

OS - PRINTER OUTPUT

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Step	Instruction	Address	Comment	Octal	Step
00	*ENTRY		PRINTER OUTPUT	← BA →	00
01	JSBR	I2 1725	STA Source H reg at entry		01
02	Pi=3746-				02
03	LDA	Z 0200	} Save return address		03
04	SFB	Z 0216			04
05	STA	I2 B			05
06	JSBR	I2 1625	SUSPEND		06
07	JSBR	I2 1721	LDA Outer Buffers Full Count		07
10	Pi=3740-				10
11	CMPL	Z 0202	CFZ		11
12	JUMP	Z 0206	Process until an Outer Buffer is free		12
13	STB	Z 0160	→ Outer Buffers Full Count		13
14	ADB	Z 0206			14
15	STB	Z 0161	→ A reg. counts at entry		15
16	ADB	Z 0202			16
17	STB	Z 0162	→ → Outer Buffer A		17
20	INCB				20
21	STB	Z 0163	→ → Outer Buffer B		21
22	SFB	Z 0214			22
23	LDA	I2 B	= Buffer (Chars) of Inner Buffer		23
24	INCA				24
25	STA	Z 0175	Counter		25
26	LDA	I2 0162	→ Outer Buffer A (Target Buffer)		26
27	STA	Z 0170	→ Buffer Word φ		27
30	ADA	Z 0170	x2		30
31	ADA	Z 0204			31
32	STA	Z 0176	Target x2		32
33	STA	Z 0171	Start x2		33
34	LDA	Z 0066	→ Inner Buffer		34
35	ADA	Z 0066	x2		35
36	STA	Z 0177	Source x2		36
37	LDA	Z 0201	000001 (00-400 line feed code)		37
40	JUMP	Z 0257			40
41	LDB	Z 0177	Source x2	↓ NEXT SOURCE CHAR.	41
42	INSZ	Z 0177			42
43	JSBR	I2 1415	Load Absolute Byte		43
44	SKC				44
45	JUMP	Z 0251			45
46	STB	Z 0174			46
47	LDB	Z 0374	"SP SP" } Space into Inner Buffer		47
50	STB	I2 0174			50
51	CHPA	Z 0240	"NUL SP" ?		51
52	JUMP	Z 0263			52
53	SKGT				53
54	LDA	Z 0240	"NUL SP"		54
55	JUMP	Z 0263			55
56					56
57					57
60					60
61					61
62					62
63	LDB	Z 0176	Target x2	* STORE CHAR. IN TARGET	63
64	INSZ	Z 0176			64
65	CHPA	Z 0240	"NUL SP"		65
66	SKIP				66
67	STB	Z 0172	→ Load new source character		67
70	JSBR	I2 1416	Load Absolute Byte		70
71	DESZ	Z 0175	Counter		71
72	JUMP	Z 0241	Auto load source character		72
73	LDA	Z 0172	→ Last unspaced * END of BUFFER		73
74	SFA	Z 0171	Start x2		74
75	STA	I2 0170	= Character Count (into Buffer Word φ)		75
76	INSZ	Z 0170	→ Buffer Word 1		76
77	LDB	Z A	= Character Count		77

OS - Printer Output (continued)

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Step	Instruction	Address	Comment	Octal	Step
00	LDA	IZ 0161	= Area constants at entry		00
01	INSZ	Z 0161	→ Outstanding line feed count		01
02	APOS				02
03	JUMP	0312	Vertical Tab requested		03
04	AND				04
05	JUMP	0312	Form Feed requested		05
06	ADA	IZ 0161	↑ Update Outstanding line feed count		06
07	STA	IZ 0161	↓		07
10	BND				10
11	JUMP	0327	Bypass output - this is a blank line		11
12	STA	IZ 0170	Buffer word 1		12
13	CLA				13
14	STA	IZ 0161	Clear Outstanding line feed count		14
15	LDA	IZ 0160	= Outer Buffers In Use Count		15
16	A=φ				16
17	JUMP	0326	Output is in progress - printer is busy.		17
20	LDA	IZ 0162	} Exchange Buffers		20
21	LDB	IZ 0163			21
22	STA	IZ 0163			22
23	STB	IZ 0162			23
24	JSBR	I 0377	START PRINTER (Area → Buffer)		24
25	INT ON			000004	25
26	INSZ	IZ 0160	Outer Buffers In Use Count		26
27	JSBR	IZ 1625	SUSPEND		27
30	JSBR	IZ 1721	LDA Suspend/Cancel request word		30
31	P ₁ = 3741 -				31
32	LRA/INCA/ASB		(Skips if D16 was set)		32
33	DESZ	IZ B	Suspend/Cancel request word		33
34	JUMP	0353	Continue		34
35	SFB	Z 0206	↑ SUSPEND printer		35
36	LDA	IZ B	= Printer Identification (PES II)		36
37	JSBR	IZ 1725	STA		37
40	P ₁ = 131705				40
41	LDA	Z 0046	Last task to use COMMAND rfu		41
42	JSBR	IZ 1654	FLASH Single Status "PRINTER SUSPENDED"		42
43	P ₁ = 131700				43
44	JSBR	IZ 1625	SUSPEND		44
45	JSBR	IZ 1721	LDA Suspend/Cancel request word		45
46	P ₁ = 3741 -				46
47	AND				47
50	JUMP	0344	Resume Suspend		50
51	APOS				51
52	JUMP	0356	Cancel		52
53	SFB	Z 0211			53
54	LDA	IZ B	= Return Address		54
55	JUMP	IZ A	Return		55
56	JSBR	IZ 1741	Hold Pad * CANCEL printing		56
57	P ₁ = 131723 1/2		"PRINT CANCELED BY OPERATOR"		57
60	P ₂ = 3600 -				60
61	P ₃ = 31 clons			000037	61
62	LDA	Z 0203	3 line feeds.		62
63	JSBR	IZ 1644	Print Line (re-enter routine!)		63
64	LDA	Z 0361	177777		64
65	JSBR	IZ 1725	STA Suspend/Cancel request word (Manual)		65
66	P ₁ = 3741 -				66
67	CLA				67
70	SFB	Z 0202			70
71	STA	IZ B	Cancel User's Termination Request		71
72	ADB	Z 0204			72
73	LDA	IZ B	= Print R for Unpacking		73
74	SFB	Z 0207			74
75	STA	IZ B	= Printer Control word (Resend Print R)		75
76	JUMP	Z 1406	Return to Printer Control Program		76
77			→ START PRINTER 3/0645		77

OS - SERIAL OUTPUT

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Step	Instruction	Address	Comment	Octal	Step
00			→ RETURN ADDRESS	/	00
01			→ Oct x2	/	01
02			→ Effects Load	/	02
03	*ENTRY		SERIAL OUTPUT SERVICE	← PA →	03
04	LDA	I2 B			04
05	STA	0400	Return Address		05
06	CASB				06
07	LDA	I2 B	→ Service Ktr.		07
10	HDB	0477	010400		10
11	STB	0441	"DATA/START"		11
12	ADB	Z 0326	000600		12
13	STB	0420	"DATA/STOP"		13
14	DECA				14
15	STA	0402	→ Special Effects Load		15
16	DECA				16
17	STA	0401	→ Oct x2		17
20	DATA/STOP			/	20
21	LDB	I 0401	Oct x2		21
22	BNA				22
23	JUMP	I 0400	Dismiss - Echo call only.		23
24	→ A=A/CHA				24
25	JUMP	0435	Status present - Abort		25
26	→ LDA	I 0402	Effects Load		26
27	A=0				27
30	JUMP	I2 A	to Special Effects Controller		30
31	→ INSZ	I 0401	Oct x2		31
32	JSCR	0461	Load Absolute Byte		32
33	A=0				33
34	JUMP	I 0403	Return to Service Ktr. / to Special Char.		34
35	→ STA	I 0401	Status Controller		35
36	JUMP	I 0400	Dismiss - Completed.		36
37	CHB		(End Special Effects)		37
40	STB	I 0402	Set Special Effects		40
41	DATA/START		*START		41
42	JUMP	I 0400	Dismiss - Output in progress		42
43	CHA		*CAN + 48x "NUL"		43
44	DESZ	0401	→ Status (holds count)		44
45	DESZ	I 0401	Loop Counter		45
46	JUMP	0441	Output NUL		46
47	→ JUMP	0437	End special effects & output "NUL"		47
50	LDA	Z 0212	"NUL LF"		50
51	JUMP	0437	End special effect & output "LF"		51
52	LDA	Z 0212	"NUL LF"		52
53	HDB	0457	→ x + "CAN"		53
54	JUMP	0440	Store Effects Control Word to Start Output		54
55	LDA	Z 0230	"NUL CAN"		55
56	JUMP	0437	End Special Effects & output "CAN"		56
57			→ x + "CAN"	4/0455	57
60					60
61	*ENTRY		LOAD ABSOLUTE BYTE (INT. OFF. ADDR)	← PA →	61
62	CAC/RSB				62
63	BNEG				63
64	JUMP	0467			64
65	→ CASB				65
66	HDB	Z 0356	R216		66
67	LDA	I2 B			67
70	SRC				70
71	SWAPT				71
72	→ ANVA	Z 1752	Dot in Byte		72
73	JUMP	I 0461	Return.		73
74				015400	74
75				003100	75
76				003200	76
77				010400	77

OS - SERIAL INPUT

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Step	Instruction	Address	Comment	Octal	Step
00			→ COMPLETION ADDRESS (0600)	-	00
01			→ FLASHBACK IDENTIFIER	-	01
02			→ In x2	-	02
03			→ Count	-	03
04			→ Input Count / Status / Actual EOF	-	04
05	*ENTRY		SERIAL INPUT SERVICE	← BA →	05
06	CASB				06
07	STB	0500	Completion Address		07
10	LDA	I2 B			10
11	ADB	0476	003200		11
12	STB	0531	"DATA2B"		12
13	ADB	Z 0326	000600		13
14	STB	0552	"START"		14
15	ADB	Z 0341	002000		15
16	STB	0555	"IOPAS" (delete)		16
17	ADB	0475	003100	Test location	17
20	STB	0532	"DATA1A/STOP"		20
21	DECA				21
22	STA	0504	→ Input Count / Status / Actual EOF		22
23	DECA				23
24	STA	0503	→ Count		24
25	DECA				25
26	STA	0502	→ In x2		26
27	DECA				27
30	STA	0501	→ Flashback Identifier		30
31	DATA2B			-	31
32	DATA1A/STOP			-	32
33	B = φ				33
34	JUMP	0554	Status		34
35	→ ANDA	Z 0375	000177 Mask out parity bit		35
36	→ CMPA	Z 0375	"NULL DEL" "Null Out?"		36
37	→ LDA	Z 0203	"NULL ETX"		37
40	→ CMPA	Z 0240	"NULL SP"		40
41	→ JUMP	0547	Insert		41
42	→ SKNET				42
43	→ JUMP	0547	Insert		43
44	→ CMPA	Z 0210	"NULL BS"		44
45	→ JUMP	0557	Backspace		45
46	→ JUMP	I 0505	Return to EOF location		46
47	STA	0577	Flashback character *Insert		47
50	JUMP	I2 0571	Convert to upper case (Pats)		50
51	JSBR	0673	Insert character		51
52	START			-	52
53	JUMP	I2 0010	Dismiss (accepting further input)		53
54	CASL/CASB		*Status		54
55	IOPAS			-	55
56	JUMP	0631	Complete		56
57	LDB	I 0504	Input Count *Backspace		57
60	STA	I 0504	Actual EOF		60
61	DECB				61
62	→ POS				62
63	→ JUMP	0632	Force EOF - Backspace began beginning		63
64	→ STB	I 0504	Input Count		64
65	DESZ	I 0502	In x2		65
66	INSZ	I 0503	Count (from 0677)		66
67	JSBR	0600	Flashback		67
70	JUMP	0552	Start		70
71	LDB	I 0501	(from 0550)		71
72	→ BNEG		Retain lower case		72
73	→ JSBR	I2 1772	Convert to upper case		73
74	→ JUMP	0551			74
75	LDA	Z 0215	"NULL CR" (from 0756)		75
76	JUMP	0547	Insert		76
77			Flashback character	-	77

OS- Serial Teletype rtrns.

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Step	Instruction	Address	Comment	Octal	Step
00	* ENTRY		FLASHBACK	← BIT →	00
01	LDB	I 0501	= Flashback clearing code		01
02	CLSB				02
03	BNP				03
04	JUMP	I 0600	Return		04
05	→ ADB	0474	015400		05
06	STB	0607	"DATA/START"		06
07	DATA/START		(0607/0600)		07
10	JUMP	I 0600	Return.		10
11	LDB	I 0502	In 2	(from 0675)	11
12	CAC/ASB				12
13	SKC				13
14	SWAPA				14
15	→ STA	0607	Same		15
16	LDA	Z 1752	Bottom byte		16
17	SHNC				17
20	SWAPA		Top byte		20
21	→ ANDA	I2 B			21
22	IOAA	0607			22
23	STA	I2 B			23
24	INSZ	I 0504	Input Count		24
25	INSZ	I 0502	In x 2		25
26	LDA	0577	Flashback character		26
27	JSR	0600	Flashback		27
30	JUMP	I 0672	Return		30
31	STB	I 0504	Status (Bit) & EOF	* Complete	31
32	CMA				32
33	STA	I 0502	Indicate not in use		33
34	JUMP	I2 0010	Interrupts - completed.		34
35	JUMP				35
36	STA	I 0504	Actual EOF	* Insert NUL.	36
37	LDB	I 0502	In 2		37
40	CAC/ASB				40
41	LDA	Z 1752	Bottom byte		41
42	SHNC				42
43	SWAPA		Top byte		43
44	→ ANDA	I2 B			44
45	STA	I2 B			45
46	JUMP	0632	Complete.		46
47	LDA	Z 0255	"NUL -"		47
50	STA	0577	Flashback character		50
51	JSR	0673	Insert character		51
52	LDA	Z 0202	"NUL STX"		52
53	JUMP	0636	Insert NUL, and complete.		53
54	LDB	I 0504	= Input Count	* EOL -	54
55	B = φ		First character?		55
56	JUMP	0647	No - exit "-" and accept		56
57	→ LDA	Z 0203	"NUL ETX"		57
60	JUMP	0636	Insert NUL, and complete		60
61					61
62					62
63					63
64					64
65					65
66					66
67					67
70					70
71					71
72					72
73	* ENTRY		INSERT CHARACTER	← BIT →	73
74	DESZ	I 0503	Count		74
75	JUMP	0611	Continue		75
76	→ LDA	Z 0207	"NUL BEN" Flashback char. & Too long		76
77	JUMP	0566			77

OS- Serial Service #TUS.

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Step	Instruction	Address	Comment	Octal	Step
00	CMPA	Z 0216	"NUL SO" * 24 line VDU Output		00
01	LDA	Z 0227	"NUL ETB"		01
02	CMPA	Z 0230	"NUL CAN"		02
03	JUMP	0407	Special Effect (Timing Delay)		03
04	JUMP	0441	Start		04
05	CMPA	Z 0215	"NUL CR" * 24 line VDU Input		05
06	JUMP	0547	Insert		06
07	CMPA	Z 0212	"NUL LF"		07
10	JUMP	0714	Abort		10
11	CMPA	Z 0234	"NUL FS" (Enter -)		11
12	JUMP	0654			12
13	CMPA	Z 0235	"NUL GS" (Enter +)		13
14	LDA	Z 0202	"NUL STX"		14
15	CMPA	Z 0230	"NUL CAN"		15
16	LDA	Z 0226	"NUL SYN"		16
17	JUMP	0636	Insert NUL		17
20	CMPA	Z 0215	"NUL CR" * 16 line VDU Output		20
21	JUMP	1414	Special Effect ("CR" + "LF")		21
22	JUMP	0702	Home		22
23	CMPA	Z 0215	"NUL CR" * 16 line VDU Input		23
24	SKIP				24
25	JUMP	0731	Endscreen & Open VDUs		25
26	LDB	Z 0212	"NUL LF"		26
27	STB	- 0577	Flourish character		27
30	JUMP	0551	Insert character for start		30
31	CMPA	Z 0206	"NUL ACK" Cfr Yes		31
32	JUMP	0714	Abort		32
33	CMPA	Z 0225	"NUL NAK" Cfr No		33
34	JUMP	0654	Abort -		34
35	JUMP	0707	Home		35
36	CMPA	Z 0230	"NUL CAN" * ANK Input		36
37	LDA	Z 0215	"NUL CR"		37
40	CMPA	Z 0215	"NUL CR"		40
41	JUMP	1416	Special Effect ("CR" + "LF" + "CAN")		41
42	JUMP	0441	Start		42
43	CMPA	Z 0227	"NUL ETB" * ANK Input		43
44	LDA	Z 0202	"NUL STX"		44
45	CMPA	Z 0230	"NUL CAN"		45
46	LDA	Z 0202	"NUL ETX"		46
47	CMPA	Z 0211	"NUL TAB"		47
50	LDA	Z 0226	"NUL SYN"		50
51	CMPA	Z 0235	"NUL GS"		51
52	JUMP	0654	Abort -		52
53	CMPA	Z 0215	"NUL CR"		53
54	LDA	Z 0202	"NUL STX"		54
55	CMPA	Z 0212	"NUL LF"		55
56	JUMP	0575	Insert "CR"		56
57	JUMP	0636	Insert NUL		57
60					60
61					61
62					62
63					63
64					64
65					65
66					66
67					67
70					70
71					71
72					72
73					73
74					74
75					75
76					76
77					77

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		00					00
		01					01
		02					02
		03					03
		04					04
		05			Recently degraded code (vacuum!)		05
		06					06
		07					07
		10					10
		11					11
		12					12
		13					13
		14	JSR	R 1675	Assign sub table		14
		15	LDA	Z 1666	Success flag		15
		16	AND				16
		17	JUMP	1635	exit		17
		20	JSR	R 1725	STA 1 parameter (local)		20
		21	R=3744-				21
		22	JUMP	1635			22
		23			JMP		23
		24			AND		24
		25			AND		25
		26					26
		27					27
		30					30
		31					31
		32					32
		33					33
		34					34
		35					35
		36					36
		37					37
		40					40
		41					41
		42					42
		43					43
		44					44
		45					45
		46					46
		47					47
		50					50
		51					51
		52					52
		53					53
		54					54
		55					55
		56					56
		57					57
		60					60
		61					61
		62					62
		63					63
		64					64
		65					65
		66	ENTRY		METACODE Rtn.	← BA →	66
		67	LDB	I 1066	R → R201		67
		70	JSR	IL 1414	Handle Absolute Byte		70
		71	NOOP				71
		72	STB	1207	ASCIZ		72
		73	INSZ	1066			73
		74	LDA	I 1066	R → Metacode		74
		75	JSR	Z 1630	Handle Offset		75
		76	STA	1210			76
		77	INSZ	1066			77

OS Molecular Pgm.

(cont)

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Step	Instruction	Address	Comment	Octal	Step
00	LDA	I 1066	=P3		00
01	ANDA	1224	077777		01
02	STA	1211	Character Count		02
03	LDA	I 1066	=P3		03
04	AMSB				04
05	JUMP	1302	ASCIZ → Molecular		05
06	LDA	I 1210	*Molecular → ASCII		06
07	INSZ	1210			07
10	LDB	1226			10
11	JSBR	1121			11
12	JSBR	1156			12
13	LDB	1225			13
14	JSBR	1121			14
15	JSBR	1150			15
16	LDB	I A			16
17	JSBR	1150			17
20	VUMP	1106			20
21	ENTRY		Divide		21
22	STB	1217			22
23	LDB	1221			23
24	STB	1215			24
25	CALC				25
26	CALC				26
27	APOS				27
30	JUMP	1144			30
31	SFA	I 1217			31
32	APOS				32
33	CALC				33
34	SFC		Molecular Routine		34
35	INCB				35
36	STAC				36
37	LDA	I 1217			37
40	DESC	1217			40
41	DESZ	1215			41
42	JUMP	1126			42
43	JUMP	I 1121			43
44	SFA	I 1217			44
45	ANEG				45
46	CAC				46
47	JUMP	1134			47
50	ENTRY		Output		50
51	STA	1212	Save		51
52	LDB	1223	+ Byte Addr. of Table Base		52
53	JSBR	I 1415	hard Address Size		53
54	DESZ	1211	Character Count		54
55	NOOP				55
56	ISTA	1213			56
57	A=0		url!		57
60	JUMP	1165	No.		60
61	LDA	I 1066	=P3		61
62	APOS				62
63	JUMP	1274	Exit condition - long url		63
64	NOOP				64
65	LDB	1207			65
66	INSZ	1207			66
67	LDA	1213			67
70	JSBR	I 1416	Store Address Size		70
71	LDA	1213	Buffer		71
72	JSBR	1200	Test for end.		72
73	LDA	1212	Address		73
74	JUMP	I 1150			74
75	ENTRY				75
76		115			76
77					77

OS - Metacode Routine

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(cont)

Step	Instruction	Address	Comment	Octal	Step
00	ENTRY				00
01	AND				01
02	JUMP	1274	End		02
03	LDA	1211	Count		03
04	AND				04
05	JUMP	1274	End		05
06	JUMP	I 1200	Return		06
07			Source x2	-	07
10			Target	-	10
11			Character Count	-	11
12			Save A	-	12
13			Buffer	-	13
14					14
15					15
16					16
17					17
20				CF3	20
21				CF6	21
22			End of table	4/1274 x2	22
23			Start of table	4/1243 x2	23
24				4/1234	24
25				4/1234	25
26				4/1242	26
27			CF50 x1	= 50	27
30			x2	100	30
31			x4	200	31
32			x8	400	32
33			x16	800	33
34			x32	1600	34
35			CF2500 x1		35
36			x2		36
37			x4		37
40			x8		40
41			x16		41
42			x32		42
43				NUL CR	43
44				SP "	44
45				% &	45
46				' (46
47) +	47
50				? -	50
51				. /	51
52				Φ 1	52
53			ASCII	2 3	53
54				4 5	54
55			look	6 7	55
56			-UP	8 9	56
57				A B	57
60			TABLE	C D	60
61				E F	61
62				G H	62
63				I J	63
64				K L	64
65				M N	65
66				O P	66
67				Q R	67
70				S T	70
71				U V	71
72				W X	72
73				Y Z	73
74	PHATC			End	74
75	(AGT)CB				75
76	JNSZ	I 1066			76
77	JUMP	I 1066			77

OS - Metacode Resotins

(Cont)

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Step	Instruction	Address	Comment	Octal	Step
00	CHT/COMH/CAC		* Error		00
01	JUMP	1275			01
02	LDA	1220	* ASCB/Meta.		02
03	STA	1214			03
04	LDB	1207			04
05	JUMP	1311			05
06	JSBR	1415	Load Absolute Byte (from 1331)		06
07	LDB	Z A			07
10	JUMP	1332			10
11	JSBR	1415	Load Absolute Byte		11
12					12
13					13
14	NOOP				14
15	NOOP				15
16					16
17					17
20					20
21					21
22					22
23					23
24					24
25					25
26					26
27					27
30					30
31	JUMP	1306			31
32					32
33					33
34					34
35					35
36					36
37					37
40					40
41					41
42					42
43					43
44					44
45					45
46					46
47					47
50					50
51					51
52					52
53					53
54					54
55					55
56					56
57					57
60					60
61					61
62					62
63					63
64	JSBR	1200			64
65	NOOP				65
66	DESL	1214			66
67	JUMP	1304			67
70	INSL	1210			70
71	JUMP	1302			71
72	MENTR/		A x 50		72
73	LSA				73
74	LDB	Z A			74
75	LSA				75
76	LSA				76
77	CAC/LSA				77

OS-

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Step	Instruction	Address	Comment	Octal	Step
00	ADB	Z A	(Molecular M)		00
01	LDA				01
02	SKNC				02
03	CASAL/OTSA				03
04	ADB	Z A			04
05	LDA	Z B			05
06	JUMP	I 1372			06
07	JESZ	0401	→ States * "CAN" + 48 x "NUL"		07
10	LDB	Z 0260	CF48		10
11	STB	I 0401	Set up loop counter		11
12	LDB	0464	→ Special Effect "CAN" + 48 x "NUL"		12
13	JUMP	0440	Store Effects Control Word & Start output		13
14	LDB	1465	→ "CR" + "LF" * "CR" + "LF"		14
15	JUMP	0440	Store Effects Control Word & Start output		15
16	LDB	1463	→ "CR" + "LF" + "CAN" * "CR" + "LF" + "CAN"		16
17	JUMP	0440	Store Effects Control Word & Start output		17
20					20
21					21
22					22
23					23
24					24
25					25
26					26
27					27
30					30
31					31
32					32
33					33
34					34
35					35
36					36
37					37
40	JSR	IL 1412	Skip if I/O Stu. → TASK CONTROL Pgm		40
41	JUMP	Z 1406	(Printer)		41
42	JSR	IL 1634	SPECIFY ESCAPE POINT		42
43	R=011405		(Error Handler)		43
44	JSR	1466	Make Task IDLE		44
45	LDA	Z 0040	= Task No.		45
46	STA	IL 0067	into 1st word of Special Buffer		46
47	JSR	IL 1640	GET "SYMBOL"		47
50	R=711762				50
51	JSR	IL 1670	FETCH NEXT Program.		51
52	R=002005				52
53	R=3716-		→ Program Name		53
54	JSR	IL 1652	GET "NOT FOUND"		54
55	R=711616				55
56	JUMP	1444	Retry.		56
57					57
60					60
61					61
62					62
63			→ "CR" + "LF" + "CAN" 4/0452		63
64			→ "CAN" + 48 x "NUL" 4/0443		64
65			→ "CR" + "LF" 4/0450		65
66	ENTRY		MAKE TASK IDLE	← BA →	66
67	CXA				67
70	JSR	IL 1614	Assign point @ p		70
71	JSR	IL 1643	Specify Default Restart address		71
72	R=011402				72
73	JSR	IL 1741	Modified "IDLE" to Program Name		73
74	R=711614				74
75	R=3716-				75
76	R=4chars				76
77	JUMP	I 1466	Retm.		77

OS - PAINTER CONTROL

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Step	Instruction	Address	Comment	Octal	Step
00	JSBR	IL 1721	LDA Completion Report Card. *PAINTER CTL.		00
01	R=3742-				01
02	CHSA				02
03	STA	Z 0170	=Task No. to be flushed		03
04	CHA				04
05	STA	IZ 3	Exec indicator		05
06	LDA	Z 0170	Task No.		06
07	AND				07
10	JUMP	1524	Flash not requested		10
11	JSBR	IL 1721	LDA Job Definition Label	Flash	11
12	R=3753-			"NAME"	12
13	JSBR	IL 1725	STA	if req.	13
14	R=131754				14
15	JSBR	IZ 1741	Move Card Program Name		15
16	R=3716-				16
17	R=131744				17
20	R=4 chms				20
21	LDA	Z 0170	Task No.	JUMP 1647	21
22	JSBR	IL 1654	FAIRY Stamp Station "PRINTED"		22
23	R=131743				23
24	JSBR	1466	Make Idle		24
25	JSBR	IZ 1625	SUSPEND		25
26	JSBR	IZ 1721	LDA Printer Control Word		26
27	R=3734-				27
30	CHPA	Z 0376	CF-1 Change of Q?		30
31	JUMP	1557	No.		31
32	JSBR	1734	Overline Termination	CHANGE Q	32
33	JSBR	IZ 1721	LDA Printer Control Word		33
34	R=3724-				34
35	STB	Z 0177	3734- → Printer Control Word		35
36	HDB	Z 0207			36
37	STB	Z 0176	3743- → Print Q No. for clearing		37
40	CHB/COMPB				40
41	STB	IZ 0177	Reset Printer Control Word = -1		41
42	STA	Z 0154	= Printer Control Word (old)		42
43	ANDA	Z 1752	Return Byte		43
44	CHPA	Z 0154			44
45	JUMP	1556	New Print Q No. specified		45
46	CHA		* "L" command		46
47	STA	IZ 0176	Switch to new print queue Q.		47
50	LDA	Z 0154	= Old Printer Control Word		50
51	JSBR	IZ 1675	ASSIGN FILE TABLE		51
52	INSZ	Z 0030	Synthetic Dictionary Counter		52
53	JSBR	IZ 1670	FETCH & LIMIT data-ops overlap.		53
54	R=002002				54
55	R=0/0211		Module 011		55
56	STA	IZ 0176	= Print Q No. for clearing (from 1545)		56
57	JSBR	IZ 1650	SHR/UNSHR/OL if not empty (from 1531)		57
60	JUMP	1525	Q empty - Wait for printing & clearing of Q.		60
61	JSBR	IZ 1721	LDA Reprint control		61
62	R=3576-				62
63	ANDA	1776	300000		63
64	CHPA	Z 0356	Bit 16		64
65	JUMP	Z 1402	to Control qn. (Ignore duplicate - no reprint requested)		65
66	ANEG				66
67	JUMP	1614	"Ordinary" operation (non-reprintable)		67
70	STA	Z 0154	Save original duplicate card & Post to Reprint Q		70
71	LDA	Z 0356	Bit 16		71
72	STA	IZ 3	3576 - Indicates Header is a duplicate		72
73	LDA	Z 0143			73
74	CHSA/CHVSA		"Write"		74
75	STA	Z 0143			75
76	JSBR	IZ 1623	LOADQ Write Header record		76
77	LDA	Z 0057	Max Print Q No.		77

OS - Printer Control (cont)

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Step	Instruction	Address	Comment	Octal	Step
00	DECA				00
01	SFA	Z 0051	Use Test No.		01
02	ADA	Z 0040	Current " "		02
03	JSBR	IZ 1614	Assign Print Q		03
04	JSBR	IZ 1647	POST to PREPARE QUEUE		04
05	R=0/0153				05
06	CHA				06
07	JSBR	IZ 1614	Assign Print Q & φ		07
10	JSBR	IZ 1646	UNSpool Header Record		10
11	R=0/0153				11
12	LDA	Z 0154	Duplicate " Lockouts		12
13	CASA				13
14	JSBR	IZ 1725	STA (1567)		14
15	R=3752-				15
16	LDA	Z 1666			16
17	ANφ		Security in progress?		17
20	JSBR	IZ 1667	No, so Store Control record.		20
21	JSBR	IZ 1721	LDA		21
22	R=3574-				22
23	ANDA		077777		23
24	JSBR	IZ 1725	STA	Program name from Spool Buffer to TCA	24
25	R=3716-				25
26	JSBR	IZ 1721	LDA		26
27	R=3575-				27
30	JSBR	IZ 1725	STA		30
31	R=3717-				31
32	JSBR	IZ 1721	LDA		32
33	R=3574-				33
34	JSBR	IZ 1675	Assign File Table	Jump 1014	34
35	JSBR	IZ 1723	Strip if Block Error		35
36	R=3574-		New Program Name		36
37	R=3744-		Program currently in partition		37
40	B=2 words				40
41	JSBR		1662 New program to be loaded		41
42	JSBR	IZ 1721	LDA Re-entry point		42
43	R=3736-				43
44	JUMP	IZ A	to Program		44
45					45
46					46
47	LDA	Z 0170			47
50	ANφ				50
51	CHA				51
52	JUMP		1582		52
53	* ENTRY		STOP if ORIGINAL	← BA →	53
54	LDB	Z 0074	→ TCA		54
55	ADB	Z 0232	3752-		55
56	LDB	IZ B	Reprint Flag		56
57	BNφ				57
60	INSZ		1653 (Skip if not reprint)		60
61	JUMP	I 1653	Return.		61
62	* ENTRY		LOAD PRINT PROGRAM	← BA →	62
63	JSBR		1734 Overlay Termination Job		63
64	JSBR	IZ 1670	FETCH Program (local only)		64
65	R=000006				65
66	R=3716-				66
67	JUMP	Z 1370	HALT - Program not in directory		67
70	JSBR	IZ 1707	Duplicate		70
71	R=3574-		New program name		71
72	R=3744-		Resident Program Name		72
73	B=2 words				73
74	LDA	Z 0154	= logical Entry Point		74
75	JSBR	IZ 1725	STA		75
76	R=3736-				76
77	JUMP	I 1662	Return		77

03

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Step	Instruction	Address	Comment	Octal	Step
00	*ENTRY		ASSIGN FILE TABLE	← BA →	00
01	ANDA	1776	300000		01
02	JSBR	1725	STA FebTableFlash		02
03	P=3775-				03
04	ANEG				04
05	JUMP	1710			05
06	→ CISA				06
07	INCA				07
10	LRA				10
11	ADA	Z 0025	→ Feb Table Table		11
12	LDA	I2 A	→ Feb Table		12
13	STA	Z 0073			13
14	JSBR	I2 1725	STA ETC		14
15	P=3714-				15
16	JUMP	I 1700	Return		16
17					17
20					20
21					21
22					22
23					23
24					24
25					25
26					26
27					27
30					30
31					31
32					32
33					33
34	*ENTRY		PRINTER OVERLAY TERMINATION	← BA →	34
35	LDB	Z 0074	→ I/O Control Area		35
36	ADB	Z 0217			36
37	LDA	I2 B	→ User's Termination Rtn.		37
40	STA	Z 0176	Save		40
41	CXA				41
42	STA	I2 B	(No Termination routine for next time)		42
43	ADB	Z 0205			43
44	STA	I2 B	(No program currently loaded)		44
45	NOOP				45
46	LDA	Z 0176	→ User's Termination Rtn.		46
47	ANP				47
50	JUMP	I 1734	Return - No Termination Rtn.		50
51	→ LDB	1734	Direct return address		51
52	STB	I2 A			52
53	INCA				53
54	JUMP	I2 A	To User's Termination Rtn.		54
55	*ENTRY		SPECIFY OVERLAY TERMINATION Rtn.	← BA →	55
56	LDB	Z 0074	→ I/O Control Area		56
57	ADB	Z 0217			57
60	LDA	I 1755	=P1		60
61	JSBR	Z 1630	Parallel Object		61
62	STA	I2 B	→ Termination Rtn auto I/O Control Area.		62
63	INSZ	1755			63
64	JUMP	I 1755	Return.		64
65	*ENTRY		SPECIFY PROGRAM RE-ENTRY POINT	← BA →	65
66	LDB	Z 0074	→ I/O Control Area		66
67	ADB	Z 0216			67
70	LDA	I 1765	=P1		70
71	JSBR	Z 1630	Parallel Object		71
72	STA	I2 B	→ Re-entry point auto I/O Control Area.		72
73	INSZ	1765			73
74	JUMP	I 1765	Return.		74
75					75
76				300000	76
77				077777	77

Programmer:-