

\* TSC TEXT EDITOR-PROCESSOR CORESIDENT LINK (LPR)  
 \*  
 \* COPYRIGHT (C) 1977 BY  
 \* TECHNICAL SYSTEMS CONSULTANTS, INC.  
 \* P. O. BOX 2574; W. LAFAYETTE, IN 47906  
 \* (317) 742-7509  
 \*  
 \* THE PURPOSE OF THIS PROGRAM IS TO SETUP THE NECESSARY  
 \* POINTERS IN THE TSC TEXT PROCESSOR AND TO SAVE CERTAIN  
 \* POINTERS OF THE TSC EDITOR TO ALLOW THEM TO RUN CO-  
 \* RESIDENT. THE ONLY CHANGE REQUIRED IN THE PROCESSOR IS  
 \* TO SET THE EXIT ADDRESS (SETUP AT \$020A) TO \$32E6,  
 \* WHICH IS THE ADDRESS OF 'EDITOR' IN 'LPR'. WHEN IN  
 \* THE EDITOR AND READY TO PROCESS YOUR FILE, TYPE 'LPR'  
 \* FOR 'LINK PROCESSOR'. WHEN THE PROCESSING OF THE FILE  
 \* IS COMPLETE, CONTROL WILL RETURN TO THE EDITOR. USING  
 \* LPR DELETES THE LOG COMMAND FROM THE EDITOR. YOU MAY  
 \* STILL USE 'STOP' TO EXIT. THIS PROGRAM IS SETUP FOR A  
 \* 16K SYSTEM. IF YOU HAVE A LARGER SYSTEM, CHANGE MEMEND  
 \* IN THE EDITOR (\$0212 BEFORE RELOCATION; \$2012 AFTER).  
 \*

## \* CHANGES TO EDITOR

|      |          |     |         |                          |
|------|----------|-----|---------|--------------------------|
| 0212 |          | ORG | \$0212  |                          |
| 0212 | 3F FF    | FDB | \$3FFF  | SET MEMORY END           |
| 028E |          | ORG | \$028E  |                          |
| 028E | 4C       | FCC | 'LPR'   | PUT LPR IN COMMAND TABLE |
| 028F | 50 52    |     |         |                          |
| 0291 | 00       | FCB | 0       |                          |
| 0292 | 14 BD    | FDB | LPR     |                          |
| 0358 |          | ORG | \$0358  |                          |
| 0358 | CE 15 0C | LDX | #BEGPT2 | SETUP NEW BEGIN PTR      |

## \* EXTERNAL EQUATES

|      |        |     |        |
|------|--------|-----|--------|
| 1491 |        | ORG | \$1491 |
| 0200 | PROCSS | EQU | \$0200 |
| 009D | JNKCNT | EQU | \$009D |
| 00A8 | TSTEMP | EQU | \$00A8 |
| 005E | ZONE1  | EQU | \$005E |
| 0060 | ZONE2  | EQU | \$0060 |
| 006A | NUMFLG | EQU | \$006A |
| 008F | INZFLG | EQU | \$008F |
| 00BB | BUFFER | EQU | \$00BB |
| 0058 | SPCPT1 | EQU | \$0058 |
| 0096 | HEDCNT | EQU | \$0096 |
| 0040 | TEMP   | EQU | \$0040 |
| 0C62 | MAKSP5 | EQU | \$0C62 |
| 0203 | RESTRT | EQU | \$0203 |

## \* TEMPORARY STORAGE

|      |        |     |    |
|------|--------|-----|----|
| 1491 | ZONE1X | RMB | 2  |
| 1493 | ZONE2X | RMB | 2  |
| 1495 | NMFG2  | RMB | 2  |
| 1497 | TMPEND | RMB | 37 |
| 14BC | TMPBEG | RMB | 1  |

## \* ENTRY POINT UPON EXITING THE EDITOR

|      |          |     |     |          |                       |
|------|----------|-----|-----|----------|-----------------------|
| 14BD | BD 08 A8 | LPR | JSR | TSTEMP   | IS FILE EMPTY?        |
| 14C0 | 86 03    |     | LDA | A #3     | SET LINE BYTE COUNT   |
| 14C2 | 97 9D    |     | STA | A JNKCNT |                       |
| 14C4 | CE 00 BB |     | LDX | #BUFFER  | SAVE EDITOR DATA      |
| 14C7 | DF 58    |     | STX | SPCPT1   |                       |
| 14C9 | CE 00 96 |     | LDX | #HEDCNT  |                       |
| 14CC | DF 40    |     | STX | TEMP     |                       |
| 14CE | CE 14 BC |     | LDX | #TMPBEG  |                       |
| 14D1 | BD 0C 62 |     | JSR | MAKSP5   |                       |
| 14D4 | DE 5E    |     | LDX | ZONE1    | SAVE ZONE1            |
| 14D6 | FF 14 91 |     | STX | ZONE1X   |                       |
| 14D9 | DE 60    |     | LDX | ZONE2    | SAVE ZONE2            |
| 14DB | FF 14 93 |     | STX | ZONE2X   |                       |
| 14DE | DE 6A    |     | LDX | NUMFLG   | SAVE NUMBER & VERIFY  |
| 14E0 | FF 14 95 |     | STX | NMFG2    |                       |
| 14E3 | 7E 02 00 |     | JMP | PROCSS   | JUMP TO THE PROCESSOR |

## \* REENTRY POINT ON EXIT FROM ASSEMBLER

|      |          |        |     |          |                         |
|------|----------|--------|-----|----------|-------------------------|
| 14E6 | 4F       | EDITOR | CLR | A        | CLEAR FLAG              |
| 14E7 | 97 8F    |        | STA | A INZFLG |                         |
| 14E9 | CE 14 BC |        | LDX | #TMPBEG  | RESTORE EDITOR DATA     |
| 14EC | DF 58    |        | STX | SPCPT1   |                         |
| 14EE | CE 14 97 |        | LDX | #TMPEND  |                         |
| 14F1 | DF 40    |        | STX | TEMP     |                         |
| 14F3 | CE 00 BB |        | LDX | #BUFFER  |                         |
| 14F6 | BD 0C 62 |        | JSR | MAKSP5   |                         |
| 14F9 | FE 14 91 |        | LDX | ZONE1X   | RESTORE ZONE1           |
| 14FC | DF 5E    |        | STX | ZONE1    |                         |
| 14FE | FE 14 93 |        | LDX | ZONE2X   | RESTORE ZONE2           |
| 1501 | DF 60    |        | STX | ZONE2    |                         |
| 1503 | FE 14 95 |        | LDX | NMFG2    | RESTORE NUMBER & VERIFY |
| 1506 | DF 6A    |        | STX | NUMFLG   |                         |
| 1508 | 7E 02 03 | RSTART | JMP | RESTRT   | JUMP INTO EDITOR        |

|      |    |  |     |      |
|------|----|--|-----|------|
| 150B | 0D |  | FCB | \$0D |
|------|----|--|-----|------|

|      |      |        |     |   |                    |
|------|------|--------|-----|---|--------------------|
| 150C | 408C | BEGPT2 | EQU | * | START OF FILESPACE |
|------|------|--------|-----|---|--------------------|

END  
NO ERROR(S) DETECTED

## SYMBOL TABLE:

|             |             |             |             |             |
|-------------|-------------|-------------|-------------|-------------|
| BEGPT2 150C | BUFFER 00BB | EDITOR 14E6 | HEDCNT 0096 | INZFLG 008F |
| JNKCNT 009D | LPR 14BD    | MAKSP5 0C62 | NMFG2 1495  | NUMFLG 006A |
| PROCSS 0200 | RESTRT 0203 | RSTART 1508 | SPCPT1 0058 | TEMP 0040   |
| TMPBEG 14BC | TMPEND 1497 | TSTEMP 08A8 | ZONE1 005E  | ZONE1X 1491 |
| ZONE2 0060  | ZONE2X 1493 |             |             |             |

## OBJECT CODE:

S1 05 0212 3F FF A8  
S1 09 028E 4C 50 52 00 14 BD A7  
S1 06 0358 CE 15 0C AF  
S1 13 14BD BD 08 A8 86 03 97 9D CE 00 BB DF 58 CE 00 96 DF EE  
S1 13 14CD 40 CE 14 BC BD 0C 62 DE 5E FF 14 91 DE 60 FF 14 D1  
S1 13 14DD 93 DE 6A FF 14 95 7E 02 00 4F 97 8F CE 14 BC DF 06  
S1 13 14ED 58 CE 14 97 DF 40 CE 00 BB BD 0C 62 FE 14 91 DF C5  
S1 12 14FD 5E FE 14 93 DF 60 FE 14 95 DF 6A 7E 02 03 0D 1A  
S9

**Source Listing**

```

*
*
* TSC 6800 TEXT PROCESSING SYSTEM
*
*
* COPYRIGHT 1977 BY
*
* TECHNICAL SYSTEMS CONSULTANTS, INC.
* BOX 2574
* WEST LAFAYETTE, IN 47906
*

```

```
0040          ORG      $0040
```

```
* TEMPORARY STORAGE
```

```
* NUMBER REGISTERS
```

|      |        |     |   |     |
|------|--------|-----|---|-----|
| 0040 | NMREGS | RMB | 2 | A-B |
| 0042 | COLCNT | RMB | 1 | C   |
| 0043 | DAY    | RMB | 1 | D   |
| 0044 |        | RMB | 2 | E-F |
| 0046 | GCNT   | RMB | 1 | G   |
| 0047 |        | RMB | 1 | H   |
| 0048 | IND    | RMB | 1 | I   |
| 0049 |        | RMB | 2 | J-K |
| 004B | LLN    | RMB | 1 | L   |
| 004C | MNTH   | RMB | 1 | M   |
| 004D | LINCNT | RMB | 1 | N   |
| 004E | LFM    | RMB | 1 | O   |
| 004F | PGL    | RMB | 1 | P   |
| 0050 |        | RMB | 5 | Q-U |
| 0055 | LDIV   | RMB | 1 | V   |
| 0056 |        | RMB | 2 | W-X |
| 0058 | YEAR   | RMB | 1 | Y   |
| 0059 |        | RMB | 1 | Z   |

```
* SINGLE STORAGE
```

|      |       |     |   |
|------|-------|-----|---|
| 005A | GDNUM | RMB | 1 |
| 005B | ADD   | RMB | 1 |
| 005C | SUB   | RMB | 1 |
| 005D | BNUM  | RMB | 1 |
| 005E | NPGN  | RMB | 1 |
| 005F | INC   | RMB | 1 |

```
* MACRO SAVE BLOCK
```

|      |        |     |   |
|------|--------|-----|---|
| 0060 | NUMPNT | RMB | 2 |
| 0062 | EXCHR  | RMB | 1 |
| 0063 | LSTNUM | RMB | 2 |

|      |        |     |   |
|------|--------|-----|---|
| 0065 | CMFLG  | RMB | 1 |
| 0066 | MBFLG  | RMB | 1 |
| 0067 | MBFPNT | RMB | 2 |
| 0069 | NOCR   | RMB | 1 |
| 006A | DONE   | RMB | 1 |
| 006B | FLBF   | RMB | 1 |
| 006C | ATFLG  | RMB | 1 |

## \* MORE SINGLE STORAGE

|      |        |     |   |
|------|--------|-----|---|
| 006D | LEFT   | RMB | 1 |
| 006E | TFILF  | RMB | 1 |
| 006F | NOFL   | RMB | 1 |
| 0070 | INNUM  | RMB | 1 |
| 0071 | NEG    | RMB | 1 |
| 0072 | SIGN   | RMB | 1 |
| 0073 | NSP    | RMB | 1 |
| 0074 | PGN    | RMB | 1 |
| 0075 | PASCHR | RMB | 1 |
| 0076 | SPSPF  | RMB | 1 |
| 0077 | DOCAP  | RMB | 1 |
| 0078 | DOCM   | RMB | 1 |
| 0079 | NOOUT  | RMB | 1 |
| 007A | TOUTL  | RMB | 1 |
| 007B | PTFL   | RMB | 1 |
| 007C | SIN    | RMB | 1 |
| 007D | MINDIS | RMB | 1 |
| 007E | EV     | RMB | 1 |
| 007F | NOEXP  | RMB | 1 |
| 0080 | NXTTAB | RMB | 2 |
| 0082 | TABFLG | RMB | 1 |
| 0083 | COLCN2 | RMB | 1 |
| 0084 | IND2   | RMB | 1 |
| 0085 | NXTTRP | RMB | 2 |
| 0087 | SVDSPC | RMB | 1 |
| 0088 | FINMAC | RMB | 1 |
| 0089 | NEGT   | RMB | 1 |
| 008A | IFFLG  | RMB | 1 |
| 008B | MACCNT | RMB | 1 |
| 008C | PASFLG | RMB | 1 |
| 008D | NONUMS | RMB | 1 |
| 008E | DWFLG  | RMB | 1 |
| 008F | DFMFLG | RMB | 1 |
| 0090 | SPIFLG | RMB | 1 |
| 0091 | DIVFLG | RMB | 1 |
| 0092 | DIVFL2 | RMB | 1 |
| 0093 | PRNTR  | RMB | 1 |
| 0094 | TLPP   | RMB | 1 |
| 0095 | LOWPG  | RMB | 1 |
| 0096 | HIPG   | RMB | 1 |
| 0097 | FSTRAM | RMB | 2 |
| 0099 | LSTRAM | RMB | 2 |
| 009B | NXTRAM | RMB | 2 |

FILE POINTERS

|      |        |     |   |            |
|------|--------|-----|---|------------|
| 009D | JNKCNT | RMB | 1 | JUNK COUNT |
| 009E | SBFLG  | RMB | 1 |            |
| 009F | LLN2   | RMB | 1 |            |
| 00A0 | MACNAM | RMB | 2 |            |
| 00A2 | MACTMP | RMB | 2 |            |
| 00A4 | LSTAVL | RMB | 2 |            |
| 00A6 | FSTAVL | RMB | 2 |            |
| 00A8 | STPOUT | RMB | 2 |            |
| 00AA | TCPNT  | RMB | 2 |            |
| 00AC | NXTMAC | RMB | 2 |            |
| 00AE | NXTOUT | RMB | 2 |            |
| 00B0 | XMAC   | RMB | 2 |            |
| 00B2 | TSIN   | RMB | 1 |            |
| 00B3 | TIND   | RMB | 1 |            |
| 00B4 | TLLN   | RMB | 1 |            |
| 00B5 | SUPL   | RMB | 1 |            |
| 00B6 | SWRDF  | RMB | 1 |            |
| 00B7 | CAP    | RMB | 1 |            |
| 00B8 | SCAP   | RMB | 1 |            |
| 00B9 | TPOS   | RMB | 1 |            |
| 00BA | DELIM  | RMB | 1 |            |
| 00BB | TCNT   | RMB | 1 |            |
| 00BC | MCNT   | RMB | 1 |            |
| 00BD | TTLPNT | RMB | 2 |            |
| 00BF | ENDLIN | RMB | 1 |            |
| 00C0 | TAB    | RMB | 1 |            |
| 00C1 | TFILL  | RMB | 1 |            |

## \* ENVIRONMENT PARAMETERS

|      |        |     |   |
|------|--------|-----|---|
| 00C2 | AUTO   | RMB | 2 |
| 00C4 | ROM    | RMB | 2 |
| 00C6 | WIDTH  | RMB | 2 |
| 00C8 | FILFLG | RMB | 2 |
| 00CA | PFLG   | RMB | 2 |
| 00CC | PCHAR  | RMB | 2 |
| 00CE | CNJ    | RMB | 2 |
| 00D0 | RTJ    | RMB | 2 |
| 00D2 | MSC    | RMB | 2 |
| 00D4 | CNTFLG | RMB | 2 |
| 00D6 | JUST   | RMB | 2 |
| 00D8 | TLN    | RMB | 2 |
| 00DA | BUFNT  | RMB | 4 |
| 00DE | BUFEND | RMB | 4 |
| 00E2 | EBFEND | RMB | 4 |
| 00E6 | CMNPNT | RMB | 2 |
| 00E8 | SPCPT1 | RMB | 2 |
| 00EA | SPCPT2 | RMB | 2 |
| 00EC | TEMP   | RMB | 2 |
| 00EE | TEMP2  | RMB | 2 |
| 00F0 | TEMP5  | RMB | 2 |
| 00F2 | TEMP6  | RMB | 2 |

```

00F4      RETREG  RMB    2
00F6      INDEX  RMB    2
00F8      XTEMP  RMB    2
00FA      MACEND RMB    2
00FC      CRF    RMB    1

0110                      ORG    $0110

0110      TABS   RMB    20
0124      TABEND RMB    1
0125      NUM   RMB    12

0200                      ORG    $0200
    
```

```

*
* PROGRAM ENTRY POINT
    
```

```

0200 7E 02 12  START  JMP    INTRO
    
```

```

* JUMP TABLE
    
```

```

0203 7E E1 D1  OUTCH  JMP    $E1D1
0206 7E E1 AC  INCH   JMP    $E1AC
0209 7E E0 D0 MON   JMP    $E0D0
020C 7E 15 A4  PINIT  JMP    PRNIT
020F 7E 15 C4  POUCH JMP    PROUCH
01FF                      EQU    $01FF
    
```

*3429  
3286 in combi version  
E0E3 done*

```

* MAIN PROGRAM STARTS HERE
    
```

```

0212 8E 01 FF  INTRO  LDS    #STACK      *** SETUP STACK ***
0215 DE 97                      LDX    FSTRAM     POINT TO FIRST OF FILE
0217 DF 9B                      STX    NXTRAM     SAVE IT
0219 BD 02 A8  INTRO0  JSR    CLRSPC     GO CLEAR SPACE
021C 97 95                      STA A  LOWPG     SET PAGE LIMITS
021E 97 93                      STA A  PRNTP
0220 97 94                      STA A  TLPP
0222 4A                      DEC A
0223 97 96                      STA A  HIPG
0225 CE 14 EA                      LDX    #CFRSTR   OUTPUT MESSAGE
0228 BD 14 90                      JSR    PSTRNG
022B 08                      INX
022C BD 14 90                      JSR    PSTRNG
022F BD 14 85                      JSR    CRLF      OUTPUT CR AND LF
0232 CE 15 1A                      LDX    #DATSTR   PROMPT FOR DATE
0235 BD 14 90                      JSR    PSTRNG
0238 BD 14 44                      JSR    GIBUF     GET DATE
023B 7C 00 65                      INC    CMFLG
023E BD 12 1A                      JSR    CHKNUM    CHECK IF VALID
0241 24 16                      BCC    INTRO3
0243 96 70                      LDA A  INNUM
0245 97 4C                      STA A  MNTH      GET MONTH & SAVE
0247 BD 12 1A                      JSR    CHKNUM    CHECK FOR DAY
024A 24 0D                      BCC    INTRO3
    
```



|      |    |    |    |        |     |         |                    |
|------|----|----|----|--------|-----|---------|--------------------|
| 024C | 96 | 70 |    | LDA    | A   | INNUM   | GET & SAVE         |
| 024E | 97 | 43 |    | STA    | A   | DAY     |                    |
| 0250 | BD | 12 | 1A | JSR    |     | CHKNUM  | CHECK FOR YEAR     |
| 0253 | 24 | 04 |    | BCC    |     | INTRO3  |                    |
| 0255 | 96 | 70 |    | LDA    | A   | INNUM   | GET & SAVE         |
| 0257 | 97 | 58 |    | STA    | A   | YEAR    |                    |
| 0259 | CE | 15 | 2C | INTRO3 | LDX | #PRQU   | PROMPT FOR PRINTER |
| 025C | BD | 14 | 90 | JSR    |     | PSTRNG  |                    |
| 025F | BD | 02 | 06 | JSR    |     | INCH    | GET RESPONSE       |
| 0262 | 81 | 50 |    | CMP    | A   | #'P     |                    |
| 0264 | 26 | 04 |    | BNE    |     | INTRO4  |                    |
| 0266 | 97 | 93 |    | STA    | A   | PRNTR   | SET PRINTER FLAG   |
| 0268 | 20 | 15 |    | BRA    |     | INTRO5  |                    |
| 026A | CE | 15 | 66 | INTRO4 | LDX | #LPPSTR | LINES PER SCREEN?  |
| 026D | BD | 14 | 90 | JSR    |     | PSTRNG  |                    |
| 0270 | BD | 14 | 44 | JSR    |     | GIBUF   | GET RESPONSE       |
| 0273 | 7C | 00 | 65 | INC    |     | CMFLG   |                    |
| 0276 | BD | 12 | 1A | JSR    |     | CHKNUM  | CHECK IF NUMBER    |
| 0279 | 24 | 04 |    | BCC    |     | INTRO5  |                    |
| 027B | 96 | 70 |    | LDA    | A   | INNUM   | GET AND SAVE 86 OF |
| 027D | 97 | 94 |    | STA    | A   | TLPP    |                    |
| 027F | CE | 15 | 4A | INTRO5 | LDX | #PGSTR  | PRMPT FOR PAGES    |
| 0282 | BD | 14 | 90 | JSR    |     | PSTRNG  |                    |
| 0285 | BD | 14 | 44 | JSR    |     | GIBUF   | GET RESPONSE       |
| 0288 | 7C | 00 | 65 | INC    |     | CMFLG   |                    |
| 028B | BD | 12 | 1A | JSR    |     | CHKNUM  | CHECK NUMBER       |
| 028E | 24 | 0D |    | BCC    |     | INTRO6  |                    |
| 0290 | 96 | 70 |    | LDA    | A   | INNUM   | GET AND SAVE       |
| 0292 | 97 | 95 |    | STA    | A   | LOWPG   |                    |
| 0294 | BD | 12 | 1A | JSR    |     | CHKNUM  | CHECK HIGH PAGE    |
| 0297 | 24 | 04 |    | BCC    |     | INTRO6  |                    |
| 0299 | 96 | 70 |    | LDA    | A   | INNUM   | GET IT             |
| 029B | 97 | 96 |    | STA    | A   | HIPG    |                    |
| 029D | BD | 14 | 85 | INTRO6 | JSR | CRLF    | OUT CR & LF        |
| 02A0 | 4F |    |    | CLR    | A   |         |                    |
| 02A1 | CE | 00 | 5A | LDX    |     | #GDNUM  | CLEAR SPACE        |
| 02A4 | 8D | 06 |    | BSR    |     | CLRSP2  |                    |
| 02A6 | 20 | 18 |    | BRA    |     | INIT    | GO INITIALIZE      |

\* CLEAR TEMPORARY SPACE

|      |    |    |    |        |     |         |                 |
|------|----|----|----|--------|-----|---------|-----------------|
| 02A8 | 4F |    |    | CLRSPC | CLR | A       |                 |
| 02A9 | CE | 00 | 40 | LDX    |     | #NMREGS | SET POINTER     |
| 02AC | A7 | 00 |    | CLRSP2 | STA | A       | 0, X            |
| 02AE | 08 |    |    | INX    |     |         | CLEAR SPACE     |
| 02AF | 8C | 00 | 93 | CPX    |     | #PRNTR  | BUMP POINTER    |
| 02B2 | 26 | F8 |    | BNE    |     | CLRSP2  | FINISHED?       |
| 02B4 | CE | 00 | 9E | LDX    |     | #SBFLG  | DO SECOND BLOCK |
| 02B7 | A7 | 00 |    | CLRSP4 | STA | A       | 0, X            |
| 02B9 | 08 |    |    | INX    |     |         |                 |
| 02BA | 8C | 00 | DA | CPX    |     | #BUFPNT |                 |
| 02BD | 26 | F8 |    | BNE    |     | CLRSP4  |                 |
| 02BF | 39 |    |    | RTS    |     |         | RETURN          |

## \* INITIALIZATION AND SETUP

|      |    |    |    |        |     |            |                     |
|------|----|----|----|--------|-----|------------|---------------------|
| 02C0 | CE | 01 | 10 | INIT   | LDX | #TABS      | SET POINTER         |
| 02C3 | 4F |    |    |        | CLR | A          |                     |
| 02C4 | A7 | 00 |    | INIT25 | STA | A 0,X      | CLEAR TABS          |
| 02C6 | 08 |    |    |        | INX |            |                     |
| 02C7 | 8C | 01 | 25 |        | CPX | #NUM       |                     |
| 02CA | 26 | F8 |    |        | BNE | INIT25     | FINISHED?           |
| 02CC | 4C |    |    |        | INC | A          |                     |
| 02CD | 97 | D6 |    |        | STA | A JUST     | SET INITIAL PARAMS. |
| 02CF | 97 | D7 |    |        | STA | A JUST+1   |                     |
| 02D1 | 97 | BF |    |        | STA | A ENDLIN   | MARK END LINE       |
| 02D3 | 97 | FC |    |        | STA | A CRF      |                     |
| 02D5 | 97 | C8 |    |        | STA | A FILFLG   | SET FOR FILL        |
| 02D7 | 97 | C9 |    |        | STA | A FILFLG+1 |                     |
| 02D9 | 97 | 4D |    |        | STA | A LINCNT   | INIT LINE COUNT     |
| 02DB | 97 | 42 |    |        | STA | A COLCNT   |                     |
| 02DD | 97 | 83 |    |        | STA | A COLCN2   | SET COLUMN CNT      |
| 02DF | 97 | 74 |    |        | STA | A PGN      | SET PAGE            |
| 02E1 | 86 | 41 |    |        | LDA | A #65      |                     |
| 02E3 | 97 | C6 |    |        | STA | A WIDTH    | SET PAGE WIDTH      |
| 02E5 | 97 | C7 |    |        | STA | A WIDTH+1  |                     |
| 02E7 | 97 | 4B |    |        | STA | A LLN      | AND LINE LENGTH     |
| 02E9 | 97 | 9F |    |        | STA | A LLN2     |                     |
| 02EB | 97 | D8 |    |        | STA | A TLN      | SET TITLE LENGTH    |
| 02ED | 97 | D9 |    |        | STA | A TLN+1    |                     |
| 02EF | 4C |    |    |        | INC | A          |                     |
| 02F0 | 97 | 4F |    |        | STA | A PGL      | SET PAGE LENGTH     |
| 02F2 | CE | 19 | F4 |        | LDX | #MACROS    |                     |
| 02F5 | DF | AC |    |        | STX | NXTMAC     | INIT MACRO SPACE    |
| 02F7 | DF | A6 |    |        | STX | FSTAVL     |                     |
| 02F9 | 86 | FF |    |        | LDA | A #\$FF    |                     |
| 02FB | A7 | 00 |    | INIT3  | STA | A 0,X      |                     |
| 02FD | 08 |    |    |        | INX |            |                     |
| 02FE | 8C | 1F | F2 |        | CPX | #LMACRO    | FINISHED?           |
| 0301 | 26 | F8 |    |        | BNE | INIT3      |                     |
| 0303 | DF | A4 |    |        | STX | LSTAVL     |                     |
| 0305 | 09 |    |    |        | DEX |            |                     |
| 0306 | 6F | 00 |    |        | CLR | 0,X        | SET END OF MACROS   |
| 0308 | 6F | 01 |    |        | CLR | 1,X        |                     |
| 030A | 6F | 02 |    |        | CLR | 2,X        |                     |
| 030C | 86 | 0D |    |        | LDA | A #\$D     | FIX BUFFER          |
| 030E | B7 | 18 | 0A |        | STA | A CMNDBF   |                     |
| 0311 | 86 | A0 |    |        | LDA | A #\$A0    | SET FILL CHAR.      |
| 0313 | 97 | C1 |    |        | STA | A TFILL    |                     |
| 0315 | CE | 17 | D8 |        | LDX | #TRAPS     |                     |
| 0318 | 86 | FF |    |        | LDA | A #\$FF    | INIT TRAPS          |
| 031A | A7 | 00 |    | INIT4  | STA | A 0,X      |                     |
| 031C | 08 |    |    |        | INX |            |                     |
| 031D | 8C | 18 | 08 |        | CPX | #TRPEND    | FINISHED?           |
| 0320 | 26 | F8 |    |        | BNE | INIT4      |                     |
| 0322 | BD | 02 | 0C |        | JSR | PINIT      | INIT PRINTER        |
| 0325 | CE | 15 | E4 |        | LDX | #LINBUF    |                     |

|      |    |       |     |          |                   |
|------|----|-------|-----|----------|-------------------|
| 0328 | DF | DA    | STX | BUFNT    | SET POINTER       |
| 032A | DF | DC    | STX | BUFNT+2  |                   |
| 032C | BD | 06 46 | JSR | FIXBFE   | FIX BUFFER END    |
| 032F | DE | DE    | LDX | BUFEND   |                   |
| 0331 | DF | E0    | STX | BUFEND+2 |                   |
| 0333 | CE | 16 7F | LDX | #EXTBUF  |                   |
| 0336 | DF | E4    | STX | EBFEND+2 |                   |
| 0338 | CE | 19 72 | LDX | #MACTBL  | CLEAR MACRO TABLE |
| 033B | DF | FA    | STX | MACEND   |                   |

## \* MAIN PROCESSOR LOOP

|      |    |       |       |       |        |                    |
|------|----|-------|-------|-------|--------|--------------------|
| 033D | 96 | 74    | PROC  | LDA A | PGN    | CHECK PAGE NUMBER  |
| 033F | 91 | 95    |       | CMP A | LOWPG  | AGAINST LOW PAGE   |
| 0341 | 24 | 06    |       | BHS   | PROC3  |                    |
| 0343 | C6 | 0F    | PROC2 | LDA B | #\$F   |                    |
| 0345 | D7 | 79    |       | STA B | NOOUT  | SET NO OUTPUT FLAG |
| 0347 | 20 | 0A    |       | BRA   | PUNTST |                    |
| 0349 | 91 | 96    | PROC3 | CMP A | HIPG   | AGAINST HIGH PAGE  |
| 034B | 23 | 03    |       | BLS   | PROC4  |                    |
| 034D | 7E | 09 53 |       | JMP   | FINIS4 | IF PAST, FINISH    |
| 0350 | 7F | 00 79 | PROC4 | CLR   | NOOUT  |                    |

## \* TEST FOR PUNCTUATION

|      |    |       |        |       |        |                   |
|------|----|-------|--------|-------|--------|-------------------|
| 0353 | 96 | CA    | PUNTST | LDA A | PFLG   | TEST FLAG         |
| 0355 | 81 | 03    |        | CMP A | #3     |                   |
| 0357 | 26 | 07    |        | BNE   | PUNTS3 |                   |
| 0359 | 96 | CC    |        | LDA A | PCHAR  | GET SPARE CHAR.   |
| 035B | 7F | 00 CA | PUNTS2 | CLR   | PFLG   | CLEAR PUNCT. FLAG |
| 035E | 20 | 37    |        | BRA   | JSTFY  |                   |
| 0360 | BD | 06 8C | PUNTS3 | JSR   | GETCHR | GET NEXT CHAR.    |
| 0363 | D6 | 6A    |        | LDA B | DONE   | FINISHED?         |
| 0365 | 27 | 03    |        | BEQ   | PUNT35 |                   |
| 0367 | 7E | 09 51 |        | JMP   | FINISH |                   |
| 036A | D6 | C8    | PUNT35 | LDA B | FILFLG | FILL ON?          |
| 036C | 27 | 29    |        | BEQ   | JSTFY  |                   |
| 036E | D6 | CA    |        | LDA B | PFLG   | TEST PUNCT. FLAG  |
| 0370 | C1 | 01    |        | CMP B | #1     |                   |
| 0372 | 22 | 19    |        | BHI   | PUNTS7 |                   |
| 0374 | 27 | 11    |        | BEQ   | PUNTS6 |                   |
| 0376 | 81 | 2E    |        | CMP A | #'     | IS CHAR A ' '??   |
| 0378 | 27 | 08    |        | BEQ   | PUNTS4 |                   |
| 037A | 81 | 21    |        | CMP A | #'!    | IS IT '!'??       |
| 037C | 27 | 04    |        | BEQ   | PUNTS4 |                   |
| 037E | 81 | 3F    |        | CMP A | #'?    | IS IT '?'??       |
| 0380 | 26 | 03    |        | BNE   | PUNTS5 |                   |
| 0382 | 7C | 00 CA | PUNTS4 | INC   | PFLG   | SET PUNCT. FLAG   |
| 0385 | 20 | 10    | PUNTS5 | BRA   | JSTFY  |                   |
| 0387 | 81 | 20    | PUNTS6 | CMP A | #\$20  | IS CHAR SPACE?    |
| 0389 | 27 | F7    |        | BEQ   | PUNTS4 |                   |
| 038B | 20 | CE    |        | BRA   | PUNTS2 |                   |
| 038D | 81 | 20    | PUNTS7 | CMP A | #\$20  | CHECK FOR SPACE   |
| 038F | 27 | CA    |        | BEQ   | PUNTS2 |                   |

|      |    |    |  |       |        |                  |
|------|----|----|--|-------|--------|------------------|
| 0391 | 97 | CC |  | STA A | PCHAR  | SAVE SPARE CHAR. |
| 0393 | 86 | 20 |  | LDA A | #\$20  | SET FOR SPACE    |
| 0395 | 20 | EB |  | BRA   | PUNTS4 |                  |

## \* JUSTIFICATION LOOP

|      |    |    |    |        |       |           |                     |
|------|----|----|----|--------|-------|-----------|---------------------|
| 0397 | CE | 16 | 7F | JSTFY  | LDX   | #EXTBUF   | FIX EXTRA POINTERS  |
| 039A | DF | EE |    |        | STX   | TEMP2     |                     |
| 039C | DF | E2 |    |        | STX   | EBFEND    |                     |
| 039E | DE | DA |    |        | LDX   | BUFPT     | GET BUFFER POINTER  |
| 03A0 | 81 | 0D |    |        | CMP A | #\$D      | IS CHAR. A CR?      |
| 03A2 | 26 | 14 |    |        | BNE   | JSTFY3    |                     |
| 03A4 | D6 | C8 |    |        | LDA B | FILFLG    | FILL MODE?          |
| 03A6 | 26 | 05 |    |        | BNE   | JSTFY2    |                     |
| 03A8 | DF | A8 |    | JSTFY1 | STX   | STPOUT    | MARK LAST BUF. POS. |
| 03AA | 7E | 05 | 0B |        | JMP   | OUTLIN    | OUTPUT LINE         |
| 03AD | 86 | 20 |    | JSTFY2 | LDA A | #\$20     | GET A SPACE         |
| 03AF | A7 | 00 |    | JSTF25 | STA A | 0, X      | SAVE IT             |
| 03B1 | 08 |    |    |        | INX   |           | BUMP POINTER        |
| 03B2 | 9C | DE |    |        | CPX   | BUFEND    | END OF BUFFER?      |
| 03B4 | 26 | F9 |    |        | BNE   | JSTF25    |                     |
| 03B6 | 20 | 1E |    |        | BRA   | JSTFY6    |                     |
| 03B8 | A7 | 00 |    | JSTFY3 | STA A | 0, X      | SAVE CHARACTER      |
| 03BA | 7C | 00 | 42 |        | INC   | COLCNT    | BUMP COLUMN COUNT   |
| 03BD | 08 |    |    |        | INX   |           | BUMP POINTER        |
| 03BE | 9C | DE |    |        | CPX   | BUFEND    | END?                |
| 03C0 | 26 | 06 |    |        | BNE   | JSTFY4    |                     |
| 03C2 | D6 | C8 |    |        | LDA B | FILFLG    | FILL MODE?          |
| 03C4 | 27 | 02 |    |        | BEQ   | JSTFY4    |                     |
| 03C6 | 20 | 0E |    |        | BRA   | JSTFY6    |                     |
| 03C8 | 8C | 16 | 7F | JSTFY4 | CPX   | #EXTBUF   | BUFFER OVERFLOW?    |
| 03CB | 26 | 04 |    |        | BNE   | JSTFY5    |                     |
| 03CD | 86 | 0D |    |        | LDA A | #\$D      | STUFF A C. R.       |
| 03CF | 20 | D7 |    |        | BRA   | JSTFY1    |                     |
| 03D1 | DF | DA |    | JSTFY5 | STX   | BUFPT     | SAVE BUF POINTER    |
| 03D3 | 7E | 03 | 3D | JSTF55 | JMP   | PROC      | REPEAT LOOP         |
| 03D6 | D6 | CA |    | JSTFY6 | LDA B | PFLG      | CHECK FLAG          |
| 03D8 | C1 | 03 |    |        | CMP B | #3        |                     |
| 03DA | 26 | 04 |    |        | BNE   | JSTF63    |                     |
| 03DC | 96 | CC |    |        | LDA A | PCHAR     | GET CHARACTER       |
| 03DE | 20 | 0B |    |        | BRA   | JSTF65    |                     |
| 03E0 | 81 | 20 |    | JSTF63 | CMP A | #\$20     | IS CHAR = SPACE?    |
| 03E2 | 27 | 4E |    |        | BEQ   | ADJSPC    |                     |
| 03E4 | BD | 06 | 8C |        | JSR   | GETCHR    | GET NEXT CHARACTER  |
| 03E7 | 81 | 20 |    |        | CMP A | #\$20     | IS IT SPACE?        |
| 03E9 | 27 | 47 |    |        | BEQ   | ADJSPC    |                     |
| 03EB | 36 |    |    | JSTF65 | PSH A |           | SAVE CHAR.          |
| 03EC | 86 | 20 |    |        | LDA A | #\$20     |                     |
| 03EE | DE | DE |    |        | LDX   | BUFEND    | GET TO END          |
| 03F0 | 09 |    |    | JSTFY7 | DEX   |           |                     |
| 03F1 | 8C | 15 | E3 |        | CPX   | #LINBUF-1 | LOOK FOR SPACES     |
| 03F4 | 27 | 1C |    |        | BEQ   | JSTFY9    |                     |
| 03F6 | A1 | 00 |    |        | CMP A | 0, X      |                     |
| 03F8 | 26 | F6 |    |        | BNE   | JSTFY7    |                     |

|               |         |             |                   |
|---------------|---------|-------------|-------------------|
| 03FA 08       | JSTFY8  | INX         | BUMP POINTER      |
| 03FB 9C DE    |         | CPX BUFEND  |                   |
| 03FD 27 13    |         | BEQ JSTFY9  |                   |
| 03FF A6 00    |         | LDA A 0, X  | PICK UP CHARACTER |
| 0401 DF EC    |         | STX TEMP    | SAVE X            |
| 0403 DE EE    |         | LDX TEMP2   |                   |
| 0405 A7 00    |         | STA A 0, X  | MOVE THE CHAR.    |
| 0407 08       |         | INX         |                   |
| 0408 DF EE    |         | STX TEMP2   |                   |
| 040A DE EC    |         | LDX TEMP    | RESTORE X         |
| 040C 86 20    |         | LDA A #\$20 | SET WITH SPACE    |
| 040E A7 00    |         | STA A 0, X  | SAVE IT           |
| 0410 20 E8    |         | BRA JSTFY8  | REPEAT            |
| 0412 32       | JSTFY9  | PUL A       | RESTORE CHARACTER |
| 0413 7F 00 82 |         | CLR TABFLG  | CLEAR TABS        |
| 0416 CE 01 24 |         | LDX #TABEND | POINT TO TABS     |
| 0419 DF 80    |         | STX NXTTAB  | SET NEXT TAB      |
| 041B DE EE    |         | LDX TEMP2   | RESTORE X         |
| 041D A7 00    | JSTFY95 | STA A 0, X  | SAVE LAST CHAR.   |
| 041F 08       |         | INX         | BUMP POINTER      |
| 0420 DF E2    |         | STX EBFEND  | SET END           |
| 0422 81 20    |         | CMP A #\$20 | WAS CHAR A SPACE? |
| 0424 27 0C    |         | BEQ ADJSPC  |                   |
| 0426 8C 16 AC |         | CPX #LINBU2 | BUFFER OVERFLOW?  |
| 0429 27 07    |         | BEQ ADJSPC  |                   |
| 042B BD 06 8C |         | JSR GETCHR  | GET NEXT CHAR.    |
| 042E DE E2    |         | LDX EBFEND  | GET POINTER       |
| 0430 20 EB    |         | BRA JSTFY95 |                   |

## \* ADJUST BUFFER FOR SPACES

|               |        |             |                     |
|---------------|--------|-------------|---------------------|
| 0432 5F       | ADJSPC | CLR B       | CLEAR COUNT         |
| 0433 CE 15 E4 |        | LDX #LINBUF | POINT TO BUF BEGIN  |
| 0436 DF E8    |        | STX SPCPT1  |                     |
| 0438 A6 00    | ADJSP2 | LDA A 0, X  | LOOK FOR SPACES     |
| 043A 81 20    |        | CMP A #\$20 |                     |
| 043C 26 09    |        | BNE ADJS35  |                     |
| 043E 5C       |        | INC B       | INC THE COUNTER     |
| 043F 08       |        | INX         | BUMP POINTER        |
| 0440 9C DE    |        | CPX BUFEND  |                     |
| 0442 26 F4    |        | BNE ADJSP2  |                     |
| 0444 7E 05 0B | ADJSP3 | JMP OUTLIN  | OUTPUT LINE         |
| 0447 DF EA    | ADJS35 | STX SPCPT2  | SET END             |
| 0449 BD 05 B7 |        | JSR DELCHR  | DELETE INIT. SPACES |
| 044C CE 15 E4 |        | LDX #LINBUF | POINT TO BEGIN      |
| 044F 86 20    |        | LDA A #\$20 | CHECK MORE SPACES   |
| 0451 A1 00    | ADJSP4 | CMP A 0, X  |                     |
| 0453 27 07    |        | BEQ ADJSP5  |                     |
| 0455 08       |        | INX         | BUMP TIL FIND       |
| 0456 9C DE    |        | CPX BUFEND  | END OF BUFFER?      |
| 0458 27 10    |        | BEQ ADJSP6  |                     |
| 045A 20 F5    |        | BRA ADJSP4  | REPEAT              |
| 045C 08       | ADJSP5 | INX         | BUMP POINTER        |
| 045D 9C DE    |        | CPX BUFEND  | FINISHED?           |

|      |    |    |    |        |        |                  |
|------|----|----|----|--------|--------|------------------|
| 045F | 26 | 05 |    | BNE    | ADJS55 |                  |
| 0461 | 7C | 00 | B6 | INC    | SWRDF  | SET SINGLE WORD  |
| 0464 | 20 | 04 |    | BRA    | ADJSP6 |                  |
| 0466 | A1 | 00 |    | ADJS55 | CMP A  | 0, X             |
| 0468 | 27 | F2 |    | BEQ    | ADJSP5 | CHECK NEXT CHAR. |
| 046A | D6 | D4 |    | ADJSP6 | LDA B  | CNTFLG           |
| 046C | 27 | 03 |    | BEQ    | ADJSP7 | CENTERING?       |
| 046E | 7E | 06 | 19 | JMP    | CNTRIT | GO CENTER LINE   |
| 0471 | D6 | D6 |    | ADJSP7 | LDA B  | JUST             |
| 0473 | 27 | CF |    | BEQ    | ADJSP3 | JUSTIFICATION?   |
| 0475 | D6 | D0 |    | LDA B  | RTJ    | RIGHT HAND?      |
| 0477 | 27 | 03 |    | BEQ    | ADJSP8 |                  |
| 0479 | 7E | 05 | A7 | JMP    | RIGHTJ | GO DO RIGHT      |
| 047C | D6 | CE |    | ADJSP8 | LDA B  | CNJ              |
| 047E | 27 | 03 |    | BEQ    | ADJSP9 | CENTER JUST. ?   |
| 0480 | 7E | 05 | B2 | JMP    | CENTJ  | GO CENTER        |
| 0483 | D6 | B6 |    | ADJSP9 | LDA B  | SWRDF            |
| 0485 | 26 | BD |    | BNE    | ADJSP3 | CHECK SINGLE     |
| 0487 | D6 | 6B |    | LDA B  | FLBF   | FLUSHING BUFFER? |
| 0489 | 26 | B9 |    | BNE    | ADJSP3 |                  |
| 048B | D6 | 6D |    | LDA B  | LEFT   | WHICH SIDE       |
| 048D | 27 | 3A |    | BEQ    | RINS   | GO FROM RIGHT    |

\* INSERT SPACES FROM LEFT

|      |    |    |    |       |       |         |                 |
|------|----|----|----|-------|-------|---------|-----------------|
| 048F | CE | 15 | E4 | LINS  | LDX   | #LINBUF | SET POINTER     |
| 0492 | DF | EC |    |       | STX   | TEMP    | SAVE IT         |
| 0494 | DE | DE |    | LINS2 | LDX   | BUFEND  | POINT TO END    |
| 0496 | 09 |    |    |       | DEX   |         | DEC THE POINTER |
| 0497 | A6 | 00 |    |       | LDA A | 0, X    | GET CHARACTER   |
| 0499 | 81 | 20 |    |       | CMP A | #\$20   | IS IT A SPACE?  |
| 049B | 26 | A7 |    |       | BNE   | ADJSP3  |                 |
| 049D | DE | EC |    |       | LDX   | TEMP    | RESTORE POINTER |
| 049F | A6 | 00 |    | LINS3 | LDA A | 0, X    | GET CHAR        |
| 04A1 | 81 | 20 |    |       | CMP A | #\$20   | IS IT SPACE?    |
| 04A3 | 27 | 07 |    |       | BEQ   | LINS4   |                 |
| 04A5 | 08 |    |    |       | INX   |         | BUMP POINTER    |
| 04A6 | 9C | DE |    |       | CPX   | BUFEND  | END OF BUFFER   |
| 04A8 | 27 | E5 |    |       | BEQ   | LINS    |                 |
| 04AA | 20 | F3 |    |       | BRA   | LINS3   | REPEAT          |
| 04AC | C6 | 01 |    | LINS4 | LDA B | #1      | SET COUNT = 1   |
| 04AE | BD | 05 | DD |       | JSR   | INSSPC  | GO INSERT SPACE |
| 04B1 | D6 | CE |    |       | LDA B | CNJ     | CENTER JUST?    |
| 04B3 | 27 | 01 |    |       | BEQ   | LINS5   |                 |
| 04B5 | 39 |    |    |       | RTS   |         | RETURN          |
| 04B6 | DE | EC |    | LINS5 | LDX   | TEMP    | RESTORE POINTER |
| 04B8 | A6 | 00 |    | LINS6 | LDA A | 0, X    | GET CHARACTER   |
| 04BA | 81 | 20 |    |       | CMP A | #\$20   | IS IT SPACE?    |
| 04BC | 26 | 07 |    |       | BNE   | LINS7   |                 |
| 04BE | 08 |    |    |       | INX   |         | BUMP POINTER    |
| 04BF | 9C | DE |    |       | CPX   | BUFEND  | END OF BUFFER?  |
| 04C1 | 27 | CC |    |       | BEQ   | LINS    |                 |
| 04C3 | 20 | F3 |    |       | BRA   | LINS6   |                 |
| 04C5 | DF | EC |    | LINS7 | STX   | TEMP    | SAVE X          |

```

04C7 20 CB          BRA      LINS2      REPEAT

* INSERT SPACES FROM RIGHT SIDE

04C9 DE DE          RINS      LDX      BUFEND      SET POINTER
04CB 86 20          LDA      A      #$20      SET UP SPACE
04CD 09             RINS2     DEX
04CE A1 00          CMP      A      0,X      IS CHAR A SPACE?
04D0 27 FB          BEQ      RINS2
04D2 DF EC          STX      TEMP      SAVE POINTER
04D4 DE DE          RINS3     LDX      BUFEND      GO TO END
04D6 09             DEX
04D7 A6 00          LDA      A      0,X      GET CHAR.
04D9 81 20          CMP      A      #$20      IS IT SPACE?
04DB 26 2E          BNE      OUTLIN
04DD DE EC          LDX      TEMP      RESTORE X
04DF A6 00          RINS4     LDA      A      0,X      GET CHAR
04E1 81 20          CMP      A      #$20      IS IT SPACE?
04E3 27 08          BEQ      RINS5
04E5 09             DEX      DEC THE POINTER
04E6 8C 15 E3      CPX      #LINBUF-1 FINISHED?
04E9 27 DE          BEQ      RINS
04EB 20 F2          BRA      RINS4      REPEAT
04ED C6 01          RINS5     LDA      B      #1      SET COUNT = 1
04EF BD 05 DD      JSR      INSSPC     INSERT SPACE
04F2 D6 CE          LDA      B      CNJ      CENTER JUST?
04F4 27 01          BEQ      RINS6
04F6 39             RTS      RETURN
04F7 DE EC          RINS6     LDX      TEMP      RESTORE POINTER
04F9 A6 00          RINS7     LDA      A      0,X      GET CHARACTER
04FB 81 20          CMP      A      #$20      SPACE?
04FD 26 08          BNE      RINS8
04FF 09             DEX
0500 8C 15 E3      CPX      #LINBUF-1 FINISHED?
0503 27 C4          BEQ      RINS
0505 20 F2          BRA      RINS7      REPEAT
0507 DF EC          RINS8     STX      TEMP      SAVE POINTER
0509 20 C9          BRA      RINS3

```

## \* OUTPUT LINE FROM WORK BUFFER

```

050B 7F 00 B6      OUTLIN   CLR      SWRDF      CLR FLAG
050E D6 4E          LDA      B      LFM      LEFT MARGIN?
0510 7D 00 7B      TST      PTFI      PUT IN INDENT?
0513 26 02          BNE      OUTLI1
0515 DB 48          ADD      B      IND      ADJUST LEFT
0517 7F 00 7B      OUTLI1  CLR      PTFI
051A DB 7C          ADD      B      SIN      ADD IN SINGLE IN.
051C 2B 0C          BMI      OUTLI3
051E 27 0A          BEQ      OUTLI3
0520 86 20          OUTLI2  LDA      A      #$20      SET UP SPACE
0522 37             PSH      B
0523 BD 14 9F      JSR      OUTCHR     OUTPUT SPACE
0526 33             PUL      B

```

|      |    |    |    |       |         |                   |
|------|----|----|----|-------|---------|-------------------|
| 0527 | 5A |    |    | DEC B |         | DEC COUNT         |
| 0528 | 26 | F6 |    | BNE   | OUTLI2  |                   |
| 052A | D6 | C8 |    | LDA B | FILFLG  | FILL MODE?        |
| 052C | 27 | 11 |    | BEQ   | OUTLI5  |                   |
| 052E | 86 | 20 |    | LDA A | ##20    | SETUP SPACE       |
| 0530 | DE | DE |    | LDX   | BUFEND  | GO TO END         |
| 0532 | 8C | 15 | E4 | CPX   | #LINBUF | EMPTY?            |
| 0535 | 27 | 19 |    | BEQ   | OUTLI6  |                   |
| 0537 | 09 |    |    | DEX   |         | DEC THE POINTER   |
| 0538 | A1 | 00 |    | CMP A | 0, X    | IS IT SPACE?      |
| 053A | 27 | F6 |    | BEQ   | OUTLI4  |                   |
| 053C | 08 |    |    | INX   |         | BUMP POINTER      |
| 053D | DF | A8 |    | STX   | STPOUT  | SET END           |
| 053F | CE | 15 | E4 | LDX   | #LINBUF |                   |
| 0542 | 9C | A8 |    | CPX   | STPOUT  | EMPTY?            |
| 0544 | 27 | 0A |    | BEQ   | OUTLI6  |                   |
| 0546 | A6 | 00 |    | LDA A | 0, X    | GET CHARACTER     |
| 0548 | BD | 14 | 9F | JSR   | OUTCHR  | OUTPUT IT         |
| 054B | 08 |    |    | INX   |         | BUMP POINTER      |
| 054C | 9C | A8 |    | CPX   | STPOUT  | FINISHED?         |
| 054E | 26 | F6 |    | BNE   | OUTL55  |                   |
| 0550 | 5F |    |    | CLR B |         | CLEAR FLAGS       |
| 0551 | D7 | 8E |    | STA B | DWFLG   |                   |
| 0553 | D7 | 6F |    | STA B | NOFL    |                   |
| 0555 | D7 | CA |    | STA B | PFLG    |                   |
| 0557 | D7 | 73 |    | STA B | NSP     |                   |
| 0559 | D7 | 7C |    | STA B | SIN     |                   |
| 055B | 73 | 00 | 6D | COM   | LEFT    | SWITCH SP. SIDES  |
| 055E | CE | 15 | E4 | LDX   | #LINBUF | SET POINTER       |
| 0561 | DF | DA |    | STX   | BUFPNT  |                   |
| 0563 | CE | 01 | 10 | LDX   | #TABS   | SET TABS          |
| 0566 | DF | 80 |    | STX   | NXTTAB  |                   |
| 0568 | BD | 14 | 14 | JSR   | FIXWD   | GO FIX WIDTH      |
| 056B | CE | 16 | 7F | LDX   | #EXTBUF |                   |
| 056E | 9C | E2 |    | CPX   | EBFEND  | CHECK FOR EXTRA?  |
| 0570 | 27 | 17 |    | BEQ   | OUTLI8  |                   |
| 0572 | A6 | 00 |    | LDA A | 0, X    | GET CHARACTER     |
| 0574 | 08 |    |    | INX   |         |                   |
| 0575 | DF | EC |    | STX   | TEMP    |                   |
| 0577 | DE | DA |    | LDX   | BUFPNT  | TRANSFER IT       |
| 0579 | A7 | 00 |    | STA A | 0, X    |                   |
| 057B | 08 |    |    | INX   |         | BUMP POINTER      |
| 057C | 9C | DE |    | CPX   | BUFEND  | CHECK END         |
| 057E | 27 | 09 |    | BEQ   | OUTLI8  | OVERFLOW!         |
| 0580 | DF | DA |    | STX   | BUFPNT  | SAVE IT           |
| 0582 | DE | EC |    | LDX   | TEMP    |                   |
| 0584 | 7C | 00 | 42 | INC   | COLCNT  | BUMP COLUMN COUNT |
| 0587 | 20 | E5 |    | BRA   | OUTL75  | REPEAT            |
| 0589 | CE | 16 | 7F | LDX   | #EXTBUF | FIX POINTER       |
| 058C | DF | E2 |    | STX   | EBFEND  |                   |
| 058E | BD | 08 | 99 | JSR   | PCRLF   | OUTPUT CR & LF    |
| 0591 | 96 | D2 |    | LDA A | MSC     | MULTIPLE SPACE?   |
| 0593 | 27 | 0A |    | BEQ   | OUTL85  |                   |
| 0595 | 4A |    |    | DEC A |         |                   |



|      |    |    |        |        |        |                    |            |
|------|----|----|--------|--------|--------|--------------------|------------|
| 0596 | 27 | 07 |        | BEQ    | OUTL85 |                    |            |
| 0598 | 36 |    |        | PSH A  |        | OUTPUT EXTRA SPACE |            |
| 0599 | BD | 08 | 99     | JSR    | PCRLF  |                    |            |
| 059C | 32 |    |        | PUL A  |        |                    |            |
| 059D | 20 | F6 |        | BRA    | OUTL82 |                    |            |
| 059F | 96 | 6B | OUTL85 | LDA A  | FLBF   | FLUSHING?          |            |
| 05A1 | 27 | 01 |        | BEQ    | OUTLI9 |                    |            |
| 05A3 | 39 |    |        | RTS    |        |                    |            |
| 05A4 | 7E | 03 | 3D     | OUTLI9 | JMP    | PROC               | GO PROCESS |

## \* RIGHT HAND JUSTIFY

|      |    |    |    |        |        |           |               |
|------|----|----|----|--------|--------|-----------|---------------|
| 05A7 | BD | 06 | 0B | RIGHTJ | JSR    | CNTSPC    | COUNT SPACES  |
| 05AA | CE | 15 | E3 | RIGHT2 | LDX    | #LINBUF-1 |               |
| 05AD | 8D | 2E |    | BSR    | INSSPC |           | INSERT SPACES |
| 05AF | 7E | 05 | 0B | JMP    | OUTLIN |           | OUTPUT LINE   |

## \* CENTER JUSTIFY

|      |    |    |  |       |        |        |              |
|------|----|----|--|-------|--------|--------|--------------|
| 05B2 | 8D | 57 |  | CENTJ | BSR    | CNTSPC | COUNT SPACES |
| 05B4 | 57 |    |  | ASR B |        |        | DIVIDE BY 2  |
| 05B5 | 20 | F3 |  | BRA   | RIGHT2 |        |              |

## \* DELETE CHARACTERS

|      |    |    |        |        |        |        |                  |
|------|----|----|--------|--------|--------|--------|------------------|
| 05B7 | DE | EA |        | DELCHR | LDX    | SPCPT2 | GET POINTER      |
| 05B9 | 9C | E8 |        |        | CPX    | SPCPT1 | EMPTY?           |
| 05BB | 27 | 1F |        |        | BEQ    | DELCH4 |                  |
| 05BD | 9C | DE |        |        | CPX    | BUFEND |                  |
| 05BF | 27 | 0E |        |        | BEQ    | DELCH3 |                  |
| 05C1 | A6 | 00 |        |        | LDA A  | 0, X   | GET CHARACTER    |
| 05C3 | 08 |    |        |        | INX    |        | BUMP THE POINTER |
| 05C4 | DF | EA |        |        | STX    | SPCPT2 | SAVE IT          |
| 05C6 | DE | E8 |        |        | LDX    | SPCPT1 | RESTORE          |
| 05C8 | A7 | 00 |        |        | STA A  | 0, X   | SAVE CHARACTER   |
| 05CA | 08 |    |        |        | INX    |        | BUMP POINTER     |
| 05CB | DF | E8 |        |        | STX    | SPCPT1 |                  |
| 05CD | 20 | E8 |        |        | BRA    | DELCHR | REPEAT           |
| 05CF | DE | E8 | DELCH3 | LDX    | SPCPT1 |        | GET POINTER      |
| 05D1 | 86 | 20 |        |        | LDA A  | #\$20  | SETUP SPACE      |
| 05D3 | 9C | DE | DELC35 | CPX    | BUFEND |        |                  |
| 05D5 | 27 | 05 |        |        | BEQ    | DELCH4 |                  |
| 05D7 | A7 | 00 |        |        | STA A  | 0, X   | PUT IN SPACE     |
| 05D9 | 08 |    |        |        | INX    |        | BUMP POINTER     |
| 05DA | 20 | F7 |        |        | BRA    | DELC35 |                  |
| 05DC | 39 |    | DELCH4 | RTS    |        |        |                  |

## \* INSERT SPACES

|      |    |    |  |        |       |        |                 |
|------|----|----|--|--------|-------|--------|-----------------|
| 05DD | 5D |    |  | INSSPC | TST B |        | TEST COUNT      |
| 05DE | 27 | 2A |  |        | BEQ   | INSSP5 | IF NONE, RETURN |
| 05E0 | 37 |    |  |        | PSH B |        | SAVE COUNT      |
| 05E1 | DF | EC |  |        | STX   | TEMP   | SAVE X          |
| 05E3 | DE | DE |  |        | LDX   | BUFEND | POINT TO END    |

|      |    |    |        |       |        |                  |
|------|----|----|--------|-------|--------|------------------|
| 05E5 | DF | E8 |        | STX   | SPCPT1 | SAVE             |
| 05E7 | 08 |    | INSSP2 | INX   |        |                  |
| 05E8 | 5A |    |        | DEC B |        | DEC THE COUNT    |
| 05E9 | 26 | FC |        | BNE   | INSSP2 |                  |
| 05EB | DF | EA |        | STX   | SPCPT2 | SAVE POINTER     |
| 05ED | DE | E8 | INSSP3 | LDX   | SPCPT1 |                  |
| 05EF | 9C | EC |        | CPX   | TEMP   | FINISHED?        |
| 05F1 | 27 | 0E |        | BEQ   | INSSP4 |                  |
| 05F3 | A6 | 00 |        | LDA A | 0, X   | GET CHARACTER    |
| 05F5 | 09 |    |        | DEX   |        | DEC THE POINTER  |
| 05F6 | DF | E8 |        | STX   | SPCPT1 | SAVE IT          |
| 05F8 | DE | EA |        | LDX   | SPCPT2 |                  |
| 05FA | A7 | 00 |        | STA A | 0, X   | PUT CHARACTER    |
| 05FC | 09 |    |        | DEX   |        |                  |
| 05FD | DF | EA |        | STX   | SPCPT2 |                  |
| 05FF | 20 | EC |        | BRA   | INSSP3 | REPEAT           |
| 0601 | 33 |    | INSSP4 | PUL B |        | RESTORE COUNT    |
| 0602 | 86 | 20 |        | LDA A | #\$20  | SETUP SPACE      |
| 0604 | 08 |    | INSS44 | INX   |        | BUMP THE POINTER |
| 0605 | A7 | 00 |        | STA A | 0, X   | STUFF SPACE      |
| 0607 | 5A |    |        | DEC B |        | DEC THE COUNT    |
| 0608 | 26 | FA |        | BNE   | INSS44 |                  |
| 060A | 39 |    | INSSP5 | RTS   |        | RETURN           |

## \* COUNT SPACES

|      |    |    |        |       |        |                |
|------|----|----|--------|-------|--------|----------------|
| 060B | 5F |    | CNTSPC | CLR B |        | CLEAR COUNT    |
| 060C | 86 | 20 |        | LDA A | #\$20  | SETUP SPACE    |
| 060E | DE | DE |        | LDX   | BUFEND | SET POINTER    |
| 0610 | 09 |    | CNTSP2 | DEX   |        |                |
| 0611 | A1 | 00 |        | CMP A | 0, X   | SPACE?         |
| 0613 | 26 | 03 |        | BNE   | CNTSP3 |                |
| 0615 | 5C |    |        | INC B |        | BUMP THE COUNT |
| 0616 | 20 | F8 |        | BRA   | CNTSP2 |                |
| 0618 | 39 |    | CNTSP3 | RTS   |        |                |

## \* CENTER LINE

|      |    |    |        |       |           |                 |
|------|----|----|--------|-------|-----------|-----------------|
| 0619 | 8D | F0 | CNTRIT | BSR   | CNTSPC    | GO COUNT SPACES |
| 061B | 96 | 8E |        | LDA A | DWFLG     | DOUBLE WIDTH?   |
| 061D | 27 | 0E |        | BEQ   | CNTRI4    |                 |
| 061F | 96 | C6 |        | LDA A | WIDTH     | GET WIDTH       |
| 0621 | 10 |    |        | SBA   |           |                 |
| 0622 | 48 |    |        | ASL A |           | FIX FOR DOUBLE  |
| 0623 | 91 | C6 |        | CMP A | WIDTH     |                 |
| 0625 | 22 | 0C |        | BHI   | CNTRI5    |                 |
| 0627 | 16 |    |        | TAB   |           | SAVE            |
| 0628 | 96 | C6 |        | LDA A | WIDTH     |                 |
| 062A | 10 |    |        | SBA   |           | SUB FROM WIDTH  |
| 062B | 16 |    |        | TAB   |           |                 |
| 062C | 57 |    |        | ASR B |           | DIVIDE BY TWO   |
| 062D | 57 |    | CNTRI4 | ASR B |           |                 |
| 062E | CE | 15 | E3     | LDX   | #LINBUF-1 | SET POINTER     |
| 0631 | 8D | AA |        | BSR   | INSSPC    | GO INSERT SPACE |

|      |    |    |    |        |     |        |                  |
|------|----|----|----|--------|-----|--------|------------------|
| 0633 | 7A | 00 | D4 | CNTRIS | DEC | CNTFLG | DEC CENTER COUNT |
| 0636 | 26 | 0B |    |        | BNE | CNTRI6 |                  |
| 0638 | 4F |    |    |        | CLR | A      |                  |
| 0639 | 97 | D4 |    |        | STA | A      | CNTFLG           |
| 063B | 96 | 6E |    |        | LDA | A      | TFILF            |
| 063D | 97 | C8 |    |        | STA | A      | FILFLG           |
| 063F | DE | DE |    |        | LDX |        | BUFEND           |
| 0641 | DF | A8 |    |        | STX |        | STPOUT           |
| 0643 | 7E | 05 | 0B | CNTRI6 | JMP |        | OUTLIN           |

## \* FIX BUFFER END POINTER

|      |    |    |    |        |     |   |            |                   |
|------|----|----|----|--------|-----|---|------------|-------------------|
| 0646 | C6 | 05 |    | FIXBFE | LDA | B | #5         | CHECK BUFFER POS. |
| 0648 | CE | 02 | 25 |        | LDX |   | #NUM+\$100 | COMPARE WITH TEMP |
| 064B | BD | 0B | ED |        | JSR |   | SENY9      | CHECK IT          |
| 064E | 81 | 2D |    |        | CMP | A | #\$2D      | OVERFLOW??        |
| 0650 | 27 | 03 |    |        | BEQ |   | FIXBF4     |                   |
| 0652 | 7E | 12 | 5E |        | JMP |   | PRNU27     | FINISH PROCESS    |
| 0655 | CE | 15 | E4 | FIXBF4 | LDX |   | #LINBUF    | SET POINTER       |
| 0658 | DF | DE |    |        | STX |   | BUFEND     |                   |
| 065A | 96 | 4B |    |        | LDA | A | LLN        | GET LINE LENGTH   |
| 065C | 90 | C6 |    |        | SUB | A | WIDTH      | CALC. COLUMN NUM. |
| 065E | 4C |    |    |        | INC | A |            |                   |
| 065F | 97 | 42 |    |        | STA | A | COLCNT     | SAVE COUNT        |
| 0661 | 5F |    |    |        | CLR | B |            |                   |
| 0662 | 96 | C6 |    |        | LDA | A | WIDTH      | GET WIDTH         |
| 0664 | 9B | DF |    |        | ADD | A | BUFEND+1   | ADD TO BUFEND     |
| 0666 | D9 | DE |    |        | ADC | B | BUFEND     |                   |
| 0668 | 97 | DF |    |        | STA | A | BUFEND+1   | SAVE RESULT       |
| 066A | D7 | DE |    |        | STA | B | BUFEND     |                   |
| 066C | 39 |    |    |        | RTS |   |            | RETURN            |

## \* RETURN FROM MACRO

|      |    |    |    |        |     |   |         |                   |
|------|----|----|----|--------|-----|---|---------|-------------------|
| 066D | 7F | 00 | 88 | RETMAC | CLR |   | FINMAC  | CLEAR FLAG        |
| 0670 | 32 |    |    |        | PUL | A |         | FIX STACK         |
| 0671 | 32 |    |    |        | PUL | A |         |                   |
| 0672 | 32 |    |    |        | PUL | A |         |                   |
| 0673 | 97 | D4 |    |        | STA | A | CNTFLG  | RESTORE FLAG      |
| 0675 | CE | 00 | 60 |        | LDX |   | #NUMPNT |                   |
| 0678 | 32 |    |    | RETMA2 | PUL | A |         | RESTORE VALUES    |
| 0679 | A7 | 00 |    |        | STA | A | 0, X    |                   |
| 067B | 08 |    |    |        | INX |   |         |                   |
| 067C | 8C | 00 | 6D |        | CPX |   | #LEFT   | FINISHED?         |
| 067F | 26 | F7 |    |        | BNE |   | RETMA2  |                   |
| 0681 | 7A | 00 | 8B |        | DEC |   | MACCNT  | DEC MACRO COUNTER |
| 0684 | 96 | 6C |    |        | LDA | A | ATFLG   | DOING AT?         |
| 0686 | 27 | 0B |    |        | BEQ |   | GETCH1  |                   |
| 0688 | 39 |    |    |        | RTS |   |         | RETURN            |

## \* CLEAR 'ENDLIN' AND GET CHARACTER

|      |    |    |    |        |     |  |        |  |
|------|----|----|----|--------|-----|--|--------|--|
| 0689 | 7F | 00 | BF | CLRGET | CLR |  | ENDLIN |  |
|------|----|----|----|--------|-----|--|--------|--|

## \* GET NEXT CHARACTER

|      |    |    |    |        |     |          |                  |
|------|----|----|----|--------|-----|----------|------------------|
| 068C | BD | 14 | 71 | GETCHR | JSR | TSTBRK   | TEST FOR BREAK   |
| 068F | 96 | 88 |    |        | LDA | A FINMAC | FINISH MACRO?    |
| 0691 | 26 | DA |    |        | BNE | RETMAC   |                  |
| 0693 | 96 | 62 |    | GETCH1 | LDA | A EXCHR  | GET EXTRA CHAR.  |
| 0695 | 27 | 03 |    |        | BEQ | GETCH2   |                  |
| 0697 | 7E | 11 | B6 |        | JMP | FTCHNM   | GET NUMBER       |
| 069A | 96 | 65 |    | GETCH2 | LDA | A CMFLG  | COMMAND?         |
| 069C | 27 | 0D |    |        | BEQ | GETCH3   |                  |
| 069E | DE | E6 |    | GETC22 | LDX | CMNPNT   | SET POINTER      |
| 06A0 | A6 | 00 |    |        | LDA | A 0, X   | GET CHARACTER    |
| 06A2 | 81 | 0D |    |        | CMP | A #\$D   | C. R. ?          |
| 06A4 | 27 | 01 |    |        | BEQ | GETC25   |                  |
| 06A6 | 08 |    |    |        | INX |          | BUMP THE POINTER |
| 06A7 | DF | E6 |    | GETC25 | STX | CMNPNT   | SAVE IT          |
| 06A9 | 20 | 29 |    |        | BRA | FETCHR   |                  |
| 06AB | 96 | 9E |    | GETCH3 | LDA | A SBFLG  | SPECIAL BUFFER?  |
| 06AD | 26 | EF |    |        | BNE | GETC22   |                  |
| 06AF | 96 | 66 |    |        | LDA | A MBFLG  | MACRO BUFFER?    |
| 06B1 | 27 | 08 |    |        | BEQ | GETCH4   |                  |
| 06B3 | BD | 0E | E3 |        | JSR | INMAC    | GET CHARACTER    |
| 06B6 | 26 | 1C |    |        | BNE | FETCHR   |                  |
| 06B8 | 7E | 0F | 7D |        | JMP | MCEND    | FINISH MACRO     |
| 06BB | 96 | 90 |    | GETCH4 | LDA | A SPIFLG | SPECIAL INPUT?   |
| 06BD | 27 | 05 |    |        | BEQ | GETCH5   |                  |
| 06BF | BD | 02 | 06 |        | JSR | INCH     | GET CHARACTER    |
| 06C2 | 20 | 10 |    |        | BRA | FETCHR   |                  |
| 06C4 | 96 | 8F |    | GETCH5 | LDA | A DFMFLG | DEFINE MACRO?    |
| 06C6 | 9A | 69 |    |        | ORA | A NOCR   |                  |
| 06C8 | 26 | 07 |    |        | BNE | GETCH6   |                  |
| 06CA | 96 | 82 |    |        | LDA | A TABFLG | TABS?            |
| 06CC | 27 | 03 |    |        | BEQ | GETCH6   |                  |
| 06CE | 7E | 0B | 10 |        | JMP | DOTAB    | GO DO TAB        |
| 06D1 | BD | 14 | BA | GETCH6 | JSR | INCHR    | GET CHARACTER    |

## \* FETCH AND CHECK CHARACTER

|      |    |    |    |        |     |          |                |
|------|----|----|----|--------|-----|----------|----------------|
| 06D4 | 81 | 1A |    | FETCHR | CMP | A #\$1A  | END OF FILE?   |
| 06D6 | 26 | 05 |    |        | BNE | FETCH2   |                |
| 06D8 | 97 | 6A |    |        | STA | A DONE   | SET FLAG       |
| 06DA | 7E | 09 | 51 |        | JMP | FINISH   |                |
| 06DD | 81 | 0D |    | FETCH2 | CMP | A #\$D   | C. R. ?        |
| 06DF | 26 | 29 |    |        | BNE | FETCH3   |                |
| 06E1 | 7F | 00 | 76 |        | CLR | SPSPF    | SPECIAL SPACE? |
| 06E4 | D6 | 69 |    |        | LDA | B NOCR   |                |
| 06E6 | 26 | 32 |    |        | BNE | FETC35   |                |
| 06E8 | D6 | 9E |    |        | LDA | B SBFLG  | CHECK FLAG     |
| 06EA | 26 | 07 |    |        | BNE | FETC22   |                |
| 06EC | D6 | BF |    |        | LDA | B ENDLIN | END OF LINE?   |
| 06EE | 27 | 03 |    |        | BEQ | FETC22   |                |
| 06F0 | BD | 09 | 2A |        | JSR | FLUSHB   | FLUSH BUFFER   |
| 06F3 | 97 | BF |    | FETC22 | STA | A ENDLIN | SET FLAGS      |
| 06F5 | 7F | 00 | 9E |        | CLR | SBFLG    |                |

|      |    |    |        |        |        |                |
|------|----|----|--------|--------|--------|----------------|
| 06F8 | D6 | 8F |        | LDA B  | DFMFLG | TEST           |
| 06FA | DA | D4 |        | ORA B  | CNTFLG |                |
| 06FC | 26 | 08 |        | BNE    | FETC25 |                |
| 06FE | D6 | C8 |        | LDA B  | FILFLG | TEST FILL      |
| 0700 | 27 | 04 |        | BEQ    | FETC25 |                |
| 0702 | 86 | 20 |        | LDA A  | #\$20  | SETUP SPACE    |
| 0704 | 20 | 19 |        | BRA    | FETC36 |                |
| 0706 | 86 | 0D | FETC25 | LDA A  | #\$D   | SETUP C. R.    |
| 0708 | 20 | 15 |        | BRA    | FETC36 |                |
| 070A | D6 | 8F | FETCH3 | LDA B  | DFMFLG | GET FLAG       |
| 070C | DA | 8C |        | ORA B  | PASFLG |                |
| 070E | 26 | 0A |        | BNE    | FETC35 |                |
| 0710 | D6 | 75 |        | LDA B  | PASCHR | PASS CHAR?     |
| 0712 | 27 | 0F |        | BEQ    | FETCH4 |                |
| 0714 | 81 | 20 |        | CMP A  | #\$20  | IS IT A SPACE? |
| 0716 | 26 | 02 |        | BNE    | FETC35 |                |
| 0718 | 8A | 80 |        | ORA A  | #\$80  | SET PARITY     |
| 071A | 5F |    | FETC35 | CLR B  |        | CLEAR FLAGS    |
| 071B | D7 | BF |        | STA B  | ENDLIN |                |
| 071D | D7 | 75 |        | STA B  | PASCHR |                |
| 071F | 7F | 00 | B7     | FETC36 | CLR    | CAP            |
| 0722 | 39 |    | FETC37 | RTS    |        | RETURN         |
| 0723 | 81 | 1F | FETCH4 | CMP A  | #\$1F  | CHECK CHAR     |
| 0725 | 22 | 03 |        | BHI    | FETC45 |                |
| 0727 | 7E | 06 | 8C     | JMP    | GETCHR | GO GET CHAR.   |
| 072A | D6 | BF | FETC45 | LDA B  | ENDLIN | END OF LINE?   |
| 072C | 27 | 1A |        | BEQ    | FETCH5 |                |
| 072E | 81 | 2E |        | CMP A  | #'     | PERIOD?        |
| 0730 | 27 | 06 |        | BEQ    | FETC47 |                |
| 0732 | 81 | 3A |        | CMP A  | #':    | COLON?         |
| 0734 | 26 | 05 |        | BNE    | FETC48 |                |
| 0736 | 97 | 6F |        | STA A  | NOFL   | SET NO FLUSH   |
| 0738 | 7E | 07 | DF     | FETC47 | JMP    | COMAND         |
| 073B | 81 | 20 | FETC48 | CMP A  | #\$20  | DO COMMAND     |
| 073D | 26 | 09 |        | BNE    | FETCH5 | SPACE?         |
| 073F | 97 | 76 |        | STA A  | SPSPF  | SET FLAG       |
| 0741 | BD | 09 | 2A     | JSR    | FLUSHB | FLUSH BUFFER   |
| 0744 | 86 | A0 | FETC49 | LDA A  | #\$A0  |                |
| 0746 | 20 | D2 |        | BRA    | FETC35 |                |
| 0748 | D6 | 76 | FETCH5 | LDA B  | SPSPF  | TEST FLAG      |
| 074A | 27 | 07 |        | BEQ    | FETC55 |                |
| 074C | 81 | 20 |        | CMP A  | #\$20  | IS IT SPACE?   |
| 074E | 27 | F4 |        | BEQ    | FETC49 |                |
| 0750 | 7F | 00 | 76     | CLR    | SPSPF  | CLEAR OUT      |
| 0753 | D6 | 65 | FETC55 | LDA B  | CMFLG  | COMMAND?       |
| 0755 | DA | 66 |        | ORA B  | MBFLG  |                |
| 0757 | DA | 8D |        | ORA B  | NONUMS |                |
| 0759 | DA | 90 |        | ORA B  | SPIFLG |                |
| 075B | DA | 9E |        | ORA B  | SBFLG  |                |
| 075D | 26 | 1C |        | BNE    | FETCH6 |                |
| 075F | 91 | C0 |        | CMP A  | TAB    | CHECK IF TAB   |
| 0761 | 26 | 18 |        | BNE    | FETCH6 |                |
| 0763 | DE | 80 |        | LDX    | NXTTAB | GET NEXT TAB   |
| 0765 | D6 | 42 |        | LDA B  | COLCNT | GET COUNT      |

|      |    |       |        |       |        |                  |
|------|----|-------|--------|-------|--------|------------------|
| 0767 | 6D | 00    | FETC57 | TST   | 0,X    | CHECK            |
| 0769 | 27 | AF    |        | BEQ   | FETC35 |                  |
| 076B | E1 | 00    |        | CMP B | 0,X    | FINISHED?        |
| 076D | 25 | 03    |        | BLO   | FETC58 |                  |
| 076F | 08 |       |        | INX   |        | BUMP THE POINTER |
| 0770 | 20 | F5    |        | BRA   | FETC57 |                  |
| 0772 | DF | 80    | FETC58 | STX   | NXTTAB | SAVE POINTER     |
| 0774 | 96 | C1    |        | LDA A | TFILL  |                  |
| 0776 | 97 | 82    |        | STA A | TABFLG | SET FLAG         |
| 0778 | 7E | 07 1A | FETC59 | JMP   | FETC35 |                  |
| 077B | D6 | 8D    | FETCH6 | LDA B | NONUMS | NUMBERS?         |
| 077D | 26 | 1D    |        | BNE   | FETCH7 |                  |
| 077F | 81 | 23    |        | CMP A | #'#    | POUND SIGN?      |
| 0781 | 27 | 04    |        | BEQ   | FETC65 |                  |
| 0783 | 81 | 25    |        | CMP A | #'%    | PERCENT SIGN?    |
| 0785 | 26 | 15    |        | BNE   | FETCH7 |                  |
| 0787 | D6 | 69    | FETC65 | LDA B | NOCR   | DO C. R. ?       |
| 0789 | 37 |       |        | PSH B |        |                  |
| 078A | 97 | 69    |        | STA A | NOCR   | SAVE VALUES      |
| 078C | 97 | 7F    |        | STA A | NOEXP  |                  |
| 078E | BD | 11 9E |        | JSR   | CLRNUM | CLEAR NUMBER     |
| 0791 | BD | 12 88 |        | JSR   | PRNU32 | PROCESS NUMBER   |
| 0794 | 33 |       |        | PUL B |        |                  |
| 0795 | D7 | 69    |        | STA B | NOCR   | RESTORE VALUES   |
| 0797 | 24 | DF    |        | BCC   | FETC59 |                  |
| 0799 | 7E | 06 8C |        | JMP   | GETCHR | GET CHARACTER    |
| 079C | 81 | 5C    | FETCH7 | CMP A | #'\    | BACK SLASH?      |
| 079E | 26 | 05    |        | BNE   | FETC75 |                  |
| 07A0 | 97 | 75    |        | STA A | PASCHR | SET PASS CHAR.   |
| 07A2 | 7E | 06 89 |        | JMP   | CLRGET | GO GET IT        |
| 07A5 | 81 | 40    | FETC75 | CMP A | #'@    | AT SIGN?         |
| 07A7 | 27 | 1C    |        | BEQ   | CAPIT  |                  |
| 07A9 | 81 | 5E    |        | CMP A | #\$5E  | UP ARROW?        |
| 07AB | 27 | 21    |        | BEQ   | SETCAP |                  |
| 07AD | D6 | B7    |        | LDA B | CAP    | CHECK MODE       |
| 07AF | DA | B8    |        | ORA B | SCAP   |                  |
| 07B1 | DA | 66    |        | ORA B | MBFLG  |                  |
| 07B3 | 26 | C3    |        | BNE   | FETC59 |                  |
| 07B5 | 81 | 41    |        | CMP A | #'A    | CHECK IF LETTER  |
| 07B7 | 25 | BF    |        | BLO   | FETC59 |                  |
| 07B9 | 81 | 5A    |        | CMP A | #'Z    |                  |
| 07BB | 22 | BB    |        | BHI   | FETC59 |                  |
| 07BD | D6 | 77    |        | LDA B | DOCAP  | DO CAP?          |
| 07BF | 27 | B7    |        | BEQ   | FETC59 |                  |
| 07C1 | 8B | 20    |        | ADD A | #\$20  | FORCE TO LOWER   |
| 07C3 | 20 | B3    | FETCH8 | BRA   | FETC59 |                  |

\* CAP SINGLE LETTER

|      |    |       |        |       |        |            |
|------|----|-------|--------|-------|--------|------------|
| 07C5 | D6 | 77    | CAPIT  | LDA B | DOCAP  | CHECK MODE |
| 07C7 | 27 | FA    |        | BEQ   | FETCH8 |            |
| 07C9 | 97 | B7    |        | STA A | CAP    | SET FLAG   |
| 07CB | 7E | 06 89 | CAPIT2 | JMP   | CLRGET |            |

*of back to 0000*

## \* CAP STRING OF LETTERS

|      |    |    |        |       |        |                |
|------|----|----|--------|-------|--------|----------------|
| 07CE | D6 | 77 | SETCAP | LDA B | DOCAP  | CHECK MODE     |
| 07D0 | 27 | F1 |        | BEQ   | FETCH8 |                |
| 07D2 | D6 | B8 |        | LDA B | SCAP   | GET FLAG       |
| 07D4 | 27 | 05 |        | BEQ   | SETCA2 |                |
| 07D6 | 7F | 00 | B8     | CLR   | SCAP   | CLEAR IT       |
| 07D9 | 20 | F0 |        | BRA   | CAPIT2 |                |
| 07DB | 97 | B8 | SETCA2 | STA A | SCAP   | SET FOR STRING |
| 07DD | 20 | EC |        | BRA   | CAPIT2 |                |

## \* COMMAND PROCESSOR

|      |    |    |    |        |       |           |                   |
|------|----|----|----|--------|-------|-----------|-------------------|
| 07DF | 7F | 00 | BF | COMAND | CLR   | ENDLIN    | CLEAR FLAG        |
| 07E2 | CE | 18 | 09 |        | LDX   | #CMNDBF-1 | SET POINTER       |
| 07E5 | 08 |    |    | COMAN2 | INX   |           | BUMP IT           |
| 07E6 | 7C | 00 | 69 |        | INC   | NOCR      | SET NO C. R.      |
| 07E9 | DF | F2 |    |        | STX   | TEMP6     | SAVE POINTER      |
| 07EB | 7C | 00 | 8D |        | INC   | NONUMS    |                   |
| 07EE | BD | 06 | 8C |        | JSR   | GETCHR    | GET CHARACTER     |
| 07F1 | DE | F2 |    |        | LDX   | TEMP6     | RESTORE POINTER   |
| 07F3 | 7F | 00 | 69 |        | CLR   | NOCR      | CLEAR FLAG        |
| 07F6 | 7F | 00 | 8D |        | CLR   | NONUMS    |                   |
| 07F9 | A7 | 00 |    |        | STA A | 0, X      | PUT CHARACTER     |
| 07FB | 81 | 0D |    |        | CMP A | #\$D      | WAS IT A C. R. ?  |
| 07FD | 26 | E6 |    |        | BNE   | COMAN2    |                   |
| 07FF | 7F | 00 | BF |        | CLR   | ENDLIN    | RESET END LINE    |
| 0802 | CE | 18 | 0A |        | LDX   | #CMNDBF   | SET POINTER       |
| 0805 | A6 | 00 |    | COMAN3 | LDA A | 0, X      | GET CHARACTER     |
| 0807 | 08 |    |    |        | INX   |           | BUMP THE POINTER  |
| 0808 | E6 | 00 |    |        | LDA B | 0, X      | GET NEXT CHAR     |
| 080A | 08 |    |    |        | INX   |           | BUMP              |
| 080B | DF | E6 |    |        | STX   | CMNPNT    | SAVE THE POINTER  |
| 080D | 81 | 5F |    |        | CMP A | #\$5F     | LOWER CASE?       |
| 080F | 23 | 04 |    |        | BLS   | COMAN4    |                   |
| 0811 | 80 | 20 |    |        | SUB A | #\$20     | SET TO UPPER      |
| 0813 | C0 | 20 |    |        | SUB B | #\$20     |                   |
| 0815 | CE | 09 | 5C | COMAN4 | LDX   | #CMNDT    | POINT TO TABLE    |
| 0818 | A1 | 00 |    | COMAN5 | CMP A | 0, X      | COMPARE FIRST     |
| 081A | 26 | 0C |    |        | BNE   | COMAN7    |                   |
| 081C | E1 | 01 |    |        | CMP B | 1, X      | COMPARE SECOND    |
| 081E | 26 | 08 |    |        | BNE   | COMAN7    |                   |
| 0820 | 97 | 65 |    |        | STA A | CMFLG     | FOUND COMMAND     |
| 0822 | EE | 02 |    |        | LDX   | 2, X      | GET ADDRESS       |
| 0824 | AD | 00 |    | COMAN6 | JSR   | 0, X      | GO DO IT          |
| 0826 | 20 | 2F |    |        | BRA   | FINCM     | FINISH COMMAND    |
| 0828 | 08 |    |    | COMAN7 | INX   |           | BUMP POINTER      |
| 0829 | 08 |    |    |        | INX   |           |                   |
| 082A | 08 |    |    |        | INX   |           |                   |
| 082B | 08 |    |    |        | INX   |           |                   |
| 082C | 8C | 0A | 3C |        | CPX   | #TBLEND   | TABLE END?        |
| 082F | 26 | E7 |    |        | BNE   | COMAN5    |                   |
| 0831 | 36 |    |    |        | PSH A |           |                   |
| 0832 | 96 | 8B |    |        | LDA A | MACCNT    | TEST MACRO NUMBER |

|      |    |    |        |     |   |         |                 |
|------|----|----|--------|-----|---|---------|-----------------|
| 0834 | 81 | 07 |        | CMP | A | #7      |                 |
| 0836 | 32 |    |        | PUL | A |         |                 |
| 0837 | 24 | 15 |        | BHS |   | MACOVF  | OVERFLOW?       |
| 0839 | CE | 19 | 72     | LDX |   | #MACTBL | POINT TO MACROS |
| 083C | 9C | FA | COMAN8 | CPX |   | MACEND  | END?            |
| 083E | 27 | 17 |        | BEQ |   | FINCM   |                 |
| 0840 | A1 | 00 |        | CMP | A | 0,X     | COMPARE FIRST   |
| 0842 | 26 | 04 |        | BNE |   | COMAN9  |                 |
| 0844 | E1 | 01 |        | CMP | B | 1,X     | COMPARE SECOND  |
| 0846 | 27 | 29 |        | BEQ |   | CALMAC  |                 |
| 0848 | 08 |    | COMAN9 | INX |   |         | FIND NEXT ENTRY |
| 0849 | 08 |    |        | INX |   |         |                 |
| 084A | 08 |    |        | INX |   |         |                 |
| 084B | 08 |    |        | INX |   |         |                 |
| 084C | 20 | EE |        | BRA |   | COMAN8  |                 |

## \* MACRO OVERFLOW ERROR

|      |    |    |    |        |     |         |                 |
|------|----|----|----|--------|-----|---------|-----------------|
| 084E | CE | 15 | 79 | MACOVF | LDX | #OVFSTR | POINT TO STRING |
| 0851 | BD | 14 | 90 |        | JSR | PSTRNG  | OUTPUT IT       |
| 0854 | 7E | 02 | 09 |        | JMP | MON     |                 |

## \* FINISH COMMAND

|      |    |    |       |        |     |        |                  |
|------|----|----|-------|--------|-----|--------|------------------|
| 0857 | 96 | 8A | FINCM | LDA    | A   | IFFLG  | CHECK FOR IF     |
| 0859 | 27 | 0A |       | BEQ    |     | FINCM1 |                  |
| 085B | 4F |    |       | CLR    | A   |        | CLEAR FLAGS      |
| 085C | 97 | BF |       | STA    | A   | ENDLIN |                  |
| 085E | 97 | 65 |       | STA    | A   | CMFLG  |                  |
| 0860 | 97 | 8A |       | STA    | A   | IFFLG  |                  |
| 0862 | 7E | 08 | 05    | JMP    |     | COMAN3 | GO DO COMMAND    |
| 0865 | 7F | 00 | 6F    | FINCM1 | CLR | NOFL   | CLEAR FLAGS      |
| 0868 | 7F | 00 | 65    | FINCM2 | CLR | CMFLG  |                  |
| 086B | 7C | 00 | BF    | FINCM4 | INC | ENDLIN | SET END LINE     |
| 086E | 7E | 06 | 8C    |        | JMP | GETCHR | GO GET CHARACTER |

## \* CALL MACRO

|      |    |    |        |     |   |        |                 |
|------|----|----|--------|-----|---|--------|-----------------|
| 0871 | DF | B0 | CALMAC | STX |   | XMAC   | SAVE POINTER    |
| 0873 | CE | 00 | 6C     | LDX |   | #ATFLG | POINT TO VALUES |
| 0876 | A6 | 00 | CALMA2 | LDA | A | 0,X    | GET VALUE       |
| 0878 | 36 |    |        | PSH | A |        | PUT ON STACK    |
| 0879 | 6F | 00 |        | CLR |   | 0,X    | CLEAR IT        |
| 087B | 09 |    |        | DEX |   |        |                 |
| 087C | 8C | 00 | 5F     | CPX |   | #INC   | FINISHED?       |
| 087F | 26 | F5 |        | BNE |   | CALMA2 |                 |
| 0881 | 96 | D4 |        | LDA | A | CNTFLG | SAVE CNT FLAG   |
| 0883 | 36 |    |        | PSH | A |        |                 |
| 0884 | 7F | 00 | D4     | CLR |   | CNTFLG |                 |
| 0887 | 7C | 00 | 8B     | INC |   | MACCNT | BUMP COUNTER    |
| 088A | DE | B0 |        | LDX |   | XMAC   | RESTORE COUNT   |
| 088C | 86 | 0F |        | LDA | A | #\$F   |                 |
| 088E | 97 | 66 |        | STA | A | MBFLG  | SET FLAG        |
| 0890 | 97 | BF |        | STA | A | ENDLIN |                 |



|      |    |    |    |     |        |                 |
|------|----|----|----|-----|--------|-----------------|
| 0892 | EE | 02 |    | LDX | 2, X   | GET ADDRESS     |
| 0894 | DF | 67 |    | STX | MBFPNT | SAVE AS POINTER |
| 0896 | 7E | 03 | 3D | JMP | PROC   | GO PROCESS      |

## \* PRINT C. R. AND L. F.

|      |    |    |    |        |     |             |                |
|------|----|----|----|--------|-----|-------------|----------------|
| 0899 | BD | 13 | ED | PCRLF  | JSR | PUSHX       | SAVE X         |
| 089C | C6 | 18 |    |        | LDA | B #24       | SET COUNT      |
| 089E | CE | 15 | 00 |        | LDX | #FIXWD+\$EC |                |
| 08A1 | BD | 0B | ED |        | JSR | SENY9       | CHECK ACTIVITY |
| 08A4 | 81 | 2A |    |        | CMP | A #\$2A     | OVERFLOW?      |
| 08A6 | 26 | CE |    |        | BNE | CALMA2      |                |
| 08A8 | 8D | 07 |    | PCRLF2 | BSR | SCRLF       | DO CR AND LF   |
| 08AA | BD | 14 | 71 |        | JSR | TSTBRK      | BREAK?         |
| 08AD | BD | 13 | FF | PCRLF4 | JSR | PULLX       | RESTORE X      |
| 08B0 | 39 |    |    |        | RTS |             | RETURN         |

## \* SPECIAL CARRIAGE RETURN LINE FEED

|      |    |    |    |        |     |          |                    |
|------|----|----|----|--------|-----|----------|--------------------|
| 08B1 | CE | 15 | 43 | SCRLF  | LDX | #CRLFST  | POINT TO STRING    |
| 08B4 | A6 | 00 |    | SCRLF1 | LDA | A 0, X   | GET CHARACTER      |
| 08B6 | 81 | 04 |    |        | CMP | A #4     | IS IT 4?           |
| 08B8 | 27 | 06 |    |        | BEQ | SCRLF3   |                    |
| 08BA | BD | 14 | 9F |        | JSR | OUTCHR   | OUTPUT CHAR.       |
| 08BD | 08 |    |    |        | INX |          | BUMP POINTER       |
| 08BE | 20 | F4 |    |        | BRA | SCRLF1   |                    |
| 08C0 | 96 | 79 |    | SCRLF3 | LDA | A NOOUT  | DO OUTPUT?         |
| 08C2 | 26 | 18 |    |        | BNE | SCRLF4   |                    |
| 08C4 | 96 | 94 |    |        | LDA | A TLPP   | LINES PER PAGE?    |
| 08C6 | 27 | 14 |    |        | BEQ | SCRLF4   |                    |
| 08C8 | 7C | 00 | 7A |        | INC | TOUTL    | BUMP LINE COUNT    |
| 08CB | 91 | 7A |    |        | CMP | A TOUTL  | MAX?               |
| 08CD | 22 | 0D |    |        | BHI | SCRLF4   |                    |
| 08CF | 7F | 00 | 7A |        | CLR | TOUTL    | CLEAR COUNT        |
| 08D2 | BD | 02 | 06 |        | JSR | INCH     | WAIT FOR CHARACTER |
| 08D5 | 81 | 0D |    |        | CMP | A #\$D   | IS IT C. R. ?      |
| 08D7 | 26 | 03 |    |        | BNE | SCRLF4   |                    |
| 08D9 | 7E | 02 | 09 |        | JMP | MON      | EXIT PROCESSOR     |
| 08DC | 96 | 91 |    | SCRLF4 | LDA | A DIVFLG | DIVERTING?         |
| 08DE | 26 | 43 |    |        | BNE | SCRLF9   |                    |
| 08E0 | 7C | 00 | 4D |        | INC | LINCNT   | BUMP LINE COUNTER  |
| 08E3 | 96 | 4D |    | SCRLF5 | LDA | A LINCNT |                    |
| 08E5 | CE | 17 | D8 |        | LDX | #TRAPS   | POINT TO TRAPS     |
| 08E8 | A1 | 00 |    | SCRLF5 | CMP | A 0, X   | LINE = TRAP?       |
| 08EA | 27 | 24 |    |        | BEQ | SCRLF8   |                    |
| 08EC | 08 |    |    |        | INX |          | GET TO NEXT        |
| 08ED | 08 |    |    |        | INX |          |                    |
| 08EE | 08 |    |    |        | INX |          |                    |
| 08EF | 8C | 18 | 08 |        | CPX | #TRPEND  | END?               |
| 08F2 | 26 | F4 |    |        | BNE | SCRLF5   |                    |
| 08F4 | 91 | 4F |    | SCRLF6 | CMP | A PGL    | BOTTOM OF PAGE?    |
| 08F6 | 23 | 2B |    |        | BLS | SCRLF9   |                    |
| 08F8 | 96 | 5E |    |        | LDA | A NPGN   | GET NEW PAGE NUM.  |
| 08FA | 27 | 07 |    |        | BEQ | SCRLF7   |                    |

|                       |    |    |    |         |       |         |                      |  |
|-----------------------|----|----|----|---------|-------|---------|----------------------|--|
| 08FC                  | 7F | 00 | 5E |         | CLR   | MPGN    |                      |  |
| 08FF                  | 97 | 74 |    |         | STA A | PGN     | SET PAGE NUMBER      |  |
| 0901                  | 20 | 03 |    |         | BRA   | SCRLF5  |                      |  |
| 0903                  | 7C | 00 | 74 | SCRLF7  | INC   | PGN     | BUMP BY ONE          |  |
| 0906                  | 86 | 01 |    | SCRLF5  | LDA A | #1      | SET UP 1             |  |
| 0908                  | 97 | 4D |    |         | STA A | LINCNT  | SET LINE COUNT       |  |
| 090A                  | 96 | B5 |    |         | LDA A | SUPL    | CHECK FLAG           |  |
| 090C                  | 26 | 15 |    |         | BNE   | SCRLF9  |                      |  |
| 090E                  | 20 | D3 |    |         | BRA   | SCRLF5  |                      |  |
| 0910                  | 7C | 00 | 6C | SCRLF8  | INC   | ATFLG   | BUMP AT COUNT        |  |
| 0913                  | 96 | BF |    |         | LDA A | ENDLIN  | SAVE STATUS          |  |
| 0915                  | 36 |    |    |         | PSH A |         |                      |  |
| 0916                  | A6 | 01 |    |         | LDA A | 1, X    | GET NAME             |  |
| 0918                  | E6 | 02 |    |         | LDA B | 2, X    |                      |  |
| 091A                  | BD | 08 | 15 | SCRLF85 | JSR   | COMAN4  | GO PROCESS           |  |
| 091D                  | 7A | 00 | 6C |         | DEC   | ATFLG   | DEC COUNT            |  |
| 0920                  | 32 |    |    |         | PUL A |         |                      |  |
| 0921                  | 97 | BF |    |         | STA A | ENDLIN  | RESTORE STATUS       |  |
| 0923                  | 39 |    |    | SCRLF9  | RTS   |         | RETURN               |  |
| * BREAK FILLED BUFFER |    |    |    |         |       |         |                      |  |
| 0924                  | 86 | 01 |    | BRAK    | LDA A | #1      | SETUP 1              |  |
| 0926                  | 91 | 4D |    |         | CMP A | LINCNT  | TEST LINE COUNT      |  |
| 0928                  | 27 | B9 |    |         | BEQ   | SCRLF5  |                      |  |
| * FLUSH WORK BUFFER   |    |    |    |         |       |         |                      |  |
| 092A                  | 96 | 6F |    | FLUSHB  | LDA A | NOFL    | NO FLUSH?            |  |
| 092C                  | 26 | 1F |    |         | BNE   | FLUSH5  |                      |  |
| 092E                  | 86 | 20 |    | FLUSH   | LDA A | #\$20   | SET UP SPACE         |  |
| 0930                  | DE | DA |    |         | LDX   | BUFEND  | SET POINTER          |  |
| 0932                  | 8C | 15 | E4 |         | CPX   | #LINBUF | BEGINNING OF BUFFER? |  |
| 0935                  | 27 | 16 |    |         | BEQ   | FLUSH5  |                      |  |
| 0937                  | DF | A8 |    |         | STX   | STPOUT  | SET END              |  |
| 0939                  | 9C | DE |    | FLUSH2  | CPX   | BUFEND  | END?                 |  |
| 093B                  | 27 | 05 |    |         | BEQ   | FLUSH3  |                      |  |
| 093D                  | A7 | 00 |    |         | STA A | 0, X    | SAVE CHARACTER       |  |
| 093F                  | 08 |    |    |         | INX   |         | BUMP POINTER         |  |
| 0940                  | 20 | F7 |    |         | BRA   | FLUSH2  |                      |  |
| 0942                  | CE | 15 | E4 | FLUSH3  | LDX   | #LINBUF | POINT TO BUFFER      |  |
| 0945                  | 97 | 6B |    |         | STA A | FLBF    | SET FLAG             |  |
| 0947                  | BD | 04 | 32 |         | JSR   | ADJSPC  | ADJUST SPACE         |  |
| 094A                  | 7F | 00 | 6B |         | CLR   | FLBF    |                      |  |
| 094D                  | 7F | 00 | 6F | FLUSH5  | CLR   | NOFL    | CLEAR FLAG           |  |
| 0950                  | 39 |    |    |         | RTS   |         | RETURN               |  |
| * FINISH AND CLEAN UP |    |    |    |         |       |         |                      |  |
| 0951                  | 8D | D7 |    | FINISH  | BSR   | FLUSHB  | FLUSH BUFFER         |  |
| 0953                  | 7C | 00 | B5 | FINIS4  | INC   | SUPL    |                      |  |
| 0956                  | BD | 0A | 67 |         | JSR   | PAGE    | GO PAGE              |  |
| 0959                  | 7E | 02 | 09 |         | JMP   | MON     | EXIT                 |  |

## \* COMMAND TABLE

|      |       |       |     |        |
|------|-------|-------|-----|--------|
| 095C | 53    | CMNDT | FCC | 'SP'   |
| 095D | 50    |       |     |        |
| 095E | 0A 44 |       | FDB | SPACE  |
| 0960 | 50    |       | FCC | 'PG'   |
| 0961 | 47    |       |     |        |
| 0962 | 0A 67 |       | FDB | PAGE   |
| 0964 | 4D    |       | FCC | 'MS'   |
| 0965 | 53    |       |     |        |
| 0966 | 0A 8B |       | FDB | MULTS  |
| 0968 | 53    |       | FCC | 'SS'   |
| 0969 | 53    |       |     |        |
| 096A | 0A 99 |       | FDB | SNGLS  |
| 096C | 4E    |       | FCC | 'NJ'   |
| 096D | 4A    |       |     |        |
| 096E | 0A 9D |       | FDB | NOJST  |
| 0970 | 4A    |       | FCC | 'JU'   |
| 0971 | 55    |       |     |        |
| 0972 | 0A A1 |       | FDB | JST    |
| 0974 | 44    |       | FCC | 'DH'   |
| 0975 | 48    |       |     |        |
| 0976 | 0C 04 |       | FDB | DUBH   |
| 0978 | 44    |       | FCC | 'DW'   |
| 0979 | 57    |       |     |        |
| 097A | 0C 0F |       | FDB | DUBW   |
| 097C | 44    |       | FCC | 'DB'   |
| 097D | 42    |       |     |        |
| 097E | 0C 18 |       | FDB | DUBB   |
| 0980 | 43    |       | FCC | 'CE'   |
| 0981 | 45    |       |     |        |
| 0982 | 0C 24 |       | FDB | CENTER |
| 0984 | 42    |       | FCC | 'BR'   |
| 0985 | 52    |       |     |        |
| 0986 | 09 24 |       | FDB | BRAK   |
| 0988 | 2A    |       | FCC | '*'    |
| 0989 | 20    |       |     |        |
| 098A | 0A 66 |       | FDB | SPACE6 |
| 098C | 46    |       | FCC | 'FI'   |
| 098D | 49    |       |     |        |
| 098E | 0C B2 |       | FDB | FILL   |
| 0990 | 4E    |       | FCC | 'NF'   |
| 0991 | 46    |       |     |        |
| 0992 | 0C AB |       | FDB | NOFILL |
| 0994 | 53    |       | FCC | 'SI'   |
| 0995 | 49    |       |     |        |
| 0996 | 0C 59 |       | FDB | SIND   |
| 0998 | 50    |       | FCC | 'PI'   |
| 0999 | 49    |       |     |        |
| 099A | 0C 76 |       | FDB | PTIND  |
| 099C | 50    |       | FCC | 'PN'   |
| 099D | 4E    |       |     |        |
| 099E | 0B F7 |       | FDB | PGNUM  |
| 09A0 | 4C    |       | FCC | 'LM'   |

|      |    |    |            |
|------|----|----|------------|
| 09A1 | 4D |    |            |
| 09A2 | 0A | CB | FDB LEFTM  |
| 09A4 | 49 |    | FCC 'IN'   |
| 09A5 | 4E |    |            |
| 09A6 | 0A | DB | FDB INDNT  |
| 09A8 | 4C |    | FCC 'LN'   |
| 09A9 | 4E |    |            |
| 09AA | 0A | F1 | FDB LENTH  |
| 09AC | 4E |    | FCC 'NS'   |
| 09AD | 53 |    |            |
| 09AE | 0B | 23 | FDB NOSPC  |
| 09B0 | 52 |    | FCC 'RS'   |
| 09B1 | 53 |    |            |
| 09B2 | 0B | 26 | FDB RESPC  |
| 09B4 | 50 |    | FCC 'PL'   |
| 09B5 | 4C |    |            |
| 09B6 | 0C | 44 | FDB PAGEL  |
| 09B8 | 43 |    | FCC 'CP'   |
| 09B9 | 50 |    |            |
| 09BA | 0C | 6D | FDB STCAP  |
| 09BC | 4E |    | FCC 'NC'   |
| 09BD | 43 |    |            |
| 09BE | 0C | 72 | FDB NOCAP  |
| 09C0 | 4E |    | FCC 'NL'   |
| 09C1 | 4C |    |            |
| 09C2 | 0C | E6 | FDB NEDL   |
| 09C4 | 53 |    | FCC 'SV'   |
| 09C5 | 56 |    |            |
| 09C6 | 0D | 2D | FDB SAVS   |
| 09C8 | 4F |    | FCC 'OS'   |
| 09C9 | 53 |    |            |
| 09CA | 0D | 49 | FDB OUTSV  |
| 09CC | 41 |    | FCC 'AT'   |
| 09CD | 54 |    |            |
| 09CE | 0D | 52 | FDB ATL    |
| 09D0 | 44 |    | FCC 'DM'   |
| 09D1 | 4D |    |            |
| 09D2 | 0D | 9E | FDB DEFMAC |
| 09D4 | 41 |    | FCC 'AM'   |
| 09D5 | 4D |    |            |
| 09D6 | 0D | DC | FDB APMAC  |
| 09D8 | 52 |    | FCC 'RM'   |
| 09D9 | 4D |    |            |
| 09DA | 0D | E5 | FDB REMMAC |
| 09DC | 44 |    | FCC 'DI'   |
| 09DD | 49 |    |            |
| 09DE | 0E | 25 | FDB DIVERT |
| 09E0 | 44 |    | FCC 'DA'   |
| 09E1 | 41 |    |            |
| 09E2 | 0E | 44 | FDB DIVAPP |
| 09E4 | 53 |    | FCC 'ST'   |
| 09E5 | 54 |    |            |
| 09E6 | 0C | D2 | FDB STOP   |
| 09E8 | 54 |    | FCC 'TL'   |



```

0A31 20
0A32 0A 66      FDB  SPACE6
0A34 20      FCC  ' '
0A35 20
0A36 0A 66      FDB  SPACE6
0A38 20      FCC  ' '
0A39 20
0A3A 0A 66      FDB  SPACE6
0A3C 00      TBLEND FCB  0

```

## \* PASS FILE ROUTINE .PS

```

0A3D 7F 00 C8  PASS  CLR  FILFLG  FIX FLAGS
0A40 7C 00 8C      INC  PASFLG
0A43 39      RTS

```

## \* SPACE ROUTINE .SP N

```

0A44 BD 09 2A  SPACE  JSR  FLUSHB  FLUSH BUFFER
0A47 96 73      LDA  A  NSP  NO SPACE?
0A49 26 1B      BNE  SPACE6
0A4B BD 12 1A      JSR  CHKNUM  CHECK FOR NUMBER
0A4E 96 70      LDA  A  INNUM  GET NUMBER
0A50 26 03      BNE  SPACE2
0A52 7C 00 70      INC  INNUM  INC BY ONE
0A55 BD 0C F5  SPACE2  JSR  FNTR  FIND TRAP
0A58 91 70      CMP  A  INNUM  EQUAL?
0A5A 25 02      BLO  SPACE4
0A5C 96 70      LDA  A  INNUM  GET NUMBER
0A5E 36      SPACE4  PSH  A
0A5F BD 08 99      JSR  PCRLF  OUTPUT CR AND LF
0A62 32      PUL  A
0A63 4A      DEC  A  DEC COUNT
0A64 26 F8      BNE  SPACE4
0A66 39      SPACE6  RTS  RETURN

```

## \* PAGE ROUTINE .PG +N

```

0A67 BD 12 1A  PAGE  JSR  CHKNUM  CHECK FOR NUMBER
0A6A 24 07      BCC  PAGE2
0A6C 96 74      LDA  A  PGN  GET PAGE NUMBER
0A6E BD 12 09      JSR  FIXVAL  FIX VALUE
0A71 20 0B      BRA  PAGE4
0A73 96 73      PAGE2  LDA  A  NSP  NO SPACE?
0A75 26 13      BNE  PAGE6
0A77 96 5E      LDA  A  NPGN  GET NEW PAGE NUM.
0A79 26 03      BNE  PAGE4
0A7B 96 74      LDA  A  PGN
0A7D 4C      INC  A  BUMP BY ONE
0A7E 97 5E      PAGE4  STA  A  SAVE AS NEW
0A80 BD 09 2A      JSR  FLUSHB  FLUSH BUFFER
0A83 BD 08 99  PAGE5  JSR  PCRLF  OUTPUT CR & LF
0A86 96 5E      LDA  A  NPGN  GET NEW PAGE NUM.
0A88 26 F9      BNE  PAGE5

```

```

0A8A 39          PAGE6  RTS          RETURN
                * MULTIPLE SPACE ROUTINE .MS +N

0A8B BD 12 1A  MULTS  JSR    CHKNUM  CHECK FOR NUMBER
0A8E 24 04          BCC    MULTS2
0A90 96 70          LDA  A  INNUM    GET NUMBER
0A92 20 02          BRA    MULTS3
0A94 86 02  MULTS2 LDA  A  #2      DEFAULT IS 2
0A96 97 D2  MULTS3 STA  A  MSC     SET COUNT
0A98 39          RTS

```

\* SINGLE SPACE ROUTINE .SS

```

0A99 7F 00 D2  SNGLS  CLR    MSC     CLEAR COUNT
0A9C 39          RTS

```

\* NO ADJUST ROUTINE .NJ

```

0A9D 7F 00 D6  NOJST  CLR    JUST    CLEAR JUST FLAG
0AA0 39          RTS

```

\* SET JUSTIFICATION ROUTINE .JU C

```

0AA1 97 D6          JST    STA  A  JUST    SET FLAG
0AA3 BD 11 D8          JSR    LDNSKP  GET NEXT CHAR.
0AA6 BD 11 E6          JSR    CLSFY   CLASSIFY IT
0AA9 C1 02          CMP  B  #2
0AAB 26 09          BNE    JST15
0AAD 81 4E          CMP  A  #'N    NORMAL?
0AAF 26 06          BNE    JST2
0AB1 4F          JST1  CLR  A
0AB2 97 CE          STA  A  CNJ
0AB4 97 D0          STA  A  RTJ
0AB6 39          JST15 RTS          RETURN
0AB7 81 52  JST2  CMP  A  #'R    RIGHT HAND?
0AB9 26 06          BNE    JST3
0ABB 7F 00 CE          CLR  CNJ    FIX FLAGS
0ABE 97 D0          STA  A  RTJ
0AC0 39          RTS
0AC1 81 43  JST3  CMP  A  #'C    CENTERED?
0AC3 26 EC          BNE    JST1
0AC5 7F 00 D0          CLR  RTJ    FIX FLAGS
0AC8 97 CE          STA  A  CNJ
0ACA 39  JST4  RTS          RETURN

```

\* SET LEFT MARGIN .LM +N

```

0ACB BD 12 1A  LEFTM  JSR    CHKNUM  CHECK FOR NUMBER
0ACE 24 0A          BCC    LEFTM2
0AD0 96 4E          LDA  A  LFM    GET MARGIN
0AD2 BD 12 09          JSR    FIXVAL  FIX VALUE
0AD5 2A 01          BPL    LEFTM1
0AD7 4F          CLR  A

```

```

0AD8 97 4E      LEFTM1 STA A LFM      SET NEW VALUE
0ADA 39        LEFTM2 RTS          RETURN

```

\* SET INDENT . IN +N

```

0ADB BD 09 2A  INDNT JSR FLUSHB  FLUSH BUFFER
0ADE BD 12 1A      JSR CHKNUM  CHECK FOR NUMBER
0AE1 24 F7        BCC LEFTM2
0AE3 96 48        LDA A IND    GET INDENT
0AE5 BD 12 09      JSR FIXVAL  FIX VALUE
0AE8 2A 01        BPL INDNT2
0AEA 4F          CLR A
0AEB 90 48      INDNT2 SUB A IND    SET INDENT
0AED 97 B3      STA A TIND  SAVE AS TEMP
0AEF 20 14      BRA LENT25

```

\* SET LENGTH OF LINE . LN +N

```

0AF1 BD 12 1A  LENTH JSR CHKNUM  CHECK FOR NUMBER
0AF4 24 19      BCC LENTH5
0AF6 96 4B      LDA A LLN    GET LENGTH
0AF8 BD 12 09      JSR FIXVAL  FIX VALUE
0AFB 81 0E      CMP A #14   14 OR LESS?
0AFD 22 02      BHI LENTH2
0AFF 86 0F      LDA A #15   FORCE TO 15
0B01 90 4B      LENTH2 SUB A LLN  SET NEW
0B03 97 B4      STA A TLLN  SAVE AS TEMP
0B05 DE DA      LENT25 LDX BUFPNT CHECK POINTER
0B07 8C 15 E4    CPX #LINBUF
0B0A 26 03      BNE LENTH5
0B0C 7E 14 14    JMP FIXWD   GO FIX WIDTH
0B0F 39        LENTH5 RTS  RETURN

```

\* DO NECESSARY TABBING

```

0B10 D6 42      DOTAB LDA B COLCNT  GET COUNT
0B12 DE 80      LDX NXTTAB  POINT TO TAB
0B14 E1 00      CMP B 0,X   COMPARE
0B16 24 05      BHS DOTAB2
0B18 96 C1      LDA A TFILL GET FILL CHAR.
0B1A 7E 07 0A    JMP FETCH3
0B1D 7F 00 82    DOTAB2 CLR TABFLG  CLEAR FLAG
0B20 7E 06 8C    JMP GETCHR  BACK TO GET CHAR.

```

\* SET NO SPACE . NS

```

0B23 97 73      NOSPC STA A NSP    SET FLAG
0B25 39        RTS

```

\* RESTORE SPACE MODE . RS

```

0B26 7F 00 73  RESPC CLR NSP    CLEAR FLAG
0B29 39        RTS

```



## \* DEFINE TAB CHARACTER .TC C

```

0B2A BD 11 D8 TABCH JSR LDNSKP GET TO NEXT CHAR.
0B2D 81 0D          CMP A  #$D   IS IT A C. R. ?
0B2F 26 01          BNE   TABCH2
0B31 4F             CLR A
0B32 97 C0          TABCH2 STA A  TAB   SAVE TAB CHAR.
0B34 39             RTS          RETURN

```

## \* DEFINE TAB FILL CHARACTER .TF C

```

0B35 BD 11 D8 TABFIL JSR LDNSKP GET TO NEXT CHAR.
0B38 81 0D          CMP A  #$D   IS IT C. R. ?
0B3A 26 02          BNE   TABFI2
0B3C 86 A0          LDA A  #$A0   SET UNPAD SPACE
0B3E 97 C1          TABFI2 STA A  TFILL  SAVE CHAR.
0B40 39             RTS          RETURN

```

## \* DEFINE TAB COLUMNS .TA 1 2 3 4

```

0B41 CE 01 10 STAB  LDX  #TABS  POINT TO TABS
0B44 BD 13 ED STAB2 JSR  PUSHX  SAVE X
0B47 BD 12 1A          JSR  CHKNUM  CHECK FOR NUMBER
0B4A 24 0E          BCC  STAB4
0B4C BD 13 FF          JSR  PULLX  RESTORE
0B4F 96 70          LDA A  INNUM  GET NUMBER
0B51 A7 00          STA A  0, X  SAVE IT
0B53 08             INX          BUMP POINTER
0B54 8C 01 24          CPX  #TABEND  END OF TABLE?
0B57 26 EB          BNE  STAB2
0B59 39             RTS          RETURN
0B5A BD 13 FF STAB4 JSR  PULLX
0B5D 6F 00          CLR  0, X  CLEAR LAST
0B5F 39             RTS

```

## \* OUTPUT STRING TO TERMINAL .TM STRING

```

0B60 BD 11 D8 TERM  JSR  LDNSKP  GET TO NEXT CHAR.
0B63 A6 00          TERM2 LDA A  0, X  GET CHAR.
0B65 81 0D          CMP A  #$D   IS IT C. R. ?
0B67 27 03          BEQ  TERM4
0B69 08             INX          BUMP THE POINTER
0B6A 20 F7          BRA  TERM2
0B6C 86 04          TERM4 LDA A  #4    SET UP 4
0B6E A7 00          STA A  0, X  SAVE IT
0B70 DE E6          LDX  CMNPNT  SET POINTER
0B72 7E 14 90          JMP  PSTRNG  GO PRINT STRING

```

## \* GET INPUT FROM TERMINAL .GI PROMPT

```

0B75 8D E9          GETIN  BSR  TERM    GO PRINT PROMPT
0B77 CE 15 62          LDX  #QUSTR  POINT TO STR.
0B7A BD 14 92          JSR  PDATA  OUTPUT IT
0B7D BD 14 44          JSR  GIBUF  GET INPUT RESPONSE

```

```

0B80 97 9E          STA A  SBFLG      SET FLAG
0B82 39            RTS          RETURN

```

## \* SET NEW ENVIRONMENT . EV N

```

0B83 BD 12 1A     SENV1 JSR      CHKNUM  CHECK FOR NUMBER
0B86 24 08                BCC      SENV1
0B88 96 70                LDA A   INNUM    GET NUMBER
0B8A 27 05                BEQ      SENV2
0B8C 86 01                LDA A   #1       SET UP 1
0B8E 20 01                BRA      SENV2
0B90 4F                SENV1 CLR A           CLEAR VALUE
0B91 91 7E                SENV2 CMP A   EV      PRESENT EV?
0B93 26 01                BNE      SENV3
0B95 39                RTS          YES, RETURN
0B96 97 7E                SENV3 STA A   EV      SET NEW EV
0B98 96 42                LDA A   COLCNT  SAVE COL COUNT
0B9A D6 83                LDA B   COLCN2
0B9C D7 42                STA B   COLCNT
0B9E 97 83                STA A   COLCN2
0BA0 96 48                LDA A   IND     FIX THE INDENT
0BA2 D6 84                LDA B   IND2
0BA4 97 84                STA A   IND2
0BA6 D7 48                STA B   IND
0BA8 96 4B                LDA A   LLN    DO LINE LENGTH
0BAA D6 9F                LDA B   LLN2
0BAC 97 9F                STA A   LLN2
0BAE D7 4B                STA B   LLN
0BB0 CE 00 C2                SENV4 LDX     #AUTO   POINT TO BLOCK
0BB3 A6 00                LDA A   0, X   GET VALUE
0BB5 E6 01                LDA B   1, X
0BB7 A7 01                STA A   1, X   SWAP VALUE
0BB9 E7 00                STA B   0, X
0BBB 08                INX          GO TO NEXT
0BBC 08                INX
0BBD 8C 00 DA                CPX     #BUFPNT FINISHED?
0BC0 26 F1                BNE      SENV4
0BC2 A6 00                SENV6 LDA A   0, X   GET VALUE
0BC4 E6 02                LDA B   2, X
0BC6 A7 02                STA A   2, X   SWAP
0BC8 E7 00                STA B   0, X
0BCA A6 01                LDA A   1, X
0BCC E6 03                LDA B   3, X
0BCE A7 03                STA A   3, X
0BD0 E7 01                STA B   1, X
0BD2 08                INX          BUMP THE POINTER
0BD3 08                INX
0BD4 08                INX
0BD5 08                INX
0BD6 8C 00 E6                CPX     #CMNPNT FINISHED?
0BD9 26 E7                BNE      SENV6
0BDB CE 15 E4                SENV8 LDX     #LINBUF POINT TO BUFFER
0BDE A6 00                LDA A   0, X   GET A CHAR.
0BE0 E6 C8                LDA B   200, X

```

|      |    |    |        |     |   |         |               |
|------|----|----|--------|-----|---|---------|---------------|
| 0BE2 | A7 | C8 |        | STA | A | 200, X  | SWAP FOR NEW  |
| 0BE4 | E7 | 00 |        | STA | B | 0, X    |               |
| 0BE6 | 08 |    |        | INX |   |         | BUMP TO NEXT  |
| 0BE7 | 8C | 16 | AC     | CPX |   | #LINBU2 | FINISHED?     |
| 0BEA | 26 | F2 |        | BNE |   | SENV8   |               |
| 0BEC | 39 |    |        | RTS |   |         | RETURN        |
| 0BED | A6 | 00 | SENV9  | LDA | A | 0, X    | GET VALUE     |
| 0BEF | 08 |    |        | INX |   |         | BUMP TO NEXT  |
| 0BF0 | AB | 00 | SENV95 | ADD | A | 0, X    | ADD IN BIAS   |
| 0BF2 | 08 |    |        | INX |   |         |               |
| 0BF3 | 5A |    |        | DEC | B |         | DEC THE VALUE |
| 0BF4 | 26 | FA |        | BNE |   | SENV95  |               |
| 0BF6 | 39 |    |        | RTS |   |         | RETURN        |

\* SET NEW PAGE NUMBER .PN +N

|      |    |    |        |       |     |        |                  |           |
|------|----|----|--------|-------|-----|--------|------------------|-----------|
| 0BF7 | BD | 12 | 1A     | PGNUM | JSR | CHKNUM | CHECK FOR NUMBER |           |
| 0BFA | 24 | 07 |        |       | BCC | PGNUM4 |                  |           |
| 0BFC | 96 | 74 |        |       | LDA | A      | PGN              | GET VALUE |
| 0BFE | BD | 12 | 09     |       | JSR | FIXVAL | GO FIX VALUE     |           |
| 0C01 | 97 | 74 |        |       | STA | A      | PGN              | SAVE NEW  |
| 0C03 | 39 |    | PGNUM4 |       | RTS |        | RETURN           |           |

\* SET DOUBLE HEIGHT .DH

|      |    |    |    |       |     |        |                  |             |
|------|----|----|----|-------|-----|--------|------------------|-------------|
| 0C04 | BD | 09 | 2E | DUBH  | JSR | FLUSH  | FLUSH BUFFER     |             |
| 0C07 | 86 | 12 |    | DUBH1 | LDA | A      | #\$12            | SET UP CODE |
| 0C09 | 7C | 00 | 4D |       | INC | LINCNT | BUMP LINE COUNT  |             |
| 0C0C | 7E | 14 | 9F | DUBH2 | JMP | OUTCHR | OUTPUT CHARACTER |             |

\* SET DOUBLE WIDTH .DW

|      |    |    |    |      |     |       |              |             |
|------|----|----|----|------|-----|-------|--------------|-------------|
| 0C0F | BD | 09 | 2E | DUBW | JSR | FLUSH | FLUSH BUFFER |             |
| 0C12 | 86 | 0E |    |      | LDA | A     | #\$0E        | SET UP CODE |
| 0C14 | 97 | 8E |    |      | STA | A     | DWFLG        | SET FLAG    |
| 0C16 | 20 | F4 |    |      | BRA | DUBH2 |              |             |

\* SET DOUBLE BOTH .DB

|      |    |    |    |      |     |        |                  |             |
|------|----|----|----|------|-----|--------|------------------|-------------|
| 0C18 | BD | 09 | 2E | DUBB | JSR | FLUSH  | FLUSH BUFFER     |             |
| 0C1B | 86 | 0E |    |      | LDA | A      | #\$0E            | SET UP CODE |
| 0C1D | 97 | 8E |    |      | STA | A      | DWFLG            | SET FLAG    |
| 0C1F | BD | 14 | 9F |      | JSR | OUTCHR | OUTPUT CHARACTER |             |
| 0C22 | 20 | E3 |    |      | BRA | DUBH1  |                  |             |

\* CENTER N LINES .CE +N

|      |    |    |    |        |     |        |                  |               |
|------|----|----|----|--------|-----|--------|------------------|---------------|
| 0C24 | BD | 09 | 2A | CENTER | JSR | FLUSHB | FLUSH BUFFER     |               |
| 0C27 | BD | 12 | 1A |        | JSR | CHKNUM | CHECK FOR NUMBER |               |
| 0C2A | 24 | 0B |    |        | BCC | CENTE2 |                  |               |
| 0C2C | 96 | D4 |    |        | LDA | A      | CNTFLG           | GET OLD COUNT |
| 0C2E | BD | 12 | 09 |        | JSR | FIXVAL | FIX VALUE        |               |
| 0C31 | 97 | D4 |    |        | STA | A      | CNTFLG           | SAVE NEW      |
| 0C33 | 27 | 23 |    |        | BEQ | PAGEL4 |                  |               |

|      |    |    |        |       |        |                 |
|------|----|----|--------|-------|--------|-----------------|
| 0C35 | 20 | 04 |        | BRA   | CENTE4 |                 |
| 0C37 | 86 | 01 | CENTE2 | LDA A | #1     | DEFAULT TO 1    |
| 0C39 | 97 | D4 |        | STA A | CNTFLG | SAVE COUNT      |
| 0C3B | 96 | C8 | CENTE4 | LDA A | FILFLG | GET FLAG        |
| 0C3D | 97 | 6E |        | STA A | TFILF  | SAVE AS TEMP    |
| 0C3F | 86 | FF |        | LDA A | #\$FF  |                 |
| 0C41 | 97 | C8 |        | STA A | FILFLG | FORCE FILL MODE |
| 0C43 | 39 |    |        | RTS   |        | RETURN          |

## \* SET PAGE LENGTH . PL +N

|      |    |    |        |       |       |        |                  |
|------|----|----|--------|-------|-------|--------|------------------|
| 0C44 | BD | 12 | 1A     | PAGEL | JSR   | CHKNUM | CHECK FOR NUMBER |
| 0C47 | 25 | 04 |        |       | BCS   | PAGEL1 |                  |
| 0C49 | 86 | 42 |        |       | LDA A | #66    | DEFAULT TO 66    |
| 0C4B | 20 | 09 |        |       | BRA   | PAGEL2 |                  |
| 0C4D | 96 | 4F | PAGEL1 | LDA A | PGL   |        | GET LAST VALUE   |
| 0C4F | BD | 12 | 09     |       | JSR   | FIXVAL | FIX VALUE        |
| 0C52 | 4D |    |        |       | TST A |        |                  |
| 0C53 | 26 | 01 |        |       | BNE   | PAGEL2 |                  |
| 0C55 | 4C |    |        |       | INC A |        | BUMP BY ONE      |
| 0C56 | 97 | 4F | PAGEL2 | STA A | PGL   |        | SAVE NEW         |
| 0C58 | 39 |    | PAGEL4 | RTS   |       |        | RETURN           |

## \* SET SINGLE INDENT . SI +N

|      |    |    |    |      |       |        |                  |
|------|----|----|----|------|-------|--------|------------------|
| 0C59 | BD | 09 | 2A | SIND | JSR   | FLUSHB | FLUSH BUFFER     |
| 0C5C | BD | 12 | 1A |      | JSR   | CHKNUM | CHECK FOR NUMBER |
| 0C5F | 24 | F7 |    |      | BCC   | PAGEL4 |                  |
| 0C61 | 96 | 7C |    |      | LDA A | SIN    | GET OLD VALUE    |
| 0C63 | BD | 12 | 09 |      | JSR   | FIXVAL | GO FIX VALUE     |
| 0C66 | 90 | 7C |    |      | SUB A | SIN    |                  |
| 0C68 | 97 | B2 |    |      | STA A | TSIN   | SAVE AS TEMP     |
| 0C6A | 7E | 0B | 05 |      | JMP   | LENT25 |                  |

## \* SET CAPS MODE . CP

|      |    |    |  |       |       |       |          |
|------|----|----|--|-------|-------|-------|----------|
| 0C6D | 86 | 0F |  | STCAP | LDA A | #\$F  | SET FLAG |
| 0C6F | 97 | 77 |  |       | STA A | DOCAP |          |
| 0C71 | 39 |    |  |       | RTS   |       |          |

## \* CLEAR CAPS MODE . NC

|      |    |    |    |       |     |       |            |
|------|----|----|----|-------|-----|-------|------------|
| 0C72 | 7F | 00 | 77 | NOCAP | CLR | DOCAP | CLEAR FLAG |
| 0C75 | 39 |    |    |       | RTS |       |            |

## \* PUT IN INDENT FIELD . PI STRING

|      |    |    |    |        |       |        |                   |
|------|----|----|----|--------|-------|--------|-------------------|
| 0C76 | BD | 09 | 2A | PTIND  | JSR   | FLUSHB | FLUSH BUFFER      |
| 0C79 | BD | 11 | D8 |        | JSR   | LDNSKP | GET TO NEXT CHAR. |
| 0C7C | D6 | 48 |    |        | LDA B | IND    | GET INDENT        |
| 0C7E | 27 | 2A |    |        | BEQ   | PTIND5 |                   |
| 0C80 | D7 | 69 |    |        | STA B | NOCR   | SET FLAG          |
| 0C82 | 5F |    |    |        | CLR B |        |                   |
| 0C83 | 37 |    |    | PTIND2 | PSH B |        |                   |



```

0CE0 26 03          BNE      STOP2
0CE2 7E 09 53      JMP      FINIS4  GO FINISH
0CE5 39            STOP2    RTS      RETURN

```

\* NEED N LINES .NL N

```

0CE6 BD 12 1A      NEDL     JSR      CHKNUM  CHECK FOR NUMBER
0CE9 25 03          BCS      NEDL1
0CEB 7C 00 70      INC      INNUM    BUMP BY 1
0CEE 8D 05          NEDL1    BSR      FNTR     GO FIND TRAP
0CF0 91 70          NEDL2    CMP A   INNUM    COMPARE
0CF2 25 4A          BLO     SAVS25
0CF4 39            NEDL4    RTS

```

\* FIND THE NEXT TRAP

```

0CF5 86 FF          FNTR     LDA A   #$FF    SET MIN DISTANCE
0CF7 97 7D          STA A   MINDIS
0CF9 CE 17 D8      LDX     #TRAPS   POINT TO TRAPS
0CFC D6 4D          FNTR2    LDA B   LINCNT   GET COUNT
0CFE E1 00          CMP B   0,X     CHECK LOC.
0D00 24 0F          BHS     FNTR4
0D02 A6 00          LDA A   0,X     GET DISTANCE
0D04 81 FF          CMP A   #$FF
0D06 27 11          BEQ     FNTR5
0D08 10            SBA
0D09 91 7D          CMP A   MINDIS  SWAP REGISTERS
0D0B 24 04          BHS     FNTR4    MIN DISTANCE?
0D0D 97 7D          STA A   MINDIS  SAVE NEW
0D0F DF 85          STX     NXTTRP  SAVE POINTER
0D11 08            FNTR4    INX           BUMP THE POINTER
0D12 08            INX
0D13 08            INX
0D14 8C 18 08      CPX     #TRPEND  FINISHED?
0D17 26 E3          BNE     FNTR2
0D19 D6 7D          FNTR5    LDA B   MINDIS  GET DISTANCE
0D1B C1 FF          CMP B   #$FF
0D1D 26 07          BNE     FNTR6
0D1F 96 4F          LDA A   PGL     SET UP PAGE LEN.
0D21 90 4D          SUB A   LINCNT
0D23 4C            INC A
0D24 5F            CLR B
0D25 39            RTS           RETURN
0D26 E6 00          FNTR6    LDA B   0,X
0D28 96 7D          LDA A   MINDIS  GET DISTANCE
0D2A DE 85          LDX     NXTTRP  POINT TO TRAP
0D2C 39            RTS           RETURN

```

\* SAVE SPACE ROUTINE .SV N

```

0D2D 7F 00 87      SAVS    CLR      SVDSPC  CLEAR COUNT
0D30 BD 12 1A      JSR     CHKNUM  CHECK FOR NUMBER
0D33 25 03          BCS     SAVS1
0D35 7C 00 70      INC     INNUM    GET COUNT

```

|      |    |    |    |        |       |        |                |
|------|----|----|----|--------|-------|--------|----------------|
| 0D38 | 8D | BB |    | SAVS1  | BSR   | FNTR   | FIND TRAP      |
| 0D3A | 91 | 70 |    | SAVS2  | CMP A | INNUM  |                |
| 0D3C | 25 | 06 |    |        | BLO   | SAVS4  |                |
| 0D3E | 7F | 00 | 73 | SAVS25 | CLR   | NSP    | CLEAR NO SPACE |
| 0D41 | 7E | 0A | 5E |        | JMP   | SPACE4 | GO DO SPACE    |
| 0D44 | 96 | 70 |    | SAVS4  | LDA A | INNUM  | GET COUNT      |
| 0D46 | 97 | 87 |    |        | STA A | SVDSPC | SAVE COUNT     |
| 0D48 | 39 |    |    | SAVS5  | RTS   |        | RETURN         |

\* OUTPUT SAVED SPACE . OS

|      |    |    |    |       |       |        |                      |
|------|----|----|----|-------|-------|--------|----------------------|
| 0D49 | 96 | 87 |    | OUTSV | LDA A | SVDSPC | GET REMEMBERED COUNT |
| 0D4B | 27 | FB |    |       | BEQ   | SAVS5  |                      |
| 0D4D | 7F | 00 | 87 |       | CLR   | SVDSPC | CLEAR COUNT          |
| 0D50 | 20 | EC |    |       | BRA   | SAVS25 | OUTPUT SPACE         |

\* AT LINE N ROUTINE . AT -N

|      |    |    |    |       |       |          |                  |
|------|----|----|----|-------|-------|----------|------------------|
| 0D52 | BD | 12 | 1A | ATL   | JSR   | CHKNUM   | CHECK FOR NUMBER |
| 0D55 | 24 | 28 |    |       | BCC   | ATL35    |                  |
| 0D57 | BD | 11 | 06 |       | JSR   | TSTNEG   | IS IT NEGATIVE?  |
| 0D5A | BD | 0F | 8A |       | JSR   | GTNAM    | GET NAME         |
| 0D5D | 96 | 4F |    |       | LDA A | PGL      | GET PAGE LEN.    |
| 0D5F | 4C |    |    |       | INC A |          |                  |
| 0D60 | BD | 12 | 09 |       | JSR   | FIXVAL   | FIX THE VALUE    |
| 0D63 | 4D |    |    |       | TST A |          |                  |
| 0D64 | 26 | 01 |    |       | BNE   | ATL1     |                  |
| 0D66 | 4C |    |    |       | INC A |          | BUMP BY ONE      |
| 0D67 | CE | 17 | D8 | ATL1  | LDX   | #TRAPS   | POINT TO TRAPS   |
| 0D6A | A1 | 00 |    | ATL2  | CMP A | 0, X     | COMPARE          |
| 0D6C | 27 | 12 |    |       | BEQ   | ATL4     |                  |
| 0D6E | 8D | 27 |    |       | BSR   | INTRP    |                  |
| 0D70 | 26 | F8 |    |       | BNE   | ATL2     |                  |
| 0D72 | CE | 17 | D8 |       | LDX   | #TRAPS   | POINT TO TRAPS   |
| 0D75 | C6 | FF |    |       | LDA B | #\$FF    | SET REFERENCE    |
| 0D77 | E1 | 00 |    | ATL3  | CMP B | 0, X     |                  |
| 0D79 | 27 | 14 |    |       | BEQ   | ATL5     |                  |
| 0D7B | 8D | 1A |    |       | BSR   | INTRP    |                  |
| 0D7D | 26 | F8 |    |       | BNE   | ATL3     |                  |
| 0D7F | 39 |    |    | ATL35 | RTS   |          | RETURN           |
| 0D80 | D6 | A0 |    | ATL4  | LDA B | MACNAM   | GET NAME         |
| 0D82 | 26 | 04 |    |       | BNE   | ATL45    |                  |
| 0D84 | 5A |    |    |       | DEC B |          | DEC THE COUNT    |
| 0D85 | E7 | 00 |    |       | STA B | 0, X     | SAVE POSITION    |
| 0D87 | 39 |    |    |       | RTS   |          | RETURN           |
| 0D88 | 96 | A1 |    | ATL45 | LDA A | MACNAM+1 | GET NAME         |
| 0D8A | E7 | 01 |    |       | STA B | 1, X     | SAVE CHAR.       |
| 0D8C | A7 | 02 |    |       | STA A | 2, X     |                  |
| 0D8E | 39 |    |    |       | RTS   |          | RETURN           |
| 0D8F | D6 | A0 |    | ATL5  | LDA B | MACNAM   | GET NAME         |
| 0D91 | 27 | EC |    |       | BEQ   | ATL35    |                  |
| 0D93 | A7 | 00 |    |       | STA A | 0, X     | SAVE CHARACTER   |
| 0D95 | 20 | F1 |    |       | BRA   | ATL45    |                  |

## \* INCREMENT TRAP POINTER

```

0D97 08      INTRP   INX      FIX POINTER
0D98 08              INX
0D99 08              INX
0D9A 8C 18 08      CPX      #TRPEND  FINISHED?
0D9D 39              RTS

```

## \* DEFINE MACRO

```

0D9E 96 66      DEFMAC  LDA  A   MBFLG      CHECK DEF FLAG
0DA0 26 39              BNE      DEFMA5
0DA2 BD 0E 4F      DEFMA2 JSR      OPMAC      GO OPEN MACRO
0DA5 27 34              BEQ      DEFMA5
0DA7 7C 00 8F      DEFMA3 INC      DFMFLG     SET DEF FLAG
0DAA 7F 00 65      DEFMA3 CLR      CMFLG      CLEAR COMMAND
0DAD BD 06 89      DEFMA3 JSR      CLRGET     GO GET CHARACTER
0DB0 81 2E              CMP  A   #'        IS IT A PERIOD?
0DB2 26 0E              BNE      DEFM35
0DB4 BD 06 89      DEFMA3 JSR      CLRGET     GET NEXT CHAR.
0DB7 81 2E              CMP  A   #'        IS IT A PERIOD?
0DB9 27 13              BEQ      DEFMA4
0DBB 36              PSH  A           SAVE CHAR
0DBC 86 2E              LDA  A   #'        SET UP PERIOD
0DBE BD 0E AE      DEFM35 JSR      OUTMAC     OUTPUT TO MACRO
0DC1 32              PUL  A           RESTORE CHAR
0DC2 BD 0E AE      DEFM35 JSR      OUTMAC     OUTPUT TO MACRO
0DC5 81 0D              CMP  A   #$D       IS IT A C. R. ?
0DC7 27 E4              BEQ      DEFMA3
0DC9 BD 06 89      DEFMA4 JSR      CLRGET     GET NEXT CHAR.
0DCC 20 F4              BRA      DEFM35
0DCE BD 0E F8      DEFMA4 JSR      CLSMAC     CLOSE MACRO
0DD1 BD 06 89      DEFM45 JSR      CLRGET     GET CHARACTER
0DD4 81 0D              CMP  A   #$D       IS IT A C. R. ?
0DD6 26 F9              BNE      DEFM45
0DD8 7F 00 8F      DEFMA5 CLR      DFMFLG     CLEAR DEF FLAG
0DDB 39              DEFMA5 RTS          RETURN

```

## \* APPEND TO A MACRO .AP XX

```

0DDC 96 66      APMAC  LDA  A   MBFLG      CHECK FLAG
0DDE 26 FB              BNE      DEFMA5
0DE0 BD 0E 82      JSR      OPAPP      OPEN FOR APPEND
0DE3 20 C0              BRA      DEFMA2

```

## \* REMOVE MACRO .RM XX

```

0DE5 BD 0F 8A      REMMAC JSR      GTNAM      GO GET NAME
0DE8 BD 0F 35      JSR      FNDMAC     FIND MACRO
0DEB 27 01              BEQ      REMMA4
0DED 39              RTS          RETURN
0DEE DF A2      REMMA4 STX      MACTMP     SAVE POINTER
0DF0 EE 02              LDY      2, X       GET ADDRESS
0DF2 BD 0F 64      JSR      CHKLST     LAST MACRO?

```



|      |    |    |        |          |                    |                |
|------|----|----|--------|----------|--------------------|----------------|
| 0DF5 | 24 | 14 | BCC    | REMMA6   |                    |                |
| 0DF7 | DE | A2 | LDX    | MACTMP   | GET POINTER        |                |
| 0DF9 | A6 | 02 | LDA A  | 2, X     | GET ADDRESS        |                |
| 0DFB | E6 | 03 | LDA B  | 3, X     |                    |                |
| 0DFD | DE | A4 | LDX    | LSTAVL   | SET LAST AVAIL     |                |
| 0DFF | A7 | 00 | STA A  | 0, X     |                    |                |
| 0E01 | E7 | 01 | STA B  | 1, X     |                    |                |
| 0E03 | DE | AC | LDX    | NXTMAC   | SET UP NXT MAC     |                |
| 0E05 | DF | A4 | STX    | LSTAVL   | SAVE AS LAST AVAIL |                |
| 0E07 | DE | A2 | LDX    | MACTMP   |                    |                |
| 0E09 | 20 | 0A | BRA    | REMNAM   |                    |                |
| 0E0B | DE | A2 | REMMA6 | LDX      | MACTMP             | SET UP POINTER |
| 0E0D | A6 | 02 | LDA A  | 2, X     | GET ADDRESS        |                |
| 0E0F | E6 | 03 | LDA B  | 3, X     |                    |                |
| 0E11 | 97 | A6 | STA A  | FSTAVL   | SET FIRST AVAIL    |                |
| 0E13 | D7 | A7 | STA B  | FSTAVL+1 |                    |                |

\* REMOVE MACRO NAME FROM TABLE

|      |    |    |        |       |        |                  |
|------|----|----|--------|-------|--------|------------------|
| 0E15 | E6 | 04 | REMNAM | LDA B | 4, X   | MOVE CHAR DOWN   |
| 0E17 | E7 | 00 |        | STA B | 0, X   |                  |
| 0E19 | 08 |    |        | INX   |        | BUMP THE POINTER |
| 0E1A | 9C | FA |        | CPX   | MACEND | FINISHED?        |
| 0E1C | 26 | F7 |        | BNE   | REMNAM |                  |
| 0E1E | 09 |    |        | DEX   |        | DEC THE POINTER  |
| 0E1F | 09 |    |        | DEX   |        |                  |
| 0E20 | 09 |    |        | DEX   |        |                  |
| 0E21 | 09 |    |        | DEX   |        |                  |
| 0E22 | DF | FA |        | STX   | MACEND | SET NEW END      |
| 0E24 | 39 |    |        | RTS   |        | RETURN           |

\* DIVERT .DI XX

|      |    |    |        |        |        |                |
|------|----|----|--------|--------|--------|----------------|
| 0E25 | 96 | 91 | DIVERT | LDA A  | DIVFLG | CHECK DIV FLAG |
| 0E27 | 27 | 0D |        | BEQ    | DIVER2 |                |
| 0E29 | 7C | 00 | 92     | DIVER0 | INC    | SET MARKER     |
| 0E2C | 7E | 0E | F8     |        | JMP    | CLOSE MACRO    |
| 0E2F | 7F | 00 | 91     | DIVER1 | CLR    | CLEAR FLAGS    |
| 0E32 | 7F | 00 | 92     |        | CLR    | DIVFL2         |
| 0E35 | 39 |    |        |        | RTS    | RETURN         |
| 0E36 | 7C | 00 | 92     | DIVER2 | INC    | SET MARKER     |
| 0E39 | 8D | 14 |        |        | BSR    | GO OPEN MACRO  |
| 0E3B | 27 | F2 |        | DIVER4 | BEQ    | DIVER1         |
| 0E3D | 7C | 00 | 91     |        | INC    | SET FLAG       |
| 0E40 | 7F | 00 | 55     |        | CLR    | CLEAR COUNT    |
| 0E43 | 39 |    |        |        | RTS    | RETURN         |

\* DIVERT APPEND .DA XX

|      |    |    |        |       |        |                 |
|------|----|----|--------|-------|--------|-----------------|
| 0E44 | 96 | 91 | DIVAPP | LDA A | DIVFLG | CHECK DIV FLAG  |
| 0E46 | 26 | E1 |        | BNE   | DIVER0 |                 |
| 0E48 | 7C | 00 | 92     |       | INC    | SET MARKER      |
| 0E4B | 8D | 35 |        |       | BSR    | OPEN FOR APPEND |
| 0E4D | 20 | EC |        |       | BRA    | DIVER4          |

## \* OPEN A MACRO SPACE

|      |    |    |    |        |       |          |                    |
|------|----|----|----|--------|-------|----------|--------------------|
| 0E4F | BD | 0F | 8A | OPMAC  | JSR   | GTNAM    | GET MACRO NAME     |
| 0E52 | 96 | A0 |    |        | LDA A | MACNAM   |                    |
| 0E54 | 26 | 01 |    |        | BNE   | OPMAC2   | PRESENT?           |
| 0E56 | 39 |    |    |        | RTS   |          |                    |
| 0E57 | BD | 0F | 35 | OPMAC2 | JSR   | FNDMAC   | LOOK FOR MACRO     |
| 0E5A | 26 | 04 |    |        | BNE   | OPMAC4   |                    |
| 0E5C | 8D | 90 |    |        | BSR   | REMM4    | REMOVE OLD VERSION |
| 0E5E | 20 | F7 |    |        | BRA   | OPMAC2   | OPEN MACRO         |
| 0E60 | 96 | A0 |    | OPMAC4 | LDA A | MACNAM   | GET NAME           |
| 0E62 | D6 | A1 |    |        | LDA B | MACNAM+1 |                    |
| 0E64 | 8C | 19 | F2 |        | CPX   | #MTEND   | END OF TABLE?      |
| 0E67 | 26 | 03 |    |        | BNE   | OPMAC5   |                    |
| 0E69 | 7E | 0E | E0 |        | JMP   | SYSERR   | REPORT ERROR       |
| 0E6C | A7 | 00 |    | OPMAC5 | STA A | 0, X     | SAVE NAME          |
| 0E6E | E7 | 01 |    |        | STA B | 1, X     |                    |
| 0E70 | 96 | A6 |    |        | LDA A | FSTAVL   | GET FIRST AVAIL    |
| 0E72 | D6 | A7 |    |        | LDA B | FSTAVL+1 |                    |
| 0E74 | A7 | 02 |    |        | STA A | 2, X     | SAVE IN TABLE      |
| 0E76 | E7 | 03 |    |        | STA B | 3, X     |                    |
| 0E78 | 08 |    |    |        | INX   |          | BUMP THE POINTER   |
| 0E79 | 08 |    |    |        | INX   |          |                    |
| 0E7A | 08 |    |    |        | INX   |          |                    |
| 0E7B | 08 |    |    |        | INX   |          |                    |
| 0E7C | DF | FA |    |        | STX   | MACEND   | SET NEW END        |
| 0E7E | DE | A6 |    |        | LDX   | FSTAVL   | GET LAST AVAIL     |
| 0E80 | 20 | 1E |    |        | BRA   | SAVSX    |                    |

## \* OPEN MACRO FOR APPEND

|      |    |    |    |        |       |          |                     |
|------|----|----|----|--------|-------|----------|---------------------|
| 0E82 | BD | 0F | 8A | OPAPP  | JSR   | GTNAM    | GET MACRO NAME      |
| 0E85 | 96 | A0 |    |        | LDA A | MACNAM   |                     |
| 0E87 | 26 | 01 |    |        | BNE   | OPAPP2   |                     |
| 0E89 | 39 |    |    |        | RTS   |          | NO NAME             |
| 0E8A | BD | 0F | 35 | OPAPP2 | JSR   | FNDMAC   | FIND MACRO          |
| 0E8D | 26 | D1 |    |        | BNE   | OPMAC4   |                     |
| 0E8F | EE | 02 |    | OPAPP4 | LDX   | 2, X     | GET LOCATION        |
| 0E91 | BD | 0F | 64 |        | JSR   | CHKLST   | IS IT THE LAST ONE? |
| 0E94 | 24 | 0A |    |        | BCC   | SAVSX    |                     |
| 0E96 | 96 | A6 |    |        | LDA A | FSTAVL   | GET FIRST AVAIL     |
| 0E98 | D6 | A7 |    |        | LDA B | FSTAVL+1 |                     |
| 0E9A | A7 | 00 |    |        | STA A | 0, X     | SET NEW             |
| 0E9C | E7 | 01 |    |        | STA B | 1, X     |                     |
| 0E9E | DE | A6 |    |        | LDX   | FSTAVL   |                     |

## \* SAVE SPECIAL INDEX

|      |    |    |    |       |     |        |              |
|------|----|----|----|-------|-----|--------|--------------|
| 0EA0 | 7D | 00 | 92 | SAVSX | TST | DIYFL2 | TEST MARKER  |
| 0EA3 | 27 | 06 |    |       | BEQ | SAVSX2 |              |
| 0EA5 | 7F | 00 | 92 |       | CLR | DIYFL2 | CLEAR MARKER |
| 0EA8 | DF | AE |    |       | STX | NXTOUT | SAVE POINTER |
| 0EAA | 39 |    |    |       | RTS |        | RETURN       |

```

0EAB DF AC      SAVSX2  STX      NXTMAC  SAVE POINTER
0EAD 39          RTS

```

\* OUTPUT TO MACRO SPACE

```

0EAE DF B0      OUTMAC  STX      XMAC      SAVE POINTER
0EB0 7D 00 92   TST      DIVFL2  TEST MARKER
0EB3 27 04      BEQ      OUTMA0
0EB5 DE AE      LDX      NXTOUT   SET POINTER
0EB7 20 02      BRA      OUTMA1
0EB9 DE AC      OUTMA0  LDX      NXTMAC
0EBB 6D 00      OUTMA1  TST      0,X      TEST IF END
0EBD 27 18      BEQ      OUTMA4
0EBF 81 1F      CMP A    #$1F     IS IT $1F?
0EC1 22 0C      BHI      OUTM18
0EC3 81 0D      CMP A    #$D      IS IT C.R.?
0EC5 26 0B      BNE      OUTMA3
0EC7 7D 00 92   TST      DIVFL2  TEST MARKER
0ECA 27 03      BEQ      OUTM18
0ECC 7C 00 55   INC      LDIY     BUMP DIV LINE CNT
0ECF A7 00      OUTM18  STA A    0,X     PUT CHARACTER
0ED1 08         OUTMA2  INX
0ED2 8D CC      OUTMA3  BSR      SAVSX   BUMP THE POINTER
0ED4 DE B0      LDX      XMAC     GO SAVE X
0ED6 39         RTS          RESTORE POINTER
0ED7 08         OUTMA4  INX          BUMP THE POINTER
0ED8 9C A4      CPX      LSTAVL  LAST AVAIL?
0EDA 27 04      BEQ      SYSERR  ERROR?
0EDC EE 00      LDX      0,X     GET POINTER
0EDE 20 DB      BRA      OUTMA1

```

\* REPORT SYSTEM MACRO ERROR

```

0EE0 7E 08 4E   SYSERR  JMP      MACOVF  REPORT OVERFLOW

```

\* INPUT TO MACRO SPACE

```

0EE3 DE 67      INMAC   LDX      MBFPNT  SET UP POINTER
0EE5 A6 00      INMAC2  LDA A    0,X     GET THE CHARACTER
0EE7 08         INX
0EE8 DF 67      STX      MBFPNT  BUMP THE POINTER
0EEA 4D         TST A
0EEB 26 06      BNE      INMAC4  SAVE IT
0EED EE 00      LDX      0,X     TEST THE CHAR.
0EEF 26 F4      BNE      INMAC2
0EF1 20 04      BRA      INMAC5
0EF3 81 FF      INMAC4  CMP A    #$FF    IS CHAR FF?
0EF5 27 EE      BEQ      INMAC2
0EF7 39         INMAC5  RTS          RETURN

```

\* CLOSE MACRO SPACE

```

0EF8 7D 00 92   CLSMAC  TST      DIVFL2  TEST MARKER
0EFB 27 09      BEQ      CLSMA2

```

|      |    |    |        |     |        |
|------|----|----|--------|-----|--------|
| 0EFD | 4F |    | CLR    | A   |        |
| 0EFE | 97 | 91 | STA    | A   | DIVFLG |
| 0F00 | 97 | 92 | STA    | A   | DIVFL2 |
| 0F02 | DE | AE | LDX    |     | NXTOUT |
| 0F04 | 20 | 02 | BRA    |     | CLSMA3 |
| 0F06 | DE | AC | CLSMA2 | LDX | NXTMAC |
| 0F08 | 6D | 00 | CLSMA3 | TST | 0, X   |
| 0F0A | 27 | 14 | BEQ    |     | CLSMA4 |
| 0F0C | 6D | 01 | TST    |     | 1, X   |
| 0F0E | 27 | 17 | BEQ    |     | CLSMA5 |
| 0F10 | 6D | 02 | TST    |     | 2, X   |
| 0F12 | 27 | 1A | BEQ    |     | CLSMA6 |
| 0F14 | 6F | 00 | CLR    |     | 0, X   |
| 0F16 | 6F | 01 | CLR    |     | 1, X   |
| 0F18 | 6F | 02 | CLR    |     | 2, X   |
| 0F1A | 08 |    | INX    |     |        |
| 0F1B | 08 |    | INX    |     |        |
| 0F1C | 08 |    | INX    |     |        |
| 0F1D | DF | A6 | STX    |     | FSTAVL |
| 0F1F | 39 |    | RTS    |     |        |
| 0F20 | EE | 01 | CLSMA4 | LDX | 1, X   |
| 0F22 | 26 | E4 | BNE    |     | CLSMA3 |
| 0F24 | 7E | 0E | E0     | JMP | SYSERR |
| 0F27 | 86 | FF | CLSMA5 | LDA | A      |
| 0F29 | A7 | 00 |        | STA | A      |
| 0F2B | 08 |    |        | INX |        |
| 0F2C | 20 | F2 |        | BRA | CLSMA4 |
| 0F2E | 86 | FF | CLSMA6 | LDA | A      |
| 0F30 | A7 | 00 |        | STA | A      |
| 0F32 | 08 |    |        | INX |        |
| 0F33 | 20 | F2 |        | BRA | CLSMA5 |

## \* FIND MACRO

|      |    |    |        |     |   |          |                |
|------|----|----|--------|-----|---|----------|----------------|
| 0F35 | 96 | A0 | FNDMAC | LDA | A | MACNAM   | CHECK NAME     |
| 0F37 | 27 | 17 |        | BEQ |   | FNDMA4   |                |
| 0F39 | D6 | A1 |        | LDA | B | MACNAM+1 | GET NAME       |
| 0F3B | CE | 19 | 72     | LDX |   | #MACTBL  | POINT TO TABLE |
| 0F3E | 9C | FA | FNDMA1 | CPX |   | MACEND   | FINISHED?      |
| 0F40 | 27 | 0E |        | BEQ |   | FNDMA4   |                |
| 0F42 | A1 | 00 |        | CMP | A | 0, X     | TEST 1ST CHAR. |
| 0F44 | 26 | 04 |        | BNE |   | FNDMA2   |                |
| 0F46 | E1 | 01 |        | CMP | B | 1, X     | TEST 2ND CHAR. |
| 0F48 | 27 | 08 |        | BEQ |   | FNDMA6   |                |
| 0F4A | 08 |    | FNDMA2 | INX |   |          | FIX POINTER    |
| 0F4B | 08 |    |        | INX |   |          |                |
| 0F4C | 08 |    |        | INX |   |          |                |
| 0F4D | 08 |    |        | INX |   |          |                |
| 0F4E | 20 | EE |        | BRA |   | FNDMA1   | REPEAT         |
| 0F50 | DE | FA | FNDMA4 | LDX |   | MACEND   | SET POINTER    |
| 0F52 | 39 |    | FNDMA6 | RTS |   |          | RETURN         |

## \* FIND LAST MACRO ENTRY

|      |    |    |        |     |   |        |               |
|------|----|----|--------|-----|---|--------|---------------|
| 0F53 | A6 | 00 | FNDLST | LDA | A | 0,X    | GET CHARACTER |
| 0F55 | 27 | 03 |        | BEQ |   | FNDLS2 | IS IT ZERO?   |
| 0F57 | 08 |    |        | INX |   |        | GO TO NEXT    |
| 0F58 | 20 | F9 |        | BRA |   | FNDLST |               |
| 0F5A | 08 |    | FNDLS2 | INX |   |        | BUMP POINTER  |
| 0F5B | DF | AC |        | STX |   | NXTMAC | SAVE POSITION |
| 0F5D | EE | 00 |        | LDX |   | 0,X    | PICK UP LINK  |
| 0F5F | 26 | F2 |        | BNE |   | FNDLST |               |
| 0F61 | DE | AC |        | LDX |   | NXTMAC | GET NEXT LOC. |
| 0F63 | 39 |    |        | RTS |   |        | RETURN        |

## \* CHECK LAST MACRO ENTRY

|      |    |    |        |     |   |        |                 |
|------|----|----|--------|-----|---|--------|-----------------|
| 0F64 | 8D | ED | CHKLST | BSR |   | FNDLST | FIND LAST ENTRY |
| 0F66 | 08 |    |        | INX |   |        | FIX POINTER     |
| 0F67 | 08 |    |        | INX |   |        |                 |
| 0F68 | 9C | A6 |        | CPX |   | FSTAVL | IS IT FIRST?    |
| 0F6A | 27 | 04 |        | BEQ |   | CHKLS2 |                 |
| 0F6C | DE | AC |        | LDX |   | NXTMAC | GET NEXT        |
| 0F6E | 0D |    |        | SEC |   |        |                 |
| 0F6F | 39 |    |        | RTS |   |        | RETURN          |
| 0F70 | 09 |    | CHKLS2 | DEX |   |        | BACK UP         |
| 0F71 | 09 |    |        | DEX |   |        |                 |
| 0F72 | 09 |    |        | DEX |   |        |                 |
| 0F73 | 86 | FF |        | LDA | A | #\$FF  | SET UP FF       |
| 0F75 | A7 | 00 |        | STA | A | 0,X    | PUT CHARACTER   |
| 0F77 | A7 | 01 |        | STA | A | 1,X    |                 |
| 0F79 | A7 | 02 |        | STA | A | 2,X    |                 |
| 0F7B | 0C |    |        | CLC |   |        |                 |
| 0F7C | 39 |    |        | RTS |   |        | RETURN          |

## \* END MACRO EXECUTION

|      |    |       |        |     |   |        |              |
|------|----|-------|--------|-----|---|--------|--------------|
| 0F7D | 96 | 8B    | MCEND  | LDA | A | MACCNT | GET COUNT    |
| 0F7F | 27 | 06    |        | BEQ |   | MCEND2 |              |
| 0F81 | 7F | 00 66 |        | CLR |   | MBFLG  | CLEAR FLAG   |
| 0F84 | 7C | 00 88 |        | INC |   | FINMAC | SET FINISHED |
| 0F87 | 7E | 08 57 | MCEND2 | JMP |   | FINCM  | GO FINISH    |

## \* GET TWO CHARACTER NAME

|      |    |       |       |     |   |        |                   |
|------|----|-------|-------|-----|---|--------|-------------------|
| 0F8A | BD | 11 D8 | GTNAM | JSR |   | LDNSKP | GET TO NEXT       |
| 0F8D | BD | 11 E6 |       | JSR |   | CLSFY  | CLASSIFY IT       |
| 0F90 | C1 | 02    |       | CMP | B | #2     |                   |
| 0F92 | 26 | 1C    |       | BNE |   | GTNA6  |                   |
| 0F94 | 36 |       |       | PSH | A |        | SAVE CHARACTER    |
| 0F95 | 08 |       |       | INX |   |        | FIX THE POINTER   |
| 0F96 | A6 | 00    |       | LDA | A | 0,X    | GET CHARACTER     |
| 0F98 | BD | 11 E6 |       | JSR |   | CLSFY  | GO CLASSIFY       |
| 0F9B | C1 | 02    |       | CMP | B | #2     |                   |
| 0F9D | 33 |       |       | PUL | B |        | RESTORE CHARACTER |
| 0F9E | 26 | 10    |       | BNE |   | GTNA6  |                   |
| 0FA0 | 08 |       |       | INX |   |        | ADJUST POINTER    |
| 0FA1 | DF | E6    |       | STX |   | CMNPNT | SAVE IT           |

|      |    |    |       |     |   |          |               |
|------|----|----|-------|-----|---|----------|---------------|
| 0FA3 | C1 | 5F |       | CMP | B | #\$5F    | LOWER CASE?   |
| 0FA5 | 23 | 04 |       | BLS |   | GTNA4    |               |
| 0FA7 | 80 | 20 |       | SUB | A | #\$20    | MAKE UPPER    |
| 0FA9 | C0 | 20 |       | SUB | B | #\$20    |               |
| 0FAB | D7 | A0 | GTNA4 | STA | B | MACNAM   | SAVE THE NAME |
| 0FAD | 97 | A1 |       | STA | A | MACNAM+1 |               |
| 0FAF | 39 |    |       | RTS |   |          | RETURN        |
| 0FB0 | 4F |    | GTNA6 | CLR | A |          | CLEAR OUT     |
| 0FB1 | 5F |    |       | CLR | B |          |               |
| 0FB2 | 20 | F7 |       | BRA |   | GTNA4    |               |

## \* SET TITLE LENGTH .LT +N

|      |    |    |    |       |     |        |                  |
|------|----|----|----|-------|-----|--------|------------------|
| 0FB4 | BD | 12 | 1A | TLEN  | JSR | CHKNUM | CHECK FOR NUMBER |
| 0FB7 | 24 | 07 |    | BCC   |     | TLEN2  |                  |
| 0FB9 | 96 | D8 |    | LDA   | A   | TLN    | GET LENGTH       |
| 0FBB | BD | 12 | 09 | JSR   |     | FIXVAL | GO FIX VALUE     |
| 0FBE | 97 | D8 |    | STA   | A   | TLN    | SAVE NEW         |
| 0FC0 | 39 |    |    | TLEN2 | RTS |        | RETURN           |

## \* DO THREE PART TITLE .TL '1'2'3'

|      |    |    |    |        |     |         |                  |                  |
|------|----|----|----|--------|-----|---------|------------------|------------------|
| 0FC1 | 7F | 00 | B9 | TITLE  | CLR | TPOS    | CLEAR POSITION   |                  |
| 0FC4 | BD | 11 | D8 |        | JSR | LDNSKP  | GET TO NEXT      |                  |
| 0FC7 | 81 | 0D |    |        | CMP | A       | #\$D             | C. R. ?          |
| 0FC9 | 27 | F5 |    |        | BEQ |         | TLEN2            |                  |
| 0FCB | CE | 18 | BE |        | LDX | #TTLBUF | POINT TO BUFFER  |                  |
| 0FCE | 7C | 00 | 69 |        | INC |         | NOCR             | SET FLAG         |
| 0FD1 | DF | BD |    | TITLE1 | STX | TTLPNT  | SAVE POINTER     |                  |
| 0FD3 | BD | 06 | 8C |        | JSR | GETCHR  | GO GET CHAR.     |                  |
| 0FD6 | DE | BD |    |        | LDX | TTLPNT  | RESTORE POINTER  |                  |
| 0FD8 | A7 | 00 |    |        | STA | A       | 0, X             | SAVE THE CHAR.   |
| 0FDA | 81 | 0D |    |        | CMP | A       | #\$D             | FINISHED?        |
| 0FDC | 27 | 03 |    |        | BEQ |         | TITL12           |                  |
| 0FDE | 08 |    |    |        | INX |         |                  | BUMP THE POINTER |
| 0FDF | 20 | F0 |    |        | BRA |         | TITLE1           |                  |
| 0FE1 | 7F | 00 | 69 | TITL12 | CLR |         | NOCR             | CLEAR FLAG       |
| 0FE4 | CE | 18 | 0A |        | LDX | #CMNDBF | POINT TO BUFFER  |                  |
| 0FE7 | A6 | B4 |    | TITL15 | LDA | A       | TTLBUF-CMNDBF, X |                  |
| 0FE9 | A7 | 00 |    |        | STA | A       | 0, X             | PUT CHAR.        |
| 0FEB | 08 |    |    |        | INX |         |                  | GET TO NEXT      |
| 0FEC | 81 | 0D |    |        | CMP | A       | #\$D             | FINISHED?        |
| 0FEE | 26 | F7 |    |        | BNE |         | TITL15           |                  |
| 0FF0 | CE | 18 | 0A |        | LDX | #CMNDBF | RESTORE POINTER  |                  |
| 0FF3 | A6 | 00 |    |        | LDA | A       | 0, X             | GET CHARACTER    |
| 0FF5 | 97 | BA |    |        | STA | A       | DELIM            | SAVE DELIMITER   |
| 0FF7 | 08 |    |    |        | INX |         |                  | BUMP THE POINTER |
| 0FF8 | DF | E6 |    |        | STX |         | CMNPNT           | SAVE IT          |
| 0FFA | CE | 18 | BE |        | LDX | #TTLBUF | POINT TO BUFFER  |                  |
| 0FFD | DF | BD |    |        | STX |         | TTLPNT           |                  |
| 0FFF | 86 | 20 |    |        | LDA | A       | #\$20            | SET UP SPACE     |
| 1001 | A7 | 00 |    | TITLE2 | STA | A       | 0, X             | SAVE IT          |
| 1003 | 08 |    |    |        | INX |         |                  | BUMP POINTER     |
| 1004 | 8C | 19 | 0E |        | CPX |         | #TTLBUF+80       |                  |

|      |    |    |        |        |             |                   |
|------|----|----|--------|--------|-------------|-------------------|
| 1007 | 26 | F8 |        | BNE    | TITLE2      |                   |
| 1009 | BD | 10 | 72     | JSR    | CNTTTL      | GO COUNT TITLE    |
| 100C | D7 | BB |        | STA    | B TCNT      | SAVE COUNT        |
| 100E | BD | 10 | 86     | JSR    | XFR TTL     | TRANSFER TITLE    |
| 1011 | BD | 10 | 72     | JSR    | CNTTTL      | COUNT TITLE       |
| 1014 | 96 | D8 |        | LDA    | A TLN       | GET LENGTH        |
| 1016 | 10 |    |        | SBA    |             |                   |
| 1017 | 47 |    |        | ASR    | A           |                   |
| 1018 | 97 | BC |        | STA    | A MCNT      | SAVE MIDDLE COUNT |
| 101A | C6 | 20 |        | LDA    | B #\$20     | GET SPACE         |
| 101C | 91 | BB |        | CMP    | A TCNT      |                   |
| 101E | 23 | 0F |        | BLS    | TITLE5      |                   |
| 1020 | 90 | BB |        | SUB    | A TCNT      |                   |
| 1022 | DE | BD |        | LDX    | TTLPNT      | RESTORE POINTER   |
| 1024 | E7 | 00 | TITLE4 | STA    | B 0,X       | SAVE CHAR.        |
| 1026 | 08 |    |        | INX    |             | BUMP THE POINTER  |
| 1027 | 7C | 00 | B9     | INC    | TPOS        | UPDATE POSITION   |
| 102A | 4A |    |        | DEC    | A           |                   |
| 102B | 26 | F7 |        | BNE    | TITLE4      |                   |
| 102D | DF | BD |        | STX    | TTLPNT      | SAVE POINTER      |
| 102F | BD | 10 | 86     | TITLE5 | JSR XFR TTL | TRANSFER TITLE    |
| 1032 | BD | 10 | 72     | TITLE6 | JSR CNTTTL  | COUNT TITLE       |
| 1035 | 96 | D8 |        | LDA    | A TLN       | GET LENGTH        |
| 1037 | 90 | B9 |        | SUB    | A TPOS      | FIX POSITION      |
| 1039 | 11 |    |        | CBA    |             |                   |
| 103A | 23 | 0D |        | BLS    | TITLE7      |                   |
| 103C | 10 |    |        | SBA    |             |                   |
| 103D | C6 | 20 |        | LDA    | B #\$20     | SET UP SPACE      |
| 103F | DE | BD |        | LDX    | TTLPNT      | SET POINTER       |
| 1041 | E7 | 00 | TITL65 | STA    | B 0,X       | PUT CHAR          |
| 1043 | 08 |    |        | INX    |             | BUMP POINTER      |
| 1044 | 4A |    |        | DEC    | A           | DEC THE COUNT     |
| 1045 | 26 | FA |        | BNE    | TITL65      |                   |
| 1047 | DF | BD |        | STX    | TTLPNT      | SAVE POINTER      |
| 1049 | BD | 10 | 86     | TITLE7 | JSR XFR TTL | TRANSFER TITLE    |
| 104C | 96 | D8 |        | LDA    | A TLN       | GET LENGTH        |
| 104E | 97 | B9 |        | STA    | A TPOS      | SAVE POSITION     |
| 1050 | 27 | 1C |        | BEQ    | TITLE9      |                   |
| 1052 | D6 | 4E |        | LDA    | B LFM       | CHECK MARGIN      |
| 1054 | 27 | 0A |        | BEQ    | TITL78      |                   |
| 1056 | 86 | 20 | TITL75 | LDA    | A #\$20     | SETUP SPACE       |
| 1058 | 37 |    |        | PSH    | B           |                   |
| 1059 | BD | 14 | 9F     | JSR    | OUTCHR      | OUTPUT SPACE      |
| 105C | 33 |    |        | PUL    | B           |                   |
| 105D | 5A |    |        | DEC    | B           | DEC COUNT         |
| 105E | 26 | F6 |        | BNE    | TITL75      |                   |
| 1060 | CE | 18 | BE     | TITL78 | LDX #TTLBUF | POINT TO TITLE    |
| 1063 | A6 | 00 | TITLE8 | LDA    | A 0,X       | GET A CHARACTER   |
| 1065 | BD | 14 | 9F     | JSR    | OUTCHR      | OUTPUT IT         |
| 1068 | 08 |    |        | INX    |             | GO TO NEXT        |
| 1069 | 7A | 00 | B9     | DEC    | TPOS        | DEC COUNT         |
| 106C | 26 | F5 |        | BNE    | TITLE8      | REPEAT TIL DONE   |
| 106E | BD | 08 | 99     | TITLE9 | JSR PCRLF   | OUTPUT CR & LF    |
| 1071 | 39 |    |        | RTS    |             | RETURN            |

## \* COUNT CHARACTERS IN TITLE

|      |       |        |       |        |                  |
|------|-------|--------|-------|--------|------------------|
| 1072 | 5F    | CNTTTL | CLR B |        | CLEAR COUNT      |
| 1073 | DE E6 |        | LDX   | CMNPNT | SET POINTER      |
| 1075 | A6 00 | CNTTT2 | LDA A | 0,X    | GET CHARACTER    |
| 1077 | 91 BA |        | CMP A | DELIM  | IS IT DELIMITER? |
| 1079 | 27 08 |        | BEQ   | CNTTT3 |                  |
| 107B | 81 0D |        | CMP A | #\$D   | IS IT C. R. ?    |
| 107D | 27 04 |        | BEQ   | CNTTT3 |                  |
| 107F | 08    |        | INX   |        | BUMP THE POINTER |
| 1080 | 5C    |        | INC B |        | BUMP COUNT       |
| 1081 | 20 F2 |        | BRA   | CNTTT2 |                  |
| 1083 | DF E8 | CNTTT3 | STX   | SPCPT1 | SET POINTER      |
| 1085 | 39    |        | RTS   |        | RETURN           |

## \* TRANSFER TITLE TO BUFFER

|      |          |        |       |        |               |
|------|----------|--------|-------|--------|---------------|
| 1086 | DE E6    | XFRTTL | LDX   | CMNPNT | SET POINTER   |
| 1088 | 9C E8    |        | CPX   | SPCPT1 | FINISHED?     |
| 108A | 27 15    |        | BEQ   | BMPCP2 |               |
| 108C | A6 00    |        | LDA A | 0,X    | GET CHARACTER |
| 108E | 08       |        | INX   |        | BUMP TO NEXT  |
| 108F | DF E6    |        | STX   | CMNPNT | SAVE          |
| 1091 | DE BD    |        | LDX   | TTLPNT | SET POINTER   |
| 1093 | A7 00    |        | STA A | 0,X    | PUT CHARACTER |
| 1095 | 08       |        | INX   |        | BUMP TO NEXT  |
| 1096 | DF BD    |        | STX   | TTLPNT | SAVE          |
| 1098 | 7C 00 B9 |        | INC   | TPOS   | BUMP POSITION |
| 109B | 20 E9    |        | BRA   | XFRTTL | REPEAT        |
| 109D | 20 02    | XFRTT2 | BRA   | BMPCP2 |               |

## \* BUMP COMMAND POINTER

|      |       |        |     |        |             |
|------|-------|--------|-----|--------|-------------|
| 109F | DE E6 | BMPCP  | LDX | CMNPNT | GET POINTER |
| 10A1 | 08    | BMPCP2 | INX |        | BUMP IT     |
| 10A2 | DF E6 |        | STX | CMNPNT | SAVE IT     |
| 10A4 | 39    |        | RTS |        | RETURN      |

## \* IF COMMAND . IF CONDITION . CM

|      |          |      |       |        |                   |
|------|----------|------|-------|--------|-------------------|
| 10A5 | 7F 00 89 | IF   | CLR   | NEGT   | CLEAR FLAG        |
| 10A8 | BD 11 D8 | IF1  | JSR   | LDNSKP | FIND NEXT CHAR    |
| 10AB | 81 21    |      | CMP A | #'!    | IS IT A '!'       |
| 10AD | 26 07    |      | BNE   | IF3    |                   |
| 10AF | 73 00 89 |      | COM   | NEGT   | SET NEG FLAG      |
| 10B2 | 8D EB    |      | BSR   | BMPCP  | BUMP POINTER      |
| 10B4 | 20 F2    |      | BRA   | IF1    |                   |
| 10B6 | 81 5F    | IF3  | CMP A | #\$5F  | IS IT LOWER CASE? |
| 10B8 | 23 02    |      | BLS   | IF35   |                   |
| 10BA | 80 20    |      | SUB A | #\$20  | MAKE UPPER        |
| 10BC | 81 4F    | IF35 | CMP A | #'0    | CHECK IF ODD      |
| 10BE | 26 07    |      | BNE   | IF4    |                   |
| 10C0 | 96 74    |      | LDA A | PGN    | GET PAGE NUMBER   |



|      |    |       |      |     |        |                  |
|------|----|-------|------|-----|--------|------------------|
| 10C2 | 46 |       | ROR  | A   |        | CHECK IF ODD     |
| 10C3 | 24 | 28    | BCC  |     | IFN    |                  |
| 10C5 | 20 | 09    | BRA  |     | IFY    |                  |
| 10C7 | 81 | 45    | IF4  | CMP | A #'E  | EVEN?            |
| 10C9 | 26 | 27    | BNE  |     | IF6    |                  |
| 10CB | 96 | 74    | LDA  | A   | PGN    | GET PAGE NUMBER  |
| 10CD | 46 |       | ROR  | A   |        | CHECK IF EVEN    |
| 10CE | 25 | 1D    | BCS  |     | IFN    |                  |
| 10D0 | 96 | 89    | IFY  | LDA | A NEG  | CHECK NEG.       |
| 10D2 | 26 | 31    | BNE  |     | IF8    |                  |
| 10D4 | 8D | C9    | IF5  | BSR | BMPCP  | BUMP POINTER     |
| 10D6 | BD | 11 D8 | JSR  |     | LDNSKP | GET NEXT CHAR    |
| 10D9 | 7F | 00 6F | CLR  |     | NOFL   | CLEAR FLAG       |
| 10DC | 81 | 2E    | CMP  | A   | #'     | IS IT PERIOD?    |
| 10DE | 27 | 06    | BEQ  |     | IF55   |                  |
| 10E0 | 81 | 3A    | CMP  | A   | #':    | IS IT COLON?     |
| 10E2 | 26 | 0D    | BNE  |     | IFN2   |                  |
| 10E4 | 97 | 6F    | STA  | A   | NOFL   | SET NO FLUSH     |
| 10E6 | 08 |       | IF55 | INX |        | FIX POINTER      |
| 10E7 | DF | E6    | STX  |     | CMNPNT | SAVE IT          |
| 10E9 | 7C | 00 8A | INC  |     | IFFLG  | SET IF FLAG      |
| 10EC | 39 |       | RTS  |     |        | RETURN           |
| 10ED | 96 | 89    | IFN  | LDA | A NEG  | CHECK NEG.       |
| 10EF | 26 | E3    | BNE  |     | IF5    |                  |
| 10F1 | 39 |       | IFN2 | RTS |        | RETURN           |
| 10F2 | BD | 12 1A | IF6  | JSR | CHKNUM | CHECK FOR NUMBER |
| 10F5 | 24 | 0E    | BCC  |     | IF8    |                  |
| 10F7 | DE | E6    | LDX  |     | CMNPNT | GET POINTER      |
| 10F9 | 09 |       | DEX  |     |        | ADJUST           |
| 10FA | 09 |       | DEX  |     |        |                  |
| 10FB | DF | E6    | STX  |     | CMNPNT | SAVE             |
| 10FD | 96 | 70    | LDA  | A   | INNUM  | GET NUMBER       |
| 10FF | 2B | EC    | BMI  |     | IFN    |                  |
| 1101 | 27 | EA    | BEQ  |     | IFN    |                  |
| 1103 | 20 | CB    | BRA  |     | IFY    |                  |
| 1105 | 39 |       | IF8  | RTS |        | RETURN           |

## \* TEST FOR NEGATIVE NUMBER

|      |    |       |        |     |         |             |
|------|----|-------|--------|-----|---------|-------------|
| 1106 | 96 | 70    | TSTNEG | LDA | A INNUM | GET NUMBER  |
| 1108 | 2A | 07    | BPL    |     | TSTNE2  |             |
| 110A | 97 | 72    | STA    | A   | SIGN    | SET SIGN    |
| 110C | 97 | 71    | STA    | A   | NEG     | SET NEG     |
| 110E | 70 | 00 70 | NEG    |     | INNUM   | NEGATE NUM. |
| 1111 | 39 |       | TSTNE2 | RTS |         | RETURN      |

## \* CHANGE TRAP LOCATION .CH -M -N

|      |    |       |      |     |        |                  |
|------|----|-------|------|-----|--------|------------------|
| 1112 | BD | 12 1A | CHNG | JSR | CHKNUM | CHECK FOR NUMBER |
| 1115 | 24 | 19    | BCC  |     | CHNG3  |                  |
| 1117 | 8D | ED    | BSR  |     | TSTNEG | NEGATIVE?        |
| 1119 | 96 | 4F    | LDA  | A   | PGL    | GET PAGE LENGTH  |
| 111B | 4C |       | INC  | A   |        |                  |
| 111C | BD | 12 09 | JSR  |     | FIXVAL | FIX VALUE        |

|      |    |    |    |        |         |                  |
|------|----|----|----|--------|---------|------------------|
| 111F | CE | 17 | D8 | LDX    | #TRAPS  | POINT TO TRAPS   |
| 1122 | 4D |    |    | TST    | A       |                  |
| 1123 | 26 | 01 |    | BNE    | CHNG2   |                  |
| 1125 | 4C |    |    | INC    | A       | BUMP IT          |
| 1126 | A1 | 00 |    | CHNG2  | CMP     | A 0, X           |
|      |    |    |    |        |         | TEST LOCATION    |
| 1128 | 27 | 23 |    | BEQ    | CHNG5   |                  |
| 112A | BD | 0D | 97 | JSR    | INTRP   | BUMP POS.        |
| 112D | 26 | F7 |    | BNE    | CHNG2   |                  |
| 112F | 39 |    |    | CHNG25 | RTS     | RETURN           |
| 1130 | BD | 0F | 8A | CHNG3  | JSR     | GTNAM            |
|      |    |    |    |        |         | GO GET NAME      |
| 1133 | 96 | A0 |    | LDA    | A       | MACNAM           |
| 1135 | 27 | F8 |    | BEQ    | CHNG25  |                  |
| 1137 | D6 | A1 |    | LDA    | B       | MACNAM+1         |
| 1139 | CE | 17 | D8 | LDX    | #TRAPS  | POINT TO TRAPS   |
| 113C | A1 | 01 |    | CHNG4  | CMP     | A 1, X           |
|      |    |    |    |        |         | CHECK CHAR.      |
| 113E | 26 | 04 |    | BNE    | CHNG45  |                  |
| 1140 | E1 | 02 |    | CMP    | B       | 2, X             |
| 1142 | 27 | 09 |    | BEQ    | CHNG5   |                  |
| 1144 | 08 |    |    | CHNG45 | INX     | BUMP TO NEXT     |
| 1145 | 08 |    |    | INX    |         |                  |
| 1146 | 08 |    |    | INX    |         |                  |
| 1147 | 8C | 18 | 08 | CPX    | #TRPEND | END OF TABLE?    |
| 114A | 26 | F0 |    | BNE    | CHNG4   |                  |
| 114C | 39 |    |    | RTS    |         | RETURN           |
| 114D | DF | F0 |    | CHNG5  | STX     | TEMP5            |
|      |    |    |    |        |         | SAVE POINTER     |
| 114F | BD | 12 | 1A | JSR    | CHKNUM  | CHECK FOR NUMBER |
| 1152 | 24 | DB |    | BCC    | CHNG25  |                  |
| 1154 | 8D | B0 |    | BSR    | TSTNEG  | IS IT NEG. ?     |
| 1156 | 96 | 4F |    | LDA    | A       | PGL              |
|      |    |    |    |        |         | GET PAGE LENGTH  |
| 1158 | 4C |    |    | INC    | A       |                  |
| 1159 | BD | 12 | 09 | JSR    | FIXVAL  | FIX VALUE        |
| 115C | 4D |    |    | TST    | A       |                  |
| 115D | 26 | 01 |    | BNE    | CHNG6   |                  |
| 115F | 4C |    |    | INC    | A       | BUMP IT          |
| 1160 | DE | F0 |    | CHNG6  | LDX     | TEMP5            |
|      |    |    |    |        |         | RESTORE POINTER  |
| 1162 | A7 | 00 |    | STA    | A       | 0, X             |
|      |    |    |    |        |         | PUT CHAR         |
| 1164 | 39 |    |    | RTS    |         | RETURN           |

## \* SET NUMBER REGISTER . NR X N

|      |    |    |    |       |     |        |                  |
|------|----|----|----|-------|-----|--------|------------------|
| 1165 | BD | 11 | D8 | NREG  | JSR | LDNSKP | GET TO NEXT      |
| 1168 | BD | 11 | E6 |       | JSR | CLSFY  | CLASSIFY IT      |
| 116B | C1 | 02 |    |       | CMP | B #2   |                  |
| 116D | 26 | 14 |    |       | BNE | NREG4  |                  |
| 116F | 36 |    |    |       | PSH | A      | SAVE             |
| 1170 | BD | 10 | 9F |       | JSR | BMPCP  | BUMP POINTER     |
| 1173 | BD | 12 | 1A |       | JSR | CHKNUM | CHECK FOR NUMBER |
| 1176 | 32 |    |    |       | PUL | A      | RESTORE          |
| 1177 | 24 | 0A |    |       | BCC | NREG4  |                  |
| 1179 | BD | 11 | A8 |       | JSR | FNDNUM | GO FIND NUMBER   |
| 117C | A6 | 00 |    |       | LDA | A 0, X | GET CHARACTER    |
| 117E | BD | 12 | 09 |       | JSR | FIXVAL | FIX VALUE        |
| 1181 | A7 | 00 |    |       | STA | A 0, X | SAVE IT          |
| 1183 | 39 |    |    | NREG4 | RTS |        | RETURN           |

## \* SET ARABIC MODE .AR

```

1184 7F 00 C4 ARB CLR ROM CLEAR ROMAN
1187 39 RTS RETURN

```

## \* SET FOR SMALL ROMAN .SR

```

1188 86 80 SR0M LDA A #$80
118A 97 C4 ROM2 STA A ROM SET FLAG
118C 39 RTS

```

## \* SET FOR CAPITAL ROMAN .CR

```

118D 86 0F CROM LDA A #$F
118F 20 F9 BRA ROM2 SET FLAG

```

## \* SET AUTO INCREMENT .AUN

```

1191 BD 12 1A SAUTO JSR CHKNUM CHECK FOR NUMBER
1194 24 07 BCC SAUTO4
1196 96 C2 LDA A AUTO GET OLD
1198 BD 12 09 JSR FIXVAL FIX VALUE
119B 97 C2 STA A AUTO SAVE NEW
119D 39 SAUTO4 RTS RETURN

```

## \* CLEAR NUMBER SPACE

```

119E 5F CLRNUM CLR B
119F D7 70 STA B INNUM CLEAR OUT NUM
11A1 D7 5F STA B INC
11A3 D7 5A STA B GNUM SET FLAGS
11A5 D7 5D STA B BNUM
11A7 39 RTS RETURN

```

## \* FIND NUMBER REGISTER

```

11A8 CE 00 40 FNDNUM LDX #NMREGS SET POINTER
11AB 80 41 SUB A #$41
11AD DF 60 STX NUMPNT
11AF 9B 61 ADD A NUMPNT+1 ADD OFFSET
11B1 97 61 STA A NUMPNT+1
11B3 DE 60 LDX NUMPNT GET POINTER
11B5 39 RTS RETURN

```

## \* FETCH NUMBER FROM BUFFER

```

11B6 DE 60 FTCHNM LDX NUMPNT SET POINTER
11B8 9C 63 CPX LSTNUM FINISHED?
11BA 27 16 BEQ FTCHN2
11BC A6 00 LDA A 0,X GET A CHAR.
11BE 84 7F AND A #$7F MASK IT
11C0 08 INX BUMP THE POINTER
11C1 DF 60 STX NUMPNT SAVE IT

```

|      |    |    |    |        |     |        |                   |
|------|----|----|----|--------|-----|--------|-------------------|
| 11C3 | 81 | 0D |    | CMP    | A   | #\$D   | C. R. ?           |
| 11C5 | 26 | 08 |    | BNE    |     | FTCHN1 |                   |
| 11C7 | 7D | 00 | 69 | TST    |     | NOCR   | TEST FLAG         |
| 11CA | 26 | 03 |    | BNE    |     | FTCHN1 |                   |
| 11CC | 7E | 07 | 48 | JMP    |     | FETCH5 | RETURN            |
| 11CF | 7E | 07 | 0A | FTCHN1 | JMP | FETCH3 |                   |
| 11D2 | 7F | 00 | 62 | FTCHN2 | CLR | EXCHR  | CLEAR EXTRA CHAR. |
| 11D5 | 7E | 06 | 8C |        | JMP | GETCHR | GO GET CHAR       |

## \* LOAD POINTER AND SKIP SPACES

|      |    |    |  |        |     |         |               |
|------|----|----|--|--------|-----|---------|---------------|
| 11D8 | DE | E6 |  | LDNSKP | LDX | CMNPNT  | SET POINTER   |
| 11DA | A6 | 00 |  | LDNSK2 | LDA | A 0, X  | GET CHARACTER |
| 11DC | 81 | 20 |  |        | CMP | A #\$20 | IS IT SPACE?  |
| 11DE | 26 | 03 |  |        | BNE | LDNSK4  |               |
| 11E0 | 08 |    |  |        | INX |         | BUMP TO NEXT  |
| 11E1 | 20 | F7 |  |        | BRA | LDNSK2  |               |
| 11E3 | DF | E6 |  | LDNSK4 | STX | CMNPNT  | SAVE POSITION |
| 11E5 | 39 |    |  |        | RTS |         | RETURN        |

## \* CLASSIFY CHARACTER

|      |    |    |  |        |     |         |                   |
|------|----|----|--|--------|-----|---------|-------------------|
| 11E6 | 5F |    |  | CLSFY  | CLR | B       | CLEAR SPECIFIER   |
| 11E7 | 4D |    |  |        | TST | A       | TEST CHAR         |
| 11E8 | 2B | 1E |  |        | BMI | CLSFY4  |                   |
| 11EA | 81 | 5F |  |        | CMP | A #\$5F | LOWER CASE?       |
| 11EC | 23 | 06 |  |        | BLS | CLSFY1  |                   |
| 11EE | 81 | 7F |  |        | CMP | A #\$7F | TEST FOR PARITY   |
| 11F0 | 22 | 16 |  |        | BHI | CLSFY4  |                   |
| 11F2 | 80 | 20 |  |        | SUB | A #\$20 | MAKE UPPER CASE   |
| 11F4 | 81 | 30 |  | CLSFY1 | CMP | A #'0   | CHAR A NUMBER?    |
| 11F6 | 25 | 10 |  |        | BLO | CLSFY4  |                   |
| 11F8 | 81 | 39 |  |        | CMP | A #'9   |                   |
| 11FA | 22 | 02 |  |        | BHI | CLSFY2  |                   |
| 11FC | 5C |    |  |        | INC | B       | IF SO, SET        |
| 11FD | 39 |    |  |        | RTS |         | RETURN            |
| 11FE | 81 | 41 |  | CLSFY2 | CMP | A #'A   | IS CHAR A LETTER? |
| 1200 | 25 | 06 |  |        | BLO | CLSFY4  |                   |
| 1202 | 81 | 5A |  |        | CMP | A #'Z   |                   |
| 1204 | 22 | 02 |  |        | BHI | CLSFY4  |                   |
| 1206 | C6 | 02 |  |        | LDA | B #2    | IF SO, SET        |
| 1208 | 39 |    |  | CLSFY4 | RTS |         | RETURN            |

## \* FIX NUMBER VALUE

|      |    |    |    |        |     |         |               |
|------|----|----|----|--------|-----|---------|---------------|
| 1209 | D6 | 70 |    | FIXVAL | LDA | B INNUM | GET NUMBER    |
| 120B | 7D | 00 | 72 |        | TST | SIGN    | TEST SIGN     |
| 120E | 27 | 08 |    |        | BEQ | FIXVA4  |               |
| 1210 | 7D | 00 | 71 |        | TST | NEG     | TEST FOR NEG. |
| 1213 | 27 | 01 |    |        | BEQ | FIXVA3  |               |
| 1215 | 50 |    |    |        | NEG | B       | NEGATE NUM    |
| 1216 | 1B |    |    | FIXVA3 | ABA |         | FIX VALUE     |
| 1217 | 39 |    |    |        | RTS |         | RETURN        |
| 1218 | 17 |    |    | FIXVA4 | TBA |         |               |

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1219 39                RTS

* CHECK FOR NUMBER

121A 4F                CHKNUM CLR A          CLEAR FLAGS
121B 97 72            STA A          SIGN
121D 97 71            STA A          NEG
121F BD 11 9E        JSR          CLRNUM    CLEAR NUMBER
1222 5C                INC B
1223 D7 69            STA B          NOCR          SET FLAGS
1225 BD 11 D8        JSR          LDNSKP    GO TO NEXT
1228 81 2B            CMP A          #'+'      IS IT A '+'?
122A 27 06            BEQ          CHKNU2
122C 81 2D            CMP A          #'-'      IS IT A '-'?
122E 26 0B            BNE          CHKNU4
1230 97 71            STA A          NEG          SET NEG.
1232 08                CHKNU2 INX          BUMP THE POINTER
1233 DF E6            STX          CMNPNT    SAVE IT
1235 8D 1F            BSR          PRNUM     PROCESS NUMBER
1237 24 0D            BCC          CHKNU6
1239 20 07            BRA          CHKNU5
123B 08                CHKNU4 INX          FIX POINTER
123C DF E6            STX          CMNPNT    SAVE IT
123E 8D 32            BSR          PRNU28   PROCESS NUM.
1240 24 04            BCC          CHKNU6
1242 8D 0B            CHKNU5 BSR          CLRTHM   CLEAR FLAGS
1244 0D                SEC
1245 39                RTS          RETURN
1246 8D 07            CHKNU6 BSR          CLRTHM   CLEAR FLAGS
1248 DE E6            LDX          CMNPNT   SET POINTER
124A 09                DEX
124B DF E6            STX          CMNPNT
124D 0C                CLC
124E 39                RTS          RETURN

* CLEAR FLAGS

124F 7F 00 62        CLRTHM CLR          EXCHR    CLEAR THEM
1252 7F 00 69        CLR          NOCR
1255 39                RTS          RETURN

* PROCESS NUMBER

1256 97 72            PRNUM  STA A          CLEAR SIGN
1258 BD 11 9E        PRNUM2 JSR          CLRNUM    CLEAR NUMBER
125B 5C                INC B
125C D7 69            STA B          NOCR          SET FLAGS
125E 7F 00 5F        PRNU27 CLR          INC
1261 7C 00 75        INC          PASCHR
1264 BD 06 8C        JSR          GETCHR    GET NEXT CHAR.
1267 7D 00 7F        TST          NOEXP    DO EXPRESSIONS?
126A 27 06            BEQ          PRNU28
126C 7F 00 7F        CLR          NOEXP
126F 7E 13 19        JMP          PRNU82    JUMP AHEAD

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|      |    |    |    |        |     |         |                  |
|------|----|----|----|--------|-----|---------|------------------|
| 1272 | BD | 11 | E6 | PRNU28 | JSR | CLSFY   | GO CLASSIFY      |
| 1275 | C1 | 01 |    |        | CMP | B #1    |                  |
| 1277 | 25 | 05 |    | PRNUM3 | BLO | PRNU31  |                  |
| 1279 | 27 | 51 |    |        | BEQ | PRNUM5  |                  |
| 127B | 7E | 13 | 07 |        | JMP | PRNU73  |                  |
| 127E | 7D | 00 | 70 | PRNU31 | TST | INNUM   | TEST NUMBER      |
| 1281 | 27 | 05 |    |        | BEQ | PRNU32  |                  |
| 1283 | 36 |    |    |        | PSH | A       |                  |
| 1284 | 96 | 70 |    |        | LDA | A INNUM | GET NUMBER       |
| 1286 | 20 | 58 |    |        | BRA | PRNUM6  |                  |
| 1288 | 7F | 00 | 70 | PRNU32 | CLR | INNUM   | CLEAR NUMBER     |
| 128B | 81 | 23 |    |        | CMP | A #'#   | CHECK FOR '#'    |
| 128D | 27 | 18 |    |        | BEQ | PRNUM4  |                  |
| 128F | 81 | 2B |    |        | CMP | A #'+   | IS IT '+ '?      |
| 1291 | 26 | 04 |    |        | BNE | PRNU35  |                  |
| 1293 | 97 | 5B |    |        | STA | A ADD   | SET FOR ADD      |
| 1295 | 20 | C7 |    |        | BRA | PRNU27  |                  |
| 1297 | 81 | 2D |    | PRNU35 | CMP | A #'-   | IS IT '- '?      |
| 1299 | 26 | 04 |    |        | BNE | PRNU37  |                  |
| 129B | 97 | 5C |    |        | STA | A SUB   | SET FOR SUBTRACT |
| 129D | 20 | BF |    |        | BRA | PRNU27  |                  |
| 129F | 81 | 25 |    | PRNU37 | CMP | A #'%   | IS IT '% '?      |
| 12A1 | 26 | 6C |    |        | BNE | PRNUM8  |                  |
| 12A3 | 96 | 74 |    |        | LDA | A PGN   | GET PAGE NUMBER  |
| 12A5 | 20 | 39 |    |        | BRA | PRNUM6  |                  |
| 12A7 | 7C | 00 | 75 | PRNUM4 | INC | PASCHR  | SET FLAG         |
| 12AA | BD | 06 | 8C |        | JSR | GETCHR  | GET CHARACTER    |
| 12AD | BD | 11 | E6 |        | JSR | CLSFY   | CLASSIFY IT      |
| 12B0 | C1 | 02 |    |        | CMP | B #2    |                  |
| 12B2 | 26 | 10 |    |        | BNE | PRNU45  |                  |
| 12B4 | BD | 11 | A8 |        | JSR | FNDNUM  | GO FIND NUMBER   |
| 12B7 | A6 | 00 |    |        | LDA | A 0, X  | GET VALUE        |
| 12B9 | 7D | 00 | 5F |        | TST | INC     | INCREMENT?       |
| 12BC | 27 | 22 |    |        | BEQ | PRNUM6  |                  |
| 12BE | 9B | C2 |    |        | ADD | A AUTO  | ADD IN AUTO      |
| 12C0 | A7 | 00 |    |        | STA | A 0, X  | SAVE NEW         |
| 12C2 | 20 | 1C |    |        | BRA | PRNUM6  |                  |
| 12C4 | 81 | 2B |    | PRNU45 | CMP | A #'+   | IS IT '+ '?      |
| 12C6 | 26 | 47 |    |        | BNE | PRNUM8  |                  |
| 12C8 | 97 | 5F |    |        | STA | A INC   | SET INC.         |
| 12CA | 20 | DB |    |        | BRA | PRNUM4  |                  |
| 12CC | 80 | 30 |    | PRNUM5 | SUB | A #30   | BIAS NUMBER      |
| 12CE | 36 |    |    |        | PSH | A       |                  |
| 12CF | D6 | 70 |    |        | LDA | B INNUM | GET NUM          |
| 12D1 | 58 |    |    |        | ASL | B       | ADJUST           |
| 12D2 | 58 |    |    |        | ASL | B       |                  |
| 12D3 | DB | 70 |    |        | ADD | B INNUM | ADD IT IN        |
| 12D5 | 58 |    |    |        | ASL | B       |                  |
| 12D6 | 32 |    |    |        | PUL | A       | RESTORE          |
| 12D7 | 1B |    |    |        | ABA |         |                  |
| 12D8 | 97 | 70 |    |        | STA | A INNUM | SAVE NEW VALUE   |
| 12DA | 7C | 00 | 5A |        | INC | GNUM    | SET GOOD         |
| 12DD | 7E | 12 | 5E |        | JMP | PRNU27  | REPEAT           |
| 12E0 | D6 | 5C |    | PRNUM6 | LDA | B SUB   | SUBTRACT?        |

|      |    |    |        |        |         |                  |             |
|------|----|----|--------|--------|---------|------------------|-------------|
| 12E2 | 27 | 06 |        | BEQ    | PRNU65  |                  |             |
| 12E4 | 16 |    |        | TAB    |         | DO SUBTRACT      |             |
| 12E5 | 96 | 5D |        | LDA    | A BNUM  |                  |             |
| 12E7 | 10 |    |        | SBA    |         |                  |             |
| 12E8 | 20 | 06 |        | BRA    | PRNUM7  |                  |             |
| 12EA | D6 | 5B | PRNU65 | LDA    | B ADD   | ADDITION?        |             |
| 12EC | 27 | 02 |        | BEQ    | PRNUM7  |                  |             |
| 12EE | 9B | 5D |        | ADD    | A BNUM  | DO ADD           |             |
| 12F0 | 97 | 5D | PRNUM7 | STA    | A BNUM  | SAVE NUMBER      |             |
| 12F2 | 7F | 00 | 5B     | CLR    | ADD     | CLEAR FLAGS      |             |
| 12F5 | 7F | 00 | 5C     | CLR    | SUB     |                  |             |
| 12F8 | 7C | 00 | 5A     | INC    | GDNUM   | SET GOOD         |             |
| 12FB | 7D | 00 | 70     | TST    | INNUM   | TEST NUMBER      |             |
| 12FE | 26 | 03 |        | BNE    | PRNU72  |                  |             |
| 1300 | 7E | 12 | 5E     | JMP    | PRNU27  |                  |             |
| 1303 | 32 |    | PRNU72 | PUL    | A       | RESTORE CHAR     |             |
| 1304 | 7E | 12 | 88     | JMP    | PRNU32  |                  |             |
| 1307 | 7D | 00 | 70     | PRNU73 | TST     | INNUM            | TEST NUMBER |
| 130A | 27 | 03 |        | BEQ    | PRNUM8  |                  |             |
| 130C | 36 |    |        | PSH    | A       |                  |             |
| 130D | 20 | D1 |        | BRA    | PRNUM6  |                  |             |
| 130F | 7F | 00 | 7F     | PRNUM8 | CLR     | NOEXP            | CLEAR FLAG  |
| 1312 | 7D | 00 | 5A     | TST    | GDNUM   | TEST GOOD        |             |
| 1315 | 26 | 02 |        | BNE    | PRNU82  |                  |             |
| 1317 | 0C |    |        | CLC    |         | SET CONDITION    |             |
| 1318 | 39 |    |        | RTS    |         | RETURN           |             |
| 1319 | 97 | 62 | PRNU82 | STA    | A EXCHR | SAVE EXTRA CHAR. |             |
| 131B | CE | 01 | 25     | LDX    | #NUM    | POINT TO NUMBER  |             |
| 131E | 96 | 5D |        | LDA    | A BNUM  | GET NUMBER       |             |
| 1320 | 97 | 70 |        | STA    | A INNUM |                  |             |
| 1322 | 27 | 04 |        | BEQ    | BTOD    |                  |             |
| 1324 | D6 | C4 |        | LDA    | B ROM   | ROMAN OR ARABIC? |             |
| 1326 | 26 | 37 |        | BNE    | BTOROM  |                  |             |

## \* BINARY TO ASCII ARABIC

|      |    |    |       |       |        |        |                |
|------|----|----|-------|-------|--------|--------|----------------|
| 1328 | 5F |    |       | BTOD  | CLR    | B      |                |
| 1329 | 81 | 64 |       | BTOD1 | CMP    | A #100 | NUM > 100?     |
| 132B | 25 | 05 |       |       | BLO    | BTOD2  |                |
| 132D | 80 | 64 |       |       | SUB    | A #100 | SUB OFF 100    |
| 132F | 5C |    |       |       | INC    | B      | BUMP NUMBER    |
| 1330 | 20 | F7 |       |       | BRA    | BTOD1  |                |
| 1332 | 5D |    | BTOD2 | TST   | B      |        | ANY YET?       |
| 1333 | 27 | 06 |       | BEQ   | BTOD3  |        |                |
| 1335 | CB | 30 |       | ADD   | B #30  |        | SET HUNDREDS   |
| 1337 | E7 | 00 |       | STA   | B 0, X |        | SAVE           |
| 1339 | 08 |    |       | INX   |        |        | GO TO NEXT     |
| 133A | 5F |    |       | CLR   | B      |        | CLEAR REGISTER |
| 133B | 81 | 0A | BTOD3 | CMP   | A #10  |        | NUMBER > 10    |
| 133D | 25 | 05 |       |       | BLO    | BTOD4  |                |
| 133F | 80 | 0A |       |       | SUB    | A #10  | SUB VALUE      |
| 1341 | 5C |    |       |       | INC    | B      | BUMP NUMBER    |
| 1342 | 20 | F7 |       |       | BRA    | BTOD3  |                |
| 1344 | 5D |    | BTOD4 | TST   | B      |        | ANY?           |

|      |    |    |        |       |        |                 |
|------|----|----|--------|-------|--------|-----------------|
| 1345 | 27 | 05 |        | BEQ   | BTOD45 |                 |
| 1347 | C8 | 30 |        | ADD B | ##30   | ADD BIAS        |
| 1349 | E7 | 00 |        | STA B | 0, X   | SAVE TENS       |
| 134B | 08 |    |        | INX   |        | BUMP TO NEXT    |
| 134C | 8B | 30 | BTOD45 | ADD A | ##30   | ADD IN BIAS     |
| 134E | A7 | 00 |        | STA A | 0, X   | SAVE ONES       |
| 1350 | 08 |    |        | INX   |        | BUMP POINTER    |
| 1351 | 96 | 62 | BTOD5  | LDA A | EXCHR  | GET EXTRA       |
| 1353 | A7 | 00 |        | STA A | 0, X   | SAVE IT         |
| 1355 | 08 |    |        | INX   |        | BUMP TO NEXT    |
| 1356 | DF | 63 |        | STX   | LSTNUM | SAVE POSITION   |
| 1358 | CE | 01 | 25     | LDX   | #NUM   | POINT TO NUMBER |
| 135B | DF | 60 |        | STX   | NUMPNT |                 |
| 135D | 0D |    |        | SEC   |        |                 |
| 135E | 39 |    |        | RTS   |        | RETURN          |

## \* BINARY TO ASCII ROMAN

|      |    |    |        |       |        |                  |
|------|----|----|--------|-------|--------|------------------|
| 135F | C6 | 43 | BTOROM | LDA B | #'C    | SET HUNDREDS     |
| 1361 | 81 | 64 | BTOR01 | CMP A | #100   | NUMBER > 100?    |
| 1363 | 25 | 07 |        | BLO   | BTOR02 |                  |
| 1365 | 80 | 64 |        | SUB A | #100   | SUBTRACT OFF     |
| 1367 | E7 | 00 |        | STA B | 0, X   | SET 100          |
| 1369 | 08 |    |        | INX   |        | BUMP TO NEXT     |
| 136A | 20 | F5 |        | BRA   | BTOR01 |                  |
| 136C | 81 | 5A | BTOR02 | CMP A | #90    | CHECK FOR 90     |
| 136E | 25 | 0A |        | BLO   | BTOR03 |                  |
| 1370 | 80 | 5A |        | SUB A | #90    | SUBTRACT OFF     |
| 1372 | E7 | 01 |        | STA B | 1, X   | PUT CHARACTER    |
| 1374 | C6 | 58 |        | LDA B | #'X    | SET TENS         |
| 1376 | E7 | 00 |        | STA B | 0, X   | SAVE IT          |
| 1378 | 08 |    |        | INX   |        | BUMP TO NEXT     |
| 1379 | 08 |    |        | INX   |        |                  |
| 137A | 81 | 32 | BTOR03 | CMP A | #50    | CHECK FOR FIFTY  |
| 137C | 25 | 07 |        | BLO   | BTOR04 |                  |
| 137E | 80 | 32 |        | SUB A | #50    | SUBTRACT OFF     |
| 1380 | C6 | 4C |        | LDA B | #'L    | SET 'L'          |
| 1382 | E7 | 00 |        | STA B | 0, X   | SAVE IT          |
| 1384 | 08 |    |        | INX   |        | BUMP THE POINTER |
| 1385 | 81 | 28 | BTOR04 | CMP A | #40    | CHECK FOR 40     |
| 1387 | 25 | 0C |        | BLO   | BTOR05 |                  |
| 1389 | 80 | 28 |        | SUB A | #40    | SUBTRACT OFF     |
| 138B | C6 | 58 |        | LDA B | #'X    | SET TEN          |
| 138D | E7 | 00 |        | STA B | 0, X   | SAVE IT          |
| 138F | C6 | 4C |        | LDA B | #'L    | SET 50           |
| 1391 | E7 | 01 |        | STA B | 1, X   | SAVE IT          |
| 1393 | 08 |    |        | INX   |        | BUMP TO NEXT     |
| 1394 | 08 |    |        | INX   |        |                  |
| 1395 | C6 | 58 | BTOR05 | LDA B | #'X    | SET UP 'X'       |
| 1397 | 81 | 0A |        | CMP A | #10    | CHECK TENS       |
| 1399 | 25 | 07 |        | BLO   | BTOR06 |                  |
| 139B | 80 | 0A |        | SUB A | #10    | SUBTRACT OFF     |
| 139D | E7 | 00 |        | STA B | 0, X   | SAVE             |
| 139F | 08 |    |        | INX   |        | BUMP POINTER     |



|      |    |    |        |        |        |                |
|------|----|----|--------|--------|--------|----------------|
| 13A0 | 20 | F3 |        | BRA    | BTOR05 |                |
| 13A2 | 81 | 09 | BTOR06 | CMP A  | #9     | CHECK IF 9     |
| 13A4 | 25 | 0A |        | BLO    | BTOR65 |                |
| 13A6 | 80 | 09 |        | SUB A  | #9     | SUBTRACT 9     |
| 13A8 | E7 | 01 |        | STA B  | 1,X    | SAVE CHARACTER |
| 13AA | C6 | 49 |        | LDA B  | #'I    |                |
| 13AC | E7 | 00 |        | STA B  | 0,X    |                |
| 13AE | 08 |    |        | INX    |        | GET TO NEXT    |
| 13AF | 08 |    |        | INX    |        |                |
| 13B0 | 81 | 05 | BTOR65 | CMP A  | #5     | CHECK FOR 5    |
| 13B2 | 25 | 07 |        | BLO    | BTOR07 |                |
| 13B4 | C6 | 56 |        | LDA B  | #'V    | SET UP 'V'     |
| 13B6 | E7 | 00 |        | STA B  | 0,X    | SAVE IT        |
| 13B8 | 08 |    |        | INX    |        | BUMP POINTER   |
| 13B9 | 80 | 05 |        | SUB A  | #5     | FIX VALUE      |
| 13BB | 81 | 04 | BTOR07 | CMP A  | #4     | CHECK FOR 4    |
| 13BD | 25 | 0C |        | BLO    | BTOR08 |                |
| 13BF | 80 | 04 |        | SUB A  | #4     | SUBTRACT OFF   |
| 13C1 | C6 | 49 |        | LDA B  | #'I    | SET UP 'I'     |
| 13C3 | E7 | 00 |        | STA B  | 0,X    | SAVE CHARACTER |
| 13C5 | C6 | 56 |        | LDA B  | #'V    |                |
| 13C7 | E7 | 01 |        | STA B  | 1,X    | SAVE 'V'       |
| 13C9 | 08 |    |        | INX    |        | BUMP POINTER   |
| 13CA | 08 |    |        | INX    |        |                |
| 13CB | C6 | 49 | BTOR08 | LDA B  | #'I    |                |
| 13CD | 4D |    |        | TST A  |        | TEST ONES      |
| 13CE | 27 | 06 |        | BEQ    | BTOR09 |                |
| 13D0 | E7 | 00 |        | STA B  | 0,X    | SAVE I'S       |
| 13D2 | 08 |    |        | INX    |        |                |
| 13D3 | 4A |    |        | DEC A  |        | DONE?          |
| 13D4 | 20 | F5 |        | BRA    | BTOR08 |                |
| 13D6 | DF | 63 | BTOR09 | STX    | LSTNUM | SAVE POINTER   |
| 13D8 | 96 | C4 |        | LDA A  | ROM    | CHECK IF SMALL |
| 13DA | 2A | 0E |        | BPL    | BTODON |                |
| 13DC | CE | 01 | 25     | LDX    | #NUM   | RESET POINTER  |
| 13DF | A6 | 00 | BTOR92 | LDA A  | 0,X    | GET CHARACTER  |
| 13E1 | 8B | 20 |        | ADD A  | #\$20  | MAKE SMALL     |
| 13E3 | A7 | 00 |        | STA A  | 0,X    | PUT BACK       |
| 13E5 | 08 |    |        | INX    |        | BUMP TO NEXT   |
| 13E6 | 9C | 63 |        | CPX    | LSTNUM | FINISHED?      |
| 13E8 | 26 | F5 |        | BNE    | BTOR92 |                |
| 13EA | 7E | 13 | 51     | BTODON | JMP    | BTOD5          |

\* PUSH X ONTO STACK

|      |    |    |       |       |          |                 |
|------|----|----|-------|-------|----------|-----------------|
| 13ED | 32 |    | PUSHX | PUL A |          | GET RETURN ADR. |
| 13EE | 33 |    |       | PUL B |          |                 |
| 13EF | 97 | F4 |       | STA A | RETREG   | SAVE IT         |
| 13F1 | D7 | F5 |       | STA B | RETREG+1 |                 |
| 13F3 | DF | F6 |       | STX   | INDEX    | SAVE X          |
| 13F5 | 96 | F6 |       | LDA A | INDEX    | GET PART X      |
| 13F7 | D6 | F7 |       | LDA B | INDEX+1  |                 |
| 13F9 | 36 |    |       | PSH A |          | PUSH ON STACK   |
| 13FA | 37 |    |       | PSH B |          |                 |

|            |       |     |        |            |
|------------|-------|-----|--------|------------|
| 13FB DE F4 | PUSH4 | LDX | RETREG | GET RETURN |
| 13FD 6E 00 |       | JMP | 0, X   | RETURN     |

## \* PULL X FROM STACK

|            |       |       |                 |                 |
|------------|-------|-------|-----------------|-----------------|
| 13FF 32    | PULLX | PUL A | GET RETURN ADR. |                 |
| 1400 33    |       | PUL B |                 |                 |
| 1401 97 F4 |       | STA A | RETREG          | SAVE IT         |
| 1403 D7 F5 |       | STA B | RETREG+1        |                 |
| 1405 33    |       | PUL B |                 | PULL X          |
| 1406 32    |       | PUL A |                 |                 |
| 1407 97 F6 |       | STA A | INDEX           | SAVE X          |
| 1409 D7 F7 |       | STA B | INDEX+1         |                 |
| 140B 96 F4 |       | LDA A | RETREG          | GET RETURN ADR. |
| 140D D6 F5 |       | LDA B | RETREG+1        |                 |
| 140F 37    |       | PSH B |                 | PUSH BACK ON    |
| 1410 36    |       | PSH A |                 |                 |
| 1411 DE F6 |       | LDX   | INDEX           | LOAD UP X       |
| 1413 39    |       | RTS   |                 | RETURN          |

## \* FIX WIDTH

|               |        |       |        |                  |
|---------------|--------|-------|--------|------------------|
| 1414 96 B4    | FIXWD  | LDA A | TLLN   | GET TEMP LENGTH  |
| 1416 9B 4B    |        | ADD A | LLN    | ADD TO LENGTH    |
| 1418 97 4B    |        | STA A | LLN    | SAVE NEW         |
| 141A 96 B3    |        | LDA A | TIND   | GET TEMP IND.    |
| 141C 9B 4B    |        | ADD A | IND    | ADD TO INDENT    |
| 141E 97 4B    |        | STA A | IND    | SAVE NEW         |
| 1420 96 B2    |        | LDA A | TSIN   | GET TEMP SIND.   |
| 1422 9B 7C    |        | ADD A | SIN    | ADD TO SIND.     |
| 1424 97 7C    |        | STA A | SIN    | SAVE NEW         |
| 1426 4F       |        | CLR A |        | CLEAR OLD VALUES |
| 1427 97 B4    |        | STA A | TLLN   |                  |
| 1429 97 B3    |        | STA A | TIND   |                  |
| 142B 97 B2    |        | STA A | TSIN   |                  |
| 142D 96 4B    |        | LDA A | LLN    | GET LINE LENGTH  |
| 142F 90 4B    |        | SUB A | IND    | SUB INDENT       |
| 1431 90 7C    |        | SUB A | SIN    | SUB S IND.       |
| 1433 81 0E    |        | CMP A | #14    | LESS THAN 15?    |
| 1435 22 02    |        | BHI   | FIXWD2 |                  |
| 1437 86 0F    | FIXWD1 | LDA A | #15    | FORCE TO 15      |
| 1439 81 96    | FIXWD2 | CMP A | #150   | >150?            |
| 143B 23 02    |        | BLS   | FIXWD3 |                  |
| 143D 86 96    |        | LDA A | #150   |                  |
| 143F 97 C6    | FIXWD3 | STA A | WIDTH  | SAVE NEW WIDTH   |
| 1441 7E 06 46 |        | JMP   | FIXBFE | GO FIX           |

## \* GET INPUT CHARACTERS

|               |        |       |       |                 |
|---------------|--------|-------|-------|-----------------|
| 1444 CE 17 74 | GIBUF  | LDX   | #SBUF | POINT TO BUFFER |
| 1447 5F       |        | CLR B |       | CLEAR COUNT     |
| 1448 37       | GIBUF2 | PSH B |       |                 |
| 1449 BD 02 06 |        | JSR   | INCH  | GET CHARACTER   |
| 144C 33       |        | PUL B |       |                 |

|      |    |    |        |        |     |         |                  |
|------|----|----|--------|--------|-----|---------|------------------|
| 144D | 81 | 18 |        | CMP    | A   | ##18    | CONTROL X?       |
| 144F | 27 | 18 |        | BEQ    |     | GIBUF6  |                  |
| 1451 | 81 | 0D |        | CMP    | A   | ##\$D   | C. R. ?          |
| 1453 | 27 | 0A |        | BEQ    |     | GIBUF4  |                  |
| 1455 | 81 | 1F |        | CMP    | A   | ##\$1F  | CONTROL CHAR. ?  |
| 1457 | 23 | EF |        | BLS    |     | GIBUF2  |                  |
| 1459 | 5C |    |        | INC    | B   |         | BUMP THE COUNT   |
| 145A | A7 | 00 |        | STA    | A   | 0, X    | PUT CHARACTER    |
| 145C | 08 |    |        | INX    |     |         | BUMP THE POINTER |
| 145D | 20 | E9 |        | BRA    |     | GIBUF2  | REPEAT           |
| 145F | A7 | 00 | GIBUF4 | STA    | A   | 0, X    | PUT CHARACTER    |
| 1461 | CE | 17 | 74     | LDX    |     | ##SBUF  | FIX POINTER      |
| 1464 | DF | E6 |        | STX    |     | CMNPNT  | SAVE IT          |
| 1466 | D7 | 46 |        | STA    | B   | GCNT    | SAVE COUNT       |
| 1468 | 39 |    |        | RTS    |     |         | RETURN           |
| 1469 | CE | 15 | 62     | GIBUF6 | LDX | ##QUSTR | POINT TO STRING  |
| 146C | BD | 14 | 90     | JSR    |     | PSTRNG  | OUTPUT IT        |
| 146F | 20 | D3 |        | BRA    |     | GIBUF   |                  |

## \* TEST FOR BREAK

|      |    |    |    |        |     |          |        |                 |
|------|----|----|----|--------|-----|----------|--------|-----------------|
| 1471 | B6 | 80 | 04 | TSTBRK | LDA | A        | \$8004 | GET STATUS      |
| 1474 | 2A | 01 |    | BPL    |     | TSTBR2   |        |                 |
| 1476 | 39 |    |    | RTS    |     |          |        | RETURN          |
| 1477 | B6 | 80 | 04 | TSTBR2 | LDA | A        | \$8004 | GET STATUS      |
| 147A | 2A | FB |    | BPL    |     | TSTBR2   |        | WAIT TIL CLEAR  |
| 147C | 01 |    |    | NOP    |     |          |        | FOR EXPANSION   |
| 147D | 01 |    |    | NOP    |     |          |        |                 |
| 147E | 01 |    |    | NOP    |     |          |        |                 |
| 147F | CE | 15 | 92 | LDX    |     | ##BRKSTR |        | POINT TO STRING |
| 1482 | 7E | 0C | D8 | JMP    |     | STOP1    |        | OUTPUT IT       |

## \* OUTPUT A C. R. AND L. F.

|      |    |    |    |       |     |  |          |                 |
|------|----|----|----|-------|-----|--|----------|-----------------|
| 1485 | DF | F8 |    | CRLF  | STX |  | XTEMP    | SAVE X REG.     |
| 1487 | CE | 15 | 43 |       | LDX |  | ##CRLFST | POINT TO STRING |
| 148A | BD | 14 | 92 |       | JSR |  | PDATA    | OUTPUT IT       |
| 148D | DE | F8 |    |       | LDX |  | XTEMP    | RESTORE X       |
| 148F | 39 |    |    | CRLF5 | RTS |  |          | RETURN          |

## \* PRINT STRING

|      |    |    |  |        |     |  |      |                |
|------|----|----|--|--------|-----|--|------|----------------|
| 1490 | 8D | F3 |  | PSTRNG | BSR |  | CRLF | OUTPUT CR & LF |
|------|----|----|--|--------|-----|--|------|----------------|

## \* PRINT DATA

|      |    |    |    |        |     |   |        |                 |
|------|----|----|----|--------|-----|---|--------|-----------------|
| 1492 | A6 | 00 |    | PDATA  | LDA | A | 0, X   | GET A CHARACTER |
| 1494 | 81 | 04 |    |        | CMP | A | #4     | IS IT TERM?     |
| 1496 | 27 | 06 |    |        | BEQ |   | PDATA2 |                 |
| 1498 | BD | 02 | 03 |        | JSR |   | OUTCH  | OUTPUT IT       |
| 149B | 08 |    |    |        | INX |   |        | MOVE TO NEXT    |
| 149C | 20 | F4 |    |        | BRA |   | PDATA  | REPEAT          |
| 149E | 39 |    |    | PDATA2 | RTS |   |        | RETURN          |

## \* OUTPUT CHARACTER

|               |        |       |        |                |
|---------------|--------|-------|--------|----------------|
| 149F D6 91    | OUTCHR | LDA B | DIVFLG | DIVERTING?     |
| 14A1 27 06    |        | BEQ   | OUTCH2 |                |
| 14A3 7C 00 92 |        | INC   | DIVFL2 | SET FLAG       |
| 14A6 7E 0E AE |        | JMP   | OUTMAC | OUT TO MACRO   |
| 14A9 D6 79    | OUTCH2 | LDA B | NOOUT  | DO OUTPUT?     |
| 14AB 27 01    |        | BEQ   | OUTCH3 |                |
| 14AD 39       |        | RTS   |        | RETURN         |
| 14AE 84 7F    | OUTCH3 | AND A | #\$7F  | MASK CHAR.     |
| 14B0 D6 93    |        | LDA B | PRNTR  | TO PRINTER?    |
| 14B2 26 03    |        | BNE   | OUTCH4 |                |
| 14B4 7E 02 03 |        | JMP   | OUTCH  | OUT TO TERM    |
| 14B7 7E 02 0F | OUTCH4 | JMP   | POUCH  | OUT TO PRINTER |

## \* INPUT A CHARACTER

|            |        |       |        |                 |
|------------|--------|-------|--------|-----------------|
| 14BA 96 FC | INCHR  | LDA A | CRF    | CHECK FLAG      |
| 14BC 27 0D |        | BEQ   | INCH15 |                 |
| 14BE 37    |        | PSH B |        |                 |
| 14BF D6 9D |        | LDA B | JNKCNT | GET JUNK COUNT  |
| 14C1 27 05 |        | BEQ   | INCHR1 |                 |
| 14C3 8D 06 | INCHR0 | BSR   | INCH15 | SKIP JUNK       |
| 14C5 5A    |        | DEC B |        | DEC COUNT       |
| 14C6 26 FB |        | BNE   | INCHR0 |                 |
| 14C8 D7 FC | INCHR1 | STA B | CRF    |                 |
| 14CA 33    |        | PUL B |        |                 |
| 14CB DF F8 | INCH15 | STX   | XTEMP  | SAVE X REG.     |
| 14CD DE 9B |        | LDX   | NXTRAM | POINT TO NEXT   |
| 14CF 9C 99 |        | CPX   | LSTRAM | FINISHED?       |
| 14D1 27 0E |        | BEQ   | INCHR4 |                 |
| 14D3 A6 00 |        | LDA A | 0, X   | GET CHARACTER   |
| 14D5 08    |        | INX   |        | BUMP TO NEXT    |
| 14D6 DF 9B | INCHR2 | STX   | NXTRAM | SAVE POSITION   |
| 14D8 81 0D |        | CMP A | #\$D   | IS IT C. R. ?   |
| 14DA 26 02 |        | BNE   | INCHR3 |                 |
| 14DC 97 FC |        | STA A | CRF    | SET FLAG        |
| 14DE DE F8 | INCHR3 | LDX   | XTEMP  | RESTORE POINTER |
| 14E0 39    |        | RTS   |        | RETURN          |
| 14E1 86 1A | INCHR4 | LDA A | #\$1A  | SET UP EOF      |
| 14E3 20 F1 |        | BRA   | INCHR2 |                 |

## \* REWIND FILE (IN RAM)

|            |      |     |        |           |
|------------|------|-----|--------|-----------|
| 14E5 DE 97 | RWND | LDX | FSTRAM | GET FIRST |
| 14E7 DF 9B |      | STX | NXTRAM | MAKE NEXT |
| 14E9 39    |      | RTS |        | RETURN    |

## \* STRINGS

|            |        |     |   |                     |
|------------|--------|-----|---|---------------------|
| 14EA 20    | CPRSTR | FCC | ' | TSC TEXT PROCESSOR' |
| 14EB 20 20 |        |     |   |                     |
| 14ED 54 53 |        |     |   |                     |
| 14EF 43 20 |        |     |   |                     |

14F1 54 45  
 14F3 58 54  
 14F5 20 50  
 14F7 52 4F  
 14F9 43 45  
 14FB 53 53  
 14FD 4F 52  
 14FF 04  
 1500 43  
 1501 4F 50  
 1503 59 52  
 1505 49 47  
 1507 48 54  
 1509 20 28  
 150B 43 29  
 150D 20 31  
 150F 39 37  
 1511 37 20  
 1513 42 59  
 1515 20 54  
 1517 53 43  
 1519 04  
 151A 44  
 151B 41 54  
 151D 45 20  
 151F 28 4D  
 1521 4D 3A  
 1523 44 44  
 1525 3A 59  
 1527 59 29  
 1529 3F 20  
 152B 04  
 152C 54  
 152D 59 50  
 152F 45 20  
 1531 50 20  
 1533 46 4F  
 1535 52 20  
 1537 50 52  
 1539 49 4E  
 153B 54 45  
 153D 52 2E  
 153F 2E 2E  
 1541 20  
 1542 04  
 1543 0D  
 1544 0A 00  
 1546 00 00  
 1548 00 04  
 154A 50  
 154B 41 47  
 154D 45 20  
 154F 4C 49  
 1551 4D 49

FCB 4  
 FCC 'COPYRIGHT (C) 1977 BY TSC'

DATSTR FCB 4  
 FCC 'DATE (MM:DD:YY)?'

PRQU FCB 4  
 FCC 'TYPE P FOR PRINTER...'

CRLFST FCB 4  
 FCC '\$D, \$A, 0, 0, 0, 0, 4'

PGSTR FCC 'PAGE LIMITS?'

1553 54 53  
 1555 3F 20  
 1557 04  
 1558 07  
 1559 53  
 155A 54 4F  
 155C 50 2E  
 155E 2E 2E  
 1560 07  
 1561 04  
 1562 3F  
 1563 20  
 1564 07  
 1565 04  
 1566 4C  
 1567 49 4E  
 1569 45 53  
 156B 20 50  
 156D 45 52  
 156F 20 53  
 1571 43 52  
 1573 45 45  
 1575 4E 3F  
 1577 20  
 1578 04  
 1579 2A  
 157A 2A 2A  
 157C 2A 20  
 157E 4D 41  
 1580 43 52  
 1582 4F 20  
 1584 4F 56  
 1586 45 52  
 1588 46 4C  
 158A 4F 57  
 158C 20 2A  
 158E 2A 2A  
 1590 2A  
 1591 04  
 1592 2A  
 1593 20 50  
 1595 52 4F  
 1597 47 52  
 1599 41 4D  
 159B 20 42  
 159D 52 45  
 159F 41 4B  
 15A1 20 2A  
 15A3 04

STPSTR FCB 4  
 FCB 7  
 FCC 'STOP...'  
 FCB 7,4  
 QUSTR FCC '? '  
 FCB 7,4  
 LPPSTR FCC 'LINES PER SCREEN? '  
 FCB 4  
 OVFSR FCC '\*\*\*\*\* MACRO OVERFLOW \*\*\*\*\*'

BRKSTR FCB 4  
 FCC '\* PROGRAM BREAK \*'

FCB 4

\*PRINTER ROUTINES

15A4 39  
 15A5

PRNIT RTS  
 RMB 31

\*\* REPLACE WITH OWN

15C4 39  
15C5

PROUCH RTS  
RMB 31

\*\* REPLACE WITH OWN

\* BUFFER STORAGE AREA

|      |        |     |      |
|------|--------|-----|------|
| 15E4 | LINBUF | RMB | 155  |
| 167F | EXTBUF | RMB | 45   |
| 16AC | LINBU2 | RMB | 200  |
| 1774 | SBUF   | RMB | 100  |
| 17D8 | TRAPS  | RMB | 48   |
| 1808 | TRPEND | RMB | 2    |
| 180A | CMNDBF | RMB | 180  |
| 18BE | TTLBUF | RMB | 180  |
| 1972 | MACTBL | RMB | 128  |
| 19F2 | MTEND  | RMB | 2    |
| 19F4 | MACROS | RMB | 1534 |
| 1FF2 | LMACRO | RMB | 2    |
| 1FF4 | LAST   | RMB | 1    |
| 1FF5 | USER   | EQU | *    |

END

NO ERROR(S) DETECTED

SYMBOL TABLE:

|        |      |        |      |        |      |        |      |        |      |
|--------|------|--------|------|--------|------|--------|------|--------|------|
| ADD    | 005B | ADJS35 | 0447 | ADJS55 | 0466 | ADJSP2 | 0438 | ADJSP3 | 0444 |
| ADJSP4 | 0451 | ADJSP5 | 045C | ADJSP6 | 046A | ADJSP7 | 0471 | ADJSP8 | 047C |
| ADJSP9 | 0483 | ADJSPC | 0432 | APMAC  | 0DDC | ARB    | 1184 | ATFLG  | 006C |
| ATL    | 0D52 | ATL1   | 0D67 | ATL2   | 0D6A | ATL3   | 0D77 | ATL35  | 0D7F |
| ATL4   | 0D80 | ATL45  | 0D88 | ATL5   | 0D8F | AUTO   | 00C2 | BMPCP  | 109F |
| BMPCP2 | 10A1 | BNUM   | 005D | BRAK   | 0924 | BRKSTR | 1592 | BTOD   | 1328 |
| BTOD1  | 1329 | BTOD2  | 1332 | BTOD3  | 133B | BTOD4  | 1344 | BTOD45 | 134C |
| BTOD5  | 1351 | BTODON | 13EA | BTOR65 | 13B0 | BTOR92 | 13DF | BTOR01 | 1361 |
| BTOR02 | 136C | BTOR03 | 137A | BTOR04 | 1385 | BTOR05 | 1395 | BTOR06 | 13A2 |
| BTOR07 | 138B | BTOR08 | 13CB | BTOR09 | 13D6 | BTOROM | 135F | BUFEND | 00DE |
| BUFPNT | 00DA | CALMA2 | 0876 | CALMAC | 0871 | CAP    | 00B7 | CAPIT  | 07C5 |
| CAPIT2 | 07CB | CENTE2 | 0C37 | CENTE4 | 0C3B | CENTER | 0C24 | CENTJ  | 05B2 |
| CHKLS2 | 0F70 | CHKLST | 0F64 | CHKNU2 | 1232 | CHKNU4 | 123B | CHKNU5 | 1242 |
| CHKNU6 | 1246 | CHKNUM | 121A | CHNG   | 1112 | CHNG2  | 1126 | CHNG25 | 112F |
| CHNG3  | 1130 | CHNG4  | 113C | CHNG45 | 1144 | CHNG5  | 114D | CHNG6  | 1160 |
| CLRGET | 0689 | CLRNUM | 119E | CLRSP2 | 02AC | CLRSP4 | 02B7 | CLRSPC | 02A8 |
| CLRTHM | 124F | CLSFY  | 11E6 | CLSFY1 | 11F4 | CLSFY2 | 11FE | CLSFY4 | 1208 |
| CLSM2  | 0F06 | CLSM3  | 0F08 | CLSM4  | 0F20 | CLSM5  | 0F27 | CLSM6  | 0F2E |
| CLSMAC | 0EF8 | CMFLG  | 0065 | CMNDBF | 180A | CMNDT  | 095C | CMNPNT | 00E6 |
| CNJ    | 00CE | CNTFLG | 00D4 | CNTRI4 | 062D | CNTRI5 | 0633 | CNTRI6 | 0643 |
| CNTRIT | 0619 | CNTSP2 | 0610 | CNTSP3 | 0618 | CNTSPC | 060B | CNTTT2 | 1075 |
| CNTTT3 | 1083 | CNTTTL | 1072 | COLCN2 | 0083 | COLCNT | 0042 | COMAN2 | 07E5 |
| COMAN3 | 0805 | COMAN4 | 0815 | COMAN5 | 0818 | COMAN6 | 0824 | COMAN7 | 0828 |
| COMAN8 | 083C | COMAN9 | 0848 | COMAND | 07DF | CPRSTR | 14EA | CRF    | 00FC |
| CRLF   | 1485 | CRLF5  | 148F | CRLFST | 1543 | CROM   | 118D | DATSTR | 151A |
| DAY    | 0043 | DEFM35 | 0DC2 | DEFM45 | 0DD1 | DEFMA2 | 0DA5 | DEFMA3 | 0DAD |
| DEFMA4 | 0DCE | DEFMA5 | 0DD8 | DEFMAC | 0D9E | DELC35 | 05D3 | DELCH3 | 05CF |

|        |      |        |      |        |      |        |      |        |      |
|--------|------|--------|------|--------|------|--------|------|--------|------|
| DELCH4 | 05DC | DELCHR | 05B7 | DELIM  | 00BA | DFMFLG | 008F | DIYAPP | 0E44 |
| DIVER0 | 0E29 | DIVER1 | 0E2F | DIVER2 | 0E36 | DIVER4 | 0E3B | DIVERT | 0E25 |
| DIYFL2 | 0092 | DIYFLG | 0091 | DOCAP  | 0077 | DOCM   | 0078 | DONE   | 006A |
| DOTAB  | 0B10 | DOTAB2 | 0B1D | DUBB   | 0C18 | DUBH   | 0C04 | DUBH1  | 0C07 |
| DUBH2  | 0C0C | DUBW   | 0C0F | DWFLG  | 008E | EBFEND | 00E2 | ENDLIN | 00BF |
| EY     | 007E | EXCHR  | 0062 | EXTBUF | 167F | FETC22 | 06F3 | FETC25 | 0706 |
| FETC35 | 071A | FETC36 | 071F | FETC37 | 0722 | FETC45 | 072A | FETC47 | 0738 |
| FETC48 | 073B | FETC49 | 0744 | FETC55 | 0753 | FETC57 | 0767 | FETC58 | 0772 |
| FETC59 | 0778 | FETC65 | 0787 | FETC75 | 07A5 | FETCH2 | 06DD | FETCH3 | 070A |
| FETCH4 | 0723 | FETCH5 | 0748 | FETCH6 | 077B | FETCH7 | 079C | FETCH8 | 07C3 |
| FETCHR | 06D4 | FILFLG | 00C8 | FILL   | 0CB2 | FINCM  | 0857 | FINCM1 | 0865 |
| FINCM2 | 0868 | FINCM4 | 086B | FINIS4 | 0953 | FINISH | 0951 | FINMAC | 0088 |
| FIXBF4 | 0655 | FIXBFE | 0646 | FIXVA3 | 1216 | FIXVA4 | 1218 | FIXVAL | 1209 |
| FIXWD  | 1414 | FIXWD1 | 1437 | FIXWD2 | 1439 | FIXWD3 | 143F | FLBF   | 006B |
| FLUSH  | 092E | FLUSH2 | 0939 | FLUSH3 | 0942 | FLUSH5 | 094D | FLUSHB | 092A |
| FNDLS2 | 0F5A | FNDLST | 0F53 | FNDMA1 | 0F3E | FNDMA2 | 0F4A | FNDMA4 | 0F50 |
| FNDMA6 | 0F52 | FNDMAC | 0F35 | FNDNUM | 11A8 | FNTR   | 0CF5 | FNTR2  | 0CFC |
| FNTR4  | 0D11 | FNTR5  | 0D19 | FNTR6  | 0D26 | FSTAVL | 00A6 | FSTRAM | 0097 |
| FTCHN1 | 11CF | FTCHN2 | 11D2 | FTCHNM | 11B6 | GCNT   | 0046 | GDNUM  | 005A |
| GETC22 | 069E | GETC25 | 06A7 | GETCH1 | 0693 | GETCH2 | 069A | GETCH3 | 06AB |
| GETCH4 | 06BB | GETCH5 | 06C4 | GETCH6 | 06D1 | GETCHR | 068C | GETIN  | 0B75 |
| GIBUF  | 1444 | GIBUF2 | 1448 | GIBUF4 | 145F | GIBUF6 | 1469 | GTNA4  | 0FAB |
| GTNA6  | 0FB0 | GTNAM  | 0F8A | HIPG   | 0096 | IF     | 10A5 | IF1    | 10A8 |
| IF3    | 10B6 | IF35   | 10BC | IF4    | 10C7 | IF5    | 10D4 | IF55   | 10E6 |
| IF6    | 10F2 | IF8    | 1105 | IFFLG  | 008A | IFN    | 10ED | IFN2   | 10F1 |
| IFY    | 10D0 | INC    | 005F | INCH   | 0206 | INCH15 | 14CB | INCHR  | 14BA |
| INCHR0 | 14C3 | INCHR1 | 14C8 | INCHR2 | 14D6 | INCHR3 | 14DE | INCHR4 | 14E1 |
| IND    | 0048 | IND2   | 0084 | INDEX  | 00F6 | INDNT  | 0ADB | INDNT2 | 0AEB |
| INIT   | 02C0 | INIT25 | 02C4 | INIT3  | 02FB | INIT4  | 031A | INMAC  | 0EE3 |
| INMAC2 | 0EE5 | INMAC4 | 0EF3 | INMAC5 | 0EF7 | INNUM  | 0070 | INSS44 | 0604 |
| INSSP2 | 05E7 | INSSP3 | 05ED | INSSP4 | 0601 | INSSP5 | 060A | INSSPC | 05DD |
| INTRO  | 0212 | INTRO0 | 0219 | INTRO3 | 0259 | INTRO4 | 026A | INTRO5 | 027F |
| INTRO6 | 029D | INTRP  | 0D97 | JNKCNT | 009D | JST    | 0AA1 | JST1   | 0AB1 |
| JST15  | 0AB6 | JST2   | 0AB7 | JST3   | 0AC1 | JST4   | 0ACA | JSTF25 | 03AF |
| JSTF55 | 03D3 | JSTF63 | 03E0 | JSTF65 | 03EB | JSTF95 | 041D | JSTFY  | 0397 |
| JSTFY1 | 03A8 | JSTFY2 | 03AD | JSTFY3 | 03B8 | JSTFY4 | 03C8 | JSTFY5 | 03D1 |
| JSTFY6 | 03D6 | JSTFY7 | 03F0 | JSTFY8 | 03FA | JSTFY9 | 0412 | JUST   | 00D6 |
| LAST   | 1FF4 | LDIV   | 0055 | LDNSK2 | 11DA | LDNSK4 | 11E3 | LDNSKP | 11D8 |
| LEFT   | 006D | LEFTM  | 0ACB | LEFTM1 | 0AD8 | LEFTM2 | 0ADA | LENT25 | 0B05 |
| LENTH  | 0AF1 | LENTH2 | 0B01 | LENTH5 | 0B0F | LFM    | 004E | LINBU2 | 16AC |
| LINBUF | 15E4 | LINCNT | 004D | LINS   | 048F | LINS2  | 0494 | LINS3  | 049F |
| LINS4  | 04AC | LINS5  | 04B6 | LINS6  | 0488 | LINS7  | 04C5 | LLN    | 004B |
| LLN2   | 009F | LMACRO | 1FF2 | LOWPG  | 0095 | LPPSTR | 1566 | LSTAVL | 00A4 |
| LSTNUM | 0063 | LSTRAM | 0099 | MACCNT | 008B | MACEND | 00FA | MACNAM | 00A0 |
| MACOVF | 084E | MACROS | 19F4 | MACTBL | 1972 | MACTMP | 00A2 | MBFLG  | 0066 |
| MBFPNT | 0067 | MCEND  | 0F7D | MCEND2 | 0F87 | MCNT   | 00BC | MINDIS | 007D |
| MNTH   | 004C | MON    | 0209 | MSC    | 00D2 | MTEND  | 19F2 | MULTS  | 0A8B |
| MULTS2 | 0A94 | MULTS3 | 0A96 | NEDL   | 0CE6 | NEDL1  | 0CEE | NEDL2  | 0CF0 |
| NEDL4  | 0CF4 | NEG    | 0071 | NEGT   | 0089 | NMREGS | 0040 | NOCAP  | 0C72 |
| NOCR   | 0069 | NOEXP  | 007F | NOFILL | 0CAB | NOFL   | 006F | NOJST  | 0A9D |
| NONUMS | 008D | NOOUT  | 0079 | NOSPC  | 0B23 | NPGN   | 005E | NREG   | 1165 |
| NREG4  | 1183 | NSP    | 0073 | NUM    | 0125 | NUMPNT | 0060 | NXTMAC | 00AC |
| NXTOUT | 00AE | NXTRAM | 009B | NXTTAB | 0080 | NXTTRP | 0085 | OPAPP  | 0E82 |
| OPAPP2 | 0E8A | OPAPP4 | 0E8F | OPMAC  | 0E4F | OPMAC2 | 0E57 | OPMAC4 | 0E60 |



|             |             |             |             |             |
|-------------|-------------|-------------|-------------|-------------|
| QPMAC5 0E6C | OUTCH 0203  | OUTCH2 14A9 | OUTCH3 14AE | OUTCH4 14B7 |
| OUTCHR 149F | OUTL55 0546 | OUTL75 056E | OUTL82 0595 | OUTL85 059F |
| OUTLI1 0517 | OUTLI2 0520 | OUTLI3 052A | OUTLI4 0532 | OUTLI5 053F |
| OUTLI6 0550 | OUTLI7 056B | OUTLI8 0589 | OUTLI9 05A4 | OUTLIN 050B |
| OUTM18 0ECF | OUTMA0 0EB9 | OUTMA1 0EBB | OUTMA2 0ED1 | OUTMA3 0ED2 |
| OUTMA4 0ED7 | OUTMAC 0EAE | OUTSV 0D49  | OVFSTR 1579 | PAGE 0A67   |
| PAGE2 0A73  | PAGE4 0A7E  | PAGE5 0A83  | PAGE6 0A8A  | PAGEL 0C44  |
| PAGEL1 0C4D | PAGEL2 0C56 | PAGEL4 0C58 | PASCHR 0075 | PASFLG 008C |
| PASS 0A3D   | PCHAR 00CC  | PCRLF 0899  | PCRLF2 08A8 | PCRLF4 08AD |
| PDATA 1492  | PDATA2 149E | PFLG 00CA   | PGL 004F    | PGN 0074    |
| PGNUM 0BF7  | PGNUM4 0C03 | PGSTR 154A  | PINIT 020C  | POUCH 020F  |
| PRNIT 15A4  | PRNTR 0093  | PRNU27 125E | PRNU28 1272 | PRNU31 127E |
| PRNU32 1288 | PRNU35 1297 | PRNU37 129F | PRNU45 12C4 | PRNU65 12EA |
| PRNU72 1303 | PRNU73 1307 | PRNU82 1319 | PRNUM 1256  | PRNUM2 1258 |
| PRNUM3 1277 | PRNUM4 12A7 | PRNUM5 12CC | PRNUM6 12E0 | PRNUM7 12F0 |
| PRNUM8 130F | PROC 033D   | PROC2 0343  | PROC3 0349  | PROC4 0350  |
| PROUCH 15C4 | PRQU 152C   | PSTRNG 1490 | PTFL 007B   | PTIND 0C76  |
| PTIND2 0C83 | PTIND3 0C98 | PTIND4 0CA4 | PTIND5 0CAA | PULLX 13FF  |
| PUNT35 036A | PUNTS2 035B | PUNTS3 0360 | PUNTS4 0382 | PUNTS5 0385 |
| PUNTS6 0387 | PUNTS7 038D | PUNTST 0353 | PUSH4 13FB  | PUSHX 13ED  |
| QUSTR 1562  | REMA4 0DEE  | REMA6 0E0B  | REMMAC 0DE5 | REMNAM 0E15 |
| RESPC 0B26  | RETMA2 0678 | RETMAC 066D | RETREG 00F4 | RIGHT2 05AA |
| RIGHTJ 05A7 | RINS 04C9   | RINS2 04CD  | RINS3 04D4  | RINS4 04DF  |
| RINS5 04ED  | RINS6 04F7  | RINS7 04F9  | RINS8 0507  | ROM 00C4    |
| ROM2 118A   | RPT 0CB9    | RTJ 00D0    | RWND 14E5   | SAUTO 1191  |
| SAUTO4 119D | SAVS 0D2D   | SAVS1 0D38  | SAVS2 0D3A  | SAVS25 0D3E |
| SAVS4 0D44  | SAVS5 0D48  | SAVSX 0EA0  | SAVSX2 0EAB | SBFLG 009E  |
| SBUF 1774   | SCAP 00B8   | SCRL55 08E8 | SCRL75 0906 | SCRL65 091A |
| SCRLF 08B1  | SCRLF1 08B4 | SCRLF3 08C0 | SCRLF4 08DC | SCRLF5 08E3 |
| SCRLF6 08F4 | SCRLF7 0903 | SCRLF8 0910 | SCRLF9 0923 | SENV 0B83   |
| SENV1 0B90  | SENV2 0B91  | SENV3 0B96  | SENV4 0BB3  | SENV6 0BC2  |
| SENV8 0BDE  | SENV9 0BED  | SENV95 0BF0 | SETCA2 07DB | SETCAP 07CE |
| SIGN 0072   | SIN 007C    | SIND 0C59   | SNGLS 0A99  | SPACE 0A44  |
| SPACE2 0A55 | SPACE4 0A5E | SPACE6 0A66 | SPCPT1 00E8 | SPCPT2 00EA |
| SPIFLG 0090 | SPSPF 0076  | SROM 1188   | STAB 0B41   | STAB2 0B44  |
| STAB4 0B5A  | STACK 01FF  | START 0200  | STCAP 0C6D  | STOP 0CD2   |
| STOP1 0CD8  | STOP2 0CE5  | STPOUT 00A8 | STPSTR 1558 | SUB 005C    |
| SUPL 00B5   | SVDSPC 0087 | SWRDF 00B6  | SYSERR 0EE0 | TAB 00C0    |
| TABCH 0B2A  | TABCH2 0B32 | TABEND 0124 | TABFI2 0B3E | TABFIL 0B35 |
| TABFLG 0082 | TABS 0110   | TBLEND 0A3C | TCNT 00BB   | TCPNT 00AA  |
| TEMP 00EC   | TEMP2 00EE  | TEMP5 00F0  | TEMP6 00F2  | TERM 0B60   |
| TERM2 0B63  | TERM4 0B6C  | TFILF 006E  | TFILL 00C1  | TIND 00B3   |
| TITL12 0FE1 | TITL15 0FE7 | TITL65 1041 | TITL75 1056 | TITL78 1060 |
| TITLE 0FC1  | TITLE1 0FD1 | TITLE2 1001 | TITLE4 1024 | TITLE5 102F |
| TITLE6 1032 | TITLE7 1049 | TITLE8 1063 | TITLE9 106E | TLEN 0FB4   |
| TLEN2 0FC0  | TLLN 00B4   | TLN 00D8    | TLPP 0094   | TOUTL 007A  |
| TPOS 00B9   | TRAPS 17D8  | TRPEND 1808 | TSIN 00B2   | TSTBR2 1477 |
| TSTBRK 1471 | TSTNE2 1111 | TSTNEG 1106 | TTLBUF 18BE | TTLPNT 00BD |
| USER 1FF5   | WIDTH 00C6  | XFRTT2 109D | XFRTTL 1086 | XMAC 00B0   |
| XTEMP 00F8  | YEAR 0058   |             |             |             |

OBJECT CODE:

32 E6

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 S1 13 0240 1A 24 16 96 70 97 4C BD 12 1A 24 0D 96 70 97 43 73  
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S1 13 0D80 D6 A0 26 04 5A E7 00 39 96 A1 E7 01 A7 02 39 D6 6E  
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S1 13 0DB0 81 2E 26 0E BD 06 89 81 2E 27 13 36 86 2E BD 0E 62  
S1 13 0DC0 AE 32 BD 0E AE 81 0D 27 E4 BD 06 89 20 F4 BD 0E 02  
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S1 13 0DF0 EE 02 BD 0F 64 24 14 DE A2 A6 02 E6 03 DE A4 A7 5D  
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S1 13 0E10 03 97 A6 D7 A7 E6 04 E7 00 08 9C FA 26 F7 09 09 72  
S1 13 0E20 09 09 DF FA 39 96 91 27 0D 7C 00 92 7E 0E F8 7F 2E  
S1 13 0E30 00 91 7F 00 92 39 7C 00 92 8D 14 27 F2 7C 00 91 FE  
S1 13 0E40 7F 00 55 39 96 91 26 E1 7C 00 92 8D 35 20 EC BD CA  
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S1 13 0EB0 7D 00 92 27 04 DE AE 20 02 DE AC 6D 00 27 18 81 8F  
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S1 13 0ED0 00 08 8D CC DE B0 39 08 9C A4 27 04 EE 00 20 DB 8A  
S1 13 0EE0 7E 08 4E DE 67 A6 00 08 DF 67 4D 26 06 EE 00 26 64  
S1 13 0EF0 F4 20 04 81 FF 27 EE 39 7D 00 92 27 09 4F 97 91 52  
S1 13 0F00 97 92 DE AE 20 02 DE AC 6D 00 27 14 6D 01 27 17 28  
S1 13 0F10 6D 02 27 1A 6F 00 6F 01 6F 02 08 08 08 DF A6 39 F7  
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S1 13 0F30 A7 00 08 20 F2 96 A0 27 17 D6 A1 CE 19 72 9C FA 12  
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S1 13 0FA0 08 DF E6 C1 5F 23 04 80 20 C0 20 D7 A0 97 A1 39 C1  
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S1 13 0FF0 CE 18 0A A6 00 97 BA 08 DF E6 CE 18 BE DF BD 86 73  
S1 13 1000 20 A7 00 08 8C 19 0E 26 F8 BD 10 72 D7 BB BD 10 9E  
S1 13 1010 86 BD 10 72 96 D8 10 47 97 BC C6 20 91 BB 23 0F 8B  
S1 13 1020 90 BB DE BD E7 00 08 7C 00 B9 4A 26 F7 DF BD BD F2  
S1 13 1030 10 86 BD 10 72 96 D8 90 B9 11 23 0D 10 C6 20 DE 0B  
S1 13 1040 BD E7 00 08 4A 26 FA DF BD BD 10 86 96 D8 97 B9 D9  
S1 13 1050 27 1C D6 4E 27 0A 86 20 37 BD 14 9F 33 5A 26 F6 FE  
S1 13 1060 CE 18 BE A6 00 BD 14 9F 08 7A 00 B9 26 F5 BD 08 A7  
S1 13 1070 99 39 5F DE E6 A6 00 91 BA 27 08 81 0D 27 04 08 96  
S1 13 1080 5C 20 F2 DF E8 39 DE E6 9C E8 27 15 A6 00 08 DF DD  
S1 13 1090 E6 DE BD A7 00 08 DF BD 7C 00 B9 20 E9 20 02 DE 42  
S1 13 10A0 E6 08 DF E6 39 7F 00 89 BD 11 D8 81 21 26 07 73 60  
S1 13 10B0 00 89 8D EB 20 F2 81 5F 23 02 80 20 81 4F 26 07 77

|    |    |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| S1 | 13 | 1000 | 96 | 89 | 26 | 31 | 8D | C9 | BD | 11 | D8 | 7F | 00 | 6F | 81 | 2E | 27 | 06 | D0 |
| S1 | 13 | 10E0 | 81 | 3A | 26 | 0D | 97 | 6F | 08 | DF | E6 | 7C | 00 | 8A | 39 | 96 | 89 | 26 | B7 |
| S1 | 13 | 10F0 | E3 | 39 | BD | 12 | 1A | 24 | 0E | DE | E6 | 09 | 09 | DF | E6 | 96 | 70 | 2B | E9 |
| S1 | 13 | 1100 | EC | 27 | EA | 20 | CB | 39 | 96 | 70 | 2A | 07 | 97 | 72 | 97 | 71 | 70 | 00 | 02 |
| S1 | 13 | 1110 | 70 | 39 | BD | 12 | 1A | 24 | 19 | 8D | ED | 96 | 4F | 4C | BD | 12 | 09 | CE | AB |
| S1 | 13 | 1120 | 17 | D8 | 4D | 26 | 01 | 4C | A1 | 00 | 27 | 23 | BD | 0D | 97 | 26 | F7 | 39 | 6A |
| S1 | 13 | 1130 | BD | 0F | 8A | 96 | A0 | 27 | F8 | D6 | A1 | CE | 17 | D8 | A1 | 01 | 26 | 04 | 00 |
| S1 | 13 | 1140 | E1 | 02 | 27 | 09 | 08 | 08 | 08 | 8C | 18 | 08 | 26 | F0 | 39 | DF | F0 | BD | E9 |
| S1 | 13 | 1150 | 12 | 1A | 24 | DB | 8D | B0 | 96 | 4F | 4C | BD | 12 | 09 | 4D | 26 | 01 | 4C | 5A |
| S1 | 13 | 1160 | DE | F0 | A7 | 00 | 39 | BD | 11 | D8 | BD | 11 | E6 | C1 | 02 | 26 | 14 | 36 | 40 |
| S1 | 13 | 1170 | BD | 10 | 9F | BD | 12 | 1A | 32 | 24 | 0A | BD | 11 | A8 | A6 | 00 | BD | 12 | CB |
| S1 | 13 | 1180 | 09 | A7 | 00 | 39 | 7F | 00 | C4 | 39 | 86 | 80 | 97 | C4 | 39 | 86 | 0F | 20 | A7 |
| S1 | 13 | 1190 | F9 | BD | 12 | 1A | 24 | 07 | 96 | C2 | BD | 12 | 09 | 97 | C2 | 39 | 5F | D7 | 46 |
| S1 | 13 | 11A0 | 70 | D7 | 5F | D7 | 5A | D7 | 5D | 39 | CE | 00 | 40 | 80 | 41 | DF | 60 | 9B | 4E |
| S1 | 13 | 11B0 | 61 | 97 | 61 | DE | 60 | 39 | DE | 60 | 9C | 63 | 27 | 16 | A6 | 00 | 84 | 7F | 38 |
| S1 | 13 | 11C0 | 08 | DF | 60 | 81 | 0D | 26 | 08 | 7D | 00 | 69 | 26 | 03 | 7E | 07 | 48 | 7E | BE |
| S1 | 13 | 11D0 | 07 | 0A | 7F | 00 | 62 | 7E | 06 | 8C | DE | E6 | A6 | 00 | 81 | 20 | 26 | 03 | D5 |
| S1 | 13 | 11E0 | 08 | 20 | F7 | DF | E6 | 39 | 5F | 4D | 2B | 1E | 81 | 5F | 23 | 06 | 81 | 7F | E0 |
| S1 | 13 | 11F0 | 22 | 16 | 80 | 20 | 81 | 30 | 25 | 10 | 81 | 39 | 22 | 02 | 5C | 39 | 81 | 41 | F8 |
| S1 | 13 | 1200 | 25 | 06 | 81 | 5A | 22 | 02 | C6 | 02 | 39 | D6 | 70 | 7D | 00 | 72 | 27 | 08 | 4B |
| S1 | 13 | 1210 | 7D | 00 | 71 | 27 | 01 | 50 | 1B | 39 | 17 | 39 | 4F | 97 | 72 | 97 | 71 | BD | A3 |
| S1 | 13 | 1220 | 11 | 9E | 5C | D7 | 69 | BD | 11 | D8 | 81 | 2B | 27 | 06 | 81 | 2D | 26 | 0B | 11 |
| S1 | 13 | 1230 | 97 | 71 | 08 | DF | E6 | 8D | 1F | 24 | 0D | 20 | 07 | 08 | DF | E6 | 8D | 32 | 45 |
| S1 | 13 | 1240 | 24 | 04 | 8D | 0B | 0D | 39 | 8D | 07 | DE | E6 | 09 | DF | E6 | 0C | 39 | 7F | AA |
| S1 | 13 | 1250 | 00 | 62 | 7F | 00 | 69 | 39 | 97 | 72 | BD | 11 | 9E | 5C | D7 | 69 | 7F | 00 | 77 |
| S1 | 13 | 1260 | 5F | 7C | 00 | 75 | BD | 06 | 8C | 7D | 00 | 7F | 27 | 06 | 7F | 00 | 7F | 7E | 36 |
| S1 | 13 | 1270 | 13 | 19 | BD | 11 | E6 | C1 | 01 | 25 | 05 | 27 | 51 | 7E | 13 | 07 | 7D | 00 | 11 |
| S1 | 13 | 1280 | 70 | 27 | 05 | 36 | 96 | 70 | 20 | 58 | 7F | 00 | 70 | 81 | 23 | 27 | 18 | 81 | B7 |
| S1 | 13 | 1290 | 2B | 26 | 04 | 97 | 5B | 20 | C7 | 81 | 2D | 26 | 04 | 97 | 5C | 20 | BF | 81 | F1 |
| S1 | 13 | 12A0 | 25 | 26 | 6C | 96 | 74 | 20 | 39 | 7C | 00 | 75 | BD | 06 | 8C | BD | 11 | E6 | 2C |
| S1 | 13 | 12B0 | C1 | 02 | 26 | 10 | BD | 11 | A8 | A6 | 00 | 7D | 00 | 5F | 27 | 22 | 9B | C2 | 93 |
| S1 | 13 | 12C0 | A7 | 00 | 20 | 1C | 81 | 2B | 26 | 47 | 97 | 5F | 20 | DB | 80 | 30 | 36 | D6 | 71 |
| S1 | 13 | 12D0 | 70 | 58 | 58 | DB | 70 | 58 | 32 | 1B | 97 | 70 | 7C | 00 | 5A | 7E | 12 | 5E | 2F |
| S1 | 13 | 12E0 | D6 | 5C | 27 | 06 | 16 | 96 | 5D | 10 | 20 | 06 | D6 | 5B | 27 | 02 | 9B | 5D | 0A |
| S1 | 13 | 12F0 | 97 | 5D | 7F | 00 | 5B | 7F | 00 | 5C | 7C | 00 | 5A | 7D | 00 | 70 | 26 | 03 | 55 |
| S1 | 13 | 1300 | 7E | 12 | 5E | 32 | 7E | 12 | 88 | 7D | 00 | 70 | 27 | 03 | 36 | 20 | D1 | 7F | E4 |
| S1 | 13 | 1310 | 00 | 7F | 7D | 00 | 5A | 26 | 02 | 0C | 39 | 97 | 62 | CE | 01 | 25 | 96 | 5D | 26 |
| S1 | 13 | 1320 | 97 | 70 | 27 | 04 | D6 | C4 | 26 | 37 | 5F | 81 | 64 | 25 | 05 | 80 | 64 | 5C | E2 |
| S1 | 13 | 1330 | 20 | F7 | 5D | 27 | 06 | CB | 30 | E7 | 00 | 08 | 5F | 81 | 0A | 25 | 05 | 80 | 8A |
| S1 | 13 | 1340 | 0A | 5C | 20 | F7 | 5D | 27 | 05 | CB | 30 | E7 | 00 | 08 | 8B | 30 | A7 | 00 | 47 |
| S1 | 13 | 1350 | 08 | 96 | 62 | A7 | 00 | 08 | DF | 63 | CE | 01 | 25 | DF | 60 | 0D | 39 | C6 | 59 |
| S1 | 13 | 1360 | 43 | 81 | 64 | 25 | 07 | 80 | 64 | E7 | 00 | 08 | 20 | F5 | 81 | 5A | 25 | 0A | 33 |
| S1 | 13 | 1370 | 80 | 5A | E7 | 01 | C6 | 58 | E7 | 00 | 08 | 08 | 81 | 32 | 25 | 07 | 80 | 32 | 01 |
| S1 | 13 | 1380 | C6 | 4C | E7 | 00 | 08 | 81 | 28 | 25 | 0C | 80 | 28 | C6 | 58 | E7 | 00 | C6 | 0B |
| S1 | 13 | 1390 | 4C | E7 | 01 | 08 | 08 | C6 | 58 | 81 | 0A | 25 | 07 | 80 | 0A | E7 | 00 | 08 | B7 |
| S1 | 13 | 13A0 | 20 | F3 | 81 | 09 | 25 | 0A | 80 | 09 | E7 | 01 | C6 | 49 | E7 | 00 | 08 | 08 | F6 |
| S1 | 13 | 13B0 | 81 | 05 | 25 | 07 | C6 | 56 | E7 | 00 | 08 | 80 | 05 | 81 | 04 | 25 | 0C | 80 | B1 |
| S1 | 13 | 13C0 | 04 | C6 | 49 | E7 | 00 | C6 | 56 | E7 | 01 | 08 | 08 | C6 | 49 | 4D | 27 | 06 | 82 |
| S1 | 13 | 13D0 | E7 | 00 | 08 | 4A | 20 | F5 | DF | 63 | 96 | C4 | 2A | 0E | CE | 01 | 25 | A6 | 4D |
| S1 | 13 | 13E0 | 00 | 8B | 20 | A7 | 00 | 08 | 9C | 63 | 26 | F5 | 7E | 13 | 51 | 32 | 33 | 97 | A7 |
| S1 | 13 | 13F0 | F4 | D7 | F5 | DF | F6 | 96 | F6 | D6 | F7 | 36 | 37 | DE | F4 | 6E | 00 | 32 | 1C |
| S1 | 13 | 1400 | 33 | 97 | F4 | D7 | F5 | 33 | 32 | 97 | F6 | D7 | F7 | 96 | F4 | D6 | F5 | 37 | 02 |
| S1 | 13 | 1410 | 36 | DE | F6 | 39 | 96 | B4 | 9B | 4B | 97 | 4B | 96 | B3 | 9B | 48 | 97 | 48 | 68 |
| S1 | 13 | 1420 | 96 | B2 | 9B | 7C | 97 | 7C | 4F | 97 | B4 | 97 | B3 | 97 | B2 | 96 | 4B | 90 | AB |
| S1 | 13 | 1430 | 48 | 90 | 7C | 81 | 0E | 22 | 02 | 86 | 0F | 81 | 96 | 23 | 02 | 86 | 96 | 97 | 1D |
| S1 | 13 | 1440 | C6 | 7E | 06 | 46 | CE | 17 | 74 | 5F | 37 | BD | 02 | 06 | 33 | 81 | 18 | 27 | 61 |
| S1 | 13 | 1450 | 18 | 81 | 0D | 27 | 0A | 81 | 1F | 23 | EF | 5C | A7 | 00 | 08 | 20 | E9 | A7 | 44 |
| S1 | 13 | 1460 | 00 | CE | 17 | 74 | DF | E6 | D7 | 46 | 39 | CE | 15 | 62 | BD | 14 | 90 | 20 | 3E |
| S1 | 13 | 1470 | D3 | B6 | 80 | 04 | 2A | 01 | 39 | B6 | 80 | 04 | 2A | FB | 01 | 01 | 01 | CE | C7 |

S1 13 1480 15 92 7E 80 D6 DF F8 CE 15 43 8D 14 92 DE F8 39 E9  
 S1 13 1490 8D F3 A6 00 81 04 27 86 8D 82 83 88 20 F4 39 D6 83  
 S1 13 14A0 91 27 06 7C 00 92 7E 0E AE D6 79 27 01 39 84 7F 7F  
 S1 13 14B0 D6 93 26 03 7E 02 03 7E 02 0F 96 FC 27 0D 37 D6 B1  
 S1 13 14C0 9D 27 05 8D 06 5A 26 FB D7 FC 33 DF F8 DE 9B 9C 4F  
 S1 13 14D0 99 27 0E A6 00 08 DF 9B 81 0D 26 02 97 FC DE F8 F3  
 S1 13 14E0 39 86 1A 20 F1 DE 97 DF 9B 39 20 20 20 54 53 43 9C  
 S1 13 14F0 20 54 45 58 54 20 50 52 4F 43 45 53 53 4F 52 04 9F  
 S1 13 1500 43 4F 50 59 52 49 47 48 54 20 28 43 29 20 31 39 E0  
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 S1 13 1560 07 04 3F 20 07 04 4C 49 4E 45 53 20 50 45 52 20 60  
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 S1 13 1580 43 52 4F 20 4F 56 45 52 46 4C 4F 57 20 2A 2A 2A 41  
 S1 13 1590 2A 04 2A 20 50 52 4F 47 52 41 4D 20 42 52 45 41 7D  
 S1 08 15A0 4B 20 2A 04 39 70  
 S1 04 15C4 39 E9

S9