OS-6   DISC SECURITY

Page:- 1   Col:- 00 - 20 -

Step	Instruction		Address	Comment	Octal	Step
00	Noop					00
01	LDA	IZ	0155	= P3		01
02	STA		0021	→ Title		02
03	INSZ	Z	0155			03
04	LDA	IZ	0155	= P4		04
05	STA		0030	→ Password		05
06	INSZ	Z	0155			06
07	LDA	IZ	0155	= P5		07
10	Noop					10
11	STA		0061	→ Phase 1 Control Block		11
12	INSZ	Z	0155			12
13	LDA	IZ	0155	= P6		13
14	Noop					14
15	STA		0055	→ Phase 2 Control Block		15
16	JSBR	IZ	1652	PUT "SECURITY"		16
17	P₁ = 2702 -					17
20	JSBR	IZ	1652	PUT title		20
21	P₁ = /					21
22	JSBR	IZ	1634	Specify Escape Point		22
23	P₁ = 0/1402					23
24	JSBR	IZ	1670	FETCH copy Overlay at 3000 -		24
25	P₁ = 000002					25
26	P₂ = 0/0205			Module 005		26
27	JSBR	IZ	1635	GET PASSWORD		27
30	P₁ = /					30
31	LDA		0055	→ Phase 2 Control Block		31
32	ANØ					32
33	JUMP		0037	No phase 2		33
34	JSBR	IZ	1640	SPLIT "PHASE 1 ONLY ?"		34
35	P₁ = 2700 -					35
36	CLA/comPA/SKIP			No		36
37	CLA			Yes		37
40	STA		0773	Indicator		40
41	LDA	Z	1666	Security Flag		41
42	A = Ø			Security in progress elsewhere?		42
43	JUMP		0047	Yes - don't flash & Store		43
44	JSBR	IZ	1653	No. FLASH "SECURITY ! NO UPDATES"		44
45	P₁ = 2717 -					45
46	JSBR	IZ	1667	STORE CONTROL RECORD		46
47	INSZ	Z	1666	Security Flag. [Inhibits Write to Master Discs]		47
50	Noop					50
51	JUMP		0114	Patch to Specify New bit order.		51
52	ANØ			Test phase 2 Indicator (0773)		52
53	JUMP		0060	Bypass (Phase 1 only)		53
54	JSBR		0220	Process Phase 2 Control Block		54
55	P₁ = /					55
56	STA		0773	Source / Target		56
57	STB		0776	No. of Sectors @ 2ⁿᵈ call.		57
60	JSBR		0220	Process Phase 1 Control Block		60
61	P₁ = /					61
62	STA		0775	Source / Target		62
63	STB		0777	No. Sectors @ 1ˢᵗ call.		63
64	JSBR		0600	COPY DIRECT		64
65	JSBR	IZ	1652	PUT "PHASE 1 COMPLETED"		65
66	P₁ = 2745½ -					66
67	LDA		0773	Phase 2 Indicator		67
70	ANØ					70
71	JUMP		0101	No phase 2		71
72	STA		0774	Phase 2 Source / Target		72
73	LDB		0776	No. Sectors @ 2ⁿᵈ call		73
74	JSBR		0604	COPY INDIRECT		74
75	INSZ		0751	= "SP 2"		75
76	JSBR	IZ	1652	PUT "PHASE 2 COMPLETED"		76
77	P₁ = 2745½ -					77

OS-6

Page:- 1　**Col:-** 01- 21-

Step	Instruction		Address	Comment	Octal	Step
00	JSBR		0640	RECOVER PHASE 1 MASTER DISC		00
01	DESZ	Z	1666	Security Flag　　　　　✷ END		01
02	JUMP	Z	1402	to "Program?"		02
03	JSBR	IZ	1667	STOW CONTROL RECORD		03
04	JSBR	IZ	1653	FLASH "SECURITY DONE"		04
05	P₁=2734-					05
06	JUMP	Z	1402	to "Program?"		06
07						07
10						10
11						11
12						12
13						13
14	JSBR	IZ	1643	Specify Default Restart Address (from 0051)		14
15	P₁=2101-					15
16	LDA		0773	Phase 2 Indicator		16
17	JUMP		0052			17
20	✷ENTRY			RRA3	←—BA—→	20
21	LDA		0176			21
22	RRA					22
23	RRA					23
24	RRA					24
25	STA		0176			25
26	JUMP	I	0120	return.		26
27						27
30	✷ ENTRY			Extract & Update Reqq Sequence No.	←—RA—→	30
31	LDA	I	0174	= Sequence Word		31
32	LDB		0175	= Digit No.		32
33	BNP					33
34	JSBR	IZ	1777	HALT -(INVALID) DIGIT No.		34
35	JUMP		0141			35
36	RRA			Rotate		36
37	RRA			Right		37
40	RRA					40
41	DESZ	Z	B			41
42	JUMP		0136			42
43	STA	Z	0177	Save		43
44	ANDA	Z	0207			44
45	LDB	Z	A	= Current Sq. No.		45
46	INCB			= Copy Number now required		46
47	STB	Z	0176			47
50	CMPB		0173	No. of Copies		50
51	CLB					51
52	XORA	Z	0177	(Removes old Sq. No.)		52
53	IORA	Z	B	Inserts new Seq. No.		53
54	LDB		0175	= Digit No.		54
55	JUMP		0161			55
56	LRA					56
57	LRA			Rotate left		57
60	LRA					60
61	DESZ	Z	B			61
62	JUMP		0156			62
63	STA	I	0174	Update Sequence Word		63
64	LDA	Z	0176	= Copy Number		64
65	JUMP	I	0130	return.		65
66						66
67						67
70						70
71				No. of Sectors @ 21 call	╱	71
72				→ Copies Type Table origin　　2200-		72
73				No. of Copies	╱	73
74				→ Sequence Word in Control Record	╱	74
75				Digit No.	╱	75
76				RRA3 Workspace	╱	76
77				Transfer Vector	╱	77

Programmer:-

OS-6

Page:- 1   Col:- 02-22-

Step	Instruction	Address		Comment	Octal	Step
00				0	000000	00
01	LDA	I	--	1 D400 3208	006210	01
02		2	1.	2 D800 / D818 6456	014470	02
03				3 D1600 12952	031230	03
04				4	0	04
05				5	0	05
06				6	0	06
07	CARTRIDGE			7	0	07
10	TYPE TABLE			10	0	10
11				11	0	11
12				12	0	12
13				13	0	13
14				14	0	14
15				15	0	15
16				16	0	16
17				17	0	17
20	ENTRY			Process Control Block Data	← BA →	20
21	LDA	I	0220	= P,		21
22	JSBR	Z	1630	Resolve Offset		22
23	STA		0177	→ Control Word in Parameter Block		23
24	LDA	I	0177	= Control Word		24
25	STA		0176			25
26	ANDA	Z	0207			26
27	STA		0175	= Digit No.		27
30	JSBR		0120	RRA3		30
31	ANDA	Z	0277			31
32	ADA	Z	0323	0/0400		32
33	STA		0174			33
34	JSBR		0120	RRA3		34
35	JSBR		0120	RRA3		35
36	ANDA	Z	0207			36
37	ANA					37
40	INCA					40
41	STA		0173	No. of Copies		41
42	JSBR		0120	RRA3		42
43	ANDA	Z	0217	= Type Code		43
44	ADA		0172	2200 - Cartridge Type Table corner		44
45	JSBR	Z	1630	Resolve		45
46	LDB	IZ	A	= No. of Sectors @ 2nd coll		46
47	BNØ					47
50	JSBR	IZ	1777	HALT - INVALID Type Code in Control Word		50
51	STB		0171			51
52	LDA		0173	No. of Copies		52
53	CMPA	Z	0201	CF,		53
54	SKIP			Bypass Sequence Processing		54
55	JSBR		0130	Extract (6 digit) Copy Number		55
56	INS2		0177	Parameter Pointer		56
57	ADA		0177	→ Copy Disc No.		57
60	LDA	IZ	A	= Copy Disc No.		60
61	SWAPA					61
62	IORA	I	0177	Master Disc No. [give Test Source]		62
63	LDB		0171	= No. of Sectors @ 2nd coll		63
64	INS2		0220			64
65	JUMP	I	0220	Return.		65
66						66
67						67
70				Read Bootstrap into { Lock, Protection o/t	200400	70
71				Master Buffer { R, Sector Disc No.	-	71
72				→ Master Buffer 3200 -		72
73				{ Bootstrap Sector	000041	73
74				MASK (W, Sector) { Lock, Protection o/t	200400	74
75				Read Label into { R, Sector Disc No.	-	75
76				Master Buffer → Master Buffer 3200 -		76
77				{ Label Sector	000040	77

Programmer:-

OS-6

Page:-		Col:- 03-	23-			
Step	Instruction		Address	Comment	Octal	Step
00	*ENTRY			RELABEL DISC	←—BA—→	00
01	LDA		0300	2 return address		01
02	STA	Z	0155			02
03	LDA	IZ	0155	= P₁ = Old Disc No.		03
04	JORA	Z	0323	000100 (P₁, 1 take)		04
05	STA		0275			05
06	JSBR	IZ	1615	Transfer (Read label into Master Buffer)		06
07	P₁ = 2274 -					07
10	LDA	Z	0053	→ Dir List origin		10
11	ADA	Z	1717	Device Code		11
12	LDA	IZ	A			12
13	ANDA	Z	1752	(leaves offset to 1ˢᵗ entry)		13
14	ADA	Z	0053	→ 1ˢᵗ entry in Dir List, this Unit		14
15	ADB	Z	A	List Pointer		15
16	LDA	IZ	0155	= P₁ = old disc No.		16
17	CMPA	IZ	B	List Entry		17
20	JUMP		0323	Entry found		20
21	ADB	Z	0202	CFL		21
22	JUMP		0317	alt next entry		22
23	INSZ	Z	0155	→ P₂		23
24	LDA	IZ	0155	= New Disc No.		24
25	STA		1200	into label in Master Buffer		25
26	STA	IZ	B	into Disc List		26
27	JORA		0274	200400		27
30	STA	Z	0143	Write, Track, Disc No.		30
31	INSZ	Z	0155	→ P₃		31
32	INCB			list pointer		32
33	LDA	IZ	L	} Save old disc's protection limit		33
34	STA	Z	0146			34
35	LDA	IZ	0155	= P₃ = Protection Limit for new disc No.		35
36	STA		1201	into label in Master Buffer		36
37	STA	IZ	L	into Disc List		37
40	INSZ	Z	0155	Return Address		40
41	JSBR	IZ	1673	WRITE (label from Master Buffer)		41
42	LDA	Z	0146	= Old Protection Limit		42
43	JUMP	IZ	0155	Return.		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						66
67						67
70						70
71						71
72						72
73						73
74						74
75						75
76						76
77						77

Programmer:-

OS- 6

Page:-	1 Col:- 04 - 24 -						
Step	Instruction		Address		Comment	Octal	Step
00					(MASTER Disc No.	⌐	00
01					Start Sector	─	01
02					Copy Parameters { COPY Disc No.	─	02
03					Start Sector	─	03
04					→\k Buffer 0 ─		04
05					No. of Sector	⌐	05
06	*ENTRY				COPY DISC	←── RA →	06
07	STA		0400		Master Disc No. (Lower byte)		07
10	SWAP/QSA/CMPBA						10
11	STA		0402		Copy Disc No. (Lower byte) +Protection off		11
12	STB		0171		Save No. of Sector of Disc call		12
13	CLA						13
14	STA		0401		} Sector φ		14
15	STA		0403		}		15
16	LDA	Z	0240		CF32		16
17	STA		0405		No. of Sector		17
20	JSBR		1000		COPY Sectors φ → 37		20
21	$P_1 = 2400$ -						21
22	LDA	Z	0241				22
23	STA		0401		} Sector 41		23
24	STA		0403		}		24
25	LDA	Z	0207		CF7		25
26	STA		0405		No. of Sectors		26
27	JSBR		1000		COPY Sector 41 → 47		27
30	$P_1 = 2400$ -						30
31	LDA	Z	0250				31
32	STA		0401		} Sector 50		32
33	STA		0403		}		33
34	LDA		0171		No. of Sectors of Disc call		34
35	STA		0405		No. of Sector		35
36	JSBR		1000		COPY Sectors 50 → end		36
37	$P_1 = 2400$ -						37
40	JUMP	I	0406		Return.		40
41	*ENTRY				Sequence Data into Bootstrap	←── RA →	41
42	LDA		0402		Copy Disc No.		42
43	ANDA	Z	1752				43
44	STA		0400		(Master Disc No.)		44
45	IORA	Z	0323		000 400		45
46	STA		0271		R,) Sector, Disc No.		46
47	JSBR	I2	1615		TRANSFER (Read Bootstrap into Master Buffer)		47
50	$P_1 = 2270$ -						50
51	JSBR	I2	1707		Duplicate (Recovery Control Block to Bootstrap)		51
52	$P_1 = 2774$ -						52
53	$P_2 = 3312$ -				(Master Buffer)		53
54	$P_3 = 4$ words						54
55	JSBR	I2	1673		WRITE (Bootstrap from Master Buffer)		55
56	CLA						56
57	STA		0403		Copy to Sector φ		57
60	INCA						60
61	STA		0405		1 sector		61
62	LDA		0273		= Bootstrap Sector		62
63	STA		0401		Source Sector		63
64	JSBR		1000		COPY Sector 41 to Sector φ		64
65	$P_1 = 2400$ -						65
66	JUMP	I	0441		Return.		66
67							67
70							70
71							71
72							72
73							73
74							74
75							75
76							76
77							77

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OS-6

Page:- 1   Col:- 06 - 26 -

Step	Instruction	Address		Comment	Octal	Step
00	*ENTRY			COPY DIRECT (PHASE 1)	← BA →	00
01	JSBR		0406	Copy Disc		01
02	JSBR		0441	Recovery Control Block into Bootstrap		02
03	JUMP	I	0600			03
04	*ENTRY			COPY INDIRECT (PHASE 2)	← BA →	04
05	LDA		0775	Phase 1 Target/Source		05
06	ANDA	Z	1752	(leaves "Fixed" Disc No.)		06
07	STA		0616			07
10	STA		0651			10
11	LDA	Z	0320	000300		11
12	ADA	Z	0040	+ Test No.		12
13	STA		0617	= Scratch Disc No.		13
14	STA		0650			14
15	JSBR		0300	RELABEL "Fixed" Disc		15
16	$P_1 = 1$			Old Disc No. (Phase 1 Source Disc)		16
17	$P_2 = 1$			Scratch Disc No.		17
20	$P_3 = 037777$			"Security" (protection limit)		20
21	STA		0652	Old Disc's protection limit		21
22	LDA		0774	Phase 2 Target/Source		22
23	ANDA	Z	1752	(leaves Source Disc)		23
24	SWAPA					24
25	IORA		0617	Scratch Disc No.		25
26	SWAPA					26
27	LDB		0776	= No. of Sectors of 2½ call		27
30	JSBR		0406	COPY Each Master → Fixed		30
31	LDA		0774	Phase 2 Target/Source		31
32	ANDA	Z	1753	(leaves Target Disc)		32
33	IORA		0617	Scratch Disc No.		33
34	LDB		0776	= No. of Sectors of 2½ call		34
35	JSBR		0406	COPY Fixed → Each Security		35
36	JSBR		0441	Recovery Control Block into Bootstrap		36
37	JUMP	I	0604	Return.		37
40	*ENTRY			RECOVER "FIXED" DISC (PHASE 3)	← BA →	40
41	LDA		0775	Phase 1 Target/Source		41
42	ANDA	Z	1753	(leaves Security Disc No)		42
43	IORA		0617	Scratch Disc No		43
44	SWAPA					44
45	LDB		0777	No. Sectors of 2½ call		45
46	JSBR		0406	COPY Fixed Security → Fixed		46
47	JSBR		0300	RELABEL "Fixed" Disc		47
50	$P_1 = 1$			Scratch Disc No.		50
51	$P_2 = 1$			Old Disc No. (Phase 1 Source)		51
52	$P_3 = 1$			Old Protection limit		52
53	CLA					53
54	STA	Z	1717	Device Code		54
55	JSBR	IZ	1674	Reschedule Disc Q (unchecked Q)		55
56	JUMP	I	0640	Return.		56
57						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

Programmer:-

OS-6

Page:- 1   Col:- 07- 27-

Step	Instruction	Address		Comment			Octal	Step
00				SPLIT "PHASE 1 ONLY?" {			300000	00
01					2707 } -			01
02				{	CR	S		02
03					E	C		03
04					4	R		04
05					I	T		05
06					Y	SP		06
07				{	WL	CR		07
10					P	H		10
11					A	S		11
12					E	SP		12
13				{	I	SP		13
14					O	N		14
15					L	Y		15
16					?	NUL		16
17				{	CR	BEL		17
20					So	S		20
21					E	C		21
22					4	R		22
23					I	T		23
24					Y	!		24
25					SP	N		25
26					O	SP		26
27					4	P		27
30					D	A		30
31					T	E		31
32					S	SI		32
33					SP	NUL		33
34				{	CR	BEL		34
35					So	S		35
36					E	c		36
37					4	R		37
40					I	T		40
41					Y	SP		41
42					D	o		42
43					N	E		43
44					SI	SP		44
45				{	NUL	BEL		45
46					CR	P		46
47					H	A		47
50					S	E		50
51					SP	1		51
52					SP	C		52
53					O	H		53
54					P	L		54
55					E	T		55
56					E	D		56
57					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				Security Phase 2 Indicator (Target/Save)			/	73
74				{ SECURITY PHASE 2 Target/Source			000000	74
75	Recovery Control			SECURITY PHASE 1 Target/Source			000000	75
76	Block			SECURITY PHASE 2 Section @ 2nd call			/	76
77				SECURITY PHASE 1 Section @ 2nd call			/	77

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BCL/M18/PS1