

|                 |                |                |                                     |                      |
|-----------------|----------------|----------------|-------------------------------------|----------------------|
| <b>bcc</b>      | <b>title</b>   | CHARACTER SETS | <b>prefix/class-number.revision</b> |                      |
|                 |                |                | AKOCS/M-15                          |                      |
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|                 |                |                | Manual                              |                      |
| <b>approved</b> |                |                | <b>distribution</b>                 | <b>pages</b>         |
|                 |                |                | Company Private                     | 22                   |

**ABSTRACT and CONTENTS**

This document lists all of the character sets that an implementor of the M-1 system might need to know. A reference for each character set is given.

The character sets included are:

M1, Old 940, ASCII, Model 35 without parity, Model 35 with correct parity, Model 37, 2 IBM 2741 character sets, EBCDIC, BCD, and the communication system character sets.

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MODEL #1 CHARACTER SET

|     | 0         | 1         | 2          | 3         | 4          | 5   | 6  | 7  | 10 | 11       | 12  | 13 | 14 | 15 | 16 | 17 |                   |                      |
|-----|-----------|-----------|------------|-----------|------------|-----|----|----|----|----------|-----|----|----|----|----|----|-------------------|----------------------|
| 0   | ∅         | !         | "          | #         | \$         | %   | &  | '  | (  | )        | *   | +  | ,  | -  | .  | /  | STANDARD GRAPHIC  |                      |
| 20  | ∅         | 1         | 2          | 3         | 4          | 5   | 6  | 7  | 8  | 9        | :   | ;  | <  | =  | >  | ?  |                   |                      |
| 40  | @         | A         | B          | C         | D          | E   | F  | G  | H  | I        | J   | K  | L  | M  | N  | O  |                   |                      |
| 60  | P         | Q         | R          | S         | T          | U   | V  | W  | X  | Y        | Z   | [  | ]  | ↑  | ←  |    |                   |                      |
| 100 | _         | a         | b          | c         | d          | e   | f  | g  | h  | i        | j   | k  | l  | m  | n  | o  |                   |                      |
| 120 | p         | q         | r          | s         | t          | u   | v  | w  | x  | y        | z   | {  |    | }  |    |    |                   |                      |
| 140 | *<br>±    | *<br>∅    | *<br>°     |           |            |     |    |    |    |          |     |    |    |    |    |    |                   | NON-STANDARD GRAPHIC |
| 160 |           |           |            |           |            |     |    |    |    |          |     |    |    |    |    |    |                   |                      |
| 200 |           |           |            |           |            |     |    |    |    |          |     |    |    |    |    |    |                   |                      |
| 220 |           |           |            |           |            |     |    |    |    |          |     |    |    |    |    |    |                   |                      |
| 240 |           |           |            |           |            |     |    |    |    |          |     |    |    |    |    |    | MULTIPLE BLANKS   |                      |
| 260 |           |           |            |           |            |     |    |    |    |          |     |    |    |    |    |    |                   |                      |
| 300 | NUL       | QIT       | ESC        | BEL       | RRS        | BRS | FF | NL | LF | HLF      | HLR | BS |    |    |    |    |                   |                      |
| 320 |           |           |            |           |            |     |    |    |    |          |     |    |    |    |    |    |                   |                      |
| 340 | IL*<br>&@ | BY*<br>&A | EOB*<br>&B | &C        | EOT*<br>&D | &E  | &F | &G |    | HT<br>&I |     | &K |    | CR | &N | &O | STANDARD FUNCTION |                      |
| 360 | &P        | &Q        | PN*<br>&R  | RS*<br>&S | PF*<br>&T  | &U  | &V | &W | &X | &Y       | &Z  | &[ | &  | &] | &↑ | &← |                   |                      |

Reference: Character Input/Output Streams (L. Barnes) CIOSUC/W-31

\* tentative

- |                             |                        |
|-----------------------------|------------------------|
| BEL: bell                   | HT : horizontal tab    |
| BRS: black ribbon shift     | IL : idle              |
| BS : backspace              | LF : line feed         |
| BY : bypass                 | NL : new line          |
| CR : carriage return        | NUL: null character    |
| EOB: end of block           | PF : punch off         |
| EOT: end of transmission    | PN : punch on          |
| ESC: escape                 | QIT: quit              |
| FF : form feed (page eject) | RRS: read ribbon shift |
| HLF: half line feed         | RS : record separator  |
| HLR: half line reverse feed |                        |

INTERNAL 940 SET (OBSOLETE)

|     | 0   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 10 | 11 | 12 | 13 | 14       | 15       | 16 | 17  |
|-----|-----|----|----|----|----|----|----|----|----|----|----|----|----------|----------|----|-----|
| 0   | ␣   | !  | "  | #  | \$ | %  | &  | '  | (  | )  | *  | +  | ,        | -        | .  | /   |
| 20  | ␣   | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | :  | ;  | <        | =        | >  | ?   |
| 40  | @   | A  | B  | C  | D  | E  | F  | G  | H  | I  | J  | K  | L        | M        | N  | O   |
| 60  | P   | Q  | R  | S  | T  | U  | V  | W  | X  | Y  | Z  | [  | \        | ]        | ↑  | ←   |
| 100 | _   | a  | b  | c  | d  | e  | f  | g  | h  | i  | j  | k  | l        | m        | n  | o   |
| 120 | p   | q  | r  | s  | t  | u  | v  | w  | x  | y  | z  | {  |          | ALT<br>} | →  | EOF |
| 140 | NUL | &A | &B | &C | &D | &E | &F | &G | &H | &I | LF | &K | FF<br>&L | CR       | &N | &O  |
| 160 | &P  | &Q | &R | &S | &T | &U | &V | &W | &X | &Y | &Z | &[ | &\       | &]       | &↑ | &←  |

Reference: Old folk legend

ALT: altmode (escape to multiple blanks)  
 CR : carriage return  
 EOF: end of file  
 FF : form feed (page eject)  
 LF : line feed  
 NUL: null character

ASCII CHARACTER SET

|     | 0              | 1   | 2   | 3   | 4   | 5   | 6   | 7              | 10  | 11 | 12 | 13  | 14 | 15 | 16 | 17  |
|-----|----------------|-----|-----|-----|-----|-----|-----|----------------|-----|----|----|-----|----|----|----|-----|
| 0   | NUL            | SOH | STX | ETX | EOT | ENQ | ACK | BEL            | BS  | HT | LF | VT  | FF | CR | SO | SI  |
| 20  | DLE            | DC1 | DC2 | DC3 | DC4 | NAK | SYN | ETB            | CAN | EM | SS | ESC | FS | GS | RS | US  |
| 40  | ∅              | !   | "   | #   | \$  | %   | &   | ' <sup>1</sup> | (   | )  | *  | +   | ,  | -  | .  | /   |
| 60  | ∅              | 1   | 2   | 3   | 4   | 5   | 6   | 7              | 8   | 9  | :  | ;   | <  | =  | >  | ?   |
| 100 | @              | A   | B   | C   | D   | E   | F   | G              | H   | I  | J  | K   | L  | M  | N  | O   |
| 120 | P              | Q   | R   | S   | T   | U   | V   | W              | X   | Y  | Z  | [   | \  | ]  | ^  | _   |
| 140 | ∧ <sup>2</sup> | a   | b   | c   | d   | e   | f   | g              | h   | i  | j  | k   | l  | m  | n  | o   |
| 160 | p              | q   | r   | s   | t   | u   | v   | w              | x   | y  | z  | {   |    | }  | ~  | DEL |

Reference: ASCII Standard

1 ' single quote or right quote or acute accent

2 ^ grave accent or left quote

|                                |                                |
|--------------------------------|--------------------------------|
| ACK: acknowledge               | FF : form feed (page eject)    |
| BEL: bell                      | FS : file separators           |
| BS : backspace                 | GS : group separators          |
| CAN: cancel                    | HT : horizontal tab            |
| CR : carriage return           | LF : line feed                 |
| DC1: device control 1          | NAK: negative acknowledge      |
| DC2: device control 2          | NUL: null character            |
| DC3: device control 3          | RS : record separator          |
| DC4: device control 4          | SI : shift in                  |
| DEL: delete                    | SO : shift out                 |
| DLE: data link escape          | SOH: start of heading          |
| EM : end of medium             | SS : start of special sequence |
| ENQ: enquiry                   | STX: start of text             |
| EOT: end of transmission       | SYN: synchronize               |
| ESC: escape                    | US : unit separator            |
| ETB: end of transmission block | VT : vertical tab              |
| ETX: end of text               |                                |

TELETYPES MODEL 35  
(Correct Parity)

|     | 0         | 1  | 2  | 3  | 4  | 5  | 6  | 7         | 10 | 11       | 12       | 13 | 14       | 15       | 16  | 17  |
|-----|-----------|----|----|----|----|----|----|-----------|----|----------|----------|----|----------|----------|-----|-----|
| 0   | NUL<br>&@ |    |    | &C |    | &E | &F |           |    | HT<br>&I | LF<br>&J |    | FF<br>&L |          |     | &O  |
| 20  |           | &Q | &R |    | &T |    |    | &W        | &X |          |          | &[ |          | &]       | &↑  |     |
| 40  |           | !  | "  |    | \$ |    |    | '         | (  |          |          | +  |          | -        | .   |     |
| 60  | ∅         |    |    | 3  |    | 5  | 6  |           |    | 9        | :        |    | <        |          |     | ?   |
| 100 |           | A  | B  |    | D  |    |    | G         | H  |          |          | K  |          | M        | N   |     |
| 120 | P         |    |    | S  |    | U  | V  |           |    | Y        | Z        |    | \        |          |     | ←   |
| 140 |           |    |    |    |    |    |    |           |    |          |          |    |          |          |     |     |
| 160 |           |    |    |    |    |    |    |           |    |          |          |    |          | ALT      | ESC |     |
| 200 |           | &A | &B |    | &D |    |    | BEL<br>&G | &H |          |          | &K |          | CR<br>&M | &N  |     |
| 220 | &P        |    |    | &S |    | &U | &V |           |    | &Y       | &Z       |    | &\       |          |     | &←  |
| 240 | ∅         |    |    | #  |    | %  | &  |           |    | )        | *        |    | ,        |          |     | /   |
| 260 |           | 1  | 2  |    | 4  |    |    | 7         | 8  |          |          |    | ;        | =        | >   |     |
| 300 | @         |    |    | C  |    | E  | F  |           |    | I        | J        |    | L        |          |     | O   |
| 320 |           | Q  | R  |    | T  |    |    | W         | X  |          |          |    | [        |          | ]   | ↑   |
| 340 |           |    |    |    |    |    |    |           |    |          |          |    |          |          |     |     |
| 360 |           |    |    |    |    |    |    |           |    |          |          |    | ACK      |          |     | DEL |

Reference: Teletype Cooperative Bulletin 273B Vol. 1, section  
574-122-100, page 3.

ACK: acknowledge  
ALT: altmode  
BEL: bell  
CR : carriage return  
DEL: delete

ESC: escape  
FF : form feed (page eject)  
HT : horizontal tab  
LF : line feed  
NUL: null character

TELETYPES MODEL 35  
(no parity)

|     | 0         | 1  | 2  | 3  | 4  | 5  | 6  | 7         | 10       | 11       | 12       | 13       | 14       | 15       | 16  | 17  |     |
|-----|-----------|----|----|----|----|----|----|-----------|----------|----------|----------|----------|----------|----------|-----|-----|-----|
| 0   |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 20  |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 40  |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 60  |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 100 |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 120 |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 140 |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 160 |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 200 | NUL<br>&@ | &A | &B | &C | &D | &E | &F | BEL<br>&G | HT<br>&H | LF<br>&I | LF<br>&J | FF<br>&K | FF<br>&L | CR<br>&M | &N  | &O  |     |
| 220 | &P        | &Q | &R | &S | &T | &U | &V | &W        | &X       | &Y       | &Z       | &[       | &\       | &]       | &↑  | &←  |     |
| 240 | ∅         | !  | "  | #  | \$ | %  | &  | '         | (        | )        | *        | +        | ,        | -        | .   | /   |     |
| 260 | ∅         | 1  | 2  | 3  | 4  | 5  | 6  | 7         | 8        | 9        | :        | ;        | <        | =        | >   | ?   |     |
| 300 | @         | A  | B  | C  | D  | E  | F  | G         | H        | I        | J        | K        | L        | M        | N   | O   |     |
| 320 | P         | Q  | R  | S  | T  | U  | V  | W         | X        | Y        | Z        | [        | \        | ]        | ↑   | ←   |     |
| 340 |           |    |    |    |    |    |    |           |          |          |          |          |          |          |     |     |     |
| 360 |           |    |    |    |    |    |    |           |          |          |          |          |          | ACK      | ALT | ESC | DEL |

Reference: Teletype Cooperative Bulletin 273B Vol. 1, section  
574-122-100, page 3.

ACK: acknowledge  
ALT: altmode  
BEL: bell  
CR: carriage return  
DEL: delete

ESC: escape  
FF: form feed (page eject)  
HT: horizontal tab  
LF: line feed  
NUL: null

|     | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 10 | 11 | 12 | 13 | 14  | 15  | 16  | 17  |
|-----|---|---|---|---|---|---|---|---|----|----|----|----|-----|-----|-----|-----|
| 0   |   | 1 | 2 |   | 4 |   |   | 7 | 8  |    |    | #  |     | RST | UC  |     |
| 20  | ∅ |   |   | 3 |   | 5 | 6 |   |    | 9  | ∅  |    | PN  |     |     | EOT |
| 40  | @ |   |   | t |   | v | w |   |    | z  |    |    | BY  |     |     | PRE |
| 60  |   | / | s |   | u |   |   | x | y  |    |    | ,  |     | LF  | EOB |     |
| 100 | - |   |   | l |   | n | o |   |    | r  |    |    | RES |     |     | IL  |
| 120 |   | j | k |   | m |   |   | p | q  |    |    | \$ |     | NL  | BS  |     |
| 140 |   | a | b |   | d |   |   | g | h  |    |    | .  |     | HT  | LC  |     |
| 160 | & |   |   | c |   | e | f |   |    | i  |    |    | PF  |     |     | DEL |

lower case

|     | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 10 | 11 | 12 | 13 | 14  | 15  | 16  | 17  |
|-----|---|---|---|---|---|---|---|---|----|----|----|----|-----|-----|-----|-----|
| 0   |   | = | ° |   | : |   |   | " | *  |    |    | ±  |     | RST | UC  |     |
| 20  | ∅ |   |   | ; |   | % | ' |   | (  | )  |    |    | PN  |     |     | EOT |
| 40  | ∅ |   |   | T |   | V | W |   |    | Z  |    |    | BY  |     |     | PRE |
| 60  |   | ? | S |   | U |   |   | X | Y  |    |    | ,  |     | LF  | EOB |     |
| 100 | - |   |   | L |   | N | O |   |    | R  |    |    | RES |     |     | IL  |
| 120 |   | J | K |   | M |   |   | P | Q  |    |    | :  |     | NL  | BS  |     |
| 140 |   | A | B |   | D |   |   | G | H  |    |    | .  |     | HT  | LC  |     |
| 160 | + |   |   | C |   | E | F |   |    | I  |    |    | PF  |     |     | DEL |

upper case

Reference: 2740/2741 communication Terminal O.E.M. Information IBM  
5360/TR-19, page 12

- |      |                     |      |             |
|------|---------------------|------|-------------|
| BS : | backspace           | LF : | line feed   |
| BY : | bypass              | NL : | new line    |
| DEL: | delete              | PF : | punch off   |
| EOB: | end of block        | PN : | punch on    |
| EOT: | end of transmission | PRE: | prefix      |
| HT : | horizontal tab      | RES: | restore     |
| IL : | idle                | RST: | reader stop |
| LC : | lower case          | UC : | upper case  |



IBM 2741  
STANDARD

|     | 0 | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 10 | 11 | 12 | 13 | 14  | 15  | 16  | 17  |
|-----|---|-----|---|---|---|---|---|---|----|----|----|----|-----|-----|-----|-----|
| 0   |   | l j | 2 |   | 5 |   |   | 8 | 4  |    |    | 9  |     | RST | UC  |     |
| 20  | ∅ |     | 3 |   | 7 | 6 |   |   | ∅  | z  |    |    | PN  |     |     | EOT |
| 40  | t |     | u |   | d | k |   |   | h  |    |    |    | BY  |     |     | PRE |
| 60  |   | x   | n |   | e |   |   | c | l  |    |    | b  |     | LF  | EOB |     |
| 100 | ! |     | v |   | r | i |   |   | s  |    |    |    | RES |     |     | IL  |
| 120 |   | m   |   | ' |   |   |   | a | o  |    |    | w  |     | NL  | BS  |     |
| 140 |   | g   | = |   | p |   |   | , | /  |    |    | -  |     | HT  | LC  |     |
| 160 | j |     | f |   | ; | q |   |   | y  |    |    |    | PF  |     |     | DEL |

lower case

|     | 0 | 1   | 2 | 3 | 4 | 5 | 6 | 7 | 10 | 11 | 12 | 13 | 14  | 15  | 16  | 17  |
|-----|---|-----|---|---|---|---|---|---|----|----|----|----|-----|-----|-----|-----|
| 0   |   | ± [ | @ |   | % |   |   | * | \$ |    |    | (  |     | RST | UC  |     |
| 20  | ∅ |     | # |   | & | ∅ |   |   | )  | z  |    |    | PN  |     |     | EOT |
| 40  | T |     | U |   | D | K |   |   | H  |    |    |    | BY  |     |     | PRE |
| 60  |   | X   | N |   | E |   |   | C | L  |    |    | B  |     | LF  | EOB |     |
| 100 | ° |     | V |   | R | I |   |   | S  |    |    |    | RES |     |     | IL  |
| 120 |   | M   | . |   | " |   |   | A | O  |    |    | W  |     | NL  | BS  |     |
| 140 |   | G   | + |   | P |   |   | , | ?  |    |    | -  |     | HT  | LC  |     |
| 160 | J |     | F |   | : | Q |   |   | Y  |    |    |    | PF  |     |     | DEL |

upper case

Reference: 2740/2741 communication Terminal O.E.M. Information IBM  
5360/TR-19, page 12

|       |                     |       |             |
|-------|---------------------|-------|-------------|
| BS :  | backspace           | LF :  | line feed   |
| BY :  | bypass              | NL :  | new line    |
| DEL : | delete              | PF :  | punch off   |
| EOB : | end of block        | PN :  | punch on    |
| EOT : | end of transmission | PRE : | prefix      |
| HT :  | horizontal tab      | RES : | restore     |
| IL :  | idle                | RST : | reader stop |
| LC :  | lower case          | UC :  | upper case  |

EBCDIC CHARACTER SET

|     | 0   | 1   | 2   | 3   | 4   | 5  | 6   | 7   | 10  | 11 | 12  | 13  | 14  | 15  | 16  | 17  |
|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|
| 0   | NUL | SOH | STX | ETX | PF  | HT | LC  | DEL |     |    | SMM | VT  | FF  | CR  | SO  | SI  |
| 20  | DLE | DC1 | DC2 | TM  | RES | NL | BS  | IL  | CAN | EM | CC  | CU1 | IFS | IGS | IRS | IUS |
| 40  | DS  | SOS | FS  |     | BYP | LF | ETB | ESC |     | GK | SM  | CU2 |     | ENQ | ACK | BEL |
| 60  |     |     | SYN |     | PN  | RS | UC  | EOT |     |    |     | CU3 | DC4 | NAK |     | SUB |
| 100 | ∅   |     |     |     |     |    |     |     |     |    | ∅   | .   | <   | (   | +   |     |
| 120 | &   |     |     |     |     |    |     |     |     |    | :   | \$  | *   | )   | ;   | ⌋   |
| 140 | -   | /   |     |     |     |    |     |     |     |    |     | ,   | %   | _   | >   | ?   |
| 160 |     |     |     |     |     |    |     |     |     |    | :   | #   | @   | '   | =   | "   |
| 200 |     | a   | b   | c   | d   | e  | f   | g   | h   | i  |     | {*  | ≤*  | (*  | +*  | +*  |
| 220 |     | j   | k   | l   | m   | n  | o   | p   | q   | r  |     | }*  | ≠*  | )*  | ±*  | ■*  |
| 240 | -*  | o*  | s   | t   | u   | v  | w   | x   | y   | z  |     | ⌊*  | ⌋*  | [*  | ≥*  | ●*  |
| 260 | 0*  | 1*  | 2*  | 3*  | 4*  | 5* | 6*  | 7*  | 8*  | 9* |     | ⌌*  | ⌍*  | ⌎*  | ≠*  | —*  |
| 300 |     | A   | B   | C   | D   | E  | F   | G   | H   | I  |     |     |     |     |     |     |
| 320 |     | J   | K   | L   | M   | N  | O   | P   | Q   | R  |     |     |     |     |     |     |
| 340 |     |     | S   | T   | U   | V  | W   | X   | Y   | Z  |     |     |     |     |     |     |
| 360 | ∅   | 1   | 2   | 3   | 4   | 5  | 6   | 7   | 8   | 9  |     |     |     |     |     |     |

Reference: System Reference Data IBM document #X20-1703-6

\*TN CHAIN ONLY

ACK: Acknowledge  
BEL: Bell  
BS: Backspace  
BY: Bypass  
CAN: Cancel  
CC: Cursor Control  
CR: Carriage Return  
CU1: Customer Use 1  
CU2: Customer Use 2  
CU3: Customer Use 3  
DC1: Device Control 1  
DC2: Device Control 2  
DC4: Device Control 4  
DEL: Delete  
DLE: Data Link Escape  
DS: Digit Select  
EM: End of Medium  
ENQ: Enquiry  
EOT: End of Transmission  
ESC: Escape  
ETB: End of Transmission Block  
ETX: End of Text  
FF: Form Feed  
FS: Field Separator  
GK: God Knows  
HT: Horizontal Tab  
IFS: Interchange File Separator  
IGS: Interchange Group Separator  
IL: Idle  
IRS: Interchange Record Separator  
IUS: Interchange Unit Separator  
LC: Lower Case  
LF: Line Feed  
NAK: Negative Acknowledge  
NL: New Line  
NUL: Null  
PF: Punch Off  
PN: Punch On  
RES: Restore  
RS: Reader Stop  
SI: Shift In  
SM: Set Mode  
SMM: Start of Manual Message  
SO: Shift Out  
SOH: Start of Heading  
SOS: Start of Significance  
SP: Space  
STX: Start of Text  
SUB: Substitute  
SYN: Synchronous Idle  
TM: Tape Mark  
UC: Upper Case  
VT: Vertical Tab

OLD BCD CHARACTER SET

|    | 0      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 10 | 11 | 12 | 13     | 14     | 15 | 16 | 17  |
|----|--------|---|---|---|---|---|---|---|----|----|----|--------|--------|----|----|-----|
| 0  | ∅      | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8  | 9  | ∅  | #<br>= | !<br>@ | :  | >  |     |
| 20 |        | / | S | T | U | V | W | X | Y  | Z  |    | ,      | %<br>( |    | \  | +++ |
| 40 | -      | J | K | L | M | N | O | P | Q  | R  |    | \$     | *      | ]  | ;  |     |
| 60 | &<br>+ | A | B | C | D | E | F | G | H  | I  |    | .      | ⋈<br>) | [  | <  | ‡   |

Reference: Tattered IBM Card

|     | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
|-----|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|
| 0   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| 20  |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| 40  |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| 60  |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| 100 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| 120 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| 140 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |
| 160 |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |

Define your own character set (the IBM way).

Take as many darts as you have characters and label each dart with one of your characters. Throw darts one at a time at above chart, (blind folded if your aim is good). Character values will tend not to be duplicated if the darts are of a decent size. If you feel that any of the resulting set is inadequate, take a few more darts, label appropriately and add characters to taste.

When finished, in order to clearly label your characters, set up a chart with the characters drawn down the left side and its (Roman Numeral) equivalent down the right hand side, Thus:

|   |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |          |
|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
|   | <u>C</u> | <u>I</u> | <u>X</u> | <u>C</u> | <u>I</u> | <u>X</u> | <u>L</u> | <u>I</u> | <u>X</u> | <u>X</u> | <u>X</u> | <u>I</u> | <u>V</u> | <u>I</u> | <u>I</u> | <u>I</u> |
| A |          |          |          | C        |          |          | X L      |          |          |          |          |          | V I I    |          |          |          |
| B | C        |          |          | C        |          |          |          |          | X X      |          |          |          | I V      |          |          |          |

PHASE I - COMMUNICATION SYSTEM CHARACTER SET  
 (Warning, Phase II may be different)

|    | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 10  | 11   | 12  | 13  | 14  | 15  | 16  | 17  |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|
| 0  | NUL | UND | UND | UND | UND | UND | UND | UND | UND | UND  | UND | UND | UND | UND | UND | UND |
| 20 | UND | UND | UND | UND | UND | UND | UND | UND | SUB | SUBI | CBR | NST | UND | SNL | UND | SHL |

Reference: CHIO/CPU Interface (P. Heckel) FOO/S-2.1

All other characters are the characters for the device. Characters from 0 to 37B are transmitted to the device as SHIFT1 followed by 40B plus the character.

CBR: break in line  
 NST: new status  
 NUL: null character  
 SHL: shift 1  
 SNL: SNULL  
 SUB: substitute  
 SUBI: substitute indefinite  
 UND: undefined character

MODEL 37 CHARACTER SET  
(Even Parity ASCII)

|     | 0   | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 10  | 11 | 12 | 13  | 14 | 15 | 16 | 17  |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|-----|----|----|----|-----|
| 0   | NUL |     |     | ETX |     | ENQ | ACK |     |     | HT | LF |     | FF |    |    | SI  |
| 20  |     | DC1 | DC2 |     | DC4 |     |     | ETB | CAN |    |    | ESC |    | GS | RS |     |
| 40  |     | :   | "   |     | \$  |     |     | (   |     |    |    | +   |    | -  | .  |     |
| 60  | Ø   |     |     | 3   |     | 5   | 6   |     |     | 9  | :  |     | <  |    |    | ?   |
| 100 |     | A   | B   |     | D   |     |     | G   | H   |    |    | K   |    | M  | N  |     |
| 120 | P   |     |     | S   |     | U   | V   |     |     | Y  | Z  |     | \  |    |    | _   |
| 140 | ^   |     |     | c   |     | e   | f   |     |     | i  | j  |     | l  |    |    | o   |
| 160 |     | q   | r   |     | t   |     |     | w   | x   |    |    | {   |    | }  | ~  |     |
| 200 |     | SOH | STX |     | EOT |     |     | BEL | BS  |    |    | VT  |    | CR | SO |     |
| 220 | DLE |     |     | DC3 |     | NAK | SYN |     |     | EM | SS |     | FS |    |    | US  |
| 240 | Ø   |     |     | #   |     | %   | &   |     |     | )  | *  |     | ,  |    |    | /   |
| 260 |     | 1   | 2   |     | 4   |     |     | 7   | 8   |    |    |     | ;  |    | =  | >   |
| 300 | @   |     |     | C   |     | E   | F   |     |     | I  | J  |     | L  |    |    | O   |
| 320 |     | Q   | R   |     | T   |     |     | W   | X   |    |    | [   |    | ]  | ^  |     |
| 340 |     | a   | b   |     | d   |     |     | g   | h   |    |    | k   |    | m  | n  |     |
| 360 | p   |     |     | s   |     | u   | v   |     |     | y  | z  |     |    |    |    | DEL |

Reference: Model 37 Teletypewriter Station for Data Phone Service.

A.T. & T 1968.

For description of abbreviations see page 4

Character Set Comparison List

Appendix A



## ALPHANUMERIC CS

| Character Set | Old 940 | ASCII | TTY            |           | 2741 PTTC/BCD | 2741 Standard | EBCDIC | BCD | Type* |
|---------------|---------|-------|----------------|-----------|---------------|---------------|--------|-----|-------|
|               |         |       | Correct Parity | No Parity |               |               |        |     |       |
| Ø             | 2Ø      | ØØ    | 6Ø             | 26Ø       | L 32          | L 31          | 36Ø    | 12  | Ø     |
| 1             | 21      | 61    | 261            | 261       | L 1           | L 1           | 361    | 1   | Ø     |
| 2             | 22      | 62    | 262            | 262       | L 2           | L 2           | 362    | 2   | Ø     |
| 3             | 23      | 63    | 263            | 263       | L 23          | L 23          | 363    | 3   | Ø     |
| 4             | 24      | 64    | 264            | 264       | L 4           | L 1Ø          | 364    | 4   | Ø     |
| 5             | 25      | 65    | 265            | 265       | L 25          | L 4           | 365    | 5   | Ø     |
| 6             | 26      | 66    | 266            | 266       | L 26          | L 26          | 366    | 6   | Ø     |
| 7             | 27      | 67    | 267            | 267       | L 7           | L 25          | 367    | 7   | Ø     |
| 8             | 3Ø      | 7Ø    | 27Ø            | 27Ø       | L 1Ø          | L 7           | 37Ø    | 1Ø  | Ø     |
| 9             | 31      | 71    | 271            | 271       | L 31          | L 13          | 371    | 11  | Ø     |
| A             | 41      | 1Ø1   | 1Ø1            | 3Ø1       | U141          | U127          | 3Ø1    | 61  | Ø     |
| B             | 42      | 1Ø2   | 1Ø2            | 3Ø2       | U142          | U 73          | 3Ø2    | 62  | Ø     |
| C             | 43      | 1Ø3   | 3Ø3            | 3Ø3       | U163          | U 67          | 3Ø3    | 63  | Ø     |
| D             | 44      | 1Ø4   | 1Ø4            | 3Ø4       | U144          | U 45          | 3Ø4    | 64  | Ø     |
| E             | 45      | 1Ø5   | 3Ø5            | 3Ø5       | U165          | U 64          | 3Ø5    | 65  | Ø     |
| F             | 46      | 1Ø6   | 3Ø6            | 3Ø6       | U166          | U163          | 3Ø6    | 66  | Ø     |
| G             | 47      | 1Ø7   | 1Ø7            | 3Ø7       | U147          | U141          | 3Ø7    | 67  | Ø     |
| H             | 5Ø      | 11Ø   | 11Ø            | 31Ø       | U15Ø          | U 51          | 31Ø    | 7Ø  | Ø     |
| I             | 51      | 111   | 311            | 311       | U171          | U1Ø6          | 311    | 71  | Ø     |
| J             | 52      | 112   | 312            | 312       | U121          | U16Ø          | 321    | 41  | Ø     |
| K             | 53      | 113   | 113            | 313       | U122          | U 46          | 322    | 42  | Ø     |
| L             | 54      | 114   | 314            | 314       | U1Ø3          | U 7Ø          | 323    | 43  | Ø     |
| M             | 55      | 115   | 115            | 315       | U121          | U124          | 324    | 44  | Ø     |
| N             | 56      | 116   | 116            | 316       | U1Ø5          | U 62          | 325    | 45  | Ø     |
| O             | 57      | 117   | 317            | 317       | U1Ø6          | U13Ø          | 326    | 46  | Ø     |
| P             | 6Ø      | 12Ø   | 12Ø            | 32Ø       | U127          | U144          | 327    | 47  | Ø     |
| Q             | 61      | 121   | 321            | 321       | U13Ø          | U166          | 33Ø    | 5Ø  | Ø     |
| R             | 62      | 122   | 322            | 322       | U111          | U1Ø5          | 331    | 51  | Ø     |
| S             | 63      | 123   | 123            | 323       | U 62          | U111          | 342    | 22  | Ø     |
| T             | 64      | 124   | 324            | 324       | U 43          | U 4Ø          | 343    | 23  | Ø     |
| U             | 65      | 125   | 125            | 325       | U 64          | U 43          | 344    | 24  | Ø     |
| V             | 66      | 126   | 126            | 326       | U 45          | U1Ø3          | 345    | 25  | Ø     |
| W             | 67      | 127   | 327            | 327       | U 46          | U133          | 346    | 26  | Ø     |
| X             | 7Ø      | 13Ø   | 33Ø            | 33Ø       | U 67          | U 61          | 347    | 27  | Ø     |
| Y             | 71      | 131   | 131            | 331       | U 7Ø          | U171          | 35Ø    | 3Ø  | Ø     |
| Z             | 72      | 132   | 132            | 332       | U 51          | U 32          | 351    | 31  | Ø     |

\* Ø: alphanumeric; 1: punctuation; 2: function character; 3: non-echoable character.

ALPHANUMERIC'S

| Character Set | ML  | Old 940 | ASCII | TTY            |           | Correct Parity | TTY No Parity | 2741 PTTC/BCD | 2741 Standard | EBCDIC | BCD | Type* |
|---------------|-----|---------|-------|----------------|-----------|----------------|---------------|---------------|---------------|--------|-----|-------|
|               |     |         |       | Correct Parity | No Parity |                |               |               |               |        |     |       |
| a             | 101 | 101     | 141   | -              | -         | -              | L141          | L127          | 201           | --     | Ø   |       |
| b             | 102 | 102     | 142   | -              | -         | -              | L142          | L 73          | 202           | --     | Ø   |       |
| c             | 103 | 103     | 143   | -              | -         | -              | L163          | L 67          | 203           | --     | Ø   |       |
| d             | 104 | 104     | 144   | -              | -         | -              | L144          | L 45          | 204           | --     | Ø   |       |
| e             | 105 | 105     | 145   | -              | -         | -              | L165          | L 64          | 205           | --     | Ø   |       |
| f             | 106 | 106     | 146   | -              | -         | -              | L166          | L163          | 206           | --     | Ø   |       |
| g             | 107 | 107     | 147   | -              | -         | -              | L147          | L141          | 207           | --     | Ø   |       |
| h             | 110 | 110     | 150   | -              | -         | -              | L150          | L 51          | 210           | --     | Ø   |       |
| i             | 111 | 111     | 151   | -              | -         | -              | L171          | L106          | 211           | --     | Ø   |       |
| j             | 112 | 112     | 152   | -              | -         | -              | L121          | L160          | 221           | --     | Ø   |       |
| k             | 113 | 113     | 153   | -              | -         | -              | L122          | L 46          | 222           | --     | Ø   |       |
| l             | 114 | 114     | 154   | -              | -         | -              | L103          | L 70          | 223           | --     | Ø   |       |
| m             | 115 | 115     | 155   | -              | -         | -              | L124          | L121          | 224           | --     | Ø   |       |
| n             | 116 | 116     | 156   | -              | -         | -              | L105          | L 62          | 225           | --     | Ø   |       |
| o             | 117 | 117     | 157   | -              | -         | -              | L106          | L130          | 226           | --     | Ø   |       |
| p             | 120 | 120     | 160   | -              | -         | -              | L127          | L144          | 227           | --     | Ø   |       |
| q             | 121 | 121     | 161   | -              | -         | -              | L130          | L166          | 230           | --     | Ø   |       |
| r             | 122 | 122     | 162   | -              | -         | -              | L111          | L105          | 231           | --     | Ø   |       |
| s             | 123 | 123     | 163   | -              | -         | -              | L 62          | L111          | 242           | --     | Ø   |       |
| t             | 124 | 124     | 164   | -              | -         | -              | L 43          | L 40          | 243           | --     | Ø   |       |
| u             | 125 | 125     | 165   | -              | -         | -              | L 64          | L 43          | 244           | --     | Ø   |       |
| v             | 126 | 126     | 166   | -              | -         | -              | L 45          | L103          | 245           | --     | Ø   |       |
| w             | 127 | 127     | 167   | -              | -         | -              | L 46          | L133          | 246           | --     | Ø   |       |
| x             | 130 | 130     | 170   | -              | -         | -              | L 67          | L 61          | 247           | --     | Ø   |       |
| y             | 131 | 131     | 171   | -              | -         | -              | L 70          | L171          | 250           | --     | Ø   |       |
| z             | 132 | 132     | 172   | -              | -         | -              | L 51          | L 32          | 251           | --     | Ø   |       |

\* Ø: alphanumeric; 1: punctuation; 2: function character; 3: non-echoable character.

STANDARD NON ALPHANUMERIC GRAPHICS

| Character Set | ML  | Old 940 | ASCII | TTY     |     | Parity | 2741 PTT/BCD | Standard | EBCDIC | BCD | Type* |
|---------------|-----|---------|-------|---------|-----|--------|--------------|----------|--------|-----|-------|
|               |     |         |       | Correct | No  |        |              |          |        |     |       |
| Ø             | Ø   | Ø       | 4Ø    | 24Ø     | 24Ø | Ø      | Ø            | Ø        | Ø      | Ø   | Ø     |
| !             | 1   | 1       | 41    | 41      | 241 | Ø      | L1ØØ         | 132      | --     | 1   |       |
| "             | 2   | 2       | 42    | 42      | 242 | U 7    | U124         | 177      | --     | 1   |       |
| #             | 3   | 3       | 43    | 243     | 243 | L 13   | U 23         | 173      | 13     | 1   |       |
| \$            | 4   | 4       | 44    | 44      | 244 | L133   | U 1Ø         | 133      | 53     | 1   |       |
| %             | 5   | 5       | 45    | 245     | 245 | U 25   | U 4          | 154      | 34     | 1   |       |
| &             | 6   | 6       | 46    | 246     | 246 | L16Ø   | U 25         | 12Ø      | 6Ø     | 1   |       |
| '             | 7   | 7       | 47    | 47      | 247 | U 26   | L124         | 175      | 14     | 1   |       |
| (             | 1Ø  | 1Ø      | 5Ø    | 5Ø      | 25Ø | U 31   | U 13         | 115      | 34     | 1   |       |
| )             | 11  | 11      | 51    | 251     | 251 | U 32   | U 31         | 135      | 74     | 1   |       |
| *             | 12  | 12      | 52    | 252     | 252 | U 1Ø   | U 7          | 134      | 54     | 1   |       |
| +             | 13  | 13      | 53    | 53      | 253 | U16Ø   | U142         | 116      | 6Ø     | 1   |       |
| ,             | 14  | 14      | 54    | 254     | 254 | 73     | 147          | 153      | 33     | 1   |       |
| -             | 15  | 15      | 55    | 55      | 255 | L1ØØ   | L153         | 14Ø      | 4Ø     | 1   |       |
| .             | 16  | 16      | 56    | 56      | 256 | 153    | 122          | 113      | 73     | 1   |       |
| /             | 17  | 17      | 57    | 257     | 257 | L 61   | L15Ø         | 141      | 21     | 1   |       |
| :             | 32  | 32      | 72    | 72      | 272 | U 4    | U165         | 172      | 15     | 1   |       |
| ;             | 33  | 33      | 73    | 273     | 273 | U 23   | L165         | 136      | 56     | 1   |       |
| <             | 34  | 34      | 74    | 74      | 274 | ---    | ---          | 114      | 76     | 1   |       |
| =             | 35  | 35      | 75    | 275     | 275 | U 1    | L142         | 176      | 13     | 1   |       |
| >             | 36  | 36      | 76    | 276     | 276 | ---    | ---          | 156      | 16     | 1   |       |
| ?             | 37  | 37      | 77    | 77      | 277 | U 61   | U15Ø         | 157      | --     | 1   |       |
| @             | 4Ø  | 4Ø      | 1ØØ   | 3ØØ     | 3ØØ | L 4Ø   | U 2          | 174      | 14     | 1   |       |
| [             | 73  | 73      | 133   | 333     | 333 | ---    | U 1          | 255**    | 75     | 1   |       |
| \             | 74  | 74      | 134   | 334     | 334 | ---    | ---          | ---      | 36     | 1   |       |
| ]             | 75  | 75      | 135   | 335     | 335 | ---    | L 1          | 275**    | 55     | 1   |       |
| ↑             | 76  | 76      | -     | 336     | 336 | ---    | ---          | ---      | --     | 1   |       |
| ←             | 77  | 77      | -     | 137     | 337 | ---    | ---          | ---      | --     | 1   |       |
| }             | 1ØØ | 1ØØ     | 137   | -       | -   | U1ØØ   | U153         | 155      | --     | 1   |       |
| }             | 133 | 133     | 173   | -       | -   | ---    | ---          | 213**    | --     | 1   |       |
| }             | 134 | 134     | 174   | -       | -   | ---    | ---          | 117      | --     | 1   |       |
| }             | 135 | 135     | 175   | -       | -   | ---    | ---          | 233**    | --     | 1   |       |

\* Ø: alphanumeric; 1: punctuation; 2: function character; 3: non-echoable character.  
 \*\* TN CHAIN GRAPHIC, NONSTANDARD EBCDIC CHARACTER

NON-STANDARD NON-ALPHANUMERIC GRAPHICS

| Character Set | M1    | Old 940 | ASCII | TTY            |           | 2741 PTTC/BCD | 2741 Standard | EBCDIC | BCD   | Type* |
|---------------|-------|---------|-------|----------------|-----------|---------------|---------------|--------|-------|-------|
|               |       |         |       | Correct Parity | No Parity |               |               |        |       |       |
| +             | 140   | -       | -     | -              | -         | U 13          | U 1           | 236**  | -     | 1     |
| 7             | 141   | -       | -     | -              | -         | U 40          | U 26          | 112    | -     | 1     |
| o             | 142   | -       | -     | -              | -         | U 2           | U100          | 241**  | -     | 1     |
| ┐             | -     | 136     | -     | -              | -         | -             | -             | 137    | -     | 1     |
| →             | ..... | 137     | ..... | .....          | .....     | .....         | .....         | .....  | ..... | 1     |
| ~             | -     | -       | 176   | -              | -         | -             | -             | -      | -     | 1     |
| ◀             | -     | -       | 140   | -              | -         | -             | -             | -      | -     | 1     |
| ^             | -     | -       | 136   | -              | -         | -             | -             | -      | -     | 1     |

\*\* TN CHAIN ONLY

STANDARD FUNCTIONAL CHARACTERS

| Character Set | ML  | Old 940 | ASCII | TTY            |        | Parity | NO  | 2741     |          | Standard | EBCDIC | BCD | Type* |
|---------------|-----|---------|-------|----------------|--------|--------|-----|----------|----------|----------|--------|-----|-------|
|               |     |         |       | Correct Parity | Parity |        |     | PTTC/BCD | Standard |          |        |     |       |
| BEL           | 303 | ---     | 7     | 207            | 207    | ---    | --- | ---      | ---      | ---      | ---    | --- | 3     |
| NUL           | 300 | 140     | 0     | 0              | 200    | ---    | --- | ---      | ---      | ---      | ---    | --- | 3     |
| BS            | 313 | ---     | 10    | ---            | ---    | 136    | --- | 136      | 136      | 26       | ---    | --- | 2     |
| NL            | 307 | ---     | -     | ---            | ---    | 135    | --- | 135      | 135      | ---      | ---    | --- | 2     |
| FF            | 306 | 154     | 14    | 14             | 214    | ---    | --- | ---      | ---      | 14       | ---    | --- | 2     |
| RRS           | 304 | ---     | -     | ---            | ---    | ---    | --- | ---      | ---      | ---      | ---    | --- | 3     |
| BRS           | 305 | ---     | -     | ---            | ---    | ---    | --- | ---      | ---      | ---      | ---    | --- | 3     |
| HLF           | 311 | ---     | -     | ---            | ---    | ---    | --- | ---      | ---      | ---      | ---    | --- | 2     |
| HLR           | 312 | ---     | -     | ---            | ---    | ---    | --- | ---      | ---      | ---      | ---    | --- | 2     |
| LF            | 310 | 152     | 12    | 12             | 212    | 75     | 75  | 75       | 75       | ---      | ---    | --- | 2     |
| QIT           | 301 | ---     | -     | UND            | UND    | UND    | UND | UND      | UND      | ---      | ---    | --- | 3     |
| ESC           | 302 | ---     | -     | UND            | UND    | UND    | UND | UND      | UND      | ---      | ---    | --- | 3     |

\* 0: alphanumeric; 1: punctuation; 2: function character; 3: non-echoable character.

NON-STANDARD FUNCTION CHARACTERS\*\*

| Character Set | ML   | Old 940 | ASCII | TTY Correct Parity | TTY No Parity | 2741 PTT/BCD | 2741 Standard | EBCDIC | BCD | Type* |
|---------------|------|---------|-------|--------------------|---------------|--------------|---------------|--------|-----|-------|
| ACK           | -    | -       | 6     | 374                | 374           | -            | -             | -      | -   | 3     |
| ALT           | -    | 135     | -     | 175                | 375           | -            | -             | -      | -   | 3     |
| BY            | 341* | -       | -     | -                  | -             | 54           | 54            | -      | -   | 3     |
| CAN           | -    | -       | 30    | -                  | -             | -            | -             | -      | -   | 3     |
| CR            | 375  | 155     | 15    | 215                | 215           | -            | -             | 15     | -   | 2     |
| DC1           | -    | -       | 21    | -                  | -             | -            | -             | 21     | -   | 3     |
| DC2           | -    | -       | 22    | -                  | -             | -            | -             | 22     | -   | 3     |
| DC3           | -    | -       | 23    | -                  | -             | -            | -             | -      | -   | 3     |
| DC4           | -    | -       | 24    | -                  | -             | -            | -             | -      | -   | 3     |
| DEL           | -    | -       | 177   | 377                | 377           | 177          | 177           | 7      | -   | 3     |
| DLE           | -    | -       | 20    | -                  | -             | -            | -             | 20     | -   | 3     |
| EM            | -    | -       | 31    | -                  | -             | -            | -             | -      | -   | 3     |
| ENQ           | -    | -       | 5     | -                  | -             | -            | -             | -      | -   | 3     |
| EOB           | 342* | -       | -     | -                  | -             | 76           | 76            | -      | -   | 3     |
| EOF           | -    | 137     | -     | -                  | -             | -            | -             | -      | -   | 3     |
| EOT           | 344* | -       | 4     | -                  | -             | 37           | 37            | -      | -   | 3     |
| ESC           | -    | -       | 33    | 176                | 376           | -            | -             | -      | -   | 3     |
| ETX           | -    | -       | 3     | -                  | -             | -            | -             | 3      | -   | 3     |
| ETB           | -    | -       | 27    | -                  | -             | -            | -             | -      | -   | 3     |
| FS            | -    | -       | 34    | -                  | -             | -            | -             | -      | -   | 3     |
| GS            | -    | -       | 35    | -                  | -             | -            | -             | -      | -   | 3     |
| HT            | 351  | -       | 11    | -                  | -             | 155          | 155           | 5      | -   | 3     |
| IL            | 340* | -       | -     | -                  | -             | 117          | 117           | -      | -   | 3     |
| LC            | -    | -       | -     | -                  | -             | 156          | 156           | 6      | -   | 3     |
| NAK           | -    | -       | 25    | -                  | -             | -            | -             | -      | -   | 3     |
| PF            | 364* | -       | -     | -                  | -             | 174          | 174           | 4      | -   | 3     |
| PN            | 362* | -       | -     | -                  | -             | 34           | 34            | -      | -   | 3     |
| PRE           | UND  | -       | -     | -                  | -             | 57           | 57            | -      | -   | 3     |
| RO            | -    | -       | -     | -                  | -             | -            | -             | -      | -   | 3     |
| RS            | 363* | -       | 36    | -                  | -             | -            | -             | -      | -   | 3     |
| RST           | -    | -       | -     | -                  | -             | 15           | 15            | -      | -   | 3     |
| SI            | -    | -       | 17    | -                  | -             | -            | -             | 17     | -   | 3     |
| SO            | -    | -       | 16    | -                  | -             | -            | -             | 16     | -   | 3     |
| SOH           | -    | -       | 1     | -                  | -             | -            | -             | 1      | -   | 3     |
| SS            | -    | -       | 32    | -                  | -             | -            | -             | -      | -   | 3     |
| STX           | -    | -       | 2     | -                  | -             | -            | -             | 2      | -   | 3     |
| SYN           | -    | -       | 26    | -                  | -             | -            | -             | -      | -   | 3     |
| UC            | -    | -       | -     | -                  | -             | 16           | 16            | -      | -   | 3     |
| US            | -    | -       | 37    | -                  | -             | -            | -             | -      | -   | 3     |
| VT            | -    | -       | 13    | -                  | -             | -            | -             | 13     | -   | 3     |

\* Ø: alphanumeric; 1: punctuation; 2: function character; 3: non-echoable character.  
 \* tentative  
 \*\* NOT ALL EBCDIC characters included

NON-STANDARD FUNCTION CHARACTERS

| Character Set | M1  | Old 940 | ASCII | TTY            |        | Parity | No | 2741 PTT/BCD | Standard | EBCDIC | BCD | Type* |
|---------------|-----|---------|-------|----------------|--------|--------|----|--------------|----------|--------|-----|-------|
|               |     |         |       | Correct Parity | Parity |        |    |              |          |        |     |       |
| &A            | 341 | 141     | -     | 201            | 201    | -      | -  | -            | -        | -      | -   | 3     |
| &B            | 342 | 142     | -     | 202            | 202    | -      | -  | -            | -        | -      | -   | 3     |
| &C            | 343 | 143     | -     | 3              | 203    | -      | -  | -            | -        | -      | -   | 3     |
| &D            | 344 | 144     | -     | 204            | 204    | -      | -  | -            | -        | -      | -   | 3     |
| &E            | 345 | 145     | -     | 5              | 205    | -      | -  | -            | -        | -      | -   | 3     |
| &F            | 346 | 146     | -     | 6              | 206    | -      | -  | -            | -        | -      | -   | 3     |
| &G            | 347 | 147     | -     | 207            | 207    | -      | -  | -            | -        | -      | -   | 3     |
| &H            | --- | 150     | -     | 10             | 210    | -      | -  | -            | -        | -      | -   | 3     |
| &I            | 351 | 151     | -     | 11             | 211    | -      | -  | -            | -        | -      | -   | 3     |
| &K            | 353 | 153     | -     | 213            | 213    | -      | -  | -            | -        | -      | -   | 3     |
| &L            | --- | 154     | -     | 14             | 214    | -      | -  | -            | -        | -      | -   | 3     |
| &N            | 356 | 156     | -     | 216            | 216    | -      | -  | -            | -        | -      | -   | 3     |
| &O            | 357 | 157     | -     | 17             | 217    | -      | -  | -            | -        | -      | -   | 3     |
| &P            | 360 | 160     | -     | 220            | 220    | -      | -  | -            | -        | -      | -   | 3     |
| &Q            | 361 | 161     | -     | 21             | 221    | -      | -  | -            | -        | -      | -   | 3     |
| &R            | 362 | 162     | -     | 22             | 222    | -      | -  | -            | -        | -      | -   | 3     |
| &S            | 363 | 163     | -     | 223            | 223    | -      | -  | -            | -        | -      | -   | 3     |
| &T            | 364 | 164     | -     | 24             | 224    | -      | -  | -            | -        | -      | -   | 3     |
| &U            | 365 | 165     | -     | 225            | 225    | -      | -  | -            | -        | -      | -   | 3     |
| &V            | 366 | 166     | -     | 226            | 226    | -      | -  | -            | -        | -      | -   | 3     |
| &W            | 367 | 167     | -     | 27             | 227    | -      | -  | -            | -        | -      | -   | 3     |
| &X            | 370 | 170     | -     | 30             | 230    | -      | -  | -            | -        | -      | -   | 3     |
| &Y            | 371 | 171     | -     | 231            | 231    | -      | -  | -            | -        | -      | -   | 3     |
| &Z            | 372 | 172     | -     | 232            | 232    | -      | -  | -            | -        | -      | -   | 3     |
| &@            | 340 | ---     | -     | 0              | 200    | -      | -  | -            | -        | -      | -   | 3     |
| &I            | 373 | 173     | -     | 33             | 233    | -      | -  | -            | -        | -      | -   | 3     |
| &N            | 374 | 174     | -     | 234            | 234    | -      | -  | -            | -        | -      | -   | 3     |
| &J            | 375 | 175     | -     | 35             | 235    | -      | -  | -            | -        | -      | -   | 3     |
| &^            | 376 | 176     | -     | 36             | 236    | -      | -  | -            | -        | -      | -   | 3     |
| &←            | 377 | 177     | -     | 237            | 237    | -      | -  | -            | -        | -      | -   | 3     |
| RES           | --- | ---     | -     | ---            | ---    | -      | -  | -            | -        | -      | -   | 3     |

MODEL #1 CHARACTER SET

|     | 0   | 1   | 2    | 3   | 4    | 5   | 6  | 7  | 10 | 11  | 12  | 13 | 14 | 15 | 16 | 17 |                   |                      |
|-----|-----|-----|------|-----|------|-----|----|----|----|-----|-----|----|----|----|----|----|-------------------|----------------------|
| 0   | ∅   | !   | "    | #   | \$   | %   | &  | '  | (  | )   | *   | +  | ,  | -  | .  | /  | STANDARD GRAPHIC  |                      |
| 20  | ∅   | 1   | 2    | 3   | 4    | 5   | 6  | 7  | 8  | 9   | :   | ;  | <  | =  | >  | ?  |                   |                      |
| 40  | @   | A   | B    | C   | D    | E   | F  | G  | H  | I   | J   | K  | L  | M  | N  | O  |                   |                      |
| 60  | P   | Q   | R    | S   | T    | U   | V  | W  | X  | Y   | Z   | [  | /  | ]  | ↑  | ←  |                   |                      |
| 100 | _   | a   | b    | c   | d    | e   | f  | g  | h  | i   | j   | k  | l  | m  | n  | o  |                   |                      |
| 120 | p   | q   | r    | s   | t    | u   | v  | w  | x  | y   | z   | {  |    | }  |    |    |                   | NON-STANDARD GRAPHIC |
| 140 | ±*  | ∅*  | °*   |     |      |     |    |    |    |     |     |    |    |    |    |    |                   |                      |
| 160 |     |     |      |     |      |     |    |    |    |     |     |    |    |    |    |    |                   |                      |
| 200 |     |     |      |     |      |     |    |    |    |     |     |    |    |    |    |    |                   |                      |
| 220 |     |     |      |     |      |     |    |    |    |     |     |    |    |    |    |    |                   | MULTIPLE BLANKS      |
| 240 |     |     |      |     |      |     |    |    |    |     |     |    |    |    |    |    |                   |                      |
| 260 |     |     |      |     |      |     |    |    |    |     |     |    |    |    |    |    |                   |                      |
| 300 | NUL | QIT | ESC  | BEL | RRS  | BRS | FF | NL | LF | HLF | HLR | BS |    |    |    |    | STANDARD FUNCTION |                      |
| 320 |     |     |      |     |      |     |    |    |    |     |     |    |    |    |    |    |                   |                      |
| 340 | IL* | BY* | EOB* |     | EOT* |     |    |    |    | HT  |     |    |    |    |    |    | STANDARD FUNCTION |                      |
| 360 | &@  | &A  | &B   | &C  | &D   | &E  | &F | &G |    | &I  |     | &K |    | CR | &N | &O |                   |                      |
|     | &P  | &Q  | PN*  | RS* | PF*  |     |    |    |    |     |     | &Z | &[ | &  | &] | &↑ | &←                |                      |

Reference: Character Input/Output Streams (L. Barnes) CIOSUC/W-31

\* tentative

BEL: bell  
 BRS: black ribbon shift  
 BS : backspace  
 BY : bypass  
 CR : carriage return  
 EOB: end of block  
 EOT: end of transmission  
 ESC: escape  
 FF : form feed (page eject)  
 HLF: half line feed  
 HLR: half line reverse feed

HT : horizontal tab  
 IL : idle  
 LF : line feed  
 NL : new line  
 NUL: null character  
 PF : punch off  
 PN : punch on  
 QIT: quit  
 RRS: read ribbon shift  
 RS : record separator