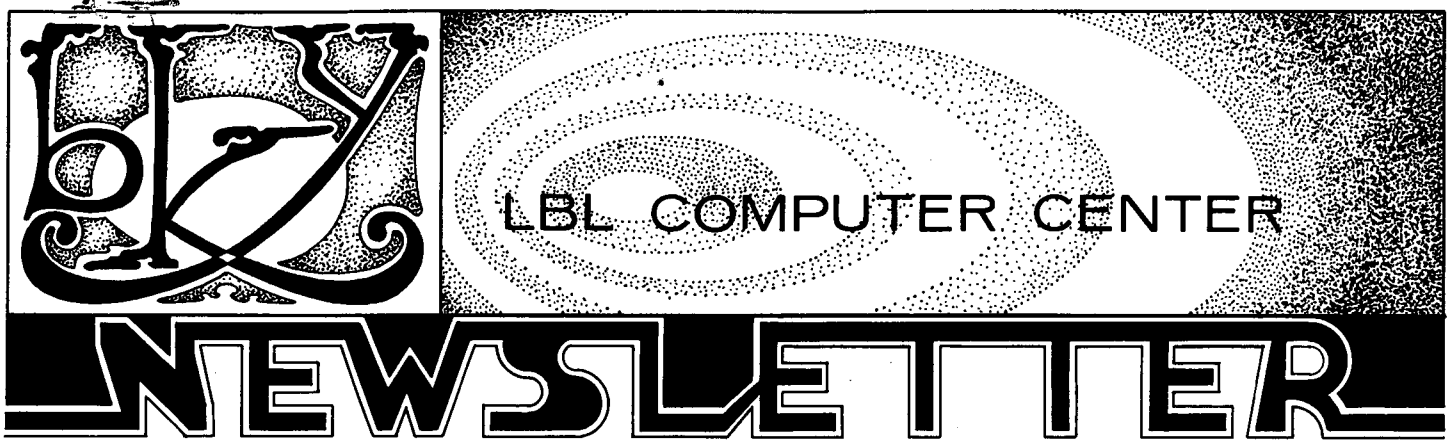


Volume 18, Number 4 **April 1981**

Publication Number 395

TABLE OF CONTENTS

Address all communications for the Newsletter to Maggie Morley, Editor, 50B/1245A, (415) 486-5529.

Illustrations are by George Kapus.

Closing date for the May Newsletter is Wednesday, April 16, 1981. And no later . . .

>> UNIX NEWS <<

In response to user complaints and our own frustration in using the UNIX system, it's probably time to say a few words about UNIX access and response problems. Access to the systems could be made easier by adding additional terminal ports, but we have found that the response deteriorates drastically with more than about thirty users on the system simultaneously.

Response depends on how many processes are attempting to run at the same time and what those processes are doing. For instance, computation-bound processes such as **nroff, tbl,** and **neqn** have a pronounced effect on the visual editor (vi) since the editor itself must obtain the cpu to even echo a character. I/O bound processes such as **cp, grep** and **spell** don't necessarily affect terminal response directly. However, they increase the central processor requirements of the operating system in processing the I/O requests.

Nroff has been given a low scheduling priority so that editors give better response. This decrease in priority has little or no effect on **nroff** response when the system is not busy.

We have begun the procedure of remaking each file system once each month by dumping its contents to tape and immediately restoring them to disk. This has the effect of ensuring that all the pieces of a single file are in close proximity to one another. A modest increase in I/O efficiency is the result.

We are currently developing a mechanism where a user may specify the execution of a command or shell script during off hours. The system will save the commands in a queue until it submits them at the specified time.

Users can help to promote tolerable system reponse. The following is taken from the January 1981 edition of the UCB campus "Computing Service Newsletter."

(1) Don't run a lot of commands simultaneously in the background (either by use of the **&** at the end of a command line, or by use of the **submit** command). It's sometimes convenient to run something in the background while you are editing, but running several background jobs simultaneously is excessive. You slow down your own jobs as well as everyone else's. The system has a limit on how many processes you can have running at one time and it also has a limit as to how many processes can be running system-wide at one time. When either of these limits is exceeded, you may see the response "No more processes" when you type a command. When this happens, there is too much going on and you should wait for a short time before trying again. Don't run so many background processes that the system warns you about exceeding the limit.

(2) Text formatting is a heavy drain on the system! Don't be fooled by how easy it is to execute many **tbl, neqn** or **nroff** commands. Try to make the most of each test run so you don't do more than you really need to do during a working session.

(3) In preparing a large document, organize chapters or sections into separate files so that you do not have to format the whole document just to see the last few pages. Keep in mind that when you use the **'-o'** option of **nroff,** the program must actually format all of the pages up to and including the ones you ask to have printed. When a document is split into several files, it's easy to control the page numbers of the output with the **'-n'** option. For example, if the output of your file named **chapter3** starts with page 32, use an **nroff** command something like this:

```
nroff -ms -T382cw -n32 chapter3
```

If your schedule permits, consider working on UNIX at periods of relatively light load: before 8:00 AM and after 6:00 PM.

- -

Contrary to what was said in the March 1981 Newsletter, UNX3 will not be made available to Computer Center users until sometime after May 1.

Direct questions or comments to . . .

. . . Bob Hoffmann, x6382

UNIX ACCOUNTING NEWS

As of April 1, 1981, the default account number for sending files from UNIX to the printers on the BKY 6000's will be eliminated.

If an account number is not included among the arguments of an **lpr** command, the user's account number in the file **/etc/passwd** will be used.

. . . David Cleveland, x5336

DISCLAIMER

INTRODUCING THE SPIRES[1] DATABASE MANAGEMENT SYSTEM

The Computer Center has recently acquired the SPIRES (Stanford Public Information REtrieval System) DBMS (data base management system) to run on the U.C. Campus IBM 4341, under the VM/CMS operating system. Initially developed for bibliographic information retrieval, SPIRES has gained a large following in the world of information science. We believe that SPIRES will serve the information management needs of many Laboratory users.

For the foreseeable future, SPIRES will only be offered on the campus 4341. We have obtained 8 dedicated computer ports (with future expansion capability) to the 4341; the ports will be accessed from our Develcon terminal switch. Its Develcon code is CCDB.

Terminal Access to the 4341

Like most IBM systems, the campus 4341 is oriented toward the use of IBM 3270-series display stations or terminals. These terminals are quite different from the standard ASCII terminals being used at LBL. Rather than replace the hundreds of ASCII terminals with 3270's (and the associated labyrinth of cables and electronics), Campus has installed an IBM SERIES/1 minicomputer as a 3270 emulator. When you log in to the 4341 through Develcon, the SERIES/1 will prompt you for the terminal type you are using. The SERIES/1 currently supports the ADM 3a and a number of less popular CRT terminals. If your terminal is not supported, we may be able to add it to the list.

Current Status of the SPIRES System

A test version of SPIRES is up and operational on the Campus 4341. It is available for test purposes only until we receive a production version of the system from Stanford. You may use the test version to set up prototype data base definitions and to test these definitions on sample sets of data. However, since the new version of SPIRES will implement a file naming convention incompatible with that of the test version, you should not use the test version for production. We regret any inconvenience that this expected changeover may cause. Hopefully, such incompatibilities will not recur with future versions of SPIRES. We feel it is necessary to provide a system that is compatible with the one Stanford provides for the other VM/CMS SPIRES sites.

If you wish to use the test version of SPIRES, contact Jerry Borges or Joyce Johnston for the appropriate VM/CMS commands necessary to access the system. Interactive file sharing is not available in the current version, but should be available in the new version. We expect the new version to be available in May or June.

Other Important Uses of the 4341

The 4341 may also be of some use to non-DBMS users. It will support the standard IBM FORTRAN H Extended compiler and a variety of mathematical and statistical libraries. The standard text editor is a visual or CRT screen-oriented editor called EDGAR (soon to be replaced by a new product called XEDIT). EDGAR is a bit like the UNIX visual mode editor called VI.

Charging on the 4341

Charging for use of the 4341 will initially be at the standard campus rates. As of this writing, those rates are $160.00/hour of CPU time and $2.50/hour of terminal connect time. To open an account contact Fran Permar, x6310. If you are planning to use SPIRES, be sure to ask for a user id of at least 5 characters.

Documentation on the 4341

The Computer Center Library (50B/1245A, x5529) is now maintaining a list of appropriate manuals for prospective users of the 4341. Since a complete set of documentation, approximately 16 manuals in all, costs about $100.00, the Computer Center Library will be stocking only a few complete sets for sale. Two sets will be maintained as loaners so users can browse through them and experiment somewhat with the system before deciding what documents they will need to purchase. We will also stock some extra copies of the most general and frequently-used of the 16 manuals. We will take orders for full or partial sets of documentation; delivery time will be at least three weeks, so please order early if you will need your own copies. Intensive use of VM/CMS and IBM FORTRAN will require a complete set of documentation.

SPIRES documentation is contained in a 1600 page users' guide and in related documents which will be available from the Computer Center librarian sometime in April. When the new system is brought up it will be possible to print the manual or sections of it on the line printer. A "cookbook"-style document on using SPIRES is available on the CDC machines by executing the control cards:

```
LIBCOPY,SPIRES,TEMP/RR,CCDB.
DISPOSE,TEMP=PR,PA=1F,M=AS,DT=I.
```

[1] SPIRES is a registered trademark of Stanford University.

Obtaining Printed Output

The Computer Center is installing a link between the 4341 and our own complex for transferring files. Until this link is operational, output will be brought back to LBL by courier.

Classes, Training, Etc.

The Computer Center is making video-taped lectures available on the use of SPIRES. These tapes may be checked out from Dortha Hines, x6094. For those interested in actual classes, we suggest contacting the Stanford Central Computing Facility.

Consulting Assistance

At this point, the consultants will not be able to provide assistance on using SPIRES. Instead, consulting will initially be available through the Computer Center's Data Management Group. The initial contact person is Jerry Borges x5568. Please be patient with us since SPIRES is newer to us than it is to some of you! If you need in-depth applications consulting, please contact Dennis Lawrence, x6875.

Where to Go for Help

VM/CMS	Jerry Borges	5568
SPIRES	Joyce Johnston	5630
Documentation	Maggie Morley	5529
Opening Accounts	Fran Permar	6310
Terminal Access	Electronic Maintenance	5354
Video Tapes	Dortha Hines	6094
Applications Help	Dennis Lawrence	6875

. . . Joan Franz, x6204

INTERNAL DOCUMENTATION ON MICROFICHES

Sets of microfiches containing the entire Writeups and Handbook libraries are currently available from Ann Garcia (x4770) at the Computer Center Library. These documents are printed in alphabetical order, according to their names. Cost ($1.25 for 48x, $4.25 for 24x [larger print]) is charged to your Computer Center account. You may also arrange to have such sets replaced automatically every few months (i.e., when enough significant changes are generated.

Users who are taking advantage of this regular update service should notify Ann of any account number change. Otherwise, they will be dropped from the list at the time of the change.

. . . Maggie Morley, x5529

KEYPUNCH AVAILABLE

The Computer Center is releasing an IBM 029 keypunch. It is available to any group willing to pay the $49.75 monthly maintenance charge. If interested, contact Mike Long, x5627.

. . . Dan Mangonon, x4752

RATE CHANGES

There are two changes to the recharge rates beginning 1 April 1981.

- The basic rate becomes $0.035 per AU.
- A charge for VARIAN plotting is being instituted which will be

  -- $0.08 per foot of paper, plus
  -- $0.01 per six sectors (2,880 characters) transferred.

LBL overhead (currently 39.5%) is added to the above charges.

. . . Howard White, x5775

FAMILY DAY

As part of the Laboratory's 50th Anniverary, a Family Day is being planned. We think that a tour of the Computer Center would be an appropriate contribution to this effort. Many of you have participated in such tours before, either as organizers or as tourists. We would like to tap your experience so that we can make this the most WhizBang tour ever.

(1) Please list three things that you and your family would enjoy seeing, doing, or knowing about the Computer Center.

a.....

b.....

c.....

(2) Please list two things that you hope we don't do.

a.....

b.....

(3) Please list three questions that you'd like us to answer.

a.....

.....

b.....

.....

c.....

.....

(4) Other comments.

.....

.....

.....

.....

Please fill out and return to: Joan Franz
Bldg 50B, Rm. 2232C
Lawrence Berkeley Laboratory

One Cyclotron Road
Berkeley, CA 94720

Family Day Questionnaire
Bldg. 50B, Rm. 2232C
Lawrence Berkeley Laboratory
Berkeley, CA 94720

CONSULTING SCHEDULE CHANGE

The Consultants' Office is now closed on weekends, and the weekday hours have been changed. As of March 30, the office is open Monday through Friday from 9 AM to 5 PM. For more information on the changes we foresee in the consulting service in the next few months, see Page 9 of the March, 1981 Newsletter.

. . . The Consultants, x5981

VAX NEWS

Our latest VAX, the program development machine, is up and running. Set up your account now by filling out an application form -- they're available outside the Consultants' Office (50B/1237), or by contacting Fran Permar, 50B/2258, x6310. This VAX will eventually support about 50 simultaneous users.

If you've stayed away from interactive computing because you have found it inconvenient, the VAX will change your mind. It allows you to do FORTRAN programming that is truly interactive. For instance, the system includes an interactive debugger, so that you can stop a program in the middle of execution, change variables, etc., and start it up again where it left off.

With the state-of-the-art compiler (ANSI-77) available on the VAXes, you can write programs that are more elegant and better structured than with older compilers. You can also manipulate character data easily and smoothly.

The VAX has a hierarchical file system permitting easy organization of files through the use of sub-directories, or branches. You can keep related files together and unrelated files distinct from each other. Also, you can protect your files by setting READ, WRITE, and EXECUTE permissions on each one; and you can specify different permissions to apply to the system, other members of your group, yourself, and the world at large.

All VAX files are both 'local' and 'permanent.' This means you do not have to execute special commands to fetch or store files. Another nice feature is that if the system should crash while you are editing a file, recovery is easy and almost no work is lost.

You can use the DECNET link to the DGATE (the hyperchannel gateway for DEC machines) for printing and for remote job submission to the CDC machines. Also, the program development machine is directly connected to the numerical modelling machine, our other VAX.

VAX users can now get information on printing and remote job submission by typing HELP BKYPRINT, HELP BKYSUBMIT, HELP BKYSTATUS, and HELP BKYCLAIM.

For more background information on our VAXes, see Page 5 of the December, 1980 Newsletter, and Page 2 of the February, 1981 Newsletter.

. . . John Dilworth, x6088

VAX CLASS IN MAY

Another VAX user class will be given during the first half of May in the Computer Center Training Room, Bldg. 50A, Rm. 1116. There will be four two-hour sessions:

Monday, May 4 -- 10 - 12
Wednesday, May 6 -- 10 - 12
Monday, May 11 -- 10 - 12
Wednesday, May 13 -- 10 - 12

The number of participants is limited and advance registration is required. To register, please contact Lisa Long, x5947.

. . . Uzi Arkadir, x5194

COMPUTER CENTER SEMINARS

Seminars, offering an overview of the BKY Computer Center operation, are now available. We hope to establish a series of regular semi-weekly sessions featuring in-depth discussions of any facet of the system the new user (and/or old hand) wishes covered. If you wish to attend one of these sessions, you **MUST** make an appointment beforehand. Contact . . .

. . . Joyce Rybandt, x6229

BKY INTERACTIVE RESPONSE MEASURES

Samples were taken during February to study the traffic through the BKY concentrator, RECC. These measure all interactive responses during the periods sampled. The units measured are transactions executed with selected verbs. An interactive transaction is defined as one line of input, together with all output lines which result from that input line. One or more computer delays are associated with each transaction. The delay tallied is the longest one observed.

The table shows the number of delays exceeding certain thresholds that were observed for frequently-used verbs. The number of transactions, and the number of delays exceeding threshold values are shown, normalized to one hour's experience with the verb.

INTERACTIVE RESPONSE SUMMARY, FEBRUARY 1981

Verb	Machine	Trans/hr	Transactions with Delay > N sec per hr				
			3	10	30	100	300
NETED	B	277	91	30	7.8	1.1	0.07
	C	196	90	37	9.4	2.0	0.21
POE	B	230	78	34	9.3	1.7	0.15
	C	165	72	35	9.2	1.0	0.
LIBCOPY	B	112	93	49	13.7	2.2	0
	C	67	56	34	10.3	0.6	0
LIBRITE	B	66	56	39	14.1	1.9	0.16
	C	88	74	54	36.0	1.2	0

. . . Fred Garland, x6728

COMPUTER CENTER STATISTICS

SYSTEM PERFORMANCE IN FEBRUARY	7600	6600	6400	UNIX1	UNIX2	VMS1	VMS2	PHYS
System Availability	93.71%	96.74%	98.42%	93.41%	99.69%	99.40%	95.70%	99.55%
Median Service Interval (hrs)	16.57	37.33	67.91	37.25	334.95	125.63	90.14	334.50
Jobs Processed	56,087	. . . . .	23,275	. . . . .			(79,362 total)	

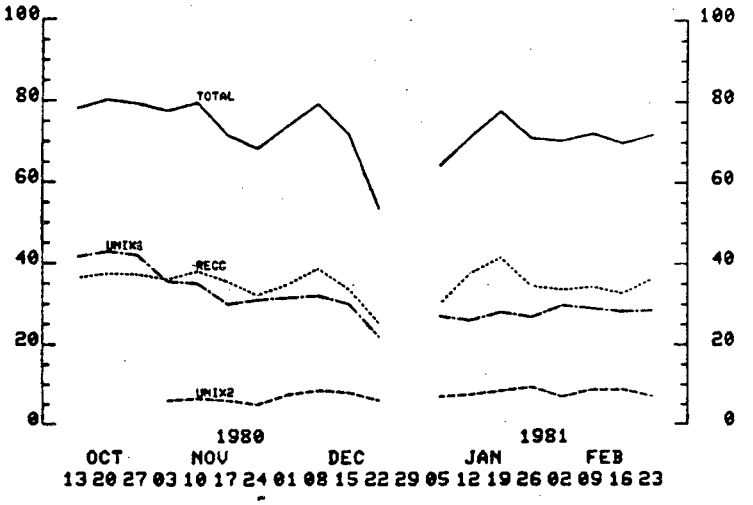
7600 TURNAROUND TIME	20 min	2 hrs	4 hrs
% of RUSH jobs returned	91.70	98.99	99.74
% of ALL jobs returned	86.78	96.72	98.55
% returned, CU limit = 100	87.02	99.41	100.00
% returned, CU limit = 500	82.80	98.92	100.00
% returned, CU limit ≥ 1000	39.75	70.19	82.62

INTERACTIVE STATISTICS

LBL COMPUTER CENTER
PERFORMANCE MEASURES

INTERACTIVE TERMINAL ACTIVITY
RECC, UNIX1 AND UNIX2

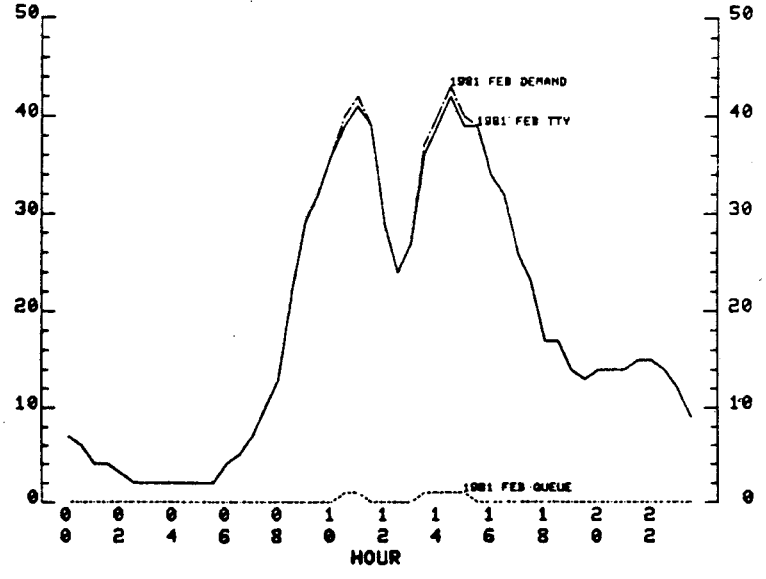
AVERAGE NUMBER OF TERMINALS CONNECTED
SAMPLED AT HOURLY INTERVALS, PRIME USE PERIODS, WORKDAYS



LBL COMPUTER CENTER
PERFORMANCE MEASURES

INTERACTIVE CONNECTIONS AND UNSATISFIED DEMAND
6600 AND 6400 COMPUTERS

FEBRUARY 1981 WORKDAYS



. . . Howard White, x5775

>> LIBRARY MATTERS <<

SPLINE PACKAGE NOW AVAILABLE

BSPLINE, a collection of FORTRAN routines for computing with splines, has recently been installed on the 7600. These routines extend the routines SPLIFT, SPLINT and ICSFKU, the cubic spline routines in the CORE library.

A spline is a curve consisting of different polynomials in different parts of the curve, joined together smoothly. Cubic splines (the pieces are cubic polynomials) are most often used. Splines are often superior to polynomials for fitting data, since they produce fewer 'wiggles'. It is precisely for this reason that organizations like General Motors used them -- to produce 'non-wiggly' vehicle bodies, for example.

The BSPLINE package is fully explained and documented in the book A Practical Guide to Splines by Carl de Boor, Springer-Verlag, 1978. (Copies have been ordered for reference in the Computer Center Library, 50B/1245A.) There are routines to do interpolation, smoothing, least squares data fitting, spline collocation, solution of ordinary differential equations, two-dimensional interpolation, and manipulation with taut splines.

There are three categories of routines: (a) 21 driver programs corresponding to examples in the book, (b) 44 subroutines, and (c) 11 sets of sample data. The source for all of these is available in UPDATE form, and, in addition, all but three of the subroutines are available in compiled (LIBGENed) form. (Those three were omitted because of name conflicts.) Thus, this package may be run in several ways:

(1) Run of example driver program and example data: (see Example 2 in Chapter 12 of A Practical Guide to Splines:)

```
<jobcard>
FETCHGS,BSPLINE/OLDPL,13214.
FETCHGS,BSPLINE/ULIB,13214.
UPDATE.
UPDATE,C=DATA.
FTN4,I=COMPILE,OPT=2.
LINK,X,P=ULIB,PP=[DATA,OUTPUT].
EOR <or 7/8/9 card>
*COMPILE CHP12EX2
EOR <or 7/8/9 card>
*COMPILE CHP12EX2D
```

(2) Run of user driver program to smooth user data using subroutine SMOOTH from the BSPLINE package:

```
<jobcard>
FETCHGS,BSPLINE/ULIB,13214.
FTN4,OPT=2.
LINK,X,P=ULIB.
EOR <or 7/8/9 card>
 .
 .     <User driver program which calls SMOOTH( ... )>
 .
EOR <or 7/8/9 card>
 .
 .     <User data>
 .
```

. . . John Bolstad, x6006

NOTE FROM THE EXPEDITERS

(1) Users who are getting itemized reports of computer charges from the Expediters should give written notification of any ACCOUNT NUMBER and/or site-code change.

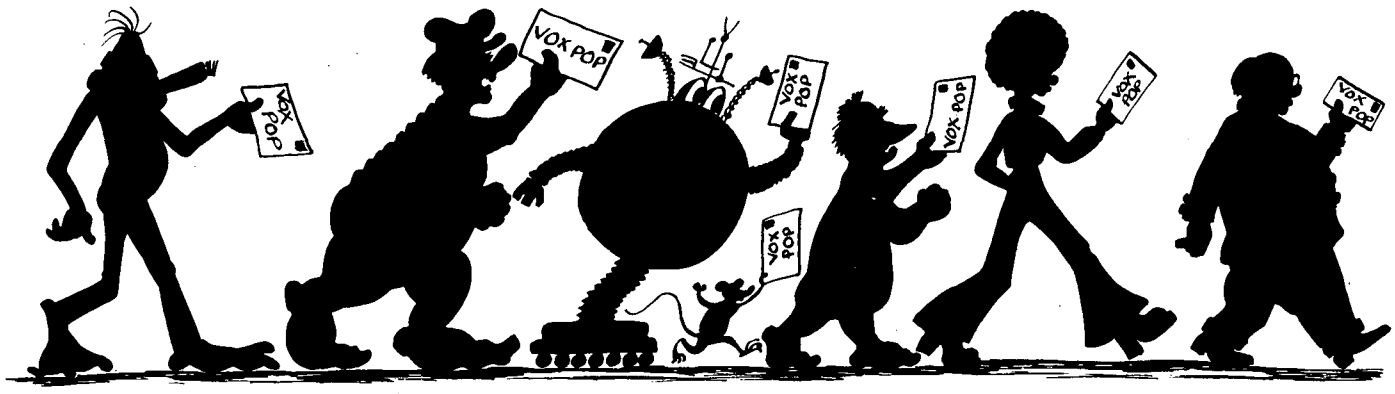
(2) NAMES Accounting Tapes from the Expediters, created after 1 December 1979, are GSS tapes in the ATL. Users must use the control card --

```
GETTAPE,filename=week,tape#.
          or
GETTAPE,filename=month,tape#.
```

(3) The form required to enter tapes into the tape library is available from the PSS disks as follows --

```
LIBCOPY,EXPLIB,OUT/RR,USER.
DISPOSE,OUT=PR,DT=I,PA=1F.  ...  (Use 'PA=1F' at BKY only)
```

. . . Irene Bernal, x6205



VOX POP

Irregularities in the rate of production of microfiche are becoming increasingly annoying. Three things in particular:

(1) Production seems good in the morning (about every 45 minutes), then fades away in the afternoon. A job queued after 3 PM can be kissed off until the next day.

(2) The message "IN TRANSIT TO MF DEVICE" can be followed by hours of waiting.

(3) Remodelling of the Fiche Room (Bowl?), which happens constantly, means no fiche at all. This is understandable, but if it is unannounced (as it always is), files sent there are in limbo. This lack of warning precludes routing the files elsewhere.

The first and third points are easily remedied, the second is minor and would become unnoticeable if something was done about the others.

(1) Jobs are needed for testing on the D48 (DICOMED). While these jobs are held and transferred to tape for the offline D48 system, they can't be processed on the 4460 until the end of the transfer. It can take quite a bit of "extra" time before enough jobs are accumulated for a "good" run. This procedure doesn't start till around 4 PM, but if the turnaround time is badly affected, we will move the testing start time to 6 PM or later if necessary.

(2) Depending upon the load, the job stays attached (in transit to MF device) until a run is completed, processed, separated (cut) and checked for quality. If your job was first to get on, it might stay attached for up to an hour, depending on the length of the run.

(3) This will be taken care of; we will make more frequent announcements to the "usrs" on the changes occurring in the status of COM operation (Fiche Room). (Mike Long)

* * * * * * * * * * * * *

Is there a UNIX account to which we can mail VOX POP material?

You may send VOX POP's via UNIX mail to login name 'mam' on any of the computer center UNIX systems. (Bob Hoffmann)

* * * * * * * * * * * * *

I have some QT tapes that are used as TAR tapes on UNIX to keep infrequently needed information. I have just looked at a TLIST and it shows that these tapes have not been accessed since they were put in the library. Is it possible that UNIX use of library tapes does not count as use? (This is only important because it will get deactivated a year after creation.)

Unfortunately at present, library tapes used on UNIX do not have the last access date updated. For the tapes in question, call Tape Services, x6219. Tape Services can prevent the tapes from being deactivated. (Bob Rendler)

* * * * * * * * * * * * *

Is it possible to archive an inactive tape or vice versa?

Yes. Contact Tape Services, x6219, and give them the tape number, account number, and owner name of the tape whose status is to be changed. (Bob Rendler)

* * * * * * * * * * * * *

Are you going to increase the number of 300 baud dial-up ports on the program development machine? Will there be 1200 baud access?

By the time you read this, more 300 baud ports will be available, and at least one at 1200. This machine will eventually have around 50 ports, and they will be divided among the various speeds according to demand. (John Dilworth)

* * * * * * * * * * * * *

To the Newsletter Editor, the Freudian Camisole Award: The article in the February Newsletter entitled "Overview of Computer Center Progress" is listed in the Table of Contents as "Overview of Computer Center Problems."

It is with a pious freud as with a bad action; it begets a calamitous necessity of going on. (Tom Paine)

* * * * * * * * * * * * *

The Computer Center staff, in its never-ending quest for better communications with the general user community, encourages users to forward all readable (and printable) questions and comments to --

The Suggestion Box
c/o Computer Center Library
Bldg. 50B, Rm. 1245A
Lawrence Berkeley Laboratory
Berkeley, CA 94720

Responses will be prompt and, it is hoped, helpful.

. . . Maggie Morley, x5529

PUB-395 4-81/1050 Prepared for the U.S. Department of Energy under Contract W-7405-ENG-48.

Computer Center Library
Bldg. 50B, Rm. 1245A
Lawrence Berkeley Laboratory
One Cyclotron Road
Berkeley, CA 94720