

## 8) Single Drive Copy Utility

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For practical use, it is recommended that FLEX (or any disk operating system) be run on at least a two drive system. This allows a user to easily back up his files and to easily create new disks for distribution. There is nothing, however, to keep FLEX from being used on a single drive system. In order to do so, one will need a "single drive copy" program which allows files to be copied from one disk to another with only one drive on the system. This involves alternatively inserting two disks into the drive until the entire file, which may not fit in memory, has been copied. The user can certainly develop his own single drive copy routine or can purchase one from Technical Systems Consultants for \$15.00. This includes a two page manual and object code disk. Be sure to specify 8 or 5 inch disk, 6800 or 6809, and include 3% for postage and handling (10% outside US and Canada).

## 9) Setting Line Width in BASIC

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Many users have expressed confusion in setting the maximum line width in our BASIC. There is no BASIC command to do such. BASIC obtains the line width and other environment parameters from FLEX. Thus, to change the line width while running BASIC, you should change the TTYSET line width in FLEX. That value CAN BE CHANGED WHILE RUNNING BASIC. To do so, use the "+" command or the "EXEC" statement to perform a TTYSET command to FLEX. For example, to set a line width of 132 in BASIC, the following statement might be used:

```
110 EXEC, "TTYSET WD=132"
```

Note that the TTYSET command can be used in this manner to set any environment parameter from BASIC.

## 10) SWTPc Versions of FLEX

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While Technical Systems Consultants, Inc, is the author and owner of the FLEX Disk Operating System, we are not the only ones who distribute it. Several companies have been licensed to distribute versions of FLEX for their hardware. One in particular is Southwest Technical Products. The reason for this paragraph is to further point out that the version of FLEX they distribute may not, and in fact is not, identical to what we distribute. Now the actual FLEX program itself is the same except for necessary adaptation to hardware, but the supplied set of utilities is not. For example, SWTPc is supplying 6809 FLEX version 2.6 with their 8" hardware which has several utilities we did not write:

FIX.CMD	P.COR	PO.CMD
RM.CMD	S.CMD	SBOX.CMD
SP.CMD	USEMF.CMD	VER.CMD
N.CMD	Y.CMD	C4MAT.CMD
CLEAN.CMD	PSP.CMD	READPROM.CMD
WRITPROM.CMD	TOUCH.CMD	UCAL.CMD
NEWDISK.T10		

The reason for pointing these routines out is that we did not write them and, therefore, cannot support them. If you have questions about these commands, or any others which licensed distributors of FLEX may be supplying, don't call us!

Here is a list of the commands we supply with FLEX. If you have questions about something not listed here, chances are it was written by the supplier of FLEX and not us. You should contact that supplier for advice or support of any such additional commands.

FLEX.SYS	ERRORS.SYS	CAT.CMD
COPY.CMD	LIST.CMD	ASN.CMD
DELETE.CMD	RENAME.CMD	TTYSET.CMD
P.CMD	SAVE.CMD	APPEND.CMD
BUILD.CMD	EXEC.CMD	JUMP.CMD
DATE.CMD	O.CMD	LINK.CMD
VERSION.CMD	PROT.CMD	VERIFY.CMD
PRINT.CMD	QCHECK.CMD	I.CMD
XOUT.CMD	SAVE.LOW	PRINT.SYS
NEWDISK.CMD		

Note that certain version of FLEX we distribute (EXORciser FLEX for example) do not have printer spooling implemented and therefore do not include PRINT.CMD or QCHECK.CMD which are used only in conjunction with printer spooling. Also, most versions of FLEX distributed by Technical Systems Consultants include EDIT.CMD and ASMB.CMD.

## 11) Telex System Installed

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To better serve our foreign customers and US industrial concerns, we have installed a Telex system at the company headquarters. Our number is "Telex 276143". The answer-back is "TSC WLAF".

## 12) MiniFLEX to 6809 FLEX Copy Utility

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In this issue of the FLEX Newsletter we include the listing of a utility to copy files from an old 6800 miniFLEX disk directly to a 6809 FLEX disk on a SWTPc minifloppy system. The user simply boots up 6809 FLEX on his 5 inch SWTPc system, inserts a miniFLEX disk in drive one and a 6809 FLEX disk in drive 0, and types the command to copy a file. Complete instructions are given at the beginning of the listing printed later in this newsletter.

### 13) 6809 Diagnostics Package

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We recently placed a nifty, new package of 6809 Diagnostics on the market. The package is comprised of two sets of programs: six memory diagnostics and ten disk repair utilities. The memory diagnostics include a "zeroes" and "ones" test, random pattern test, walking bit tests, dynamic RAM dropout test, and a memory convergence test. All these tests are position independent. The disk repair utilities are aimed at recovering data from or repairing the data on "structurally damaged" diskettes. They have nothing to do with the disk hardware, but allow you to work around problems like CRC errors, crashed directories, accidentally deleted files, etc. Included are 3 diagnostic utilities which report unreadable sectors and structural inconsistencies among the files on a disk, 2 utilities for recovering data when the directory on a diskette is not readable, a utility to remove bad or intermittent sectors from the free space, a program to retrieve deleted files from the diskette free chain, a single-sector read/write/modify routine, and a copy utility which ignores CRC errors.

The 100 page manual goes further than simply describing how to use the utilities. It describes the types of problems which might occur, why they occur, how to detect them, how to decide which of the diagnostic utilities to attack the problem with, how to use the utilities, and in some cases what to do if the diagnostics cannot help. Many examples are given, and a "Case Study" reviews 6 typical cases of disk problems and how they were solved.

This package is available only for 6809 FLEX. The price of \$75.00 includes the user's manual and the object code on a 5 or 8 inch diskette.

```
*
* MINIFLEX TO FLEX 9.0 MOVE UTILITY
*
* COPYRIGHT (C) 1979 BY
* TECHNICAL SYSTEMS CONSULTANTS, INC.
* BOX 2570, W. LAFAYETTE, IN 47906
*
*
* INSTRUCTIONS:
*
* THIS UTILITY PERMITS THE USER TO COPY NAMED FILES
* FROM A 6800 MINIFLEX DISK TO A 6809 FLEX DISK.
* INSTRUCTIONS FOR USE ARE AS FOLLOWS:
*
* 1) BOOT UP FLEX 9.0.
* 2) INSERT A 6809 DISK WITH A COPY OF THIS UTILITY
*    ON IT INTO DRIVE #0.
* 3) INSERT THE MINIFLEX DISK IN DRIVE #1.
* 4) TYPE A COMMAND OF THE FOLLOWING FORM:
*     +++MOVE9,MINIFILE,NINEFILE
*     WHERE "MOVE9.CMD" IS THE NAME OF THIS UTILITY,
*     "MINIFILE" REPRESENTS THE NAME OF THE FILE ON
*     THE MINIFLEX DISK, AND "NINEFILE" REPRESENTS
*     THE NAME OF THE FILE TO BE CREATED ON THE
*     FLEX 9.0 DISK. THE DEFAULT EXTENSION FOR BOTH
*     FILENAMES IS ".TXT". DRIVE NUMBERS NEED NOT
*     BE SPECIFIED AND IF SPECIFIED WILL BE IGNORED
*     SINCE DRIVE #0 MUST BE FLEX 9.0 AND DRIVE #1
*     MUST BE MINIFLEX.
*
* IF IT BECOMES NECESSARY TO RESET THE CPU DURING
* OPERATION OF THIS UTILITY FOR ANY REASON, BE SURE
* TO RE-BOOT FLEX 9.0 BEFORE CONTINUING WITH ANY
* DISK OPERATIONS! THIS IS DUE TO THE FACT THAT
* THE 6809 DRIVERS ARE ALTERED WHEN READING THE
* MINIFLEX DISK AND MUST NOT BE LEFT IN THAT STATE.
*
```

```
* EQUATES
```

```
CD03  WARMS   EQU   $CD03
D406  FMS     EQU   $D406
D403  FMSCLS  EQU   $D403
CD1E  PSTRNG  EQU   $CD1E
CD24  PCRLF   EQU   $CD24
CD2D  GETFIL  EQU   $CD2D
CD33  SETEXT  EQU   $CD33
CD3F  RPTERR  EQU   $CD3F
CC2B  MEMEND  EQU   $CC2B
C840  FCB     EQU   $C840
```

\*\*\*\*\*  
 \* START OF PROGRAM  
 \*\*\*\*\*

```

C100                ORG      $C100

C100 20    09      MOVE    BRA      MOVE1

C102 01                FCB      1          VERSION #1
C103                TRACK   RMB      1
C104                SECTOR  RMB      1
C105                TEMP    RMB      2
C107                SCTRL1  RMB      2
C109                SCTSID  RMB      2

```

\* GET MINIFLEX FILENAME

```

C10B 8E    C208      MOVE1   LDX      #MFCB
C10E BD    CD2D                JSR      GETFIL
C111 1025  00B3                LBCS    ERROR
C115 86    01                LDA      #1
C117 BD    CD33                JSR      SETEXT
C11A 86    01                LDA      #1
C11C A7    03                STA      3,X          FORCE DRIVE #1

```

\* GET FLEX 9.0 FILENAME & OPEN IT

```

C11E 8E    C840                LDX      #FCB
C121 BD    CD2D                JSR      GETFIL
C124 1025  00A0                LBCS    ERROR
C128 86    01                LDA      #1
C12A BD    CD33                JSR      SETEXT
C12D 6F    03                CLR      3,X          FORCE DRIVE #0
C12F 86    02                LDA      #2
C131 A7    84                STA      0,X
C133 BD    D406                JSR      FMS
C136 1026  008E                LBNE    ERROR
C13A 86    FF                LDA      #$FF
C13C A7    88 3B                STA      59,X

```

\* FIND SECTOR BYTES IN DRIVERS

```

C13F CC    C600                LDD      #$C600      GET "LDB #0" PATTERN
C142 8E    DE20                LDX      #$DE20      APPROX. START OF DRIVER CODE
C145 10A3  80      FIND1   CMPD    0,X+
C148 26    FB                BNE     FIND1
C14A BF    C107                STX     SCTRL1      SAVE LOCATION OF 1ST ONE
C14D CC    C10A                LDD     #$C10A      GET "CMPB #10" PATTERN
C150 8E    DE20                LDX     #$DE20      APPROX. START OF DRIVER CODE
C153 10A3  80      FIND2   CMPD    0,X+
C156 26    FB                BNE     FIND2
C158 BF    C109                STX     SCTSID      SAVE SECTORS/SIDE LOCATION

```

## \* FIND THE ADDRESS OF THE MINIFLEX FILE

C15B	CC	0004		LDD	#\$0004	DIRECTORY STARTS AT 00-04
C15E	FD	C103		STD	TRACK	
C161	FC	C103	MOVE2	LDD	TRACK	
C164	1027	0097		LBEQ	FNFERR	ERROR IF AT END OF DIRECTORY
C168	17	0066		LBSR	READMS	READ A SECTOR
C16B	8E	C250		LDX	#MFCB+72	POINT TO 1ST ENTRY
C16E	108E	C20C	MOVE3	LDY	#MFCB+4	POINT TO NAME
C172	BF	C105		STX	TEMP	
C175	A6	84		LDA	0,X	GET 1ST CHARACTER
C177	1027	0084		LBEQ	FNFERR	IF 0, FILE NOT FOUND
C17B	2B	0D		BMI	MOVE5	SKIP IF DELETED ENTRY
C17D	C6	0B		LDB	#11	
C17F	A6	80	MOVE4	LDA	0,X+	COMPARE NAMES
C181	A1	A0		CMPA	0,Y+	
C183	26	05		BNE	MOVE5	
C185	5A			DECB		
C186	26	F7		BNE	MOVE4	
C188	20	0D		BRA	MOVE6	
C18A	BE	C105	MOVE5	LDX	TEMP	
C18D	30	88 18		LEAX	24,X	POINT TO NEXT ENTRY
C190	8C	C2C6		CMPX	#MFCB+190	AT END OF SECTOR?
C193	25	D9		BLO	MOVE3	NEXT ENTRY IF NOT
C195	20	CA		BRA	MOVE2	NEXT SECTOR IF SO

## \* FOUND THE FILE ENTRY

C197	BE	C105	MOVE6	LDX	TEMP	POINT TO START OF ENTRY
C19A	EC	0D		LDD	13,X	GET STARTING DISK ADDRESS
C19C	FD	C103		STD	TRACK	SAVE IN TRACK & SECTOR

## \* READ MINIFLEX FILE INTO FLEX 9.0 FILE

C19F	FC	C103	MOVE7	LDD	TRACK	GET TRACK & SECTOR
C1A2	27	18		BEQ	GOTALL	SKIP IF END OF FILE
C1A4	17	002A		LBSR	READMS	READ SECTOR
C1A7	108E	C24C		LDY	#MFCB+68	POINT TO DATA
C1AB	C6	7C		LDB	#124	
C1AD	8E	C840		LDX	#FCB	
C1B0	A6	A0	MOVE8	LDA	0,Y+	
C1B2	BD	D406		JSR	FMS	
C1B5	26	11		BNE	ERROR	
C1B7	5A			DECB		
C1B8	26	F6		BNE	MOVE8	
C1BA	20	E3		BRA	MOVE7	

## \* FILE IS TRANSFERRED; CLOSE IT AND EXIT

C1BC	8E	C840	GOTALL	LDX	#FCB	
C1BF	86	04		LDA	#4	
C1C1	A7	84		STA	0,X	
C1C3	BD	D406		JSR	FMS	
C1C6	27	03		BEQ	EXIT	

## \* ERROR AND EXIT ROUTINES

```

C1C8 BD   CD3F   ERROR   JSR   RPTERR
C1CB BD   D403   EXIT    JSR   FMSCLS
C1CE 7E   CD03           JMP   WARMS   BACK TO FLEX

```

## \* READ A SINGLE MINIFLEX SECTOR

```

C1D1 8E   C208   READMS  LDX   #MFCB
C1D4 ED   88 1E           STD   30,X   SET SECTOR FOR READING
C1D7 86   80           LDA   #128
C1D9 A7   9F C107       STA   [SCTRL1] ADJUST DRIVERS FOR 128
C1DD A7   9F C109       STA   [SCTSID] ENSURE SIDE 0
C1E1 86   09           LDA   #9     READ SINGLE SECTOR FUNCTION
C1E3 A7   84           STA   0,X
C1E5 BD   D406           JSR   FMS     DO READ
C1E8 34   01           PSHS  CC     SAVE CONDITION CODES
C1EA 6F   9F C107       CLR   [SCTRL1] ADJUST DRIVERS FOR 256
C1EE 86   0A           LDA   #10    RESET SECTORS PER SIDE
C1F0 A7   9F C109       STA   [SCTSID]
C1F4 35   01           PULS  CC
C1F6 26   D0           BNE   ERROR  SKIP IF AN ERROR
C1F8 EC   88 40         LDD   64,X   GET FORWARD LINK
C1FB FD   C103         STD   TRACK  SAVE IT
C1FE 39           RTS

```

## \* FILE NOT FOUND ERROR

```

C1FF 8E   C840   FNFERR  LDX   #FCB
C202 86   04           LDA   #4     FILE NOT FOUND ERROR CODE
C204 A7   01           STA   1,X   INTO ERROR STATUS BYTE
C206 20   C0           BRA   ERROR  GO REPORT IT

```

## \* FCB FOR MINIFLEX FILE

```

C208           MFCB   RMB   192

                END   MOVE

```

0 ERROR(S) DETECTED

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