1-1-1984

User Services External Report

Lehigh University

USER SERVICES EXTERNAL REPORT

LEHIGH UNIVERSITY COMPUTING CENTER
CDC CYBER 170 MODEL 730 (CM 256KW, NOS/BE)
DECSYSTEM-2060 (1024KW MEMORY, TOPS-20 V5)
IBM 4331 (DOS/VSE, RELEASE 3)
Vol. XI, No. 4
January 1, 1984

COMPUTING CENTER DIRECTORY

Information About Policies and Plans

Office of the Director	
Director	861-3830
Dr. J. Gary Lutz	
Associate Director	861-3984
William R. Harris	
User Services	
Manager	861-3990
Timothy J. Foley	
Operations	
Manager	861-3989
Carol D. Rauch	

Information About Bills Received

Administrative Associate	861-3825
Joseph P. Holzer	
Annette L. Ruhe	

User Consultants

Blair R. Bernhardt	861-3994
Bob Kendi	861-3992
Monica A. Newman	861-3995
Kevin R. Weiner	861-3991

Information About Programs in the Computer Libraries

Software Librarian	861-3993
Judy K. Allio	

Systems Status, Technical Information

On-duty Consultant	861-4141

General User Information 861-3990

Information About Tapes and Supplies

Secretary/Tape Librarian	861-4140
Monica M. Morganello	

On-Campus Computer Access

CYBER 730	(110/300 Baud)	Ext. 4000
	(1200 Baud)	Ext. 4660
DEC 20	(110/300 Baud)	Ext. 4020
	(1200 Baud)	Ext. 4661

Off-Campus Computer Access

CYBER 730	(110/300 Baud)	691-5800
	(1200 Baud)	691-5806
DEC 20	(110/300 Baud)	868-2250
	(1200 Baud)	691-0506

STAFF CHANGES

Users coming to 115 Packard Lab for assistance will not be greeted at the door by Judy Allio's warm smile for very much longer. Effective December 16th, Judy was promoted to Software Librarian. Judy's responsibilities as Secretary included the opening and modifying of computer accounts, and so during her seven years with User Services she has assisted many users with questions about their accounts. Judy will be relinquishing this responsibility just as soon as another secretary has been trained. The Center congratulates Judy on her promotion, and wishes her much happiness with her new responsibilities.

FROM THE DIRECTOR

by J. Gary Lutz

In the last issue of USER, I discussed the fact that LUCC was beginning to plan for its move to the new Mart facility with a target date of late spring 1985. We were recently informed, however, that there exists a very strong possibility that the building will be completed almost one year ahead of schedule, i.e., in the spring of 1984. For a variety of reasons, it would be impractical for the Center to move in that time frame. It does seem feasible, on the other hand, to consider the following tentative schedule: move the Center's administrative offices as soon as the building is ready for occupancy, move Administrative Systems and its hardware early in November, and move LUCC proper after the end of the fall 1984 semester. As I indicated in the last issue, you will be kept informed as these plans solidify.

As many of you are aware, the IBM 4331, which is used exclusively for administrative processing, has for some time been severely overtaxed. The Administrative Systems Steering Committee has given its approval to upgrade the system to the newly released 4361 processor with 4 MB of memory rather than 2 MB as we currently have. This is a "field upgrade" and should involve very little downtime for the system. LUCC is currently negotiating with IBM for a date for this action.

Many of you are also aware that the Computing Center Advisory Committee (CCAC) had formed an ad hoc subcommittee to examine the so-called "computing committees" situation on campus. Its recommendations are now in the hands of the Vice Provost for Computing and Information Services awaiting his reactions.

PRE- AND POST-SALES MICROCOMPUTER SEMINARS

Microcomputers are currently available for purchase at the University Bookstore, as you probably know by now. Multiple configurations of the IBM PC, IBM XT, and Zenith Z-100 are available at thirty to fifty percent off list price. Availability is currently limited to faculty and staff, with student purchases scheduled to begin during the spring semester.

LUCC will be offering two different pre-sales seminars, entitled "Introduction to Microcomputers" and "A Description of the Zenith and IBM Microcomputer Systems". Topics to be covered in the "Introduction to Microcomputers" seminar include the basic components of micros, methods of communicating with micros, possible applications of micros, and determining one's microcomputer needs. The purpose of the second seminar is to describe the Zenith and IBM microcomputers available at the Bookstore; included will be a discussion of operating systems, software availability, hardware features and graphics capabilities. The two pre-sales seminars will be given at least two times during the spring semester. These seminars will be offered the first time to faculty and staff only; the dates, etc. will be announced via campus mail. These seminars will be offered the second time as part of LUCC's Spring Seminar Series, which is open to the public. The public "Introduction to Microcomputers" seminar is scheduled to be given on February 14th, the "A Description of the Zenith and IBM Microcomputer Systems" seminar on February 16th; both are scheduled to take place at 4:10 P.M. in Room 466 Packard Lab. Any additional offerings of these seminars would be announced in USER and on-line on the CYBER 730 and DEC 20.

A post-sales seminar will be offered weekly, and is for those whose new microcomputers will have just been delivered (to the microcomputer maintenance depot, currently located in the Centennial Building, near Saucon Fields). This seminar will be conducted at the depot, by LUCC and Media Center staff. Attendees of the post-sales seminar will be instructed on how to set up their micros, and how to perform basic operations such as booting their systems, copying files, etc. It is also possible that seminars on applications software will be offered in the future.

STUDENT CONSULTANTS WANTED

Student consultants augment full-time staff consultants in assisting faculty and students in the use of computer facilities. The minimum qualifications for a student consultant position are: sophomore standing, knowledge of FORTRAN, and familiarity with at least one of the operating systems (NOS/BE or TOPS-20). Interested students should contact Bob Kendi in User Services, Room 115 Packard Lab, before January 20th.

COMPUSTAT FINANCIAL DATA BASE NOW AVAILABLE

LUCC has recently subscribed to the COMPUSTAT service, provided by Standard & Poor's Compustat Services, Inc. For this subscription, LUCC is sent magnetic tapes containing financial, statistical and market data for several thousand industrial and nonindustrial companies. The information provided includes key balance sheet, income statement, sources and uses of funds, and market data. Annual data covering 20 years and quarterly data covering 10 years are provided for most companies. Significant attributes of the COMPUSTAT service include standardized data definition, continuous updating, and company identification by CUSIP (Committee on Uniform Security Identification Procedures) Issuer Code or SIC (Standard Industrial Classification) codes. The COMPUSTAT data base will be described in more detail in a seminar entitled "COMPUSTAT, a Financial Data Base", to be given on March 1st at 4:10 P.M. in Room 1 Drown Hall. This seminar is being offered as part of LUCC's Spring Seminar Series.

Use of the COMPUSTAT data base is limited to research and educational usage. For further information, please contact Bob Kendi at ext. 3992.

FROM THE LIBRARIAN

DEC 20 - New Software

KERMIT - File Transfer Program (K50005)

KERMIT is a file transfer program that allows diverse computer systems to exchange files over ordinary asynchronous telecommunication lines, with error detection and re-transmission to ensure reliable transfer.

KERMIT-20 is the KERMIT implementation for the DEC 20. KERMIT-20 must be run "remotely" from another computer (e.g., a microcomputer). KERMIT implementations are available from User Services for the IBM PC, the IBM XT, the DEC VT180 "Robin", the Osborne 1, and the TRS-80 Model II running CP/M. Anyone who needs the KERMIT implementation for one of the above machines should contact Blair Bernhardt in User Services, ext. 3994.

To run KERMIT on the DEC 20, type the following at DEC 20 command level:

@KERMIT

You may obtain help from within the program by typing "HELP" to the KERMIT-20 prompt, as follows:

```
Kermit-20>HELP
```

A system HELP file, entitled "KERMIT", is also available. This file can be accessed by typing the following:

```
@HELP KERMIT
```

A line printer copy of this HELP file can be obtained by typing the following:

```
@PRINT <HELP>KERMIT.HLP
```

The documentation for all implementations of KERMIT is the same and can be found under its library number in the Packard Lab Reference Area. A copy of this documentation may also be purchased at the Bookstore.

MM - Mail Utility (J90067)

MM is an alternative to the MAIL and RDMAIL programs. It is completely file-compatible with those programs, as a MAIL.TXT file created by MAIL can be read by MM, and mail created by MM can be read by RDMAIL.

MM has many message handling features, most of which are described on the system HELP file entitled "MM" (which is currently the only documentation for the program). Among its features is the capability to delete individual messages, to forward messages, and to edit all parts of a message currently being created.

The MM program is invoked by typing the following at DEC 20 command level:

```
@MM
```

Typing a "?" to an MM prompt will cause the program to list the available commands. Typing "HELP commandname" to an MM prompt will cause MM to provide information about the command's function and usage.

11TAPE - Tape Utility (K50004)

11TAPE is a utility for transferring files between RSX-compatible systems and a DEC 20, using magnetic tapes written in PDP-11 format. 11TAPE allows you to read and write DOS (PDP-11) or ANSI labelled tapes. In addition, 11TAPE allows you to perform such operations as obtaining a directory listing of the files on a tape or initializing a tape for use with either format.

The documentation for 11TAPE is available only on a HELP file, entitled "11TAPE".

Before calling the 11TAPE program, the tape from which or to which you want to transfer files should be mounted. An example of a mount request follows:

```
@MOUNT TAPE MTA-11TAPE:/VOLID:vsn
```

where "vsn" is the volume serial number of the tape.

After the tape has been mounted, you would then invoke the 11TAPE program as follows:

```
@11TAPE
```

The program "11TAPE>" prompt will then appear, to which you can issue commands as described in the HELP file.

DEC 20 - Modified Software

PASCAL-20 - Programming Language

Version 14 of the Pascal-20 compiler from Rutgers University has been installed, and will become the default version of the compiler on January 2, 1984 (at which time the current default version, Version 12, will be moved to directory OLD:). In addition to fixing a number of bugs, the new version attempts to conform to the ISO Pascal standard, although this has not been officially validated. The main features of interest from the ISO standard are conformant arrays, which allow much more flexible passing of array parameters, and parametric procedures, which permit parameter list declarations for procedures which are themselves passed as parameters. The new version of the compiler also supports "extended addressing" which allows larger programs to be run.

The documentation for Pascal-20 has been expanded to include both a Pascal-20 Introductory User's Guide and a Pascal-20 Reference Manual. These documents can be found at the Packard Lab, Christmas-Saucon, Grace Hall and Drown Hall sites, and at Mart Library on reserve. These documents are also available for purchase at the University Bookstore.

EDUNET APPLICATIONS BEING ACCEPTED AGAIN

Lehigh is a member of EDUNET, the national computing network for higher education and research. Through EDUNET, supplying institutions such as Cornell, MIT, Dartmouth and Carnegie-Mellon are accessed. A complete list of the institutions and their computers accessible via EDUNET can be obtained from Judy Allio in User Services, Room 115 Packard Lab, ext. 3993. Judy also has information

on what special software is available at these institutions.

Limited funds are available to faculty for using EDUNET for instructional or University-funded research. Those interested should contact Judy Allio in User Services. The deadline for submission of requests to use EDUNET is February 13th. The next review of requests will occur in September, 1984.

FACULTY/STAFF DEC 20 SEMINAR

The Computing Center is planning to offer an "Introduction to the DEC 20 and EDIT" seminar exclusively for faculty and staff. This seminar will consist of two "hands on" sessions, scheduled to take place on January 23rd and 24th, from 4:10 P.M. to 6:00 P.M. in Room 208 Drown Hall.

This seminar is restricted to the first 16 faculty or staff members to register for it. Those interested should register with User Services, Room 115 Packard Lab, ext. 3990.

The following topics will be covered during this seminar: accessing the DEC 20, creating and modifying files (using the EDIT text editing program), maintaining (i.e., deleting, renaming, etc.) files, and using various utility programs, such as MAIL. Specific programming languages are not covered. No prior computing experience is necessary.

PUBLIC SPRING SEMINAR SERIES

The schedule for the Computing Center's public Spring Seminar Series appears below. With the exception of the MUSE, NCP Calc and "Using Terminals Instead of Keypunches" seminars, all sessions will begin promptly at 4:10 P.M. and last for approximately one hour, and no advance registration is necessary. Note that more than one date is specified for most seminars because more than one session is required to cover those topics adequately.

The MUSE seminar will consist of four "hands on" sessions, scheduled to occur from 4:10 P.M. to 5:30 P.M. at the Christmas-Saucon site (Room B9). The NCP Calc seminar will consist of three sessions, the first of which will be a demonstration in Room 466 Packard Lab, the second and third of which will be "hands on" sessions at the Christmas-Saucon site (Room B9). All three NCP Calc sessions are scheduled to begin at 4:10 P.M. and last for approximately one hour. Those interested in attending the MUSE or NCP Calc seminar must register in advance with User Services, ext. 3990. Either of these seminars can be repeated, contingent upon the demand demonstrated at the time of this registration. Additional MUSE and NCP Calc seminars would be announced via system-wide MAIL on the DEC 20, and added to the on-line seminar lists ("HELP SEMINAR" on the DEC 20 and "SYSBULL,SEMINAR" on the CYBER).

The seminar entitled "Using Terminals Instead of Keypunches" is designed to help users make the transition from using cards to using a terminal. There are a number of advantages to being able to run jobs from a terminal, and LUCC would like to help users make the transition. In addition, the number of available keypunches will diminish ov the years. Further information on this semin appears below with the descriptions of all of the seminars. For this "seminar", instruction will actually be on an individual or small group basis. Those interested should contact Monica Newman at ext. 3995 to describe the type of jobs they are currently running on the CYBER.

Included in the seminar series is a "Getting Started with the TEMPLATE Graphics Subroutine Package" seminar. TEMPLATE will be available to the user community early in the spring semester.

General Seminars

Introduction to LUCC (Lehigh U. Computing Center)
Jan. 20 — 360 Packard

Introduction to Microcomputers
Feb. 14 — 466 Packard

A Description of the Zenith and IBM Microcomputer Systems
Feb. 16 — 466 Packard

COMPUSTAT, a Financial Data Base
Mar. 1 — 1 Drown

CYBER Seminars

Using Terminals Instead of Keypunches
By Appointment - see details above

Elementary NOS/BE Control Language
Jan. 26 — 360 Packard

Interactive Computing on the CYBER
Jan. 31, Feb. 2 — 360 Packard

Using Senator, Interactive Text Editor on the CYBER
Feb. 7,9 — 360 Packard

Getting Started with the TEMPLATE Graphics Subroutine Package
Mar. 6,8 — 360 Packard

DEC 20 Seminars

Introduction to the DEC 20 and EDIT
Jan. 25,27,30 — 360 Packard

Word Processing Using MUSE
Feb, 1,3,8,10 — B9 Xmas-Saucon*

Text Formatting Using SCRIBE
Feb. 13,15 — 360 Packard

Using NCP Calc, A Spreadsheet Calculator Program
Feb. 22,24,27 — 466 Packard*

* Advance registration. See details above.

Descriptions of these seminars follow.

Introduction to LUCC (Lehigh U. Computing Center)

This seminar provides a brief overview of the computing services available at Lehigh. Its purpose is to guide the user to sources of information and acquaint him or her with basic policies and procedures. Actual methods of using the computer are not covered. No computing experience is necessary.

Introduction to Microcomputers

This seminar is designed to acquaint novice users with some of the basic terminology and functions of microcomputers. The following topics will be discussed: basic components of micros; methods of communicating with micros; possible applications of micros; and, determining one's microcomputer needs. No prior computing experience is required.

A Description of the Zenith and IBM Microcomputer Systems

This seminar is designed to describe the Zenith and IBM microcomputers which are available at the University Bookstore through the Ben Franklin "Microcomputer Purchase Plan". Topics to be discussed include: operating systems, software availability, hardware features and graphics capabilities.

COMPUSTAT, A Financial Data Base

This seminar is designed to acquaint users with the data obtained through the COMPUSTAT service, to which LUCC has recently subscribed. Use of the COMPUSTAT data base is limited to research and educational usage. The data base contains financial information on several thousand companies. Significant attributes include standardized data item definition, unique company identification, and a by-industry breakdown. The latter part of the session will be a question-and-answer period on effective COMPUSTAT usage.

Using Terminals Instead of Keypunches

This seminar is designed to help users make the transition from using cards to using a terminal. Instruction will be on an individual or small group basis. The only topics covered will be those necessary for the batch user to become terminal literate. All that is required is a sample or samples of jobs currently being run on the CYBER. It is suggested that users also attend the "Interactive Computing on the CYBER" seminar.

Elementary NOS/BE Control Language

This seminar covers the basic commands necessary to define and submit jobs on the CYBER. Topics discussed include: deck setups, control card syntax, and file storage and retrieval. No prior computing experience is necessary.

Interactive Computing on the CYBER

This seminar provides a brief introduction to the basic commands of INTERCOM necessary to create and run jobs interactively. Attendance at the "Elementary NOS/BE Control Language" seminar is suggested.

Using Senator, Interactive Text Editor on the CYBER

The commands necessary to create, edit and run jobs while in Senator are covered in this seminar. Prerequisite: "Interactive Computing on the CYBER" seminar or some familiarity with using INTERCOM.

Getting Started with the TEMPLATE Graphics Subroutine Package

TEMPLATE is a sophisticated graphics subroutine package for FORTRAN users; it will be available to the user community early in the spring semester. TEMPLATE allows the construction of applications programs having elaborate graphics output. In addition to a host of primitive drawing routines, it provides high level functions for drawing line and bar graphs, pie charts, and three-dimensional data representations. This seminar will provide a brief overview of the facilities available in TEMPLATE, and the information necessary to run TEMPLATE on our system. Prerequisites: Knowledge of FORTRAN, and familiarity with NOS/BE.

Introduction to the DEC 20 and EDIT

This seminar is designed to give the user information on how to: access the DEC 20, create and modify files (using the EDIT text editing program), maintain (i.e., delete, rename, etc.) files, and use utility programs such as MAIL. Specific programming languages are not covered. No computing experience is necessary.

Word Processing Using MUSE

MUSE is a full-screen, cursor-controlled word processor which can be used to produce letters, memoranda and articles. This is a "hands on" seminar; participants will use MUSE to create sample documents during the sessions. Topics include the editing, formatting and printing of documents. Familiarity with DEC 20 file principles is assumed.

Text Formatting Using SCRIBE

SCRIBE is a text formatting program capable of producing essays, articles, reports, manuals, letters and theses. This seminar provides a general introduction to SCRIBE; several examples of SCRIBE input and output are discussed. Knowledge of a DEC 20 editor (such as EDIT, MUSE, etc.) is assumed.

Using NCP Calc, A Spreadsheet Calculator Program

A "spreadsheet calculator" is a program primarily intended for use in preparing financial spreadsheets, such as budgets, forecasts, manpower charts, or anything else that can be prepared on accounting pads. This seminar will consist of one session during which a demonstration of NCP Calc will occur and two "hands on" sessions. Prerequisite: Introductory DEC 20 seminar or some familiarity with the DEC 20.

CONSULTANT'S CORNER

This column presents answers to questions frequently asked of consultants.

Q: I understand that, with the DEC 20, I can specify alternative characters for suspending and continuing output being sent to my terminal. I do find CTRL/S and CTRL/Q a bit cumbersome to use. How do I declare other characters for this use?

A: You specify other characters for flow control by using the DEC 20 TERMINAL command, as follows:

@TERMINAL PAUSE CHARACTER x y

where x and y are the characters for halting and continuing output, respectively. X and y can be specified in various ways:

@TER PAUSE CHARACTER "h" "g"

would declare that the lower-case characters h and g would be used to halt and continue output, respectively.

@TER PAUSE CHARACTER CONTROL "h" CONTROL "g"

would declare that the characters CTRL/H and CTRL/G would be used to halt and continue output, respectively. In this case, it does not matter whether the characters h and g are entered as upper- or lower-case.

@TER PAUSE CHARACTER SPACE SPACE

would specify that the space bar would be used for halting and continuing output. (When you specify the same character for both uses, you get a toggle effect.)

Such a command can be included in your LOGIN.CMD file. Note that in order for this TERMINAL command to be effective, "TERMINAL PAUSE COMMAND" and "TERMINAL PAUSE END-OF-PAGE" must be in effect. These two commands are automatically in effect whenever you declare your terminal type as TELEVIDEO, FOX or any other CRT-type terminal.

Note also that CTRL/S can still be used to suspend output even though you have declared an alternative character for this use, but then CTRL/Q must be used to continue the output. Also, CTRL/Q would only be effective after a CTRL/S (unless you explicitly declared the character for continuing output as CTRL/Q).

MINUTES OF THE USERS' SUBCOMMITTEE MEETING OF 12/13/83

Members Present: T. Delph, T. Foley, J. Hall, J. Hansz, W. Hoffman, C. Kostem, G. Rayna

The first topic discussed was the possibility of replacing our current plotter on the CYBER with a publication quality plotter. It was pointed out that this task would need some input from members of the Subcommittee. T. Delph and C. Kostem agreed to participate with LUCC in defining our requirements for a plotter replacement. The first task will be to look at the plots produced by the Seiko color hardcopy device to determine if they meet the requirements of publication quality. This device was recently purchased by LUCC and will be available in the Packard Lab Users' Area (wherever that may be), along with 3 of the 4 recently purchased color graphics terminals. Another question relating to graphics was when the TEMPLATE package of graphics subroutines would be ready to be announced. T. Foley explained that there was still some work involved in setting up TEMPLATE and that it should be ready by the spring semester.

The next topic discussed was the continuing saga of the Packard Lab Users' Area. T. Delph explained the current status of the Users' Area and the fact that 12 CRTs, 4 graphics devices, and graphics terminals from Bethlehem Steel were being held up pending some resolution of this area. T. Foley pointed out that LUCC has had the CRTs since this summer and that the terminals have been sitting idle all this time. T. Delph stated that the major obstacle in determining the actual location of the Users' Area was the possible purchase of the Jewish Community Center and the IE department moving there instead of expanding into LUCC's current Users' Area. A major unanswered question was when this issue was to be resolved and no one really had any idea of when this would be happening based on prior experience.

Next on the agenda was the topic of software additions. T. Delph discussed an IMSL package to do finite element code that a number of members of the ME department were interested in obtaining. This specific package costs $1500 and it was felt that the faculty members requesting this software might have some research funds to finance at least part of this package. T. Delph will contact the faculty members to see if any research monies were available for its purchase. Another package brought up for discussion was a relational data base management system for the DEC 20 called Magnum. T. Foley explained that two faculty members were interested in using this package in their research work and also in some graduate courses. The educational cost of the package is $5000 and the industrial cost is $50,000. It was felt that the $5000 was a considerable percentage of the total software budget and that the faculty members should be contacted to see if a less expensive data base package could be found.

After this T. Foley explained LUCC's involvement in the Ben Franklin "Microcomputer Purchase Program". He explained that LUCC currently has a Zenith and an IBM PC. These micros were obtained to allow faculty, staff, and students a chance to become familiar with the two micros and their software before making a decision to purchase one. They will initially be placed in the faculty work room and then moved out to the Users' Area (again, wherever that may be). The machines are currently being used to test printers using the proposed software for the Ben Franklin Center. Testing started on 12/9/83 and some software problems have already been seen on the Zenith using Wordstar with dot-matrix printers. C. Kostem then asked when the Ben Franklin Center would be introducing more proposed micros to their list. T. Foley pointed out that the technical evaluation by Ben Franklin of the first two machines was still being written and that he was uncertain as to when any new machines would be introduced.

The last topic discussed was the distribution of the graphics terminals from Bethlehem Steel. T. Foley pointed out that the terminals along with their documentation have arrived and that a decision had to be made as to where to put them. Since the fate of the Packard Lab Users' Area was still unknown it was decided to install the 4 graphics terminals and printer at Drown with the possibility of moving two of them to the lower campus when space becomes available. It was pointed out that Bethlehem Steel would like to encourage usage by the Engineering School and that placing all of the terminals in Drown might hinder this type of usage. C. Kostem suggested placing two of the terminals in the Fritz Lab Annex site. T. Foley will look into this possibility. Jim Hall stated that someone from the Business School would be in charge of the documentation and helping people use the terminals at Drown. T. Foley explained the current limits on accounts at Bethlehem Steel and stated that anyone wishing to open an account should contact him.

T. Delph then invited any interested members of the Subcommittee to a demonstration of the Seiko graphics terminal and color hardcopy device in User Services.

OPERATIONAL STATISTICS

CYBER 730

	10/83	11/83
Time System Available During Scheduled Hours (Percentage)		
Batch	100.0	99.9
INTERCOM	100.0	99.9
Mean Time Between Interruptions (Hours)		
Batch	425.2	394.4
INTERCOM	425.2	98.6

DECSYSTEM-20

	10/83	11/83
Time System Available During Scheduled Hours (Percentage)	97.7	99.9
Mean Time Between Interruptions (Hours)	18.8	83.7

USAGE STATISTICS

CYBER 730

	10/83	11/83
BATCH -		
Jobs Processed	33,855	35,224
Central Site	6,646	7,068
INTERCOM -		
Terminal Sessions	32,234	23,543
Terminal Connect Hours	17,253	11,262
CPU Hours - Batch	96.0	139.2
- INTERCOM	121.3	89.2

DECSYSTEM-20

	10/83	11/83
Terminal Sessions	30,140	27,191
Terminal Connect Hours	12,110	10,653
CPU Hours - All Jobs	196.5	201.3