DECUS 12 BIT SPECIAL INTEREST GROUP
NEWSLETTER

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(Please include reference to Newsletter number and page when inquiring
about material published.)

NEWSLETTER DEADLINE

The deadline for ready-to-use material for the next Newsletter is
28-October-1977.   Material requiring editing/re-typing must be in
earlier. Ready-to-use material should use an area 6 1/2 inches (16.5
cm) wide by no more than 9 inches (23 cm) long on each page. It should
be single spaced on white bond paper whenever possible and must be
reasonably clean, legible and sufficiently dark for good photographic
reproduction.

FALL SYMPOSIUM

The Symposium Committee recently finished scheduling the mini/midi
sessions for the Fall meeting in San Diego which will be held November
28 thru December 1 at the Town and Country Hotel complex. Everyone who
has indicated an interest in the meetings should recEIve the usual
information very soon. I will not try to detail everything here but a
few highlights and 12 Bit items may be of special interest to our
readers.

The first session on Monday morning is expected to deal with some very
interesting information even though the exact nature of the session has
not as yet been officially announced.

The 12 Bit sessions will start off with a short "roadmap" session to point the way to sessions of interest to 12 bit system users. A brief session for business of the 12 Bit Special Interest Group is also planned.

The PDP-8 Product Line will be represented again with a panel session and three workshop sessions. First the Product Panel will overview DEC's PDP-8 products and organization and provide an opportunity to discuss forthcoming product developments and general policy issues. Steve Root will run another RTS-8 workshop. Ron Jansen will run the PDP-8 Software Development Tools Workshop where OS/8, OS/78, and MACREL/LINKER will be discussed. Gary Cole will run a DECstation Applications Workshop where details of the new DECstation 78 and how to use it will be covered.

Presently two formal papers of special interest to 12 bit users are scheduled. Paul Gilmartin will be talking about an implimentation of the EULER language for OS/8. Don Harmer and David G. Henderson will talk about a system for providing transparent access to other machine's peripherals under OS/8 using the normal OS/8 handler conventions.

N.S. Kendrick is planning an extensive set of workshops and tutorial sessions for Wednesday afternoon and evening on 12 bit hardware topics that are described elsewere in this newsletter in a note from him.

Jim Crapuchettes will give a FUTIL Update tutorial session. This will be very interesting because Jim has added considerable new capability to FUTIL recently and if it is distributed with some part of the OS/8 V3D updates a great many people will be interested in learning more about it. For example FUTIL can now be used under BATCH and it has conditional execution and checking features that make fully automated patching of software a possibility.

We hope to continue the experiment tried at the last meeting involving an open session ("12 BIT Short Notes") where we have the flexibility to cover late breaking and short items that do not fit into the other types of sessions. If you have inputs for this session let me know as soon as you can so I can plan the time.

As usual various smaller birds-of-a-feather sessions will be scheduled for the off hours as the interest warrants.

A new addition to the Symposium format that seems to be gaining popularity are the Poster Paper sessions. In these the basic story is told through posters that attendees can study at their leisure. At certain designated times the authors of the Poster Papers plan to be available in the area to answer questions on an informal, one-on-one basis. For this meeting we have five 12 Bit related Poster Papers scheduled. Tim Clark will present information on how he simplifies OS/8 file management by having a file he calls a DeVice File (DVF) which can contain a selected group of files. His program DVFX allows the DVF to be treated as a "device" for file storage and retrieval. Tim is also planning a Poster Paper on his program CMU that is designed to utilize the best features of both a small OS/8 system and a large time sharing

system by providing interactive bidirectional terminal communication, transfer of OS/8 files with support for several modes and communications protocals. Arthur G. Snapper and Geofrey Inslis will present their Real-Time Control and Data-Acquisition System for OS/8 and RTS-8. R. I. Kibrick and L. B. Robinson will present their Lick 32k FOCAL for Digital Spectroscopy. Dr. Richard C. Howe and Lyman E. Byrd will present information on the hardware and software for a PDP-8E 24 hour digital clock with visual display that can be read under program control.

DECUS LIBRARY

The latest information is that the DECUS Library staff found it was impossible to get the TPL PDP-12 working reliably with the resources available. As a result I understand the DECUS/US Executive board has voted to terminate consideration of the PDP-12 for use by the DECUS Library and to proceed instead with plans to acquire a suitable PDP-8 configuration that will meet most of the requirements the 12 would have been used for. One of the reasons this change of direction became feasible was that the very large backlog on PDP-8 orders seems to have been brought under control and we are told that DECUS will be able to get their machine in short order once all the approvals are made.

Chuck Conley recently announced that due to a strong interest expressed by the membership, the Library will soon start distributing DEC Software Standards as a new service. With this added function it seems appropriate to refer, in the future, to the "DECUS Library" rather than the "DECUS Program Library". Initially, certain finalized DEC Software Standards will be available. Anyone with questions or suggestions should contact Betty Cadieux, DECUS Library Secretary at DECUS in Maynard (ext. 2524).

Recent Library Submissions:

COMPAF - DECUS 8-862

COMPAF compares all OS/8 files having the same name on two separate file-structured devices. A report is printed which includes the name of any such files whose contents differ in one or more words. COMPAF is a dependable way to verify the correctness of file copying operations.

Price codes: Write-up - no charge, DECtape - H12, Floppy disk - K09.

BRAILE - A Semi-Automatic Braille Embosser - DECUS 8-857

BRAILE is a PAL-8 program which embosses Grade II braille, from a paper tape of English text prepared by a braillist using a teletype modified in the manner described by Anderson and Rogers in the article entitled, "An Inexpensive Braille Terminal Device" in the June 1968 Communications of the ACM. The semi-automatic system involves the following steps:

1) A braillist marks some special symbols in the text to be translated into braille;
2) A typist, who needs no special knowledge of braille creates a

paper tape from the marked text directly or with the SYMBOLIC
EDITOR program;

3) The teletype is modified in the manner described;

4) BRAILE is run using the paper tape from step 2 as input.

The program requires a 4k PDP-8e and the modified ASR-33 teletype. The
required teletype modifications involve substituting a special type head
and a platten modified with a cover of surgical rubber tubing plus
various adjustments. A write-up and listing and a source paper tape are
available.

Extensions to OS/8 BASIC - DECUS 8-860

Sixteen functions have been developed to extend OS/8 BASIC (V3.21).
Several of the functions depend on special hardware, however, most will
support any OS/8 configuration.

I. Functions for any PDP-8e:
        a. Key data in from keyboard on the fly.
        b. Get a random number in a specified range.
        c. Common storage across program chain.
        d. Variable programmable pause (requires crystal clock).
        e. Keep elapsed time during program execution (see d.)

II. Support for an extra terminal connected to a KL8-J
        without calling handlers.

III. Special Hardware:
        a. Calandar/clock support.
        b. A to D converter.

IV. Direct cursor addressing on VT-50,51,52

Price codes: Write-up and Listing - D02, Object and Source files on
floppy disk - K09.

USER4 - BASIC Data Acquisition from Mass Spectrometers - DECUS 8-861

The data system consists of five 23-bit data channels and an elapsed
time counter that are used for control and data acquisition from a high-
precision mass spectrometer. The system requires only three PAL8
user-defined functions that reside in BASIC.UF and are called from OS/8
BASIC: CKW(N), which causes a delay in program execution; CTL(M,N),
which is used to switch the magnetic field and to control the data
counters; and RDA(N), which reads data from the data channels and the
E-T counter.

Price codes: Write-up and listing - D01, Binary paper tape - F02.

Integrated Games and Practice Program Set - DECUS 8-858

This is a package of games and practice programs designed for LIBRA -
FOCAL. The main program records in data files the account number,
password, practice program scores, money for use with games, and

optional test scores for each user. The available practice programs are
chiefly concerned with an Algebra I course, but others could be
included. The games are primarily of the Casino of Gunner types,
including versions of Roulette, Slot Machine, Stock Market, BlackJack,
and a Game of the Month.

The package is written for an 8K PDP-8I with DF32 (may run on RF08).
DECUS 8-433 seems to be needed (the file stucture used is from it).

Price codes: Write-up and Listing - D01, "Object ASCII" on paper tape -
G08.

HYFOC - Hybrid Operation in FOCAL for EAL580-PDP 8e System - FOCAL8-338

HYFOC is an extended version of FOCAL-8 to operate the EAL580/PDP-8e
system in hybrid mode.   It retains all the features of FOCAL and has
additional subroutines to control the 580 computer.   The additional
commands are: FDVM - To read and store all the addressable amplifiers
of 580;   thus the address selection system provides a sort of
multiplexing. FPST - To change the settings of servo-set potentiometers
or to provide two channel bi-directional DAC output. FSAM - To control
the modes of the 580 computer. FSTR - To store large amount of data in
field one to provide data logging facility. FOCAL-8 user area is
undisturbed as the HYFOC overlay resides in field one.

An EAL 580 Analog Computer with interface for PDP-8e is used. A minimum
of 8K of memory is required. The digital voltmeter is used as an ADC to
sample at 50 Hz line frequency (note: submission is from India) for
single channel and about 7 Hz for multi-channel with address selection.

Price codes: Write-up - A01, Object Binary paper tape - F02, Source
paper tape - G02.

DIRECT

Jim van Zee has written regarding OS/8 DIRECT and improvments to it. As
many of you know, Jim and several other members of our special interest
group have done considerable work to create an improved and extended
version of the DIRECT program. The following is an extract from the
write up for this program to demonstrate what Jim is talking about in
the letter that follows it.

"DIRECT V5" vs. OS/8 DIRECT

     This is an improved version of the directory listing program dis-
tributed with CS/8 (OS/12) V3, V3C, V3D and OS/78. It is functionally
equivalent to the original version and includes any updates which have
been released up to the time of submission. To distiguish it from the
earlier versions it has been designated 'V5'. The loading and operat-
ing instructions in the OS/8 Handbook apply without change.*

     The improvements are as follows:

1.   Multiple column listings are now printed in column order rather
than in row order. This makes the listing much more 'readable' since
sequential files and embedded empties appear in their natural order.

2.   The listing can be sorted! The output can be arranged alphabeti-
cally (by name or extension), or viewed in forward or reverse chrono-
logical order. Ordering is first by date, then extension, then name.

3.   Dates can be printed in either the 'DD-MMM-YY' format of the orig-
inal version or the numeric 'MM/DD/YY' style used by the monitor DATE
command prior to 1978. The extended date algorithm devised for V3D is
used to interpret file dates after 1977. (Good through 1999!)

4.   The header block defined by the DECSYSTEM-8 program PARAM.SV can
be listed at the beginning to provide a convenient identification of
the media and the program contents, all in one place. The header may
also be written by the U/W-FOCAL program PARAM.FC.

5.   Fewer spaces are used between columns so that 3 columns will fit
on standard output devices, but a space -is- inserted after the block
number so that it does not run into the file size. Note that numeric
dates use 1 less character per column. To reduce waste paper as well
as to preserve the display on some CRT terminals, the formfeed at the
end-of-output can be eliminated and the 'free blocks' message is now
printed just 1 line below the last file name so that terminals with a
limited number of lines of display can retain more information.

        These features are selected by the /A, /D, /H, /N, /P, /T and /X
switches. "/A" produces an Alphabetical list while "/X" groups files
by their eXtensions; /D organizes the output by Date while /T outputs
the most Timely (recent) files first. Empties will be printed at the
end if /E is also specified. "/P" Prevents Paging while "/N" selects
Numeric dates. "/H" prints out the Header block - if there is one -
otherwise /H is ignored. Note that the date options will not work if
there is no system date, so always check this before using DIRECT.

        To further enhance operation of the program, some of the switches
can be reversed. Thus "/P" can be used to Page rather than to Prevent
Paging, and "/N" can be inverted to designate Non-Numeric dates rather
than Numeric ones. The number of columns can also default to a value
other than 1, and the TV: handler can be used in place of the TTY: for
normal output. Note: Such changes -will- affect the documentation.

        Optional patches (shown in ODT format: location/ value change)

12257/ 7710 7700 Change /N to mean 'print non-numeric dates'
12273/ 7640 7650 Change /H to mean 'don't print header information'
13246/ 7650 7640 Change /P to mean 'output a formfeed' (much better!)
12377/ 0001 0003 Change default to 3 columns (or your choice)
13177/ 0002 0004 Change spacing between columns (your choice)
14713/ 5524 2426 Change default output device to TV: (for the PDP-12!)

        Implementation notes: A minor difference in this release is that
/W now disables the other options so that the version ID will not be

followed by other output. This is consistent with OS/8 documentation
(and is actually an improvement!) but is at variance with the earlier
releases. The 'version release number' of the monitor system is also
now printed in the header so you can distinguish 'V3' from 'V3C' etc.
Note that this 'number' is actually printed as a letter to conform to
the OS/8 convention. Thus you should use the value '195' in PARAM in
order to have the letter 'C' printed. System ID=5 defines 'OS/78'.
Finally, the restriction on combining /B and /E with the sort options
has now been removed. Both starting block numbers and a list of the
empties may be included at any time.

        Acknowledgments: The initial improvements were made by Larry
Fowler of the Boeing Commercial Airplane Co. in Seattle, Washington.
He added the /A and /H options and also modified the source file so
that different I/O codes could be substituted for the terminal. Dr.
Thomas W. McIntyre of the West Virginia University Medical Center in
Morgantown, W. V. added the column-output feature and Jim van Zee of
the Chemistry Department at the University of Washington in Seattle
added the remaining options and condensed the code so that it would
fit into the original file space. Thanks to Rev. Geoffrey Chase of
the Portsmouth Abbey school in Portsmouth R.I. for suggesting the /X
switch and to Tom McIntyre for encouraging the addition of /D.

*Loading Instructions: .DA 7/7/77   (Identifies version 5G)
(Delete the original   .R ABSLDR
  version first so this   *PTR:(89P)=14600$
  one will replace it)   .SA SYS DIRECT   (optional: use '=6503')

        Summary of the command decoder options:

        /A   ALPHABETIZE DIRECTORY BEFORE PROCESSING
        /B   PRINT STARTING BLOCK NUMBERS (OCTAL)
        /C   LIST ONLY FILES WITH THE CURRENT DATE
        /D   ORDER FILES BY DATE, THEN ALPHABETICALLY
        /E   INCLUDE EMPTIES IN THE LISTING
        /F   FAST MODE (NO LENGTHS OR DATES)
        /H   LIST CONTENTS OF THE PARAMETER BLOCK (HEADER)
        /I   PRINT ADDITIONAL INFORMATION WORDS (OCTAL)
        /M   LIST ONLY THE EMPTIES
        /N   PRINT DATES IN NUMERIC FORM (MM/DD/YY)
        /O   LIST ONLY FILES WITH OTHER THAN TODAY'S DATE
        /P   ELIMINATE PAGING (NO FORMFEEDS IN THE OUTPUT)
        /R   LIST REMAINDER OF FILES AFTER THE FIRST ONE
        /T   LIST THE MOST TIMELY (RECENT) FILES FIRST
        /U   TREAT EACH INPUT SPECIFICATION SEPARATELY
        /V   LIST FILES NOT OF THE FORM SPECIFIED
        /W   PRINT THE VERSION NUMBER
        /X   ALPHABETIZE BY EXTENSION, THEN BY NAME
        =N   USE N COLUMNS - OUTPUT IS ORDERED BY COLUMN

        *   WILD NAME OR EXTENSION
        ?   WILD CHARACTER

```
DEFAULT INPUT SPECIFICATION:      *.*
DEFAULT OUTPUT DEVICE:            TTY:
DEFAULT OUTPUT FILE EXTENSION:    .DI
```

LETTER REGARDING "DIRECT V5" DISTRIBUTION

During one of the software sessions at the June meeting the
audience was asked if they would like to have a version of DIRECT
which could sort the directory before listing it. This would add
alphabetical (by name or extension) as well as forward or reverse
chronological listings to the directory options. There seemed to
be substantial interest in such improvements and the question of
distributing the version of DIRECT currently in the DECUS library
(which has these features) as part of the forthcoming V3D release
was brought up. DEC was reluctant to do this for several reasons:
(1) Legal questions related to ownership and 'selling' of programs
which are in the public domain; (2) support problems related to
testing and maintaining a 'new' program; and (3) lack of demand,
from within DEC and from the OEM/user community for such features.

As I understand it, item 1 has probably been resolved. Item
2 has some merit, since although the DECUS version is derived from
the original (V3) release, it has been extensively rewritten. The
revising authors were extremely careful, however, to maintain com-
patibility with the 'official' version so that the new features do
not in any way interfere with the normal operation of the program.
Several bugs were also found in the original version during the re-
vision, so actually less maintainence is to be expected rather than
more. And finally, one of the submittors offered to respond to any
SPR's received, should that ever be necessary. So much for item 2.

This leaves item (3): user interest, especially the OEM users.
Since the people who attend DECUS meetings might not be representa-
tive of the entire user community, it was decided to take a poll on
this matter. It will cost you the price of a stamp, so we will as-
sume that those not replying are voting 'no', but if it turns out
that there is as much interest in this version as was suggested at
the June meeting, perhaps DEC will reconsider. As an alternative,
we could also try to distribute a paper-tape copy in the next News-
letter. If the latter approach is taken, we would undoubtedly need
a few volunteers with high-speed punches to help with tape prepara-
tion. Considering all the benefits you have received from the News-
letter, perhaps you could find a little time to punch a few copies
and forward them to Maynard. Anyone participating in this venture
would receive the latest version with simple instructions for dupli-
cating it. A writeup for the current version can be found elsewhere
in this issue.

                                                  -Jim van Zee

QUESTIONAIRE REGARDING 'DIRECT'

A) Would you like to see the improved version of DIRECT
distributed as part of the V3D (or subsequent) release?   ____

B) Are you an OEM user? (Your vote counts more!)   ____

C) Do you think we should try to distribute a paper-tape
copy in the Newsletter?   ____

D) Would you be willing to duplicate 10 copies and return
them to Maynard for distribution? (Punching = 1 min/copy) ____

Name and address if willing:

E) Comments:

Note: Due to production problems and time limitations I could not make
Jim's questionaire a tear-off, pre-addressed type.   I think that for
best results you should respond directly to him with a short note that
covers the points he has outlined. A personal response will carry more
weight in Maynard and Jim will be better able to evaluate the potential
for his proposal's success. His address is: Department of Chemistry -
BG-10, University of Washington, Seattle, WA 98195. (RH)

NOTE FROM STUART DOLE

Stuart sent information on a couple of things he has found handy. He
says he gets terribly confused by compares (both signed and unsigned, on
both 8's and 11's), so he worked out his own version of how to do them.
He says he does not like to start off thinking in terms of the LINK set
the way Ed Stienberger did in a recent issue, so he starts with both the
LINK and AC clear, does a TAD on one item, then compliments both the AC
and LINK (i.e. like a 13-bit accumulator) and then does an increment.
Then he has a direct correspondence between signed and unsigned
compares. For example:

```
        CLA CLL
        TAD       B
        CML CMA IAC
        TAD       A
```

Skip if	Unsigned	Signed
A .NE. B	SNA	SNA
A .LT. B	SNL	SMA
A .LE. B	SNL SZA	SMA SZA
A .EQ. B	SZA	SZA
A .GE. B	SZL	SPA
A .GT. B	SZL SNA	SPA SNA

E.G. "if A .LE. B branch to C" becomes (signed)

```
        CLA CLL
        TAD       B
        CML CMA IAC
```

```
      TAD     A
      SPA SNA             /Note - skip if A>B!  Signed compare here
        JMP   C
      ...
      ...
```

Stuart suggests that this set of compares would make a good set of
MACREL macros. One way of doing that could be to make them look like
the PDP-11 CMP and various branch instructions. If I am not mistaken
the 11 instruction set covers all the signed and unsigned cases. Note
to users of the older machines: please check and be sure that all this
works on your machine. There could be an obscure compatibility issue
that I do not know about. If you find any problem or have additional
ideas, let me know.

Stuart's other trick is for coding co-routines. This technique enables
you to re-enter a routine at the same place you exited the last time it
was called. He likes it for input and output routines that have to
handle special cases. (It is a common way of coding OS/8 character
packing and unpacking routines for example). Stuart has successfully
used it in an ASCII OS/8 to BCD Mastape routine, as well as in real time
pulmonary physiology studies.

```
/Co-routine example to process an input value -
/enter with AC= value to process

CORTN,  0                   /Entry
        JMP I   LINK        /Go to where we left off
LINK,       INITL           /Initialize with where to go first time
        JMP I   CORTN

/Code here can be on another page
LOOP,   ....
        ....
        ....
        JMS     LINK
INITL,  ....                /Process - initial entry point
        ....
        ....
        JMS     LINK        /Get next value, update LINK
                            /and return here
        /more code

        JMS     LINK        /Get more values, etc
        ...
        JMP     LOOP
```

You could say:
        RESUME= JMS LINK
to make it look more like a real co-routine.

Stuart is at 1386 HSE, Anesthesiology Research, U.C. San Francisco
School of Medicine, San Francisco, CA 94143.

MULTI8 UPDATE

I recently received copies of the new MULTI8 Terminal and System Manuals
from Ernst Lopes Cardozo. They are very informative and helpful in
evaluating what MULTI8 is and what it can be expected to do (basically
it is a real-time operating system with a timesharing background task
that can be configured to run on a wide variety of hardware
configurations and is not restricted to Omnibus machines, the RK8e disc,
or special hardware options). I like the idea that apparently you get
the sources of the system so you have a chance to see and understand
what the system is really doing if you want to and you can compensate
for any peculiarities of your hardware (for example I would need to
modify the clock handler for my particular special hardware).
Conditional assembly parameters are provided to handle all the usual
hardware variations rather like RTS-8. In the real-time area the main
difference from RTS-8 is that MULTI8 uses a sort of round robin
scheduling rather than strictly set priorities. On the other hand
MULTI8 provides for dynamic task loading and memory allocation. This
means that when a task is called for, memory is allocated, the task is
loaded from disc and automatically relocated, it runs, then when it is
done it can release the memory it was using. The net result is that
systems seem easier to configure, build, and modify than with the
current version of RTS-8. A rather interesting feature of the
timesharing section of the manuals are actual statements about what can
be expected for performance (i.e. how many terminals can be supported)
that seem realistic. Further information on MULTI8 can be obtained from
the firm that has taken charge of marketing and support: Westvries
Computer Consulting B.V., P.O. Box 20, Oostzaan, The Netherlands.

NOTES FROM MICHAEL E. MAZZONI

Mr. Mazzoni sent a package of material for the Newsletter. To save
space I have combined and condensed some of it:

1) "Charlie Kronenwetter, a friend of mine developed a modification to
the KL8E handler which, when used with a video terminal, will backspace
and erase a character in response to a rubout."

"Attached is a source compare between the KL8E source and his modified
source. When loaded into BUILD, the group name for the handler will be
KL8T, but the permanent name remains TTY."

2) "Here is a patch to the OS/8 keyboard monitor and command decoder
which will erase characters on a video terminal in respose to a rubout:"

```
      .R EPIC
      *SYS:/1$
      R,11
      0,313
      LOC      OLD      NEW
      313      1070     1323
      314      2020     4423
```

```
315      4423    1322
316      7240    4423
317      3020    1323
320      1013    4423
321      3040    5324
322      1440    0240
323      4423    0210

W
R,53
0,135
LOC      OLD     NEW
135      1102    1344
136      2024    4466
137      4466    1345
140      7240    4466
141      3024    1344
142      1015    4466
143      3020    5346
144      1420    0210
145      4466    0240

W
^C
.SAVE SYS EPIC
```

"It is assumed that control-H (ASCII 210) produces a backspace on the video terminal."

3) "Here is a patch to EDIT.SV that will cause a backspace – space – backspace sequence to be output on a video terminal when the rubout key is pressed. The tab counter is also modified so that tabs come out correctly in the forward direction."

.GET SYS EDIT
.ODT

```
0104/0334 0210  CTRLH,  210                     /change \ to ^H

1522/1104 4723          JMS I .+1               /replace "print \" with patch
1523/4467 3026          PATCH                   /space left @ 3026 for patch

3026/xxxx 0000  PATCH,  0
3027/xxxx 1104          TAD (CTRLH              /set ^H
3030/xxxx 4467          JMS I (PRINT            /print it
3031/xxxx 1037          TAD (SPACE              /set space
3032/xxxx 4467          JMS I (PRINT            /print it
3033/xxxx 1104          TAD (CTRLH              /set ^H
3034/xxxx 4467          JMS I (PRINT            /print it
3035/xxxx 7307          CLA CLL IAC RTL         /AC=4 to reset tab counter
3036/xxxx 1161          TAD TCNT                /add tab count
3037/xxxx 3161          DCA TCNT                /tab counter now correct
3040/xxxx 2226          ISZ PATCH               /increment return address
3041/xxxx 5626          JMP I PATCH             /return
```

```
^C
.SAVE SYS EDIT
```

4) "Here is a patch to BASIC.SV, the Basic Editor, that will cause a backspace - space - backspace sequence to be output on a video terminal when the rubout key is pressed."

```
.GET SYS BASIC
.ODT

0115/0137 0210   CTRLH,   210                /change _ to ^H

0320/1115 4721            JMS I .+1           /put subroutine where
0321/4575 3147            PATCH               /there is room

3147/xxxx 0000   PATCH,   0
3150/xxxx 1115            TAD CTRLH           /set ^H
3151/xxxx 4575            JMS I (TTYOUT       /send it
3152/xxxx 1360            TAD P240            /set space
3153/xxxx 4575            JMS I (TTYOUT       /send it
3154/xxxx 1115            TAD CTRLH           /set ^H
3155/xxxx 4575            JMS I (TTYOUT       /send it
3156/xxxx 2347            ISZ PATCH           /increment return
3157/xxxx 5747            JMP I PATCH         /return
3160/xxxx 0240   P240,    240                /space
^C
.SAVE SYS BASIC
```

5) "Here is a patch to INBSIC.SV, the Industrial Basic Editor, that will cause a backspace - space - backspace sequence to be output on a video terminal when the rubout key is pressed."

```
.GET SYS INBSIC
.ODT

0115/0137 0210   CTRLH,   210                /change _ to ^H

0320/1115 4721            JMS I .+1           /put subroutine where
0321/4575 3135            PATCH               /there is room

3135/xxxx 0000   PATCH,   0
3136/xxxx 1115            TAD CTRLH           /set ^H
3137/xxxx 4575            JMS I (TTYOUT       /send it
3140/xxxx 1346            TAD P240            /set space
3141/xxxx 4575            JMS I (TTYOUT       /send it
3142/xxxx 1115            TAD CTRLH           /set ^H
3143/xxxx 4575            JMS I (TTYOUT       /send it
3144/xxxx 2335            ISZ PATCH           /increment return
3145/xxxx 5735            JMP I PATCH         /return
3146/xxxx 0240   P240,    240                /space
^C
.SAVE SYS INBSIC
```

6) "I have been experimenting with the CCL SET command as described in
the March newsletter. I have a modification to CAMP which makes the SET
LPT WIDTH command work with the excellent line printer handler from G.
Chase's OS/8 system output handler package (DECUS 8-753). This handler
is superior to DEC's because, for one thing, it keeps track of the
length of a printed page for you."

"These modifications should be made to CAMP.SV:"

```
        .GET SYS CAMP
        .ODT
        5204/7040 7041   (so width comes out right)
        5216/4461 5227   (will now look for version A)
        5376/7200 7551   (so width sets put at relative location
                                351 in handler)
        5417/3774 7000   (so nothing happens if set lower case
                                is attempted)
        ^C
        .SAVE SYS CAMP
```

"This line printer handler does not have a version number defined as
distributed. To avoid having to force a version every time the SET
command is used, use the SET command to alter the handler thusly:"

```
        .SET LPT-A LOC 23       /23 is entry point
        0000/1                  /now set to be version A
```

"Or use the ALTER command in BUILD."

7) "I am an INDUSTRIAL BASIC (V3) fan. In the past two years I have put
together one very large system (over 8000 lines of code, a UDC, and an
I-14) and two medium sized core only systems (2000 lines of code, ICS,
and an I-14) using INDUSTRIAL BASIC as the programming language. In the
works is a system to monitor 8 I-14 controllers and display color
graphic pictures of piping schematics of an industrial process on two
Inte-color terminals, showing changes to process conditions as they are
developing in the I-14's."

"Despite the fact that INBSIC is an extension of OS/8 BASIC, and perhaps
from a programming elegance standpoint it is not the best, it does work
as advertised. In fact, V3 worked as advertised, as distributed!!!"

"In my opinion INBSIC is definitely a best buy for a medium sized
dedicated process control computer hardware/software system. Within its
capabilities, it offers a very high price/performance ratio over
RSX11-M.   This is because a small INBSIC system can perform and do
useful work while any RSX11-M system means big bucks.   INBSIC offers
advantages over RSX11-S too, since only an OS/8 system is needed to
generate a core load (as opposed to the RSX11-S need for a supporting
RSX11-M system - R.H.).   INBSIC also supports I-14's as an integral part
of a class A software package, while RSX11 offers it as an add on Class
C product. (According to my sources, the RSX11-M I-14 package has bugs
that are up to you to fix.) I do not mean to infer that INBSIC can
replace RSX11-M, but I do strongly infer that INBSIC can beat the pants

off RSX11-M for a dedicated single Job at a time process control
situation, and beat it for less than half of the cost of an equivalent
RSX11-M system."

"I have developed and/or accumulated quite a number of small
enhancements/changes to INDUSTRIAL BASIC. They include such things as
allowing the OS/8 date word to be set from INBSIC, using a DK8-EP clock
instead of the DK8-EC, replacing the UDC with M-1703, M1705 and DR8-ED
cards for TTL discrete I/O with the RDI, SDO and RDO functions, an
instant restart on power fail with console notification that the power
failed, a programmed halt, or fatal error exit, a second teletype for
string I/O, and several others. I have also rewritten the SYSGEN.BA
program to include some of these features, to make it work for a core
only system generation (it doesn't as distributed), and commented it to
make it intelligible...."

Michael asks if the 12 Bit SIG is the best place to present these
enhancements to INBSIC and to expound on INBSIC in the future. He feels
IPG (DEC's Industrial Products Group) would rather forget INBSIC, and
push RSX11-M. I do not know if we reach a significant number of users
who are interested in this area but our charter seems to cover the
subject and it seems like a promising area to explore. Michael has
offered to make available the details of his enhancements in the
Newsletter. Maybe the best idea would be to use his contributions as a
nucleus for a one or two page section in each newsletter where we can
explore the extent of the membership's interest. Let me and Michael
know if you are interested or have ideas or suggestions. Maybe someone
would like to explain what some of this equipment (I-14, VT-14 etc.) is
for all the rest of us who don't get to work with such stuff.

8) Michael also enclosed information on a software product that he is
offering called CREF-14. He says CREF-14 is "a wonderful addition to
the library of I-14 utility programs" that can make ladder diagrams
without a VT-14 and cross reference any input or output to see in which
circuit it is used. Several advantages involving speed, configuration
flexibilty and information output are provided. Due to DECUS policies I
cannot reproduce the entire product description sheet but full
information is available from Michael who is president of Process
Control Systems, Inc., 18130 S. Thornapple Ln., New Berlin, Wis. 53151
(414-782-3945).

NOTE FROM GLEN F. WILSON

Dr. Wilson writes: "I would like to communicate with Lab 8e users who
would be willing to share bio-feedback and EEG frequency analysis
programs. I would like these programs for research and student
projects, but I do not have time or staff to develop them."

"I agree with the comment in the recent newsletter with regard to
discontinuing the publication of Decuscope and using the money for
publication of SIG newsletters. This seems like a better use of these
funds to me since the current set up of Decuscope does not seem to be
worth the money that is being spent. ...."

Dr. Wilson is with the Department of Psychology, Wittenberg University, Springfield, Ohio 45501.

NOTE FROM PAUL F. SULLIVAN

The following two items were submitted by Paul F. Sullivan of the Acushnet Company, P.O. Box E916, New Bedford, Mass. 02742:

OS/8 to IBM VM370 Link

"Just two days ago we began testing an OS/8 handler which allows simple communication between our PDP-8's and an IBM 370 (or ITEL AS4) operating under the VM370 virtual machine timesharing system. We operate with a KL8J and direct wire, but modem operation should also be possible. This handler may solve Alan Cleary's problem (Newsletter #23, page 49), and may be of interest to others as well. The handler will be made available as soon as testing is completed, though it has not been decided whether it will be distributed through DECUS or directly for a nominal charge."

KL8J Interrupts

"To avoid the problem described in Geoffrey Inglis's comment #6 (Newsletter #23, page 33) we modified our KL8J board to disable the interrupt in response to the front panel CLEAR or the software CAF by swapping the connections to pins 1 and 4 of E56."

SPECIAL 12-BIT HARDWARE WORKSHOP AND TUTORIAL:
A different kind of session for family of eight users is being considered for the fall symposium in San Diego. An afternoon session of brief (about 10 minutes) presentations on various hardware hints, kinks, kluges and maybe even solutions which have been used by many of us, but not reported should benefit all, especially the newer users. This would be followed after the coffee break by a panel session with the opportunity to talk further with the people who presented papers earlier and to share hardware problems and solutions. Several people who have had some experience design and implementation have agreed to participate and others are invited. If you have a hint which would be of use to others but which you may not have considered worth the effort of a 30 minute presentation this is the forum in which to share it. Remember others are out there inventing that same wheel! We would ask that essentially a single concept be presented completely (possibly with simple hand-outs) so that one could make use of the idea quickly. Contributions for this session can be accepted up to the first day of the meeting. A program for the afternoon would be available not later than the morning of the day of the session. Neb Kendrick at the School of Physics, Georgia Tech, Atlanta, Georgia 30332 will coordinate and accept contributions. A few lines about your idea sent to him will suffice. No formal abstract required. If you are interested, plan to participate.

PDP-8 Microcomputers

The 12-bit SIG community may be interested in hearing about
microcomputers that incorporate the Intersil 6100 chip (which implements
the PDP-8e instruction set). These are the ones I found out about
in the process of looking for a microcomputer to control equipment in
a neurophysiological laboratory. (We opted for the ADS MICRO-8,
incidentally). Remarks are subjective, and are based entirely on
manufacturers' literature.

Intersil; 10900 N. Tantau Ave.; Cupertino, Calif. 95014;
408 996-5000. The only sizable company making PDP-8 micros.
Offerings appear intended as educational and development aids
(i.e. they want to sell 6100's, not Intercepts).

Automated Data Systems, Inc. P. O. Box 4062; Madison, Wis. 53711;
608 262-3705. MICRO-8, about $2000, includes real-time clock;
two programmable 4-digit octal displays; 12 bits of digital
input and output with indicator/press-to-test buttons on all
lines. Outputs are 300 ma. sinking, up to 30 volts (i.e. they
can control relays or small electromechanical devices without
additional interfacing). Fairly complete line of laboratory-
oriented options. No software. A cheaper PICO-8 for the hobbyist
market is said to be under development.

Pacific Cyber/Metrix, Inc.; 3120 Crow Canyon Road; San
Ramon, Calif. 94583; 415 837-5400. PC/M-12A, about $1225.
A non-volatile (battery-backup) memory module is available, as
well as standard (volatile) memory. The parallel I/O card is
said to emulate DEC's DR8-EA, a versatile unit with various
handshake and bitwise capabilities (vs. ADS's, straight parallel
transfer). Available in kit form. In my opinion, the manu-
facturer's literature may be deceptive with respect to software
pricing and availability; the manufacturer suggests software may
be obtained easily and inexpensively from DECUS and DEC and
skirts the question of legality. "4K BASIC" is available from
the manufacturer fxs for $5.50. No other software listed.

TLF, Inc.; P. O. Box 2298; Littleton, Colorado 80161;
303 794-1634. MINI-12, about $900; includes "TOS-12" software
(a version of the P?S monitor and a version of PAL) when the
"Mini-Store" cassette system is ordered (about $800). Cassette
system apparently resembles DECtape, i.e. blocks occupy fixed
locations and rewrites in place are possible. Not really available
yet, although a prototype was demonstrated at the DECUS meeting.
Few peripherals or options available, although wonderful things
are scheduled for the future.

Cybertek, Inc. P. O. Box 8766, Madeira Beach, Florida 33738
813 392-3467. LP-12, available as boards only. Interesting
feature: all logic is CMOS and is extremely low power. A
battery-operated PDP-8 is apparently feasible.

FROM OS/8 TO RT-11

A year and a half ago we were faced with a tough decision.
With five PDP-8's in the Health Sciences community, two of them in
our own department, we were in the market for another system. Up
until this time the PDP-11 had been priced sufficiently higher than
the PDP-8 so that the decision was easy - we bought another 8.
Now it was different. The 11 and a comparable 8 were about the
same price. Now, having received the OS/8 newsletter, forerunner
to this publication, and having read it faithfully for years, we
weren't exactly biased toward the 11. It seems no one in OS/8
land had ever said anything good about the 11. RT-11 was dis-
missed as an inferior "son of OS/8".

Being the primary systems software person for several of these
8's, I had had considerable exposure to all aspects of the 8 soft-
ware. I was disappointed in many things. I loved FOCAL. I didn't
care that it was relatively slow - but never could find a truly
acceptable version. I wanted program and variable storage to
trade-off and fields be damned. I wanted strings. I finally
gave up on FOCAL. OS/8 BASIC had some nice things. It handled
program and variable storage intelligently, the overlay structure
was acceptable to me, and, you could write really long programs
in 16K. When you reached that limit however you were in trouble.
Chaining was slow (on DEC tape) and a pain. Yes we tried OS/8
FORTRAN IV. It was impossibly slow to compile on the DECtape/
LINCtape systems and you just couldn't write a decent sized pro-
gram for an 8K system. Another pain was the incompatibility of
data files produced by the various languages and rather hard
slugging to add user assembler language functions to these systems.

We thus looked to the 11 to clean up the 8 mess. I must re-
port that it did. RT-11 has a perfectly acceptable FOCAL - still
no strings but you can't have everything. RT-11 BASIC is rather
extremely similar to OS/8 BASIC in language structure. It has an
overlay feature of sorts, lots of files. Novices much prefer it
to OS/8 BASIC as there is no waiting for compilation. FORTRAN
under RT-11 is just great. It compiles almost instantly, it is
absolutely simple to mix with user assembler functions, has
strings, a great overlay capability, etc., etc., etc. Now PAL8
is a good assembler - at least I think so. MACRO-11 is however
far superior - its almost like a high level language. This is
perhaps the biggest difference in the two systems.

There are alas some negative things about the 11. You need
more core than the 8 - quite a bit more in fact. A less-than-16K

OS/8 BASIC program would not quite fit in 24K under RT-11.

The 11 is slower - even a PDP-11/34 is slower than our slowest
8. We found oscilloscope flicker on the 11 unacceptable with an
assembler program converted from the 8. Maximum analogue to
digital conversion rates are also significantly slower on the 11.

Did we make a good choice? How does it all add up? Well, we
sold two of the 8's and bought another 11. With all that existing
8 software we took quite a chance. Conversion was however relatively
easy and fast. BASIC was trivial. FOCAL was tough - because of
all the kludges we had made in PS/8 FOCAL. FORTRAN only required
changing the logical unit numbers and taking the prompts out of
the READ commands.

If there are any of you out there pondering OS/8 or RT-11,
I recommend a good look at RT-11. It's cleaner and easier to
program in all languages. We now run a time-shared version of
RT-11 call TSX.

We also like to think of RT-11 as the "son of OS/8" but not
an inferior one. One who has got his act together.

The next and imminent release of RT-11, version 3, included
a higher level command language. With this release RT-11 will
have added the only feature of OS/8 missing - a CCL like capability.

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University of Manitoba
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WINNIPEG, Manitoba, Canada
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PH: (204) 786-3642

John Van Essen
Rm 136 — Hearing Research Lab
2630 University Ave. S.E.
Mpls., Minn.   55414

Dear Bob,

1) Observation on source purchases as opposed to disassembling existing code: DEC's requirement of a $1000 license to buy sources is a bit steep. I can see paying what they charge for the sources, but the initial kilobucks investment is a bit too much.

2) Another giant step forward in the ongoing effort to enable the execution of an initial job when OS/8 is booted! The following patch for blocks 0 and 13 changes the "read monitor" CIF to a jump into the user device name table, where code exists to restore the CIF, load the USR, perform a lookup, and then perform a chain if the lookup succeeds. The program being chained to has the responsibility of clearing the user device name table. The file name is put in the USR in locations 0-3!

```
              7746              JSWLOC= 07746      /JOB STATUS WORD.
              7741              UDEVNT= 17741      /USER DEVICE NAME TABLE.
              7667              RMON=   17667      /MONITOR READ.
              7713              RMONC=  17713      /(RMONC) = (RMON)
              0000              USRNAM= 10000      /USR LOC. FOR NAME STORAGE.

              7746              *JSWLOC             /WORD 346 IN BLOCK 0.
     07746    1403              1403               /DON'T SAVE CORE.

              0000              *USRNAM             /WORD 0 IN BLOCK 13.
     10000    0611              FILENAME FIREUP. SV
     10001    2205
     10002    2520
     10003    2326

              7667              *RMON               /WORD 67 IN BLOCK 0.
     17667    5341    RMON,     JMP UDEVNT

              7741              *UDEVNT             /WORD 141 IN BLOCK 0.
     17741    1313    UDEVNT,   TAD RMONC          /RESTORE LOCATION RMON.
     17742    3267              DCA RMON
     17743    4300              JMS 7700           /HAUL IN USR, (AND NAME).
     17744    0010              10
     17745    7001              IAC
     17746    4757    USRCAL,   JMS I C200         /LOOK FOR FILE ON SYS.
     17747    0002    USRCOD,   2
     17750    0000              USRNAM
     17751    0000              0
     17752    5267              JMP RMON           /FILE NOT FOUND.
     17753    1356              TAD C6             /CHANGE LOOKUP TO CHAIN.
     17754    3347              DCA USRCOD
     17755    5346              JMP USRCAL         /CHAIN TO THE FILE!
     17756    0006    C6,       6
     17757    0200    C200,     200

              0001              ROOM=20-. +UDEVNT              /WDS LEFT IN UDEVNT.
```

3) Nice little patch to RK05 bootstrap code to preserve the date across boots. Locations are in Block 0.

WORD	CONT	
34	5022	/JMP 22
22	6211	/CDF 10
23	1427	/TAD I 27
24	6201	/CDF 00
25	3066	/DCA 66 (DATE LOCATION IN BLOCK 0)
26	5000	/JMP 0
27	7666	/DATE LOCATION IN FIELD 1.

4) Have you ever wanted to add features to CCL, but been frustrated by insufficient room for code? Well, I took CCL, ripped it apart into many tiny pieces, stirred in some subroutines, mixed well in a blender for a week, and served it up as CCLX. Features include:

   a. Overlay scheme for infrequently executed code.
   b. Keywords moved from block 67 to CCLX file itself, allowing for twice as many commands.
   c. RECALL command prints rememberance areas and their associated commands.
   d. HELP with no filename prints directory of help files.
   e. DEFINE command to enable user to define new commands to take advantage of same line command decode in CCL. For example: .DEFINE PIP   . PIP MKF1,F2,F3
   f. EDIT FILE1<FILE2 remembers only FILE1.

and many more, too numerous to mention.

5) We make extensive use of SABR (and, unfortunately, FORTRAN II), because of it's modularity, and it's directly executable code. We've been getting shafted by the limitation of 64 externals, so I procured a LOADER source, and have produced a 128 external mutation. Additional features include /1,/2, etc. affecting all files on a line, plus library files, both explicit and default. Also, up to 8 default libraries are allowed (program can be patched with library names). For example, we have IOLIB, FTNLIB, LABLIB, and LIB8.

   I hesitate to distribute these programs because of DEC's copyright notice. It would be helpful if DEC had a policy regarding the distribution of modified DEC sources and binaries.

                                        Sincerely,

                                        John VanEssen

George Gonzalez
H. R. L.
August 19, 1976

Bob,
      Here are a set of patches to OS/8 CUSP's to erase a
character with the DELETE key. I was able to patch FRTS,   BRTS,
EDIT,   and   the   BASIC   editor   to support this feature. The only
known restriction is in BRTS, where I was forced to shorten   the
TTY ring buffer to make room for the backspace code. All the
other   patches   fit   into   the   nooks   and   crannies   of   their
respective programs.

      It   is   almost   impossible   to   patch   the   FORT II run-time
routines to do this. I have modified the source for F RT II I/O
to   handle erase-with-delete, but I am hesitant to distribute it
as I have made many other changes in the routine to customize it
to our environment. I am also   unclear   about   DEC's   stance   on
distribution of modified DEC software sources or binaries.

      Let   me   state that I am generally a   nst patching program
binaries, but these patches have made life ith EDIT   much   more
tolerable. I considered patching TECO, but soon gave up the idea
as   it   is   a   very tight program and it requires a considerable
amount of code to properly erase an input character (especially
across line boundaries!). You are welcome to publish the
patches if you think they would be of general interest.

      I   am   also including a list of locally-discovered bugs. We
have reported the worst of the bugs to DEC.   The   remainder   are
trivial   or happen so infrequently that I haven't taken the time
to properly documen? them. Please feel free to publish this list
if you have the room or inclination to do so.

                                          Sincerely,

                                          George Gonzalez

```
          A SET OF PATCHES TO 'EDIT' V9.  INSTALL ANY OR ALL PATCHES
. GET SYS:EDIT
. ODT
70/1221 3030 <CR>          [ PATCH TO PRINT 'ESC' KEY AS '$' ]

3030/XXXX 0000 <LF>
03031 /XXXX 1237 <LF>
03032 /XXXX 7450 <LF>
03033 /XXXX 1240 <LF>
03034 /XXXX 1241 <LF>
03035 /XXXX 4642 <LF>
03036 /XXXX 5630 <LF>
03037 /XXXX 7545 <LF>
03040 /XXXX 0011 <LF>
03041 /XXXX 0233 <LF>
03042 /XXXX 1221 <CR>      [ END OF 'ESC' PATCH ]

1522/1104 5723 <LF>        [ PATCH TO ERASE CHARS WITH 'DELETE' KEY ]
01523 /4467 2763 <CR>

2763/XXXX 1372 <LF>
02764 /XXXX 4470 <LF>
02765 /XXXX 1373 <LF>
02766 /XXXX 4470 <LF>
02767 /XXXX 1372 <LF>
02770 /XXXX 4470 <LF>
02771 /XXXX 5774 <LF>
02772 /XXXX 0210 <LF>
02773 /XXXX 0240 <LF>
02774 /XXXX 1524 <CR>      [ END OF 'DELETE' KEY PATCH ]

274/1112 5675 <LF>         [ PATCH TO ACCEPT LOWER CASE COMMANDS ]
275/4327 3043 <CR>

3043/XXXX 1112 <LF>
03044 /XXXX 4655 <LF>
03045 /XXXX 0300 <LF>
03046 /XXXX 0064 <LF>
03047 /XXXX 1011 <LF>
03050 /XXXX 1112 <LF>
03051 /XXXX 4655 <LF>
03052 /XXXX 0300 <LF>
03053 /XXXX 0064 <LF>
03054 /XXXX 4143 <LF>
03055 /XXXX 0327 <CR>      [ END OF LOWER CASE PATCH ]

35/0216 0377 <CR>          [ PASS ^N'S TO OUTPUT FILE PATCH ]

220/1031 7300 <CR>         [ SURPRESS EXTRA LINE FEEDS PATCH ]
  ^C
. SAVE SYS:EDIT
```

BACKSPACE ERASE PATCH FOR BASIC EDITOR

```
. GET SYS: BASIC
. ODT

117/0036 40 <RETURN>

224/7450 7440 <LF>
00225 /5315 5237 <LF>
00226 /7001 1111 <LF>
00227 /7450 4575 <LF>
00230 /5234 1117 <LF>
00231 /7001 4575 <LF>
00232 /7440 1111 <LF>
00233 /5237 5321 <RETURN>
  ^C
. SAVE SYS: BASIC
```

BACKSPACE ERASE PATCH FOR BASIC-RUN TIME SYSTEM V3

```
. GET SYS: BRTS
. ODT

1025/1070 1100 <LF>
01026 /1070 1100 <LF>
01027 /1070 1100 <LF>
01030 /0050 40 <RETURN>

1033/7730 7740 <RETURN>

1070/0000 1073 <LF>
01071 /0000 4522 <LF>
01072 /0000 1351 <LF>
01073 /0000 4522 <LF>
01074 /0000 1073 <LF>
01075 /0000 4522 <LF>
01076 /0000 5677 <LF>
01077 /0000 6463 <RETURN>

6461/1273 5662 <LF>
06462 /4522 1070 <RETURN>
  ^C
. SAVE SYS: BRTS
```

PATCH TO 'FRTS' V3 TO ERASE CHARS. WITH DELETE KEY
. GET SYS:FRTS
. ODT

3072/4336 5673 <LF>
03073 /0134 6600 <CR>

5172/6600 7160 <CR>

6600/0000 4610 <LF>
06601 /0000 0210 <LF>
06602 /0000 4610 <LF>
06603 /0000 0240 <LF>
06604 /0000 4610 <LF>
06605 /0000 0210 <LF>
06606 /0000 5607 <LF>
06607 /0000 3074 <LF>
06610 /0000 3136 <CR>
 ^C
. SAVE SYS:FRTS

** THAT'S IT **

< ABSLDR >

ABSLDR SHOULD USE SELF-STARTING BINARY LOADER FEATURE THAT ENABLES USER TO DEFINE A STARTING ADDRESS BY HAVING AN ORIGIN AS THE LAST OPERATION IN THE LOAD.

ABSLDR SHOULD PUT THE STARTING ADDRESS IN THE FIELD 0 LOCATIONS, SO THE PROGRAM CAN BE IMMEDIATELY EXECUTED VIA 'START'.

< BASIC SYSTEM >
BASIC, BCOMP, BLOAD, BRTS & OVERLAYS

'BASIC.SV' DOESN'T WAIT FOR THE TTY TO FINISH THE LAST CHARACTER AFTER THE MESSAGE 'INCOMPLETE SYSTEM' IS PRINTED.

'BCOMP' DOESN'T CHECK THE 'USE' ARGUMENT FOR VALIDITY.

'BASIC.UF' FUNCTION PLY(X) DOESN'T CHECK FOR END OF USER ARRAY.

'BASIC.UF' FUNCTIONS DO NOT CHECK FOR ZERO (MISSING) 'USE' ADDRESSES.

'BRTS' PRINTS FLOAT(4000) AS GARBAGE.

'BRTS' GOES INTO INFINITE 'RE' ERROR LOOP AFTER A ^Z INPUT FROM FILE #0.

'BRTS' GOES INTO INFINITE 'WE' ERROR LOOP IF ^Z IS INPUT IN THE MIDDLE OF A NUMBER.

< BATCH.SV >

'BATCH.SV' SHOULD USE FIELD 7 IF NO ROM RESIDES UP THERE. IF THIS IS IMPOSSIBLE, BATCH SHOULD RESET THE SOFTWARE CORE SIZE TO 32K WHEN EXITING INSTEAD OF LEAVING IT SET TO 28K.

BATCH STILL PRINTS MANUAL HELP NEEDED MESSAGE WHEN SPECIAL

MODE COMMAND DECODE IS DONE.

WHEN /T OPTION IS USED, BATCH STILL TESTS FOR LPT.

BATCH SHOULD COPY INPUT FILE TO SYS IF IT RESIDES ON A
NON-SUPPORTED DEVICE.

BATCH FILE BUFFER RESIDES IN CORE LOWER THAN THE LOCATION
CHECKED BY THE MONITOR, ETC. , TO SEE WHETHER BATCH IS IN
CORE. THIS RESULTS IN A BUFFER OF GARBAGE IF IT HAPPENS TO
BE CABBAGED BY A PROGRAM WHICH OCCUPIES OR USES THAT AREA,
SINCE BATCH IS O. K. , AND DOESN'T HAVE TO READ A NEW BUFFER.
PERHAPS WHEN IT READS A NEW BUFFER, IT COULD SAVE THE FIRST
WORD OF THE BUFFER, AND MATCH IT WITH WHAT IS IN CORE, TO
DETERMINE INTACTNESS??

< CCL. SV >

CCL HAS TOO MANY BUGS!!! SEE CCLX FOR CORRECTIONS!!!

< DIRECT. SV >

DIRECT RESETS ITS STARTING ADDRES, BUT DOES NOT RESET THE
FIELD. IF IT WAS CHAINED TO, THIS PRODUCES PROBLEMS IF
DIRECT IS RESTARTED AND THE FIELD WAS WRONG.

< EDIT. SV >

IF THE LAST PAGE DOES NOT HAVE A FORM FEED (CONTROL L) AT
THE END, AND IF EDITING IS ENDED ON A PAGE OTHER THAN THE
LAST PAGE, THE LAST PAGE IS COPIED WITH THE TABS EXPANDED
INTO SPACES!!!

CONTROL N'S ARE THROWN AWAY WHEN AN EDITTED PAGE IS WRITTEN
TO OUTPUT. THIS MAKES IT DIFFICULT TO EDIT LINES THAT ARE
TO BE EXPANDED ON CENTRONIX 306 PRINTER.

IF CONTROL-O IS HIT WHILE EDIT IS DOING AN 'END' COMMAND, A
BUFFER LOAD MAY BE LOST FROM THE OUTPUT FILE.

CONSOLE I/O SOMETIMES LOSES A CHARACTER, DUE TO TWIDDLING
WITH LOCATION 203(?). SOMETIMES POUND CHARACTER GETS LOST.

< FORTRAN II SYSTEM >
FORT, LIB8, SABR, LOADER

AN AT SIGN ('@') PREMATURELY TERMINATES A FORMAT STATEMENT
LITERAL. IT ALSO TERMINATES A TEXT "STRING@".

A REAL ARRAY NAME IS NOT ALLOWED AS A FORMAT SPEC.

A FORMAT ARRAY MAY NOT BE A PARAMETER.

DO LOOP INDEX THAT IS A PARAMETER IS NOT HANDLED PROPERLY.

FORTRAN HAS PROBLEMS HANDLING CONTINUATIONS. (E.G. CALL
STATEMENT ON ONE LINE, AND PARAMETERS 1(ARG1,ARG2) ON NEXT
LINE PRODUCES NO CODE FOR THE CALL, DEFINES SYMBOL
RG1(!!!), AND IGNORES THE REST OF THE LINE.

IF THE FILE NAME USED IN AN 'OOPEN' IS CHANGED BEFORE THE
'OCLOSE', DUPLICATE FILES WILL APPEAR IN THE DIRECTORY.

CALLS TO "SUBSC" ROUTINE WIPE OUT INTEGER DIVISION
REMAINDER.

FORTRAN PASSES THE FILENAME TO THE FIELD 0 USR ROUTINES VIA
LOCATIONS 0-3, THUS DESTROYING ANY INTERRUPT TRAPS.

SABR PATCH #2 (LINE NUMBER PATCH) SCREWS UP 'M' ERROR LINE
NUMBERS.

SABR HAS PROBLEMS WITH SOLITARY SYMBOLS DEFINITIONS (I.E.
SYMBOL, COMMA, NO CODE). OFTEN CRASHES RESIDENT SYSTEM.

'SABR' GIVES SPURIOUS 'I' ERRORS IF AN 'OPDEF'ED OPERATOR
IS USED IN A FORTRAN PROGRAM.

'SABR' GIVES SPURIOUS 'C' ERROR FOR 8'S OR 9'S IN DECIMAL
MODE.

IF A SABR PAGE BOUNDARY IS PASSED IN THE MIDDLE OF A SOURCE
LINE WITH MULTIPLE STATEMENTS, THE SOURCE LINE IS REPRINTED

MINUS ITS FIRST CHARACTER.

IF 'LOADER' IS CHAINED TO WITH AN OPTION THAT GENERATES
SOME OUTPUT (/M, /U, /P) THE VERSION NUMBER IS PRINTED.
(UNDOCUMENTED FEATURE)

IF 'LOADER' IS CHAINED TO WITH THE /Y OPTION SET (AND NOT
FROM SABR), IT HANGS.

'LOADER.SV' /R OPTION DOES NOT RESET /I /O INDICATORS.

'LOADER.SV' /N OPTION (FORCE TO FIELD N) ONLY AFFECTS THE
FIRST FILE IN A MULTIPLE FILE COMMAND DECODER INPUT.
LIBRARY FILES CANNOT BE FORCED AT ALL.

DIRECTLY RUNNING THE LOADER, ABORTING THE COMMAND DECODER,
AND RESTARTING JUMPS INTO GARBAGE.

< KEYBOARD MONITOR >

THE MESSAGE "DIRECTORY I/O ERROR" IS PRINTED WHEN THE
DIRECTORY AREA IS NOT IN CORRECT FORMAT.

THE 'R' AND 'RUN' COMMANDS WILL RUN A .SV FILE WHICH
EXCEEDS THE SOFTWARE OR HARDWARE CORE SIZE.

THE 'SAVE' COMMAND ACCEPTS STARTING ADDRESSES IN
NON-EXISTENT MEMORY.

< PAL8.SV >

A QUOTE WILL FOLLOW THE ADDRESS FIELD OF THE PAGE PSUEDO-OP
IF THE LAST INSTRUCTION GENERATED A LINK.

< RESORC.SV >

A DEVICE NAME MISH-MASH CODE WITH UPPER BIT SET SHOULD
ALWAYS BE PRINTED WITH (XXXX). RESOURCE WILL PRINT 7025 AS
XU . BUT "XU" IS NOT RECOGNIZED AS A DEVICE BY ANYTHING,
BECAUSE IT SHOULD BE (3025)!!

< SRCCOM. SV >

'SRCCOM' CONSIDERS ANYTHING AFTER A '/' TO BE A COMMENT. THEREFORE SLASHES SHOULD NOT BE USED TO DELIMIT 'TEXT' STRINGS AS THE /C OPTION WILL CAUSE THE TEXT STRING DIFFERENCES TO BE IGNORED.

'SRCCOM' SHOULD PRINT OUT AS MUCH AS POSSIBLE BEFORE GIVING THE ?O ERROR MESSAGE.

IMPROVED ROUNDING IN FORTRAN IV

THE ROUNDING-FACTOR SCALING SUBROUTINE FOR DECIMAL OUTPUT IN I, G, E & F FORMATS IN FORTRAN IV (FRTS.SV, LOCS.2126-2170) CONTAINS A FUDGE TO DEAL WITH PRINTING MORE THAN 6 SIGNIFICANT DIGITS. INITIALLY A ROUNDOFF OF 0.5 (2000 0000 IN LOCS.45 & 46) IS DIVIDED BY 10 AN APPROPRIATE NUMBER OF TIMES. THE RESULT IS THEN DIVIDED BY 2, AS MANY TIMES AS THERE ARE EXCESS DIGITS, BY INSERTING THE NEGATIVE OF THIS NUMBER IN THE EXPONENT (LOC.44). THIS ADDS SLIGHTLY TOO MUCH, SO THAT, FOR INSTANCE, 1.0 IS PRINTED OUT AS 1.000002, 1.0000008 ETC..

ERRORS IN THE SEVENTH DIGIT MAY BE REDUCED TO 1 OR 0 BY ADDING AN EXTRA -2 TO THE EXPONENT VIA THE FOLLOWING PATCH:-

```
.GET SYS FRTS
.OD
2155/3044   5371
2171/XXXX   1374
2172/XXXX   3044
2173/XXXX   5356
2174/XXXX   7776
^C
.SAVE SYS FRTS
```

THE ONLY PROBLEM I HAVE FOUND IS THAT IN PRINTING 10^{**N} WITH MORE THAN 8 SIGNIFICANT DIGITS A LEADING ZERO APPEARS, E.G. 10.0 PRINTS AS 09.9999964 OR 0.099999964E+02.

PROBLEM IN FORLIB 'SYNC'

IT IS POSSIBLE FOR A CALL TO 'SYNC' TO FAIL TO RECOGNISE AN INTERRUPT IF IT OCCURS IN THE MIDDLE OF THE 8-MODE ROUTINE 'DOSYNC', WHICH RUNS WITH THE INTERRUPT ENABLED. THE SEQUENCE SHOULD BE CHANGED TO:

```
DOSYNC, 0

            .

        TAD KSTFLG+1     /GET PTR TO FLAG
        DCA SETCLK
        IOF              /DON'T ALLOW SYNC INTERRUPT!    *****
        TAD% SETCLK      /GET FLAG
        DCA FCNWD        /STORE FOR RETURN
        DCA% SETCLK      /CLEAR FLAG
        ION              /SYNC CAN INTERRUPT AGAIN NOW   *****
        CIF CDF
        JMP% DOSYNC      /RETURN
```

I.M. TEMPLETON
DIVISION OF PHYSICS
NATIONAL RESEARCH COUNCIL OF CANADA
OTTAWA, CANADA K1A OR6.

THE PENNSYLVANIA STATE UNIVERSITY

417 BRUCE V. MOORE BUILDING
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College of the Liberal Arts
Department of Psychology

Area Code 814
865-1815

August 25, 1977

Mr. Robert Hassinger
Liberty Mutual Research
   Center
71 Frankland Road
Hopkinton, MA 01748

Dear Mr. Hassinger:

Having expanded our system recently, first to 20K and then to 32K, we are interested in having our OS/8 BASIC use this extra space for its various functions instead of doing the time-consuming and unnecessary swaps of the function groups. Rewriting the control routines and modifying the functions for cross-field access seems feasible, but before plunging ahead, we thought it would be worth asking if this has been done, and if so, where, and by whom?

A second variation of OS/8 BASIC that would be very helpful would be one that handled output to a TTY or other slow serial device as a "background task" to a main BASIC program, e.g., to do program listing in I/O dead-space. Once again, has it been done, and if so, where, and by whom? We are also interested in the possibility that someone has modified either BASIC or FOCAL or other language system to run under RTS-8, as a task rather than an OS/8 program. (We have addressed this question to Lee Nichols, too, who is currently organizing the RTS-8 interest group.)

We would be very grateful for any information you might have, or any advice you would care to offer on such "conversions".

Yours truly,

Robert Seibel
Associate Professor
   of Psychology

Alex Frediani
Systems Programmer

RS/amm

P.S. We are also quite interested to know if DEC has plans to support the KL8-A multiplexer under OS/8 and/or if handlers exist for using the KL8-A under OS/8.

DEPARTMENT OF CHEMISTRY 642-4710   BERKELEY, CALIFORNIA 94720

August 10,1977

Mr. R. Hassinger
Liberty Mutual Research Center
71 Frankland Road
Hopkington, MA 01748

Dear Bob,

I enjoy reading the Newsletter and find it informative and
helpful. This time I thought I might put in my two cents worth
and ask some questions.

The articles by Jim van Zee and Lars Palmer (May Newsletter
No. 22) comparing the relative merits of high level languages on
the 8 were interesting. We are using Fortran IV for program dev-
elopment and so after reading Lars' article I ran to my library
catalog and quickly looked for the user routines by Robert Phelps
which he mentioned; then, I looked more carefully. Maybe my
catalog is old or missing parts, but I couldn't find it. I would
really like to get a copy soon and would appreciate any information
to help
Those of us who are unfortunate enough not to have sources
of F4 software must have been dismayed by the recent published
patch to the arctangent function which requires a source. Is
there anything we can do about this? Further, how can you patch
blocks in the library? Epic will allow you to access the blocks
but how do you find out which block to access? What does DEC's
one-year update policy mean in this case (or any)?

Fortran IV has a punch option so that programs compiled on
one system can be run on a more primitive system. Is there any
simple way, or does anyone have a program/patch to make a save
file from FRTS which can be run just by OS/8?

Is there any program which runs either on a PDP11 or PDP8
which will copy ASCII files from a floppy on an 8 to a floppy on
an 11? Also, does anyone have the low level routines needed to
drive the Tektronix TCS software (including graphic input?) in
F4 for a model 4010? Also, I would appreciate any comments on
graphics with the 4010 and the 8.

Lastly, I am glad to hear that an overall index to the Decus
libraries may soon be available. I would like to commend you on
your job on the Newsletter. Keep up the good work!

Sincerely,

J. E. Kleckner

ACUSHNET COMPANY

August 10, 1977

Mr. Robert Hassinger, Coordinator
12-Bit SIG
c/o DECUS
146 Main Street
Maynard, MA   01754

Dear Mr. Hassinger:

In response to the letter from Jerome Vuoso that appeared in the
March newsletter, I am enclosing a copy of the EPIC version of
the OS/8 patches for the VT50 terminal submitted by Alan Cleary
and appearing in the January newsletter. Since we do not have
FUTIL, we had to make the translation to use the patches on our
system and thought we would forward the computer printout to you
for the benefit of your other readers. We have found the patches
extremely useful.

On another subject, there was a discussion in the January news-
letter on the format in which dates are input to the OS/8 system.
The difference between the month/day/year order used in the states
and the day/month/year used in other countries does create a bit
of a problem. Six years ago ISO adopted a format of writing dates
with the most significant information first so the format would be
year/month/day/hour/minute/second, and so forth. I've enclosed a
copy of an article on this standard. As far as I know, this is the
only international standard for writing the date. In addition, it
gives the date in a logical order just the way we write any other
number, most significant bits first. Finally, if DEC adopts this
standard they won't offend anybody because it doesn't favor one
group of users over another. As far as I know, no one uses this
system except for a few astronomers.

I find your newsletter extremely helpful and hope that some of your
other readers will find my comments of some use.

Sincerely yours,

Paul F. Sullivan
Corporate Research & Development

/crr

*SYS:</1$

```
R,11
0,224
7403 /7555
1302 /1207
7402 /7557
1302 /1207
0,263
2020 /7000
5267 /
1070 /210
4423 /240
0,307
1013 /1265
1071 /4423
7650 /1013
5300 /1071
1070 /7650
2020 /5201
4423 /1266
7240 /4423
3020 /1265
1013 /4423
3040 /7000
1440 /7000
4423 /7000
W
R,53
0,33
7403 /7555
5321 /5207
7402 /7557
5321 /5207
0,135
1102 /1360
2024 /7000
0,142
1015 /1361
3020 /4466
1420 /1360
0,151
2024 /1360
5300 /4466
1102 /5202
5277 /7000
0000 /
2024 /7000
5362 /
1102 /210
4466 /240
E
```

*^C

ISO ADOPTS NEW CODES
FOR WRITING NUMERIC DATES
AND FOR NUMBERING WEEKS

The worldwide membership of the International Organization for Standardization (ISO) has agreed to standardize the manner of writing numeric dates. ISO Recommendation 2014 uses a system of descending order when writing numeric dates on any letter or document. ISO recommends that if numbers only are used, the first day of April 1971 should be written 1971-04-01. For technical reasons, the hyphen is recommended as a separator rather than the point (.), the slant (/), or the space. Provided that the month is clearly spelled out (even in an abbreviated form) one can write the date however one wishes — 1 April 1971, April 1 1971, or 1971 April 1. There is no ambiguity as long as a four character year is used, and no standard is required for writing dates in this form.

A second document, ISO Recommendation 2015, provides an agreed standard for the numbering of weeks. ISO recommends that Monday (rather than Sunday) be regarded as the first day of the week for business and commercial purposes. ISO/R 2015 recommends, too, that the week should always be of seven days and that a week divided by the turn of the year should be attached to the year containing the higher number of days of that week. Thus, for practical purposes, the first week of the year could begin, at one extreme, on December 29th and at the other extreme, on January 4th.

The American National Standards Institute (ANSI), the U.S. member body to ISO, cast the U.S. affirmative ballots on these recommendations. Copies of the ISO Recommendations can be obtained from ANSI, 1430 Broadway, New York, N.Y. 10018.

GENERAL LATEX AND CHEMICAL CORPORATION (OF OHIO)

P. O. BOX 498 • ASHLAND • OHIO 44805

419-289-2727

AUGUST 12, 1977

ROBERT HASSINGER
LIBERTY MUTUAL RESEARCH CENTER
71 FRANKLAND ROAD
HOPKINTON, MA 01748

- - - - - - - - - - - - - - - - - -
REFERENCE - MARCH 1977 NEWSLETTER, PAGE 6
(FOLLOW-UP TO MY LETTER OF MAY 3, 1977)
- - - - - - - - - - - - - - - - - -

DEAR BOB:

I HAVE DONE SOME LIMITED STUDY OF THE POTENTIAL FOR ELONGATED
LINES (VIA CENTRONICS) FOR OS/8 PROGRAMS.   THERE   ARE,
UNFORTUNATELY,   MANY   PITFALLS TO THE SIMPLISTIC "HOPE" OF
MODIFYING THE LPT HANDLER, PART OF WHICH ARE:

1)   IT IS NOT LIKELY THAT THE FIRST LINE OF A LISTING (PAL8,
     CREF, FORT, OR F4) CONTAINS ANYTHING - IT'S USUALLY A NULL
     LINE. THEREFORE, EACH PROGRAM WOULD REQUIRE MODIFICATION
     BEFORE BEING ABLE TO UTILIZE THE MODIFIED LPT HANDLER FOR
     ELONGATING THE FIRST LINE AFTER AN EJECT.   (NOTE THE
     MULTIPLE USE OF THE WORD 'MODIFIED'. "DEC" IS VERY UNLIKELY
     TO DO THIS WORK.)

2)   MORE SIGNIFICANTLY PERHAPS, THE AMOUNT OF   INFORMATION
     CONTAINED (NUMBER OF COLUMNS) VARIES FROM SOURCE LISTER TO
     SOURCE LISTER. AS AN EXAMPLE, PAL8 (V10A) OUTPUTS UP TO 72
     COLUMNS - WHICH, OBVIOUSLY, IS 144 COLUMNS WHEN ELONGATED.
     THEREFORE, THE BUFFERS FOR EACH SOURCE LISTER WILL REQUIRE
     MODIFICATION TO ASSURE 66 COLUMN MAXIMUM OUTPUT TO STAY
     WITHIN THE 132 COLUMN BOUNDARIES   (WRAP-AROUND WILL OCCUR.)

3)   AN UNEXPECTED PROBLEM - UNTIL IT HAPPENED, AND THEN IT WAS A
     SLAP-ON-HEAD, OF-COURSE ! - HANDLERS FOR THE TTY HAVE BECOME
     SO (DAMNED) SOPHISTICATED THAT THEY "PRINT" NON-PRINTING
     CHARACTERS. FOR EXAMPLE, 0216 (ELONGATE TO THE CENTRONICS)
     PRINTS ON THE TTY AS "^N", AND UNFORTUNATELY, THE SAME
     HAPPENS FOR 0016. THIS IS TRUE OF THE 2 PAGE KL8E HANDLER,
     HOWEVER,   THE AS33 HANDLER TREATS THE 0216 AS A NON-PRINTING
     CHARACTER.   (I SUSPECT THAT THE KL8E HANDLER IS MORE
     UNIVERSALLY USED.)

TO SUMMARIZE, A GENERALLY USABLE, SIMPLE, HANDLER CHANGE FOR
ELONGATING A TITLE OR FIRST LINE DOES NOT APPEAR PRACTICAL TO ME.

HOWEVER. . . .

AS YOU KNOW FROM MY LAST LETTER (MAY 3, 1977), I HAVE DONE SOME
EXTENSIVE MODIFICATION TO THE LAP-6-DIAL-MS SYSTEM AND PROGRAMS,
ONE OF WHICH WAS RADICAL SURGERY TO CREF12 TO PRINT A TITLE PAGE
SIMILAR TO THAT SHOWN ON THE FRONT PAGE OF THE OS/8 HANDBOOK, AND
TO CAPTURE AND PRINT AN ELONGATED TITLE LINE IN THE LISTING
PATTERNED AFTER PAL8. THIS WORK, DONE 3-4 YEARS AGO, GAVE ME THE
FALSE IMPRESSION THAT SUCH A JOB COULD BE DONE SIMPLY WITH OR TO
PAL8, BUT I DIDN'T HAVE ANY SOURCE CODE FOR OS/8.

I SURREPTITIOUSLY GOT PAL8 V10A TO STUDY; WITH THE HOPE THAT CREF
WOULDN'T NEGATE ANY WORK DONE TO PAL8. READING PAL8.LS MAKES ONE
APPRECIATE LINEAR CODING. THE BASIC PREMISE OF ELONGATING THE
HEADER LINE WAS WORKED OUT, RECODED, ASSEMBLED, AND THEN I GOT
CLOBBERED !! V10 HAS CONDITIONAL ASSEMBLY BASED ON SOME "HASH"
FOR SYMBOLS — WHICH I NEITHER UNDERSTAND NOR PLAN TO UNDERSTAND.
V10 HAS MANY "RELOC" SECTIONS OF CODE, ONE OF WHICH IS HASH
CONDITIONAL RIGHT IN THE MIDDLE OF THE HEADER BUFFER, WHICH
CAUSED FUNSVILLE TO SET IN. 8 TO 10 HOURS LATER I MADE THE
FOLLOWING CHANGES SUCCESSFULLY:

   1)   INSERT PROVISION FOR LS8F AS CONDITIONAL CODE.

   2)   IF HASH IS DEFINED, THAT IS, THE OLD WAY INVOKED, JUST PLAIN
        FORGET ABOUT LS8F. CONDITIONAL CODE TAKES CARE OF THIS
        AUTOMATICALLY.

   3)   IF LS8F IS INVOKED, ACCEPT A 40(8) CHARACTER TITLE (REALLY
        37) INSTEAD OF 50(8) (REALLY 47).

   4)   CHANGE THE WORD "SYMBOLS" TO "TAGS" TO MAINTAIN THE OVERLAY
        ASSEMBLED WITHIN THE HEADER BUFFER. THIS WORD WILL PRINT
        OUT IF THE LISTING IS SUPPRESSED VIA OPTION /N.

   5)   REVERSE THE EFFECT OF THE /7 OPTION (AN OBSCURE NEW OPTION
        PROVIDED BY THE NEW HASH) TO LIST THE SYMBOLS IN 7
        COLUMNS — LOGICAL SINCE THE LS8F HEADER ELONGATION REQUIRES
        132 COLUMN PAPER ANYWAY.

REFERENCE - MARCH 1977 NEWSLETTER, PAGE 6

6) NOW FOR THE KICKER ! IF THE /T OPTION IS INVOKED, NULLIFY
THE ELONGATION, AND RETURN TO THE 4 COLUMN SYMBOL TABLE.
(THERE IS SOME OTHER CODE WHICH CHECKS FOR TTY OUTDEV FOR
PASS 3; SEE NEXT PARAGRAPH.)

THIS DOES NOT OVERCOME A POTENTIAL PROBLEM WHERE THE LISTING
IS TO A FILE STRUCTURED DEVICE AND THEN TYPED ON THE TTY.
SINCE THE ELONGATE AND 7 COLUMN SYMBOL TABLE ARE ALREADY
PRESENT, NEITHER CAN BE DELETED.

7) BECAUSE OF LACK OF PATIENCE, TIME, AND JUST PLAIN NOT
CARING, I HAVE NO INTENTION OF TRYING TO COVER THE SITUATION
WHERE "HASH" IS DEFINED.   I'LL LEAVE THIS TO SOME ONE
ELSE - IT WILL PROBABLY BE A REAL HEADACHE WITH CONDITIONALS
ON TOP OF CONDITIONALS, "RELOCS", AND NOT TO MENTION BACK
AND FORTH CODING.

MY BELIEF THAT CREF WOULDN'T PLAY HAVOC WITH THE ELONGATION FROM
PAL8 WAS CONFIRMED;   BOTH PAL8 AND A CREF FROM PAL8 NOW HAVE
ELONGATED TITLE LINES. HOWEVER, CREF VIA THE CCL COMMAND DOES
CAUSE PROBLEMS, WHICH I HAVE SOMEWHAT UNSATISFACTORILY PROVIDED
FOR. CCL SETS THE /C SWITCH FOR PAL8; THE CHANGE TO PAL8
INITIALIZING CODE LOOKS FOR THE /C, AND IF PRESENT, SKIPS THE
CHECK FOR TTY OUTDEV FOR PASS 3.   I HAVEN'T FOUND A SIMPLE WAY
AROUND THIS AS YET, SINCE A DEVICE CODE OF 0 MEANS EITHER TTY WAS
SPECIFIED, OR THAT NO DEVICE WAS SPECIFIED.   (IS THERE A WAY OF
CHECKING FOR TTY SPECIFICALLY ?) MY CHANGE NOW REQUIRES THAT A
MONITOR LEVEL (CCL) CREF OUTPUT TO THE TTY MUST SPECIFY THE /T
OPTION, WHICH I DO NOT CONSIDER A DESIRABLE SITUATION.

I FEEL OBLIGATED NOT TO DISTRIBUTE MY SOURCE (WHICH I HAVE
UPDATED TO V10B), AND IN FACT WILL TRY TO INTEREST "DEC" IN
ACCEPTING IT.   THE BINARY IS ANOTHER MATTER, I SEE NO REASON NOT
TO DISTRIBUTE THE BINARY TO ANYONE WHO ALREADY HAS A PAL8. SV
FILE.   PERHAPS YOU CAN OFFER SOME ADVICE ON THIS MATTER, AND FOR
THAT MATTER, LET ME KNOW IF THIS WORK WAS REALLY WORTH THE
EFFORT.

THE CHANGE REQUIRED TO ENABLE THE ELONGATION ARE TOO COMPLEX TO
USE "ODT" FOR THIS PURPOSE, AND ONLY A SOURCE REASSEMBLY IS
FEASIBLE.

                REFERENCE - MARCH 1977 NEWSLETTER, PAGE 6

PAL12 (A W. V. U. PROGRAM) CAN BE "ODT" CHANGED TO ACCOMPLISH
ELONGATION:


```
        . GE SYS PAL12
        . OD
        1342/0240   216        /MAKE A SPACE INTO "ELONGATE"
        ^C
        . SA SYS PAL12
```


PAL12 SHOULD ONLY BE USED WITH THE ONE PAGE AS33 TTY HANDLER
ANYWAY, SO THE NON-PRINTING CHARACTER IS NOT A PROBLEM.

I HAVE ENCLOSED SEVERAL SELF EXPLANATORY EXAMPLES.

PLEASE FEEL FREE TO USE EXERPTS OR ALL OF THIS LETTER IN THE
NEWSLETTER, IF YOU FEEL IT IS WORTHWHILE.

                    SINCERELY,

                    Sheldon

                    H. S. HOPKINS JR.

REFERENCE - MARCH 1977 NEWSLETTER, PAGE 6

- - - - - - - - - - - - - - - - - - - -
A VERY LATE NOTE ON THE DATE PROBLEM
- - - - - - - - - - - - - - - - - - - -

THE SCHEME PROPOSED (FINALIZED ?) FOR HANDLING THE DATEWORD DOES
NOT APPEAL TO ME AT ALL.   THE CODING REQUIRED TO ACQUIRE THE DATE
APPEARS TOO COMPLICATED, PARTICULARLY IN LIGHT OF THE "TIGHTNESS"
OF CODE IN MANY EXISTING PROGRAMS.   (MY OWN "ALPHA.SV" WILL
REQUIRE ANOTHER FULL PAGE IN LENGTH, FOR EXAMPLE.) IT ALSO LOOKS
LIKE THE EFFECT OF THE NEW SCHEME IS TO POSTPONE THE PROBLEM FOR
ANOTHER 8 YEARS, BUT PERHAPS "DEC" BELIEVES ALL 8'S WILL HAVE
DIED BY THEN ANYWAY.   MAYBE I DON'T FULLY UNDERSTAND THE NEW
SCHEME, BUT IT SURE LOOKS LIKE A FIXED 16 YEAR MAXIMUM TROUBLE
FREE DATE ONLY.

I'M SURE IT'S TOO LATE, BUT ALTERNATE ARRANGEMENTS SURELY APPEAL
TO ME....

 1) THE DIRECTORY COULD CONTAIN A ONE WORD OFFSET FACTOR,
    RESULTING IN UNLIMITED DATES.   (KEEP ALL MASS DEVICES WITHIN
    8 YEARS.)

 2) EXTEND THE DIRECTORY BLOCK BEYOND THE CURRENT 6, AND USE TWO
    ADDITIONAL INFORMATION WORDS FOR THE DATE. MANY PEOPLE HAVE
    COMPLAINED ABOUT TOO FEW DIRECTORY BLOCKS FOR LARGE DEVICES
    SUCH AS DISKS ANYWAY, AND, IT'S LIKELY THAT EVEN LARGER ONES
    WILL BECOME AVAILABLE IN THE FUTURE.

 3) I KNOW THAT THE SYSTEM IS CORE TIGHT, SO THAT USING A TOTAL
    WORD FOR DATE EXTENTION IS PROBABLY NOT POSSIBLE, BUT SIX
    BITS EACH FOR MONTH, DAY AND YEAR SURE COULD SIMPLIFY CODING
    AND TAKE CARE OF THE DAMNED YEAR PROBLEM ALL IN ONE SWOOP.
    (64 YEARS OF POTENTIAL LIFETIME FOR OS/8 IS PROBABLY MORE
    THAN ENOUGH, AT LEAST FOR THIS GENERATION OF PROGRAMMERS.)

GENERAL LATEX AND CHEMICAL CORPORATION (OF OHIO)

P. O. BOX 498 • ASHLAND • OHIO 44805

419-289-2727

August 22, 1977

Robert Hassinger
Liberty Mutual Research Center
71 Frankland Road
Hopkinton, MA 01748

REFERENCE: MY LETTER OF AUGUST 12, 1977

It appears that I am in a continuing saga regarding the
elongation of title lines under OS/8 programming, but I
have found some 'minor' irritations in PAL8 V10 and in
CREF V4 which are significant. Quite obviously, I found
these inconsistencies after working out the elongation
for PAL8.

PAL8 V10 has an internal line buffer which truncates any
information past column 109. CREF V4 has an internal
buffer which truncates at column 102. Ordinarily, I think,
this wouldn't show up -- or cause difficulties -- however,
if you just happen to use the /7 option of PAL8 (to give
7 columns of symbol table), you are in trouble !!. CREF V4
will truncate away the seventh column of symbols !!

(Incidentally, this points out some inconsistencies in the
"integration" of OS/8: PAL8 handles 109 columns, then
truncates; CREF handles 102 columns, then truncates; and
the line printer handler takes care of 132 columns and
then wraps-around to the next line. It's unfortunate that
internal buffer sizes weren't "fixed" for larger lines,
so that everybody gets taken care of the same way, by the
same 'handler'. PAL8 can be made to handle 126 columns
(as I have done in my version V10B), but CREF does not have
core available without extensive effort.)

Robert Hassinger........................August 22, 1977

To solve the problem of PAL8/CREF incompatibility:
-    A)   1)   don't use the /7 option
-         2)   don't use lines longer than 1Ø2 columns

-    B)   1)   fix PAL8 to take 126 columns, allow CREF
              to truncate at column 1Ø2
-         2)   make the /7 option into a /6 option

The version I have fixed for elongation (PAL8 V1ØB) has
been adjusted for 126 columns and the /7 option has been
polarity reversed and changed to a /4. Six columns are
'normal' in the symbol table, and if a /T option is found,
the /4 is automatically turned on.

To turn PAL8 V1Ø into a CREF compatible version, I believe
the following will work:

```
         .GET SYS PAL8
         .ODT
         5763/Ø512  Ø463        /67 x 5 (8) offset factor
         5765/7771  7772        / -6 columns
         5767/ØØØ4  ØØ1Ø        /look for the /6 option (not /7)
         ↑C
         .SAVE SYS PAL8
```

(If the location/values aren't the same as above, there's
problems; I don't have V1Ø to check anymore.)

Incidentally, I have NOT sent this in to DEC as a software
problem. There may have been an SPR on this by now.

                         Sincerely,

                         Sheldon
                         H. S. Hopkins Jr.

```
1)          /12 SUPER TTY HANDLER FOR OS/8
2)          /11 SUPER TTY HANDLER FOR OS/8


1)001    /COPYRIGHT  (C)  1974,1975 BY DIGITAL EQUIPMENT CORPORATION
1)    .   /
****
2)001    /COPYRIGHT  (C)  1974 BY DIGITAL EQUIPMENT CORPORATION
2)        /


********

1)001    /S.W.,S.R.,H.J.,R.L.
1)              *0
1)              -1
1)              DEVICE KL8E;DEVICE TTY;0;TTY&177+4000;ZBLOCK 2
1)        /TWO-PAGE TELETYPE HANDLER FOR OS/8 V3.
****
2)001    /S.W.,S.R.,H.J.,R.L.,CMK
2)              *0
2)              -1
2)              DEVICE KL8T;DEVICE TV;0;TTY&177+4000;ZBLOCK 2
2)        /TWO-PAGE TELETYPE HANDLER FOR OS/8 V3.


********

1)001    /MAINTENANCE RELEASE CHANGES:
1)        /1.     ADDED KCC FOR NON-CONSOLE TELETYPES
1)002             INDVC=03
****
2)002             INDVC=03


********

1)002             TTYVERSION="D&77
1)003    /BUILD YOUR OWN TELETYPE HANDLER:
****
2)002    DECIMAL
2)                LLENGTH=-80
2)        .OCTAL
2)                TTYVERSION="C&77
2)003    /BUILD YOUR OWN TELETYPE HANDLER:


********

1)003    / DELAY          0              7           DELAY AFTER GIVEN CHAR
1)       / CTRL           0              3           PRINT CONTROL CHARS AS ^
K
****
2)003    /DELAY           0              6           DELAY AFTER GIVEN CHAR
2)       / CTRL           0              3           PRINT CONTROL CHARS AS ^
K


********

1)003    / FREE LOCS:     2             33
1)                DELAY=0         /SET NON-ZERO TO ALLOW DELAY AFTER ANY CHAR (12=
CR)
1)                                /TYPICALLY AFTER LF FOR HIGH SPEED VT05
****
```

```
2 )003    /BACKUP            0               14               BACKUP THE CURSOR AND FI
X TAB
2 )                                                           /CTR FOR DELETE
2 )       / FREE LOCS:       2               33
2 )                DELAY=12             /SET NON-ZERO TO ALLOW DELAY AFTER ANY CHAR ( 12:
CR, 13: FF )
2 )                                     /TYPICALLY AFTER LF FOR HIGH SPEED VT05


********

1 )003            RUB=1               /SET TO 0 TO ECHO EACH RUBOUT BY TYPING A BACK S
LASH
1 )                                   /SET TO 1 TO ECHO CHARS RUBBED OUT UPON RUB-OUT
****
2 )003            RUB=0               /SET TO 0 TO ECHO EACH RUBOUT BY TYPING A BACK S
LASH
2 )                                   /SET TO 1 TO ECHO CHARS RUBBED OUT UPON RUB-OUT


********

1 )003            ALTMOD=1            /SET TO 1 TO CONVERT 175, 176 TO 33
1 )                                   /( UPPER CASE TERMINALS ONLY )
****
2 )003            ALTMOD=0            /SET TO 1 TO CONVERT 175, 176 TO 33
2 )                                   /( UPPER CASE TERMINALS ONLY )


********

1 )003            FLAGLC=1            /SET TO 1 TO FLAG LOWER CASE CHARS ON OUTPUT
1 )                                   /THIS IS FOR PEOPLE NOT PRIVELIDGED ENOUGH TO
****
2 )003            FLAGLC=0            /SET TO 1 TO FLAG LOWER CASE CHARS ON OUTPUT
2 )                                   /THIS IS FOR PEOPLE NOT PRIVELIDGED ENOUGH TO


********

1 )003    /SOME OF THE ABOVE OPTIONS SHOULD ACTUALLY BE IMPLEMENTED
****
2 )003            BACKUP=1            /SET TO 1 TO CAUSE SEQUENCE BACKSPACE-SPACE-BACK
SPACE
2 )                                   /FOR DELETE
2 )       /SOME OF THE ABOVE OPTIONS SHOULD ACTUALLY BE IMPLEMENTED


********

1 )008    LSLASH,  "\
1 )                TAD LSLASH               /PRINT A BACK SLASH FOR EACH RUBBED OUT
CHAR
****
2 )008            IFZERO BACKUP <
2 )       LSLASH,  34        /BACKSLASH FOR DELETE
2 )                >
2 )                IFNZRO  BACKUP <
2 )       LSLASH,  0010      /BACK UP CURSOR FOR DELETE
2 )                >
2 )                TAD LSLASH               /PRINT A BACK SLASH FOR EACH RUBBED OUT
CHAR


********

1 )011    PCH,     AND ( 177         /FORCE TO 7-BIT
```

```
1)              DCA TCHAR
****
2)011    PCH,
2)              AND (177          /FORCE TO 7-BIT
2)              DCA TCHAR


********

1)011           TAD (-32
1)              SNA CLA
****
2)011           TAD (-32          /CTRL-Z END OF FILE
2)              SNA CLA


********

1)011           TAD TCHAR
****
2)011    IFNZRO BACKUP <
2)              TAD TCHAR
2)              TAD (-10
2)              SNA CLA
2)              JMP DELETE        /DO A BACKSPACE-SPACE-BACKSPACE THEN BACK UP THE
  TABCTR
2)              >
2)              TAD TCHAR


********

1)012    TTY140,
****
2)012    IFNZRO BACKUP <
2)       DELETE,
2)              TAD TCHAR         /-10: BACKSPACE (CTRL-H)
2)              JMS TTYTLS
2)              TAD TTY240
2)              JMS TTYTLS
2)              CLA CLL CMA RTL /-3: BACK UP THE TABCTR
2)              TAD TABCTR
2)              DCA TABCTR        /NOW DO A FINAL BACKSPACE
2)              JMP PRIN
2)              >
2)       /
2)       TTY140,


********

1)013    TABCTR, -110
1)       TTYTLS, 0
****
2)013    TABCTR, LLENGTH
2)       TTYTLS, 0


********

1)013           JMP TTYTSF
1)              >
****
2)013           JMP TTYTSF+2
2)              >
```

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*******
1)013    LINSIZ, -110
1)               IFNZRO ALTMOD <
****
2)013    LINSIZ, LLENGTH
2)               IFNZRO ALTMOD <

*********
1)014            IFNZRO INDVC-3 <KCC>
1)               CIF CDF 0        /BRANCH TO OS/8 MONITOR AT 07600
****
2)014            CIF CDF 0        /BRANCH TO OS/8 MONITOR AT 07600

********
2)015    /VERSION FOR TV OUTPUT WITH DELETION OF CHARACTER FOR RUBOUT
2)       /CMK 4/24/77
```