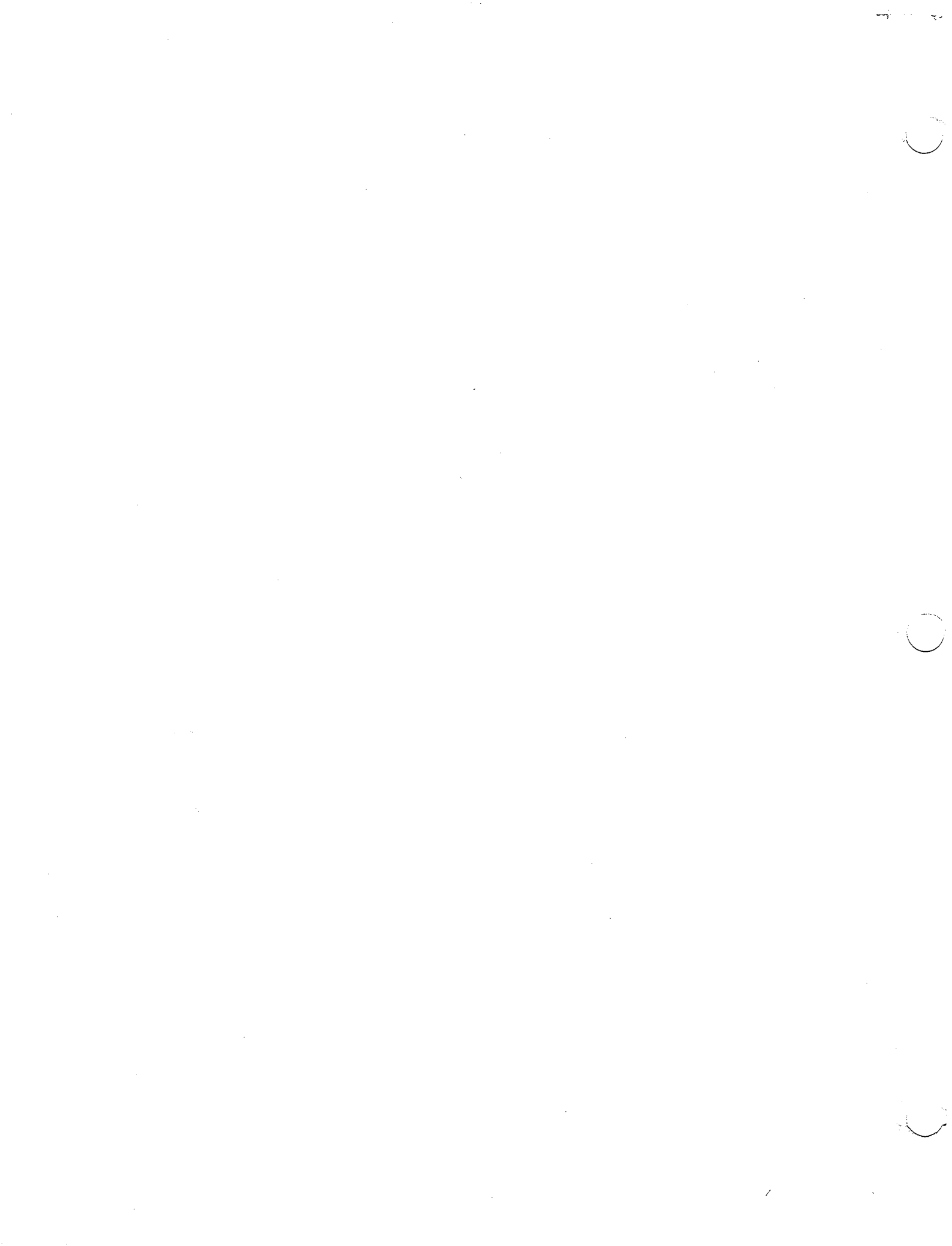


IDENTIFICATION

PRODUCT CODE: DEC-14-LZPB-D
PRODUCT NAME: LOAD-14
DATE CREATED: JUNE 18, 1970
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: EDWARD P. STEINBERGER

COPYRIGHT © 1971
DIGITAL EQUIPMENT CORPORATION



1. ABSTRACT

LOAD-14 is a program written in PDP-8 language and run on a Family-of-8 computer whose purpose is to load into 8 memory and properly checksum a PDP-14 binary program on punched paper tape via the teletype reader on the ASR-33 or the high speed paper tape reader. This program is normally used to load PDP-14 tapes for use with the programs VER-14 and RUN-14. It is NOT used to load PDP-14 tapes for SIM-14.

2. LOADING PROCEDURE

LOAD-14 is loaded into 8 memory using the "standard" PDP-8 binary loader technique.

3. USING THE PROGRAM

- 3.1 Load LOAD-14 into 8 memory using the Binary Loader program.
- 3.2 Place the PDP-14 binary tape to be loaded into 8 memory in the paper tape reader to be used with leader (code 200 - column 8) over the read diodes or sense pins. Turn reader on.
- 3.3 Set Switch Register to 7400, depress "LOAD ADDRESS".
- 3.4 Switch register settings.
 - 3.4.1 If high speed reader is being used, set SRO to 0; if ASR-33 reader is being used, leave SRO set to 1.
 - 3.4.2 Set SR11 to 1 if it is desired to load PDP-14 program into the locations indicated by the PDP-14 binary tape. If SR11 is 0, the PDP-14 program will be loaded into the PDP-8 memory starting at location 0000.
- 3.5 Depress "START". The PDP-14 binary program will be loaded into 8 memory as dictated by SR11.
- 3.6 If the PDP-14 program loads and checksums properly, the 8 will stop with 0000 in the AC lights. If the 8 stops without 0000 in the AC lights, reposition the paper tape in the reader over loader code and depress "CONTINUE". Repeated checksum errors indicates a "bad" binary tape or a malfunctioning reader.
 - 3.6.1 If the PDP-14 program is greater than 1K and it is desired to load the complete program (only if SR11=1), depress "CONTINUE" after each segment is read in.
- 3.7 If LOAD-14 is in memory bank 1 and it is desired to load the PDP-14 binary tape into bank 0:
Set IF switches to 1, DF switches to 0, SR to 7400, depress "LOAD ADDRESS", reset SRO (if necessary), depress "START".
PDP-14 program will be loaded into bank 0 from bank 1.

4. DETAIL OF OPERATION AND STORAGE

4.1 LOAD-14 is basically similar to the PDP-8 Binary Loader with the following exceptions:

4.1.1 No extended memory loading capability. LOAD-14 will only load a PDP-14 binary tape into the memory bank indicated by the Data Field switches when LOAD-14 is started.

4.1.2 The PDP-14 binary tape will be loaded into 8 memory starting at location 0000 through 1777 unless SR11=1. If this is undesirable, the instruction in location 7423 may be modified as desired to alter this characteristic.

4.1.3 The sumcheck of the information punched on paper tape is the sum of the 8-bit characters on the tape (excluding leader/trailer, checksum, and text delimited by rubout codes) plus the character count (number of characters added to the sumcheck).

```

1 7400 /LOAD 14
2 5315 /MODIFIED BINARY LOADER FOR PDP-14 ROM TAPES
3 4342 CLEAR
4 6032 KCC CKSR11
5 6014 RFC
6 7404 LAS
7 7700 SMA CLA
8 1332 TAD
9 1334 TAD
10 3302 DCA
11 4257 JMS
12 5211 JMP
13 3331 DCA
14 1330 TAD
15 3340 DCA
16 4301 JMS
17 3341 DCA
18 4257 JMS
19 5246 JMP
20 4237 JMS
21 5234 SNL
22 0367 JMP
23 3336 AND
24 7326 DCA
25 1340 CLA
26 1341 TAD
27 1331 TAD
28 5213 JMP
29 3736 DCA
30 2336 ISZ
31 0000 JMP
32 1340 TAD
33 7106 CLL
34 7006 RTL
35 1341 RTL
36 5637 TAD
37 4237 JMP
38 7041 JMS
39 1331 CIA
40 7451 TAD
41 7450 SNA
42 5255 JMP
43 7402 HLT
44 5201 JMP
45 7402 HLT
46 5201 JMP

```

```

/CLEAR MEMORY BEFORE LOADING PROGRAM
/START LOW
/AND H,S, READERS
/H,S,R, OR L,S,R, SELECTED?
/H,S,R,
/L,S,R,
/PROCESS TAPE UNTIL NO LEADER SEEN
/STORE CHECKSUM (INITIALLY SET TO 0)
/READ 2ND CHARACTER OF WORD
/CHECK FOR END OF DATA
/END OF DATA, SUMCHECK THE TAPE
/NOT END OF DATA, ASSEMBLE 12 BIT WORD
/ADDRESS
/NO, DATA
/MASK ADDRESS TO 10 BITS IF SR11 CLEAR,
/CHECKSUM TAPE BY ADDING
/2" PLUS THE TWO
/CHARACTERS RECEIVED FROM TAPE
/TO THE CURRENT CHECKSUM
/STORE DATA
/INCREMENT ADDRESS
/GO CHECKSUM INFORMATION
/THIS SUBROUTINE ASSEMBLES
/A 12 BIT WORD
/FROM 2 CHARACTERS
/FROM TAPE
/END OF TAPE
/COMPARE SUMCHECK AND CHECKSUM
/GOOD?
/YES
/NO, STOP WITH ERROR IN AC
/PROGRAM STOPS HERE IF GOOD COMPARISON

```

```

CLEAR
CKSR11
SMA CLA
HIRI
LORI
READ*1
BEGG
I*1
CHKSUM
CHAR
WORD1
WORD2
BEGG
BEND
ASSEMB
STORE
KMASK
ORIGIN
CML RTL
WORD1
WORD2
CHKSUM
GO
DCA I
ORIGIN
ISZ
ORIGIN
CHEX
WORD1
WORD2
ASSEMB
I
CHKSUM
I*3
BEGIN
BEGIN

```



```

106 /CHECK SR BIT 11.
107 /CHECK SR11, 0
108 /CHECK SR11, 0
109 CKSR11, 0
110 LAS
111 CLL RAR
112 SNL CLA
113 JMP ,*3
114 CMA
115 SKP
116 TAD K1777
117 DCA KMASK
118 JMP I CKSR11
119
120 /CHECK IF AND DF,
121 /CKIFDF, 0
122 CLA
123 RIF
124 SNA CLA
125 JMP ,*4
126 RDF
127 SNA CLA
128 SKP
129 TAD M0000
130 DCA KCLEAR
131 JMP I CKIFDF
132
133 KMASK,
134 KCLEAR, 0
135 RIF=6224
136 RDF=6214
137
138
139

```

/CHECK SR11,

/SR11 SET, SET ADDRESS MASK TO 7777.

/SR11 CLEAR, SET ADDRESS MASK TO 1777.

/IF=1 AND DF=0,
/IF=0 OR IF=1 AND DF=1,

/READ INSTRUCTION FIELD,
/READ DATA FIELD,

S

0000
0100
0200
0300
0400
0500
0600
0700

1000
1100
1200
1300
1400
1500
1600
1700

2000
2100
2200
2300
2400
2500
2600
2700

3000
3100
3200
3300
3400
3500
3600
3700

ASSEMB	7437
BEGC	7497
BEGIN	7401
BEND	7446
CHAR	7530
CHEX	7427
CHKSUM	7531
CKIFDF	7554
CKSR11	7542
CLEAR	7515
GO	7413
HIR	7511
HIRI	7532
K1777	7533
KCLEAR	7570
KMASK	7567
LOAD14	7400
LOR	7503
LORI	7534
M0100	7405
M0376	7453
M6000	7527
MASK	7535
ORIGIN	7536
RDF	6214
READ	7501
RIF	6224
STORE	7434
SWITCH	7537
WORD1	7540
WORD2	7541

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 2 SECONDS

2K CORE USED

ASSEMB	23	36#	42	43	64	69	78
BEGG	14	21	53#	61			
BEND	6#	49	51	94			
CHAR	17	45#	76	77	96#		
CHEX	28#	65					
CHKSUM	16	35	45	88	92	97#	
CKIFDF	86	31	135				
CKSR11	6	123#	135				
CLEAR	5	85	110#	119			
GO	16#	85#					
HIR	79#	32					
HIR1	11	98					
K1777	19#	98#					
KCLEAR	87	117	135#				
KMASK	26	132	134#				
LOAD14	5#	118					
LOR	73#	82	98	100			
LOR1	12	100#					
M0100	10#	67					
M0376	48#	56					
M6800	95#	131					
MASK	66	101#					
ORIGIN	27	32	34	89	90	91	102#
ORDF	128	137#	55	71#	78		
READ	13	119					
RIF	125	135#					
STORE	25	39#	62	103#			
SWITCH	54	59	37	104#			
WORD1	18	29	41	105#			
WORD2	20	30					

