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1
2 8085 ASSEMBLER LISTING
3 Line Addr Opcode Label Instruction
4
5 0001 0000 ;*****
6 0002 0000 ;
7 0003 0000 ; BIOS60 MOPPEL-60-K-BIOS V 12.6 ;
8 0004 0000 ;
9 0005 0000 ;*****
10 0006 0000 ;
11 0007 0000 ; Stand: Mo,02.03.87;19:43:10h
12 0008 0000 ;
13 0009 0000 ;
14 0010 0000 ; Ueberarbeitet und Anpassung auf 8085Simulator-ID
15 0011 0000 ; https://www.oshonsoft.com/
16 0012 0000 ; 01.07.2023 W.Roemer (werner.roemer@t-online.de)
17 0013 0000 ;
18 0014 0000 ;
19 0015 0000 ; Druck:
20 0016 0000 ;
21 0017 0000 ; org 0ea00h ;umkopieren: F000,FFFF,EA00
22 0018 EA00 ;
23 0019 EA00 ;
24 0020 EA00 ; buffer equ f800h ;2 KB bis MEM Top
25 0021 EA00 ; verbuf equ f700h
26 0022 EA00 ; variab equ f500h
27 0023 EA00 ; syspar equ f400h ;vom Urloader
28 0024 EA00 ;
29 0025 EA00 ; bios equ ea00h
30 0026 EA00 ; bdos equ dc06h
31 0027 EA00 ; ccp equ d400h
32 0028 EA00 ;
33 0029 EA00 ; stacku equ verbuf
34 0030 EA00 ; stackc equ 100h
35 0031 EA00 ; stackw equ 80h
36 0032 EA00 ; buff equ 80h
37 0033 EA00 ; cdisk equ 4h ;Kaltstart-Drive/User
38 0034 EA00 ; iobyte equ 3h
39 0035 EA00 ;
40 0036 EA00 ;
41 0037 EA00 ; rambnk equ 24h ;Banking-Latch
42 0038 EA00 ;
43 0039 EA00 ; cimo equ 43h ;Monitor-Unterprogramme
44 0040 EA00 ; como equ 49h
45 0041 EA00 ; cstsm equ 52h
46 0042 EA00 ; cstsmo equ 100ch
47 0043 EA00 ; lomo equ 4fh
48 0044 EA00 ; v24imo equ 1024h
49 0045 EA00 ; v24omo equ 101eh
50 0046 EA00 ; vinimo equ 64h ;Adr. !
51 0047 EA00 ; pinimo equ 58h
52 0048 EA00 ;
53 0049 EA00 ; stack0 equ 2950h ;Bank-0-Stack
54 0050 EA00 ; ioflag equ 2fc8h ;LO Select
55 0051 EA00 ;
56 0052 EA00 ;
57 0053 EA00 ; begin equ 0101h ;Systemspuren ab Trk.1, Sec.1
58 0054 EA00 ; nkalt equ 1fh ;Anzahl Sektoren CCP/BDOS/BIOS
59 0055 EA00 ; nwarm equ 16h ;Anzahl Sektoren CCP/BDOS
60 0056 EA00 ; offset equ 04h ;Start bei Track 4
61 0057 EA00 ; nmax equ 04h ;LW-Anzahl
62 0058 EA00 ; rwdhg equ 5h ;Wiederholungen bei R/W-Fehler
63 0059 EA00 ; timeout equ 6h ;max.Positionierzeit (x0,5 s)
64 0060 EA00 ;
65 0061 EA00 ;
66 0062 EA00 C3 58 EF jmp cboot ;Kaltstart
67 0063 EA03 C3 A9 EF jmp wboot ;Warmstart
68 0064 EA06 C3 9A EA jmp const ;Console Status
69 0065 EA09 C3 7F EA jmp conin ;Console In
70 0066 EA0C C3 79 EA jmp conout ;Console Out
71 0067 EA0F C3 05 EB jmp list ;Lineprinter
72 0068 EA12 C3 D7 EA jmp punch ;Puncher Out
73 0069 EA15 C3 AD EA jmp reader ;Reader In
74 0070 EA18 C3 05 EC jmp home ;Track 0 einstellen
75 0071 EA1B C3 1A EC jmp seldsk ;Select Disk
76 0072 EA1E C3 08 EC jmp settrk ;Set Track No.
77 0073 EA21 C3 0E EC jmp setsec ;Set Sector No.
78 0074 EA24 C3 14 EC jmp setdma ;Set Disk Buffer
79 0075 EA27 C3 45 EC jmp read ;Read Logical Sector
80 0076 EA2A C3 67 EC jmp write ;Write Logical Sector

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81 0077 EA2D C3 1A EB jmp lsts ;Lineprinter Status
82 0078 EA30 C3 3A EC jmp sectra ;Get Translate Table
83 0079 EA33 C3 BA EB jmp prtini ;Schnittstellen initialisieren
84 0080 EA36 C3 B2 EB jmp v24ini
85 0081 EA39 ;
86 0082 EA39 ;
87 0083 EA39 ;*****
88 0084 EA39 ;
89 0085 EA39 ; Disk Parameter Header
90 0086 EA39 ;
91 0087 EA39 ;*****
92 0088 EA39 ;
93 0089 EA39 dpbase: ds 0h ;Variablen und Tabellen am Ende
94 0090 EA39 ;
95 0091 EA39 00 00 dpe0: dw 0h ;Translate Table (XLT)
96 0092 EA3B 00 00 dw 0h ;Highest Dir.Entry
97 0093 EA3D 00 00 dw 0h ;Current Logical Track
98 0094 EA3F 00 00 dw 0h ;First Sector of Current Track
99 0095 EA41 30 F5 dw dirbuf ;Directory Buffer
100 0096 EA43 80 F4 dw dpb0 ;Disk Parameter Block
101 0097 EA45 D8 F5 dw csv0 ;Checksum Vector
102 0098 EA47 B0 F5 dw alv0 ;Allocation Vector
103 0099 EA49 ;
104 0100 EA49 00 00 dpe1: dw 0h
105 0101 EA4B 00 00 dw 0h
106 0102 EA4D 00 00 dw 0h
107 0103 EA4F 00 00 dw 0h
108 0104 EA51 30 F5 dw dirbuf
109 0105 EA53 90 F4 dw dpb1
110 0106 EA55 20 F6 dw csv1
111 0107 EA57 F8 F5 dw alv1
112 0108 EA59 ;
113 0109 EA59 00 00 dpe2: dw 0h
114 0110 EA5B 00 00 dw 0h
115 0111 EA5D 00 00 dw 0h
116 0112 EA5F 00 00 dw 0h
117 0113 EA61 30 F5 dw dirbuf
118 0114 EA63 A0 F4 dw dpb2
119 0115 EA65 68 F6 dw csv2
120 0116 EA67 40 F6 dw alv2
121 0117 EA69 ;
122 0118 EA69 00 00 dpe3: dw 0h
123 0119 EA6B 00 00 dw 0h
124 0120 EA6D 00 00 dw 0h
125 0121 EA6F 00 00 dw 0h
126 0122 EA71 30 F5 dw dirbuf
127 0123 EA73 B0 F4 dw dpb3
128 0124 EA75 B0 F6 dw csv3
129 0125 EA77 88 F6 dw alv3
130 0126 EA79 ;
131 0127 EA79 ;
132 0128 EA79 ;*****
133 0129 EA79 ;
134 0130 EA79 ; Peripherie-Ansprache
135 0131 EA79 ;
136 0132 EA79 ;*****
137 0133 EA79 ;
138 0134 EA79 21 8A EA conout: lxi h,cotab
139 0135 EA7C C3 82 EA jmp consol
140 0136 EA7F 21 92 EA conin: lxi h,citab
141 0137 EA82 3A 03 00 consol: lda iobyte ;CONSOLE (I/O-Bits 0&1)
142 0138 EA85 E6 03 ani 3h
143 0139 EA87 C3 2F EB jmp decode
144 0140 EA8A 70 EB cotab: dw co ;Video Out
145 0141 EA8C CA EB dw crtout
146 0142 EA8E 05 EB dw list
147 0143 EA90 DA EB dw uscn3o
148 0144 EA92 5C EB citab: dw ci ;ASCII In
149 0145 EA94 C2 EB dw crtin
150 0146 EA96 AD EA dw reader
151 0147 EA98 D2 EB dw uscn3i
152 0148 EA9A ;
153 0149 EA9A 3A 03 00 const: lda iobyte ;Console Status
154 0150 EA9D E6 03 ani 3h
155 0151 EA9F 21 A5 EA lxi h,cistab
156 0152 EAA2 C3 2F EB jmp decode
157 0153 EAA5 78 EB cistab: dw cstst ;ASCII Status
158 0154 EAA7 02 EC dw crtst
159 0155 EAA9 C2 EA dw ristat
160 0156 EAAB 02 EC dw uscn3s

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161 0157 EAAD ;
162 0158 EAAD ;***
163 0159 EAAD ;
164 0160 EAAD 3A 03 00 reader: lda iobyte ;READER IN (I/O-Bits 2&3)
165 0161 EAB0 0F rrc
166 0162 EAB1 0F rrc
167 0163 EAB2 E6 03 ani 3h
168 0164 EAB4 21 BA EA lxi h,ritab
169 0165 EAB7 C3 2F EB jmp decode
170 0166 EABA 5C EB ritab: dw ci ;ASCII Input
171 0167 EABC A2 EB dw v24in
172 0168 EABE E2 EB dw usri2
173 0169 EAC0 EA EB dw usri3
174 0170 EAC2 ;
175 0171 EAC2 3A 03 00 ristat: lda iobyte ;Reader Status
176 0172 EAC5 0F rrc
177 0173 EAC6 0F rrc
178 0174 EAC7 E6 03 ani 3h
179 0175 EAC9 21 CF EA lxi h,ristab
180 0176 EACC C3 2F EB jmp decode
181 0177 EACF 78 EB ristab: dw csts ;ASCII Status
182 0178 EAD1 02 EC dw v24st
183 0179 EAD3 02 EC dw usri2s
184 0180 EAD5 02 EC dw usri3s
185 0181 EAD7 ;
186 0182 EAD7 ;***
187 0183 EAD7 ;
188 0184 EAD7 3A 03 00 punch: lda iobyte ;PUNCHER OUT (I/O-Bits 4&5)
189 0185 EADA 0F rrc
190 0186 EADB 0F rrc
191 0187 EADC 0F rrc
192 0188 EADD 0F rrc
193 0189 EADE E6 03 ani 3h
194 0190 EAE0 21 E6 EA lxi h,potab
195 0191 EAE3 C3 2F EB jmp decode
196 0192 EAE6 70 EB potab: dw co ;Video Out
197 0193 EAE8 AA EB dw v24out
198 0194 EAEA F2 EB dw uspo2
199 0195 EAEC FA EB dw uspo3
200 0196 EAEF ;
201 0197 EAEF 3A 03 00 pustat: lda iobyte ;Puncher Status
202 0198 EAF1 0F rrc
203 0199 EAF2 0F rrc
204 0200 EAF3 0F rrc
205 0201 EAF4 0F rrc
206 0202 EAF5 E6 03 ani 3h
207 0203 EAF7 21 FD EA lxi h,pustab
208 0204 EAFA C3 2F EB jmp decode
209 0205 EAFD 02 EC pustab: dw rdysta ;ready
210 0206 EAFF 02 EC dw v24st
211 0207 EB01 02 EC dw uspo2s
212 0208 EB03 02 EC dw uspo3s
213 0209 EB05 ;
214 0210 EB05 ;***
215 0211 EB05 ;
216 0212 EB05 3A 03 00 list: lda iobyte ;LISTER OUT (I/O-Bits 6&7)
217 0213 EB08 07 rlc
218 0214 EB09 07 rlc
219 0215 EB0A E6 03 ani 3h
220 0216 EB0C 21 12 EB lxi h,lotab
221 0217 EB0F C3 2F EB jmp decode
222 0218 EB12 70 EB lotab: dw co ;Video Out
223 0219 EB14 CA EB dw crtout
224 0220 EB16 80 EB dw prt
225 0221 EB18 95 EB dw centr
226 0222 EB1A ;
227 0223 EB1A 3A 03 00 lsts: lda iobyte ;Lister Status
228 0224 EB1D 07 rlc
229 0225 EB1E 07 rlc
230 0226 EB1F E6 03 ani 3h
231 0227 EB21 21 27 EB lxi h,listab
232 0228 EB24 C3 2F EB jmp decode
233 0229 EB27 02 EC listab: dw rdysta ;ready
234 0230 EB29 02 EC dw crtst
235 0231 EB2B 02 EC dw prtst
236 0232 EB2D 02 EC dw censta
237 0233 EB2F ;
238 0234 EB2F ;
239 0235 EB2F CA 38 EB decode: jz found ;Verzweigung nach Tabelle
240 0236 EB32 23 inx h

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241 0237 EB33 23          inx h
242 0238 EB34 3D          dcr a
243 0239 EB35 C3 2F EB    jmp decode
244 0240 EB38 5E          found: mov e,m
245 0241 EB39 23          inx h
246 0242 EB3A 56          mov d,m
247 0243 EB3B EB          xchg          ;H&L: Zieladresse
248 0244 EB3C E9          pchl
249 0245 EB3D          ;
250 0246 EB3D          ;
251 0247 EB3D          ;*****
252 0248 EB3D          ;
253 0249 EB3D          ;      Monitor-Unterprogramme (incl.User)
254 0250 EB3D          ;
255 0251 EB3D          ;*****
256 0252 EB3D          ;
257 0253 EB3D 22 4F EB    monio: shld monadr      ;universelles Ein/Ausgabe-UP
258 0254 EB40 21 00 00    lxi h,0h
259 0255 EB43 39          dad sp          ;H&L: Bank 1 Stack
260 0256 EB44 11 50 29    lxi d,stack0    ;D&E: Bank 0 Stack
261 0257 EB47 EB          xchg
262 0258 EB48 F9          sphl          ;Stack Pointer auf Bank 0 Stack
263 0259 EB49 3E 81        mvi a,81h
264 0260 EB4B D3 24        out rambnk      ;umschalten auf Bank 0
265 0261 EB4D D5          push d          ;Bank 1 Stack retten
266 0262 EB4E          ;
267 0263 EB4E CD          ;CALL
268 0264 EB4F 00 00        monadr: ds 2h          ;UP-Startadresse
269 0265 EB51          ;
270 0266 EB51 4F          mov c,a
271 0267 EB52 E1          pop h          ;Bank 1 Stack zur}ck
272 0268 EB53 3E 01        mvi a,1h
273 0269 EB55 D3 24        out rambnk      ;Umschalten auf Bank 1
274 0270 EB57 F9          sphl          ;alter Bank 1 Stack
275 0271 EB58 E1          pop h          ;Restore Regs
276 0272 EB59 D1          pop d
277 0273 EB5A 79          mov a,c
278 0274 EB5B C9          ret
279 0275 EB5C          ;
280 0276 EB5C          ;
281 0277 EB5C D5          ci: push d          ;ASCII Input
282 0278 EB5D E5          push h
283 0279 EB5E 21 64 EB    lxi h,cisub
284 0280 EB61 C3 3D EB    jmp monio
285 0281 EB64 CD 43 00    cisub: call cimo
286 0282 EB67 F5          push psw
287 0283 EB68 CD 0C 10    cilop: call cstsmo      ;auf Loslassen warten
288 0284 EB6B C2 68 EB    jnz cilop
289 0285 EB6E F1          pop psw
290 0286 EB6F C9          ret
291 0287 EB70          ;
292 0288 EB70          ;
293 0289 EB70 D5          co: push d          ;Video Output
294 0290 EB71 E5          push h
295 0291 EB72 21 49 00    lxi h,como
296 0292 EB75 C3 3D EB    jmp monio
297 0293 EB78          ;
298 0294 EB78          ;
299 0295 EB78 D5          csts: push d          ;ASCII Status
300 0296 EB79 E5          push h
301 0297 EB7A 21 52 00    lxi h,cstsm
302 0298 EB7D C3 3D EB    jmp monio
303 0299 EB80          ;
304 0300 EB80          ;
305 0301 EB80 D5          prt: push d          ;Drucker (seriell)
306 0302 EB81 E5          push h
307 0303 EB82 21 88 EB    lxi h,prtsub
308 0304 EB85 C3 3D EB    jmp monio
309 0305 EB88 3E 80          prtsub: mvi a,80h      ;d.h. LO7
310 0306 EB8A 32 C8 2F    prtret: sta ioflag
311 0307 EB8D CD 4F 00    call lomo
312 0308 EB90 AF          xra a
313 0309 EB91 32 C8 2F    sta ioflag
314 0310 EB94 C9          ret
315 0311 EB95          ;
316 0312 EB95          ;
317 0313 EB95 D5          centr: push d          ;Drucker (parallel)
318 0314 EB96 E5          push h
319 0315 EB97 21 9D EB    lxi h,censub
320 0316 EB9A C3 3D EB    jmp monio

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321 0317 EB9D 3E 40      censub:      mvi  a,40h      ;d.h. LO6
322 0318 EB9F C3 8A EB      jmp  prtret
323 0319 EBA2              ;
324 0320 EBA2              ;
325 0321 EBA2 D5          v24in:      push d          ;V.24 Input
326 0322 EBA3 E5          push h
327 0323 EBA4 21 24 10      lxi  h,v24imo
328 0324 EBA7 C3 3D EB      jmp  monio
329 0325 EBAA              ;
330 0326 EBAA              ;
331 0327 EBAA D5          v24out:     push d          ;V.24 Output
332 0328 EBAB E5          push h
333 0329 EBAC 21 1E 10      lxi  h,v24omo
334 0330 EBAF C3 3D EB      jmp  monio
335 0331 EBB2              ;
336 0332 EBB2              ;
337 0333 EBB2 D5          v24ini:     push d          ;V.24 initialisieren
338 0334 EBB3 E5          push h
339 0335 EBB4 2A 64 00      lhld  vinimo      ;Adr!
340 0336 EBB7 C3 3D EB      jmp  monio
341 0337 EBBA              ;
342 0338 EBBA              ;
343 0339 EBBA D5          prtini:     push d          ;SER initialisieren
344 0340 EBBB E5          push h
345 0341 EBBC 21 58 00      lxi  h,pinimo
346 0342 EBBF C3 3D EB      jmp  monio
347 0343 EBC2              ;
348 0344 EBC2              ;
349 0345 EBC2 D5          crtin:      push d          ;Terminal Input
350 0346 EBC3 E5          push h
351 0347 EBC4 2A F0 F4      lhld  usadr0
352 0348 EBC7 C3 3D EB      jmp  monio
353 0349 EBCA              ;
354 0350 EBCA              ;
355 0351 EBCA D5          crtout:     push d          ;Terminal Output
356 0352 EBCB E5          push h
357 0353 EBCC 2A F2 F4      lhld  usadr1
358 0354 EBCF C3 3D EB      jmp  monio
359 0355 EBD2              ;
360 0356 EBD2              ;
361 0357 EBD2 D5          uscn3i:     push d          ;User Console Input
362 0358 EBD3 E5          push h
363 0359 EBD4 2A F4 F4      lhld  usadr2
364 0360 EBD7 C3 3D EB      jmp  monio
365 0361 EBDA              ;
366 0362 EBDA              ;
367 0363 EBDA D5          uscn3o:     push d          ;User Console Output
368 0364 EBDB E5          push h
369 0365 EBD4 2A F6 F4      lhld  usadr3
370 0366 EBD7 C3 3D EB      jmp  monio
371 0367 EBE2              ;
372 0368 EBE2              ;
373 0369 EBE2 D5          usri2:      push d          ;User Reader Input (1)
374 0370 EBE3 E5          push h
375 0371 EBE4 2A F8 F4      lhld  usadr4
376 0372 EBE7 C3 3D EB      jmp  monio
377 0373 EBEA              ;
378 0374 EBEA              ;
379 0375 EBEA D5          usri3:      push d          ;User Reader Input (2)
380 0376 EBEB E5          push h
381 0377 EBEC 2A FA F4      lhld  usadr5
382 0378 EBEE C3 3D EB      jmp  monio
383 0379 EBF2              ;
384 0380 EBF2              ;
385 0381 EBF2 D5          uspo2:      push d          ;User Puncher Out (1)
386 0382 EBF3 E5          push h
387 0383 EBF4 2A FC F4      lhld  usadr6
388 0384 EBF7 C3 3D EB      jmp  monio
389 0385 EBFA              ;
390 0386 EBFA              ;
391 0387 EBFA D5          uspo3:      push d          ;User Puncher Out (2)
392 0388 EBFB E5          push h
393 0389 EBFC 2A FE F4      lhld  usadr7
394 0390 EBF7 C3 3D EB      jmp  monio
395 0391 EC02              ;
396 0392 EC02              ;
397 0393 EC02      prtst:      ds 0h
398 0394 EC02      censta:     ds 0h
399 0395 EC02      v24st:      ds 0h
400 0396 EC02      crtst:      ds 0h

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401 0397 EC02 uscn3s: ds 0h
402 0398 EC02 usri2s: ds 0h
403 0399 EC02 usri3s: ds 0h
404 0400 EC02 uspo2s: ds 0h
405 0401 EC02 uspo3s: ds 0h
406 0402 EC02 ;
407 0403 EC02 AF rdysta: xra a ;Dummy Status: Device Ready
408 0404 EC03 3D dcr a ;A: FFh
409 0405 EC04 C9 ret ;ZERO off
410 0406 EC05 ;
411 0407 EC05 ;
412 0408 EC05 ;*****
413 0409 EC05 ;
414 0410 EC05 ; Disketten-Management
415 0411 EC05 ;
416 0412 EC05 ;*****
417 0413 EC05 ;
418 0414 EC05 01 00 00 home: lxi b,0h ;Track 0 einstellen
419 0415 EC08 C5 settrk: push b ;Trackbuffer laden
420 0416 EC09 E1 pop h
421 0417 EC0A 22 20 F5 shld iotrk
422 0418 EC0D C9 ret
423 0419 EC0E ;
424 0420 EC0E ;***
425 0421 EC0E ;
426 0422 EC0E C5 setsec: push b ;Sectorbuffer laden
427 0423 EC0F E1 pop h
428 0424 EC10 22 22 F5 shld iosec
429 0425 EC13 C9 ret
430 0426 EC14 ;
431 0427 EC14 ;***
432 0428 EC14 ;
433 0429 EC14 C5 setdma: push b ;DMA-Adresse laden
434 0430 EC15 E1 pop h
435 0431 EC16 22 24 F5 shld iodma
436 0432 EC19 C9 ret
437 0433 EC1A ;
438 0434 EC1A ;***
439 0435 EC1A ;
440 0436 EC1A 21 00 00 seldsk: lxi h,0h ;f}r Fehlerbehandlung
441 0437 EC1D 79 mov a,c
442 0438 EC1E FE 04 cpi nmax ;LW im Bereich?
443 0439 EC20 DA 2A EC jc selcte ;ja:JMP
444 0440 EC23 3A C1 F4 lda sysusr
445 0441 EC26 32 04 00 sta cdisk
446 0442 EC29 C9 ret ;H&L=0 --> Select Fehler
447 0443 EC2A ;
448 0444 EC2A 32 18 F5 selcte: sta dbank ;LW-Nr.
449 0445 EC2D CD DD ED call parcop
450 0446 EC30 87 add a
451 0447 EC31 87 add a
452 0448 EC32 87 add a
453 0449 EC33 87 add a ;DPB-L{nge: 16d
454 0450 EC34 6F mov l,a
455 0451 EC35 11 39 EA lxi d,dpbase
456 0452 EC38 19 dad d ;H&L: DPEx-Anfangsadresse
457 0453 EC39 C9 ret
458 0454 EC3A ;
459 0455 EC3A ;***
460 0456 EC3A ;
461 0457 EC3A C5 sectra: push b ;in H&L Sektor-Nr.}bergeben
462 0458 EC3B E1 pop h
463 0459 EC3C 7A mov a,d
464 0460 EC3D B3 ora e
465 0461 EC3E C8 rz ;No X-late Table
466 0462 EC3F 19 dad d
467 0463 EC40 5E mov e,m ;Wert aus Translate Table
468 0464 EC41 16 00 mvi d,0h
469 0465 EC43 EB xchg
470 0466 EC44 C9 ret
471 0467 EC45 ;
472 0468 EC45 ;***
473 0469 EC45 ;
474 0470 EC45 CD AC ED read: call calcmp ;Block lesen
475 0471 EC48 C4 53 EC cnz rload
476 0472 EC4B CD 44 ED call bufcal
477 0473 EC4E CD F3 ED call copy
478 0474 EC51 AF xra a ;o.k.:ACC=00h
479 0475 EC52 C9 ret
480 0476 EC53 ;

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481	0477	EC53	3A	11	F5	rload:	lda	wrtflg	
482	0478	EC56	B7				ora	a	;Buffer leer?
483	0479	EC57	CA	63	EC		jz	rlod	;ja: JMP
484	0480	EC5A	CD	A5	EC		call	puttrk	;sonst abspeichern
485	0481	EC5D	3A	18	F5		lda	dbank	
486	0482	EC60	CD	DD	ED		call	parcop	
487	0483	EC63	CD	B1	EC	rlod:	call	gettrk	
488	0484	EC66	C9				ret		
489	0485	EC67							
490	0486	EC67							
491	0487	EC67							
492	0488	EC67	79			write:	mov	a,c	;Block schreiben
493	0489	EC68	32	10	F5		sta	dirflg	;BDOS-FLAG
494	0490	EC6B	CD	AC	ED		call	calcmp	
495	0491	EC6E	C4	8D	EC		cnz	wload	
496	0492	EC71	CD	44	ED		call	bufcal	
497	0493	EC74	EB				xchg		
498	0494	EC75	CD	F3	ED		call	copy	
499	0495	EC78	3E	01			mvi	a,1h	
500	0496	EC7A	32	11	F5		sta	wrtflg	;Buffer voll
501	0497	EC7D	3A	10	F5		lda	dirflg	
502	0498	EC80	FE	01			cpi	1h	;DIR-Record?
503	0499	EC82	3E	00			mvi	a,0h	
504	0500	EC84	C0				rnz		;nein: RET mit ACC=00h (=o.k.)
505	0501	EC85	CD	A1	EC		call	putsub	
506	0502	EC88	AF				xra	a	
507	0503	EC89	32	11	F5		sta	wrtflg	;Buffer leer
508	0504	EC8C	C9				ret		;o.k.:ACC=00h
509	0505	EC8D							
510	0506	EC8D	3A	11	F5	wload:	lda	wrtflg	
511	0507	EC90	B7				ora	a	;Buffer leer?
512	0508	EC91	CA	9D	EC		jz	wlod	;ja: JMP
513	0509	EC94	CD	A5	EC		call	puttrk	;sonst abspeichern
514	0510	EC97	3A	18	F5		lda	dbank	
515	0511	EC9A	CD	DD	ED		call	parcop	
516	0512	EC9D	CD	B1	EC	wlod:	call	gettrk	
517	0513	ECA0	C9				ret		
518	0514	ECA1							
519	0515	ECA1	CD	A5	EC	putsub:	call	puttrk	;wg.Error Handling
520	0516	ECA4	C9				ret		
521	0517	ECA5							
522	0518	ECA5							
523	0519	ECA5							
524	0520	ECA5	3A	28	F5	puttrk:	lda	aktdrv	;Disk schreiben
525	0521	ECA8	CD	DD	ED		call	parcop	
526	0522	ECAB	21	E3	EC		lxi	h,secwr	
527	0523	ECAE	C3	BA	EC		jmp	pgsub	
528	0524	ECB1							
529	0525	ECB1	CD	9B	ED	gettrk:	call	calc	;Disk lesen
530	0526	ECB4	CD	D0	ED		call	store	
531	0527	ECB7	21	DC	EC		lxi	h,secd	
532	0528	ECBA							
533	0529	ECBA	22	CA	EC	pgsub:	shld	pgadr	;PUT/GET-Unterprogramm
534	0530	ECCD	CD	5F	ED		call	codbuf	
535	0531	ECC0	E5			pglp:	push	h	
536	0532	ECC1	D5				push	d	
537	0533	ECC2	C5				push	b	
538	0534	ECC3	CD	8B	ED		call	xlat	
539	0535	ECC6	CD	05	EE		call	save	
540	0536	ECC9							
541	0537	ECC9	CD						
542	0538	ECCA	00	00		pgadr:	db	0cdh	;CALL
543	0539	ECCC					ds	2h	;FDC-Routine
544	0540	ECCC	CD	0C	EE				
545	0541	ECCF	C1				call	resto	
546	0542	ECD0	D1				pop	b	
547	0543	ECD1	E1				pop	d	
548	0544	ECD2	DA	13	EE		pop	h	
549	0545	ECD5	CD	FC	ED		jc	bdoser	;CY on: Error
550	0546	ECD8	C2	C0	EC		call	nxtsec	
551	0547	ECDB	C9				jnz	pglp	
552	0548	ECDC					ret		
553	0549	ECDC							
554	0550	ECDC	E5			secd:	push	h	
555	0551	ECDD	21	09	ED		lxi	h,secd	
556	0552	ECE0	C3	E7	EC		jmp	secsub	
557	0553	ECE3							
558	0554	ECE3	E5			secwr:	push	h	
559	0555	ECE4	21	1B	ED		lxi	h,secwr	
560	0556	ECE7							


```

561 0557 ECE7 22 FC EC secsub: shld secadr
562 0558 ECEA E1 pop h
563 0559 ECEB 22 13 F5 shld hlbuff
564 0560 ECEE 21 00 00 lxi h,0h
565 0561 ECF1 39 dad sp
566 0562 ECF2 22 15 F5 shld spbuff
567 0563 ECF5 31 00 F7 lxi sp,stacku
568 0564 ECF8 2A 13 F5 lhld hlbuff
569 0565 ECFB CD db 0cdh ;CALL
570 0566 ECFC 00 00 secadr: ds 2h
571 0567 ECFE 22 13 F5 shld hlbuff
572 0568 ED01 2A 15 F5 lhld spbuff
573 0569 ED04 F9 sphl
574 0570 ED05 2A 13 F5 lhld hlbuff
575 0571 ED08 C9 ret
576 0572 ED09 ;
577 0573 ED09 ;
578 0574 ED09 0E 05 secured: mvi c,rwdhg
579 0575 ED0B E5 scrd: push h
580 0576 ED0C D5 push d
581 0577 ED0D C5 push b
582 0578 ED0E CD A2 EE call secrdx
583 0579 ED11 C1 pop b
584 0580 ED12 D1 pop d
585 0581 ED13 E1 pop h
586 0582 ED14 D0 rnc ;CY off: o.k.
587 0583 ED15 0D dcr c
588 0584 ED16 C2 0B ED jnz scrd
589 0585 ED19 37 stc ;CY on: Error
590 0586 ED1A C9 ret
591 0587 ED1B ;
592 0588 ED1B ;
593 0589 ED1B 0E 05 secwrt: mvi c,rwdhg
594 0590 ED1D E5 scwr: push h
595 0591 ED1E D5 push d
596 0592 ED1F C5 push b
597 0593 ED20 CD 79 EE call secwrx
598 0594 ED23 C1 pop b
599 0595 ED24 D1 pop d
600 0596 ED25 E1 pop h
601 0597 ED26 D2 2F ED jnc verify ;kein WR-Fehler, aber pr}fen!
602 0598 ED29 0D dcr c
603 0599 ED2A C2 1D ED jnz scwr
604 0600 ED2D 37 stc ;CY on: Error
605 0601 ED2E C9 ret
606 0602 ED2F ;
607 0603 ED2F ;
608 0604 ED2F C5 verify: push b
609 0605 ED30 D5 push d
610 0606 ED31 E5 push h
611 0607 ED32 21 00 F7 lxi h,verbuf
612 0608 ED35 CD 09 ED call secured ;hier keine Fehlerauswertung
613 0609 ED38 E1 pop h
614 0610 ED39 E5 push h
615 0611 ED3A CD BE ED call compar
616 0612 ED3D E1 pop h
617 0613 ED3E D1 pop d
618 0614 ED3F C1 pop b
619 0615 ED40 C2 1D ED jnz scwr
620 0616 ED43 C9 ret ;CY off (=o.k.): RET
621 0617 ED44 ;
622 0618 ED44 ;
623 0619 ED44 ;*****
624 0620 ED44 ;
625 0621 ED44 ;
626 0622 ED44 ;
627 0623 ED44 ;
628 0624 ED44 ;*****
629 0625 ED44 21 00 F8 bufcal: lxi h,buffer
630 0626 ED47 3A 22 F5 lda iosec
631 0627 ED4A E6 07 ani 7h
632 0628 ED4C 0F rrc
633 0629 ED4D 57 mov d,a
634 0630 ED4E 3E 00 mvi a,0h
635 0631 ED50 1F rar
636 0632 ED51 5F mov e,a
637 0633 ED52 7A mov a,d
638 0634 ED53 E6 7F ani 7fh
639 0635 ED55 57 mov d,a
640 0636 ED56 19 dad d

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641	0637	ED57 EB		xchg	
642	0638	ED58 2A 24 F5		lhld iodma	
643	0639	ED5B EB		xchg	
644	0640	ED5C 0E 80		mvi c,80h	;128 Bytes Länge
645	0641	ED5E C9		ret	
646	0642	ED5F			
647	0643	ED5F AF	; codbuf:	xra a	;LW-Ansprache vorbereiten
648	0644	ED60 32 11 F5		sta wrtflg	;Buffer leer
649	0645	ED63 21 00 F8		lxi h,buffer	
650	0646	ED66 3A 2A F5		lda aktsec	
651	0647	ED69 5F		mov e,a	
652	0648	ED6A 3A 28 F5		lda aktdrv	
653	0649	ED6D 07		rlc	
654	0650	ED6E E6 06		ani 6h	
655	0651	ED70 47		mov b,a	
656	0652	ED71 16 04		mvi d,4h	;4 Sektoren x256 Bytes
657	0653	ED73 3A 19 F5		lda step	
658	0654	ED76 B0		ora b	
659	0655	ED77 47		mov b,a	
660	0656	ED78 3A 1A F5		lda side	
661	0657	ED7B B7		ora a	
662	0658	ED7C C8		rz	
663	0659	ED7D 3A 1B F5		lda trksid	
664	0660	ED80 4F		mov c,a	
665	0661	ED81 3A 29 F5		lda akttrk	
666	0662	ED84 B9		cmp c	
667	0663	ED85 D8		rc	
668	0664	ED86 78		mov a,b	
669	0665	ED87 F6 20		ori 20h	
670	0666	ED89 47		mov b,a	
671	0667	ED8A C9		ret	
672	0668	ED8B			
673	0669	ED8B 3A 1A F5	; xlat:	lda side	
674	0670	ED8E B7		ora a	
675	0671	ED8F 3A 29 F5		lda akttrk	
676	0672	ED92 57		mov d,a	
677	0673	ED93 C8		rz	
678	0674	ED94 B9		cmp c	
679	0675	ED95 D8		rc	
680	0676	ED96 2F		cma	
681	0677	ED97 81		add c	
682	0678	ED98 81		add c	
683	0679	ED99 57		mov d,a	
684	0680	ED9A C9		ret	
685	0681	ED9B			
686	0682	ED9B 3A 22 F5	; calc:	lda iosec	
687	0683	ED9E 0F		rrc	
688	0684	ED9F E6 0C		ani 0ch	
689	0685	EDA1 3C		inr a	
690	0686	EDA2 5F		mov e,a	
691	0687	EDA3 3A 18 F5		lda dbank	
692	0688	EDA6 4F		mov c,a	
693	0689	EDA7 3A 20 F5		lda iotrk	
694	0690	EDAA 57		mov d,a	
695	0691	EDAB C9		ret	
696	0692	EDAC			
697	0693	EDAC CD 9B ED	; calcmp:	call calc	
698	0694	EDAF 3A 28 F5	comp:	lda aktdrv	
699	0695	EDB2 B9		cmp c	
700	0696	EDB3 C0		rnz	
701	0697	EDB4 3A 29 F5		lda akttrk	
702	0698	EDB7 BA		cmp d	
703	0699	EDB8 C0		rnz	
704	0700	EDB9 3A 2A F5		lda aktsec	
705	0701	EDBC BB		cmp e	
706	0702	EDBD C9		ret	
707	0703	EDBE			
708	0704	EDBE 0E 00	; compar:	mvi c,0h	;256d Bytes vergleichen
709	0705	EDC0 E5		push h	
710	0706	EDC1 21 00 F7		lxi h,verbuf	
711	0707	EDC4 EB		xchg	
712	0708	EDC5 E1		pop h	
713	0709	EDC6 1A	comlop:	ldax d	
714	0710	EDC7 BE		cmp m	
715	0711	EDC8 C0		rnz	
716	0712	EDC9 23		inx h	
717	0713	EDCA 13		inx d	
718	0714	EDCB 0D		dcr c	
719	0715	EDCC C2 C6 ED		jnz comlop	
720	0716	EDCF C9		ret	

```

721 0717 EDD0
722 0718 EDD0 79
723 0719 EDD1 32 28 F5
724 0720 EDD4 7A
725 0721 EDD5 32 29 F5
726 0722 EDD8 7B
727 0723 EDD9 32 2A F5
728 0724 EDDC C9
729 0725 EDDD
730 0726 EDDD F5
731 0727 EDDE E5
732 0728 EDDF 87
733 0729 EDE0 87
734 0730 EDE1 5F
735 0731 EDE2 16 00
736 0732 EDE4 21 D1 F4
737 0733 EDE7 19
738 0734 EDE8 11 19 F5
739 0735 EDEB 0E 03
740 0736 EDED CD F3 ED
741 0737 EDF0 E1
742 0738 EDF1 F1
743 0739 EDF2 C9
744 0740 EDF3
745 0741 EDF3 7E
746 0742 EDF4 12
747 0743 EDF5 23
748 0744 EDF6 13
749 0745 EDF7 0D
750 0746 EDF8 C2 F3 ED
751 0747 EDFB C9
752 0748 EDFC
753 0749 EDFC D5
754 0750 EDFD 11 00 01
755 0751 EE00 19
756 0752 EE01 D1
757 0753 EE02 1C
758 0754 EE03 15
759 0755 EE04 C9
760 0756 EE05
761 0757 EE05 3A 66 00
762 0758 EE08 32 12 F5
763 0759 EE0B C9
764 0760 EE0C
765 0761 EE0C 3A 12 F5
766 0762 EE0F 32 66 00
767 0763 EE12 C9
768 0764 EE13
769 0765 EE13 F1
770 0766 EE14 F1
771 0767 EE15 AF
772 0768 EE16 3C
773 0769 EE17 C9
774 0770 EE18
775 0771 EE18
776 0772 EE18
777 0773 EE18
778 0774 EE18
779 0775 EE18
780 0776 EE18
781 0777 EE18
782 0778 EE18
783 0779 EE18
784 0780 EE18
785 0781 EE18
786 0782 EE18
787 0783 EE18
788 0784 EE18
789 0785 EE18
790 0786 EE18 DB 4B
791 0787 EE1A 12
792 0788 EE1B 13
793 0789 EE1C C9
794 0790 EE1D
795 0791 EE1D
796 0792 EE1D 1A
797 0793 EE1E D3 4B
798 0794 EE20 13
799 0795 EE21 C9
800 0796 EE22

;
store: mov a,c
sta aktdrv
mov a,d
sta akttrk
mov a,e
sta aktsec
ret

;
parcop: push psw
push h
add a
add a
mov e,a
mvi d,0h
lxi h,drv0
dad d
lxi d,step
mvi c,3h
call copy
pop h
pop psw
ret

;
copy: mov a,m
stax d
inx h
inx d
dcr c
jnz copy
ret

;
nxtsec: push d
lxi d,100h
dad d ;Adresse +256d
pop d
inr e ;Sektor-Nr.+1
dcr d ;Sektor-Z{hler -1
ret

;
save: lda 66h
sta nscbuf
ret

;
resto: lda nscbuf
sta 66h
ret

;
bdoser: pop psw ;wg. 2xCALL
pop psw
xra a
inr a
ret ;Err.:ACC=01h

;
;*****
;
; Floppy-Routinen
;*****
;
comreg equ 48h
trkreg equ 49h
secreg equ 4ah
datreg equ 4bh
status equ comreg
ctrl equ 40h
;
;
intrd: in datreg
stax d
inx d
ret

;
;
intwr: ldax d
out datreg
inx d
ret

;

```

```

801 0797 EE22 ;
802 0798 EE22 C5 inton: push b
803 0799 EE23 3E 1E mvi a,1eh ;8085-RST5.5 enable
804 0800 EE25 06 02 mvi b,02h ;NSC800-RSTC enable
805 0801 EE27 C3 2F EE jmp intcte
806 0802 EE2A C5 intof: push b
807 0803 EE2B 3E 1F mvi a,1fh ;8085-RST5.5 disable
808 0804 EE2D 06 00 mvi b,00h ;NSC800-RSTC disable
809 0805 EE2F 30 intcte: sim
810 0806 EE30 00 nop ;wg.NSC800-JR-Befehl
811 0807 EE31 78 mov a,b
812 0808 EE32 D3 BB out 0bbh
813 0809 EE34 C1 pop b
814 0810 EE35 C9 ret
815 0811 EE36 ;
816 0812 EE36 ;
817 0813 EE36 F3 init: di ;Sektorzugriff vorbereiten
818 0814 EE37 C5 push b
819 0815 EE38 22 04 F5 shld datadr
820 0816 EE3B 3E E9 mvi a,0e9h ;PCHL
821 0817 EE3D 32 24 00 sta 24h ;8085-TRAP
822 0818 EE40 32 66 00 sta 66h ;NSC-TRAP
823 0819 EE43 21 2C 00 lxi h,2ch ;RST.5/RSTC
824 0820 EE46 36 F1 mvi m,0f1h ;POP PSW
825 0821 EE48 23 inx h
826 0822 EE49 36 DB mvi m,0dbh ;IN
827 0823 EE4B 23 inx h
828 0824 EE4C 36 48 mvi m,status
829 0825 EE4E 23 inx h
830 0826 EE4F 36 C9 mvi m,0c9h ;RET
831 0827 EE51 ;
832 0828 EE51 7A mov a,d
833 0829 EE52 32 00 F5 sta trknr
834 0830 EE55 7B mov a,e
835 0831 EE56 32 01 F5 sta secnr
836 0832 EE59 78 mov a,b
837 0833 EE5A 32 02 F5 sta selbyt
838 0834 EE5D 0F rrc
839 0835 EE5E E6 03 ani 3h
840 0836 EE60 5F mov e,a
841 0837 EE61 16 00 mvi d,0h
842 0838 EE63 21 75 EE lxi h,lwnr
843 0839 EE66 19 dad d
844 0840 EE67 4E mov c,m
845 0841 EE68 78 mov a,b
846 0842 EE69 E6 21 ani 21h
847 0843 EE6B B1 ora c
848 0844 EE6C 32 03 F5 sta selout
849 0845 EE6F 21 06 F5 lxi h,track0
850 0846 EE72 19 dad d
851 0847 EE73 C1 pop b
852 0848 EE74 C9 ret
853 0849 EE75 ;
854 0850 EE75 02 lwnr: db 02h
855 0851 EE76 04 db 04h
856 0852 EE77 08 db 08h
857 0853 EE78 10 db 10h
858 0854 EE79 ;
859 0855 EE79 ;
860 0856 EE79 CD 36 EE secwrx: call init ;Sektor schreiben
861 0857 EE7C E5 push h
862 0858 EE7D 21 1D EE lxi h,intwr
863 0859 EE80 22 0B F5 shld intprg
864 0860 EE83 E1 pop h
865 0861 EE84 3A 00 F5 lda trknr
866 0862 EE87 57 mov d,a
867 0863 EE88 3E 2A mvi a,2ah
868 0864 EE8A BA cmp d ;Sec.kleiner 42d?
869 0865 EE8B 3E A2 mvi a,0a2h ;*./A6h; WRSEC
870 0866 EE8D D2 9C EE jnc scwrx
871 0867 EE90 47 mov b,a
872 0868 EE91 3A 02 F5 lda selbyt
873 0869 EE94 E6 01 ani 01h
874 0870 EE96 78 mov a,b
875 0871 EE97 C2 9C EE jnz scwrx
876 0872 EE9A E6 FD ani 0fdh
877 0873 EE9C 32 0A F5 scwrx: sta rwbef
878 0874 EE9F C3 B2 EE jmp start
879 0875 EEA2 ;
880 0876 EEA2 ;

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```

881 0877 EEA2 CD 36 EE      secrdx:      call init      ;Sektor lesen
882 0878 EEA5 E5            push h
883 0879 EEA6 21 18 EE      lxi h,intrd
884 0880 EEA9 22 0B F5      shld intprg
885 0881 EEAC E1            pop h
886 0882 EEAD 3E 80            mvi a,80h      ;*./ .84h; RDSEC (+30 ms)
887 0883 EEAF 32 0A F5      sta rwbef
888 0884 EEB2            ;
889 0885 EEB2 7E      start:      mov a,m
890 0886 EEB3 07            rlc
891 0887 EEB4 D4 FC EE      cnc restor      ;MSB off: Spur-Nr.ung}ltig
892 0888 EEB7 7E            mov a,m
893 0889 EEB8 E6 7F            ani 7fh
894 0890 EEBA D3 49            out trkreg
895 0891 EEEBC 3A 00 F5      lda trknr
896 0892 EEEBF D3 4B            out datreg
897 0893 EEC1 06 10            mvi b,10h      ;*./ .14h; SEEK
898 0894 EEC3 CD FE EE      call posit      ;Spur einstellen
899 0895 EEC6 D8            rc      ;CY on: RET (Fehler)
900 0896 EEC7            ;
901 0897 EEC7 0E 05            mvi c,rwdhg
902 0898 EEC9 C5      wdhg:      push b
903 0899 EECA E5            push h
904 0900 EECB CD E2 EE      call rdwr      ;Schreib/Lese-Operation
905 0901 EECE E1            pop h
906 0902 EECF C1            pop b
907 0903 EED0 E6 5C            ani 5ch      ;Status auswerten
908 0904 EED2 CA DC EE      jz ende
909 0905 EED5 0D            dcr c
910 0906 EED6 C2 C9 EE      jnz wdhg
911 0907 EED9 C3 15 EF      jmp fdcerr
912 0908 EEDC            ;
913 0909 EEDC F5      ende:      push psw
914 0910 EEDD CD 2A EE      call intof
915 0911 EEE0 F1            pop psw
916 0912 EEE1 C9            ret
917 0913 EEE2            ;
918 0914 EEE2            ;
919 0915 EEE2 2A 04 F5      rdwr:      lhld datadr
920 0916 EEE5 E5            push h
921 0917 EEE6 D1            pop d
922 0918 EEE7 2A 0B F5      lhld intprg
923 0919 EEEA 3A 01 F5      lda secnr
924 0920 EEED D3 4A            out secreg
925 0921 EEEF CD 22 EE      call inton
926 0922 EEF2 3A 0A F5      lda rwbef
927 0923 EEF5 D3 48            out comreg
928 0924 EEF7 FB      rdwrlp:      ei
929 0925 EEF8 76            hlt
930 0926 EEF9 C3 F7 EE      jmp rdwrlp
931 0927 EEF8            ;
932 0928 EEF8            ;
933 0929 EEF8 06 00      restor:      mvi b,0h      ;*./ .04h; RESTORE
934 0930 EEF8            ;
935 0931 EEF8 CD 19 EF      posit:      call pos      ;Spur einstellen
936 0932 EF01 E6 18            ani 18h      ;Statusfehler?
937 0933 EF03 C2 15 EF      jnz fdcerr      ;ja: JMP
938 0934 EF06 DB 49            in trkreg
939 0935 EF08 4F            mov c,a
940 0936 EF09 3A 00 F5      lda trknr
941 0937 EF0C B9            cmp c      ;gew}nschte = aktuelle Spur?
942 0938 EF0D C2 15 EF      jnz fdcerr      ;nein: JMP
943 0939 EF10 F6 80      fdcok:      ori 80h      ;MSB on: Spur-Nr.g}ltig
944 0940 EF12 77            mov m,a
945 0941 EF13 AF            xra a      ;CY off: kein Fehler
946 0942 EF14 C9            ret
947 0943 EF15 36 00      fdcerr:      mvi m,0h      ;MSB off: Spur-Nr.ung}ltig
948 0944 EF17 37            stc      ;CY on: Fehler
949 0945 EF18 C9            ret
950 0946 EF19            ;
951 0947 EF19 CD 22 EE      pos:      call inton      ;Kopf posit.;RET:Status im ACC
952 0948 EF1C CD 4F EF      call dely1      ;wg.Hitachi-Timing
953 0949 EF1F 3A 02 F5      lda selbyt
954 0950 EF22 0F            rrc
955 0951 EF23 0F            rrc
956 0952 EF24 0F            rrc
957 0953 EF25 E6 03            ani 3h      ;Step Rate
958 0954 EF27 B0            ora b      ;mit CMD verkn}pfen
959 0955 EF28 D3 48            out comreg
960 0956 EF2A DB 48      poslop:      in status

```

```

961 0957 EF2C 07 rlc ;Motor on?
962 0958 EF2D D2 2A EF jnc poslop ;nein: JMP
963 0959 EF30 ;
964 0960 EF30 3A 03 F5 lda selout
965 0961 EF33 D3 40 out ctrl
966 0962 EF35 FB ei
967 0963 EF36 ;
968 0964 EF36 0E 06 mvi c,timout
969 0965 EF38 11 00 00 timlop: lxi d,0h ;TIMOUT x 0,52 s
970 0966 EF3B 1B timlp: dcx d
971 0967 EF3C 7A mov a,d
972 0968 EF3D B3 ora e
973 0969 EF3E C2 3B EF jnz timlp
974 0970 EF41 0D dcr c
975 0971 EF42 C2 38 EF jnz timlop
976 0972 EF45 ;
977 0973 EF45 3E D0 mvi a,0d0h ;*(FORCE INTERRUPT)
978 0974 EF47 D3 48 out comreg ;hier: Befehl abberechen
979 0975 EF49 CD 2A EE call intof
980 0976 EF4C 3E FF mvi a,0ffh ;Pseudo-Status: Error
981 0977 EF4E C9 ret
982 0978 EF4F ;
983 0979 EF4F ;
984 0980 EF4F F5 dely1: push psw
985 0981 EF50 3E C0 mvi a,0c0h ;192d
986 0982 EF52 3D delop: dcr a
987 0983 EF53 C2 52 EF jnz delop
988 0984 EF56 F1 pop psw
989 0985 EF57 C9 ret
990 0986 EF58 ;
991 0987 EF58 ;
992 0988 EF58 ;*****
993 0989 EF58 ;
994 0990 EF58 ; Kalt- und Warmstart
995 0991 EF58 ;
996 0992 EF58 ;*****
997 0993 EF58 ;
998 0994 EF58 3E 01 cboot: mvi a,1h ;Kaltstart
999 0995 EF5A D3 24 out rambnk ;Bank 1 allein
1000 0996 EF5C 31 00 01 lxi sp,stackc
1001 0997 EF5F ;
1002 0998 EF5F 11 03 00 lxi d,iobyte
1003 0999 EF62 21 C0 F4 lxi h,sysprt
1004 1000 EF65 7E mov a,m
1005 1001 EF66 12 stax d ;I/O-Byte laden
1006 1002 EF67 13 inx d
1007 1003 EF68 23 inx h
1008 1004 EF69 7E mov a,m
1009 1005 EF6A 12 stax d ;Kalt-Disk/User laden
1010 1006 EF6B ;
1011 1007 EF6B 3E FF mvi a,0ffh
1012 1008 EF6D 32 28 F5 sta aktdrv ;letztes Drive undefiniert
1013 1009 EF70 3E 00 mvi a,0h
1014 1010 EF72 32 11 F5 sta wrtflg ;Buffer leer
1015 1011 EF75 21 00 00 lxi h,0h
1016 1012 EF78 22 06 F5 shld track0 ;Spur-Regs.undefiniert
1017 1013 EF7B 22 08 F5 shld track2
1018 1014 EF7E ;
1019 1015 EF7E 21 00 F0 lxi h,msg1 ;*"This is..."
1020 1016 EF81 CD F3 EF call msgout
1021 1017 EF84 ;
1022 1018 EF84 3E C3 gocpm: mvi a,0c3h ;Initialisierung Page 0
1023 1019 EF86 32 00 00 sta 0h
1024 1020 EF89 32 05 00 sta 5h
1025 1021 EF8C 21 00 EA lxi h,bios
1026 1022 EF8F 11 03 00 lxi d,3h
1027 1023 EF92 19 dad d ;H&L: Warmstart-Adresse
1028 1024 EF93 22 01 00 shld 1h
1029 1025 EF96 21 06 DC lxi h,bdos
1030 1026 EF99 22 06 00 shld 6h
1031 1027 EF9C 01 80 00 lxi b,buff
1032 1028 EF9F CD 14 EC call setdma
1033 1029 EFA2 3A 04 00 lda cdisk
1034 1030 EFA5 4F mov c,a
1035 1031 EFA6 C3 00 D4 jmp ccp
1036 1032 EFA9 ;
1037 1033 EFA9 31 80 00 wboot: lxi sp,stackw
1038 1034 EFAC 3A 11 F5 lda wrtflg
1039 1035 EFAF B7 ora a ;ist alter Buffer gerettet?
1040 1036 EFB0 CA BC EF jz load ;ja: JMP

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1041 1037 EFB3 CD EF EF      call botsub      ;sonst abspeichern
1042 1038 EFB6 3A 18 F5      lda dbank
1043 1039 EFB9 CD DD ED      call parcop
1044 1040 EFBC                ;
1045 1041 EFBC 3E 00          load:      mvi a,0h
1046 1042 EFBE 32 11 F5      sta wrtflg      ;Buffer leer
1047 1043 EFC1 0E 16          mvi c,nwarm      ;nur (!) CCP und BDOS neu laden
1048 1044 EFC3 11 01 01      lxi d,begin      ;Warmstart von Disk
1049 1045 EFC6 21 00 D4      lxi h,ccp
1050 1046 EFC9 D5              bloop:     push d
1051 1047 EFCA E5              push h
1052 1048 EFCE C5              push b
1053 1049 EFCC 3A D1 F4      lda drv0
1054 1050 EFCF 47              mov b,a          ;Select-Byte
1055 1051 EFD0 CD DC EC      call secrd
1056 1052 EFD3 C1              pop b
1057 1053 EFD4 E1              pop h
1058 1054 EFD5 11 00 01      lxi d,0100h
1059 1055 EFD8 19              dad d          ;Adresse +256d
1060 1056 EFD9 D1              pop d
1061 1057 EFDA B7              ora a
1062 1058 EFDB DA BC EF      jc load          ;Lesefehler: JMP
1063 1059 EFDE 1C              inr e
1064 1060 EFDF 0D              dcr c
1065 1061 EFE0 CA 84 EF      jz gocpm          ;Start
1066 1062 EFE3                ;
1067 1063 EFE3 7B              mov a,e
1068 1064 EFE4 FE 11          cpi 11h
1069 1065 EFE6 C2 C9 EF      jnz bloop
1070 1066 EFE9 14              inr d          ;n{chste Spur,
1071 1067 EFEA 1E 01          mvi e,1h        ;erster Sektor
1072 1068 EFEC C3 C9 EF      jmp bloop
1073 1069 EFEE                ;
1074 1070 EFEE                ;
1075 1071 EFEE CD A5 EC      botsub: call puttrk      ;wg.Error Handling
1076 1072 EFF2 C9              ret
1077 1073 EFF3                ;
1078 1074 EFF3                ;
1079 1075 EFF3                ;*****
1080 1076 EFF3                ;
1081 1077 EFF3                ;      Textausgabe
1082 1078 EFF3                ;
1083 1079 EFF3                ;*****
1084 1080 EFF3                ;
1085 1081 EFF3 7E              msgout:  mov a,m
1086 1082 EFF4 B7              ora a
1087 1083 EFF5 C8              rz
1088 1084 EFF6 4F              mov c,a
1089 1085 EFF7 E5              push h
1090 1086 EFF8 CD 79 EA      call conout
1091 1087 EFFB E1              pop h
1092 1088 EFFC 23              inx h
1093 1089 EFFD C3 F3 EF      jmp msgout
1094 1090 F000                ;
1095 1091 F000 0D              msg1:   db 0dh
1096 1092 F001 0A              db 0ah
1097 1093 F002 0A              db 0ah
1098 1094 F003 54 68 69 73      db "This is 60 K CP/M Rel. 2.2"
1099 1094 F007 20 69 73 20
1100 1094 F00B 36 30 20 4B
1101 1094 F00F 20 43 50 2F
1102 1094 F013 4D 20 52 65
1103 1094 F017 6C 2E 20 32
1104 1094 F01B 2E 32
1105 1095 F01D 0D              db 0dh
1106 1096 F01E 0A              db 0ah
1107 1097 F01F 00              db 00h
1108 1098 F020                ;
1109 1099 F020                ;
1110 1100 F020                ;*****
1111 1101 F020                ;
1112 1102 F020                ;      Variablen-Bereich
1113 1103 F020                ;
1114 1104 F020                ;*****
1115 1105 F020                ;
1116 1106 F020                ;
1117 1107 F400                ;      org syspar      ;vom Urloader
1118 1108 F400 00 00 00 00      xlt0:   ds 20h          ;Translate Tables
1119 1108 F404 00 00 00 00
1120 1108 F408 00 00 00 00

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1121 1108 F40C 00 00 00 00
1122 1108 F410 00 00 00 00
1123 1108 F414 00 00 00 00
1124 1108 F418 00 00 00 00
1125 1108 F41C 00 00 00 00
1126 1109 F420 00 00 00 00 xlt1: ds 20h
1127 1109 F424 00 00 00 00
1128 1109 F428 00 00 00 00
1129 1109 F42C 00 00 00 00
1130 1109 F430 00 00 00 00
1131 1109 F434 00 00 00 00
1132 1109 F438 00 00 00 00
1133 1109 F43C 00 00 00 00
1134 1110 F440 00 00 00 00 xlt2: ds 20h
1135 1110 F444 00 00 00 00
1136 1110 F448 00 00 00 00
1137 1110 F44C 00 00 00 00
1138 1110 F450 00 00 00 00
1139 1110 F454 00 00 00 00
1140 1110 F458 00 00 00 00
1141 1110 F45C 00 00 00 00
1142 1111 F460 00 00 00 00 xlt3: ds 20h
1143 1111 F464 00 00 00 00
1144 1111 F468 00 00 00 00
1145 1111 F46C 00 00 00 00
1146 1111 F470 00 00 00 00
1147 1111 F474 00 00 00 00
1148 1111 F478 00 00 00 00
1149 1111 F47C 00 00 00 00
1150 1112 F480 ;
1151 1113 F480 00 00 00 00 dpb0: ds 10h ;Disk Parameter Blocks
1152 1113 F484 00 00 00 00
1153 1113 F488 00 00 00 00
1154 1113 F48C 00 00 00 00
1155 1114 F490 00 00 00 00 dpb1: ds 10h
1156 1114 F494 00 00 00 00
1157 1114 F498 00 00 00 00
1158 1114 F49C 00 00 00 00
1159 1115 F4A0 00 00 00 00 dpb2: ds 10h
1160 1115 F4A4 00 00 00 00
1161 1115 F4A8 00 00 00 00
1162 1115 F4AC 00 00 00 00
1163 1116 F4B0 00 00 00 00 dpb3: ds 10h
1164 1116 F4B4 00 00 00 00
1165 1116 F4B8 00 00 00 00
1166 1116 F4BC 00 00 00 00
1167 1117 F4C0 ;
1168 1118 F4C0 00 sysprt: ds 1h ;I/O-Byte
1169 1119 F4C1 00 sysusr: ds 1h ;Kaltstart-Drive/User
1170 1120 F4C2 00 00 00 00 ds 0eh
1171 1120 F4C6 00 00 00 00
1172 1120 F4CA 00 00 00 00
1173 1120 F4CE 00 00
1174 1121 F4D0 ;
1175 1122 F4D0 00 ds 1h ;Dive Parameter
1176 1123 F4D1 00 00 00 00 drv0: ds 4h
1177 1124 F4D5 00 00 00 00 drv1: ds 4h
1178 1125 F4D9 00 00 00 00 drv2: ds 4h
1179 1126 F4DD 00 00 00 drv3: ds 3h
1180 1127 F4E0 ;
1181 1128 F4E0 00 sysjmp: ds 1h ;Codes umkopieren Y/N
1182 1129 F4E1 00 sysvid: ds 1h
1183 1130 F4E2 00 00 00 00 ds 0eh
1184 1130 F4E6 00 00 00 00
1185 1130 F4EA 00 00 00 00
1186 1130 F4EE 00 00
1187 1131 F4F0 ;
1188 1132 F4F0 00 00 usadr0: ds 2h
1189 1133 F4F2 00 00 usadr1: ds 2h
1190 1134 F4F4 00 00 usadr2: ds 2h
1191 1135 F4F6 00 00 usadr3: ds 2h
1192 1136 F4F8 00 00 usadr4: ds 2h
1193 1137 F4FA 00 00 usadr5: ds 2h
1194 1138 F4FC 00 00 usadr6: ds 2h
1195 1139 F4FE 00 00 usadr7: ds 2h
1196 1140 F500 ;
1197 1141 F500 ;
1198 1142 F500 org variab ;Line modified by ASM preprocessor (ORG
correction): org variab
1199 1143 F500 ;

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1200	1144	F500	00	trknr:	ds	1h	;FDC-Init
1201	1145	F501	00	secnr:	ds	1h	
1202	1146	F502	00	selbyt:	ds	1h	
1203	1147	F503	00	selout:	ds	1h	
1204	1148	F504	00 00	datadr:	ds	2h	
1205	1149	F506	00	track0:	ds	1h	;Spur-Regs.
1206	1150	F507	00	track1:	ds	1h	
1207	1151	F508	00	track2:	ds	1h	
1208	1152	F509	00	track3:	ds	1h	
1209	1153	F50A	00	rwbef:	ds	1h	;RD/WR-Befehl
1210	1154	F50B	00 00	intprg:	ds	2h	;RD/WR-Adresse
1211	1155	F50D	00 00 00		ds	3h	
1212	1156	F510		;			
1213	1157	F510	00	dirflg:	ds	1h	;von WRITE
1214	1158	F511	00	wrtflg:	ds	1h	;WR erl.:00h
1215	1159	F512	00	nsdbuf:	ds	1h	
1216	1160	F513	00 00	hlbuff:	ds	2h	
1217	1161	F515	00 00	spbuff:	ds	2h	
1218	1162	F517	00		ds	1h	
1219	1163	F518		;			
1220	1164	F518	00	dbank:	ds	1h	;SELDSK-Init.(LW-Nr.)
1221	1165	F519	00	step:	ds	1h	
1222	1166	F51A	00	side:	ds	1h	
1223	1167	F51B	00	trksid:	ds	1h	
1224	1168	F51C	00 00 00 00		ds	4h	
1225	1169	F520		;			
1226	1170	F520	00 00	iotrk:	ds	2h	;SETTRK
1227	1171	F522	00 00	iosec:	ds	2h	;SETSEC
1228	1172	F524	00 00	iodma:	ds	2h	;SETDMA
1229	1173	F526	00 00		ds	2h	
1230	1174	F528		;			
1231	1175	F528	00	aktdrv:	ds	1h	;STORE-Err.
1232	1176	F529	00	akttrk:	ds	1h	
1233	1177	F52A	00	aktsec:	ds	1h	
1234	1178	F52B	00 00 00 00		ds	5h	
1235	1178	F52F	00				
1236	1179	F530		;			
1237	1180	F530	00 00 00 00	dirbuf:	ds	80h	;DIR Access Buffer
1238	1180	F534	00 00 00 00				
1239	1180	F538	00 00 00 00				
1240	1180	F53C	00 00 00 00				
1241	1180	F540	00 00 00 00				
1242	1180	F544	00 00 00 00				
1243	1180	F548	00 00 00 00				
1244	1180	F54C	00 00 00 00				
1245	1180	F550	00 00 00 00				
1246	1180	F554	00 00 00 00				
1247	1180	F558	00 00 00 00				
1248	1180	F55C	00 00 00 00				
1249	1180	F560	00 00 00 00				
1250	1180	F564	00 00 00 00				
1251	1180	F568	00 00 00 00				
1252	1180	F56C	00 00 00 00				
1253	1180	F570	00 00 00 00				
1254	1180	F574	00 00 00 00				
1255	1180	F578	00 00 00 00				
1256	1180	F57C	00 00 00 00				
1257	1180	F580	00 00 00 00				
1258	1180	F584	00 00 00 00				
1259	1180	F588	00 00 00 00				
1260	1180	F58C	00 00 00 00				
1261	1180	F590	00 00 00 00				
1262	1180	F594	00 00 00 00				
1263	1180	F598	00 00 00 00				
1264	1180	F59C	00 00 00 00				
1265	1180	F5A0	00 00 00 00				
1266	1180	F5A4	00 00 00 00				
1267	1180	F5A8	00 00 00 00				
1268	1180	F5AC	00 00 00 00				
1269	1181	F5B0		;			
1270	1182	F5B0	00 00 00 00	alv0:	ds	28h	;27h f}r 2x80 Tracks
1271	1182	F5B4	00 00 00 00				
1272	1182	F5B8	00 00 00 00				
1273	1182	F5BC	00 00 00 00				
1274	1182	F5C0	00 00 00 00				
1275	1182	F5C4	00 00 00 00				
1276	1182	F5C8	00 00 00 00				
1277	1182	F5CC	00 00 00 00				
1278	1182	F5D0	00 00 00 00				
1279	1182	F5D4	00 00 00 00				

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1280 1183 F5D8 00 00 00 00 csv0: ds 20h ;20h f}r 2x80 Tracks
1281 1183 F5DC 00 00 00 00
1282 1183 F5E0 00 00 00 00
1283 1183 F5E4 00 00 00 00
1284 1183 F5E8 00 00 00 00
1285 1183 F5EC 00 00 00 00
1286 1183 F5F0 00 00 00 00
1287 1183 F5F4 00 00 00 00
1288 1184 F5F8 00 00 00 00 alv1: ds 28h
1289 1184 F5FC 00 00 00 00
1290 1184 F600 00 00 00 00
1291 1184 F604 00 00 00 00
1292 1184 F608 00 00 00 00
1293 1184 F60C 00 00 00 00
1294 1184 F610 00 00 00 00
1295 1184 F614 00 00 00 00
1296 1184 F618 00 00 00 00
1297 1184 F61C 00 00 00 00
1298 1185 F620 00 00 00 00 csv1: ds 20h
1299 1185 F624 00 00 00 00
1300 1185 F628 00 00 00 00
1301 1185 F62C 00 00 00 00
1302 1185 F630 00 00 00 00
1303 1185 F634 00 00 00 00
1304 1185 F638 00 00 00 00
1305 1185 F63C 00 00 00 00
1306 1186 F640 00 00 00 00 alv2: ds 28h
1307 1186 F644 00 00 00 00
1308 1186 F648 00 00 00 00
1309 1186 F64C 00 00 00 00
1310 1186 F650 00 00 00 00
1311 1186 F654 00 00 00 00
1312 1186 F658 00 00 00 00
1313 1186 F65C 00 00 00 00
1314 1186 F660 00 00 00 00
1315 1186 F664 00 00 00 00
1316 1187 F668 00 00 00 00 csv2: ds 20h
1317 1187 F66C 00 00 00 00
1318 1187 F670 00 00 00 00
1319 1187 F674 00 00 00 00
1320 1187 F678 00 00 00 00
1321 1187 F67C 00 00 00 00
1322 1187 F680 00 00 00 00
1323 1187 F684 00 00 00 00
1324 1188 F688 00 00 00 00 alv3: ds 28h
1325 1188 F68C 00 00 00 00
1326 1188 F690 00 00 00 00
1327 1188 F694 00 00 00 00
1328 1188 F698 00 00 00 00
1329 1188 F69C 00 00 00 00
1330 1188 F6A0 00 00 00 00
1331 1188 F6A4 00 00 00 00
1332 1188 F6A8 00 00 00 00
1333 1188 F6AC 00 00 00 00
1334 1189 F6B0 00 00 00 00 csv3: ds 20h
1335 1189 F6B4 00 00 00 00
1336 1189 F6B8 00 00 00 00
1337 1189 F6BC 00 00 00 00
1338 1189 F6C0 00 00 00 00
1339 1189 F6C4 00 00 00 00
1340 1189 F6C8 00 00 00 00
1341 1189 F6CC 00 00 00 00
1342 1190 F6D0 ;
1343 1191 F6D0 ;
1344 1192 F6D0 end
1345 1193 F6D0 ;
1346 Number of errors = 0
1347
```