PERCOM Peripheral™

MARCH 1979

MORE SOFTWARE

PERCOM now provides more direct software support than either SWTP or Smoke Signal. We have recently arranged with ED SMITH (Ed Smith Software Works) to adapt and distribute his software for the LFD-400. The Source Generator, Trace/Disassembler and EPROM Support/Relocator are ready to go right now. The Relocating Assembler needs a little work but should be ready by the end of March. "SMITHBUG" is ready now but we are not able to ship until we get some 2716 EPOMS. Refer to the description of each package later in this newsletter.

CP-68

Those of you familier with EDN magazine may have noticed the software feature written by Jack Hemenway in the November 20, 1978 issue. Jack has developed a 6800 disk operating system called "CP-68". It is similiar in operation to CP/M (trademark of Digital Research) and is supported by the Hemenway Editor, Macro-Relocating Assembler, and STRUBAL+ compiler. CP-68 is currently running on the LFD-400 and should be ready for sale sometime in March. The price is $99.95 but will be included at no charge with all STRUBAL+ orders. Because of its similarity to CP/M, CP-68 has a good chance of becoming a standard 6800 DOS. We will shortly have versions which run on SWTP and Smoke disks also. Look for more details in the next newsletter. In the meantime, check out the article in EDN.

INDEX

Speaking of Disk Operating Systems, we would like to draw your attention to INDEX. This is the most powerful DOS available for the 6800. It borrows features from the DEC-10 and UNIX operating systems. Unlike other 6800 Disk Operating Systems, INDEX is interrupt driven. Among other features this permits 'graceful' recovery from system runaway and crashes. It also permits the disk to appear virtually invisible to the operator. You can enter instructions while the disk is operating rather than waiting for it to complete the current operation. It also permits long continuous data streams from tape or modem to be stored on disk without intermediate buffering or interruption. (Try that on a FLEX or Smoke system and you will lose some data!) More important is the independence of the I/O system from the operating system. The operating system treats I/O as if it were just another disk file. I/O devices can be added to the system without any modification to the DOS. It is only necessary to install a 'driver' for the I/O device.

To illustrate the flexibility of INDEX we implemented a version which uses Percom disks for drives 1 and 2, and SWTP disks for drives 3 and 4. All that was necessary to implement this arrangement was to write a driver for the SWTP disk controller. INDEX is totally unaware of the fact that it is talking to two completely different disk controllers!

As a matter of fact, FLEX can be linked to and controlled by INDEX just like any other I/O device. This is characteristic of device independent operating systems.

Operator commands may be entered into INDEX while it is busy performing other tasks (printing, accessing the disk, etc.). When printing, the printer does not have to pause while waiting for the

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Address Correction Requested

next block of text to be fetched from the disk, both operations proceed simultaneously. This behaviour is possible because I/O communication is handled via QUEUE buffered INTERRUPT driven I/O drivers.

The INDEX ADVANCED PROGRAMMER'S GUIDE is 108 pages long and includes source listings for the CONSOLE and PRINTER drivers and a listing of modifications to the TSC TEXT PROCESSOR so that it may run under INDEX. This is a very remarkable DOS which you must see in operation to appreciate.

After we move into our new headquarters in March we plan to install a telephone connected system with INDEX on line. If you have a modem or acoustic coupler you can call in and try out INDEX for yourself before you order.

WHAT ABOUT FLEX?

FLEX is the disk operating system used by SWTP written by TSC. FLEX is similar to the Smoke Signal DOS and is quite primitive compared to operating systems such as INDEX or CP-68. It is slower than INDEX, I/O handling requires separate utilities, and it is not interrupt driven. TSC provides a rather extensive package of utilities for FLEX but most of these are necessary because of the cumbersome manner in which FLEX handles disk files and I/O devices. When we surveyed Disk Operating Systems for use with the LFD-400, FLEX was obviously one of the systems considered. We concluded FLEX made excessive demands on simple computing systems and did not have the power and flexibility of more modern operating systems such as INDEX. In small computing systems MINIDOS-PLUSX uses less memory than FLEX, is faster, permits Random Access files, and requires only a single disk drive.

This is in no way an indictment of FLEX. Because of its popularity, FLEX has a good chance of becoming a hobby standard 6800 Disk Operating System. FLEX is well written but somewhat dated in design. We feel that a 'standard' DOS should have features such as device and I/O independence to permit convenient accommodation of future peripherals devices, and interrupt control of peripherals to permit 'graceful' management of the I/O. Only Software Dynamic SDOS and Percom INDEX provide these features. Since the size and cost of SDOS puts it in a catagory beyond most home computing systems INDEX should be given serious consideration in any standards discussion. INDEX is currently supported by Percom modified versions of the TSC editor and text processor, a symbolic assembler, all of the Hemenway software, and a 12K BASIC interpreter. Ed Smith's software and the Microware A/BASIC compiler will be available shortly.

There are currently versions of INDEX running on the SWTP and Smoke Signal minidisks systems as well as on the EXORciser Bus.

SUPER BASIC

Later in this newsletter is a description of Percom SUPER BASIC. In the past we tried to adapt SWTP Basic, but it was difficult to keep up with the flow of new releases from SWTP so we wrote our own and added several interesting features in the process.

SUPER BASIC is a 12K Random Acess disk based interpreter compatible with programs written for SWTP Cassette Basic. It is 35% to 45% faster that SWTP Basic and has LINE INPUT (LINPUT) and PRINT USING modes which enhance text input and printer/display control. If you already have SUPER BASIC be sure to check out the Patch Memos later in the newsletter for the most recent improvements and problem fixes.

If $49.95 sounds like a steep price to pay for Basic, think about the money you have spent aquiring the many versions of SWTP Basic. Incidently SUPER BASIC should not be confused with the Basic sold by a small computer store in California.

A/BASIC

A number of LFD-400 users have asked about the software produced by Microware, specifically A/BASIC. Thanks to JOE LANGE, we have a patch for A/BASIC in the user group library (Users Group Diskette #2). You still have to get the Cassette from Microware or a Microware dealer but we are talking to Microware about distributing their software. Microware has a new version of A/BASIC designed for disk operation. We are currently working with Microware to bring this version of A/BASIC up under INDEX. To give you an idea of the speed of A/BASIC, one of our engineers 'aquired' a copy of the game 'OTHELLO' written in Basic. When run under SWTP basic each move took approximately 2 minutes. Each move took approximately 30 seconds using Software Dynamics compiler Basic. The A/BASIC version took less than 1 second per move! This is quite spectacular. While A/BASIC is an integer only Basic compiler it has very good string manipulation capabilities.

NEWTECH MUSIC BOARD

You may have seen or used the Newtech Music Synthesizer. Both the Music Board and "AMERICANA-PLUS" software are now available from Percom. The Music Board is $59.95 Assembled and Tested. The "AMERICANA-PLUS" Diskette for the LFD-400 is $19.95. We have had a lot of fun with this product and it is a great way to show off your computer!

One of our engineers uses the Newtech Music Board to generate sound effects for his adaptation of Space War. Let us know if you are interested and we may be able to get his program for the Users Group.

THE ELECTRIC WINDOW (tm)

After considerable developmental delay, we now have a memory resident video display for the SS-50 bus. The circuit uses a SMC CRT controller and permits up to 80 characters per line by 24 lines (programmable). It has 'two' character generators; one is the Motorola 66714 character generator with descending lower case characters, the other is a 2708 EPROM which can be programmed for special characters (APL anyone?) or Symbol Graphics (like the PET). The engineer who developed the ELECTRIC WINDOW is a model railroad enthusiast. He programmed a set of railroad switching symbols into a ROM and intends to use his system to control the model railroad!.

We have an operating system for the 'WINDOW which will replace SWTBUG and eliminate the need for a CRT Terminal. All you need is a video monitor (converted TV set) and a simple ASCII keyboard. We intend to support the 'WINDOW with a powerful Text/Word processor. Memory resident video displays are more convenient than data terminals for word processing because the effects of editing and line justification are instantly visible.

Prices for the ELECTRIC WINDOW is $249.95 assembled and tested. Delivery will begin near the end of March. The operating system and word processor software cost is yet to be determined.

THE ELECTRIC CRAYON (tm)

This is still a couple of months away but since we have shown the breadboard at several local computer club meetings we will tell you about our new COLOR GRAPHICS VIDEO DISPLAY using the Motorola MC6847 color graphics generator. The 'CRAYON has its own 6808 CPU and connects to the computer via a parallel I/O port (MP-L). We have not set a price yet, but we should be able to tell you more in the next newsletter.

SS-50 PROTOTYPE CARDS

We get many requests for SS-50 bus prototype cards. They are now available. The large card will hold 70 14-pin ICs and cost $24.95, the smaller I/O card is $14.95. The 10-contact Molex edge connectors are $.50 each.

LFD-800 and LFD-1000

We are developing two higher capacity disk systems for the SS-50 bus. The LFD-800 using the existing controller card but requires a change in the MINIDOS ROM to accommodate the higher capacity of 200K bytes per drive. The LFD-800 uses Micropolis 77-track minidisk drives and will be available sometime in April. Price for a dual drive LFD-800 system will be $1349.

The LFD-1000 uses a different controller and permits 400K bytes to be stored on a minidisk!. It uses the Micropolis QUAD-DENSITY minidisk drives and will be available sometime in May. Price for a dual drive LFD-1000 system will be $2495.

INDEX and CP-68 are currently running on both the LFD-800 and the LFD-1000 systems.

DANGER 117VAC!

George and Vivian Fuslar were the latest victims (we know of) whose computer was destroyed by following the SWTP instructions for wiring the computer power supply.

If any of the wiring slips under the SWTP mother board, the insulation may be perforated by the motherboard contact pins when you insert a circuit card. If the perforated wire happens to carry 117VAC the computer WILL BE DESTROYED! Route the 117VAC wiring from the power cord, fuse, and power switch as far from the mother board as you can.

INTERMITTENT CONTACTS

If your MP-6800 is like ours you have found that the contacts between the circuit cards and mother board occassionaly become intermittent. The problem disappears (temporarily) if you wiggle (or kick!) the circuit cards.

If all solder joints are OK, the problem may be caused by an insulating film which builds up on the circuit card contacts. The film can be removed by spraying TV Tuner Cleaner into the circuit card connector contacts and then inserting and removing the circuit card from the mother board several times to clean the contact pins.

UPGRADE to STRUBAL+

If you purchased the STRUBAL compiler from Percom, you can upgrade to STRUBAL+ (MINIDOS version) for $49.95. Include a copy of your original invoice when you order.

In addition to the features of the original STRUBAL, STRUBAL+ features 14 digit BCD floating point arithmetic, and a Macro relocating assembler. This permits the user to define new KEYWORDS to extend the syntax of the STRUBAL language. You can use STRUBAL+ with your existing LINK LOADER.

UPGRADE SMOKE and SWTP DISK SYSTEMS

Since the LFD-400 now has more fully supported and easier to use disk software than either Smoke or SWTP, we get many requests from Smoke and SWTP users for Percom software. Consequently, we have put together an upgrade/conversion package to convert SWTP or Smoke disk systems to Percom. The package includes:

LFD-400 Controller Circuit Card
MINIDOS
MINIDOS-PLUSX
SUPER BASIC
Cable Connector (for SWTP Disk cable)
All Instruction Manuals

The conversion package is $249.95.

PERCOM SUPER BASIC 1.0

PERCOM SUPER BASIC is a 12K Extended Disk BASIC for 6800 computers using the PERCOM LFD-400 or LFD-1000 disk systems. PERCOM SUPER BASIC incorporates the 'dialect' and is fully compatible with SWTP 8K Cassette BASIC (Ver 2.0, 2.2, 2.3) but is much faster than SWTP 8K BASIC and includes many more features and functions!

Features of PERCOM SUPER BASIC

* PRINT USING permits precise control of printed report formating.
* Easy to use RANDOM ACCESS disk files permit direct access to a specific data item for faster disk data file access.
* LINPUT permits entry of an entire line of text into a single string variable.
* Programs run an average of 35-40% FASTER than SWTP 8K BASIC. Subscripting is 75% faster. Functions in IF and PRINT statements run 100% faster.
* BASE command permits BASE=0 or BASE=1 subscripting.
* QUESTION MARK (?) may be substituted for the word PRINT in command statements to improve operator convenience.
* NAMED DISK FILES when used with PERCOM MINIDOS-PLUSX
* Direct execution of any MINIDOS-PLUSX command within a program permits BATCH PROCESSING.
* Improved ERROR REPORTING displays the line and position in the line at which an error occurres. ABBREVIATED ERROR MESSAGES are easy-to-remember MNEMONICS (rather than numbers)
* CHAINing combines the functions of LOAD and RUN commands. Permits one program to 'link' in another program from the disk without operator intervention.
* STRING command permits 6 to 127 character string length control.

* 9-Digit BCD arithmetic prevents round-off errors and loss of significant digits in fractions. Essential for business applications.
* Programs and Data files may be created and edited using one of the PERCOM TEXT EDITORS.
* RESTORE to a specified data statement line number permits greater control of program embedded DATA.
* END OF FILE 'trapping' within program permits greater control of disk data files.
* BUFR function permits PEEKing and POKEing into disk data file buffers.
* MEM function return the number of memory bytes still available for program and data storage.
* VARPTR function return the decimal address of a numeric or string variable. Useful for PEEKing or USER function calls.
* PI function returns the value of the mathematical constant 'PI' (3.14159265).

$49.95

SUPER BASIC
INSTRUCTION SET SUMMARY

NUMBERS IN PARENTHESIS ARE USER'S MANUAL PAGE NUMBERS

GENERAL COMMANDS

CONT	(6)
LIST	(6)
MDOS	(7)
MON	(7)
NEW	(7)
POKE	(7)
RUN	(6)
TRACE ON	(8)
TRACE OFF	(8)

ENVIRONMENTAL CONTROLS

LINE	(8)
DIGITS	(8)
STRING	(8)
PORT	(9)
FILESZ	(9)

PROGRAM STORAGE

APPEND	(9)
CHAIN	(10)
LOAD	(9)
SAVE	(10)
TAPPEND	(10)
TLOAD	(10)
TSAVE	(10)

I/O (FILE)

OPEN	(18)
CLOSE	(19)
RESTORE	(20)
READ	(19)
SCRATCH	(20)
INPUT	(15,19)
LINPUT	(16,19)
PRINT	(16,18)
PRINT...USING	(17)

STATEMENTS

BASE	(12)
DATA	(11)
DEF	(11)
DIM	(11)
END	(12)
LET	(13)
READ	(12)
RESTORE	(12)
REM	(12)
STOP	(12)

PROGRAM CONTROL

FOR...STEP	(14)
NEXT	(14)
IF...THEN	(14)
ON...GOSUB	(14)
RETURN	(15)

FUNCTIONS

ABS	(21)	PEEK	(26)
ASC	(21)	PI	(23)
ATAN	(21)	POS	(24)
BUFR	(21)	RIGHT$	(24)
CHR$	(21)	RND	(24)
COS	(22)	SCTR	(24)
EOF	(22)	SGN	(24)
EXP	(22)	SIN	(24)
FN	(22)	SQR	(25)
FILESZ	(22)	STR$	(25)
INT	(22)	TAB	(25)
LEFT$	(23)	TAN	(25)
LEN$	(23)	USER	(25)
LOG	(23)	VAL	(25)
MEM	(23)	VARPTR	(26)
MID$	(23)		

DISK FILE COMMANDS: OPEN, CLOSE, READ, PRINT, INPUT, LINPUT, RESTORE, SCRATCH, MDOS*

* MDOS LINKS ALL MINIDOS-PLUSX COMMANDS TO BASIC (RENAME, FILES, DELETE, ETC.)

MATHEMATICAL OPERATORS

^	EXPONENTIATION
*	MULTIPLICATION
/	DIVISION
+	ADDITION
-	SUBTRACTION
-	UNARY MINUS

RELATIONAL OPERATORS

=	EQUAL
<>	NOT EQUAL
<	LESS THAN
>	GREATER THAN
<=	LESS THAN OR EQUAL
>=	GREATER THAN OR EQUAL

PM's

PATCH MEMO PM-LFD-400-001
JANUARY 25, 1979

PRODUCT: PERCOM SUPER BASIC VER 1.0

Problems Solved:

1. In some rare instances, closing a file will cause the disk directory to be destroyed.
2. Files may erroneously be allocated beyond the limits of a diskette, resulting in a "wrap-around" which destroys files at the beginning of the diskette.
3. SAVEing a program containing a line with only a single quote (presumably an error) will result in a 'UL' error on the next line when that program is LOADed.
4. Errors which occur in MINIDOS-PLUSX, when invoked by the 'MDOS' command, are reported, but the BASIC program is allowed to continue running with the result that the error may not be noticed by the operator.

Patch Application:

To apply the patches in this memo it is first necessary to load SUPER BASIC into memory. Whether using MINIDOS or MINIDOS-PLUSX this is done with the 'L' command. When SUPER BASIC has been loaded, use the system ROM monitor (MIKBUG, SWTBUG, etc.) to apply the patches. This is normally done with the 'M', or Memory Change function. Work slowly and carefully to avoid mistakes. When all patches have been entered, save the patched SUPER BASIC using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from address 0100 to 2FFF with the program start at address 0100.

Patch Address	Patch data
0413	2E 20 31 2E 30 31 00
047D	4D 2B
0495	44 46
06E3	7E 2D 0E 01
07FE	BD 2C F7 01
121E	BD 2D 20
2CF7	DE EE 27 03 DF 01 39 7E
2CFF	07 BB A6 02 B1 C1 7C 23
2D07	03 7E 15 F6 7E C5 F5 81
2D0F	0D 26 04 C4 F7 D7 EA C5
2D17	08 26 03 7E 06 E7 7E 07
2D1F	0A BD C4 12 25 01 39 C6
2D27	29 7E 10 C7

Documentation Changes:

With the application of these patches SUPER BASIC is elevated to Version 1.01. Please reference this version in any correspondence relative to SUPER BASIC.

Two new error codes have been added. Error code 'DF' signifies DISK FULL, i.e. no more files can be added to the disk referenced by a 'SAVE' or 'OPEN' command. Error code 'M+' indicates an error occured during the execution of a MINIDOS-PLUSX function invoked by the 'MDOS' command. The error will be displayed immediately preceding the 'M+' error message.

PATCH MEMO PM-LFD-400-002
JANUARY 25, 1979

PRODUCT: PERCOM TOUCHUP TEXT EDITOR PATCH

Problem Solved: Use of the STATUS or 'S' command while the HARD COPY option is in effect will cause garbage to be printed with possible loss of control of the editor.

Patch Application:

To apply the patches in this memo it is necessary to load the TOUCHUP Editor into memory using the MINIDOS or MINIDOS-PLUSX 'L' command. When the editor has been loaded, use the system ROM monitor to apply the patches. When all patches have been entered, save the patched TOUCHUP editor using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from address 00B0 to 1D7B with Program Start at 0200.

Patch Address	Patch Data
15FB	45 44 49 54 4F 52 20 56
1603	53 4E 20 31 2E 30 31
17F9	2D
1807	2D

With the application of these patches the TOUCHUP editor is elevated to Version 1.01. No other documentation changes are necessary.

PATCH MEMO PM-LFD-400-003
JANUARY 25, 1979

PRODUCT: PERCOM SYMBOLIC ASSEMBLER

Problem Solved: When printing the assembler output to a printer which uses a parallel (MP-L) interface, the assembler may 'die' without printing anything.

Patch Application:

To apply the patches in this memo it is first necessary to load the assembler into memory. Whether using MINIDOS or MINIDOS-PLUSX, this is done with the 'L' command. When the assembler is loaded use the system ROM monitor 'M' (memory change) function to apply the patches. When all patches have been entered, save the patched assembler using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from 0100 to 13BE with Program Start at 0100.

Patch Address	Patch Data
017C	01
017E	03
1358	32 2E 30 31

With these patches the Assembler is elevated to Version 2.01. No other documentation changes are necessary.

PATCH MEMO PM-LFD-400-004
JANUARY 29, 1979

PRODUCT: PERCOM FINDER (TM) DATA BASE MANAGER

Problem Solved: The initialization program 'BILDER' calculates the number of records which can be stored incorrectly, resulting in a possible overlap of data records.

Patch application:

To apply the patches in this memo it is first necessary to load 'BILDER' into memory. This is done when in BASIC using the BASIC 'LOAD' command. After 'BILDER' is loaded, enter the new program lines as shown below. Save the modified 'BILDER' using the BASIC 'SAVE' command. Note that there are two version of 'BILDER'; one for Percom BANDAID 2.3, and one for Percom SUPER BASIC. The patches provided are for both versions.

```
130 PRINT "VERSION 1.01"
800 S9=S9/256 : R=INT(339/S9)-INT(C/S9)
850 R9=0
```

The version number of BILDER (not previously printed) is raised to 1.01.

If any item in the data base is to have a size longer than 32 characters, the following line should be added to both the 'BILDER' and 'FINDER' programs:

```
10 STRING=X
```

where X is a number equal to the longest possible item size.

PATCH MEMO PM-LFD-400-005
MARCH 5, 1979

PRODUCT: PERCOM SUPER BASIC VERSION 1.01

Problems Solved:

1. User defined port types fail when used for Port #1
2. The RESTORE statement is erroneously error flagged when used in a multi-statement line.
3. Printing data to a file with comma separators does not provide proper field spacing in all cases.
4. Garbage is printed on the screen when an MP-C interface is initialized.
5. Closing string quotes should not be required when the end of a string coincides with the end of the line.
6. Following application of patch memo 001, files could not be open at sector 000.

Patch Application

To apply the patches in this memo it is necessary to load SUPER BASIC using the MINIDOS or MINIDOS-PLUSX 'L' command. Use the memory change function in the system ROM monitor to apply the patches. Work slowly and carefully to avoid mistakes. When all patches have been entered, save the patched SUPER BASIC using the MINIDOS or MINIDOS-PLUSX 'S' command. Save memory from 0100 to 2FFF with program start at 0100.

Patch Address	Patch Data
0418	32
04D8	A7 02 6C 00
057E	BD 2D 2B
076C	01 01
0CAE	09 34 01 01 01
1B47	BD 2D 31
1D1E	BD 2D 39 01
2CFF	2D 42
2D2B	B6 01 5B 84 03 39 BD 0F
2D33	5A 27 02 81 3A 39 86 2C
2D3B	BD 1D 39 7F 00 3D 39 96
2D43	EA 85 40 27 B3 7E 07 BB

With the application of these patches SUPER BASIC is elevated to Version 1.02. Please reference this version in any correspondence relative to SUPER BASIC.

If a user-defined port type is to be used in Port #1, there must still be an MP-S, MP-L, or MP-C interface at that port to insure proper detection of a console 'break' request. The number of the user-defined port type should be 4 for MP-S, 5 for MP-L, or 6 for MP-C.

For user convenience, error 'MO' is no longer issued if the end of a line is encountered while SUPER BASIC is looking for a closing string quote (").
This means the following statement is legal:

```
LOAD "2/PROG
```

Error code 'OV' was inadvertently omitted from the SUPER BASIC instruction manual. 'OV' indicates overflow of the input buffer during execution of 'INPUT', 'LINPUT', or entry of statements in the direct mode. The limit of this buffer is 72 characters including Carriage Return.

When saving a program using the form 'SAVE DSSS', it is possible to get the last sector used by:

```
PRINT SCTR
```

This may also be used after a named file save.

USER'S GROUP

As PERCOM customers and users of the LFD-400, you are no doubt aware of the Technical Information Memos which PERCOM produces from time to time. Based on feedback from our customers these have been well received. Much of the information in the current series of Technical Memos was written by PERCOM personnel but in several instances was written or suggested by LFD-400 users.

To permit all LFD-400 users an information exchange forum, we are forming an LFD-400 USER'S GROUP. This newletter will be used to inform users of contributed programs and suggestions. However software will be distributed on diskette for a nominal charge to cover cost of reproduction and distribution.

Obviously such a group needs a few guidelines to speed transfer of information and keep the cost of distribution to a minimum.

1. Since software contributions will be distributed on diskette, all contributions must be submitted on LFD-400 compatible diskette. If at all possible, supply the source and object files in a format compatible with PERCOM disk BASIC or the PERCOM 6800 Symbolic Assembler (ASMBLR) and Hex loader (HEXLDR). If the software requires special instructions include them as remarks in the source file or as a separate text file.
2. If your contribution is accepted for distribution to the USER'S GROUP, your diskette will be returned with a copy of a USER'S GROUP diskette of your choice at no charge. We reserve the right to edit or reject a contribution if it is in the best interests of the USER'S GROUP.
3. We will list names and addresses of contributors in the newsletter together with a summary of the contribution unless specifically instructed otherwise.
4. All contributions become the property of the LFD-400 USER'S GROUP and are available to all members for a nominal reproduction and distribution charge of $10.00 per diskette (plus shipping). We will put as many contributions on a diskette as we can. Unless specifically stated otherwise, all contributions to the LFD-400 USER'S GROUP may be reprinted or copied for any non-commercial purpose provided credit for the material is given to the LFD-400 USER'S GROUP.
5. Please do not send us anything owned or copyrighted by others without their written permission. Contributions will be distributed 'as-is' without guarantee or support. PERCOM Data Co. Inc. is not responsible for damages either direct or consequential which may occur as a result of the information submitted or distributed by the LFD-400 USER'S GROUP.
6. PERCOM is not responsible for loss or damage of material or diskettes sent to us. Make a duplicate of anything you wish to keep and put your name and address on any material you want returned. Pack diskettes in a crushproof carton or sandwich between two pieces of corrugated carton stock. Cross the corrugations at right angles for maximum protection of the diskette. Mark the parcel:
   MAGNETIC SENSITIVE MATERIAL
   DO NOT BEND
   DO NOT X-RAY
   Be sure to insure the parcel for the cost of the diskette.

```
                        NAM   DSKCPY
                    * SINGLE DISC COPY PROCEEDURE
                    * DOUG BECK  LOS ALTOS, CA   2/23/78
                    * TO COPY FROM DISC 1 TO DISC 2, MOUNT DISC 1
                    * AND INVOKE THIS PROGRAM.  5 TRACKS (50 SECTORS)
                    * INCLUDING EMPTY SECTORS WILL BE READ TO MEMORY
                    * AND A PROMPT * ISSUED.  REPLACE DISC 1 WITH DISC 2
                    * AND PRESS THE TERMINAL SPACEBAR   WHEN THE 5 TRACKS
                    * HAVE BEEN WRITTEN A PROMPT & WILL BE ISSUED.
                    * REPEAT THE DISC 1 - DISC 2 EXCHANGE AND SPACEBAR
                    * PRESS   CONTINUE THIS PROCEEDURE UNTIL THE DISC
                    * IS COPIED (7 SEQUENCES) OR SUFFICIENT TRACKS
                    * ARE READ AND WRITTEN TO COVER THE DESIRED RANGE
                    * THIS PROGRAM REQUIRES 16K OF MEMORY TO RUN.
                    * EQUATES
   (0000)           DRV     EQU   0
   (0001)           TRKSEC  EQU   1
   (0001)           TRACK   EQU   1
   (0002)           SECT    EQU   2
   (0007)           BYTCNT  EQU   7
   (0014)           TA      EQU   $14
   (0016)           TW      EQU   $16
   (C00C)           READ    EQU   $C00C
   (C00F)           WRITE   EQU   $C00F
   (E0E3)           MON     EQU   $E0E3
   (E1D1)           OUT     EQU   $E1D1
   (E1AC)           IN      EQU   $E1AC
                    * TEMPORARIES
   (0040)                   ORG   $40
0040                TCTR    RMB   1
0041                SCTR    RMB   1
0042                TSTMPR  RMB   2
0044                HDRPTR  RMB   2
0046                XI      RMB   2
0048                XO      RMB   2
   (0100)                   ORG   $0100
                    * SET UP READ ROUTINE
0100 86 40                  LDA A #$40
0102 97 00                  STA A DRV
0104 4F                     CLR A               CLEAR TEMPORARIES
0105 97 42                  STA A TSTMPR
0107 97 43                  STA A TSTMPR+1
0109 CE 020C        AA      LDX   #BFR          SET INPUT ADDRESS
010C DF 16                  STX   TW
010E 7F 0040                CLR   TCTR          CLEAR TRACK COUNTER
0111 CE 340C                LDX   #HDR          SET HEADER BUFFER ADDRESS
0114 DF 44                  STX   HDRPTR
0116 DE 42                  LDX   TSTMPR        SET TRACK AND SECTOR
0118 DF 01                  STX   TRKSEC
011A BD C00C        BB      JSR   READ          READ ONE SECTOR
011D 24 26                  BCC   XX            NO ERROR
                    *
011F 81 03                  CMP A #3            IS IT EMPTY SECTOR
0121 27 08                  BEQ   YY
                    *
0123 86 3C                  LDA A #'<           ERROR PROMPT
0125 BD E1D1                JSR   OUT
0128 7E E0E3                JMP   MON           EXIT
012B DE 44          YY      LDX   HDRPTR        SAVE HEADER
012D 96 00                  LDA A DRV
012F A7 00                  STA A DRV,X
0131 96 01                  LDA A TRACK
0133 A7 01                  STA A TRACK,X
0135 96 02                  LDA A SECT
0137 A7 02                  STA A SECT,X
0139 86 01                  LDA A #1
013B A7 07                  STA A BYTCNT,X
013D DE 16                  LDX   TW
013F 86 04                  LDA A #4            MAKE EOT
0141 A7 00                  STA A 0,X
0143 20 0E                  BRA   ZZ
                    *
0145 DF 44          XX      LDX   HDRPTR        MOVE HEADER
0147 DF 48                  STX   XO
0149 CE 0000                LDX   #DRV
014C DF 46                  STX   XI
014E C6 0F                  LDA B #15
0150 BD 01FA                JSR   MOVBLK
0153 96 02          ZZ      LDA A SECT          ONE TRACK READ TEST
0155 81 09                  CMP A #9
0157 27 17                  BEQ   DD
                    *
0159 7C 0002                INC   SECT          BUMP SECTOR COUNTER
015C DE 16          CC      LDX   TW            INCREASE BUFFER ADDRESS
015E 5F                     CLR B
015F BD 01F5                JSR   ADDBTX
0162 DF 16                  STX   TW
0164 DE 44                  LDX   HDRPTR
0166 C6 0F                  LDA B #15
0168 BD 01F5                JSR   ADDBTX
016B DF 44                  STX   HDRPTR
016D 7E 011A                JMP   BB            READ NEXT SECTOR
                    *
0170 96 40          DD      LDA A TCTR          TEST IF TRACK = 5
0172 81 04                  CMP A #4
0174 27 0B                  BEQ   EE
                    *
0176 7C 0040                INC   TCTR          BUMP TRACK COUNTER
0179 7C 0001                INC   TRACK         BUMP TRACK
017C 7F 0002                CLR   SECT          CLEAR SECTOR COUNTER
017F 20 DB                  BRA   CC            DO MORE
                    *
0181 7F 0002        EE      CLR   SECT          WIND UP READ
0184 7F 0040                CLR   TCTR
0187 CE 340C                LDX   #HDR
018A DF 44                  STX   HDRPTR
018C 7C 0001                INC   TRACK
018F DE 01                  LDX   TRKSEC
0191 DF 42                  STX   TSTMPR        SAVE TRACK AND SECTOR
0193 86 2A          FF      LDA A #'*           MAKE A PROMPT
0195 BD E1D1                JSR   OUT
0198 BD E1AC                JSR   IN            WAIT FOR SPACEBAR, CHANGE DISCS
019B 81 20                  CMP A #$20
019D 26 F4                  BNE   FF
                    *
019F 7F 0041                CLR   SCTR          CLEAR SECTOR WRITTEN COUNTER
01A2 CE 020C                LDX   #BFR          SET UP WRITE ADDRESS
01A5 DF 14                  STX   TA
01A7 DF 16                  STX   TW
01A9 CE 0000        GG      LDX   #DRV          MOVE HEADER
01AC DF 48                  STX   XO
01AE DE 44                  LDX   HDRPTR
01B0 DF 46                  STX   XI
01B2 C6 0F                  LDA B #15
01B4 BD 01FA                JSR   MOVBLK
01B7 BD C00F                JSR   WRITE         WRITE A SECTOR
01BA 96 41                  LDA A SCTR          IF SCTR COUNTER = 9
01BC 81 09                  CMP A #9
01BE 27 18                  BEQ   HH
                    *
01C0 7C 0041                INC   SCTR
01C3 DE 16          JJ      LDX   TW
01C5 5F                     CLR B
01C6 BD 01F5                JSR   ADDBTX
01C9 DF 14                  STX   TA
01CB DF 16                  STX   TW
01CD DE 44                  LDX   HDRPTR        BUMP HEADERPOINTER ADDRESS
01CF C6 0F                  LDA B #15
01D1 BD 01F5                JSR   ADDBTX
01D4 DF 44                  STX   HDRPTR
01D6 20 D1                  BRA   GG
                    *
01D8 96 40          HH      LDA A TCTR          IF TRACK COUNTER = 5
01DA 81 04                  CMP A #4
01DC 27 08                  BEQ   LL
                    *
01DE 7C 0040                INC   TCTR
01E1 7F 0041                CLR   SCTR          RESET SECTOR COUNTER
01E4 20 DD                  BRA   JJ
                    *
01E6 86 26          LL      LDA A #'&           MAKE THE PROMPT
01E8 BD E1D1                JSR   OUT
01EB BD E1AC                JSR   IN            WAIT FOR SPACEBAR, SWAP DISCS
01EE 81 20                  CMP A #$20
01F0 26 F4                  BNE   LL
01F2 7E 0109                JMP   AA            DO 5 MORE TRACKS
                    * ADD B TO X SUBROUTINE
01F5 08             ADDBTX  INX
01F6 5A                     DEC B
01F7 26 FC                  BNE   ADDBTX
01F9 39                     RTS
                    * MOVE A DATA BLOCK SUBROUTINE
01FA DE 46          MOVBLK  LDX   XI
01FC A6 00                  LDA A 0,X
01FE 08                     INX
01FF DF 46                  STX   XI
0201 DE 48                  LDX   XO
0203 A7 00                  STA A 0,X
0205 08                     INX
0206 DF 48                  STX   XO
0208 5A                     DEC B
0209 26 EF                  BNE   MOVBLK
020B 39                     RTS
020C                BFR     RMB   12800         A BIG BUFFER FOR DATA
340C                HDR     RMB   750           A SMALL BUFFER FOR HEADERS
                            END
     00  ERROR(S) DETECTED


   SYMBOL TABLE:
AA          0109    ADDBTX  01F5    BB          011A    BFR     020C
BYTCNT      0007    CC      015C    DD          0170    DRV     0000
EE          0181    FF      0193    GG          01A9    HDR     340C
HDRPTR      0044    HH      01D8    IN          E1AC    JJ      01C3
LL          01E6    MON     E0E3    MOVBLK      01FA    OUT     E1D1
READ        C00C    SCTR    0041    SECT        0002    TA      0014
TCTR        0040    TRACK   0001    TRKSEC      0001    TSTMPR  0042
TW          0016    WRITE   C00F    XI          0046    XO      0048
XX          0145    YY      012B    ZZ          0153
```

ED SMITH'S SOFTWARE

RELOCATING ASSEMBLER AND LINKING LOADER

An assembler with the capability of producing relocatable object code. Designed with the personal computer user in mind. Has convenience features necessary for rapid program development and debugging. Some of the many features are:

* Relocatable object code
* Alphabetized Cross Reference listing
* Global and Local labels
* Listing of execution time
* Listing of relative branch target address
* 8 character labels
* Permits BREAK character in label
* Co-Resident Editor
* Error Messages in English text
* TSC Text Editor source text compatibility
* Variable column size for both CRT and Printer
* PAUSE count for CRT display
* Special PR-40 print mode for 80 column listing

The assembler executive prompts the user to select either the EDIT mode for source text loading, saving, editing and creation; the CHECK mode to rapidly find any assembly errors; the LIST mode to display the assembled program and cross-reference on the CRT under complete user control; the TAPE mode for creating relocatable object code cassettes; or the DISK mode for creating relocatable object code diskettes. These modes all return control to the assembler EXEC when completed. The assembler program is approximately 8K bytes. The linking loader is less than 2K bytes. The loader is designed to be placed in EPROM.

The Relocating Assembler and Linking Loader are furnished in relocatable formatted code so they may be placed anywhere in memory. The Linking Loader is also supplied as a binary file on diskette to initially load the Linking Loader at any desired address.

A comprehensive instruction Manual and an extensively commented assembly listing complete the Assembler and Linking Loader package.

M68AS-I... INDEX DISK... $55.95

RELOCATING DISASSEMBLER AND SEGMENTED SOURCE TEXT GENERATOR

Produces compacted code suitable for re-editing and assembly with the Relocating Assembler (M68AS) program. The segmenting feature permits large programs to be broken into a number of smaller source modules to permit reassembly within user memory limitations. Linkage references are automatically added to the source programs. This program has all of the operator convenience features of the M68SG program (see below). The output can be listed, printed or directed to tape or disk. Furnished in relocatable formatted code with instruction manual and assembly listing.

M68RS-I... INDEX disk... $40.95

SPECIAL COMBINATION OFFER
M68AS AND M68RS on single diskette
M68ASPK-I... INDEX disk... $85.00

DISASSEMBLER/SOURCE GENERATOR

Produces compacted source code suitable for re-editing and assembly with the Percom TOUCHUP Editor and SYMBOLIC ASSEMBLER. Output source file can be directed to cassette or disk. Produces a full assembly type output listing with symbol labels and mnemonic instructions. Can be printed or displayed on the system terminal. The number of bytes of source code generated along with the number of variable labels , the number of local labels and the number of variable labels is also displayed. This program contains many user selected options and features which make it easy to tailor the program to individual needs. The source code generated can be assembled immediately without any change. As supplied, the program produces source code files on the Percom LFD-400 disk. All output passes through a jump table at the beginning of the program and may be easily changed to the users own routines. The program requires nearly 4K bytes of memory and contains two files for loading at either $2000 or $3000.

M68SG-M... MINIDOS disk... $30.95

TRACE/DISASSEMBLER

A powerful debug tool which permits the user to examine (or examine and execute) any area of memory, even ROM and PROM, under complete operator control. The disassembler displays:

Program counter
OP code
Instruction Mnemonic
Operand
Branch location (for relative branches)
ASCII characters (if valid alphanumeric)

In the trace mode, the program displays the complete CPU status before and after execution of each instruction. This permits the user to 'software single step' through any program. The user may switch back and forth between modes at any time. The display can be directed to a printer or to the CRT terminal.

In the DISASSEMBLER mode, the operator can generate a hard copy assembly listing. In the TRACE mode, the user may change the contents of any CPU or memory location at any time. The trace program interprets all instructions except WAIT for interrupt which is treated as a NOP. Subroutines may be traced to any depth.

The program requires approximately 2300 bytes of memory. The diskette is supplied with 3 files which can load into locations $1700, $2700, or $3700.

M68DT-M... MINIDOS Disk... $25.95

EPROM SUPPORT/RELOCATOR

Takes a program in any contiguous area in memory (RAM, ROM, etc) and RELOCATES it anywhere within RAM. All operand addresses are checked and adjusted as necessary for their new locations. Can also take a program in RAM and ADJUST it to operate in another address without actually relocating the program. Has the ability to MOVE a program without any adjustment. With this program, you can assemble and test programs in RAM, adjust them for an EPROM operating address, then block move the program to the EPROM burner address.

This program requires 952 bytes and loads at address $1000. Obviously it can relocate itself anywhere desired.

M68EP-M... MINIDOS Disk... $25.95

SPECIAL COMBINATION OFFER
M68DT, M68SG, and M68EP on one diskette
M68DTPK-M... MINIDOS disk... $65.00

SMITHBUG

A 2K Monitor Disassembler/Trace Debugging Tool in EPROM. Use as a stand-alone resident system monitor or as an adjunct to your present monitor. SMITHBUG provides all the monitor commands you could ever want, plus the convenience of built in debugging functions to provide a mnemonic disassembler, a single stepping disassembler/trace display, interactive use of single or dual breakpoints with trace pickup at the breakpoint if desired.

SMITHBUG occupies the upper 2K of memory, starting at address $F800 and requires an ACIA (MP-S) as the control port at address $8004 and 128 bytes of RAM at address $A000.

Furnished on 2716 eprom complete with instructions and listing.

SMITHBUG-P... $70.00

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LFD-400 TECHNICAL INFORMATION AND SOFTWARE PRICE LIST

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TECHNICAL MEMOS FOR THE LFD-400

* ALL ITEMS MARKED WITH AN ASTERISK (*) ARE INCLUDED WITH THE COMPLETE LFD-400 SYSTEM AT NO ADDITIONAL CHARGE. THESE ITEMS ARE 'EXTRA COST' IF COMPONENTS OF THE LFD-400 ARE PURCHASED SEPARATELY.

TM-LFD-400-01 REVISED 9-27-78 FOR MINIDOS 1.4
INTERFACING THE PERCOM LFD-400 FLEXIBLE DISK TO THE SWTPC 8K BASIC. IMPLEMENTS PROGRAM 'SAVE', 'LOAD', AND 'APPEND' FUNCTIONS. COMPLETE WITH LISTING. FOR A MORE COMPREHENSIVE IMPROVEMENT TO SWTP 8K BASIC REFER TO THE 'BASIC BANDAID'. $ 2.50*

TM-LFD-400-02 REVISED 9-27-78 FOR MINIDOS 1.4
ADAPTING THE TSC (TECHNICAL SYSTEMS CONSULTANTS) TEXT EDITOR TO THE PERCOM LFD-400. PERMITS TEXT FILES CREATED BY THE TSC EDITOR TO BE STORED AND READ FROM THE PERCOM DISK. COMPLETE WITH LISTING. FOR A MORE POWERFUL MODIFICATION OF THE TSC TEXT EDITOR REFER TO 'TOUCHUP' DESCRIBED LATER. $ 2.50*

TM-LFD-400-03 REISSUED 1-1-79 MODIFIED FOR MINIDOS 1.4
ADAPTING THE TSC 6800 ASSEMBLER TO THE PERCOM LFD-400. COMPLETE WITH LISTING. $ 2.50*

TM-LFD-400-04 REVISED 9-28-78 FOR MINIDOS 1.4
A LOADER ROUTINE FOR LOADING MOTOROLA ASCII-HEX OBJECT FILES FROM DISK. PERMITS OBJECT FILES CREATED BY THE PERCOM 6800 ASSEMBLER TO BE LOADED INTO MEMORY. COMPLETE WITH LISTING. $ 2.50*

TM-LFD-400-05 REPLACED BY 'BASIC BANDAID'

TM-LFD-400-06 REPLACED BY TM-LFD-400-16

TM-LFD-400-07 REVISED 10-25-78 FOR MINIDOS-PLUSX
DESCRIPTION AND OPERATING INSTRUCTIONS FOR THE 'MINIDOS-PLUSX' MINIDISK OPERATING SYSTEM. INCLUDES THE FOLLOWING TWO MEMOS. $ 5.00

TM-LFD-400-08 5-30-78
INSTRUCTIONS FOR MODIFYING THE SWTP MP-A PROCESSOR CIRCUIT CARD AND 4K MEMORY CIRCUIT CARDS TO PERMIT THE 4K MEMORY CARD TO BE ADDRESSED AT $A000. INCLUDED WITH TM-LFD-400-07

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DESCRIPTION AND OPERATING INSTRUCTIONS FOR THE MINIDOS-PLUSX DISK UTILITY PACKAGE. THE MINIDOS-PLUSX DISK UTILITY PACKAGE CURRENTLY CONTAINS 'CREATE', 'COPY', 'BACKUP', AND 'PACK' COMMANDS. THIS MEMO IS INCLUDED WITH TM-LFD-400-07

TM-LFD-400-10 RETITLED 'UG-LFD-400-01' SUBMITTED BY JOSEPH LANG
ADAPTING THE SWTP CO-RESIDENT EDITOR/ASSEMBLER FOR USE WITH THE PERCOM LFD-400. $ 3.00

TM-LFD-400-11 RETITLED 'UG-LFD-400-02' SUBMITTED BY AL TEJERA.
REVISED 10-30-78 FOR MINIDOS 1.4
ADAPTING THE SMOKE SIGNAL 'SOURCE GENERATOR' PROGRAM FOR USE WITH THE PERCOM LFD-400. $ 3.00

TM-LFD-400-12 REVISED AND EXPANDED 8-21-78 FOR MINIDOS 1.4
THIS 'DISK MAP' PROGRAM DISPLAYS THE CONTENTS OF A SELECTED SECTOR(S) ON THE DISK. USEFUL FOR STUDYING THE STRUCTURE OF A DISK, FOR VERIFYING DISK INTEGRITY, FOR LOCATING 'LOST' PROGRAMS, OR FOR REBUILDING A DESTROYED DISK. A VERY USEFUL UTILITY. COMPLETE WITH LISTING. $ 3.00*

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A 'MEMORY TEST' ROUTINE TO DETERMINE IF A DISK READ ERROR IS CAUSED BY DEFECTIVE MEMORY IN THE HOST COMPUTER. A USEFUL UTILITY FOR IDENTIFYING SYSTEM PROBLEMS. $ 3.00*

TM-LFD-400-14 10-13-78
DESCRIPTION AND OPERATING INSTRUCTIONS FOR THE 'TOUCH-UP'(TM) MODIFICATIONS TO THE TSC TEXT EDITOR. $ 3.00

TM-LFD-400-15 9-21-78
DESCRIPTION AND OPERATING INSTRUCTIONS FOR THE PERCOM 6800 SYMBOLIC ASSEMBLER. $ 3.00

TM-LFD-400-16 REVISED 8-22-78 FOR MINIDOS 1.4
A ROUTINE TO 'PRINT-OUT' THE CONTENTS OF A TEXT FILE (ASCII) FROM THE PERCOM LFD-400 DISK TO THE SYSTEM PRINTER. COMPLETE WITH LISTING. $ 3.00*

TM-LFD-400-17 10-12-78
LFD-400 CONTROLLER CARD THEORY OF OPERATION AND ADJUSTMENT CHECKOUT PROCEDURE. $ 3.00

TM-LFD-400-18 RETITLED 'UG-LFD-400-04' SUBMITTED BY AL TEJERA
'BASIC FILE MANAGER' THIS IS EFFECTIVELY A DISK OPERATING SYSTEM WRITTEN IN PERCOM 'BANDAID' (MODIFIED SWTP 8K BASIC). IT PERMITS BASIC PROGRAMS TO BE ACCESSED AND MANIPULATED BY 10 CHARACTER FILE NAME. COMMANDS INCLUDE, 'INITIALIZE', 'LIST', 'RUN', 'LOAD', 'RENAME', 'UPDATE', 'DELETE', 'HELP'. COMPLETE BASIC PROGRAM LISTING AND INSTRUCTIONS $ 5.00

INSTRUCTION MANUALS

IM-LFD-400-01 LFD-400 INSTRUCTION MANUAL
COMPLETE OPERATING INSTRUCTIONS FOR THE PERCOM LFD-400 AND THE 'MINIDOS' (TM) ROM-BASED DISK OPERATING SYSTEM. COMPLETE WITH LISTING OF 'MINIDOS' (TM). THE LFD-400 INSTRUCTION MANUAL INCLUDES ALL OF THE ABOVE TECHNICAL MEMOS MARKED WITH AN ASTERISK (*) BESIDE THE PRICE. $15.00*

IM-LFD-400-02 'INDEX' INSTRUCTION MANUAL
COMPLETE OPERATING INSTRUCTIONS FOR THE 'INDEX' (TM) DISK OPERATING SYSTEM. $15.00

IM-LFD-400-03 'INDEX' ADVANCED PROGRAMMERS GUIDE
ADVANCED PROGRAMMERS GUIDE AND SOFTWARE DESIGNERS INFORMATION FOR THE 'INDEX' DISK OPERATING SYSTEM. INCLUDES A LIST OF ALL IMPORTANT PARAMETER LOCATIONS AND SYSTEM ENTRY POINTS. ALSO INCLUDES SAMPLE I/O DRIVER ROUTINES AND INFORMATION ON LINKING 'INDEX' TO OTHER SOFTWARE. $45.00

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DESCRIPTION AND OPERATING INSTRUCTIONS FOR PERCOM 'SUPER-BASIC', A 12K DISK-BASED 'BASIC' INTERPRETER FOR THE PERCOM LFD-400. $15.00

LFD-400 SOFTWARE PACKAGES

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MINIDOS-PLUSX. AN EASY TO USE 'DOS' FOR THE SMALL COMPUTING SYSTEM. SUPPORTS BOTH RESIDENT AND TRANSIENT COMMANDS. PERMITS UP TO 31 FILE NAMES PER DISKETTE. REQUIRES LESS THAN 1K RAM! CONTIGUOUS FILE STRUCTURE PERMITS 'RANDOM ACCESS' FILES. PACKAGE INCLUDES ROM, INSTRUCTIONS, AND DISKETTE WITH SOURCE LISTINGS AND NUMEROUS UTILITY PROGRAMS $39.95

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SUPER BASIC. A 10K EXTENDED DISK BASIC INTERPRETER. FASTER THAN SWTP BASIC. SUPPORTS 'RANDOM ACCESS' DISK DATA FILES. PROGRAMS MAY BE PREPARED WITH ONE OF THE TEXT EDITORS DESCRIBED LATER. OPERATES WITH PERCOM MINIDOS OR MINIDOS-PLUSX OPERATING SYSTEMS. INSTRUCTIONS AND DISKETTE $49.95

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Text Editors and Processors:

EDIT68: HEMENWAY ASSOCIATES' POWERFUL DISK-BASED TEXT EDITOR. MAY BE USED TO CREATE PROGRAMS AND DATA FILES. SUPPORTS 'MACROS' WHICH PERFORM COMPLEX, REPETITIVE EDITING FUNCTIONS. PERMITS TEXT FILES LARGER THAN AVAILABLE RAM TO BE CREATED AND EDITED. $39.95

TOUCHUP (TM): MODIFIES TSC'S TEXT EDITOR AND TEXT PROCESSOR FOR PERCOM DISK OPERATION. 'ROLL' FUNCTION PERMITS TEXT FILES LARGER THAN AVAILABLE RAM TO BE CREATED AND EDITED. DISKETTE INCLUDES SOURCE FILE. $17.95

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PERCOM 6800 SYMBOLIC ASSEMBLER: VERY EASY TO USE. PERMITS ASSEMBLER OPTIONS TO BE SPECIFIED AT TIME OF ASSEMBLY. ASSEMBLES PROGRAMS WITH 200 LABELS IN LESS THAN 8K. $29.95

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LINKAGE EDITOR: LINKS RELOCATABLE OBJECT CODE FILES GENERATED BY 'STRUBAL+' OR THE ABOVE RELOCATING ASSEMBLER. $49.95

CROSS REFERENCE GENERATOR: UTILITY PROGRAM WHICH PRODUCES A CROSS REFERENCE LISTING OF AN INPUT SOURCE FILE. $29.95

Business Applications:

PERCOM FINDER: GENERAL PURPOSE INFORMATION RETRIEVAL SYSTEM AND DATA BASE MANAGER. $99.95

FULL-FUNCTION MAILING LIST: 700 ADDRESSED PER DISKETTE. POWERFUL SEARCH, SORT, CREATE AND UPDATE CAPABILITY. $99.95

GENERAL LEDGER SYSTEM: ACCOMMODATES UP TO 250 ACCOUNTS. FINANCIAL INFORMATION IS IMMEDIATELY AVAILABLE - NO LENGTHY SORTING REQUIRED. AUDIT TRAIL INFORMATION PERMITS TRACKING FROM GENERAL-LEDGER RECORD

*** LFD-400 USER'S GROUP DISKETTE #2 *** (NEW DISKETTE-MARCH 5, 1979)

TAPDSK - A UTILITY FOR TRANSFERRING CASSETTE TEXT PREPARED WITH THE SWTP CO-RESIDENT EDITOR/ASSEMBLER TO A DISK FILE.
DSKTAP - A UTILITY FOR TRANSFERRING DISK OBJECT CODE FILES IN MOTOROLA S1-S9 FORMAT TO CASSETTE.
ABASIC - SUBMITTED BY JOE LANGE. OVERLAY PATCH TO ADAPT MICRO-WARE A/BASIC (CASSETTE VERSION) TO RUN ON THE LFD-400.
DSKCPY - SUBMITTED BY DOUGLAS BECK. A SINGLE DRIVE DISC COPY UTILITY. USEFUL FOR BACKING UP OR DUPLICATING DISKETTES IF YOU ONLY HAVE ONE DISK DRIVE. REQUIRES 16K.
OTHELLO - SUBMITTED BY BYRON SEASTRUNK, A GAME FOR THE FUN AND GAMES ENTHUSIASTS.

*** USER'S GROUP DISKETTE #1 *** (NO ADDITIONS SINCE LAST NEWSLETTER)

COMPLETE SOURCE FILE OF MINIDOS

COMPLETE SOURCE FILE OF MINIDOS-PLUSX

'DISK-MAP' SUBMITTED BY R. WEIR; MODIFIED BY H. MAUCH
REFER TO TECHNICAL MEMO TM-LFD-400-12

'MEMORY-TEST' WRITTEN BY R. BENJAMIN. REFER TO TM-LFD-400-13

UG-LFD-400-01 SUBMITTED BY JOSEPH LANG (MODIFIED BY PETER STARK)
ADAPTING THE SWTP CO-RESIDENT EDITOR/ASSEMBLER FOR USE WITH THE PERCOM LFD-400. (MODIFIED FOR MINIDOS 1.4 BY PETER STARK)

UG-LFD-400-02 SUBMITTED BY AL TEJERA
ADAPTING THE SMOKE SIGNAL DISASSEMBLER/SOURCE CODE GENERATOR PROGRAM FOR USE WITH THE PERCOM LFD-400. (MODIFIED FOR MINIDOS VER 1.4)

UG-LFD-400-03 SUBMITTED BY ED CLEMETT (MODIFIED BY STEPHEN CARTER)
ADAPTING THE COMPUTERWARE CASSETTE BASIC (VERSION CASS-1.4) TO RUN ON THE PERCOM LFD-400. (MODIFIED FOR MINIDOS 1.4 AND CSS BASIC VERSION 1.4 BY STEPHEN CARTER)

UG-LFD-400-04 SUBMITTED BY AL TEJERA
'BASIC FILE MANAGER' THIS PROGRAM ALONE IS WORTH THE PRICE OF THE DISK. IT IS EFFECTIVELY A DISK OPERATING SYSTEM WRITTEN IN PERCOM 'BANDAID' (MODIFIED SWTP 8K BASIC). PERMITS BASIC PROGRAMS TO BE ACCESSED AND MANIPULATED BY 10 CHARACTER FILE NAMES. COMMANDS INCLUDE 'INITIALIZE', 'LIST', 'RUN', 'LOAD', 'RENAME', 'UPDATE', 'DELETE', 'HELP'.

UG-LFD-400-04 SUBMITTED BY AL TEJERA
UTILITY TO PRINT OUT A MINIDOS-PLUS(X) DIRECTORY ON A PR-40 OR SIMILIAR PRINTER (MODIFIED FOR MINIDOS 1.4 BY PERCOM. THIS IS NOW A MINIDOS-PLUSX UTILITY)

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