

Department 539  
South Road Laboratory  
November 5, 1958

FILE MEMO

SUBJECT: Character and Control Codes  
BY: W. Buchholz

In order to get the new Channel Adapter under way, it is necessary to obtain agreement on the general assignment of character and control codes. A specific proposal, very similar to one circulated recently, is attached.

It should be noted that the leftmost bit (bit 0) is assumed to be zero in the code chart. If this bit is one, the Channel Adapter will transmit it, provided the parity is correct. It will no longer be possible for the Channel Adapter to suppress a one in bit position 0 because this would indicate a parity error.

Unless improvements are suggested or objections are raised by 5:00 P.M., Friday, November 7, the attached codes will be accepted as final with the exception that the assignment of specific symbols in the special character positions of the code chart is still tentative.

WB/pkb

Attach.

cc: Mr. J. D. Calvert  
Mr. H. K. Wild  
7000 Product Planning  
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*Dr. H. G. Kalsky*

Control Decoder

The Channel Adapter contains a decoder which provides the control functions for all units. Control may be indicated in one of two ways:

1. A single byte of the right effective address (bits 42-49) of a CONTROL instruction.
2. Any byte transmitted during a WRITE instruction, which is coded as shown below, will be interpreted as control rather than data to be written.

The Channel Adapter will always interpret CONTROL instructions as in (1). The interpretation of data bytes as in (2) will be set up only for those units which need it, primarily the typewriter at this point.

In the table below, decimal symbols are used to indicate the coding of the eight bits as follows:

Bit	0	1	2	3	4	5	6	7
	XX	-	YY					

where XX(YY) stands for the numbers 0 to 15. Thus, "01011110" is shown as "5-14".

The table below shows several typical interpretations of the control codes. The underlined controls will be wired in as standard functions of the Channel Adapter. The other codes are defined in the various units, and if necessary, may be given different interpretations. Any control code not defined will be treated as "No Operation" for CONTROL, or "Ignore" for WRITE.

Control Codes

<u>Code</u>	<u>WRITE</u> (Inquiry Station and Console)	<u>CONTROL</u>
0-0	Blank	Sound gong
0-14	Erase or <u>Check Light On</u>	<u>Check Light On</u> (Note 2)
0-15	End	Write Tape Mark
1-14	Line Feed	Rewind
1-15	Carriage Return and Line Feed	Rewind and Unload
2-14	Tabulate	Space Block (Note 2)
2-15	Carriage Return Only	Space File (Note 2)
3-14	Backspace	Backspace Block
3-15	Blank (Note 1)	Backspace File (Note 2)
4-14	<u>Reserved Light Off</u>	<u>Reserved Light Off</u>
4-15	<u>Reserved Light On</u>	<u>Reserved Light On</u>
5-14	Black Ribbon	Even Parity Mode
5-15	Red Ribbon	Odd Parity Mode
6-14	(Ignore)	Erase Long Gap
6-15	(Ignore)	(No Operation)
7-14	(Ignore)	(No Operation)
7-15	Ignore	(No Operation)
8-0 to 15-15	(Not decoded; may cause parity errors)	(Not defined)

Note 1: Code 3-15 is the only Blank recognized by the Console display units. The typewriter and printer will print a blank space for Code 3-15 as well as 0-0 (the collatable Blank).

Note 2: These functions will be omitted on the 729 tapes.

# REFUSED CODE CHART

BITS 4-5-6-7 ( $R_2 \bar{R}_1 A T_2 T_1$ )	BITS 1-2-3 (S-R <sub>2</sub> -R <sub>1</sub> )							
	Lower Shift				Upper Shift			
	000	001	010	011	100	101	110	111
0000	BLANK	c	o	0	NIL	C	O	<
0001	•	d	p	1	:	D	P	>
0010	\$	e	q	2	!	E	Q	[
0011	/	f	r	3	?	F	R	]
0100	CP	g	s	4	CP	G	S	(
0101	CP	h	t	5	CP	H	T	)
0110	CP	i	u	6	CP	I	U	=
0111	CP	j	v	7	CP	J	V	→
1000	,	k	w	8	;	K	W	^
1001	'	l	x	9	"	L	X	v
1010	a	m	y	+	A	M	Y	
1011	b	n	z	-	B	N	Z	_
1100	*	NIL	NIL	NIL	↑	NIL	NIL	NIL
1101	⊙	NIL	NIL	NIL	NIL	NIL	NIL	NIL
1110	0-14 CTL	1-14 CTL	2-14 CTL	3-14 CTL	4-14 CTL	5-14 CTL	6-14 CTL	7-14 CTL
1111	0-15 CTL	1-15 CTL	2-15 CTL	3-15 BLANK	4-15 CTL	5-15 CTL	6-15 CTL	7-15 IGNORE

BIT ASSIGNMENT:

0 1 2 3 4 5 6 7  
0 S R<sub>2</sub> R<sub>1</sub> R<sub>2</sub>  $\bar{R}_1$  T<sub>2</sub> T<sub>1</sub>

Bit 0: Always Zero

S: Shift

SYMBOLS:

CP (Chain Print Data)

NIL Not Used

⊙ Period for Console

BLANK Blank for Console

CTL Control Codes