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DECUS NO.	5/8-18A
TITLE	BIN TAPE DISASSEMBLY PROGRAM FOR PDP-5/8
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DATE	September 14, 1966
SOURCE LANGUAGE	

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BIN TAPE DISASSEMBLY PROGRAM FOR
PDP-5/8 COMPUTER*

DECUS Program Library Write-up

DECUS No. 5/8-18A

PURPOSE

Disassembles a PDP-5/8 program which is on tape in BIN format. The program prints the margin setting, address, octal contents, and mnemonic interpretation (PAL) of the octal contents. A normal program or a program which uses the Floating Point Program may be disassembled.

STORAGE

168-13778

EQUIPMENT

4K PDP-5/8, ASR 33

USAGE

Set BIN tape to be disassembled into the ASR 33 tape reader. Set SA - 200. Set Switch Register (\emptyset) = \emptyset for a normal program, or Switch Register (\emptyset) = 1 for a program which uses the Floating Point Program. Press console start.

* This work performed under the auspices of the U. S. Atomic Energy Commission.

Example of Output:

			Margin Setting
		*0006	
0006	7200	CLA	
0007	5600	JMP I 0000	
		*6554	
6554	6000	6000	
6555	7400		
		*0200	
0200	6032	6032	
0201	6046	6046	
0202	4407	JMS I Z 0007	
0203	0011	0011	
0204	3273	FMPY 0273	
0205	6301	FPUT 0301	
0206	0011	0011	
0207	6304	FPUT 0304	
0210	0011	0011	
0211	3273	FMPY 0273	
			Address
			Octal Contents
			Mnemonic Interpretati
0212	3301	FMPY 0301	
0213	6276	FPUT 0276	
0214	5304	FGET 0304	
0215	0001	SQ	
0216	2276	FSUB 0276	
0217	0002	SQRT	
0220	6276	FPUT 0276	
0221	5304	FGET 0304	
0222	0010	0010	
0223	6304	FPUT 0304	
0224	2276	FSUB 0276	
0225	4301	FDIV 0301	
0226	0000	FEXT	
0227	1271	TAD 0271	
0230	3272	DCA 0272	
0231	1061	TAD Z 0061	
0232	7640	SZA CLA	
0233	5202	JMP 0202	

/DISSASSEMBLY PROGRAM; SA = 200
 /ASR33 TELETYPE TAPE READER.
 /CONSTANTS & PROGRAM INTERTIES ON PAGE 0.

BINDX=16
 AINDX=17

/BUFFER INDEX
 /ADDRESS INDEX

```

*20
0020 0000 OCT, 0 /OCTAL STORAGE
0021 0000 ADRF, 0 /ADDR. FINDER
0022 7774 CN4, 0-4
0023 0007 M7, 7
0024 7000 M777, 7000
0025 0377 M377, 377
0026 0000 ADC, 0 /ADDR. FINDER
0027 1244 BEG, OUT
0030 7776 CN2, 0-2
0031 0077 M77, 77
0032 0240 C240, 240
0033 0311 POCT, SOCT /TIE TO PRINT OCT SUBR.
0034 0000 TEMP, 0
0035 0000 CNTR, 0
0036 0002 C2, 2
0037 0004 C4, 4
0040 0010 C10, 10
0041 0710 PROP, SR0P /TIE WITH PRINT OPR. CODE SUBR.
0042 0743 PRT, SRT /TIE WITH PRINT ON TELE SUBR.
0043 7775 CN3, 0-3
0044 0156 STI, STEP
0045 0751 NGRI, NGR
0046 0757 NGR+6
0047 0000 FSWIT, 0
0050 0000 FPSWIT, 0
0051 1000 FPNTI, FPNT /FLOATING POINT OP. CODES
0052 3371 M4407, -4407 /JMS I Z 7
0053 1200 READI, READ
0054 0342 ENDTI, ENDT
0055 0265 READII, READI
0056 0221 BBBI, BBB
0057 0277 SPCRI, SPCR
0060 0360 SETI, SET
0061 1233 OUT8I, OUT8
0062 0215 AAAI, AAA
0063 0271 CRLFPI, CRLFP
  
```

/OPERATION CODES

```

0064 5641 OPC, 5641 /AND
0065 0044 0044
0066 4164 4164 /TAD
0067 0044 0044
0070 6351 6351 /ISZ
0071 0072 0072
0072 4344 4344 /DCA
0073 0041 0041
0074 5552 5552 /JMS
0075 0063 0063
0076 5552 5552 /JMP
0077 0060 0060
0100 0051 IZC, 0051 /I
0101 0072 0072 /Z
  
```

/MICRO GROUP 1

0102	5443	MIC1,	5443	/CLA
0103	0041		0041	
0104	5443		5443	/CLL
0105	0054		0054	
0106	5543		5543	/CMA
0107	0041		0041	
0110	5543		5543	/CML
0111	0054		0054	
0112	4151		4151	/IAC
0113	0043		0043	
0114	4162		4162	/RAL
0115	0054		0054	
0116	4162		4162	/RAR
0117	0062		0062	
0120	6462		6462	/RTL
0121	0054		0054	
0122	6462		6462	/RTR
0123	0062		0062	
0124	5756	NOC,	5756	/NOP
0125	0060		0060	

/MICRO GROUP 2

0126	5450	MIC2,	5450	/HLT
0127	0064		0064	
0130	6357		6357	/OSR
0131	0062		0062	
0132	5363		5363	/SKP
0133	0060		0060	
0134	5663		5663	/SNL
0135	0054		0054	
0136	7263		7263	/SZA
0137	0041		0041	
0140	5563		5563	/SMA
0141	0041		0041	
0142	7263		7263	/SZL
0143	0054		0054	
0144	5663		5663	/SNA
0145	0041		0041	
0146	6063		6063	/SPA
0147	0041		0041	

/ I/O PRINT OCTAL ROUTINE

0150	1020	OP6,	TAD OCT	
0151	4433		JMS I POCT	
0152	1026		TAD ADC	
0153	7001		IAC	
0154	3026		DCA ADC	
0155	5427		JMP I BEG	/GO TO STRT

```

/STEP ADDR.  FINDER ROUTINE
0156 0000  STEP, 0
0157 7420  SNL
0160 5163  JMP .+3
0161 4441  JMS I PROP
0162 5166  JMP .+4
0163 1021  TAD ADRF
0164 1036  TAD C2
0165 3021  DCA ADRF
0166 1034  TAD TEMP
0167 7010  RAR
0170 3034  DCA TEMP
0171 2035  ISZ CNTR
0172 5157  JMP STEP+1
0173 5556  JMP I STEP

```

END0,

/LOC. END PAGE

/SORT FIRST 3 BITS ROUTINE

/DIFFERENTIATE BETWEEN REG. CODE & FLOATING POINT CODE

```

*200
0200 6046 6046
0201 7300  CLA CLL
0202 3360  DCA SET
0203 3050  DCA FPSWIT
0204 7404  OSR
0205 7700  SMA CLA
0206 5212  JMP .+4
0207 7001  IAC
0210 3047  DCA FSWIT  /SET FLOAT. PROG. INDIC.
0211 7410  SKP
0212 3047  DCA FSWIT
0213 4463  JMS I Z CRLFPI  /PRINT CR & LF
0214 5453  STRT,  JMP I Z READI  /GO READ TAPE
0215 4277  AAA,  JMS SPCR  /GO TO SPACE SUBR.
0216 1026  TAD Z ADC
0217 4311  JMS SOCT  /PRINT OCTAL SUBR.
0220 5427  JMP I Z BEG
0221 1026  BBB,  TAD Z ADC
0222 4311  JMS SOCT  /PRINT ADDR.
0223 1020  TAD Z OCT
0224 4311  JMS SOCT  /PRINT OCTAL CONTENTS
0225 1050  TAD FPSWIT
0226 7650  SNA CLA
0227 5232  JMP .+3
0230 1020  TAD Z OCT
0231 5235  JMP .+4
0232 1020  TAD Z OCT
0233 7450  SNA
0234 5152  JMP OP6+2
0235 7106  CLL RTL
0236 7006  RTL
0237 0023  AND Z M7
0240 3034  DCA Z TEMP
0241 1034  TAD Z TEMP
0242 1354  TAD CN6

```

```

0244 5755      JMP I OP5      /GO TO OPR. CODE
0245 3034      DCA Z TEMP
0246 1050      TAD Z FPSWIT
0247 7640      SZA CLA
0250 5451      JMP I Z FPNTI  /GO TO F.P. CODE ROUTINE
0251 1034      TAD Z TEMP
0252 7650      SNA CLA
0253 5150      JMP Z OP6      /GO TO I/O CODE
0254 1020      TAD Z OCT
0255 7001      IAC
0256 7650      SNA CLA
0257 5152      JMP OP6+2
0260 1020      TAD Z OCT
0261 0355      AND OP5      /400
0262 7450      SNA
0263 5756      JMP I OP71    /GO TO MICRO 1
0264 5757      JMP I OP72    / GO TO MICRO 2

```

/SUBROUTINES

/READ TELE 1 SUBR.

```

0265 0000 READ1, 0
0266 6031      6031      /SKIP IF FLAG = 1
0267 5266      JMP .-1
0270 5665      JMP I READ1

```

/CR & LF SUBR.

```

0271 0000 CRLFP, 0
0272 1347      TAD CR
0273 4442      JMS I Z PRT
0274 1350      TAD LF
0275 4442      JMS I Z PRT
0276 5671      JMP I CRLFP

```

/SET MARGIN SUBROUTINE

```

0277 0000 SPCR, 0
0300 1351      TAD CN13
0301 3035      DCA Z CNTR
0302 1032      TAD C240
0303 4442      JMS I Z PRT
0304 2035      ISZ Z CNTR
0305 5302      JMP .-3
0306 1353      TAD AST
0307 4442      JMS I Z PRT
0310 5677      JMP I SPCR

```

/PRINT OCTAL SUBROUTINE

```

0311 0000 SOCT, 0
0312 3034      DCA Z TEMP
0313 1022      TAD Z CN4
0314 3035      DCA Z CNTR
0315 1034      TAD Z TEMP
0316 7104      CLL RAL
0317 7006 REP,  RTL
0320 7004      RAL

```

0321	3034	DCA Z TEMP
0322	1034	TAD Z TEMP
0323	0023	AND Z M7
0324	1352	TAD C260
0325	4442	JMS I Z PRT
0326	1034	TAD Z TEMP
0327	2035	ISZ Z CNTR
0330	5317	JMP REP
0331	7200	CLA
0332	1030	TAD Z CN2
0333	3035	DCA Z CNTR
0334	1032	TAD C240
0335	4442	JMS I Z PRT
0336	2035	ISZ Z CNTR
0337	5334	JMP .-3
0340	7200	CLA
0341	5711	JMP I SOCT

/LOOK FOR END OF TAPE ROUTINE

0342	7200	ENDT, CLA	
0343	1360	TAD SET	
0344	7650	SNA CLA	/END OF TAPE?
0345	5214	JMP STRT	/NO
0346	5461	JMP I Z OUTBI	/YES

/CONSTANTS & INTERTIES

0347	0215	CR, 215
0350	0212	LF, 212
0351	7765	CN13, 0-13
0352	0260	C260, 260
0353	0252	AST, 252
0354	7772	CN6, 0-6
0355	0400	OP5, OPCR
0356	0600	OP71, GRP1
0357	0533	OP72, GRP2
0360	0000	SET, 0

END2, /LOC. END PAGE

/OPERATION CODE ROUTINE

*400			
0400	7200	OPCR, CLA	
0401	1047	TAD FSWIT	
0402	7650	SNA CLA	
0403	5217	JMP OPC2	
0404	1050	TAD FPSWIT	
0405	7640	SZA CLA	
0406	5216	JMP OPC1	
0407	1020	TAD Z OCT	
0410	1052	TAD M4407	/ENTRY TO INTERPRETER?
0411	7640	SZA CLA	
0412	5217	JMP OPC2	/NO
0413	7001	IAC	/YES
0414	3050	DCA FPSWIT	


```

0415 7410 SKP
0416 5451 OPC1, JMP I Z FPNTI /GO TO FLOAT. CODE ROUTINE
0417 1325 OPC2, TAD CON1
0420 3021 DCA Z ADRF
0421 7040 CMA
0422 1034 TAD Z TEMP
0423 7510 SPA
0424 5264 JMP ENDO /=0
0425 7440 SZA
0426 5233 JMP .+5 /= MORE THAN 1
0427 1021 TAD Z ADRF /=1
0430 1036 TAD Z C2
0431 3021 DCA Z ADRF
0432 5264 JMP ENDO
0433 7200 CLA
0434 1021 TAD Z ADRF
0435 1037 TAD Z C4
0436 3021 DCA Z ADRF
0437 1034 TAD Z TEMP
0440 1043 TAD Z CN3
0441 7510 SPA
0442 5264 JMP ENDO /=2
0443 7440 SZA
0444 5251 JMP .+5 /=4 OR 5
0445 1021 TAD Z ADRF /=3
0446 1036 TAD Z C2
0447 3021 DCA Z ADRF
0450 5264 JMP ENDO
0451 7200 CLA
0452 1021 TAD Z ADRF
0453 1037 TAD Z C4
0454 3021 DCA Z ADRF
0455 1034 TAD Z TEMP
0456 1022 TAD Z CN4
0457 7650 SNA CLA
0460 5264 JMP ENDO /=4
0461 1021 TAD Z ADRF /=5
0462 1036 TAD Z C2
0463 3021 DCA Z ADRF

```

```

/PRINT OPR. CODE ROUTINE
0464 4441 ENDO, JMS I Z PROP
0465 1326 TAD CON2
0466 3021 DCA Z ADRF
0467 1020 TAD Z OCT
0470 7106 CLL RTL
0471 7006 RTL
0472 3034 DCA Z TEMP
0473 7420 SNL
0474 5277 JMP .+3
0475 4441 JMS I Z PROP /PRINT I
0476 5302 JMP .+4
0477 1021 TAD Z ADRF
0500 7001 IAC
0501 3021 DCA Z ADRF
0502 1034 TAD Z TEMP

```

```

0503 7710 SPA CLA
0504 5311 JMP .+5
0505 4441 JMS I Z PROP /PRINT Z
0506 1020 TAD Z OCT
0507 0331 AND M177
0510 5317 JMP .+7
0511 1020 TAD Z OCT
0512 0331 AND M177
0513 3034 DCA Z TEMP
0514 1026 TAD Z ADC
0515 0332 AND M760
0516 1034 TAD Z TEMP
0517 4433 JMS I Z POCT /PRINT ADDR.
0520 7200 CLA
0521 1026 TAD Z ADC
0522 7001 IAC
0523 3026 DCA Z ADC
0524 5427 JMP I Z BEG /GO TO OUT

```

/CONSTANTS & INTERTIES

```

0525 0064 CON1, OPC /ADDR. FINDER FOR OPR. CODES
0526 0100 CON2, IZC /FIND I & Z
0527 0126 CONS, MIC2 /FIND MICRO GROUP 2 LIST
0530 0102 CON6, MIC1 /FIND MICRO GROUP 1 LIST
0531 0177 M177, 177
0532 7600 M760, 7600

```

/MICRO GROUP 2 ROUTINE

```

0533 7300 GRP2, CLA CLL
0534 1327 TAD CONS
0535 3021 DCA Z ADRF
0536 1030 TAD Z CN2
0537 3035 DCA Z CNTR
0540 1020 TAD Z OCT
0541 0025 AND Z M377
0542 7012 RTR
0543 3034 DCA Z TEMP
0544 4444 JMS I Z STI /TEST BITS 10,9
0545 7430 SZL /TEST BIT 8
0546 5353 JMP .+5
0547 1021 TAD Z ADRF
0550 1036 TAD Z C2
0551 3021 DCA Z ADRF
0552 5364 JMP .+12
0553 1034 TAD Z TEMP
0554 7440 SZA /BIT 8 ONLY ?
0555 5360 JMP .+3
0556 4441 JMS I Z PROP
0557 5446 JMP I Z NGRI+1
0560 7200 CLA
0561 1021 TAD Z ADRF
0562 1040 TAD Z C10
0563 3021 DCA Z ADRF
0564 1034 TAD Z TEMP
0565 7010 RAR

```

0566	3034	DCA Z TEMP	
0567	1043	TAD Z CN3	
0570	3035	DCA Z CNTR	
0571	4444	JMS I Z STI	/TEST BITS 7,6,5
0572	7420	SNL	/TEST BIT 4
0573	5445	JMP I Z NGRI	
0574	1330	TAD CON6	
0575	3021	DCA Z ADRF	
0576	4441	JMS I Z PROP	
0577	5446	JMP I Z NGRI+1	

END4, /LOC. END PAGE

PAUSE

/MICRO GROUP 1 ROUTINE

*600			
0600	7300	GRP1, CLA CLL	
0601	1306	TAD CON3	
0602	3021	DCA Z ADRF	
0603	1022	TAD Z CN4	
0604	3035	DCA Z CNTR	
0605	1020	TAD Z OCT	
0606	0025	AND Z M377	
0607	7006	RTL	
0610	7006	RTL	
0611	7004	RAL	
0612	3034	DCA Z TEMP	
0613	7420	SNL	/TEST BITS 4 TO 7
0614	5217	JMP .+3	
0615	4310	JMS SR0P	/BIT=1
0616	5222	JMP .+4	
0617	1021	TAD Z ADRF	
0620	1036	TAD Z C2	
0621	3021	DCA Z ADRF	
0622	1034	TAD Z TEMP	
0623	7004	RAL	
0624	2035	ISZ Z CNTR	
0625	5212	JMP .-13	
0626	7300	CLA CLL	
0627	1020	TAD Z OCT	
0630	7010	RAR	
0631	3034	DCA Z TEMP	
0632	7420	SNL	/TEST BIT 11
0633	5236	JMP .+3	
0634	4310	JMS SR0P	
0635	5241	JMP .+4	
0636	1021	TAD Z ADRF	
0637	1036	TAD Z C2	
0640	3021	DCA Z ADRF	
0641	1034	TAD Z TEMP	
0642	7010	RAR	
0643	3034	DCA Z TEMP	

0644	7420	SNL	/TEST BIT 10
0645	5251	JMP .+4	
0646	1021	TAD Z ADRF	
0647	1037	TAD Z C4	
0650	3021	DCA Z ADRF	
0651	1034	TAD Z TEMP	
0652	7010	RAR	
0653	3034	DCA Z TEMP	
0654	7420	SNL	/TEST BIT 9
0655	5260	JMP .+3	
0656	4310	JMS SR0P	
0657	5263	JMP .+4	
0660	1021	TAD Z ADRF	
0661	1036	TAD Z C2	
0662	3021	DCA Z ADRF	
0663	1034	TAD Z TEMP	
0664	7010	RAR	
0665	7420	SNL	/TESTBIT 8
0666	5271	JMP .+3	
0667	4310	JMS SR0P	
0670	5301	JMP .+11	
0671	7200	CLA	
0672	1020	TAD Z OCT	
0673	0025	AND Z M377	
0674	7440	SZA	
0675	5301	JMP .+4	
0676	1307	TAD CON4	
0677	3021	DCA Z ADRF	
0700	4310	JMS SR0P	
0701	7200	CLA	
0702	1026	TAD Z ADC	
0703	7001	IAC	
0704	3026	DCA Z ADC	
0705	5427	JMP I Z BEG	/GO TO STRT

/INTERTIES

0706	0102	CON3, MIC1
0707	0124	CON4, NOC

/PRINT OPR CODES SUBROUTINE

0710	0000	SR0P, 0
0711	7200	CLA
0712	1421	AA, TAD I Z ADRF
0713	0031	AND Z M77
0714	7450	SNA
0715	5335	JMP BB
0716	1032	TAD Z C240
0717	4343	JMS SRT
0720	1421	TAD I Z ADRF
0721	7012	RTR
0722	7012	RTR
0723	7012	RTR
0724	0031	AND Z M77
0725	7450	SNA
0726	5335	JMP BB

0727	1032		TAD Z C240
0730	4343		JMS SRT
0731	1021		TAD Z ADRF
0732	7001		IAC
0733	3021		DCA Z ADRF
0734	5312		JMP AA
0735	1032	BB,	TAD Z C240
0736	4343		JMS SRT
0737	1021		TAD Z ADRF
0740	7001		IAC
0741	3021		DCA Z ADRF
0742	5710		JMP I SKOP

/PRINT SUBROUTINE

0743	0000	SRT,	0	
0744	6041		6041	/SKIP IF FLAG=1
0745	5344		JMP --1	
0746	6046		6046	/PRINT
0747	7200		CLA	
0750	5743		JMP I SRT	

/NO VALID MICRO-OP ROUTINE

0751	1020	NGR,	TAD Z OCT	
0752	7110		CLL RAR	
0753	7620		SNL CLA	
0754	5357		JMP .+3	
0755	1020		TAD Z OCT	
0756	4433		JMS I Z POCT	
0757	1026		TAD Z ADC	
0760	7001		IAC	
0761	3026		DCA Z ADC	
0762	5427		JMP I Z BEG	/GO TO STRT

END6,

/LOC. END PAGE

/FLOATING POINT OP. CODES ROUTINE

*1000

1000	1270	FPNT,	TAD FCD11	
1001	3021		DCA Z ADRF	
1002	1020		TAD Z OCT	
1003	7640		SZA CLA	
1004	5210		JMP .+4	
1005	4441		JMS I Z PROP	/PRINT FEXT
1006	3050		DCA Z FPSWIT	
1007	5240		JMP FPEND	
1010	4272		JMS STEP3	
1011	1020		TAD Z OCT	
1012	0265		AND M1000	
1013	3034		DCA Z TEMP	
1014	1034		TAD Z TEMP	
1015	7640		SZA CLA	
1016	5244		JMP FPNT1	
1017	1020		TAD Z OCT	
1020	7041		CMA IAC	

1021	7001		IAC	
1022	7440		SZA	
1023	5226		JMP .+3	
1024	4441		JMS I Z PROP	/PRINT SQ
1025	5240		JMP FPEND	
1026	3034		DCA Z TEMP	
1027	4272		JMS STEP3	
1030	1034		TAD Z TEMP	
1031	7001		IAC	
1032	7640		SZA CLA	
1033	5236		JMP .+3	
1034	4441		JMS I Z PROP	/PRINT SQRT
1035	5240		JMP FPEND	
1036	1020		TAD Z OCT	
1037	4433		JMS I Z POCT	/PRINT OCTAL
1040	1026	FPEND,	TAD Z ADC	
1041	7001		IAC	
1042	3026		DCA Z ADC	
1043	5427		JMP I Z BEG	/GO TO STRT
1044	1267	FPNT1,	TAD N7	
1045	3035		DCA Z CNTR	
1046	1271		TAD FCD2I	
1047	3021		DCA Z ADRF	
1050	1034		TAD Z TEMP	
1051	1265		TAD M1000	
1052	7440		SZA	
1053	7410		SKP	
1054	5666		JMP I ENDOI	/PRINT F.P. OP. CODE
1055	3034		DCA Z TEMP	
1056	4272		JMS STEP3	
1057	2035		ISZ Z CNTR	
1060	5250		JMP FPNT1+4	
1061	1020		TAD Z OCT	
1062	4433		JMS I Z POCT	/PRINT OCTAL
1063	5240		JMP FPEND	

/CONSTANTS & INTERTIES

1064	0003	C3,	3
1065	7000	M1000,	-1000
1066	0464	ENDOI,	ENDO
1067	7771	N7,	-7
1070	1077	FCD1I,	FCODE
1071	1110	FCD2I,	FCODE2

/STEP ADDR. FINDER SUBR.

1072	0000	STEP3,	0	
1073	1021		TAD Z ADRF	
1074	1264		TAD C3	
1075	3021		DCA Z ADRF	/STEP 3 ADDRESSES
1076	5672		JMP I STEP3	

/FLOATING POINT CODES

1077	4546	FCODE,	4546	/FEXT
1100	6470		6470	
1101	0000		0	
1102	6163		6163	/SQ
1103	0000		0	
1104	0000		0	
1105	6163		6163	/SQRT
1106	6462		6462	
1107	0000		0	
1110	4146	FCODE2,	4146	/FADD
1111	4444		4444	
1112	0000		0	
1113	6346		6346	/FSUB
1114	4265		4265	
1115	0000		0	
1116	5546		5546	/FMPY
1117	7160		7160	
1120	0000		0	
1121	4446		4446	/FDIV
1122	6651		6651	
1123	0000		0	
1124	4746		4746	/FGET
1125	6445		6445	
1126	0000		0	
1127	6046		6046	/FPUT
1130	6465		6465	
1131	0000		0	
1132	5646		5646	/FNOR
1133	6257		6257	
1134	0000		0	

END10,

/LOC. END PAGE

/READ INTO BUFFER AREA AND OUTPUT FROM BUFFER AREA.

*1200

1200	1267	READ,	TAD BADD1	/SET INDEXES
1201	3016		DCA Z BINDX	
1202	1270		TAD AADD1	
1203	3017		DCA Z AINDX	
1204	4455		JMS I Z READ11	/READ TELE 1
1205	6036		6036	/READ TELE.
1206	7106			
1207	7006			
1210	7004		CLL RTL;RTL;RAL	/SHIFT 5 LEFT
1211	7430		SZL	/LOOK FOR CH. 8
1212	5454		JMP I Z ENDTI	/YES
1213	7104		CLL RAL	/NO
1214	4455		JMS I Z READ11	
1215	6034		6034	/NO CLEAR, READ TELE.
1216	3416		DCA I Z BINDX	
1217	6032		6032	/CLEAR AC & FLAG
1220	1036		TAD Z C2	

1221	3460		DCA I Z SETI	/SET END TAPE FLAG
1222	7420		SNL	/LOOK FOR CH. 7
1223	5227		JMP .+4	/NO
1224	1016		TAD Z BINDX	/YES
1225	7041		CMA IAC	
1226	3417		DCA I Z AINDX	
1227	1016		TAD Z BINDX	
1230	1273		TAD ENDB	
1231	7640		SZA CLA	/END OF BUFFER?
1232	5204		JMP READ+4	/NO
1233	1016	OUT8,	TAD Z BINDX	/YES
1234	7041		CMA IAC	
1235	3271		DCA END	
1236	1267		TAD BADD1	/RESET INDEXES
1237	3016		DCA Z BINDX	
1240	1270		TAD AADD1	
1241	3017		DCA Z AINDX	
1242	1417		TAD I Z AINDX	
1243	3272		DCA ADDA	
1244	4463	OUT,	JMS I Z CRLFPI	/PRINT CR & LF
1245	1016		TAD Z BINDX	
1246	1271		TAD END	
1247	7650		SNA CLA	/END OF BUFFER?
1250	5200		JMP READ	/YES
1251	1416		TAD I Z BINDX	/NO
1252	3020		DCA Z OCT	
1253	1016		TAD Z BINDX	
1254	1272		TAD ADDA	
1255	7640		SZA CLA	/ADDRESS ASSIGNMENT?
1256	5456		JMP I Z BBBI	/NO
1257	1020		TAD Z OCT	/YES
1260	3026		DCA Z ADC	/STORE ADDRESS
1261	1017		TAD Z AINDX	
1262	3272		DCA ADDA	
1263	3672		DCA I ADDA	
1264	1417		TAD I Z AINDX	
1265	3272		DCA ADDA	
1266	5462		JMP I Z AAI	

/TAGS & CONSTANTS

1267	1277	BADD1,	1277
1270	1347	AADD1,	1347
1271	0000	END,	0
1272	0000	ADDA,	0
1273	6431	ENDB,	-1347

END12, /END PAGE

/END OF PROGRAM

AA	0712	FPSWIT	0050
AAA	0215	FSWIT	0047
AAAI	0062	GRP1	0600
AADD1	1270	GRP2	0533
ADC	0026	IZC	0100
ADDA	1272	LF	0350
ADRF	0021	MIC1	0102
AINDX	0017	MIC2	0126
AST	0353	M1000	1065
BADD1	1267	M177	0531
BB	0735	M377	0025
BBB	0221	M4407	0052
BBBI	0056	M7	0023
BEG	0027	M760	0532
BINDX	0016	M77	0031
CNTR	0035	M777	0024
CN13	0351	NGR	0751
CN2	0030	NGRI	0045
CN3	0043	NOC	0124
CN4	0022	N7	1067
CN6	0354	OCT	0020
CON1	0525	OPC	0064
CON2	0526	OPCR	0400
CON3	0706	OPC1	0416
CON4	0707	OPC2	0417
CON5	0527	OP5	0355
CON6	0530	OP6	0150
CR	0347	OP71	0356
CRLFP	0271	OP72	0357
CRLFPI	0063	OUT	1244
C10	0040	OUT8	1233
C2	0036	OUT8I	0061
C240	0032	POCT	0033
C260	0352	PROP	0041
C3	1064	PRT	0042
C4	0037	READ	1200
END	1271	READI	0053
ENDB	1273	READ1	0265
ENDO	0464	READ1I	0055
ENDOI	1066	REP	0317
ENDT	0342	SET	0360
ENDTI	0054	SETI	0060
END0	0174	SOCT	0311
END10	1135	SPCR	0277
END12	1274	SPCRI	0057
END2	0361	SR0P	0710
END4	0600	SRT	0743
END6	0763	STEP	0156
FCD1I	1070	STEP3	1072
FCD2I	1071	STI	0044
FCODE	1077	STRT	0214
FCODE2	1110	TEMP	0034
FPEND	1040		
FPNT	1000	0154	
FPNTI	0051		
FPNT1	1044		