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# University Computer Center newsletter

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227 EXPERIMENTAL ENGINEERING  
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*****
* FEBRUARY 18 *
* HOLIDAY HOURS *
* Lauderdale: close 2AM Mon. 18th *
* open 6PM Mon. 18th *
* ExpEng : close 12Mn Sun. 17th *
* open 8AM Tue. 19th *
* West Bank : close 4PM Sat. 16th *
* open 8AM Tue. 19th *
*****

## CDC 6600 USAGE FOR JANUARY

Jobs run:	57,543
from ExpEng	29.1 %
from Lauderdale	11.0 %
from West Bank	21.6 %
from other remotes	33.5 %
for maintenance	4.8 %
Average times:	
on input queue	29.2 minutes
at control point	6.6 minutes
on output queue	5.9 minutes
printing	1.7 minutes

## CDC 6600 TO BE REPLACED

---by Thea D. Hodge

The CDC 6600 computer will be turned off permanently sometime in the break between Winter and Spring Quarters, 1974, according to present plans. If you are close to the end of a project which uses the 6600, you may want to consider giving that project a high priority at this time. Installation of the new computer, a CDC CYBER 74, will begin immediately after the 6600 is removed.

Our expected schedule is as follows:

- 1) We hope to test the SCOPE/MOMS operating system on the machine in the CDC plant in the metro area before it is disassembled for shipping.
- 2) The machine will be disassembled and moved to Lauderdale after the 6600 is removed.
- 3) As soon as possible, we will begin operations again, running under SCOPE/MOMS as we are now. We do not plan to change any software in the MOMS system for the next several months in order that any problems can be traced to the new hardware. Changing software and hardware is usually traumatic!

Nobody ever made a painless computer switch -- "if something can go wrong, it will." Meanwhile, plan ahead: finish projects now near completion before the end of Winter Quarter.

### More on KRONOS

For a few hours each weekend (after the CYBER 74 is installed and running) we will bring up KRONOS 2.1 and run under that system on a trial basis. We will not charge users during these hours. A systems person will be on duty and available to users during the trial hours. More about this when the time comes.

Short courses on the KRONOS 2.1 operating system will be given during February and March (see the course list elsewhere in this newsletter).

Documentation will be distributed at the courses or through the bookstores.

## ONE STEP FORWARD TWO STEPS BACK (OR, APOLOGIES FROM THE SYSTEMS GROUP)

---by L.A. Liddiard

The last major change we had planned to implement in the MOMS system was a 'routing' feature for files. The initial change for the user came on January 2 when the form of the BIN card was changed. Four major problems occurred:

- 1) All output files were routed to the BIN card site rather than the site where the job was read. This caused transient tape jobs submitted at ExpEng to have slow turnaround when the output file went to ExpEng (the BIN card site) rather than Lauderdale (the site read into), to be gathered up with the transient tape and input deck.
- 2) XMIT/SEND and LOCAL between the 6400 and 6600 failed.
- 3) STATUS commands from the high speed stations at ExpEng and West Bank no longer recognized jobs on the input queue and thus some jobs were submitted and run twice.
- 4) The new PP routine JANUS (to drive the local line image equipment at Lauderdale) hung the MOMS system several times a day. This caused the remote job entry stations extreme amounts of down time during the dead starts

required to 'unhang' the system.

Each of these problems has been overcome:

- 1) The BIN card does not now affect the destination of the output file.
- 2) XMIT/SEND again works, while the LOCAL control card is being removed since the ROUTE card replaces it.
- 3) The STATUS command performs correctly.
- 4) The new JANUS routine is working smoothly and has two additional features:
  - a) 029 punch card files can be read at Lauderdale,
  - b) Only one header page with SYSNOTES is printed, thus conserving paper.

#### The ROUTE control card

The ROUTE control will be implemented on February 17, 1974. The purpose of the ROUTE control card is to allow output files (that is, those files with special disposition codes or names, PR, PH, PB, P8) to be sent to a terminal other than the one where the job was entered into the system.

Calling sequence:

```
ROUTE({fname1=dc, fname2=dc, ..., fnameN=dc/S=site code, B=bin number})
```

*fname* Name of file to be 'ROUTED'

*dc* Disposition code to be assigned to the file:

PR means print  
 PH means punch coded  
 PB means punch binary  
 P8 means punch 80-column binary

*S=site code* Send files to site represented by the 2-character site code. Site codes are:

LD - Room 17 Lauderdale (central site)  
 EX - Room 131 ExpEng (high speed terminal)  
 WB - Room 90 Blegen Hall (high speed terminal)  
 HL - Room 125 Space Science Center (hybrid lab)  
 64 - Room 18 Lauderdale (CDC 6400)  
 DA - Room 18 Lauderdale (Data Speed 40)  
 DB - Room 140 ExpEng (Data Speed 40)  
 DC - Room 415 Coffey Hall (MAPS)  
 2Y - U of Minnesota Duluth Computer Center (CDC 3200)  
 21 - Room 415 Coffey Hall (MAPS)  
 23 - U of Minnesota Morris Computer Center  
 25 - U of Minnesota Duluth Computer Center (CDC 200UT)  
 4U - Lauderdale - 1004 Engineering Group  
 4V - Room 38 Electrical Engineering  
 4W - Room N640 Elliott Hall  
 4X - Room 167 Social Sciences  
 4Z - Room S191 Kolthoff Hall  
 40 - Room 24 North Hall  
 41 - Room 321 Mines & Metallurgy  
 44 - Room 69 Physics  
 46 - U of Minnesota Crookston  
 47 - Room 257A Biological Sciences  
 48 - Room 125G Classroom Office Building  
 49 - Lauderdale Users' Room (1004)

The default site code is LD if no S parameter is present, and EX if only the S with no following site code is present.

*B=bin number* Place files in bin *bin number*. The default bin number is 0 if no B parameter is present and 9999 if only the B parameter is present with no following equal.

#### EXAMPLE:

```
ROUTE(GEORGE=PR/S,B=438)
```

File GEORGE is to be a print file put out at Experimental Engineering in bin number 438.

## MIMIC ACCESS CHANGED

---by A. Michel

The simulation language MIMIC is now accessed by  
 FETCH(MIMIC)  
 MIMIC.

This change is effective immediately, although the old way (via the ACQUIRE control card) still works but will not after KRONOS 2.1 comes up full time in September.

For more information about MIMIC see the CDC MIMIC reference manual (publication # 44610400).

UCC PLOTTER FACILITY NOW AVAILABLE

---by M. Frisch

The Varian Statos 31 electrostatic plotter/printer has arrived and preliminary software for its use is now ready. The software is described in a writeup entitled "Plotter Routines for the Statos 31" available in Room 140 Experimental Engineering. The Statos 31 generates plots up to 14 inches wide using dots spaced 0.01 inch in X or Y directions. Complete plots can be made at speeds up to 2.2 inches/second which is comparable to a 1000 line/minute printer. Based on present costs of paper and computer operator time, plots will cost 10 cents/foot plus a 75 cent setup charge for the operator to mount the necessary magnetic tape. (This is a supply cost and is not covered by UCC-subsidized computer time.) The variable amount of central processor time needed to generate the plot is not included in this cost since it depends on the complexity of the plot.

The current plotting system is off-line; that is, a magnetic tape is generated by the software and the operator mounts the tape on the plotter's tape unit after which the plot can be made. The plotter will later be connected directly to the central computer so that a magnetic tape will no longer be needed. This change to on-line plotting is planned to coincide with the change to KRONOS 2.1 expected in September. Prices for plotting will probably change at this time since less operator time will be needed.

The software mentioned above is only temporary because its format will change when the on-line system is ready (although the software is similar to the present pen-and-ink/microfilm plotter routine package called PLOT PAC). The on-line system to be used on KRONOS 2.1 will read a PLOT PAC-generated file in addition to files generated by several other planned plotting and printing packages.

Further information on the new plotting system is available from Mike Frisch, 235d Experimental Engineering (612)373-5907.

MAGNETIC TAPE CAPACITY AND TRANSFER RATES

---by L.A. Liddiard

The following table and transfer rates are taken from the University of Colorado Computer Center newsletter "Bullet". The main purpose of this table is to show that selection of larger block sizes (up to the maximum 5120 characters) and of higher tape densities give better tape transfer rates and character capacity. A secondary use of the table is to allow estimates to be made of the total amount of magnetic tape required to write a given amount of data.

Record Size in characters	LO 200 BPI		HI 556 BPI		HY 800 BPI	
	Megachars	Records/2400'	Megachars	Records/2400'	Megachars	Records/2400'
Card Images (80 characters)	2.00	25,000	2.58	32,000	2.71	33,900
Line Printer Images (136 characters)	2.74	20,100	3.94	29,000	4.26	31,300
Packed Card Images (800 characters)	4.85	6,060	10.50	13,200	13.20	16,500
Coded Blocked (1280 characters)	5.16	4,030	12.10	9,440	15.70	12,300
Binary Blocked (5120 characters)	5.60	1,090	14.80	2,890	20.60	4,030

<u>TAPE</u>	<u>SEQUENTIAL ACCESS TIME</u>	<u>TRANSFER RATE</u> (thousand characters/second)
200 BPI/80 characters	5 milliseconds	10
800 BPI/5120 characters	5 milliseconds	107

EQUIPMENT MOVEMENTS ON THE WEST BANK

---With thanks due "The West Bank Buffer"

The Univac 1004 remote terminal and lister, the IBM 519 reproducer, an IBM 026 card punch, an IBM 026 card punch/interpreter, and a 3M microfilm reader have been moved into the West Bank Timesharing Lab, 167 Social Science Tower. The counter-sorter formerly in 54 B.A. Tower has been moved into the SSRFC, 25 Blegen Hall.

This equipment will be available during the time that the Timesharing Lab is open.

Also, the I/O bins formerly in Room 54 B.A. Tower have been moved into the I/O Room, 90 Blegen Hall.

## A REMINDER ABOUT IMSL

---by M. Frisch

The University Computer Center has available a package of computational routines obtained from International Mathematical and Statistical Libraries, Inc. (IMSL). It is an extensive collection of over 200 FORTRAN-callable subroutines in the following major areas:

Analysis of Experimental Design Data  
 Basic Statistics  
 Differential Equations; Quadrature; Differentiation  
 Eigenanalysis  
 Forecasting; Econometrics; Time Series  
 Generation and Testing of Random Numbers; Goodness of Fit  
 Interpolation, Approximation and Smoothing  
 Linear Algebraic Equations  
 Mathematical and Statistical Special Functions  
 Nonparametric Statistics  
 Regression Analysis  
 Utility Functions  
 Vector-Matrix Arithmetic  
 Zeros and Extrema

Further information on the IMSL package is given in the writeup entitled: "CDC 6600 library systems and FORTRAN library subprograms grouped according to VIM categories" which is available in Room 140 Experimental Engineering.

## DOCUMENTATION PRODUCED AT UCC

The University Computer Center produces a variety of documents for users. With this issue of the newsletter we are starting a monthly column to keep you up-to-date on documentation. In 1973, these were printed by UCC:

Writeups

Writeups undergo a continuing revision process. In future, new and revised writeups will be noted here.

Reference manuals

*Introduction to OMNITAB II Programming* - written by C.R. Byers and K.C. Schneider of the Department of Management Sciences.  
*MNF Reference Manual* - Appendices I,J,K added to the original manual; many small errors were corrected; IMPLICIT statement, TRACSET subroutine, relocatable MNF, timesharing MNF information added; indexed. Manual was made available in December, 1973 and can be purchased at the Engineering Bookstore for \$2.80.  
*System 2000 Users' Guide* - A guide to the use of System 2000, a data base management system. Available in the Engineering and Smith Bookstores for \$3.90.  
*Pocket Guide to UCC Facilities* - A brief pocket-sized guide to services available at UCC. (Pink cover; free from the Reference Room, 235a Experimental Engineering.)

## SHORT COURSES

These are the short courses being offered in February and March. Please note the change in the days for the SPSS and BMD short courses.

ROOM 18 MECHANICAL ENGINEERING  
1:00 - 3:00 PM

Introduction to SNOBOL  
 February 20,22,25  
 A. Mickel

XMIT/SEND  
 February 27, March 1  
 R. Williams

ROOM 18 MECHANICAL ENGINEERING  
3:00 - 5:00 PM

Introduction to SPSS  
 February 12,14,19,21  
 B. Center

Introduction to BMD  
 February 26,28  
 B. Center

Introduction to KRONOS 2.1 (6600)  
 February 20,22,25,27  
 R. Franta and others

Control Cards under KRONOS 2.1  
 March 1,4  
 T. Lanzatella

Permanent Files under KRONOS 2.1  
 March 6  
 K. Matthews

Tapes under KRONOS 2.1  
 March 8  
 R. Gulbranson

ROOM 315 MECHANICAL ENGINEERING  
1:15 - 3:00 PM

COBOL  
 February 4,6,8,11,13  
 S. Nachtsheim

SCOPE INDEXED SEQUENTIAL (SIS)  
 February 20,22  
 S. Nachtsheim

SYSTEM 2000  
 February 25,27, March 1,4,6,8  
 S. Nachtsheim

6600 OPERATING HOURS

	12:01AM	2AM	3AM	4AM	8AM	4PM	Midnight
Sunday							
Monday	.....						
Tuesday	.....						
Wednesday	.....						
Thursday	.....						
Friday	.....						
Saturday	.....						

||||| (Lauderdale, ExpEng, West Bank)  
 ||||| (Lauderdale, ExpEng)  
 ... (Lauderdale only)

MEDIUM SPEED REMOTE TERMINALS

(Hours will vary from site to site.)

Site	Supervisor
38 ElectE (East)	J. Guentzel/373-5404 M. Cook/373-3895
N640 EltH (East)	J. DeWitt/376-7377 N. DeWitt/376-7377
140 ExpEng(East)	R. Franta/376-3963
S191 KoltH(East)	T. Faulkner/376-7024 J. Abdallah/373-2348
321 MinMet(East)	C. Swanson/373-5475 R. Olfke/373-5680
69 Physics(East)	Bob Scarlett/373-0243 Dave Olson/376-7175
167 SocSci(West)	G. Lutgen/373-3608
415 CofH (StP)	D. Nelson/376-7003 T. Ehlen/376-7003
24 NoH (StP)	J. Colton/373-0990 D. Rignell/373-0990
257 BioSci(StP)	R. Comstock/373-0928 H. Meyer/373-3067
125G ClaOff(StP)	C. Bingham/373-0988
User Room (Laud)	Shift Sup./373-4940

TELEPHONES

373-4548	Account Clerk, 6600
373-7753	Account Clerk, 6400
373-4596	ExpEng I/O
376-7584	Field Engineering
373-2521	Keypunch supervisor
373-4940	Lauderdale Shift Supervisor
373-4995	Microfilm Operator (leave a message)
373-4876	Operations (R. Folden)
373-4994	Recorded Message
373-7744	Reference Librarian
376-3963	Remote Job Entry Coordinator
373-4995	Tape Librarian (leave a message)
373-4360	UCC Office
373-4599	User Services (T. Hodge)
373-4921	Users' Room (Lauderdale)
373-3608	West Bank I/O

KEYPUNCH LOCATIONS

(number of keypunches is in parentheses)

East Bank	St. Paul	West Bank	Lauderdale
38 ElectE (1)	257 BioSci (1)	90 BlegH (1)	Users' Room (4)*
N640 EltH (1)	125G ClaOff (1)	167 SocSci (1)	
130 ExpEng (2)	415 CofH (1)		
131 ExpEng (1)	384 HortS (1)		
208 ExpEng (8)*			
223 ExpEng (4)			
S191 KoltH (1)			
321 MinMet (1)			

\*includes 1 interpreting card punch.

CONSULTING SCHEDULE

EAST BANK	GENERAL COMPUTING	STATISTICAL COMPUTING
140 ExpEng	Mon- 9AM-5PM Thurs: 7PM-9PM Fri : 9AM-5PM Sat :12 N-2PM Sun : 7PM-9PM	
205 ExpEng		Mon : 1:00PM- 3:00PM Tues : 8:30AM-12:30PM Thurs: 11:00AM- 3:00PM
N640 EltH		Mon : 11:00AM- 2:00PM Wed : 9:00AM-12:00 N Fri : 11:00AM- 2:00PM
ST. PAUL	GENERAL COMPUTING	STATISTICAL COMPUTING
125C ClaOff	Mon : 8:00AM- 6:00PM Tues : 8:30AM-12:00 N 2:00PM- 6:00PM Wed : 8:00AM- 8:00PM Thurs: 8:30AM-11:00AM 2:00PM- 6:00PM Fri : 8:00AM- 6:00PM Sat : 9:00AM-12:00 N	Mon : 1:00PM- 5:00PM Tues : 8:30AM- 2:00PM Wed : 1:00PM- 3:00PM 3:30PM- 5:30PM Thurs: 8:30AM- 2:00PM
WEST BANK	GENERAL COMPUTING	STATISTICAL COMPUTING
25 BlegH*	Mon-Fri: 9AM-12 N 1PM- 4PM	Mon-Fri: 9AM-12N 1PM- 4PM
167 SocSci		Mon : 9:00AM-12:30PM Wed : 2:30PM- 5:30PM Thurs: 9:00AM-12:30PM
LAUDERDALE	GENERAL COMPUTING	STATISTICAL COMPUTING
	Mon- Thurs: 1:30PM-3:30PM 7:30PM-9:30PM Fri : 1:30PM-3:30PM	Thurs: 1:30PM-3:30PM

\*Social science computing only.

REFERENCE MANUALS

[Copies are available for reference in Room 140 ExpEng, Lauderdale, West Bank Computer Center, and at the medium speed terminal sites.]

	CDC publication #
APEX	86615300B
ALGOL Version 2	60306100D
COBOL version 3	60253000E
COMPASS Version 2	60279900D
FORTRAN EXTENDED Version 3	60329100D
FTN DEBUG Users' Guide	60329400C
FORTRAN (RUN/FUN) Version 2.3	60174900F
MIMIC Simulation Language	44610400E
MODIFY	60281700D
PERT/TIME	60133600C
SCOPE Version 3.2	60189400L
SIMSCRIPT Version 2	60178300C
SIMULA	60234800E
SORT/MERGE Version 3	60252600D
6000/7000 Computer Systems	60100000W
BMD & BMDX: Biomedical Computer Programs	
IMSL Library Catalog	
MNF Reference Manual	
OMNITAB II Programmers Reference Manual	
SPSS: Statistical Package for the Social Sciences	
UMST: U of Minnesota Statistical Programs	
UCC Users' Reference Manual	

## BRIEF NOTES

*To All Microfilm Users...*The Canon "800" microfilm duplicator which has been at Lauderdale was returned to the 3M Company. The machine was only on loan to the University and UCC has been unable to justify its lease or purchase.

*Paper and Card Recycling...*While it is not possible for the Computer Center to pick up paper and cards on a door-to-door basis, we will be glad to serve as a 'recycling' center for your scrap paper and cards. Bring them to the high-speed terminal sites or to Lauderdale. Cards should be in boxes and paper should be either boxed or baled.

If you have loose cards and paper bring them to one of the keypunch rooms or the user rooms and deposit them in the appropriate receptacles. Receptacles are large white barrels for the paper and cardboard boxes marked 'cards only' for cards. These barrels and boxes should be kept free of debris and waste matter. If cigarette butts, chewing gum, broken glass, rubber bands, your discarded lunch, etc. are placed therein, all the material will be discarded, even the reusable paper. The pickup service people do not sort out the garbage.

*Input/Output...*Tape storage equipment available! A good supply of TAB unit spacefinder tape storage racks available for shipping costs. Supply includes 17 and 24 tape shelves and single and double-sided standards. CONTACT: Walter Carlson, 103 Space Science Center (373-5492).

*UCC Library moved...*The UCC Library, formerly located in Room 229 ExpEng is now a "Reference Room" in 235A ExpEng.

*Another Price Change...*On March 1, 1974 the cost for printing on microfilm will be changed. The new charge will be 2/3 cent per frame rather than 1/3 cent per frame as it is now.

*System Note Archives...*No new SYSNOTES appeared in January.

*And Now There's a Ribbon Shortage...*Due to delayed shipments and shortages of computer ribbons, the UCC Operations Staff has been directed to use ribbons as long as possible. This means that the printed output will be readable but at times may appear very faded. If anyone requires a darker printing he may request that his job be delayed until after a new ribbon has been put on the appropriate printer.

RETURN TO:  
UNIVERSITY COMPUTER CENTER  
227 EXPERIMENTAL ENGINEERING  
UNIVERSITY OF MINNESOTA  
MINNEAPOLIS, MN 55455

University Archives  
11 WaLib  
East Bank