]CATALOG

DISK VOLUME 254

```
 A 002 HELLO
 T 002 FIRST
*B 036 ASSM
*B 016 EDITOR
 B 002 ASMIDSTAMP
*B 003 EDASM.OBJ
*B 020 FID
*A 003 EDASM
 T 058 MUSE21
 T 026 MUSE22
 T 032 MUSE12
 T 005 APCOM
 B 002 APCOM.OBJ0
 T 025 ASSCTL
 T 056 MUSE11
 B 013 ASS2.OBJ0
 T 016 ASS2
 B 019 SAVEEFFECTS
 T 002 JUNKER
 B 018 ASS3.OBJ0
 B 034 EFFECTS
 T 016 ASS3
 B 015 MUSE12.OBJ0
 B 015 MUSE22.OBJ0
 T 001 MUSE72
```

]BRUN EDASM.OBJ

APPLE 11 EDITOR ASSEMBLER VERSION 1.0

APPLEMUSIC
6/7 7-11-85

:,PR#0

SOURCE FILE: ASS3
SOURCE FILE: ASSCTL
```
0000:              1 ;APPLE.SOUND
0000:              2 ;P.P.
C030:              3 SPEAKER EQU   $C030
0000:              4        DSECT
00E0:              5        ORG   $E0
00E0:              6 NOTECOUNT DS  2
00E2:              7 Z1COMP  DS    2
00E4:              8 Z2COMP  DS    2
00E6:              9 Z1COUNT DS    2          ;CTL.POINTER
00E8:             10 Z1WAVE  DS    2          ;OCT.ADJ.PULSE.WIDTH
00EA:             11 Z2WAVE  DS    2
00EC:             12 TIMEFACT DS   1

00ED:             13 OCTUPUS DS    4
00F1:             14 TIME1   DS    1
00F2:             15 TIME5   DS    1
00F3:             16 TIME3   DS    1
00F4:             17 TIME7   DS    1
00F5:             18 TEMPERARY DS  2
00F7:             19 TEMP    DS    1
0000:             20        DEND
----- NEXT OBJECT FILE NAME IS ASS3.OBJO
1000:             21        ORG   $1000
1000:A9 FF        22 INIT   LDA   #$FF
1002:85 E0        23        STA   NOTECOUNT
1004:4C 09 10     24        JMP   APPLEGO
1007:             25 SAVECOUNT DS  1
1008:             26 LENADJ  DS    1
1009:             27 APPLEGO EQU   *
1009:AD 00 C0     28        LDA   $C000
100C:C9 DA        29        CMP   #$DA
100E:D0 04        30        BNE   NOUT
1010:AD 10 C0     31        LDA   $C010
1013:60           32        RTS
1014:             33 NOUT   EQU   *
1014:AD 10 C0     34        LDA   $C010
1017:E6 E0        35 ZG01   INC   NOTECOUNT
1019:A5 E0        36        LDA   NOTECOUNT
101B:C9 0C        37        CMP   #12
101D:D0 03        38        BNE   NXTNOTE
101F:4C 00 10     39        JMP   INIT
1022:             40 NXTNOTE EQU  *
1022:             41 GONOTE EQU   *
1022:A5 E0        42        LDA   NOTECOUNT
1024:             43 ;GET.NOTE.IN.OCTAVE
1024:29 0F        44        AND   #$F
1026:0A           45        ASL   A
1027:AA           46        TAX
1028:BD 75 12     47        LDA   NOTETBL,X
102B:85 E2        48        STA   Z1COMP
102D:BD 76 12     49        LDA   NOTETBL+1,X
1030:85 E3        50        STA   Z1COMP+1
1032:AD AB 12     51        LDA   PWVALUE
```

```
1032:AD AB 12    51          LDA  PWVALUE
1035:85 E8       52          STA  Z1WAVE
1037:AD AC 12    53          LDA  PWVALUE+1
103A:85 E9       54          STA  Z1WAVE+1
103C:BD 8F 12    55          LDA  TIMETBL,X
103F:85 ED       56          STA  OCTUPUS
1041:BD 90 12    57          LDA  TIMETBL+1,X
1044:85 EE       58          STA  OCTUPUS+1
1046:AD B1 12    59          LDA  QUIK
1049:F0 04       60          BEQ  OKQUIKS
104B:46 EE       61          LSR  OCTUPUS+1
104D:66 ED       62          ROR  OCTUPUS
104F:           63 OKQUIKS   EQU  *
104F:A9 00       64          LDA  #0
1051:8D 08 10    65          STA  LENADJ
1054:85 EF       66          STA  OCTUPUS+2
1056:85 F0       67          STA  OCTUPUS+3
1058:           68 ;LDA #$35
1058:           69 ;STA TIMEFACT
1058:A5 E0       70          LDA  NOTECOUNT
105A:4A         71          LSR  A
105B:4A         72          LSR  A
105C:4A         73          LSR  A
105D:4A         74          LSR  A
105E:09 F0       75          ORA  #$F0
1060:18         76          CLC
1061:69 0B       77          ADC  #11
1063:AA         78          TAX
1064:           79 ;DEX
1064:8E 07 10    80          STX  SAVECOUNT
1067:CE 07 10    81          DEC  SAVECOUNT
106A:           82 OCTLOOP   EQU  *
106A:46 E3       83          LSR  Z1COMP+1
106C:66 E2       84          ROR  Z1COMP
106E:           85 ;LSR Z2COMP+1
106E:           86 ;ROR Z2COMP
106E:46 E9       87          LSR  Z1WAVE+1
1070:66 E8       88          ROR  Z1WAVE
1072:CA         89          DEX
1073:30 1C       90          BMI  OUTOCTLOOP
1075:EC 07 10    91          CPX  SAVECOUNT
1078:F0 F0       92          BEQ  OCTLOOP
107A:06 ED       93          ASL  OCTUPUS
107C:26 EE       94          ROL  OCTUPUS+1
107E:26 EF       95          ROL  OCTUPUS+2
1080:26 F0       96          ROL  OCTUPUS+3
1082:AD 08 10    97          LDA  LENADJ
1085:18         98          CLC
1086:69 16       99          ADC  #22
1088:8D 08 10   100          STA  LENADJ
108B:4C 6A 10   101          JMP  OCTLOOP
108E:          102 OCTNEW    EQU  *
108E:          103 ;
108E:4C 6A 10   104          JMP  OCTLOOP
1091:          105 OUTOCTLOOP EQU *
1091:A5 ED     106          LDA  OCTUPUS
1093:38        107          SEC
1094:ED 08 10  108          SBC  LENADJ
1097:B0 18     109          BCS  OKLEN1
1099:A5 EE     110          LDA  OCTUPUS+1
109B:08        111          PHP
109C:C6 EE     112          DEC  OCTUPUS+1
109E:28        113          PLP
109F:F0 02     114          BEQ  OKLEN2
```

(handwritten annotations in right margin:)

```
LDA  SLIDEVAL
STA  SLIDEDOWN
LDA  SLIDEVAL+1
STA  SLIDEDOWN+1
```

```
ASL  SLIDEDOWN
ROL  SLIDEDOWN+1
```

```
109F:F0 02      114           BEQ   OKLEN2
10A1:D0 0E      115           BNE   OKLEN1
10A3:          116 OKLEN2 EQU *
10A3:A5 EF      117           LDA   OCTUPUS+2
10A5:08         118           PHP
10A6:C6 EF      119           DEC   OCTUPUS+2
10A8:28         120           PLP
10A9:D0 06      121           BNE   OKLEN1
10AB:          122 OKLEN3 EQU *
10AB:A5 F0      123           LDA   OCTUPUS+3
10AD:F0 02      124           BEQ   OKLEN1
10AF:C6 F0      125           DEC   OCTUPUS+3
10B1:          126 OKLEN1 EQU *
10B1:E6 EE      127           INC   OCTUPUS+1
10B3:E6 EF      128           INC   OCTUPUS+2
10B5:E6 F0      129           INC   OCTUPUS+3
10B7:          130 OKSCNT2 EQU *
10B7:          131 ;ADJUST.FOR.LOOP.HOUSEKEEPING.TIME
10B7:A5 E2      132           LDA   Z1COMP
10B9:38         133           SEC
10BA:E9 04      134           SBC   #4
10BC:85 E2      135           STA   Z1COMP
10BE:B0 06      136           BCS   OKSC1
10C0:A5 E3      137           LDA   Z1COMP+1



10C2:F0 02      138           BEQ   OKSC1
10C4:C6 E3      139           DEC   Z1COMP+1
10C6:          140 OKSC1   EQU  *            ;LDA Z2COMP
10C6:          141 ;SEC
10C6:          142 ;SBC #4
10C6:          143 ;STA Z2COMP
10C6:          144 ;BCS OKSC2
10C6:          145 ;LDA Z2COMP+1
10C6:          146 ;BEQ OKSC2
10C6:          147 ;DEC Z2COMP+1
10C6:          148 OKSC2   EQU  *
10C6:A5 E2      149           LDA   Z1COMP
10C8:85 E4      150           STA   Z2COMP
10CA:A5 E3      151           LDA   Z1COMP+1
10CC:85 E5      152           STA   Z2COMP+1
10CE:          153 ;DO.PULSE.WIDTH
10CE:          154 ;JMP ENDPWTH
10CE:          155 TESTPWOVER EQU  *
10CE:A5 E9      156           LDA   Z1WAVE+1
10D0:C5 E3      157           CMP   Z1COMP+1
10D2:90 1F      158           BCC   OKPWC1
10D4:D0 08      159           BNE   PWOVER1
10D6:A5 E8      160           LDA   Z1WAVE
10D8:C5 E2      161           CMP   Z1COMP
10DA:90 17      162           BCC   OKPWC1
10DC:F0 15      163           BEQ   OKPWC1
10DE:A5 E8      164 PWOVER1 LDA   Z1WAVE
10E0:38         165           SEC
10E1:E5 E2      166           SBC   Z1COMP
10E3:85 E8      167           STA   Z1WAVE
10E5:B0 02      168           BCS   OKZ1SB1
10E7:C6 E9      169           DEC   Z1WAVE+1
10E9:A5 E9      170 OKZ1SB1 LDA   Z1WAVE+1
10EB:38         171           SEC
10EC:E5 E3      172           SBC   Z1COMP+1
10EE:85 E9      173           STA   Z1WAVE+1
10F0:4C CE 10   174           JMP   TESTPWOVER
10F3:          175 OKPWC1  EQU  *
10F3:A5 E2      176           LDA   Z1COMP
10F5:38         177           SEC
```

Z1WAVE=Z1WAVE-Z1COMP (handwritten annotation)

```
10F5:38         177         SEC
10F6:E5 E8      178         SBC     Z1WAVE
10F8:85 E2      179         STA     Z1COMP
10FA:B0 02      180         BCS     OKDOZW
10FC:C6 E3      181         DEC     Z1COMP+1
10FE:A5 E3      182 OKDOZW  LDA     Z1COMP+1
1100:38         183         SEC
1101:E5 E9      184         SBC     Z1WAVE+1
1103:85 E3      185         STA     Z1COMP+1
1105:A5 E4      186         LDA     Z2COMP
1107:18         187         CLC
1108:65 E8      188         ADC     Z1WAVE
110A:90 02      189         BCC     OKDOZW2
110C:E6 E5      190         INC     Z2COMP+1
110E:85 E4      191 OKDOZW2 STA     Z2COMP
1110:A5 E5      192         LDA     Z2COMP+1
1112:18         193         CLC
1113:65 E9      194         ADC     Z1WAVE+1
1115:85 E5      195         STA     Z2COMP+1
1117:          196 ;END.DO.PULSE.WIDTH
1117:          197 ENDPWTH EQU     *
1117:E6 E2      198         INC     Z1COMP
1119:E6 E4      199         INC     Z2COMP
111B:E6 E3      200         INC     Z1COMP+1

111D:E6 E5      201         INC     Z2COMP+1
111F:AE AF 12   202         LDX     RESTER
1122:4C 00 12   203         JMP     NEXTWAVE
0025:          204 ORGP1   EQU     >*
1125:          205         DS      256-ORGP1
1200:          206 NEXTWAVE EQU    *
1200:A5 E2      207         LDA     Z1COMP
1202:85 E8      208         STA     Z1WAVE
1204:A5 E4      209         LDA     Z2COMP
1206:85 EA      210         STA     Z2WAVE
1208:A5 E3      211         LDA     Z1COMP+1
120A:85 E9      212         STA     Z1WAVE+1
120C:          213 ;18
120C:EA         214         NOP
120D:EA         215         NOP
120E:BD 2F C0   216         LDA     $C02F,X    ;SPEAKER
1211:          217 ;24.CCS
1211:C6 E8      218 WL1     DEC     Z1WAVE
1213:D0 FC      219         BNE     WL1
1215:C6 E9      220         DEC     Z1WAVE+1
1217:F0 08      221         BEQ     OUTWL1
1219:C6 E8      222         DEC     Z1WAVE
121B:C6 E8      223         DEC     Z1WAVE
121D:C6 E8      224         DEC     Z1WAVE
121F:D0 F0      225         BNE     WL1
1221:          226 OUTWL1  EQU     *
1221:          227 ;7.OUT
1221:A5 E5      228         LDA     Z2COMP+1
1223:85 EB      229         STA     Z2WAVE+1
1225:A5 ED      230         LDA     OCTUPUS
1227:18         231         CLC
1228:E5 ED      232 STRKLK  SBC     TIMEFACT
122A:85 ED      233         STA     OCTUPUS
122C:B0 08      234         BCS     WAVEOK
122E:C6 EE      235         DEC     OCTUPUS+1
1230:D0 04      236         BNE     WAVEOK
1232:C6 EF      237         DEC     OCTUPUS+2
1234:F0 13      238         BEQ     EXITWAVE
1236:          239 WAVEOK  EQU     *
1236:BD 2F C0   240         LDA     $C02F,X
```

(handwritten annotations:) LDA DCTPGP4) STA SAMP4S +1 +1 +2 +2

```
1236:BD 2F C0    240           LDA    $C02F,X
1239:           241 ;91.CCS
1239:C6 EA       242 WL2        DEC    Z2WAVE
123B:D0 FC       243           BNE    WL2
123D:C6 EB       244           DEC    Z2WAVE+1
123F:F0 BF       245           BEQ    NEXTWAVE
1241:C6 EA       246           DEC    Z2WAVE
1243:C6 EA       247           DEC    Z2WAVE
1245:C6 EA       248           DEC    Z2WAVE
1247:D0 F0       249           BNE    WL2
1249:           250 ;7.OUT
1249:           251 WAVEOUT EQU  *
1249:           252 EXITWAVE EQU *
1249:4C 30 14    253.          JMP    NEXTNOTE
124C:A2 10       254           LDX    #$10
124E:A0 10       255           LDY    #$10
1250:CA          256 OL1        DEX
1251:D0 FD       257           BNE    OL1
1253:88          258           DEY
1254:D0 FA       259           BNE    OL1
1256:4C 09 10    260           JMP    APPLEGO
1259:01 02 03    261 OCTAVE    DFB    1,2,3,4,5
125C:04 05
125E:06 07 08    262           DFB    6,7,8,9,10,11,12,13
1261:09 0A 0B
1264:0C 0D
1266:0E          263           DFB    14
1267:80          264 PTBL      DFB    $80
1268:81          265           DFB    $81
1269:82          266           DFB    $82
126A:83          267           DFB    $83
126B:84          268           DFB    $84
126C:85          269           DFB    $85
126D:86          270           DFB    $86
126E:87          271           DFB    $87
126F:88          272           DFB    $88
1270:89          273           DFB    $89
1271:8A          274           DFB    $8A
1272:8B          275           DFB    $8B
1273:8C          276           DFB    $8C
1274:8D          277           DFB    $8D
1275:2E FD       278 NOTETBL   DW     64814
1277:F8 EE       279           DW     61176
1279:8F E1       280           DW     57743
127B:E6 D4       281           DW     54502
127D:F3 C8       282           DW     51443
127F:AC BD       283           DW     48556
1281:06 B3       284           DW     45830
1283:FA A8       285           DW     43258
1285:7E 9F       286           DW     40830
1287:8B 96       287           DW     38539
1289:1B 8E       288           DW     36376
128B:1E 66       289           DW     34334
128D:97 7E       290           DW     32407
128F:           291 TIMETBL EQU  *
128F:26 00       292           DW     38      ;21*2
1291:28 00       293           DW     40      ;22*2
1293:2B 00       294           DW     43      ;23*2
1295:2E 00       295           DW     46      ;24*2
1297:30 00       296           DW     48      ;25*2
1299:33 00       297           DW     51      ;26*2
129B:35 00       298           DW     53      ;27*2
129D:37 00       299           DW     55      ;28*2
129F:3A 00       300           DW     29*2
```

Handwritten notes (right margin):

FOR SLIDES

as nextnote

use ZICOMP,
to adjust slide
value, simply
add slide value.

also OCTPLUS,
OCTPLUS+1
          +2

need to be
saved + restored.

SLIDE: DELTA (neg·pos)
       number slides

Handwritten notes (green):

at EXITWAVE
LDA SLIDECONT
STA SLIDEFLG
BNE
JMP NEXTNOTE

Handwritten notes (red):

→ LDA SLIDEDOWN

LDA SLIDETO
BMI
DEC SLIKTO
BPL

BMI :)

PL: LDA SAVEPLUS OCTPLUS
              +1 / +1
              +2 / +2

LDA ZICOMP·
CLC
ADC SLIDEVAL
STA ZICOMP
INC ZICOMP+1

CL: LDA ZICOMP+1
ADC SLIDEVAL+1
STA ZICOMP+1

```
12A1:3E 00      301         DW      30*2
12A3:3E 00      302         DW      31*2
12A5:40 00      303         DW      32*2
12A7:42 00      304         DW      33*2
12A9:44 00      305         DW      34*2
12AB:           306         CHN     ASSCTL
12AB:             1 ;ASSCTL
12AB:             2 PWVALUE DS      2
12AD:             3 PWDELTA DS      2
12AF:             4 RESTER  DS      1
12B0:             5 RTIME   DS      1
12B1:00           6 QUIK    DFB     0
12B2:00           7 NOIFLAG DFB     0
12B3:00           8 NOITIMER DFB    0
12B4:00           9 TIME11  DFB     0
12B5:            10 TIME13  DS      1
12B6:            11 TIME17  DS      1
12B7:            12 SOUNDORG DS     2
12B9:00          13 PASS    DFB     0
12BA:            14 SOUND   DS      $1400-*
1400:AD 10 C0    15         LDA     $C010
1403:4C 90 14    16         JMP     WAITGO
1406:            17 TUNOTE  DS      1


1407:            18 GOTUNE  EQU     *
1407:            19 ;********
1407:            20 ;*.SET.SOUNDORG.TO.BASE.ADDRESS
1407:            21 ;*.OF.MUSIC.TABLE;.FOR.OVERLAYS
1407:            22 ;*.SOUNDORG.IS.USED.TO.PROVIDE.
1407:            23 ;*.RELOCATABILITY;.IT.POINTS.TO
1407:            24 ;*.FIRST.BYTE.OF.MUSIC.TO.PLAY
1407:            25 ;*.OR.OF.SOUND.EFFECT.TABLES.!
1407:            26 ;********
1407:            27 ;><><><><><><><
1407:            28 ;>.AND.ONE.MORE.THING....
1407:            29 ;>.THE.WORD.OF.STORAGE."SUBTBL"
1407:            30 ;>.MUST.HOLD.THE.RELOCATABLE
1407:            31 ;>.ADDRESS.OF.THE.SUBTABLE,NOW
1407:            32 ;>.THIS.IS.AT.END.OF.AREA,AT
1407:            33 ;>.2F00!!!!!!!!!!!
1407:            34 ;><><><><><><><
1407:A9 00       35         LDA     #0
1409:8D B7 12    36         STA     SOUNDORG
140C:A9 20       37         LDA     #$20
140E:8D B8 12    38         STA     SOUNDORG+1
1411:            39 ;********
1411:            40 ;*.CURRENTLY.AT.$2000
1411:            41 ;********
1411:A9 00       42         LDA     #>TUNE
1413:85 E6       43         STA     Z1COUNT
1415:A9 20       44         LDA     #<TUNE
1417:85 E7       45         STA     Z1COUNT+1
1419:            46 ;********
1419:            47 ;*.Z1COUNT.IS.WHERE.ABSOLUTE.
1419:            48 ;*.ADDRESS.OF.CURRENT.SOUND.IS
1419:            49 ;********
1419:            50 GOTUNEX EQU     *
1419:A9 00       51         LDA     #0
141B:8D AB 12    52         STA     PWVALUE
141E:8D AC 12    53         STA     PWVALUE+1
1421:8D AD 12    54         STA     PWDELTA
1424:8D AE 12    55         STA     PWDELTA+1
1427:8D B1 12    56         STA     QUIK
142A:8D 4B 15    57         STA     SLOOPCNT
```

```
142A:8D 4B 15    57           STA  SLOOPCNT
142D:CE 4B 15    58           DEC  SLOOPCNT
1430:            59 NEXTNOTE EQU  *
1430:A0 00       60           LDY  #0
1432:            61 NEXTNGO  EQU  *
1432:A9 01       62           LDA  #1
1434:8D AF 12    63           STA  RESTER
1437:E6 F1       64           INC  TIME1
1439:E6 F3       65           INC  TIME3
143B:A5 F3       66           LDA  TIME3
143D:29 03       67           AND  #*3
143F:D0 02       68           BNE  OINKT3
1441:E6 F3       69           INC  TIME3
1443:A5 F2       70 OINKT3   LDA  TIME5
1445:69 05       71           ADC  #5
1447:85 F2       72           STA  TIME5
1449:           73 ;BCC OINKT5
1449:           74 ;LDA #0
1449:           75 ;STA TIME5
1449:           76 ;
1449:           77 ;
1449:           78 OINKT5   EQU  *          ;INC.TIME7
1449:A5 F4       79           LDA  TIME7
144B:69 07       80           ADC  #7
144D:85 F4       81           STA  TIME7
144F:           82 ;BNE OINKT7
144F:           83 ;INC TIME7
144F:           84 OINKT7   EQU  *
144F:AD B4 12    85           LDA  TIME11
1452:69 0B       86           ADC  #11
1454:8D B4 12    87           STA  TIME11
1457:AD B5 12    88           LDA  TIME13
145A:69 0D       89           ADC  #13
145C:8D B5 12    90           STA  TIME13
145F:AD B6 12    91           LDA  TIME17
1462:E9 11       92           SBC  #17
1464:8D B6 12    93           STA  TIME17
1467:           94 ;BNE OINKT11
1467:           95 ;LDA #0
1467:           96 ;STA TIME11
1467:           97 OINKT11  EQU  *
1467:AD B0 12    98           LDA  RTIME
146A:4A         99           LSR  A
146B:E5 F1      100           SBC  TIME1
146D:65 F3      101           ADC  TIME3
146F:E5 F2      102           SBC  TIME5
1471:65 F4      103           ADC  TIME7
1473:ED B4 12   104           SBC  TIME11
1476:6D B5 12   105           ADC  TIME13
1479:ED B6 12   106           SBC  TIME17
147C:8D B0 12   107           STA  RTIME
147F:AD 00 C0   108           LDA  $C000
1482:30 11      109           BMI  WAITGOX
1484:AD B2 12   110           LDA  NOIFLAG
1487:F0 03      111           BEQ  OKTINY
1489:4C 9F 16   112           JMP  DONOISER
148C:           113 OKTINY   EQU  *
148C:B1 E6      114           LDA  (Z1COUNT),Y
148E:D0 53      115           BNE  NORETS
1490:           116 WAITGO   EQU  *
1490:AD 00 C0   117           LDA  $C000
1493:10 FB      118           BPL  WAITGO
1495:           119 WAITGOX  EQU  *
1495:48        120           PHA
```

```
1496:AD 10 C0   121          LDA   $C010
1499:68         122          PLA
149A:38         123          SEC
149B:E9 81      124          SBC   #$81
149D:90 F1      125          BCC   WAITGO
149F:C9 1A      126          CMP   #26
14A1:90 0C      127          BCC   DOKEY
14A3:E9 40      128          SBC   #$40
14A5:C9 19      129          CMP   #25
14A7:D0 01      130          BNE   OKKEY1
14A9:60         131          RTS
14AA:90 03      132  OKKEY1   BCC   DOKEY
14AC:           133  ;LDA $C010
14AC:4C 90 14   134          JMP   WAITGO
14AF:0A         135  DOKEY    ASL   A
14B0:AA         136          TAX
14B1:BD 00 1F   137          LDA   SOUNDS,X
14B4:85 E6      138          STA   Z1COUNT
14B6:BD 01 1F   139          LDA   SOUNDS+1,X
14B9:85 E7      140          STA   Z1COUNT+1
14BB:A0 00      141          LDY   #0
14BD:B1 E6      142          LDA   (Z1COUNT),Y
14BF:8D EC 16   143          STA   SUBTBL


14C2:C8         144          INY
14C3:B1 E6      145          LDA   (Z1COUNT),Y
14C5:8D ED 16   146          STA   SUBTBL+1
14C8:A5 E6      147          LDA   Z1COUNT
14CA:18         148          CLC
14CB:69 02      149          ADC   #2
14CD:90 02      150          BCC   OKZ1AOK
14CF:E6 E7      151          INC   Z1COUNT+1
14D1:85 E6      152  OKZ1AOK  STA   Z1COUNT
14D3:A5 E6      153          LDA   Z1COUNT
14D5:8D B7 12   154          STA   SOUNDORG
14D8:A5 E7      155          LDA   Z1COUNT+1
14DA:8D B8 12   156          STA   SOUNDORG+1
14DD:A0 00      157          LDY   #0
14DF:4C 19 14   158          JMP   GOTUNEX
14E2:           159  ;******
14E2:           160  ;ALSO.NEED.RELOCATE.SOUNDS
14E2:           161  ;AND.SUBTBL
14E2:           162  ;******
14E2:           163  ;
14E2:60         164          RTS
14E3:30 51      165  NORETS   BMI   DONOTES
14E5:           166  NEXTBYT  EQU   *
14E5:E6 E6      167          INC   Z1COUNT
14E7:D0 02      168          BNE   OKBYT
14E9:E6 E7      169          INC   Z1COUNT+1
14EB:           170  OKBYT    EQU   *
14EB:8D B9 12   171          STA   PASS
14EE:C9 30      172          CMP   #$30
14F0:B0 19      173          BCS   NEXTGOON
14F2:C9 20      174          CMP   #$20
14F4:90 04      175          BCC   CHKEMA
14F6:A9 0B      176          LDA   #11
14F8:D0 00      177          BNE   DOEMA
14FA:           178  CHKEMA   EQU   *
14FA:           179  ;CMP #12
14FA:           180  ;BCS NEXTNGO
14FA:           181  DOEMA    EQU   *
14FA:0A         182          ASL   A
14FB:AA         183          TAX
```

```
14FB:AA        183           TAX
14FC:BD 0E 15  184           LDA  SUBS,X
14FF:8D 09 15  185           STA  GODOIT+1
1502:BD 0F 15  186           LDA  SUBS+1,X
1505:8D 0A 15  187           STA  GODOIT+2
1508:20 32 14  188 GODOIT    JSR  NEXTNGO
150B:          189 NEXTGOON EQU  *
150B:4C 30 14  190           JMP  NEXTNOTE
150E:00 00     191 SUBS      DW   0
1510:4C 15     192           DW   SLOOP
1512:8B 15     193           DW   SSETPW
1514:A3 15     194           DW   SSETPWD
1516:28 16     195           DW   SBOTHPW
1518:19 16     196           DW   SCLEARPW
151A:BB 15     197           DW   SDOPWD
151C:29 15     198           DW   SREST
151E:30 16     199           DW   SROTS
1520:75 16     200           DW   SRETS
1522:86 16     201           DW   STOGLQUIK
1524:CC 16     202           DW   SWHITE
1526:4C 32 14  203           JMP  NEXTNGO
1529:A9 00     204 SREST     LDA  #0
152B:8D AF 12  205           STA  RESTER
152E:68        206           PLA

152F:68        207           PLA
1530:A9 C0     208           LDA  #$C0
1532:85 E0     209           STA  NOTECOUNT
1534:D0 08     210           BNE  OKB2
1536:          211 DONOTES  EQU  *
1536:85 E0     212           STA  NOTECOUNT
1538:E6 E6     213           INC  Z1COUNT
153A:D0 02     214           BNE  OKB2
153C:E6 E7     215           INC  Z1COUNT+1
153E:B1 E6     216 OKB2      LDA  (Z1COUNT),Y
1540:85 EC     217           STA  TIMEFACT
1542:E6 E6     218           INC  Z1COUNT
1544:D0 02     219           BNE  OKB3
1546:E6 E7     220           INC  Z1COUNT+1
1548:          221 OKB3      EQU  *
1548:4C 22 10  222           JMP  DONOTE     ;GOES.TO.PLAY.IT
154B:          223 ;
154B:FF      • 224 SLOOPCNT  DFB  $FF
154C:          225 SLOOP     EQU  *
154C:AD 4B 15  226           LDA  SLOOPCNT
154F:30 26     227           BMI  STARTLOOP
1551:CE 4B 15  228           DEC  SLOOPCNT
1554:30 29     229           BMI  ENDLOOP
1556:          230 DOMYLOOP EQU  *
1556:E6 E6     231           INC  Z1COUNT
1558:D0 02     232           BNE  OKZ11
155A:E6 E7     233           INC  Z1COUNT+1
155C:          234 OKZ11     EQU  *
155C:B1 E6     235           LDA  (Z1COUNT),Y
155E:48        236           PHA
155F:C8        237           INY
1560:B1 E6     238 OKZ12     LDA  (Z1COUNT),Y
1562:85 E7     239           STA  Z1COUNT+1
1564:68        240           PLA
1565:85 E6     241           STA  Z1COUNT
1567:          242 ;********  EQU  *
1567:          243 ;*.USE.SOUNDORG.TO.COMPUTE
1567:          244 ;*.ABSOLUTE.ADDRESS.OF.LOOP.FROM
1567:          245 ;*.RELATIVE.ADDRESS.
1567:          246 ;********
```

```
1567:               246  :********
1567:AD B7 12      247        LDA   SOUNDORG
156A:18            248        CLC
156B:65 E6         249        ADC   Z1COUNT
156D:85 E6         250        STA   Z1COUNT
156F:AD B8 12      251 OKZ1NL LDA   SOUNDORG+1
1572:65 E7         252        ADC   Z1COUNT+1
1574:85 E7         253        STA   Z1COUNT+1
1576:60            254        RTS
1577:B1 E6         255 STARTLOOP LDA (Z1COUNT),Y
1579:8D 4B 15      256        STA   SLOOPCNT
157C:4C 56 15      257        JMP   DOMYLOOP
157F:A5 E6         258 ENDLOOP LDA   Z1COUNT
1581:18            259        CLC
1582:69 03         260        ADC   #3
1584:90 02         261        BCC   OKENDL
1586:E6 E7         262        INC   Z1COUNT+1
1588:85 E6         263 OKENDL STA   Z1COUNT
158A:60            264        RTS
158B:              265 SSETPW EQU   *
158B:B1 E6         266        LDA   (Z1COUNT),Y
158D:8D AB 12      267        STA   PWVALUE
1590:C8            268        INY
1591:B1 E6         269        LDA   (Z1COUNT),Y


1593:8D AC 12      270        STA   PWVALUE+1
1596:A5 E6         271        LDA   Z1COUNT
1598:18            272        CLC
1599:69 02         273        ADC   #2
159B:90 02         274        BCC   OKZ13
159D:E6 E7         275        INC   Z1COUNT+1
159F:85 E6         276 OKZ13  STA   Z1COUNT
15A1:88            277        DEY
15A2:60            278        RTS
15A3:              279 SSETPWD EQU  *
15A3:B1 E6         280        LDA   (Z1COUNT),Y
15A5:8D AD 12      281        STA   PWDELTA
15A8:C8            282        INY
15A9:B1 E6         283        LDA   (Z1COUNT),Y
15AB:8D AE 12      284        STA   PWDELTA+1
15AE:A5 E6         285        LDA   Z1COUNT
15B0:18            286        CLC
15B1:69 02         287        ADC   #2
15B3:90 02         288        BCC   OKZ14
15B5:E6 E7         289        INC   Z1COUNT+1
15B7:85 E6         290 OKZ14  STA   Z1COUNT
15B9:88            291        DEY
15BA:60            292        RTS
15BB:              293 SDOPWD EQU   *
15BB:AD AC 12      294        LDA   PWVALUE+1
15BE:85 F6         295        STA   TEMPERARY+1
15C0:AD AB 12      296        LDA   PWVALUE
15C3:18            297        CLC
15C4:6D AD 12      298        ADC   PWDELTA
15C7:85 F5         299        STA   TEMPERARY
15C9:AD AE 12      300        LDA   PWDELTA+1
15CC:30 0C         301        BMI   CHKPDNS
15CE:90 14         302        BCC   OK1PWDO
15D0:A5 F6         303        LDA   TEMPERARY+1
15D2:69 00         304        ADC   #0
15D4:B0 2A         305        BCS   NEGPWD
15D6:85 F6         306        STA   TEMPERARY+1
15D8:90 0A         307        BCC   OK1PWDO
15DA:B0 08         308 CHKPDNS BCS  OK1PWDO
15DC:A5 F6         309        LDA   TEMPERARY+1
```

```
15DC:A5 F6      309            LDA    TEMPERARY+1
15DE:E9 00      310            SBC    #0
15E0:90 1E      311            BCC    NEGPWD
15E2:85 F6      312            STA    TEMPERARY+1
15E4:          313 OK1PWDO EQU    *
15E4:A5 F6      314            LDA    TEMPERARY+1
15E6:18         315            CLC
15E7:6D AE 12   316            ADC    PWDELTA+1
15EA:85 F6      317            STA    TEMPERARY+1
15EC:AD AE 12   318            LDA    PWDELTA+1
15EF:30 0D      319            BMI    DOCHDOWN
15F1:B0 0D      320            BCS    NEGPWD
15F3:          321 NONEGPWD EQU   *
15F3:A5 F5      322            LDA    TEMPERARY
15F5:8D AB 12   323            STA    PWVALUE
15F8:A5 F6      324            LDA    TEMPERARY+1
15FA:8D AC 12   325            STA    PWVALUE+1
15FD:60         326            RTS
15FE:B0 F3      327 DOCHDOWN BCS   NONEGPWD
1600:          328 NEGPWD   EQU   *
1600:AD AE 12   329            LDA    PWDELTA+1
1603:49 FF      330            EOR    #$FF
1605:8D AE 12   331            STA    PWDELTA+1
1608:AD AD 12   332            LDA    PWDELTA


160B:49 FF      333            EOR    #$FF
160D:8D AD 12   334            STA    PWDELTA
1610:EE AD 12   335            INC    PWDELTA
1613:D0 03      336            BNE    DUNGNEG
1615:EE AE 12   337            INC    PWDELTA+1
1618:          338 DUNGNEG EQU    *
1618:60         339            RTS
1619:A9 00      340 SCLEARPW LDA   #0
161B:8D AD 12   341            STA    PWDELTA
161E:8D AE 12   342            STA    PWDELTA+1
1621:8D AB 12   343            STA    PWVALUE
1624:8D AC 12   344            STA    PWVALUE+1
1627:60         345            RTS
1628:20 8B 15   346 SBOTHPW  JSR   SSETPW
162B:4C A3 15   347            JMP    SSETPWD
162E:          348 HOLDROT DS     2
1630:          349 SROTS    EQU   *
1630:          350 ;          *
1630:          351 ;
1630:          352 ;
1630:AD EC 16   353            LDA    SUBTBL
1633:85 F5      354            STA    TEMPERARY
1635:AD ED 16   355            LDA    SUBTBL+1
1638:85 F6      356            STA    TEMPERARY+1
163A:B1 E6      357            LDA    (Z1COUNT),Y
163C:48         358            PHA
163D:E6 E6      359            INC    Z1COUNT
163F:D0 02      360            BNE    OKIZS
1641:E6 E7      361            INC    Z1COUNT+1
1643:A5 E6      362 OKIZS    LDA   Z1COUNT
1645:8D 2E 16   363            STA    HOLDROT
1648:A5 E7      364            LDA    Z1COUNT+1
164A:8D 2F 16   365            STA    HOLDROT+1
164D:68         366            PLA
164E:2D B0 12   367            AND    RTIME
1651:18         368            CLC
1652:71 E6      369            ADC    (Z1COUNT),Y
1654:0A         370            ASL    A
1655:90 02      371            BCC    PGSB1
1657:E6 F6      372            INC    TEMPERARY+1
```

```
1657:E6 F6      372         INC   TEMPERARY+1
1659:           373 PGSB1   EQU   *
1659:A8         374         TAY
165A:B1 F5      375         LDA   (TEMPERARY),Y
165C:85 E6      376         STA   Z1COUNT
165E:C8         377         INY
165F:B1 F5      378         LDA   (TEMPERARY),Y
1661:85 E7      379         STA   Z1COUNT+1
1663:           380 ;*******
1663:           381 ;*.USE.SOUNDORG.AGAIN.FOR
1663:           382 ;*.SUBROUTINE.TABLE
1663:           383 ;*******
1663:AD B7 12   384         LDA   SOUNDORG
1666:18         385         CLC
1667:65 E6      386         ADC   Z1COUNT
1669:85 E6      387         STA   Z1COUNT
166B:AD B8 12   388         LDA   SOUNDORG+1
166E:65 E7      389         ADC   Z1COUNT+1
1670:85 E7      390         STA   Z1COUNT+1
1672:A0 00      391         LDY   #0
1674:60         392         RTS
1675:           393 SRETS   EQU   *
1675:AD 2E 16   394         LDA   HOLDROT
1678:85 E6      395         STA   Z1COUNT


167A:AD 2F 16   396         LDA   HOLDROT+1
167D:85 E7      397         STA   Z1COUNT+1
167F:E6 E6      398         INC   Z1COUNT
1681:D0 02      399         BNE   HROK1
1683:E6 E7      400         INC   Z1COUNT+1
1685:           401 HROK1   EQU   *
1685:60         402         RTS
1686:AD B1 12   403 STOGLQUIK LDA QUIK
1689:49 FF      404         EOR   #$FF
168B:8D B1 12   405         STA   QUIK
168E:60         406         RTS
168F:           407 OTHRNOSE EQU  *
168F:           408 CKNSTOP EQU   *
168F:CE B3 12   409         DEC   NOITIMER
1692:F0 03      410         BEQ   EXITGOER
1694:4C 30 14   411 NXTNGOER JMP NEXTNOTE
1697:           412 EXITGOER EQU  *
1697:A9 00      413         LDA   #0
1699:8D B2 12   414         STA   NOIFLAG
169C:4C 30 14   415         JMP   NEXTNOTE
169F:           416 DONOISER EQU  *
169F:           417 NXTNOISE EQU  *
169F:           418 ;LDA SPEAKER
169F:AD B0 12   419         LDA   RTIME
16A2:4A         420         LSR   A
16A3:4A         421         LSR   A
16A4:A8         422         TAY
16A5:AD B9 12   423         LDA   PASS
16A8:AE 30 C0   424         LDX   SPEAKER
16AB:           425 DRIVE   EQU   *
16AB:AA         426         TAX
16AC:CA         427 DODEX   DEX
16AD:10 FD      428         BPL   DODEX
16AF:88         429         DEY
16B0:D0 F9      430         BNE   DRIVE
16B2:E6 F1      431         INC   TIME1
16B4:AD 30 C0   432         LDA   SPEAKER
16B7:A5 F1      433         LDA   TIME1
16B9:29 07      434         AND   #7
16BB:F0 D2      435         BEQ   OTHRNOSE
```

```
16BB:F0 D2        435            BEQ   OTHRNOSE
16BD:AD B0 12     436            LDA   RTIME
16C0:             437   ;ADC TIME3
16C0:             438   ;SBC TIME5
16C0:             439   ;ADC TIME7
16C0:             440   ;SBC TIME1
16C0:             441   ;ADC TIME11
16C0:ED B5 12     442            SBC   TIME13
16C3:6D B6 12     443            ADC   TIME17
16C6:8D B0 12     444            STA   RTIME
16C9:             445   ;LDA SPEAKER
16C9:4C 9F 16     446            JMP   DONOISER
16CC:             447   SWHITE    EQU   *
16CC:B1 E6        448            LDA   (Z1COUNT),Y
16CE:E6 E6        449            INC   Z1COUNT
16D0:D0 02        450            BNE   ZWHZ
16D2:E6 E7        451            INC   Z1COUNT+1
16D4:             452   ZWHZ      EQU   *
16D4:8D B3 12     453            STA   NOITIMER
16D7:A9 FF        454            LDA   #$FF
16D9:8D B2 12     455            STA   NOIFLAG
16DC:68           456            PLA
16DD:68           457            PLA
16DE:AD B9 12     458            LDA   PASS
16E1:29 0F        459   ;        AND   #$F
16E3:0A           460   ;        ASL   A
16E4:0A           461   ;        ASL   A
16E5:0A           462            ASL   A
16E6:8D B9 12     463            STA   PASS
16E9:4C 9F 16     464            JMP   NXTNOISE
16EC:00 2F        465   SUBTBL    DW    $2F00
16EE:             466            DS    *1F00-*
1F00:FE 1F        467   SOUNDS    DW    $1FFE
2000:             468   TUNE      EQU   $2000
1F02:             469            DS    $1FFE-*
1FFE:00 2F        470            DW    $2F00
2000:             471   ;         LDA
```

*** SUCCESSFUL ASSEMBLY: NO ERRORS

```
 1009 APPLEGO        14FA CHKEMA       15DA CHKPDNS      ?168F CKNSTOP
 15FE DOCHDOWN       16AC DODEX        14FA DOEMA         14AF DOKEY
 1556 DOMYLOOP       169F DONOISER     1536 DONOTES       16AB DRIVE
 1618 DUNGNEG        157F ENDLOOP     ?1117 ENDPWTH       1697 EXITGOER
 1249 EXITWAVE       1508 GODOIT       1022 GONOTE        1419 GOTUNEX
?1407 GOTUNE         162E HOLDROT      1685 HROK1         1000 INIT
 1008 LENADJ         1600 NEGPWD      ?14E5 NEXTBYT       150B NEXTGOON
 1432 NEXTNGO        1430 NEXTNOTE     1200 NEXTWAVE      12B2 NOIFLAG
 12B3 NOITIMER       15F3 NONEGPWD     14E3 NORETS          E0 NOTECOUNT
 1275 NOTETBL        1014 NOUT        ?1694 NXTNGOER      169F NXTNOISE
 1022 NXTNOTE       ?1259 OCTAVE      106A OCTLOOP       ?108E OCTNEW
   ED OCTUPUS       ?1467 OINKT11      1443 OINKT3       ?1449 OINKT5
?144F OINKT7         15E4 OK1PWDO      153E OKB2          1548 OKB3
 14EB OKBYT          10FE OKDOZW       110E OKDOZW2       1588 OKENDL
 1643 OKIZS          14AA OKKEY1       10B1 OKLEN1        10A3 OKLEN2
?10AB OKLEN3         10F3 OKPWC1       104F OKQUIKS       10C6 OKSC1
?10C6 OKSC2         ?10B7 OKSCNT2      148C OKTINY        155C OKZ11
?1560 OKZ12          159F OKZ13        15B7 OKZ14         14D1 OKZ1AOK
?156F OKZ1NL         10E9 OKZ1SB1      1250 OL1             25 ORGP1
 168F OTHRNOSE       1091 OUTOCTLOOP   1221 OUTWL1        12B9 PASS
 1659 PGSB1         ?1267 PTBL         12AD PWDELTA       10DE PWOVER1
 12AB PWVALUE        12B1 QUIK         12AF RESTER        12B0 RTIME
 1007 SAVECOUNT      1628 SBOTHPW      1619 SCLEARPW      15BB SDOPWD
 154B SLOOPCNT       154C SLOOP        12B7 SOUNDORG      1F00 SOUNDS
 C030 SPEAKER        1529 SREST        1675 SRETS         1630 SROTS
 15A3 SSETPWD        158B SSETPW       1577 STARTLOOP     1686 STOGLQUIK
 150E SUBS           16EC SUBTBL       16CC SWHITE       ?  F7 TEMP
   F5 TEMPERARY      10CE TESTPWOVER   12B4 TIME11        12B6 TIME17
   F1 TIME1          12B5 TIME13         F3 TIME3           F2 TIME5
   F4 TIME7            EC TIMEFACT      128F TIMETBL       2000 TUNE
?1406 TUNOTE         1490 WAITGO        1495 WAITGOX       1236 WAVEOK
?1249 WAVEOUT        1211 WL1           1239 WL2            E2 Z1COMP
   E6 Z1COUNT          E8 Z1WAVE          E4 Z2COMP         EA Z2WAVE
?1017 ZG01           16D4 ZWHZ
```

```
  25 ORGP1          E0 NOTECOUNT        E2 Z1COMP          E4 Z2COMP
  E6 Z1COUNT        E8 Z1WAVE           EA Z2WAVE          EC TIMEFACT
  ED OCTUPUS        F1 TIME1            F2 TIME5           F3 TIME3
  F4 TIME7          F5 TEMPERARY     ?  F7 TEMP          1000 INIT
1007 SAVECOUNT    1008 LENADJ         1009 APPLEGO       1014 NOUT
?1017 ZG01        1022 NXTNOTE        1022 GONOTE        104F OKQUIKS
 106A OCTLOOP    ?108E OCTNEW         1091 OUTOCTLOOP     10A3 OKLEN2
?10AB OKLEN3      10B1 OKLEN1        ?10B7 OKSCNT2        10C6 OKSC1
?10C6 OKSC2       10CE TESTPWOVER     10DE PWOVER1        10E9 OKZ1SB1
 10F3 OKPWC1      10FE OKDOZW         110E OKDOZW2      ?1117 ENDPWTH
 1200 NEXTWAVE    1211 WL1            1221 OUTWL1         1236 WAVEOK
 1239 WL2        ?1249 WAVEOUT        1249 EXITWAVE       1250 OL1
?1259 OCTAVE     ?1267 PTBL           1275 NOTETBL        128F TIMETBL
 12AB PWVALUE     12AD PWDELTA        12AF RESTER         12B0 RTIME
 12B1 QUIK        12B2 NOIFLAG        12B3 NOITIMER       12B4 TIME11
 12B5 TIME13      12B6 TIME17         12B7 SOUNDORG       12B9 PASS
?1406 TUNOTE     ?1407 GOTUNE         1419 GOTUNEX        1430 NEXTNOTE
 1432 NEXTNGO     1443 OINKT3        ?1449 OINKT5        ?144F OINKT7
?1467 OINKT11     148C OKTINY         1490 WAITGO         1495 WAITGOX
 14AA OKKEY1      14AF DOKEY          14D1 OKZ1AOK        14E3 NORETS
?14E5 NEXTBYT     14EB OKBYT          14FA DOEMA          14FA CHKEMA
 1503 GODOIT      150B NEXTGOON       150E SUBS           1529 SREST
 1536 DONOTES     153E OKB2           1548 OKB3           154B SLOOPCNT
 154C SLOOP       1556 DOMYLOOP       155C OKZ11        ?1560 OKZ12
?156F OKZ1NL      1577 STARTLOOP      157F ENDLOOP        1588 OKENDL
 158B SSETPW      159F OKZ13          15A3 SSETPWD        15B7 OKZ14
 15BB SDOPWD      15DA CHKPDNS        15E4 OK1PWD0        15F3 NONEGPWD
 15FE DOCHDOWN    1600 NEGPWD         1618 DUNGNEG        1619 SCLEARPW
 1628 SBOTHPW     162E HOLDROT        1630 SROTS          1643 OKIZS
 1659 PGSB1       1675 SRETS          1685 HROK1          1686 STOGLQUIK
 168F OTHRNOSE   ?168F CKNSTOP       ?1694 NXTNGOER       1697 EXITGOER
 169F NXTNOISE    169F DONOISER       16AB DRIVE          16AC DODEX
 16CC SWHITE      16D4 ZWHZ           16EC SUBTBL         1F00 SOUNDS
 2000 TUNE        C030 SPEAKER
```