CONTROL DATA CORPORATION
COMPUTER DIVISION, LOS ANGELES OPERATIONS
5630 Arbor Vitae Street
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April 30, 1963

TECHNICAL APPLICATIONS MEMORANDUM NO. 99

TITLE: Reading Paper Tape in the Automatic Mode

PURPOSE: To provide information regarding the special operation
                          of reading punched paper tape in the automatic (re-
                          load) mode.

EQUIPMENT AFFECTED: Alphanumeric G-15

EFFECTIVE DATE: April 30, 1963

INSTRUCTIONS:

1. The basic feature of the automatic mode is that each time Line 23
   is filled (116 bits or 29 4-bit digits), it is automatically trans-
   ferred to the low order four words (00-03) of Line 19, with the
   previous contents of Line 19 being moved up by 4 words.

2. There are actually two different types of automatic mode: one sim-
   ilar to the normal operation of the PR-2, the other tied to the
   logic of alphanumeric typewriter input.

3. The "PR-2" automatic mode works just as described in the PR-2 Tech-
   nical Bulletin. Input is terminated by a stop code. This action
   on termination leaves Line 23 "as is" with a single marker bit pre-
   ceding the characters read since the last reload, and zeroes in
   front of the marker. Thus, the complete sequence of input charac-
   ters is not contiguous in memory, nor would they be even if Line 23
   reloaded into Line 19.

   This operation may take place on any photo-reader, either the one
   which is part of the G-15, the PR-1 accessory, or the PR-2 acces-
   sory. The commands to initiate such operation are as follows:

L_5	N	5	12	31	for PR-2 Accessory
L_5	N	C+4	15	31	for PR-1 Accessory
L_5	N	5	15	31	for machine photo-reader when no PR-1 attached
L_5	N_1	5	12	31	for machine photo-reader when no PR-2
L_2	N_2	0	15	31	attached ***

4. The "alphanumeric typewriter" automatic mode is somewhat different. Only digit codes are permitted on the tape, as tabs and carriage returns cause the clearing and re-setting of Line 23. If a stop code on the tape is used to terminate input, the termination situation is just as described above. If however, a minus code on tape is used to end the block, rather than a stop code, the following takes place: Line 23 is normalized so that the marker bit is shifted out of word 03 of Line 23, causing the automatic reload. This operation will leave the complete sequence of input characters contiguous in Line 19. It should be noted that in the case of the PR-2, that the tape does not stop on a character as in the normal case. This is because it is the stop code itself which stops the PR-2, and in this case the code is not present, so the PR-2 is stopped by ready which is set within 2 drum cycles. A leader of 3 inches should be left after the minus code.

This operation may likewise take place on any photo-reader. The commands to initiate such operations are as follows:

L_5	N	4	15	31	for machine photo-reader
L_5	N_1	4	12	31	for PR-1 Accessory
L_2	N_2	C+4	15	31	

L_5	N_1	4	12	31	for PR-2 Accessory
L_2	N_2	5	12	31	

*** It should be noted that on a small number of G-15's which are not completely modified as alphanumeric, this sequence will not work properly.

ACTION BY: All personnel concerned

REFERENCE: Technical Bulletin-Accessory PR-2 Photo-Electric Reader,
                                              T28/Dec 1960
                Technical Bulletin-PR-1 Punched Tape Reader, T29/March 1961

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