SPACE. MOVE
10601  0 00000 0 11765          PZE CDARP           4 SPACES AND PRINT ON
                                                    LINE 17.
10602  0 00000 0 00000          PZE                 NO OVERFLOW.
10603  0761 00 0 00000          NOP                 LOOP RETURN.

10604  0762 00 0 01361          RPRA
10605  0760 00 0 01370          SPRA 8              SELECTIVE SPACE + EXTRA SPACE.
10606  0074 00 4 04422          TSX SPRA2,4         LESS THAN 7 SPACES.
10607  0074 00 4 11067          TSX CARR,4          PRINT-SELECTIVE SPACE. MOVE
10610  0 00000 0 12002          PZE CDARQ           5 SPACES AND PRINT ON
                                                    LINE 22.
10611  0 00000 0 00000          PZE                 NO OVERFLOW.
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10612  0761 00 0 00000         NOP           LOOP RETURN.

10613  0762 00 0 01361         RPRA
10614  0760 00 0 01370         SPRA 8        SELECTIVE SPACE + EXTRA SPACE.
10615  0074 00 4 04422         TSX SPRA2,4   LESS THAN 7 SPACES.
10616  0074 00 4 11067         TSX CARR,4    PRINT-SELECTIVE SPACE. MOVE
10617  0 00000 0 12002         PZE CDARQ     6 SPACES AND PRINT ON
                                             LINE 28.
10620  0 00000 0 00000         PZE           NO OVERFLOW.
10621  0761 00 0 00000         NOP           LOOP RETURN.

10622  0762 00 0 01361         RPRA
10623  0760 00 0 01366         SPRA 6        SELECTIVE
10624  0760 00 0 01367         SPRA 7        SPACE
10625  0760 00 0 01372         SPRA 10       X
10626  0074 00 4 04422         TSX SPRA2,4   X
10627  0074 00 4 11067         TSX CARR,4    PRINT-SELECTIVE SPACE. MOVE
10630  0 00000 0 12034         PZE CDARS     7 LINES AND PRINT ON
                                             LINE 35.
10631  0 00000 0 00000         PZE           NO OVERFLOW.
10632  0761 00 0 00000         NOP           LOOP RETURN.

10633  0762 00 0 01361         RPRA
10634  0760 00 0 01367         SPRA 7        EXTRA
10635  0074 00 4 04422         TSX SPRA2,4   SPACE.
10636  0760 00 0 01363         SPRA 3        DOUBLE SPACE.
10637  0074 00 4 11067         TSX CARR,4    PRINT-DOUBLE SPACE WITH EXTRA
10640  0 00000 0 11304         PZE CDAQM     SPACE. SHOULD BE 2 SPACES
                                             FROM LAST LINE.
10641  0 00000 0 00000         PZE           NO OVERFLOW.
10642  0761 00 0 00000         NOP           LOOP RETURN.

10643  0762 00 0 01361         RPRA
10644  0760 00 0 01363         SPRA 3        DOUBLE SPACE WITH
10645  0760 00 0 01367         SPRA 7        EXTRA
10646  0074 00 4 04422         TSX SPRA2,4   SPACE.
10647  0074 00 4 11067         TSX CARR,4    PRINT-DOUBLE SPACE WITH EXTRA
10650  0 00000 0 11320         PZE CDAQN     SPACE. SHOULD BE 4 SPACES
                                             FROM LAST LINE.
10651  0 00000 0 00000         PZE           NO OVERFLOW.
10652  0761 00 0 00000         NOP           LOOP RETURN.

10653  0762 00 0 01361         RPRA
10654  0760 00 0 01366         SPRA 6        SUPRESS SPACE
10655  0760 00 0 01367         SPRA 7        X
10656  0760 00 0 01370         SPRA 8        X
10657  0074 00 4 04422         TSX SPRA2,4   X
10660  0074 00 4 11067         TSX CARR,4    PRINT-SUPPRESS SPACE. SHOULD
10661  0 00000 0 12002         PZE CDARQ     PRINT 1 SPCE FROM LAST LINE.
10662  0 00000 0 00000         PZE           NO OVERFLOW.
10663  0761 00 0 00000         NOP           LOOP RETURN.

10664  0762 00 0 01361         RPRA
10665  0760 00 0 01367         SPRA 7        SINGLE SPACE WITH
10666  0074 00 4 04422         TSX SPRA2,4   EXTRA SPACE.
10667  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACW WITH EXTRA
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10670  0 00000 0 12060         PZE CDARU     SPACE. SHOULD BE 1 SPACE
                                             FORM LAST LINE.
10671  0 00000 0 00000         PZE           NO OVERFLOW.
10672  0761 00 0 00000         NOP           LOOP RETURN.

10673  0762 00 0 01361         RPRA
10674  0760 00 0 01367         SPRA 7        SINGLE SPACE WITH
10675  0074 00 4 04422         TSX SPRA2,4   EXTRA SPACE.
10676  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACE WITH EXTRA
10677  0 00000 0 11334         PZE CDAQP     SPACE. SHOULD BE 2 SPACES
                                             FROM LAST LINE.
10700  0 00000 0 00000         PZE           NO OVERFLOW.
10701  0761 00 0 00000         NOP           LOOP RETURN.

10702  0762 00 0 01361         RPRA
10703  0760 00 0 01366         SPRA 6        SUPRESS SPACE
10704  0760 00 0 01367         SPRA 7        X
10705  0760 00 0 01370         SPRA 8        X
10706  0074 00 4 04422         TSX SPRA2,4   X
10707  0074 00 4 11067         TSX CARR,4    PRINT ALTERNATE CHARACTERS
10710  0 00000 0 12140         PZE CDARY     OF-SUPPRESS SPACE. SHOULD
                                             PRINT ON VERY NEXT LINE.
10711  0 00000 0 00000         PZE           NO OVERFLOW.
10712  0761 00 0 00000         NOP           LOOP RETURN.

10713  0762 00 0 01361         RPRA
10714  0760 00 0 01366         SPRA 6        SUPRESS SPACE
10715  0760 00 0 01367         SPRA 7        X
10716  0760 00 0 01370         SPRA 8        X
10717  0074 00 4 04422         TSX SPRA2,4   X
10720  0074 00 4 11067         TSX CARR,4    PRINT REST OF-SUPPRESS SPACE.
10721  0 00000 0 12152         PZE CDARZ     SHOULD PRINT ON VERY NEXT.
                                             LINE.
10722  0 00000 0 00000         PZE           NO OVERFLOW.
10723  0761 00 0 00000         NOP           LOOP RETURN.

10724  0762 00 0 01361         RPRA          SINGLE SPACE.
10725  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACE. SHOULD
10726  0 00000 0 11362         PZE CDAQR     PRINT 1 SPACE FROM LAST LINE.
10727  0 00000 0 00000         PZE           NO OVERFLOW.
10730  0761 00 0 00000         NOP           LOOP RETURN.

10731  0762 00 0 01361         RPRA
10732  0760 00 0 01363         SPRA 3        DOUBLE SPACE.
10733  0074 00 4 11067         TSX CARR,4    PRINT-DOUBLE SPACE. SHOULD
10734  0 00000 0 12074         PZE CDARV     PRINT 2 SPACES FROM LAST LINE.
10735  0 00000 0 00000         PZE           NO OVERFLOW.
10736  0761 00 0 00000         NOP           LOOP RETURN.

10737  0762 00 0 01361         RPRA
10740  0760 00 0 01363         SPRA 3        DOUBLE SPACE WITH
10741  0760 00 0 01367         SPRA 7        EXTRA
10742  0074 00 4 04422         TSX SPRA2,4   SPACE.
10743  0074 00 4 11067         TSX CARR,4    PRINT-DOUBLE SPACE WITH EXTRA
10744  0 00000 0 11304         PZE CDAQM     SPACE. SHOULD BE 2 SPACES
                                             FROM LAST LINE.
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10745  0 00000 0 00000         PZE           NO OVERFLOW.
10746  0761 00 0 00000         NOP           LOOP RETURN.

10747  0762 00 0 01361         RPRA          SINGLE SPACE WITH
10750  0760 00 0 01367         SPRA 7        EXTRA
10751  0074 00 4 04422         TSX SPRA2,4   SPACE.
10752  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACE WITH EXTRA
10753  0 00000 0 11334         PZE CDAQP     SPACE. SHOULD BE 2 SPACES
                                             FROM LAST LINE.
10754  0 00000 0 00000         PZE           NO OVERFLOW.
10755  0761 00 0 00000         NOP           LOOP RETURN.

10756  0762 00 0 01361         RPRA          SINGLE SPACE,
10757  0760 00 0 01370         SPRA 8        SUPPRESS SPACE +
10760  0760 00 0 01367         SPRA 7        EXTRA
10761  0074 00 4 04422         TSX SPRA2,4   SPACE.
10762  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACE, SUPPRESS
10763  0 00000 0 12106         PZE CDARW     SPACE AND EXTRA SPACE. PRINT
                                             1 SPACE FROM LAST LINE.
10764  0 00000 0 00000         PZE           NO OVERFLOW.
10765  0761 00 0 00000         NOP           LOOP RETURN.

10766  0762 00 0 01361         RPRA          SINGLE SPACE,
10767  0760 00 0 01370         SPRA 8        SUPPRESS SPACE +
10770  0760 00 0 01367         SPRA 7        EXTRA
10771  0074 00 4 04422         TSX SPRA2,4   SPACE.
10772  0074 00 4 11067         TSX CARR,4    PRINT-SINGLE SPACE, SUPPRESS
10773  0 00000 0 12106         PZE CDARW     SPACE AND EXTRA SPACE. PRINT
                                             1 SPACE FROM LAST LINE.
10774  0 00000 0 00000         PZE           NO OVERFLOW.
10775  0761 00 0 00000         NOP           LOOP RETURN.

10776  0774 00 1 00002         AXT 2,1       PRINT 2 LINES.
10777  0762 00 0 01361   ARX   RPRA
11000  0760 00 0 01370         SPRA 8        SUPPRESS SPACE +
11001  0760 00 0 01363         SPRA 3        DOUBLE SPACE AND
11002  0760 00 0 01367         SPRA 7        EXTRA
11003  0074 00 4 04422         TSX SPRA2,4   SPACE.
11004  0074 00 4 11067         TSX CARR,4    PRINT-DOUBLE SPACE, SUPPRESS
11005  0 00000 0 12123         PZE CDARX     SPACE AND EXTRA SPACE. PRINT
                                             2 SPACES FROM LAST LINE.
11006  0 00000 0 00000         PZE           NO OVERFLOW.
11007  0761 00 0 00000         NOP           LOOP RETURN.

11010  2 00001 1 10777         TIX ARX,1,1   PRINT 2 LINES.

11011  0762 00 0 01361         RPRA          SINGLE SPACE AND
11012  0760 00 0 01365         SPRA 5        NON
11013  0760 00 0 01372         SPRA 10       PRINT.
11014  0074 00 4 11067         TSX CARR,4    PRINT-NON-PRINT HUB. SHOULD
11015  0 00000 0 12106         PZE CDARW     NOT SPACE OR PRINT THIS.
                                             NO GOOD.
11016  0 00000 0 00000         PZE           NO OVERFLOW.
11017  0761 00 0 00000         NOP           LOOP RETURN.

11020  0762 00 0 01361         RPRA
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11021  0760 00 0 01365         SPRA 5         DOUBLE SPACE AND
11022  0760 00 0 01365         SPRA 5         NON
11023  0760 00 0 01372         SPRA 10        PRINT.
11024  0074 00 4 11067         TSX CARR,4     PRINT-DOUBLE SPACE AND NON-
11025  0 00000 0 12207         PZE CDASC      PRINT. SHOULD NOT SPACE
                                              OR PRINT THIS.
11026  0 00000 0 00000         PZE            NO OVERFLOW.
11027  0761 00 0 00000         NOP            LOOP RETURN.

11030  0762 00 0 01361         RPRA           SINGLE SPACE,
11031  0074 00 4 11067         TSX CARR,4     PRINT-SINGLE SPACE, SHOULD
11032  0 00000 0 11374         PZE CDAQS      FIND 12 HOLE IN CARRIAGE TAPE.
11033  1 00000 0 00000         PON            OVERFLOW INDICATOR.
11034  0020 00 0 10522         TRA ARK        LOOP RETURN.

11035  0074 00 4 05136         TSX SPLTA,4    PRINT-PROGRAMMED CARRIAGE
11036  0 00000 0 12177         PZE CDASB      CONTROL TEST COMPLETE.
11037  0060 00 0 11037         TCOA *

11040  0074 00 4 03476         TSX OK,4
11041  0020 00 0 10064         TRA AQA        REPEAT SECTION.



*ZC    *** 9P01 END OF PART TWO


11042  0074 00 4 03421   ZCA   TSX CHCKR,4    TEST PROGRAM SEQUENCE.

11043  0074 00 4 05136         TSX SPLTA,4    PRINT - 9P01  PART TWO
11044  0 00000 0 12236         PZE CDZAE      PASS COMPLETE ON CHANNEL X.
11045  0060 00 0 11045         TCOA *

11046  0500 00 0 05524         CLA IOCNT      STEP UNIT COUNTER DOWN
11047  0402 00 0 05316         SUB Q1         BY 1
11050  0100 00 0 11062         TZE ZCB        COUNT ZERO-DONE.

11051  0601 00 0 05524         STO IOCNT      NOT DONE
11052 -0520 00 0 05531         NZT SIZE       TEST SIZE OF STORAGE.
11053  0020 00 0 11055         TRA ZCD        NOT 4K.
11054  0020 00 0 10044         TRA STRTC      REPEAT PART 2 ON
                                              NEXT CHANNEL

11055  0074 00 4 07621   ZCD   TSX CTX,4      NOT 4K. MODIFY I/O
11056  0 12275 0 10050         PZE STRTB,,FRSTB INSTRUCTIONS IN PART TWO
11057  0074 00 4 07621         TSX CTX,4      MODIFY I/O INSTRUCTIONS
11060  0 05305 0 00054         PZE START,,NOMOD IN PART ONE.
11061  0020 00 0 00054         TRA START      REPEAT ENTIRE PROGRAM ON
                                              NEXT CHANNEL

11062  0074 00 4 05136   ZCB   TSX SPLTA,4    PRINT - 9P01  PASS COMPLETE
11063  0 00000 0 12247         PZE CDZAF      ON ALL CHANNELS.

11064  0760 00 0 00166         SWT 6          TEST SW 6
11065  0020 00 0 07747         TRA PLCB       UP-READ IN NEXT PROGRAM
11066  0020 00 0 00031         TRA 25         RESET I/O TO CHANNEL A
```

AND REPEAT PROGRAM.

```
*CARR  *** PRINT BCD TEXT UNDER RPRA FOR CARRIAGE TEST.

*      SPECIFICATIONS-
*       1. CHECK FOR OVERFLOW AS SPECIFIED BY THE CALLING SEQUENCE.
*       2. CONVERT BCD TEXT AND PRINT IT AS SPECIFIED
*       3. PROVIDE FOR I/O CHECK AND CHANNEL DATA TESTS.
*       4. PROVIDE FOR ECHO CHECKING.

*      ERROR INDICATION FORMATS-
*          IOT, SCH AND ECHO ERRORS CAUSE THEIR REGULAR
*          INDICATIONS UNDER SENSE SWITCH 3 CONTROL.

*       CARRIAGE OVERFLOW ERROR - HALT.
*          THE STORAGE REGISTER CONTAINS AN -HPR- WITH THE LOCATION
*          FROM WHICH THE -CARR- ROUTINE WAS ENTER IN THIS ADDRESS.
*          IF THE ERROR IS A FAILURE TO INDICATE AN OVERFLOW
*          WHEN THE INDICATION SHOULD BE PRESENT, THE CONTENTS
*          OF THE ACCUMULATOR WILL BE ALL ONES.
*          IF THE ERROR IS A FALSE OVERFLOW INDICATION WHEN
*          NO OVERFLOW INDICATION SHOULD BE PRESENT, TEH
*          ACCUMULATOR WILL CONTAIN 707070707070.

*      CARRIAGE OVERFLOW ERROR - PRINT -
*      1. ONE OR THE OTHER OF THE FOLLOWING TEXTS
*         WILL BE PRINTED-

*         -THE CARRIAGE OVERFLOW INDICATION HAS NOT
*         OCCURRED WHERE IT SHOULD.

*         -A CARRIAGE OVERFLOW INDICATION HAS OCCURRED
*         WHERE IT SHOULD NOT.

*      2. -PROGRAM EXIT AT AAAAA. SECTION STARTS
*         AT BBBBB.-

*      CALLING SEQUENCE-
*          A PREVIOUS RPRA AND ALL DESIRED
*          SENSE PRINTER INSTRUCTIONS MUST BE GIVEN BEFORE ENTRY
*          TO THIS SUBROUTINE.-
*          A         TSX CARR,4
*          A+1       PZE LOCATION OF BCD TEXT.
*          A+2       PZE OR MZE.
*                    PZE-IF NO OVERFLOW SHOULD OCCUR.
*                    MZE-IF OVERFLOW SHOULD OCCUR.
*          A+3             LOOP RETURN.
*          A+4             CONTINUE RETURN.


11067  0634 00 2 11157   CARR  SXA CRRR,2
11070  0634 00 4 11160         SXA CRRR+1,4

11071  0500 00 4 00001         CLA 1,4       SET BCD TEXT TO
11072  0601 00 0 11074         STO *+2       CONVERT.
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11073  0074 00 4 05151         TSX SPLTR,4   CONVERT BCD TEXT.
11074  0 00000 0 00000             **

11075  0074 00 4 04320         TSX MOVE,4    MOVE -CARDA- TO -IMAGE-.
11076  0 00030 2 07364         PZE CARDA,2,24
11077  0 00000 2 07414         PZE IMAGE,2

11100  0074 00 4 04234         TSX CLARA,4   CLEAAR ECHO IMAGE.

11101  0640 00 0 11104         SCHA *+3      RECORD DSC REGISTERS.

11102  0074 00 4 03636         TSX SCHT,4    SCH CHECK.
11103  0000 00 0 00000         IOCD          CORRECT DSC REG CONTENTS
11104  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
11105  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

11106  0540 00 0 07316         RCHA CWRM     PRINT TEXT.

11107  0074 00 4 03512         TSX IODSC,4   TEST CHANNEL RUNAWAY UNTIL
                                             DISCONNECT.
11110  0 07326 0 07522         PZE ECHO+22,,CWRM+8   CORRECT DSC REG LIMITS.
11111  0761 00 0 00000         NOP           LOOP RETURN.

11112  0760 00 0 00005         IOT           TEST FOR I/O CHECK.
11113 -0625 00 0 05525         STL IOTA      I/O CHECK OCCURRED.

11114  0640 00 0 11117         SCHA *+3      RECORD DSC REGISTERS.

11115  0074 00 4 03572         TSX SCHTA,4   IOT AND SCH CHECK.
11116  0073 26 0 07516         IOCD ECHO+18,,CWRM+8 CORRECT DSC REG CONTS.
11117  0 00000 0 00000         PZE **        DSC REGISTER STORAGE.
11120  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

11121  0074 00 4 03702         TSX ECHK,4    CHECK ECHOES.
11122  0 00000 1 07436         PZE IMAGE+18,1 COMPARISON LOCATION.
11123  0761 00 0 00000         NOP           CHECK 1-72
11124  0540 00 0 07275         RCHA CWIM     LINE TO PRINT ON ERROR.
11125  0761 00 0 00000         NOP           IGNORE LOOP RETURN.

11126  0534 00 4 11160         LXA CRRR+1,4  RESTORE XRC
11127  0535 00 2 11160         LAC CRRR+1,2  SAVE TRUE EXIT LOCATION.
11130  0760 00 0 01360         SPTA          TEST FOR OVERFLOW INDICATION.
11131  0020 00 0 11145         TRA *+12      NO OVERFLOW INDICATION
11132  0520 00 4 00002         ZET 2,4       TEST OVERFLOW INDICATION
                                             FOR ERROR.

11133  0020 00 0 11157         TRA *+20      OK-PROGRAM MATCHES
                                             OVERFLOW INDICATION.

11134  0760 00 0 00162        #SWT 2         ERROR-TEST TO IGNORE
11135  0020 00 0 11137        #TRA *+2       UP-INDICATE ERROR
11136  0020 00 0 11157        #TRA *+17      DOWN-IGNORE INDICATION.

11137  0760 00 0 00163        #SWT 3         TEST ERROR PRINT OR HALT.
11140  0020 00 0 11164        #TRA *+20      UP-PRINT ERROR
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11141 -0500 00 0 05312        #CAL SEVNS     DOWN-HALT ON ERROR
11142  0634 00 2 11143        #SXA *+1,2

11143  0420 00 0 00000        #HPR **        ERROR-OVERFLOW INDICATION
                                             WHERE PROGRAM DOES NOT
                                             ALLOW IT.

11144  0020 00 0 11157        #TRA *+11      GO TO SWT ONE

11145 -0520 00 4 00002         NZT 2,4       TEST NO OVERFLOW INDICATION
                                             FOR ERROR.

11146  0020 00 0 11157         TRA *+9       OK-PROGRAM MATCHES THE
                                             NO OVERFLOW INDICATION.

11147  0760 00 0 00162        #SWT 2         ERROR-TEST TO IGNORE.
11150  0020 00 0 11152        #TRA *+2       UP-INDICATE ERROR
11151  0020 00 0 11157        #TRA *+6       DOWN-IGNORE ERROR INDICATION.

11152  0760 00 0 00163        #SWT 3         TEST HALT OR PRINT ERROR.
11153  0020 00 0 11173        #TRA *+16      UP-PRINT ERROR

11154 -0500 00 0 05311        #CAL ONES      DOWN-HALT ON ERROR.
11155  0634 00 2 11156        #SXA *+1,2

11156  0420 00 0 00000        #HPR **        ERROR-NO OVERFLOW INDICATION
                                             WHERE PROGRAM REQUIRES
                                             AN OVERFLOW.

11157  0774 00 2 00000   CRRR  AXT **,2      EXIT LINK.
11160  0774 00 4 00000         AXT **,4

11161  0760 00 0 00161         SWT 1         TEST FOR LOOP
11162  0020 00 4 00004         TRA 4,4       UP-CONTINUE.
11163  0020 00 4 00003         TRA 3,4       DN-LOOP.

11164  0074 00 4 05136         TSX SPLTA,4   PRINT-A CARRIAGE OVERFLOW
11165  0 00000 0 06531        #PZE CDCAR     INDICATION HAS OCCURRED
11166  0060 00 0 11166        #TCOA *        WHERE IT SHOULD NOT.

11167 -0754 00 2 00000        #PXD ,2        OBTAIN PROGRAM EXIT
11170 -0625 00 0 05527        #STL LOCAT     PRINT PROGRAM LOCATION AND
11171  0020 00 0 04174        #TRA ERLOC     SECTION START ADDRESS
11172  0020 00 0 11157        #TRA *-11      GO TO SWT 1

11173  0074 00 4 05136        #TSX SPLTA,4   PRINT-A CARRIAGE OVERFLOW
11174  0 00000 0 06544        #PZE CDCNR     INDICATION HAS NOT OCCURRED
11175  0060 00 0 11175        #TCOA *        WHERE IT SHOULD OCCUR.
11176  0020 00 0 11167        #TRA *-7       PRINT ERROR LOCATION.
```

```
11177  0 00001 0 00014   CDAQA PZE 12,,1
11200  622523633146            BCD 6SECTION AQ. THIS IS A 709 OPERATED A
11201  456021503360
11202  633031626031
11203  626021600700
11204  116046472551
11205  216325246021
11206  646346442163            BCD 6UTOMATIC CARRIAGE CONTROL PROGRAM.
11207  312360232151
11210  513121272560
11211  234645635146
11212  436047514627
11213  512144336060

11214  0 00001 0 00014         PZE 12,,1
11215  314562645125            BCD 6INSURE THAT THE DIAGNOSTIC PRINTER B
11216  606330216360
11217  633025602431
11220  212745466263
11221  312360475131
11222  456325516022
11223  462151246021            BCD 6OARD AND CARRIAGE TAPE ARE IN USE
11224  452460232151
11225  513121272560
11226  632147256021
11227  512560314560
11230  646225606060

11231  0 00001 0 00014         PZE 12,,1
11232  214524606330            BCD 6AND THAT THE LINES OF PRINTED INFORM
11233  216360633025
11234  604331452562
11235  604626604751
11236  314563252460
11237  314526465144
11240  216331464560            BCD 6ATION CONFORM WITH THE ACTUAL
11241  234645264651
11242  446066316330
11243  606330256021
11244  236364214360
11245  606060606060

11246  0 00001 0 00014         PZE 12,,1
11247  464725512163            BCD 6OPERATION OF THE CARRIAGE AND WRITE-
11250  314645604626
11251  606330256023
11252  215151312127
11253  256021452460
11254  665131632540
11255  644760475146            BCD 6UP PROVIDED.
11256  653124252433
11257  606060606060
11260  606060606060
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11261  606060606060
11262  606060606060

11263  0 00001 0 00006   CDAQB PZE 6,,1
11264  232151513121            BCD 6CARRIAGE SKIP TO 1. PRINT ON LINE 1
11265  272560624231
11266  476063466001
11267  336047513145
11270  636046456043
11271  314525600160

11272  0 00001 0 00011   CDAQK PZE 9,,1
11273  623145274325            BCD 6SINGLE SPACE. SHOULD PRINT 2 SPACES
11274  606247212325
11275  336062304664
11276  432460475131
11277  456360026062
11300  472123256260
11301  265146446043            BCD 3FROM LAST LINE
11302  216263604331
11303  452560606060

11304  0 00001 0 00013   CDAQM PZE 11,,1
11305  244664224325            BCD 6DOUBLE SPACE WITH EXTRA SPACE. SHOUL
11306  606247212325
11307  606631633060
11310  256763512160
11311  624721232533
11312  606230466443
11313  246022256002            BCD 5D BE 2 SPACES FROM LAST LINE.
11314  606247212325
11315  626026514644
11316  604321626360
11317  433145253360

11320  0 00001 0 00013   CDAQN PZE 11,,1
11321  244664224325            BCD 6DOUBLE SPACE WITH EXTRA SPACE. SHOUL
11322  606247212325
11323  606631633060
11324  256763512160
11325  624721232533
11326  606230466443
11327  246022256004            BCD 5D BE 4 SPACES FROM LAST LINE.
11330  606247212325
11331  626026514644
11332  604321626360
11333  433145253360

11334  0 00001 0 00013   CDAQP PZE 11,,1
11335  623145274325            BCD 6SINGLE SPACE WITH EXTRA SPACE. SHOUL
11336  606247212325
11337  606631633060
11340  256763512160
11341  624721232533
11342  606230466443
11343  246022256002            BCD 5D BE 2 SPACES FROM LAST LINE.
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11344  606247212325
11345  626026514644
11346  604321626360
11347  433145253360

11350  0 00001 0 00011   CDAQQ PZE 9,,1
11351  244664224325            BCD 6DOUBLE SPACE. SHOULD PRINT 4 SPACES
11352  606247212325
11353  336062304664
11354  432460475131
11355  456360046062
11356  472123256260
11357  265146446043            BCD 3FROM LAST LINE.
11360  216263604331
11361  452533606060

11362  0 00001 0 00011   CDAQR PZE 9,,1
11363  623145274325            BCD 6SINGLE SPACE. SHOULD PRINT 1 SPACE
11364  606247212325
11365  336062304664
11366  432460475131
11367  456360016062
11370  472123256060
11371  265146446043            BCD 3FROM LAST LINE.
11372  216263604331
11373  452533606060

11374  0 00001 0 00011   CDAQS PZE 9,,1
11375  623145274325            BCD 6SINGLE SPCE. SHOULD FIND 12 HOLE IN
11376  606247232533
11377  606230466443
11400  246026314524
11401  600102603046
11402  432560314560
11403  602321515131            BCD 3 CARRIAGE TAPE.
11404  212725606321
11405  472533606060

11406  0 00001 0 00011   CDAQT PZE 9,,1
11407  624231476063            BCD 6SKIP TO 1, START SYMETRICAL SHIFING
11410  466001736062
11411  632151636062
11412  704425635131
11413  232143606230
11414  312631452760
11415  604060066062            BCD 3 - 6 SPACES APART.
11416  472123256260
11417  214721516333

11420  0 00001 0 00013   CDAQU PZE 11,,1
11421  624231476063            BCD 6SKIP TO 2, TAKE IDLE CYCLE, MOVE
11422  466002736063
11423  214225603124
11424  432560237023
11425  432573604446
11426  652560606060
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11427  026030464325            BCD 52 HOLE AND PRINT ON LINE 7.
11430  602145246047
11431  513145636046
11432  456043314525
11433  600733606060

11434  0 00001 0 00013   CDAQV PZE 11,,1
11435  624231476063            BCD 6SKIP TO 3, TAKE IDLE CYCLE, MOVE TO
11436  466003736063
11437  214225603124
11440  432560237023
11441  432573604446
11442  652560634660
11443  036030464325            BCD 53 HOLE AND PRINT ON LINE 13.
11444  602145246047
11445  513145636046
11446  456043314525
11447  600103336060

11450  0 00001 0 00013   CDAQW PZE 11,,1
11451  624231476063            BCD 6SKIP TO 4, TAKE IDLE CYCLE, MOVE TO
11452  466004736063
11453  214225603124
11454  432560237023
11455  432573604446
11456  652560634660
11457  046030464325            BCD 54 HOLE AND PRINT ON LINE 19.
11460  602145246047
11461  513145636046
11462  456043314525
11463  600111336060

11464  0 00001 0 00013   CDAQX PZE 11,,1
11465  624231476063            BCD 6SKIP TO 5, TAKE IDLE CYCLE, MOVE TO
11466  466005736063
11467  214225603124
11470  432560237023
11471  432573604446
11472  652560634660
11473  056030464325            BCD 55 HOLE AND PRINT ON LINE 25.
11474  602145246047
11475  513145636046
11476  456043314525
11477  600205336060

11500  0 00001 0 00013   CDAQY PZE 11,,1
11501  624231476063            BCD 6SKIP TO 6, TAKE IDLE CYCLE, MOVE TO
11502  466006736063
11503  214225603124
11504  432560237023
11505  432573604446
11506  652560634660
11507  066030464325            BCD 56 HOLE AND PRINT ON LINE 31.
11510  602145246047
11511  513145636046
11512  456043314525
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11513  600301336060

11514  0 00001 0 00013   CDAQZ PZE 11,,1
11515  624231476063            BCD 6SKIP TO 7, TAKE IDLE CYCLE, MOVE TO
11516  466007736063
11517  214225603124
11520  432560237023
11521  432573604446
11522  652560634660
11523  076030464325            BCD 57 HOLE AND PRINT ON LINE 37.
11524  602145246047
11525  513145636046
11526  456043314525
11527  600307336060

11530  0 00001 0 00013   CDARA PZE 11,,1
11531  624231476063            BCD 6SKIP TO 8, TAKE IDLE CYCLE, MOVE TO
11532  466010736063
11533  214225603124
11534  432560237023
11535  432573604446
11536  652560634660
11537  106030464325            BCD 58 HOLE AND PRINT ON LINE 43.
11540  602145246047
11541  513145636046
11542  456043314525
11543  600403336060

11544  0 00001 0 00013   CDARB PZE 11,,1
11545  624231476063            BCD 6SKIP TO 9, TAKE IDLE CYCLE, MOVE TO
11546  466011736063
11547  214225603124
11550  432560237023
11551  432573604446
11552  652560634660
11553  116030464325            BCD 59 HOLE AND PRINT ON LINE 49.
11554  602145246047
11555  513145636046
11556  456043314525
11557  600411336060

11560  0 00001 0 00013   CDARC PZE 11,,1
11561  624231476063            BCD 6SKIP TO 10, TAKE IDLE CYCLE, MOVE TO
11562  466001007360
11563  632142256031
11564  244325602370
11565  234325736044
11566  466525606346
11567  600100603046            BCD 5 10 HOLE AND PRINT ON LINE 55
11570  432560214524
11571  604751314563
11572  604645604331
11573  452560050560

11574  0 00001 0 00014   CDARD PZE 12,,1
11575  622543252363            BCD 6SELECTIVE SPACE. NO IDLE CYCLE, MOVE
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11576  316525606247
11577  212325336045
11600  466031244325
11601  602370234325
11602  736044466525
11603  634660010000            BCD 6TO 100 HOLE AND PRINT ON LINE 59.
11604  603046432560
11605  214524604751
11606  314563604645
11607  604331452560
11610  051133606060

11611  0 00001 0 00014   CDARE PZE 12,,1
11612  623046516360            BCD 6SHORT SKIP TO 1. NO IDLE CYCLE, MOVE
11613  624231476063
11614  466001336045
11615  466031244325
11616  602370234325
11617  736044466525
11620  606346600160            BCD 6 TO 1 HOLE AND PRINT ON LINE1.
11621  304643256021
11622  452460475131
11623  456360464560
11624  433145250133
11625  606060606060

11626  0 00001 0 00014   CDARF PZE 12,,1
11627  623046516360            BCD 6SHORT SKIP TO 2. NO IDLE CYCLE, MOVE
11630  624231476063
11631  466002336045
11632  466031244325
11633  602370234325
11634  736044466525
11635  606346600260            BCD 6 TO 2 HOLE AND PRINT ON LINE 7.
11636  304643256021
11637  452460475131
11640  456360464560
11641  433145256007
11642  336060606060

11643  0 00001 0 00014   CDARG PZE 12,,1
11644  623046516360            BCD 6SHORT SKIP TO 3. NO IDLE CYCLE, MOVE
11645  624231476063
11646  466003336045
11647  466031244325
11650  602370234325
11651  736044466525
11652  606346600360            BCD 6 TO 3 HOLE AND PRINT ON LINE 13.
11653  304643256021
11654  452460475131
11655  456360464560
11656  433145256001
11657  033360606060

11660  0 00001 0 00014   CDARH PZE 12,,1
11661  623046516360            BCD 6SHORT SKIP TO 4. NO IDLE CYCLE, MOVE
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11662  624231476063
11663  466004336045
11664  466031244325
11665  602370234325
11666  736044466525
11667  606346603046            BCD 6 TO HOLE AND PRINT ON LINE 19.
11670  432560214524
11671  604751314563
11672  604645604331
11673  452560011133
11674  606060606060

11675  0 00001 0 00014   CDARJ PZE 12,,1
11676  010101010101            BCD 611111111111111111AAAAAAAAAAAAAAAAA
11677  010101010101
11700  010101010101
11701  212121212121
11702  212121212121
11703  212121212121
11704  414141414141            BCD 6JJJJJJJJJJJJJJJJJSSSSSSSSSSSSSSSSS
11705  414141414141
11706  414141414141
11707  626262626262
11710  626262626262
11711  626262626262

11712  0 00001 0 00014   CDARK PZE 12,,1
11713  626447475125            BCD 6SUPPRESS SPACE. LAST LINE ON FLY 4 I
11714  626260624721
11715  232533604321
11716  626360433145
11717  256046456026
11720  437060046031
11721  452330256260            BCD 6NCHES BACK. PRINT THIS ON LINE 1.
11722  222123423360
11723  475131456360
11724  633031626046
11725  456043314525
11726  600133606060

11727  0 00001 0 00011   CDARL PZE 9,,1
11730  622543252363            BCD 6SELECTIVE SPACE. MOVE 1 SPACE AND PR
11731  316525606247
11732  212325336044
11733  466525600160
11734  624721232560
11735  214524604751
11736  314563604645            BCD 3INT ONE LINE 8.
11737  256043314525
11740  601033606060

11741  0 00001 0 00011   CDARM PZE 9,,1
11742  622543252363            BCD 6SELECTIVE SPACE. MOVE 2 SPACES AND P
11743  316525606247
11744  212325336044
11745  466525600260
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11746  624721232562
11747  602145246047
11750  513145636046            BCD 3RINT ON LINE 10.
11751  456043314525
11752  600100336060

11753  0 00001 0 00011   CDARN PZE 9,,1
11754  622543252363            BCD 6SELECTIVE SPACE. MOVE 3 SPACES AND P
11755  316525606247
11756  212325336044
11757  466525600360
11760  624721232562
11761  602145246047
11762  513145636046            BCD 3RINT ON LINE 13.
11763  456043314525
11764  600103336060

11765  0 00001 0 00013   CDARP PZE 11,,1
11766  622543252363            BCD 6SELECTIVE SPACE + EXTRA SPACE. MOVE
11767  316525606247
11770  212325602060
11771  256763512160
11772  624721232533
11773  604446652560
11774  046062472123            BCD 64 SPACES AND PRINT ON LINE 17.
11775  256260214524
11776  604751314563
11777  604645604331
12000  452560010733
12001  606060606060

12002  0 00001 0 00013   CDARQ PZE 11,,1
12003  622543252363            BCD 6SELECTIVE SPACE + EXTRA SPACE. MOVE
12004  316525606247
12005  212325602060
12006  256763512160
12007  624721232533
12010  604446652560
12011  056062472123            BCD 65 SPACES AND PRINT ON LINE 22.
12012  256260214524
12013  604751314563
12014  604645604331
12015  452560020233
12016  606060606060

12017  0 00001 0 00013   CDARR PZE 11,,1
12020  622543252363            BCD 6SELECTIVE SPACE + EXTRA SPACE. MOVE
12021  316525606247
12022  212325602060
12023  256763512160
12024  624721232533
12025  604446652560
12026  066062472123            BCD 66 SPACES AND PRINT ON LINE 28.
12027  256260214524
12030  604751314563
12031  604645604331
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12032  452560021033
12033  606060606060

12034  0 00001 0 00011   CDARS PZE 9,,1
12035  622543252363            BCD 6SELECTIVE SPACE. MOVE 7 SPACES AND P
12036  316525606247
12037  212325336044
12040  466525600760
12041  624721232562
12042  602145246047
12043  513145636046            BCD 3RINT ON LINE 35.
12044  456043314525
12045  600305336060

12046  0 00001 0 00011   CDART PZE 9,,1
12047  626447475125            BCD 6SUPPRESS SPACE. SHOULD PRINT 1 SPACE
12050  626260624721
12051  232533606230
12052  466443246047
12053  513145636001
12054  606247212325
12055  602651464460            BCD 3 FROM LAST LINE.
12056  432162636043
12057  314525336060

12060  0 00001 0 00013   CDARU PZE 11,,1
12061  623145274325            BCD 6SINGLE SPACE WITH EXTRA SPACE. SHOUL
12062  606247212325
12063  606631633060
12064  256763512160
12065  624721232533
12066  606230466443
12067  246022256001            BCD 5D BE 1 SPACE FROM LAST LINE.
12070  606247212325
12071  602651464460
12072  432162636043
12073  314525336060

12074  0 00001 0 00011   CDARV PZE 9,,1
12075  244664224325            BCD 6DOUBLE SPACE. SHOULD PRINT 2 SPACES
12076  606247212325
12077  336062304664
12100  432460475131
12101  456360026062
12102  472123256260
12103  265146446043            BCD 3FROM LAST LINE.
12104  216263604331
12105  452533606060

12106  0 00001 0 00014   CDARW PZE 12,,1
12107  623145274325            BCD 6SINGLE SPACE. SUPPRESS SPACE, EXTRA
12110  606247212325
12111  336062644747
12112  512562626062
12113  472123257360
12114  256763512160
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12115  624723253360           BCD 6SPCE. PRINT 1 SPACE FROM LAST LINE.
12116  475131456360
12117  016062472123
12120  256026514644
12121  604321626360
12122  433145253360

12123  0 00001 0 00014   CDARX PZE 12,,1
12124  244664224325           BCD 6DOUBLE SPACE. SUPPRESS SPACE, EXTRA
12125  606247212325
12126  336062644747
12127  512562626062
12130  472123257360
12131  256763512160
12132  624721232533           BCD 6SPACE. PRINT 2 SPACES FROM LAST LINE
12133  604751314563
12134  600260624721
12135  232562602651
12136  464460432162
12137  636043314525

12140  0 00001 0 00011   CDARY PZE 9,,1
12141  626047605160           BCD 6S P R S   P C     H U D P I T O   H
12142  626060604760
12143  236060606060
12144  306064602460
12145  476031606360
12146  466060603060
12147  606025607060           BCD 3  E Y N X   I E
12150  456067606060
12151  316025606060

12152  0 00001 0 00011   CDARZ PZE 9,,1
12153  606460476025           BCD 6 U P E S S A E - S O L   R N   N T E
12154  606260626021
12155  602560406062
12156  604660436060
12157  605160456060
12160  604560636025
12161  606560516060           BCD 3 V R   E T L N .
12162  602560636043
12163  604560336060

12164  0 00001 0 00012   CDASA PZE 10,,1
12165  454645404751           BCD 6NON-PRINT HUB. SHOULD NOT SPACE OR P
12166  314563603064
12167  223360623046
12170  644324604546
12171  636062472123
12172  256046516047
12173  475131456360           BCD 4PRINT THIS. NO GOOD.
12174  633031623360
12175  454660274646
12176  243360606060

12177  0 00001 0 00007   CDASB PZE 7,,1
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12200  475146275121            BCD 6PROGRAMMED CARRIAGE CONTROL TEST COM
12201  444425246023
12202  215151312127
12203  256023464563
12204  514643606325
12205  626360234644
12206  474325632533            BCD 1PLETE.

12207  0 00001 0 00014   CDASC PZE 12,,1
12210  244664224325            BCD 6DOUBLE SPACE AND NON-PRINT. SHOULD N
12211  606247212325
12212  602145246045
12213  464540475131
12214  456333606230
12215  466443246045
12216  466360624721            BCD 6OT SPACE OR PRINT THIS. NO GOOD.
12217  232560465160
12220  475131456360
12221  633031623360
12222  454660274646
12223  243360606060

12224  0 00001 0 00011   CDZAD PZE 9,,1
12225  606045466660            BCD 6  NOW PERFORMING -9P01-, PART TWO,
12226  472551264651
12227  443145276040
12230  114700014073
12231  604721516360
12232  636646736060
12233  464560233021            BCD 3ON CHANNEL
12234  454525436060
12235  606060606060

12236  0 00001 0 00010   CDZAE PZE 8,,1
12237  601147000160            BCD 5 9P01 PART TWO, PASS COMPLETE
12240  472151636063
12241  664673604721
12242  626260234644
12243  474325632560
12244  464560233021            BCD 3ON CHANNEL
12245  454525436060
12246  606060606060

12247  0 00001 0 00006   CDZAF PZE 6,,1
12250  601147000160            BCD 6 9P01 PASS COMPLETE ON ALL CHANNELS.
12251  472162626023
12252  464447432563
12253  256046456021
12254  434360233021
12255  454525436233
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12256 -0520 00 0 05531   BEGNB NZT SIZE
12257  0020 00 0 12270         TRA SETRB     MORE THEN 4K.

12260  0774 00 4 01110         AXT LASTA+4096-FRSTB,4 4K.
12261  0500 00 0 05324         CLA CATCH
12262  0601 00 4 03405         STO LASTA,4
12263  2 00001 4 12262         TIX *-1,4,1

12264  0774 00 4 00027         AXT 23,4
12265  0601 00 4 00030         STO 24,4
12266  2 00001 4 12265         TIX *-1,4,1
12267  0020 00 0 00031         TRA 25

12270  0774 00 4 65503   SETRB AXT 32767-FRSTB+1,4 MORE THAN 4K.
12271  0500 00 0 05324         CLA CATCH
12272  0601 00 4 00000         STO 0,4
12273  2 00001 4 12272         TIX *-1,4,1
12274  0020 00 0 07766         TRA SETRA




                12275   FRSTB BSS 0


                12256         END BEGNB
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EOF*