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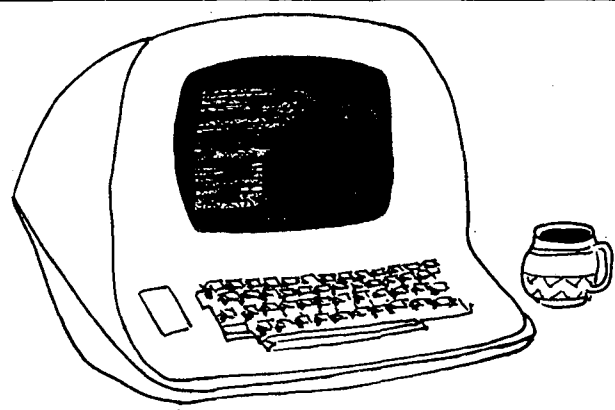
Morley, M.

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LBL COMPUTING NEWSLETTER

Lawrence Berkeley Laboratory
University of California, Berkeley

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April, 19 83

TABLE OF CONTENTS

NAMES & NUMBERS TO KNOW	2
Terminal Switch Access Names	3
VAX Classes in April	3
DI-3000 Hard Copy Now Available	4
Electronic Mail at LBL	4
Systems Performance in February 1983	8
Interactive Statistics	7
GRAPHICS NEWS	8
Color Hardcopy Now Available from Dicomed	8
Software Additions to the Grinnell Frame Buffer	8
DEVELCON Change Form	9
VAX PM Schedule for 1983	11
PM Schedule Effective Mar. 1, 1983	11
News of Local User Groups	12
DATATRIEVE LUG News	12
VAX LUG News	12
GRAPHICS LUG News	12
RT-11 LUG News	12
STARTING UP a Local User Group	12

PUB-429

NAMES AND NUMBERS TO KNOW

From on-site, dial <xxxx> From off-site, dial 486-<xxxx> From FTS line, dial 451-<xxxx>

COMPUTER POLICY BOARD

50D/106	x6722	William A. Lester, Jr., Chairman
50A/4112	x5511	Walter D. Hartsough
50B/3238	x5313	Paula K. Hawthorn
50A/4119	x5131	George L. Pappas
90 /3215	x6286	Henry Ruderman
50 /137	x7087	Mark Strovink
90 /1106	x5728	Chin-Fu Tsang
71 /259	x4825	Michael S. Zisman

OFFICE OF COMPUTING RESOURCES

50A/4112	x4764	Robert J. Harvey, Head
50B/2258A	x5739	James A. Baker
50B/2258B	x7344	David F. Stevens
50B/2258C	x7083	Kenneth G. Wiley

COMPUTATION DEPARTMENT

50B/2232E	x5224	Paul Rhodes, Department Head
50B/2232A	x5775	Howard White, Deputy Department Head
50B/2232B	x6287	Margaret Yamada, Administrator
50B/2232C	x6296	Everett Magnuson, Budget Manager
50B/1232C	x5455	F. Marvin Atchley, Computer Operations
50B/2232D	x5351	Eric Beals, Consulting & User Relations (both)
50A/1211A	x5692	Robert Fink, Networks
50A/1127A	x5568	Jerry Borges, Operating Systems & Product Set (both)
50 /209A	x6019	John Colonias, Applications

DEPARTMENTAL SERVICES

50B/2232	x5871,2	Central Office Number
50B/1245	x5981	Consultants' Office
50B/1245A	x5529	Computation Department Library: Maggie Morley
50B/1215	x6211	Operations
	x5311	Coke/Cope Operator
50B/2249B	x6205	Expediter Services: Irene Bernal
50B/2215A	x6256	Keypunch Service
50B/2249	x6219	PSS (Program Storage System): Tape Services
50B/1245	x6094	GSS Tape Repair Service: Dortha Hines
50B/1245	x6094	Sticky Label Service: Dortha Hines
90 /3136	x6494	Building 90 Remote Job Entry (RJE) Station
50B/2262C	x6310	To open or change an account: Fran Permar
50B/2232	x5654	Guest cards, locker space, & parking permits: Gean Broughton
50B/2266	x6713	To connect a remote terminal (RJE or interactive): Sig Rogers
50B/2259	x5354	Terminal or Port Repair: Electronics Maintenance
50B/1245A	x5529	Introductory seminars: UNIX: Maggie Morley
50B/1245	x6094	WRITEUPS & HANDBOOK on fiche: Dortha Hines

PUB-429 12-82/1200

Prepared for the U.S. Department of Energy under Contract DE-AC03-76SF00098

TERMINAL SWITCH ACCESS NAMES

COMPUTER	DEVELCON DIRECTORY NAME	--- GANDALF ACCESS CODE ---		
		300 bps	1200 bps	9600 bps
VAX Program Development Machine	PDM	na	na	na
VAX Numerical Modeling Machine	NMM	na	na	71
VAX Interactive Graphics Machine	IGM	na	na	73
PDP 11/70 (UNIX 1)	UNIX1	15	na	11
PDP 11/70 (UNIX 3)	UNIX3	55	na	51
CDC 6600B, 6400C	RECC	05	03	01
IBM 4341 (UCB)	CCDB	na	na	na

(1) na means NO DIRECT ACCESS. However, Indirect access from Gandalf to all computers is available via Develcon.

Gandalf access code 67 connects you to Develcon.

(Then) enter rs so that Develcon can determine your terminal speed.

Develcon responds with Request.

(Then) you enter your Develcon directory name and a carriage return.

(If you use this method more than occasionally, please contact Sig Rogers, x6713).

(1) Note: There are many additional hosts operated by other groups that are available on the terminal switches. To gain access, you should make arrangements directly with the appropriate group representative.

(2) DIAL-UP ACCESS to Develcon is available.

486-4959 -- 300 BPS

486-4979 -- 1200 BPS

VA-3400 & 212A equivalent.

... Sig Rogers, x6713

VAX CLASSES

IN APRIL

VAX user classes will be given this month from 10 AM to noon in the NRCC Conference Room, Bldg. 50D, Rm. 116.

Wednesday April 13

Friday April 15

Wednesday April 20

Friday April 22

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

... Noel Brown, x4387

DI-3000 HARD COPY

NOW AVAILABLE

A DICOMED device driver for the DI-3000 software has been written and is available on the IGM VAX. For information of how to use it, read the file ...

SYS\$SYSDEVICE:[GRAPHICS.DI3000]DICOMED.INF

... Don Zurlinden, x6329

ELECTRONIC MAIL AT LBL

A mechanism now exists to send electronic mail between many of the major time-sharing computers at LBL. Many other systems on the Berkeley Campus and beyond are also reachable.

Systems with Mail

The linked systems include:

- o the Computation Department and TID UNIX-based PDP-11/70 systems
- o the Computation Department VAX/VMS systems
- o the CSAM VAX/VMS and VAX/Unix systems
- o most of the DecNet-connected VAX/VMS systems supporting Software-Tools
- o most of the DecNet-connected VAX/VMS systems supporting DecMail

Each type of system has a different *interactive format* for the terminal user, a different form of *addressing* outgoing mail, and a different *transmission technique*. All systems have some form of online help, and common features such as the ability to read mail, answer mail, originate it, file it, forward it, or simply discard it.

General Description of System Classes

All the Unix machines have two varieties of interactive program, *mail* and *Mail*. *Mail* is strongly preferred. The basic inter-Unix transmission method is called *Unix to Unix Communication Protocol (UUCP)*. It can use dedicated or automatic dial-up lines, which run usually at low speeds. Local LBL modifications add the further capability of using Develcon. The use of UUCP is usually designated by the presence of the "!" character in an address. Users of the *C-shell* must escape the "!" as "\!". Online help for address forms is available from *help mail*, and for general usage from *%man Mail* and *%man mail*. Written documentation is the *Unix Mail Reference Manual*.

The PDP-11/70 systems (not the VAXes) continue to support a *Berknet* protocol over dedicated low speed lines. In this case the address will contain a ":" character.

Those VAXes supporting Software Tools have a complementary pair of interactive programs, *msg* and *sndmsg*. The basic inter-tools transfer mechanism is called *Simple Mail Transfer Protocol (SMTP)*. It can use DecNet, the THC (Hyperchannel) network, or ArpaNet for transmission. Typically these use dedicated medium-speed or high-speed

lines. The distinguishing address character is "@". Help is available in the Tools environment from *%man msg* and *%man sndmsg*. Within these, summary help is available as *<-?* and *snd>h*, respectively.

The standard interactive mail interface for VAX/VMS is *MAIL*. It uses only DecNet for inter-VMS transfers. The special address character here is ":". Help is available from the standard DEC help facility *\$HELP MAIL*. Help is also available from within *MAIL*: *>HELP*. Written documentation is the *Personal Mail Utility*, chapter 13, volume 4A, of the VMS manual.

You should read the available documents for the system from which you are sending mail.

Names of Machines

The following table summarizes the classes of machines by Develcon name. These classes are referred to in all the other tables.

Classes of Hosts	
Class	Develcon Names
Unix70	unx1,tid7,unx3
Unix	csmf,csmg,csmh
VMS-tools	pdm,nmm,igm,nrcc,gsi, hiss,csmg,csmh
VMS	phys,tkyo,other

Notice that *csmg* and *csmh* appear twice; that is because they are dual systems, supporting Unix and VMS with Tools simultaneously. In fact, *csmg* is the bridge or gateway between the UUCP and SMTP transmission methods. (When sending mail to them, use the class most like your own, that is, consider them Unix from Unix and VMS-tools from VMS-tools or VMS.)

Sometimes aliases (pseudonyms) for machines are provided because common usage, Develcon usage, and formal usage all differ.

Typical Aliases for Machines	
Develcon	Aliases
unx1	lblunx1
tid7	unx2,tid,lblunx2,lbl-tid,lbl-tid7
unx3	lblunx3
csmf	csamf,lblf,lbl-unix,lbl-csam
csmg	csamg,lblg
csmh	csamh,lblh

Addressing Mail

The next table gives basic address forms, organized by machine classes. The paradigm for the address form requires the *user*, the login name of the person you want to send mail to, and the *machine*, the name of the destination system. Not all classes of system are reachable from all others. In particular, Unix and Unix70 cannot reach VMS (that is, they may not reach pure VMS DecMAIL).

Berknet only serves Unix70. DecMAIL only serves DecMAIL (VMS class) with the exception that certain sites have chosen to eliminate DecMAIL altogether -- if you send them DecMAIL it becomes Software Tools Mail. However, when they send mail back, it *must* go back to Software Tools Mail.

Each class of system is always self-addressing, so, in the table below, a "*" indicates the destination is the same as the origin class.

Forms of Addressing				
<i>Origin</i>	<i>Interface</i>	<i>Protocol</i>	<i>Destination</i>	<i>Address Form</i>
VMS	MAIL	DecNet	*	mach::user
VMS-tools	rmsg/sndmsg	SMTP	*,Unix70,Unix	user@mach
Unix	Mail,mail	UUCP	*	mach!user
Unix	Mail,mail	UUCP	VMS-tools	lblg!user#mach
Unix70	Mail,mail	UUCP	*	mach!user
Unix70	Mail,mail	UUCP	VMS-tools	lblg!user#mach
Unix70	Mail,mail	Berknet	*	mach:user

It is possible to address mail off-site. This always involves *routing*, that is, specifying not just the destination machine, but at least one of the machines to pass through on the way there. In general, UUCP routing begins on the left, so it looks like:

first!second!...!dest!user

The previous table has an example of required routing -- from Unix70 class machines to VMS-tools class: you must route through *lblg*.

SMTP routing begins on the right, as:

user@dest@...@second@first

DecNet does routing automatically.

Where it is reasonable, internal routing directions have been provided. However, to reach the UC campus, you must specify at least part of the route, summarized below.

Campus Addressing	
<i>Origin</i>	<i>Address Form</i>
Unix70	lbl-esam!uebvax!mach.user
Unix	uebvax!mach.user
VMS-tools	mach.user@berkeley

When Trouble Occurs

If you incorrectly address outgoing mail, several things will happen. With all of the interactive/protocol systems, you will be told immediately on your terminal if a bad *local user* name is specified. If a bad machine name is given, after a delay of usually less than a minute, you will receive either a notice on your terminal, or return mail.

When the machine name is correct, real delivery attempts begin. These protocols will retry for a long time. If no such user exists on the destination machine, or the mail just can't be delivered because the destination machine or one of the machines on the route to it isn't operating, SMTP and UUCP will tell you that by return mail, but the delay may be several days. It is a good idea to send yourself a carbon copy, so you can try again (perhaps using a different address) without having to retype the text of the letter.

DecMAIL, in all of the failure modes mentioned above, will reply immediately to your terminal. This is an advantage where a bad address is concerned; however, this is the only protocol which doesn't *persist*. This means that DecMAIL will give up immediately unless all the machines on the route

respond and the user exists. Correctly, it does so inform you *before* you have composed the letter.

How long should you wait for mail to arrive before deciding something is wrong with the mail system?

The typical delay from one machine to the next using SMTP or UUCP is a minute or two. DecMAIL is nearly instantaneous. Of course, you must take into account that *Unix70 to VMS-tools*, for example, makes two hops; campus mail makes at least three hops from most machines. In addition, most machines can only talk to one or two other machines at a time, so during busy times of the day they may service different machines in rotation. This means

the total transit time is more like 10 minutes. If a machine has any trouble contacting another, it will often ignore it for about an hour while it emphasizes the working connections.

The size of the letter is usually unimportant -- until the letter is 10,000 bytes long or more. If you are really moving files you should find out about the regular *file transfer protocols* that are offered. This is particularly important if you intend to send more than 100,000 bytes. Please use the mails for short communications so the delays for all users are reasonable.

... Steve Lewis, x7100

SYSTEMS PERFORMANCE IN FEB/1983

7600

Systems Availability 95.19%
Median Service Interval 22.16 (hrs)

6000B

Systems Availability 98.46%
Median Service Interval 72.97 (hrs)

6400

Systems Availability 98.74%
Median Service Interval 150.00 (hrs)

UNIX1

Systems Availability 97.87%
Median Service Interval 115.53 (hrs)

UNIX3

Systems Availability 95.36%
Median Service Interval 34.46 (hrs)

PDM

Systems Availability 94.72%
Median Service Interval 31.03 (hrs)

NMM

Systems Availability 93.71%
Median Service Interval 36.53 (hrs)

IGM

Systems Availability 98.90%
Median Service Interval 77.32 (hrs)

Total No. of Jobs Processed: 52,335
6000's - 21,153 : 7600 - 31,182

7600 TURNAROUND TIME

% of RUSH jobs returned
20 min 2 hrs 4 hrs
91.51 98.36 99.61

% of ALL jobs returned
20 min 2 hrs 4 hrs
85.81 93.98 96.01

% returned, CU limit = 100
20 min 2 hrs 4 hrs
86.08 94.94 96.20

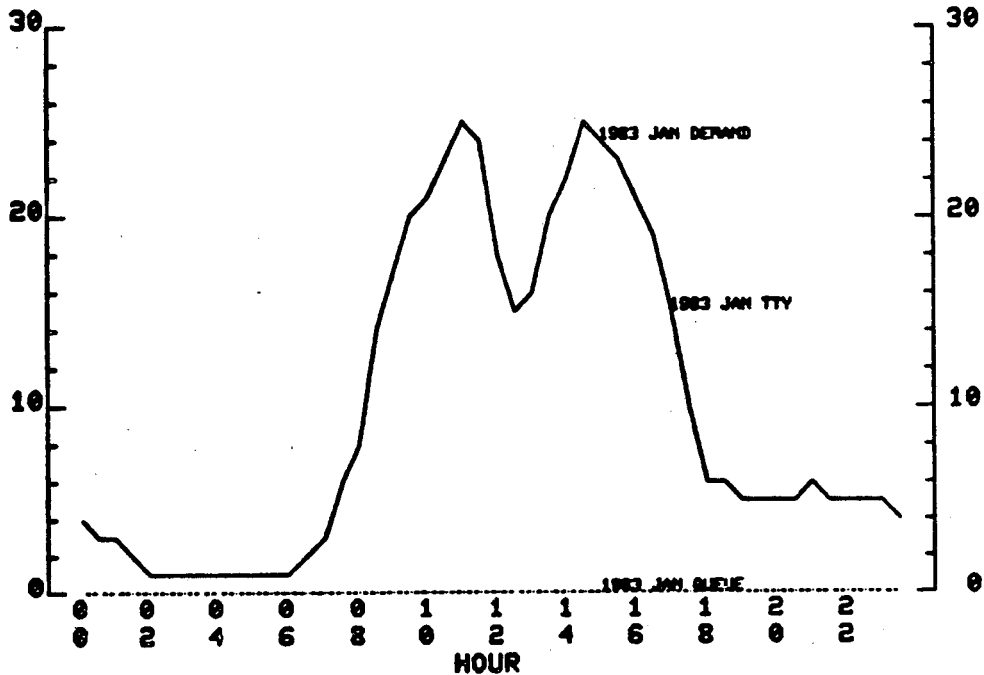
% returned, CU limit = 500
20 min 2 hrs 4 hrs
87.34 94.94 99.16

% returned, CU limit ≥ 1000
20 min 2 hrs 4 hrs
29.96 55.62 62.13

INTERACTIVE STATISTICS

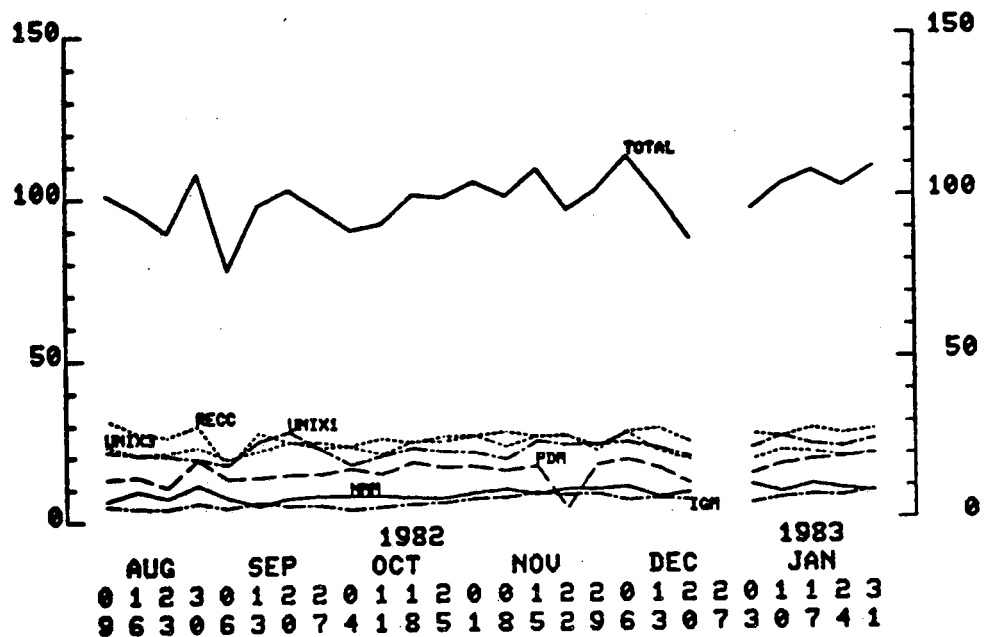
RECC CONNECTIONS AND UNSATISFIED DEMAND
6600 AND 6400 COMPUTERS

JAN 1983 WORKDAYS



INTERACTIVE TERMINAL ACTIVITY

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



>> GRAPHICS NEWS <<

COLOR HARDCOPY NOW AVAILABLE

For those requiring color movies or slides or Polaroid prints, we now have the means for producing them on our Dicomed film recorder. To send a file to the Dicomed from a Computer Center VAX, use the "DICOMED" command to specify the essentials such as the film type and color. The file will then be placed in the Dicomed queue, to await an operator who will write the file to a tape. The Dicomed recorder will be set up for your film type, the tape will be read to produce your output, and the film developing will be arranged for. In the case of color 35 mm or 16 mm or 4X5 sheet film, the film must be sent away for processing. Black and white 35 mm or 16 mm or microfiche are processed within one or two hours. Polaroid prints are, of course, processed immediately.

In addition to the use of GRAFPAC to produce Dicomed output files, users on the IGM VAX can now

use DI3000 to create Dicomed files, due to a new DI3000/Dicomed driver just completed. See the notice elsewhere in this newsletter. The DI3000 graphics package consists of a system of device-independent software tools which are called by the user's program. At the time of running, the user chooses the output device of his choice, whether a terminal, plotter, or film recorder, and links that device-dependent driver to his program to communicate with the chosen output device. See the DI3000 manual for a description of the DI3000 system.

If you have a file destined for Dicomed but your VAX isn't connected to the network or the "DICOMED" command doesn't exist for you, write the file to tape, read it in to a VAX with "DICOMED" capability (NMM, PDM, IGM), and execute the "DICOMED" command.

... Doug Brainard, X6380

SOFTWARE ADDITIONS
TO THE GRINNELL FRAME BUFFER

Two additional tools, SAVEFRAME and LOOKFRAME, have been developed for the Grinnell user who wants a full frame of gray levels for a certain image. To do this the user will need 1029 blocks per frame on the IGM.

To use these Grinnell tools, the user is reminded to follow the startup procedure outlined in the Jan/Feb LBL Computing Newsletter (Vol. 20, No. 1).

\$ SAVEFRAME

The program will instruct and query the user, especially about the up to 70-character identification of the digitized image. 2-binary records will be written for each image in file SAVEFRAME.DAT (Since the user might have several such files, they should each be renamed by the user to give definition to the file name.)

To process this information the user needs to know the format of these two records: Record 1 contains IDENT, the 70-character alphanumeric identification of the frame. Record 2 contains DATA, a 512 x 512 array of 2-byte integers, which are the gray-level values for each pixel, starting from the lower left of the screen, and reading the screen horizontally. The DATA values will be from 0 for white to 255 for black. Thus the FORTRAN to input these two records might simply be as follows:

```
BYTE          IDENT(70)
INTEGER       DATA(512,512)
```

```
OPEN (UNIT=1,FILE='SAVEFRAME',
      STATUS='OLD',
      FORM='UNFORMATTED',READONLY)
READ (1)      IDENT
READ (1)      DATA
```

To look on the Grinnell monitor at an image, say in file SAVEFRAME.DAT, that has been digitized by the Grinnell tool SAVEFRAME, type

```
$ LOOKFRAME SAVEFRAME.DAT
```

For those interested in seeing what types of images have been digitized on our Grinnell, some further definitions are necessary; so type

```
$ VIEW_GRINNELL
```

This will define some digitized data files in directory USERDISK: [GRAPHICS.GRINNELL.DATA]

As of this date, LUGGAGE, FRUIT, TELESCOPE, BEVATRON, and SLIDES are available for viewing. All of these files are in .DAT name form, and similarly new additions will be found there. To view any of these examples use the procedure LOOKFRAME and just name the image. For example, to view LUGGAGE type

```
$ LOOKFRAME LUGGAGE.DAT
```

And do likewise for the other example images named above.

... Claudette Lederer, x6945

DEVELCON CHANGE FORM

Name _____ Phone _____

Bldg _____ Rm _____ Division _____ Group _____

Develcon Port ID _____ Speed _____ Account _____

Signal channel number 44GS _____ Your Terminal Type _____

Your Request

This form may be used for relocations, user updates, or any other change. Please complete as much as possible and mail to

Sig Rogers,
Bldg. 50B, Rm. 2232.

* The port I.D. consists of 3 or 4 hexadecimal digits e.g., 110, A20, FF3, 2C2 etc. It should be written on the wallbox into which your TSB plugs.

Sig Rogers
Bldg. 50B, Rm. 2266
Lawrence Berkeley Laboratory
One Cyclotron Road
Berkeley, CA 94720

1983 VAX MAINTENANCE SCHEDULE

IGM

5/220000 - 1200
 3/230000 - 0800
 4/200000 - 0800
 5/230000 - 0800
 5/240000 - 0800
 5/250000 - 0800
 6/220000 - 0800
 7/200000 - 0800
 8/220000 - 0800
 8/230000 - 0800
 9/210000 - 0800

NMM

4/240000 - 1200
 7/240000 - 1200
 3/250000 - 0800
 4/250000 - 0800
 4/260000 - 0800
 4/270000 - 0800
 5/270000 - 0800
 6/240000 - 0800
 7/250000 - 0800
 8/260000 - 0800
 9/230000 - 0800

PDM

3/120000 - 1200
 3/130000 - 1200
 6/110000 - 1200
 6/120000 - 1200
 4/130000 - 0800
 5/110000 - 0800
 6/130000 - 0800
 6/140000 - 0800
 7/130000 - 0800
 8/100000 - 0800
 9/120000 - 0800
 9/130000 - 0800

UCLBL COMPUTER CENTER

PM SCHEDULE

EFFECTIVE APRIL 1, 1983

7600 (CDC) Mondays
 CDC 0500 - 0800
 Thursdays
 CDC 0600 - 0800

6600B (CDC) Tuesdays
 CDC 0500 - 0800

6400C (CDC) Mondays
 CDC 0500 - 0800

UNIX1 Sunday, Mar. 6
 RTSG 0200 - 0600

UNIX2 Wednesday, Mar. 16
 RTSG 0200 - 0600

UNIX3 Saturday, Mar. 19
 RTSG 0200 - 0600
 Sunday, Mar. 20
 RTSG 0200 - 0600

IGM Wednesday, Mar. 23
 RTSG 0000 - 0800

NMM Friday, Mar. 25
 RTSG 0000 - 0800

PDM Saturday, Mar. 12
 RTSG 0000 - 1200
 Sunday, Mar. 13
 RTSG 0000 - 1200

ATL Thursdays
 Maint ... 0600 - 0800

COM Tuesdays
 Maint ... 0700 - 0900

PSS Wednesdays
 CDC 0600 - 0800

"We shall not cease from exploration.
 And the end of all our exploring
 Will be to arrive where we started
 And know the place for the first time."

... T. S. Eliot

>> NEWS OF LOCAL USER GROUPS <<

DATATRIEVE LUG NEWS

The next meeting of the Datatrieve User Group will be held at 1:30 PM Monday, April 18, in the Bldg. 70A Conference Room (70A/3377). For more information, contact LUG facilitator . . .

. . . Valerie Sherriffe, x5362
or x4460

GRAPHICS LUG NEWS

Users who are interested in organizing a GRAPHICS Local Users Group at LBL are requested to contact Maggie Morley (x5529),

. . . Jim Miller, x6255

VAX LUG NEWS

The next meeting of the VAX Local User Group will be held at 2 PM Tuesday, April 19 in the Old Directors' Office (50/154). For more information, contact LUG facilitator . . .

. . . Nancy Deerinck, x4680
or x6411

RT-11 LUG NEWS

The next meeting of the RT-11 User (Lunch) Bunch will be held at noon on Thursday April 7 in the Bldg. 46A Conference Room. For more info, contact . . .

. . . Mike Green, x5598

GETTING STARTED

Lab folks who are interested in establishing a Local User Interest Group on site should contact Sally Shlaer, x4687.

Computation Department Library
Bldg. 50B, Rm. 1245A
Lawrence Berkeley Laboratory
One Cyclotron Road
Berkeley, CA 9 4720

572500 JOSE OLIVARES (3)
BLDG. 50B, RM. 4206
LBL

94720

88