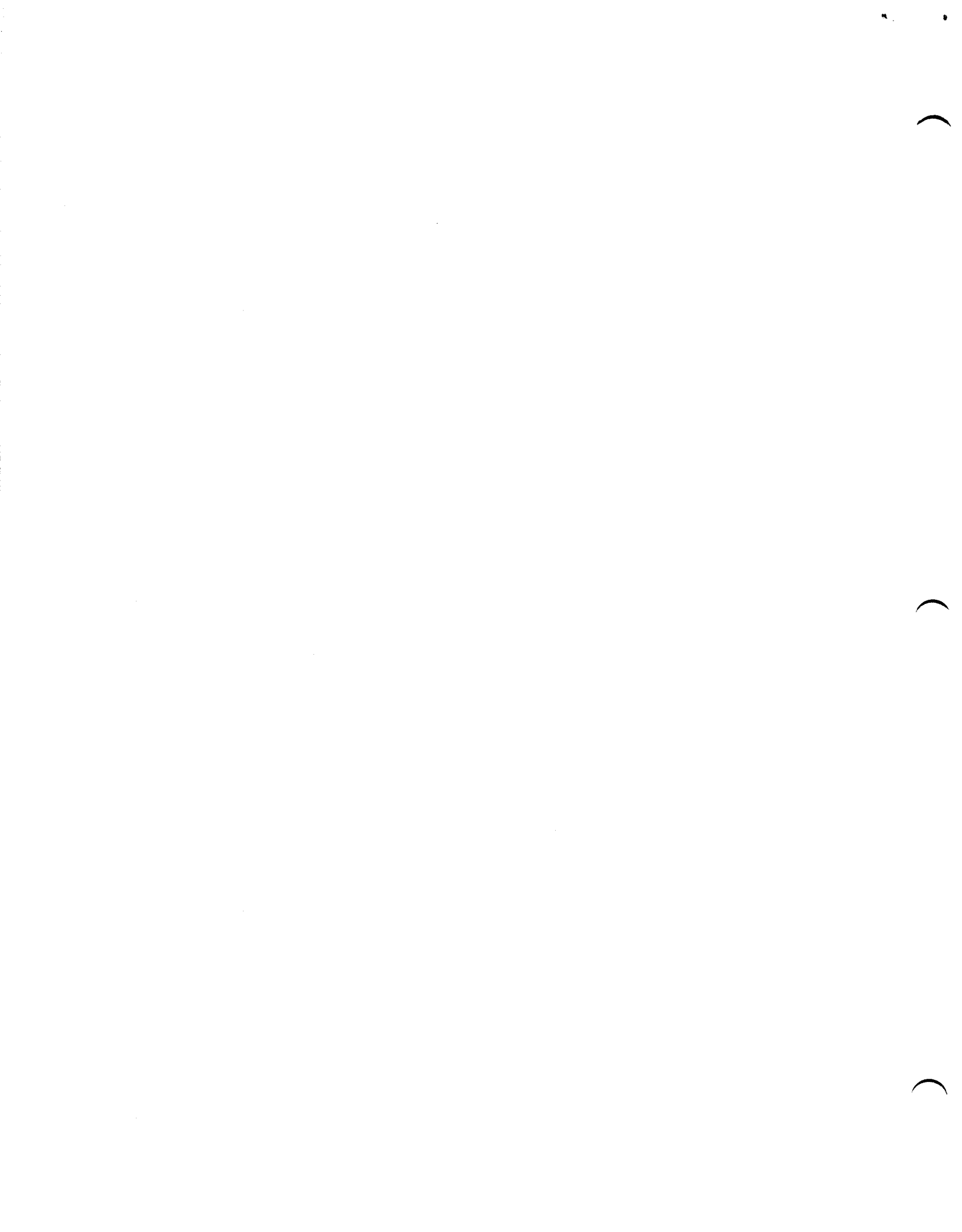


IDENTIFICATION

PRODUCT CODE: MAINDEC-8E-DØIB-0
PRODUCT NAME: BASIC JMP-JMS TEST
DATE CREATED: JUNE 11, 1971
MAINTAINER: DIAGNOSTICS GROUP
AUTHOR: BRUCE HANSEN

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1. ABSTRACT

THIS IS A DIAGNOSTIC PROGRAM FOR TESTING THE JMP AND JMS INSTRUCTIONS OF THE PDP-8E.

2. REQUIREMENTS

2.1 EQUIPMENT

A PDP-8E EQUIPPED WITH TELETYPE.

2.2 STORAGE

THIS PROGRAM USES MOST OF MEMORY. THE BINARY LOADER MUST BE STORED IN THE LAST MEMORY PAGE.

2.3 PRELIMINARY PROGRAMS

MAINDEC-8E-D0A(N) AND MAINDEC-8E-D0B(N)

3. LOADING PROCEDURE

3.1 METHOD

THE STANDARD BINARY LOADER IS USED.

4. STARTING PROCEDURE

4.1 CONTROL SWITCH SETTINGS (NONE)

4.2 STARTING ADDRESS

200

4.3 RESTART ADDRESSES

600
704

4.4 OPERATOR ACTION

A. SET SR TO 200 AND PRESS LOAD ADDRESS.

B. PUSH CLEAR AND THEN CONTINUE. THE PROGRAM WILL STORE PARTS OF THE RIM AND BINARY LOADERS THAT WILL BE DESTROYED, AND THEN JMP TO 4200 TO BEGIN TESTING.

5. OPERATING PROCEDURES

5.1 PROGRAM RESTARTS

SINCE THE LOADERS ARE ALREADY STORED, A PROGRAM RESTART SHOULD BEGIN AT 600 NOT 200.

5.2 PROGRAM END

TO RESTORE THE LOADERS AT THE CONCLUSION OF THE TEST, START AT 704. WHEN THE PROGRAM HALTS, RESTORATION IS COMPLETED (PC=736).

6. ERRORS

6.1 ERROR HALTS AND DESCRIPTION

SEE SECTION 9.

6.2 ERROR RECOVERY

IN MOST CASES IT IS POSSIBLE TO INSERT A JMP INSTRUCTION IN THE ERROR HALT POSITION TO RETURN THE PROGRAM TO THE FAILING TEST. THIS FORMS A PROGRAM LOOP ON THE FAILING TEST AND ALLOWS THE PROBLEM TO BE INVESTIGATED WITH AN OSCILLOSCOPE. IN CASES WHERE A SCOPE MODE LOOP CANNOT BE MAINTAINED DUE TO THE INSTABILITY OF THE JMP OR JMS INSTRUCTION AND ITS FAILING CONDITION, IT WILL PROBABLY BE ADVANTAGEOUS TO SIMULATE THIS SAME PROBLEM USING THE RANDOM JMP TEST, MAINDEC-8E-D0HC, OR RANDOM JMP-JMS TEST, MAINDEC-8E-D0JC.

7. RESTRICTIONS (NONE)

8. MISCELLANEOUS

8.1 EXECUTION TIME

THREE HUNDRED AND FORTY-FIVE PROGRAM LOOPS PER SECOND. A BELL IS SOUNDED EVERY 10 SECONDS, WHICH EQUALS 3456 PROGRAM LOOPS.

9. PROGRAM DESCRIPTION

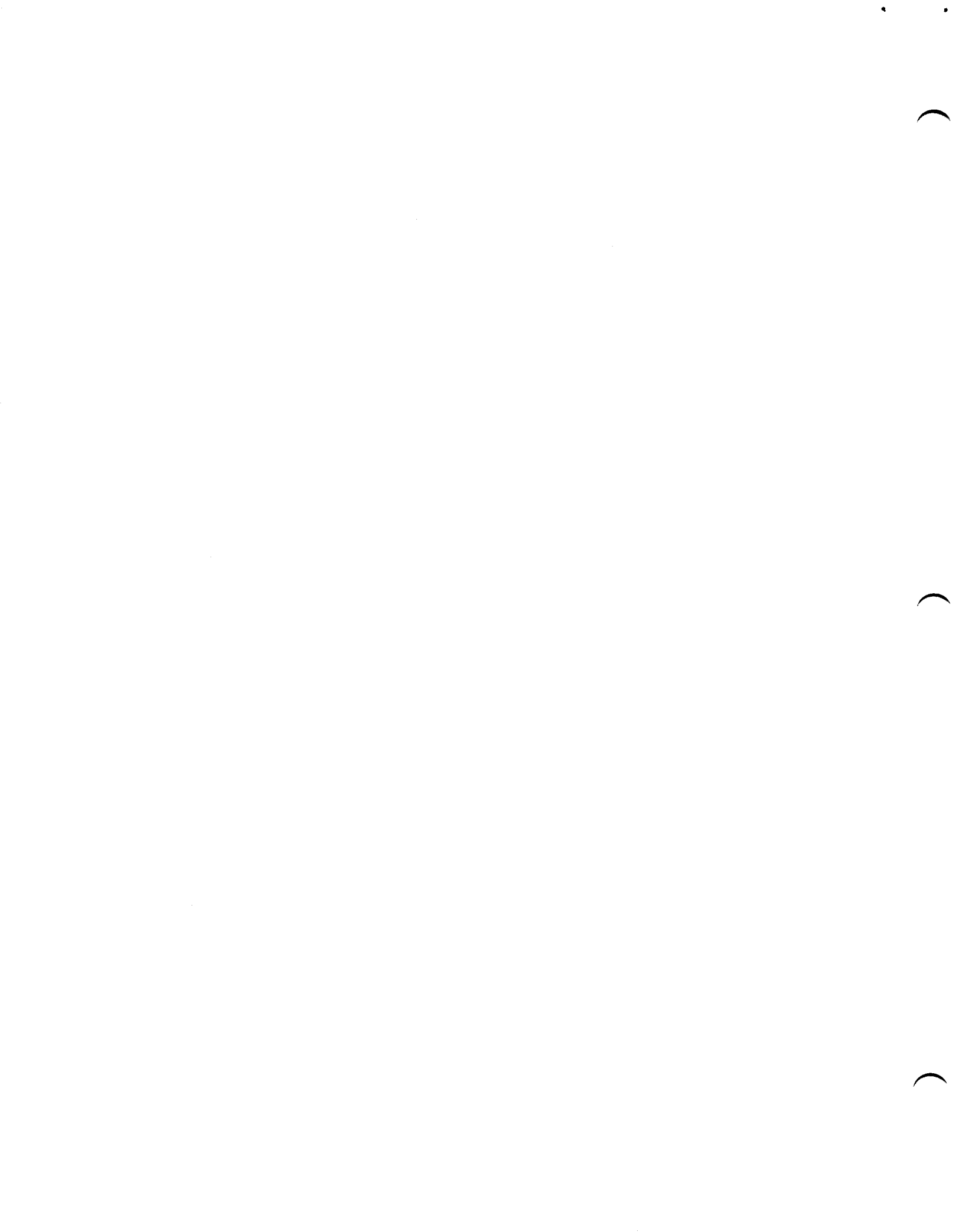
THE PROGRAM IS MADE UP OF 82 INDIVIDUAL TESTS FOR JMP AND JMS. AN OCTAL COUNTER LOCATED AT MEMORY LOCATION 0136 ALWAYS HOLDS THE NUMBER OF THE PRESENT TEST. FOR TEST 1 LOCATION, 0136 CONTAINS 0000 AND FOR TEST 82, 0136 CONTAINS 0121. EACH TEST PERFORMS THE FOLLOWING FUNCTIONS:

- A. CHECK LOCATION 0136 FOR PROPER TEST NUMBER.
- B. PERFORMS ADDITIONAL CHECKING SUCH AS VERIFICATION OF THE STORED PC (PROGRAM COUNTER) ON A JMS.
- C. ADVANCES TEST COUNTER.
- D. SETS UP FOR NEXT TEST.
- E. JMP'S OR JMS'S TO THE NEXT TEST. THESE JMP AND JMS INSTRUCTIONS ARE THE ONES BEING TESTED.

IF THE PC DOES NOT ARRIVE AT THE PROPER PLACE AFTER PERFORMING STEPS ABOVE, IT EITHER FALLS INTO THE BACKGROUND FIELD OF HLTS OR INTO ANOTHER AREA OF THE PROGRAM. IF THE FIELD OF HLTS IS ENCOUNTERED, THE PROGRAM HALTS IMMEDIATELY. IF A PROGRAM FIELD IS ENTERED, IT IS MOST LIKELY THAT THE PROGRAM WILL HALT WHEN THE TEST COUNTER CHECK IS MADE (LOCATION 136 EQUALS THE TEST COUNT). IN A FEW REMOTE CASES IT IS POSSIBLE FOR THE TEST COUNTER TO BE ADVANCED BY ONE, FOLLOWING THE ERRONEOUS JMP OR JMS AND BEFORE THE HALT. IT IS ALSO POSSIBLE FOR THE PROGRAM, ON A ERROR CONDITION, TO ENTER THE LOADERS STORED IN THE LAST MEMORY PAGE. ALL OF THESE POSSIBILITIES SHOULD BE KEPT IN MIND WHEN ANALYZING AN ERROR.

TEST 0 THROUGH 19 ARE TESTS FOR SAME PAGE JUMPING USING DIRECT ADDRESSING. TESTS 20 THROUGH 45 TEST THE JMP INSTRUCTION WITH INDIRECT ADDRESSING. IN THESE CASES, THE ADDRESS THAT THE PROGRAM JUMPS TO IS ALWAYS THE COMPLEMENT OF ITS PRESENT ADDRESS. JMS TESTS 1 THROUGH 12 ARE TESTS FOR THE SAME PAGE USING DIRECT ADDRESSING. JMS TESTS 13 THROUGH 35 TEST JMS IN THE SAME MANNER AS JMP IS TESTED IN TEST 20 THROUGH 45.

THE TELETYPE BELL IS SOUNDED EVERY 10 SECONDS (3456 PROGRAM CYCLES).



/BASIC JMP-JMS TEST

```

0000
0000
0001 JMP 1
0002 2
0003 3
0004 0
0005 0
0006 7402 HLT
0007 7402 HLT
0010 7402 HLT
0011 7402 HLT
0012 7402 HLT
0013 7402 HLT
0014 7402 HLT
0015 7402 HLT
0016 7402 HLT
0017 7402 HLT
0020 7402 HLT
0021 7402 HLT

```

*0

```

0022
0000
0001 K0,
0024 0002 K1,
0025 0004 K2,
0026 0010 K4,
0027 0020 K10,
0030 0040 K20,
0031 0100 K40,
0032 0200 K100,
0033 0400 K200,
0034 1000 K400,
0035 2000 K1000,
0036 4000 K2000,
0037 3777 K4000,
0042 K3777,
0042 *42
0043 K5777,
0044 6777 K6777,
0045 7377 K7377,
0046 7577 K7577,
0047 7677 K7677,
0050 7737 K7737,
0051 7757 K7757,
0052 7767 K7767,
0053 7773 K7773,
0054 7775 K7775,
0055 7776 K7776,
0056 4620 K7777,
0057 4640 K4620,
0060 4660 K4640,
0061 4700 K4660,
0062 4720 K4700,

```

0063	4740	K4740,	4740
0064	4760	K4760,	4760
0065	5000	K5000,	5000
0066	5020	K5020,	5020
0067	5040	K5040,	5040
0070	5060	K5060,	5060
0071	5100	K5100,	5100
0072	5120	K5120,	5120
0073	5140	K5140,	5140
0074	5160	K5160,	5160
0075	5200	K5200,	5200
0076	5220	K5220,	5220
	0102	*102	
0102	5240	K5240,	5240
0103	5260	K5260,	5260
0104	5300	K5300,	5300
0105	5320	K5320,	5320
0106	5340	K5340,	5340
0107	5360	K5360,	5360
0110	5400	K5400,	5400
0111	5420	K5420,	5420
0112	5440	K5440,	5440
0113	7777	M1,	-1
0114	7776	M2,	-2
0115	7775	M3,	-3
0116	7774	M4,	-4
0117	7773	M5,	-5
0120	7772	M6,	-6
0121	7771	M7,	-7
0122	7770	M10,	-10
0123	7767	M11,	-11
0124	7766	M12,	-12
0125	7765	M13,	-13
0126	7764	M14,	-14
0127	7763	M15,	-15
0130	7762	M16,	-16
0131	7761	M17,	-17
0132	7760	M20,	-20
0133	7757	M21,	-21
0134	7756	M22,	-22
0135	7755	M23,	-23
0136	0000	PNTCNT,	0
0137	2410	K2410,	2410
0140	2440	K2440,	2440
0141	2470	K2470,	2470
0142	2520	K2520,	2520
0143	2600	K2600,	2600
0144	2630	K2630,	2630
0145	2660	K2660,	2660
0146	2710	K2710,	2710
0147	2740	K2740,	2740
0150	3000	K3000,	3000
0151	3030	K3030,	3030

0152 3060 K3060, 3060
0153 3110 K3110, 3110
0154 3140 K3140, 3140
0155 3200 K3200, 3200

0156 3230 K3230, 3230
0157 3260 K3260, 3260
0160 3310 K3310, 3310
0161 3340 K3340, 3340
0162 3400 K3400, 3400
0163 3430 K3430, 3430
0164 3460 K3460, 3460
0165 3510 K3510, 3510
0166 3540 K3540, 3540

0170 0170 *170
0000 00, 0
0171 1175 0 TAD K7402
0172 3410 DCA I 10
0173 1010 TAD 10
0174 5570 JMP I 00
0175 7402 K7402, 7402

0200 0200 *200 JMP I SAVER
5601 5601 JMS I SAVER
0600 0600 SAVER, SAVE

/STORE LOADER INSTRUCTIONS
/THAT WILL BE DESTROYED

0600 0600 *600
7200 7200 SAVE,
1453 1453 CLA TAD I K7775
3343 3343 DCA STOR
1452 1452 TAD I K7773
3344 3344 DCA STOR+1
1736 1736 TAD I K74
3345 3345 DCA STOR+2
1451 1451 TAD I K7767
3346 3346 DCA STOR+3
1737 1737 TAD I K70
3347 3347 DCA STOR+4
1450 1450 TAD I K7757
3350 3350 DCA STOR+5
1740 1740 TAD I K60
3351 3351 DCA STOR+6
1447 1447 TAD I K7737
3352 3352 DCA STOR+7
1741 1741 TAD I K740
3353 3353 DCA STOR+10

0623	1446	TAD I K7677
0624	3354	DCA STOR+11
0625	1742	TAD I K00
0626	3355	DCA STOR+12
0627	1455	TAD I K7777
0630	3356	DCA STOR+13
0631	7300	CLA CLL
0632	1264	TAD K175
0633	3010	DCA 10
0634	4170	JMS DO
0635	1265	TAD M577
0636	7640	SEA CLA
0637	5234	JMP --3
0640	1266	TAD K756
0641	3010	DCA 10
0642	4170	JMS DO
0643	1267	TAD M1777
0644	7640	SEA CLA
0645	5242	JMP --3
0646	1270	TAD K3572
0647	3010	DCA 10
0650	4170	JMS DO
0651	1271	TAD M4177
0652	7640	SEA CLA
0653	5250	JMP --3
0654	1272	TAD K5451
0655	3010	DCA 10
0656	4170	JMS DO
0657	1273	TAD M7600
0660	7640	SEA CLA
0661	5256	JMP --3
0662	5300	JMP RESTAR
0663	4200	BEGIN
0664	0175	175
0665	7201	-977
0666	0756	756
0667	6001	-1777
0670	3572	K3572,
0671	3601	M4177, -4177
0672	5451	K5451, 5451
0673	0200	M7600, -7600

HALT1,

HALT2,

HALT3,

HALT4,

/RESTORE LOADER INSTRUCTIONS

0700	*700	RESTAR,	TAD RENEW
1303	3200	DCA SAVE	
0701	5303	JMP RENEW	
0702	5663	JMP I HALT4+7	
0703	7200	REFILL,	CLA
0704	1343	TAD STOR	
0705	3453	DCA I K7775	
0706	1344	TAD STOR+1	
0707	3452	DCA I K7773	

```

0711 1345 TAD STOR+2
0712 3736 DCA I K74
0713 1346 TAD STOR+3
0714 3451 DCA I K7767
0715 1347 TAD STOR+4
0716 3737 DCA I K70
0717 1350 TAD STOR+5
0720 3490 DCA I K7757
0721 1351 TAD STOR+6
0722 3740 DCA I K60
0723 1352 TAD STOR+7
0724 3447 DCA I K7737
0725 1353 TAD STOR+10

0726 3741 DCA I K740
0727 1354 TAD STOR+11
0730 3446 DCA I K7677
0731 1355 TAD STOR+12
0732 3742 DCA I K00
0733 1356 TAD STOR+13
0734 3455 DCA I K7777
0735 7402 HLT
    
```

/CONSTANTS

```

0736 7774 K74, 7774
0737 7770 K70, 7770
0740 7760 K60, 7760
0741 7740 K740, 7740
0742 7700 K00, 7700
0743 0000 STOR, 0
0744 0000 0
0745 0000 0
0746 0000 0
0747 1742 -6036
0750 0000 0
0751 0000 0
0752 0000 0
0753 0000 0
0754 0000 0
0755 0000 0
0756 0000 0

/STORE LOC 7775
/+1 STORE LOC 7773
/+2 STORE LOC 7774
/+3 STORE LOC 7767
/+4 STORE LOC 7770
/+5 STORE LOC 7757
/+6 STORE LOC 7760
/+7 STORE LOC 7737
/+10 STORE LOC 7740
/+11 STORE LOC 7677
/+12 STORE LOC 7700
/+13 STORE LOC 7777
    
```

```

4200 4200 +4200
4201 3136 BEGIN, DCA PNTCNT

4202 5203 /JUMP TEST 0 COUNTER=0
4203 1136 JMP .+1
4204 7440 TAD PNTCNT
4205 7402 SZA
4206 1136 HLT
                                /CHECK COUNTER
                                /JMP COUNTER WRONG
                                TAD PNTCNT
    
```

4207 7001 IAC PNTCNT /JUMP TEST 1 COUNTER=1
 4210 3136 DCA PNTCNT /ADVANCE COUNTER

4211 5213 JMP .+2 /JUMP TEST 1 COUNTER=1
 4212 7402 HLT /JMP FAILED
 4213 1136 TAD PNTCNT /CHECK COUNTER
 4214 1113 TAD M1 /JMP COUNTER WRONG
 4215 7440 SZA /CHECK COUNTER
 4216 7402 HLT /JMP COUNTER WRONG
 4217 1136 TAD PNTCNT /ADVANCE COUNTER
 4220 7001 IAC PNTCNT /ADVANCE COUNTER
 4221 3136 DCA PNTCNT /ADVANCE COUNTER

4222 5225 /JUMP TEST 2 COUNTER=2
 4223 7402 JMP .+3 /JMP FAILED
 4224 7402 HLT /JMP FAILED
 4225 1136 TAD PNTCNT /CHECK COUNTER
 4226 1114 TAD M2 /JMP COUNTER WRONG
 4227 7440 SZA /CHECK COUNTER
 4230 7402 HLT /JMP COUNTER WRONG
 4231 1136 TAD PNTCNT /CHECK COUNTER
 4232 7001 IAC PNTCNT /JMP COUNTER WRONG
 4233 3136 DCA PNTCNT /JMP COUNTER WRONG

4234 5240 /JUMP TEST 3 COUNTER=3
 4235 7402 JMP .+4 /JMP FAILED
 4236 7402 HLT /
 4237 7402 HLT /
 4240 1136 TAD PNTCNT /CHECK COUNTER
 4241 1115 TAD M3 /JMP COUNTER WRONG
 4242 7440 SZA /CHECK COUNTER
 4243 7402 HLT /JMP COUNTER WRONG
 4244 1136 TAD PNTCNT /ADVANCE COUNTER
 4245 7001 IAC PNTCNT /ADVANCE COUNTER
 4246 3136 DCA PNTCNT /ADVANCE COUNTER

4247 5254 /JUMP TEST 4 COUNTER=4
 4250 7402 JMP .+5 /JMP FAILED
 4251 7402 HLT /
 4252 7402 HLT /
 4253 7402 HLT /
 4254 1136 TAD PNTCNT /CHECK COUNTER
 4255 1116 TAD M4 /JMP COUNTER WRONG
 4256 7440 SZA /CHECK COUNTER
 4257 7402 HLT /JMP COUNTER WRONG
 4260 1136 TAD PNTCNT /ADVANCE COUNTER
 4261 7001 IAC PNTCNT /ADVANCE COUNTER
 4262 3136 DCA PNTCNT /ADVANCE COUNTER

```

4263 5271 JMP .+6
4264 7402 HLT /JMP FAILED
4265 7402 HLT /
4266 7402 HLT /
4267 7402 HLT /
4270 7402 HLT /
4271 1136 TAD PNTCNT
4272 1117 TAD M5
4273 7440 SZA /CHECK COUNTER
4274 7402 HLT /JMP COUNTER WRONG
4275 1136 TAD PNTCNT /ADVANCE COUNTER
4276 7001 IAC
4277 3136 DCA PNTCNT

```

```

/JUMP TEST 6 COUNTER=6
4300 5307 JMP .+7
4301 7402 HLT /JMP FAILED
4302 7402 HLT /
4303 7402 HLT /
4304 7402 HLT /
4305 7402 HLT /
4306 7402 HLT /
4307 1136 TAD PNTCNT
4310 1120 TAD M6
4311 7440 SZA /CHECK COUNTER
4312 7402 HLT /JMP COUNTER WRONG
4313 1136 TAD PNTCNT /ADVANCE COUNTER
4314 7001 IAC
4315 3136 DCA PNTCNT

```

```

/JUMP TEST 7 COUNTER=7
4316 5326 JMP .+10
4317 7402 HLT /JMP FAILED
4320 7402 HLT /
4321 7402 HLT /
4322 7402 HLT /
4323 7402 HLT /
4324 7402 HLT /
4325 7402 HLT /
4326 1136 TAD PNTCNT
4327 1121 TAD M7
4330 7440 SZA /CHECK COUNTER
4331 7402 HLT /JMP COUNTER WRONG
4332 1136 TAD PNTCNT /ADVANCE COUNTER
4333 7001 IAC
4334 3136 DCA PNTCNT

```

```

/JUMP TEST 8 COUNTER=10
4335 5346 JMP .+11
4336 7402 HLT /JMP FAILED
4337 7402 HLT /
4340 7402 HLT /
4341 7402 HLT /
4342 7402 HLT /

```

```

4343 7402 /
4344 7402 /
4345 7402 /
4346 1136 /CHECK COUNTER
4347 1122 /JMP COUNTER WRONG
4350 7440 /ADVANCE COUNTER
4351 7402
4352 1136
4353 7001
4354 3136

```

```

/JUMP TEST 9 COUNTER=11
5367 /JMP FAILED
4356 7402 /
4357 7402 /
4360 7402 /
4361 7402 /
4362 7402 /
4363 7402 /
4364 7402 /
4365 7402 /
4366 7402 /
4367 1136 /CHECK COUNTER
4370 1123 /JMP COUNTER WRONG
4371 7440 /ADVANCE COUNTER
4372 7402
4373 1136
4374 7001
4375 3136
4376 7000
4377 7000

```

```

*4400 /JUMP TEST 10 COUNTER=12
4400
4401 3201 JMP *+1
4402 1136 TAD PNTCNT
4403 1124 TAD M12
4404 7402 /CHECK COUNTER
4405 1136 /JMP COUNTER WRONG
4406 7001 /ADVANCE COUNTER
4407 3136

```

```

/JUMP TEST 11 COUNTER=13
4410 3212 /JMP FAILED
4411 7402 /
4412 1136 /CHECK COUNTER
4413 1125 /JMP COUNTER WRONG
4414 7440 /ADVANCE COUNTER
4415 7402 /
4416 1136 /
4417 7001 /
4420 3136

```

4421 5224 /JUMP TEST 12 COUNTER=14
 4422 7402 JMP .+3 /JMP FAILED
 4423 7402 HLT /
 4424 1136 TAD PNTCNT
 4425 1126 TAD M14
 4426 7440 SEA /CHECK COUNTER
 4427 7402 HLT /JMP COUNTER WRONG
 4430 1136 TAD PNTCNT /ADVANCE COUNTER
 4431 7001 IAC
 4432 3136 DCA PNTCNT

4433 5237 /JUMP TEST 13 COUNTER=15
 4434 7402 JMP .+4 /JMP FAILED
 4435 7402 HLT /
 4436 7402 HLT /
 4437 1136 TAD PNTCNT
 4440 1127 TAD M15
 4441 7440 SEA /CHECK COUNTER
 4442 7402 HLT /JMP COUNTER WRONG
 4443 1136 TAD PNTCNT /ADVANCE COUNTER
 4444 7001 IAC
 4445 3136 DCA PNTCNT

4446 5253 /JUMP TEST 14 COUNTER=16
 4447 7402 JMP .+5 /JMP FAILED
 4450 7402 HLT /
 4451 7402 HLT /
 4452 7402 HLT /
 4453 1136 TAD PNTCNT
 4454 1130 TAD M16
 4455 7440 SEA /CHECK COUNTER
 4456 7402 HLT /JMP COUNTER WRONG
 4457 1136 TAD PNTCNT /ADVANCE COUNTER
 4460 7001 IAC
 4461 3136 DCA PNTCNT

4462 5270 /JUMP TEST 15 COUNTER=17
 4463 7402 JMP .+6 /JMP FAILED
 4464 7402 HLT /
 4465 7402 HLT /
 4466 7402 HLT /
 4467 7402 HLT /
 4470 1136 TAD PNTCNT
 4471 1131 TAD M17
 4472 7440 SEA /CHECK COUNTER
 4473 7402 HLT /JMP COUNTER WRONG
 4474 1136 TAD PNTCNT /ADVANCE COUNTER
 4475 7001 IAC
 4476 3136 DCA PNTCNT

4477 5306 /JUMP TEST 16 COUNTER =20
 4500 7402 JMP .+7 /JMP FAILED
 4501 7402 HLT /
 4502 7402 HLT /
 4503 7402 HLT /
 4504 7402 HLT /
 4505 7402 HLT /
 4506 1136 TAD PNTCNT
 4507 1132 TAD M20
 4510 7440 SEA /CHECK COUNTER
 4511 7402 HLT /JMP COUNTER WRONG
 4512 1136 TAD PNTCNT /ADVANCE COUNTER
 4513 7001 IAC PNTCNT
 4514 3136 DCA PNTCNT

4515 9325 /JUMP TEST 17 COUNTER=21
 4516 7402 JMP .+10 /JMP FAILED
 4517 7402 HLT /
 4520 7402 HLT /
 4521 7402 HLT /
 4522 7402 HLT /
 4523 7402 HLT /
 4524 7402 HLT /

4525 1136 TAD PNTCNT
 4526 1133 TAD M21
 4527 7440 SEA /CHECK COUNTER
 4530 7402 HLT /JMP COUNTER WRONG
 4531 1136 TAD PNTCNT /ADVANCE COUNTER
 4532 7001 IAC PNTCNT
 4533 3136 DCA PNTCNT

4534 9345 /JUMP TEST 18 COUNTER=22
 4535 7402 JMP .+11 /JMP FAILED
 4536 7402 HLT /
 4537 7402 HLT /
 4540 7402 HLT /
 4541 7402 HLT /
 4542 7402 HLT /
 4543 7402 HLT /
 4544 7402 HLT /
 4545 1136 TAD PNTCNT
 4546 1134 TAD M22
 4547 7440 SEA /CHECK COUNTER
 4550 7402 HLT /JMP COUNTER WRONG
 4551 1136 TAD PNTCNT /ADVANCE COUNTER
 4592 7001 IAC PNTCNT
 4593 3136 DCA PNTCNT
 /JUMP TEST 19 COUNTER=23

4584	4680	4620	4627	4640
4585	4601	4621	4630	4640
4586	4602	4622	4631	4641
4587	4603	4623	4632	4642
4588	4604	4624	4633	4643
4589	4605	4625	4634	
4590	4606	4626	4635	
4591			4636	
4592				
4593				
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4700				

/BASIC JMP-JNS TEST
 JMP .+12
 HLT /JMP FAILED
 HLT /
 HLT /
 HLT /
 HLT /
 HLT /
 HLT /
 HLT /
 HLT /
 HLT /
 HLT /
 TAD PNTCNT
 TAD M23
 SEA /CHECK COUNTER WRONG
 HLT /JMP COUNTER WRONG
 TAD PNTCNT /ADVANCE COUNTER
 IAC
 DCA PNTCNT
 NOP
 NOP
 NOP
 /JMP TEST 20 COUNTER=24
 TAD PK1
 DCA I K7777
 TAD PK2
 DCA I K8
 JMP I K7777
 JMP I K8
 JMP I K4620
 *4620
 TAD PNTCNT
 TAD M24
 SEA /CHECK COUNTER WRONG
 HLT /JMP COUNTER WRONG
 TAD PNTCNT /ADVANCE COUNTER
 IAC
 DCA PNTCNT
 /JMP TEST 21 COUNTER=25
 TAD PK3
 DCA I K7776
 TAD PK4
 DCA I K1
 JMP I K7776
 JMP I K1
 JMP I K4640
 -24
 *4640
 TAD PNTCNT
 TAD M25
 SEA /CHECK COUNTER WRONG
 HLT /JMP COUNTER WRONG

4644 1136 TAD PNTCNT /ADVANCE COUNTER
 4645 7001 IAC PNTCNT
 4646 3136 DCA PNTCNT

/JMP TEST 22 COUNTER=26
 4647 1254 TAD PK5
 4650 3453 DCA I K7775
 4651 1255 TAD PK6
 4652 3424 DCA I K2
 4653 5453 JMP I K7775
 4654 5424 JMP I K2
 4655 5660 JMP I 4660
 4656 7753 -25
 PK5,
 PK6,
 M25,

4660 4660 *4660
 4660 1136 TAD PNTCNT
 4661 1276 TAD M26
 4662 7440 SEA /CHECK COUNTER
 4663 7402 HLT /JMP COUNTER WRONG
 4664 1136 TAD PNTCNT /ADVANCE COUNTER
 4665 7001 IAC PNTCNT
 4666 3136 DCA PNTCNT

/JMP TEST 23 COUNTER=27
 4667 1274 TAD PK7
 4670 3452 DCA I K7773
 4671 1275 TAD PK8
 4672 3425 DCA I K4
 4673 5452 JMP I K7773
 4674 5425 JMP I K4
 4675 5461 JMP I K4700
 4676 7752 -26
 PK7,
 PK8,
 M26,

*4700
 4700 1136 TAD PNTCNT /CHECK COUNTER
 4701 1316 TAD M27 /JMP COUNTER WRONG
 4702 7440 SEA /ADVANCE COUNTER
 4703 7402 HLT
 4704 1136 TAD PNTCNT
 4705 7001 IAC PNTCNT
 4706 3136 DCA PNTCNT

/JMP TEST 24 COUNTER=30
 4707 1314 TAD PK9
 4710 3451 DCA I K7767
 4711 1315 TAD PK10
 4712 3426 DCA I K10
 4713 5451 JMP I K7767
 4714 5426 JMP I K10
 4715 5462 JMP I K4720
 4716 7751 -27
 PK9,
 PK10,
 M27,

*4720
 4720 1136 TAD PNTCNT

4721 1336 TAD M30
 4722 7440 SEA /CHECK COUNTER
 4723 7402 HLT /JMP COUNTER WRONG
 4724 1136 TAD PNTCNT
 4725 7001 IAC /ADVANCE COUNTER
 4726 3136 DCA PNTCNT

4727 1334 /JMP TEST 25 COUNTER=31
 4730 3450 TAD PK11
 4731 1335 DCA I K7757
 4732 3427 TAD PK12
 4733 5450 DCA I K20
 4734 5427 JMP I K7757
 4735 5463 JMP I K20
 4736 7750 JMP I K4740
 M30, -30

4740 4740 *4740 TAD PNTCNT
 4741 1136 TAD M31
 4742 7440 SEA /CHECK COUNTER
 4743 7402 HLT /JMP COUNTER WRONG
 4744 1136 TAD PNTCNT
 4745 7001 IAC /ADVANCE COUNTER
 4746 3136 DCA PNTCNT

4747 1354 /JMP TEST 26 COUNTER=32
 4750 3447 TAD PK13
 4751 1355 DCA I K7737
 4752 5430 TAD PK14
 4753 5447 DCA I K40
 4754 5430 JMP I K7737
 4755 9404 JMP I K40
 4756 7747 JMP I K4760
 M31, -31

4760 4760 *4760 TAD PNTCNT
 4761 1136 TAD M32
 4762 7440 SEA /CHECK COUNTER
 4763 7402 HLT /JMP COUNTER WRONG
 4764 1136 TAD PNTCNT
 4765 7001 IAC /ADVANCE COUNTER
 4766 3136 DCA PNTCNT

4767 1374 /JMP TEST 27 COUNTER=33
 4770 3446 TAD PK15
 4771 1375 DCA I K7677
 4772 3431 TAD PK16
 4773 5446 DCA I K100
 4774 5431 JMP I K7677
 4775 5465 JMP I K100
 4776 7746 JMP I K5000
 M32, -32

5000 *5000
 5001 TAD PNTCNT
 5002 TAD M33
 5003 SEA /CHECK COUNTER
 5004 HLT /JMP COUNTER WRONG
 5005 TAD PNTCNT /ADVANCE COUNTER
 5006 IAC
 DCA PNTCNT

/JMP TEST 28 COUNTER=34
 5007 TAD PK17
 5010 DCA I K7577
 5011 TAD PK18
 5012 DCA I K200
 5013 JMP I K7577
 5014 5432
 5015 JMP I K200
 5016 JMP I K5020
 M33, -35

*5020
 5020 TAD PNTCNT
 5021 TAD M34
 5022 SEA /CHECK COUNTER
 5023 HLT /JMP COUNTER WRONG
 5024 TAD PNTCNT /ADVANCE COUNTER
 5025 IAC
 5026 DCA PNTCNT

/JMP TEST 29 COUNTER=35
 5027 TAD PK19
 5030 DCA I K7377
 5031 TAD PK20
 5032 DCA I K400
 5033 JMP I K7377
 5034 JMP I K400
 5035 JMP I K5040
 M34, -34

*5040
 5040 TAD PNTCNT
 5041 TAD M35
 5042 SEA /CHECK COUNTER
 5043 HLT /JMP COUNTER WRONG
 5044 TAD PNTCNT /ADVANCE COUNTER
 5045 IAC
 5046 DCA PNTCNT

/JMP TEST 30 COUNTER=36
 5047 TAD PK21
 5050 DCA I K6777
 5051 TAD PK22
 5052 DCA I K1000

5053 5443 JMP I K6777
 5054 5434 PK21, JMP I K1000
 5055 5470 PK22, JMP I K5060
 5056 7743 M35, -35

5060 *5060
 5061 1136 TAD PNTCNT
 5062 1276 TAD M36
 5063 7440 SEA
 5064 1136 HLT
 5065 7001 TAD PNTCNT
 5066 3136 IAC
 DCA PNTCNT

/CHECK COUNTER WRONG
 /JMP COUNTER WRONG
 /ADVANCE COUNTER

COUNTER=37

/JMP TEST 31
 TAD PK23
 DCA I K5777
 TAD PK24
 DCA I K2000
 JMP I K5777
 JMP I K2000
 JMP I K5100
 M36, -36

5100 *5100
 5101 1136 TAD PNTCNT
 5102 1316 TAD M37
 5103 7440 SEA
 5104 7402 HLT
 5105 1136 TAD PNTCNT
 5106 7001 IAC
 3136 DCA PNTCNT

/CHECK COUNTER WRONG
 /JMP COUNTER WRONG
 /ADVANCE COUNTER

COUNTER=40

/JMP TEST 32
 TAD PK25
 DCA I K3777
 TAD PK26
 DCA I K4000
 JMP I K3777
 JMP I K4000
 JMP I K5120
 M37, -37

5120 *5120
 5121 1136 TAD PNTCNT
 5122 1336 TAD M40
 5123 7440 SEA
 5124 7402 HLT
 5125 1136 TAD PNTCNT
 5126 7001 IAC
 3136 DCA PNTCNT

/CHECK COUNTER WRONG
 /JMP COUNTER WRONG
 /ADVANCE COUNTER

/JMP TEST 33 COUNTER=41

5127 1334
 5130 3422
 5131 1335
 5132 3455
 5133 5422
 5134 5455
 5135 5473
 5136 7740

PK27,
 PK28,
 M40,
 *5140

TAD PNTCNT
 TAD M41
 SZA
 HLT
 TAD PNTCNT
 IAC PNTCNT
 DCA PNTCNT

/CHECK COUNTER
 /JMP COUNTER WRONG
 /ADVANCE COUNTER

/JMP TEST 34 COUNTER=42

5147 1394
 5150 3423
 5151 1355
 5152 3454
 5153 5423
 5154 5494
 5155 5474
 5156 7737

PK29,
 PK30,
 M41,
 *5160

TAD PNTCNT
 TAD M42
 SZA
 HLT
 TAD PNTCNT
 IAC PNTCNT
 DCA PNTCNT

/CHECK COUNTER
 /JMP COUNTER WRONG
 /ADVANCE COUNTER

/JMP TEST 35 COUNTER=43

5167 1374
 5170 3424
 5171 1375
 5172 3453
 5173 5424
 5174 5493
 5175 5475
 5176 7736

PK31,
 PK32,
 M42,
 *5200

TAD PNTCNT
 TAD M43
 SZA
 HLT
 TAD PNTCNT

/CHECK COUNTER
 /JMP COUNTER WRONG

IAC /ADVANCE COUNTER
DCA PNTCNT

IAC
DCA PNTCNT

/JMP TEST 36 COUNTER=44

TAD PK33
DCA I K4
TAD PK34
DCA I K7773
JMP I K4
JMP I K7773
JMP I K5220
-43

PK33,
PK34,
M43,

*5220

TAD PNTCNT
TAD M44
SEA /CHECK COUNTER
HLT /JMP COUNTER WRONG
TAD PNTCNT
IAC /ADVANCE COUNTER
DCA PNTCNT

/JMP TEST 37 COUNTER=45

TAD PK35
DCA I K10
TAD PK36
DCA I K7767
JMP I K10
JMP I K7767
JMP I K5240
-44

PK35,
PK36,
M44,

*5240

TAD PNTCNT
TAD M45
SEA /CHECK COUNTER
HLT /JMP COUNTER WRONG
TAD PNTCNT
IAC /ADVANCE COUNTER
DCA PNTCNT

/JMP TEST 3 COUNTER=46

TAD PK37
DCA I K20
TAD PK38
DCA I K7757
JMP I K20
JMP I K7757
JMP I K5260
-45

PK37,
PK38,
M45,

*5260

TAD PNTCNT
TAD M46

5205 7001
5206 3136

5207 1214
5210 3425
5211 1215
5212 3452
5213 5425
5214 5452
5215 5476
5216 7735

5220
5221 1136
5221 1236
5222 7440
5223 7402
5224 1136
5225 7001
5226 3136

5227 1234
5230 3426
5231 1235
5232 3451
5233 5426
5234 5491
5235 5502
5236 7734

5240
5240 1136
5241 1256
5242 7440
5243 7402
5244 1136
5245 7001
5246 3136

5247 1254
5250 3427
5251 1255
5252 3450
5253 5427
5254 5450
5255 5503
5256 7733

5260
5261 1276
5260 1136
5261 1276

5262 7440 SZA /CHECK COUNTER
 5263 7402 HLT /JMP COUNTER WRONG
 5264 1136 TAD PNTCNT
 5265 7001 IAC /ADVANCE COUNTER
 5266 3136 DCA PNTCNT

/JMP TEST 39 COUNTER=47

5267 1274 TAD PK39
 5270 3430 DCA I K40
 5271 1275 TAD PK40
 5272 3447 DCA I K7737
 5273 5430 JMP I K40
 5274 5447 JMP I K7737
 5275 5504 JMP I K5300
 5276 7732 M46, -46

PK39,
PK40,
M46,

*5300

5300 TAD PNTCNT
 5301 1136 TAD M47
 5302 7440 SZA /CHECK COUNTER
 5303 7402 HLT /JMP COUNTER WRONG
 5304 1136 TAD PNTCNT /ADVANCE COUNTER
 5305 7001 IAC
 5306 3136 DCA PNTCNT

/JMP TEST 40 COUNTER=50

5307 1314 TAD PK41
 5310 3431 DCA I K100
 5311 1315 TAD PK42
 5312 3446 DCA I K7677
 5313 5431 JMP I K100
 5314 5446 JMP I K7677
 5315 5505 JMP I K5320
 5316 7731 M47, -47

PK41,
PK42,
M47,

*5320

5320 TAD PNTCNT
 5321 1136 TAD M50
 5322 1336 SZA /CHECK COUNTER
 5323 7402 HLT /JMP COUNTER WRONG
 5324 1136 TAD PNTCNT /ADVANCE COUNTER
 5325 7001 IAC
 5326 3136 DCA PNTCNT

/JMP TEST 41 COUNTER=51

5327 1334 TAD PK43
 5330 3432 DCA I K200
 5331 1335 TAD PK44
 5332 3445 DCA I K7577
 5333 5432 JMP I K200
 5334 5445 JMP I K7577
 5335 5506 PK43,
 5336 7730 PK44,
 M50, -50

PK43,
PK44,
M50,

5340 *5340
 5340 1136 TAD PNTCNT
 5341 1356 TAD M51
 5342 7440 SZA /CHECK COUNTER
 5343 7402 HLT /JMP COUNTER WRONG
 5344 1136 TAD PNTCNT /ADVANCE COUNTER
 5345 7001 IAC
 5346 3136 DCA PNTCNT

5347 1354 /JMP TEST 42 COUNTER=52
 5350 3433 TAD PK45
 5351 1355 DCA I K400
 5352 3444 TAD PK46
 5353 3433 DCA I K7377
 5354 5444 JMP I K400
 5355 5507 JMP I K7377
 5356 7727 JMP I K5360
 -51

5360 *5360
 5360 1136 TAD PNTCNT
 5361 1376 TAD M52
 5362 7440 SZA /CHECK COUNTER
 5363 7402 HLT /JMP COUNTER WRONG
 5364 1136 TAD PNTCNT /ADVANCE COUNTER
 5365 7001 IAC
 5366 3136 DCA PNTCNT

5374 1374 /JMP TEST 43 COUNTER=53
 5370 3434 TAD PK47
 5371 1375 DCA I K1000
 5372 3443 TAD PK48
 5373 3434 DCA I K6777
 5374 3443 JMP I K1000
 5375 5510 JMP I K6777
 5376 7726 JMP I K5400
 -52

5400 *5400
 5400 1136 TAD PNTCNT
 5401 1216 TAD M53
 5402 7440 SZA /CHECK COUNTER
 5403 7402 HLT /JMP COUNTER WRONG
 5404 1136 TAD PNTCNT /ADVANCE COUNTER
 5405 7001 IAC
 5406 3136 DCA PNTCNT

5407 1214 /JMP TEST 44 COUNTER=54
 5410 3435 TAD PK49
 5411 1215 DCA I K2000
 5412 3442 TAD PK50
 5413 3435 DCA I K5777
 5414 5442 JMP I K2000
 JMP I K5777

5415 5511 PK50, JMP I K5420
 5416 7725 M53, -53

5420 *5420
 5420 1136 TAD PNTCNT
 5421 1236 TAD M54
 5422 7440 SZA /CHECK COUNTER
 5423 7402 HLT /JMP COUNTER WRONG
 5424 1136 TAD PNTCNT
 5425 7001 IAC /ADVANCE COUNTER
 5426 3136 DCA PNTCNT

5427 1234 /JMP TEST 45 COUNTER=55
 5430 3436 TAD PK51
 5431 1235 DCA I K4000
 5432 3437 TAD PK52
 5433 5436 DCA I K3777
 5434 5437 JMP I K4000
 5435 5512 JMP I K3777
 5436 7724 PK51,
 PK52,
 M54, -54

5440 *5440
 5440 1136 TAD PNTCNT
 5441 1250 TAD M55
 5442 7440 SZA /CHECK COUNTER
 5443 7402 HLT /JMP COUNTER WRONG
 5444 1136 TAD PNTCNT
 5445 7001 IAC /ADVANCE COUNTER
 5446 3136 DCA PNTCNT

5447 5651 /JMS TEST 1 COUNTER=56
 5450 7723 JMP I AFRM
 5451 2002 M55,
 AFRM,

2002 *2002
 2002 4203 FRM,
 TO,
 2003 5203 JMS TO
 2004 1136 JMP
 2005 1222 TAD PNTCNT
 2006 7440 SZA
 2007 7402 HLT /CHECK COUNTER
 2010 1224 TAD AFRM /JMP COUNTER WRONG
 2011 7041 CIA
 2012 1203 TAD TO
 2013 7440 SZA
 2014 7402 HLT /CHECK STORED ADDRESS
 2015 3203 DCA TO /JMS FAILED
 2016 1136 TAD PNTCNT /CLEAR STORED PC
 2017 7001 IAC
 2020 3136 DCA PNTCNT
 2021 7410 SKP
 2022 7722 M56, -56

2023 7410 SKP
 2024 2003 FRM#1

2025 4227 /JMS TEST 2 COUNTER#57
 2026 7402 JMS T01
 2027 5227 HLT
 2030 1136 JMP
 2031 1246 TAD PNTCNT
 2032 7440 TAD M57
 2033 7402 SEA /CHECK COUNTER WRONG
 2034 1250 HLT /JMP COUNTER WRONG
 2035 7041 TAD AFRM1
 2036 1227 CIA
 2037 7440 TAD T01 /CHECK STORED ADDRESS
 2040 7402 SEA /JMS FAILED
 2041 3227 HLT /CLEAR STORED PC
 2042 1136 OCA T01
 2043 7001 TAD PNTCNT
 2044 3136 IAC PNTCNT
 2045 7410 DCA PNTCNT
 SKP

2046 7721 -57
 2047 7410 SKP
 2050 2026 AFRM1, FRM1

2051 4254 /JMS TEST 3 COUNTER#60
 2052 7402 JMS T02
 2053 7402 HLT
 2054 5254 HLT
 2055 1136 JMP
 2056 1275 TAD PNTCNT
 2057 7440 TAD M60
 2060 7402 SEA /CHECK COUNTER WRONG
 2061 1273 HLT /JMP COUNTER WRONG
 2062 7041 TAD AFRM2
 2063 1254 CIA
 2064 7440 TAD T02
 2065 7402 SEA /CHECK STORED ADDRESS
 2066 3254 HLT /JMS FAILED
 2067 1136 OCA T02 /CLEAR STORED PC
 2070 7001 TAD PNTCNT
 2071 3136 IAC PNTCNT
 2072 7410 DCA PNTCNT
 2073 2052 SKP
 2074 7410 AFRM2,
 2075 7720 SKP
 M60, -60

2076 4302 /JMS TEST 4 COUNTER#61
 2077 7402 JMS T03
 2100 7402 HLT
 2101 7402 HLT

2102 5302 JMP T03, /CHECK COUNTER WRONG
 2103 1136 TAD PNTCNT /JMP COUNTER WRONG
 2104 1323 TAD M61
 2105 7440 SEA
 2106 7402 HLT /CHECK STORED ADDRESS
 2107 1321 TAD AFRM3 /JMS FAILED
 2110 7041 CIA /CLEAR STORED PC
 2111 1302 TAD T03
 2112 7440 SEA
 2113 7402 HLT
 2114 3302 DCA T03
 2115 1136 TAD PNTCNT
 2116 7001 IAC
 2117 3136 DCA PNTCNT
 2120 7410 SKP
 2121 2077 FRM3
 2122 7410 SKP
 2123 7717 M61, -61

/JMS TEST 5 COUNTER=62

2124 4330 JMS T04
 2125 7402 FRM4, HLT
 2126 7402 HLT
 2127 7402 HLT
 2130 5330 JMP T04, /CHECK COUNTER WRONG
 2131 1136 TAD PNTCNT /JMP COUNTER WRONG
 2132 1351 TAD M62
 2133 7440 SEA
 2134 7402 HLT /CHECK STORED ADDRESS
 2135 1347 TAD AFRM4 /JMS FAILED
 2136 7041 CIA /CLEAR STORED PC
 2137 1330 TAD T04
 2140 7440 SEA
 2141 7402 HLT
 2142 3330 DCA T04
 2143 1136 TAD PNTCNT
 2144 7001 IAC
 2145 3136 DCA PNTCNT
 2146 7410 SKP
 2147 2125 FRM4
 2150 7410 SKP
 2151 7716 M62, -62

/JMS TEST 6 COUNTER=63

2152 4356 JMS T05
 2153 7402 FRM5, HLT
 2154 7402 HLT
 2155 7402 HLT
 2156 5356 JMP T05, /CHECK COUNTER
 2157 1136 TAD PNTCNT
 2160 1377 TAD M63
 2161 7440 SEA

2162 7402 HLT
 2163 1375 TAD AFRM5
 2164 7041 CIA
 2165 1356 TAD T05
 2166 7440 SZA
 2167 7402 HLT
 2170 3356 DCA T05
 2171 1136 TAD PNTCNT
 2172 7001 IAC
 2173 3136 DCA PNTCNT
 2174 7410 SKP
 2175 2153 FRM5
 2176 7410 SKP
 2177 7715 M63, -63

/JMP COUNTER WRONG
 /CHECK STORED ADDRESS
 /JMS FAILED
 /CLEAR STORED PC

PAUSE

/TAPE # 2
*2200

2200 7000 /JMS TEST 7 COUNTER=64
 2201 4202 NOP
 2202 5202 JMS T06
 2203 1136 JMP
 2204 1221 TAD PNTCNT
 2205 7440 TAD M64
 2206 7402 SZA
 2207 1202 HLT
 2210 7041 TAD T06
 2211 1223 CIA
 2212 7440 TAD AT06
 2213 7402 SZA
 2214 3202 HLT
 2215 1136 DCA T06
 2216 7001 TAD PNTCNT
 2217 3136 IAC
 2220 7410 DCA PNTCNT
 2221 7714 SKP
 2222 7410 -64
 2223 2202 SKP
 T06, M64, AT06, T06

/CHECK COUNTER WRONG
 /JMP COUNTER WRONG
 /CHECK STORED ADDRESS
 /JMS FAILED
 /CLEAR STORED PC

/JMS TEST 8 COUNTER=65

2224 4226 /JMS TEST 8 COUNTER=65
 2225 7402 JMS T07
 2226 5226 HLT
 2227 1136 JMP
 2230 1245 TAD PNTCNT
 2231 7440 TAD M65
 2232 7402 SZA
 2233 1247 HLT
 2234 7041 TAD AFRM7
 2235 1226 CIA
 T07, FRM7, T07

/CHECK COUNTER
 /JMP COUNTER WRONG

2236 7440 SEA /CHECK STORED ADDRESS
 2237 7402 HLT /JMS FAILED
 2240 3226 DCA T07 /CLEAR STORED PC
 2241 1136 TAD PNTCNT
 2242 7001 IAC
 2243 3136 DCA PNTCNT
 2244 7410 SKP
 2245 7713 M65,
 2246 7410 SKP
 2247 2225 AFRM7, FRM7

/JMS TEST 9 COUNTER=66

2250 4253 JMS T08
 2251 7402 FRM8,
 2252 7402 HLT
 2253 5253 JMP T08,
 2254 1136 TAD PNTCNT
 2255 1274 TAD M66
 2256 7440 SEA /CHECK COUNTER
 2257 7402 HLT /JMP COUNTER WRONG
 2260 1253 TAD T08
 2261 7041 CIA
 2262 1272 TAD AFRM8
 2263 7440 SEA /CHECK STORED ADDRESS
 2264 7402 HLT /JMS FAILED
 2265 3253 DCA T08 /CLEAR STORED PC
 2266 1136 TAD PNTCNT
 2267 7001 IAC
 2270 3136 DCA PNTCNT
 2271 7410 SKP
 2272 8251 AFRM8,
 2273 7410 SKP
 2274 7712 M66,

/JMS TEST 10 COUNTER=67

2275 4301 JMS T09
 2276 7402 HLT
 2277 7402 HLT
 2300 7402 HLT
 2301 5301 JMP T09,
 2302 1136 TAD PNTCNT
 2303 1322 TAD M67
 2304 7440 SEA /CHECK COUNTER
 2305 7402 HLT /JMP COUNTER WRONG
 2306 1301 TAD T09
 2307 7041 CIA
 2310 1320 TAD AFRM9
 2311 7440 SEA /CHECK STORED ADDRESS
 2312 7402 HLT /JMS FAILED
 2313 3301 DCA T09 /CLEAR STORED PC
 2314 1136 TAD PNTCNT
 2315 7001 IAC
 2316 3136 DCA PNTCNT
 2317 7410 SKP

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2320 2276 AFRM9, FRM9
2321 7410 SKP
2322 7711 M67,

2323 4330 /JMS TEST 11 COUNTER =70
2324 7402 JMS T010
2325 7402 HLT
2326 7402 HLT
2327 7402 HLT

2330 5330 JMP TAD PNTCNT
2331 1136 TAD M70
2332 1351 SEA
2333 7440 HLT
2334 7402 TAD T010
2335 1330 CIA
2336 7041 TAD AFRM10
2337 1347 SEA
2340 7440 HLT
2341 7402 DCA T010
2342 3330 TAD PNTCNT
2343 1136 IAC
2344 7001 DCA PNTCNT
2345 3136 SKP
2346 7410 AFRM10, FRM10
2347 2324 SKP
2350 7410

2351 7710 M70, -70

2352 4356 /JMS TEST 11 COUNTER=71
2353 7402 JMS T011
2354 7402 HLT
2355 7402 HLT
2356 5356 JMP TAD PNTCNT
2357 1136 TAD M71
2360 1377 SEA
2361 7440 HLT
2362 7402 TAD T011
2363 1356 CIA
2364 7041 TAD AFRM11
2365 1375 SEA
2366 7440 HLT
2367 7402 DCA T011
2370 3356 TAD PNTCNT
2371 1136 IAC
2372 7001 DCA PNTCNT
2373 3136 SKP
2374 7410 AFRM11, FRM11
2375 2353 SKP
2376 7410 M71,
2377 7707

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/CHECK COUNTER
/JMP COUNTER WRONG

/CHECK STORED ADDRESS
/JMS FAILED
/CLEAR STORED PC

/CHECK COUNTER
/JMP COUNTER WRONG

/CHECK STORED ADDRESS
/JMS FAILED
/CLEAR STORED PC

2400 *2400

/JMS TEST 12 COUNTER=72

2400 1205 TAD RK1
 2401 3455 DCA I K7777
 2402 1206 TAD RK2
 2403 3423 DCA I K1
 2404 5423 JMP I K1
 2405 5537 JMP I K2410
 2406 4424 JMS I K7776

RK1,
RK2,

2410 *2410

2410 1136 TAD PNTCNT
 2411 1233 TAD M72
 2412 7440 SEA /CHECK COUNTER
 2413 7402 HLT /JMP COUNTER WRONG
 2414 1454 TAD I K7776
 2415 1054 TAD K7776
 2416 7440 SEA /CHECK STORED ADDRESS
 2417 7402 HLT /JMS FAILED
 2420 3454 DCA I K7776 /CLEAR STORED ADDRESS
 2421 1136 TAD PNTCNT
 2422 7001 IAC /ADVANCE COUNTER
 2423 3136 DCA PNTCNT

/JMS TEST 13 COUNTER=73

2424 1231 TAD RK3
 2425 3454 DCA I K7776
 2426 1232 TAD RK4
 2427 3424 DCA I K2
 2430 3424 JMP I K2
 2431 5540 JMP I K2440
 2432 4453 JMS I K7775
 2433 7706 M72, -72

RK3,
RK4,
M72,

2440 *2440

2440 1136 TAD PNTCNT
 2441 1263 TAD M73
 2442 7440 SEA /CHECK COUNTER
 2443 7402 HLT /JMP COUNTER WRONG
 2444 1453 TAD I K7775
 2445 1053 TAD K7775
 2446 7440 SEA /CHECK STORED ADDRESS
 2447 7402 HLT /JMS FAILED
 2450 3453 DCA I K7775 /CLEAR STORED ADDRESS
 2451 1136 TAD PNTCNT
 2452 7001 IAC /ADVANCE COUNTER
 2453 3136 DCA PNTCNT

/JMS TEST 14 COUNTER=74

2454 1261 TAD RK5

2455 3664 DCA I K7774
2456 1262 TAD RK6
2457 3425 DCA I K4
2460 3425 JMP I K4
2461 5441 JMP I K2470
2462 4452 JMS I K7773
2463 7705 -73
2464 7774 K7774, 7774

2470 *2470
2470 1136 TAD PNTCNT
2471 1313 TAD M74
2472 7440 SEA /CHECK COUNTER
2473 7402 HLT /JMP COUNTER WRONG
2474 1452 TAD I K7773
2475 1052 TAD K7773
2476 7440 SEA /CHECK STORED ADDRESS
2477 7402 HLT /JMS FAILED
2500 3452 DCA I K7773 /CLEAR STORED ADDRESS
2501 1136 TAD PNTCNT /ADVANCE COUNTER
2502 7001 IAC
2503 3136 DCA PNTCNT

2504 1311 /JMS TEST 15 COUNTER=75
2505 3714 TAD RK7
2506 1312 DCA I K7770
2507 3426 TAD RK8
2510 3426 DCA I K10
2511 5542 JMP I K10
2512 4451 JMP I K2520
2513 7704 RK8, M74, -74
2514 7770 K7770, 7770

2520 *2520
2520 1136 TAD PNTCNT
2521 1343 TAD M75
2522 7440 SEA /CHECK COUNTER
2523 7402 HLT /JMP COUNTER WRONG
2524 1451 TAD I K7767
2525 1051 TAD K7767
2526 7440 SEA /CHECK STORED ADDRESS
2527 7402 HLT /JMS FAILED
2530 3451 DCA I K7767 /CLEAR STORED ADDRESS
2531 1136 TAD PNTCNT /ADVANCE COUNTER
2532 7001 IAC
2533 3136 DCA PNTCNT

2534 1341 /JMS TEST 16 COUNTER=76
2535 3744 TAD RK9
2536 1342 DCA I K7760
2537 3427 TAD RK10
2540 3427 DCA I K20
2540 3427 JMP I K20

/BASIC JMP-JMS TEST PAL10

2541	5243	RK9,	JMP I K2600
2542	4450	RK10,	JMS I K7757
2543	7703	M75,	-75
2544	7760	K7760,	7760

2600	*2600	TAD PNTCNT	
2601	1136	TAD M76	
2602	7440	SEA	/CHECK COUNTER
2603	7402	HLT	/JMP COUNTER WRONG
2604	1450	TAD I K7757	
2605	1050	TAD K7757	
2606	7440	SEA	/CHECK STORED ADDRESS
2607	7402	HLT	/JMS FAILED
2610	3450	DCA I K7757	/CLEAR STORED ADDRESS
2611	1136	TAD PNTCNT	
2612	7001	IAC	/ADVANCE COUNTER
2613	3136	DCA PNTCNT	

2614	1221	/JMS TEST 17	COUNTER=77
2615	3624	TAD RK11	
2616	1222	DCA I K7740	
2617	3430	TAD RK12	
2620	5430	DCA I K40	
2621	5544	JMP I K40	
2622	4447	JMP I K2630	
2623	7702	JMS I K7737	
2624	7740	M76,	-76
		K7740,	7740

2630	*2630	TAD PNTCNT	
2631	1136	TAD M77	
2632	1253	SEA	/CHECK COUNTER
2633	7402	HLT	/JMP COUNTER WRONG
2634	1447	TAD I K7737	
2635	1047	TAD K7737	
2636	7440	SEA	/CHECK STORED ADDRESS
2637	7402	HLT	/JMS FAILED
2640	3447	DCA I K7737	/CLEAR STORED ADDRESS
2641	1136	TAD PNTCNT	
2642	7001	IAC	/ADVANCE COUNTER
2643	3136	DCA PNTCNT	

2644	1251	/JMS TEST 18	COUNTER=100
2645	3654	TAD RK13	
2646	1252	DCA I K7700	
2647	3431	TAD RK14	
2650	3431	DCA I K100	
2651	5545	JMP I K100	
2652	4446	JMP I K2660	
2653	7701	JMS I K7677	
2654	7700	M77,	-77
		K7700,	7700

2660 *2660
 2660 1136 TAD PNTCNT
 2661 1303 TAD M100
 2662 7440 SEA /CHECK COUNTER WRONG
 2663 7402 HLT /JMS COUNTER WRONG
 2664 1446 TAD I K7677
 2665 1046 TAD K7677
 2666 7440 SEA /CHECK STORED ADDRESS
 2667 7402 HLT /JMS FAILED
 2670 3446 DCA I K7677 /CLEAR STORED ADDRESS
 2671 1136 TAD PNTCNT
 2672 7001 IAC /ADVANCE COUNTER
 2673 3136 DCA PNTCNT

2674 1301 /JMS TEST 19 COUNTER=101
 2675 3704 TAD RK15
 2676 1302 DCA I K7600
 2677 3432 TAD RK16
 2700 3432 DCA I K200
 2701 3546 JMP I K200
 2702 4445 JMP I K2710
 2703 7700 JMS I K7577
 2704 7600 -100
 K7600, 7600

2710 *2710
 2710 1136 TAD PNTCNT
 2711 1333 TAD M101
 2712 7440 SEA /CHECK COUNTER WRONG
 2713 7402 HLT /JMP COUNTER WRONG
 2714 1445 TAD I K7577
 2715 1045 TAD K7577
 2716 7440 SEA /CHECK STORED ADDRESS
 2717 7402 HLT /JMS FAILED
 2720 3445 DCA I K7577 /CLEAR STORED ADDRESS
 2721 1136 TAD PNTCNT
 2722 7001 IAC /ADVANCE COUNTER
 2723 3136 DCA PNTCNT

2724 1331 /JMS TEST 20 COUNTER=102
 2725 3734 TAD RK17
 2726 1332 DCA I K7400
 2727 3433 TAD RK18
 2730 3433 DCA I K400
 2731 3547 JMP I K400
 2732 4444 JMP I K2740
 2733 7677 JMS I K7377
 2734 7400 -101
 K7400, 7400

2740 *2740
 2740 1136 TAD PNTCNT

2741 1363 TAD M102
 2742 7440 SEA /CHECK COUNTER
 2743 7402 HLT /JMP COUNTER WRONG
 2744 1444 TAD I K7377
 2745 1044 TAD K7377
 2746 7440 SEA /CHECK STORED ADDRESS
 2747 7402 HLT /JMS FAILED
 2750 3444 DCA I K7377 /CLEAR STORED ADDRESS
 2751 1136 TAD PNTCNT /ADVANCE COUNTER
 2752 7001 IAC
 2753 3136 DCA PNTCNT

COUNTER=103

/JMS TEST 21
 2754 1361 TAD RK19
 2755 3764 DCA I K7000
 2756 1362 TAD RK20
 2757 3434 DCA I K1000
 2760 5434 JMP I K1000
 2761 5550 JMP I K3000
 2762 4443 JMS I K6777
 2763 7676 M102, -102
 2764 7000 K7000,

*3000

3000 TAD PNTCNT
 3001 1136 TAD M103
 3002 7440 SEA /CHECK COUNTER
 3003 7402 HLT /JMP COUNTER WRONG
 3004 1443 TAD I K6777
 3005 1043 TAD K6777
 3006 7440 SEA /CHECK STORED ADDRESS
 3007 7402 HLT /JMS FAILED
 3010 3443 DCA I K6777 /CLEAR STORED ADDRESS
 3011 1136 TAD PNTCNT /ADVANCE COUNTER
 3012 7001 IAC
 3013 3136 DCA PNTCNT

COUNTER=104

/JMS TEST 22
 3014 1221 TAD RK21
 3015 3624 DCA I K6000
 3016 1222 TAD RK22
 3017 3435 DCA I K2000
 3020 5435 JMP I K2000
 3021 5551 JMP I K3030
 3022 4442 JMS I K5777
 3023 7675 M103, -103
 3024 6000 K6000,

*3030

3030 TAD PNTCNT
 3031 1136 TAD M104
 3032 7440 SEA /CHECK COUNTER
 3033 7402 HLT /JMP COUNTER WRONG
 3034 1442 TAD I K5777

3035 1042 TAD K5777 /CHECK STORED ADDRESS
 3036 7440 SEA /JMS FAILED
 3037 7402 HLT /CLEAR STORED ADDRESS
 3040 3442 DCA I K5777 /ADVANCE COUNTER
 3041 1136 TAD PNTCNT
 3042 7001 IAC
 3043 3136 DCA PNTCNT

3044 1251 /JMS TEST 23 COUNTER=105
 3045 3054 TAD RK23
 3046 1252 DCA I K4001
 3047 3437 TAD RK24
 3050 5437 DCA I K3777
 3051 5552 JMP I K3777
 3052 4436 JMP I K3060
 3053 7674 RK23,
 3054 4001 RK24,
 -104
 K4001, 4001

*3060
 3060 3060 TAD PNTCNT
 3061 1136 TAD M105
 3062 7440 SEA /CHECK COUNTER
 3063 7402 HLT /JMP COUNTER WRONG
 3064 1436 TAD I K4000
 3065 1036 TAD K4000
 3066 7440 SEA /CHECK STORED ADDRESS
 3067 7402 HLT /JMS FAILED
 3070 3436 DCA I K4000 /CLEAR STORED ADDRESS
 3071 1136 TAD PNTCNT /ADVANCE COUNTER
 3072 7001 IAC
 3073 3136 DCA PNTCNT

3074 1301 /JMS TEST 24 COUNTER=106
 3075 3704 TAD RK25
 3076 1302 DCA I K2001
 3077 3442 TAD RK26
 3100 0442 DCA I K5777
 3101 0553 JMP I K5777
 3102 4435 JMP I K3110
 3103 7673 JMS I K2000
 3104 2001 -105
 K2001, 2001

3110 *3110
 3110 1136 TAD PNTCNT
 3111 1333 TAD M106
 3112 7440 SEA /CHECK COUNTER
 3113 7402 HLT /JMP COUNTER WRONG
 3114 1435 TAD I K2000
 3115 1035 TAD K2000
 3116 7440 SEA /CHECK STORED ADDRESS
 3117 7402 HLT /JMS FAILED
 3120 3435 DCA I K2000 /CLEAR STORED ADDRESS

3121 1136 TAD PNTCNT /ADVANCE COUNTER
3122 7001 IAC /ADVANCE COUNTER
3123 3136 DCA PNTCNT /ADVANCE COUNTER

3124 1331 /JMS TEST 25 COUNTER=107
3125 3734 TAD RK27
3126 1332 DCA I K1001
3127 3443 TAD RK28
3130 5443 DCA I K6777
3131 5554 JMP I K6777
3132 4434 JMP I K3140
3133 7672 JMS I K1000
3134 1001 -106
1001 K1001,

*3140
3140 1136 TAD PNTCNT
3141 1363 TAD M107
3142 7440 SZA /CHECK COUNTER WRONG
3143 7402 HLT /JMP COUNTER WRONG
3144 1434 TAD I K1000
3145 1034 TAD K1000
3146 7440 SZA /CHECK STORED ADDRESS
3147 7402 HLT /JMS FAILED
3150 3434 DCA I K1000 /CLEAR STORED ADDRESS
3151 1136 TAD PNTCNT /ADVANCE COUNTER
3152 7001 IAC /ADVANCE COUNTER
3153 3136 DCA PNTCNT /ADVANCE COUNTER

3154 1361 /JMS TEST 26 COUNTER=110
3155 3764 TAD RK29
3156 1362 DCA I K401
3157 3444 TAD RK30
3160 5444 DCA I K7377
3161 5555 JMP I K7377
3162 4433 JMP I K3200
3163 7671 JMS I K400
3164 0401 -107
401 K401,

*3200
3200 1136 TAD PNTCNT
3201 1223 TAD M110
3202 7440 SZA /CHECK COUNTER WRONG
3203 7402 HLT /JMP COUNTER WRONG
3204 1433 TAD I K400
3205 1033 TAD K400
3206 7440 SZA /CHECK STORED ADDRESS
3207 7402 HLT /JMS FAILED
3210 3433 DCA I K400 /CLEAR STORED ADDRESS
3211 1136 TAD PNTCNT /ADVANCE COUNTER
3212 7001 IAC /ADVANCE COUNTER
3213 3136 DCA PNTCNT /ADVANCE COUNTER

3214 1221 /JMS TEST 27 COUNTER=111
 3215 3624 TAD RK31
 3216 1222 DCA I K201
 3217 3445 TAD RK32
 3220 5445 DCA I K7577
 3221 5556 JMP I K7577
 3222 4432 JMP I K3230
 3223 7670 JMS I K200
 3224 0201 -110
 201

*3230
 3230 TAD PNTCNT
 3231 1136 TAD M111
 3231 1253
 3232 7440 SEA
 3233 7402 HLT
 3234 1432 TAD I K200
 3235 1032 TAD K200
 3236 7440 SEA
 3237 7402 HLT
 3240 3432 DCA I K200
 3241 1136 TAD PNTCNT
 3242 7001 IAC
 3243 3136 DCA PNTCNT

/CHECK COUNTER
 /JMP COUNTER WRONG
 /CHECK STORED ADDRESS
 /JMS FAILED
 /CLEAR STORED ADDRESS
 /ADVANCE COUNTER

3244 1251 /JMS TEST 28 COUNTER =112
 3245 3654 TAD RK33
 3246 1252 DCA I K101
 3247 3446 TAD RK34
 3250 5446 DCA I K7677
 3251 5557 JMP I K7677
 3252 4431 JMP I K3260
 3253 7667 JMS I K100
 3254 0101 -111
 101

*3260
 3260 1136 TAD PNTCNT
 3261 1303 TAD M112
 3262 7440 SEA
 3263 7402 HLT
 3264 1431 TAD I K100
 3265 1031 TAD K100
 3266 7440 SEA
 3267 7402 HLT
 3270 3431 DCA I K100
 3271 1136 TAD PNTCNT
 3272 7001 IAC
 3273 3136 DCA PNTCNT

/CHECK COUNTER
 /JMP COUNTER WRONG
 /CHECK STORED ADDRESS
 /JMS FAILED
 /CLEAR STORED ADDRESS
 /ADVANCE COUNTER

/JMS TEST 29 COUNTER=113
 3274 1301 TAD RK35
 3275 3704 DCA I K41
 3276 1302 TAD RK36

3277	3447	DCA I K7737	
3300	5447	JMP I K7737	
3301	5560	JMP I K3310	
3302	4430	RK35, JMS I K40	
3303	7666	M112, -112	
3304	0041	K41, 41	
3310	*3310		
3310	1136	TAD PNTCNT	
3311	1333	TAD M113	
3312	7440	SEA	/CHECK COUNTER
3313	7402	HLT	/JMP COUNTER WRONG
3314	1430	TAD I K40	
3315	1030	TAD K40	
3316	7440	SEA	/CHECK STORED ADDRESS
3317	7402	HLT	/JMS FAILED
3320	3430	DCA I K40	/CLEAR STORED ADDRESS
3321	1136	TAD PNTCNT	
3322	7001	IAC	/ADVANCE COUNTER
3323	3136	DCA PNTCNT	

3324	1331	/JMS TEST 30 COUNTER=114	
3325	3734	TAD RK37	
3326	1332	DCA I K21	
3327	3450	TAD RK38	
3330	5450	DCA I K7757	
3331	5561	JMP I K7757	
3332	4427	JMP I K3340	
3333	7665	JMS I K20	
3334	0021	M113, -113	
		K21, 21	

3340	*3340		
3340	1136	TAD PNTCNT	
3341	1363	TAD M114	
3342	7440	SEA	/CHECK COUNTER
3343	7402	HLT	/JMP COUNTER WRONG
3344	1427	TAD I K20	
3345	1027	TAD K20	
3346	7440	SEA	/CHECK STORED ADDRESS
3347	7402	HLT	/JMS FAILED
3350	3427	DCA I K20	/CLEAR STORED ADDRESS
3351	1136	TAD PNTCNT	
3352	7001	IAC	/ADVANCE COUNTER
3353	3136	DCA PNTCNT	

3354	1361	/JMS TEST 31 COUNTER=115	
3355	3764	TAD RK39	
3356	1362	DCA I K11	
3357	3451	TAD RK40	
3360	5451	DCA I K7767	
3361	5562	JMP I K7767	
		JMP I K3400	
		RK39,	

3362	4426	RK40,	JMS I K10	
3363	7664	M114,	-114	
3364	0011	K11,	11	
3400		*3400		
3400	1136		TAD PNTCNT	
3401	1223		TAD M115	
3402	7440		SEA	/CHECK COUNTER
3403	7402		HLT	/JMP COUNTER WRONG
3404	1426		TAD I K10	
3405	1026		TAD K10	
3406	7440		SEA	/CHECK STORED ADDRESS
3407	7402		HLT	/JMS FAILED
3410	3426		DCA I K10	/CLEAR STORED ADDRESS
3411	1136		TAD PNTCNT	
3412	7001		IAC	/ADVANCE COUNTER
3413	3136		DCA PNTCNT	

3414	1221		/JMS TEST 32	COUNTER=116
3415	3624		TAD RK41	
3416	1222		DCA I K5	
3417	3492		TAD RK42	
3420	5492		DCA I K7773	
3421	5593		JMP I K7773	
3422	4425	RK41,	JMP I K3430	
3423	7603	RK42,	JMS I K4	
3424	0005	M115,	-115	
		K5,	5	

3430		*3430		
3430	1136		TAD PNTCNT	
3431	1293		TAD M116	
3432	7440		SEA	/CHECK COUNTER
3433	7402		HLT	/JMP COUNTER WRONG
3434	1425		TAD I K4	
3435	1025		TAD K4	
3436	7440		SEA	/CHECK STORED ADDRESS
3437	7402		HLT	/JMS FAILED
3440	3425		DCA I K4	/CLEAR STORED ADDRESS
3441	1136		TAD PNTCNT	
3442	7001		IAC	/ADVANCE COUNTER
3443	3136		DCA PNTCNT	

3444	1251		/JMS TEST 33	COUNTER=117
3445	3654		TAD RK43	
3446	1252		DCA I K3	
3447	3493		TAD RK44	
3450	5453		DCA I K7775	
3451	5564		JMP I K7775	
3452	4424	RK43,	JMP I K3460	
3453	7662	RK44,	JMS I K2	
3454	0003	M116,	-116	
		K3,	3	

*3460
 3460 TAD PNTCNT
 1136 TAD M117
 3461 /CHECK COUNTER
 3462 /JMP COUNTER WRONG
 7440
 3463 HLT
 7402
 3464 TAD I K2
 1424
 3465 TAD K2
 1024
 3466 /CHECK STORED ADDRESS
 7440 //JMS FAILED
 3467 /CLEAR STORED ADDRESS
 7402 /ADVANCE COUNTER
 3470
 3471 TAD PNTCNT
 1136
 3472 IAC
 7001
 3473 DCA PNTCNT
 3136

/JMS TEST 34 COUNTER=120
 TAD RK45
 DCA I K2
 TAD RK46
 DCA I K7776
 JMP I K7776
 JMP I K3510
 JMS I K1
 -117
 RK45,
 RK46,
 M117,

*3510
 3510 TAD PNTCNT
 1136 TAD M120
 3511 /CHECK COUNTER
 3512 /JMP COUNTER WRONG
 7440
 3513 HLT
 7402
 3514 TAD I K1
 1423
 3515 TAD K1
 1023
 3516 /CHECK STORED ADDRESS
 7440 //JMS FAILED
 3517 /CLEAR STORED ADDRESS
 7402 /ADVANCE COUNTER
 3520
 3521 TAD PNTCNT
 1136
 3522 IAC
 7001
 3523 DCA PNTCNT
 3136

/JMS TEST 35 COUNTER=121
 TAD RK47
 DCA I K1
 TAD RK48
 DCA I K7777
 JMP I K7777
 JMP I K3540
 JMS I K0
 -120
 RK47,
 RK48,
 M120,

*3540
 3540 TAD PNTCNT
 1136 TAD M121
 3541 /CHECK COUNTER
 3542 /JMP COUNTER WRONG
 7440
 3543 HLT
 7402

3544	1422	TAD I K0	
3545	1022	TAD K0	
3546	7440	SEA	/CHECK STORED ADDRESS
3547	7402	HLT	/JMS FAILED
3550	3422	DCA I K0	/CLEAR STORED ADDRESS
3551	1371	TAD BLCNT	
3552	7001	IAC	
3553	3371	DCA BLCNT	
3554	1371	TAD BLCNT	
3555	1372	TAD LIMIT	
3556	7640	SEA CLA	
3557	8766	JMP I BEL-1	
3560	3371	DCA BLCNT	
3561	1367	TAD BEL	
3562	6046	TLS	
3563	6041	T8F	
3564	8363	JMP :-1	
3565	5766	JMP I .+1	
3566	4200	4200	
3567	0207	207	
3570	7657	-121	
3571	0000	BLCNT, 0	
3572	1200	LIMIT, -6600	

