

University Computer Center newsletter

Director: Peter C. Patton

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CONTENTS

KRONOS Is Up and Running!	p. 1	CYBER 74/KRONOS 2.1 Charges (\$\$)	p. 3
MIRJE: Interactive Computing On The CYBER 74	p. 2	The Suggestion Box (and an error corrected)	p. 4
Changes to MNF (introducing 'BATCHER')	p. 2	News from SYSTEM NOTES (new version of BASIC)	p. 4
New Version of BMD Series	p. 2	KRONOS 2.1 "Instant" (all the news)	p. 5,6
Chronology of Changes in 1974	p. 3	Fall Quarter Short Courses	p. 8

KRONOS IS UP & RUNNING

On September 1, 1974, the University Computer Center activated the KRONOS 2.1 operating system full time on the CYBER 74. Trial periods have been available since June for testing programs and for evaluating the new operating system. Hopefully, everyone using the CYBER 74 took advantage of these free trial periods to test programs and to become familiar with the new system. Realistically, the computer center staff realizes that this did not happen and that some people will be coming back from vacation or leave of absence to find that their jobs no longer work on the computer. The following is a brief list of information previously published and (when necessary) a referral to other sources of information.

References -- The standard reference for KRONOS is the CDC publication KRONOS 2.1 Reference Manual (#60407000B). Copies of this manual are now available in all the manual racks.

-- UCC has published conversion guides to aid in explaining KRONOS differences. These guides describe compilers, control cards, tapes, and permanent files. Tape use and the permanent file scheme are drastically changed from the MOMS practices. These guides are available from the consultants in ExpEng and at Lauderdale, or call 373-7744.

-- A KRONOS "Instant" (2 pages) describing changes as they occur is also being published and will be updated as necessary until the system is running smoothly. This "Instant" can be obtained from the consultant desks. A reproduction of the current "Instant" also appears on pages 5 and 6 of this newsletter.

-- A conversion guide for COBOL has been published but is premature since COBOL Version 3 has been carried over to KRONOS. COBOL Version 4 will be implemented on the CYBER 74 later this year.

-- FORTTRAN EXTENDED Version 3 has also been carried over from MOMS to KRONOS. Version 4 will be made available later this year and a conversion guide will be available at that time.

Charges -- Details of the new charging scheme appear on page 3 of this newsletter and can also be obtained by calling 373-4548.

Account numbers -- MOMS account numbers may not be used. Call 373-4548 for the new KRONOS account numbers.

Permanent Files -- Permanent files using the PACK control cards are no longer available. Any PACK files which remained on August 31st were converted and now exist as KRONOS permanent files. Any problems with these should be referred to Kevin Matthews at 373-4572.

Consulting -- Consultants are available at these hours from September 1 through September 15:

Experimental Engineering: 10AM-12Noon; 1PM-3PM; 4PM-5PM; 7PM-9PM (Monday through Friday)

Lauderdale : 10:30AM-12:30PM; 1:30PM-3:30PM; 7:30PM-9:30PM (Monday through Friday)

-- Consultants are available at these hours from September 16 through September 30:

Experimental Engineering: 10AM-12Noon; 1PM-3PM (Monday through Friday)

Lauderdale : 1:30PM-3:30PM; 7:30PM-9:30PM (Monday through Friday)

-- Statistical consulting will be available at these hours from September 1 through September 15:

Experimental Engineering: 9AM-12Noon; 1PM-4PM (Monday and Thursday)

1PM-4PM (Tuesday, Wednesday, Friday)

MNF & MNF Student Batch -- A brief description of changes in MNF appears on page 2 of this newsletter. MNF student batch is now called BATCHER.

SEMINAR FOR NEW FACULTY AND STUDENTS

AN INTRODUCTORY SEMINAR WILL BE GIVEN IN SEPTEMBER FOR NEW FACULTY MEMBERS AND GRADUATE STUDENTS WHO EXPECT TO USE THE CYBER 74 COMPUTER SYSTEM. INFORMATION ON COMPUTER CENTER HARDWARE, SOFTWARE, DOCUMENTATION, CONSULTING PROCEDURES, INSTRUCTIONAL AND TRAINING PROGRAMS, CHARGES, AND OTHER BASIC SERVICES WILL BE PRESENTED BY VARIOUS SPEAKERS. ALTHOUGH THIS SEMINAR IS INTENDED FOR NEW USERS, PRESENT USERS WILL BE WELCOMED.

MONDAY, SEPTEMBER 30

1:00 - 4:00 PM

ROOM B6 BOTANY BUILDING

MINNESOTA INTERACTIVE REMOTE JOB ENTRY (KNOWN ELSEWHERE AS TIMESHARING)

--by T.D. Hodge

The University Computer Center announces the addition of MIRJE (Minnesota Interactive Remote Job Entry) to the services which UCC provides on the CYBER 74. We expect to make MIRJE available for testing to selected users with teletypes or CRTs on September 9. If these tests are satisfactory, full scale interactive operation will begin about September 16.

Since there are at present a limited number of ports, these have been assigned to former University users of MERITSS who could not be accommodated on the MECC/MERITSS system. If you are supposed to operate under MIRJE, you will be informed by Richard Franta or Thea Hodge before September 16.

After September 16, then, the CYBER 74 will accept interactive (including Interactive BATCH or I-Batch) jobs on the MIRJE service, and queued jobs in a batch stream under what we are presently calling Batch service. These Batch jobs can be input as regular punched card decks or via the command SUBMIT, from an interactive low speed terminal. The program library will include the full current MERITSS library. (Note, however, that the Timesharing Interactive Computer Laboratories will remain on MERITSS as will certain other users. If you have any questions about where you belong, call Richard Franta at 376-3963 or Thea Hodge at 373-4599.)

To use both MIRJE and Batch services on the CYBER 74 you will need two (2) separate account numbers. If you are already using the CYBER 74, then you already have an account number for Batch services. Application forms for Batch account numbers are available from the Account Clerk, 235c ExpEng (373-4548). CYBER 74 charges will be figured on the same basis for both types of access. For a complete outline and explanation of rates, see the article on page 3 of this newsletter. Users needing grants of University money for CP time and PRU's transferred should apply to Mr. James Foster at 373-5757. These requests for a grant are reviewed and approved by the Computer Grants Committee. Grants for both MIRJE and Batch services may be requested; however, MIRJE service will receive University support normally only for educational projects.

Since MIRJE and Batch run under the same operating system, KRONOS 2.1, consulting and documentation are the same for both. See page 1 for consulting information. Documentation is available from the librarian in 235a ExpEng (373-7744).

If you have questions about interactive computing on the CYBER 74, call Mr. Franta or Mrs. Hodge.

MNF UNDER KRONOS 2.1 STUDENT BATCH NOW 'BATCHER'

--by L.A. Liddiard

Three major changes have been made to MNF. These are: 1) relocatable binary, 2) Fortran Extended as the normal calling sequence in standard MNF, and 3) single submission of student jobs under BATCHER (the MNF student Batch compiler formerly called BATCH).

Relocatable binary allows MNF to produce relocatable libraries and multiple overlays that were not possible under previous versions. Producing relocatable code does have the disadvantages of losing certain global error messages that MNF previously produced and of requiring slightly more mass storage transfers and processor time.

Since the standard University of Minnesota libraries have the Fortran Extended (FTN) calling sequence under KRONOS 2.1, MNF has also been changed so that its standard options now produce this calling sequence. Thus, MNF. or MNF(C=FTN) will get the FTN calling sequence for libraries while MNF(C=RUN) will generate the previous RUN-type calling sequence.

For students, the following example job will allow single submission to the BATCHER compiler:

```
JOB,T1,CM1000.
BATCHER.
.. (double period control card)
[Fortran source deck]
../ (period, period, slash in columns 1, 2, 3)
[data, if any]
```

There must be a 6-7-8-9 multiple punched card following these.

On September 29, 1974, two additional MNF control card options (the G and J options) will be implemented. Both the FTN and RUN relocatable-producing compilers had a G option to produce a load-and-go execution without source listing; MNF will also allow that parameter. In order to save paper, MNF will put only two blank lines between subroutines rather than the previous page eject. The J parameter on the MNF control card will produce the previous page eject between subroutines.

NEW VERSION OF BMD SERIES

--by S.P. Yen

A new version of the BMD series from UCLA has been received and converted for the CYBER 74. Initial testing has been completed on all programs except 09V, 14S, and parts of 03T.

Users should be aware that the new version is keyed to the BMD Reference Manual dated January 1, 1973 (blue cover) and is a combination of the previous BMD and BMDX programs with these modifications: 1) the BMDX programs are re-numbered into the BMD series, 2) programs 3M, 6M, and 01T are omitted since they have been superseded by other programs, 3) the set of programs 04S to 08S have been omitted.

The field length tables for this new version will be available in 140 ExpEng and the actual implementation date will be announced in SYSNOTES.

CHRONOLOGY OF CHANGES AT UCC IN 1974

--by L.A. Liddiard

DATE	EVENT	CHANGES SEEN BY USERS
February	Last 6603 disk was turned off.	40% less average PP time charged.
March 25	CYBER 74-16 was installed.	Average input queue wait halved. 5% faster CP times.
May - August	KRONOS 2.1 checkout period.	Users given free time & supplies for changeover.
August	All 607 tape units now have wrapped heads. Increment FCO installed.	Better tape error diagnostics and recovery. 5% faster average CP times.
September 1	KRONOS 2.1 implemented as the normal system.	Additional services to users.
September 9	First checkout of the MIRJE ports.	Interactive services to users.
September 16	Running of 32 MIRJE ports.	
October 15	Addition of 4 PP's and 6 channels.	Alleviation of PP saturation.

The UCC thanks you for your patience and understanding during the past months as new hardware and software have sometimes made for confusion and difficulty in running user jobs. Until the extra PP's are installed, there will still be some limitation in the total service due to PP saturation.

UCC had not expected such a full year of changes. Originally, only the March CYBER 74 hardware installation followed by a changeover to the KRONOS 2.1 software in September were planned. Due to the late selection of the statewide instructional timesharing system by the MECC board, the new MECC system could not be ready for the current school year. UCC offered to expand the MERITSS system to 256 ports for one year and to do a limited amount of research and CAI timesharing on the CYBER 74. MECC accepted this offer in June. Therefore, very short notice was given to the Control Data Corporation to supply the additional equipment. CDC made an extreme effort to obtain the equipment by September, but, due to a general parts and supply problem, will not be able to supply the extra PP's until October.

UCC notes that changes in University computing systems must be expected from time to time. Universities that have not changed have either dropped their own computing centers or are in a saturated state. The 40% reduction in PP mass storage transfer time and 10% faster CP times on the CYBER 74 have meant a 22% reduction in the average bill for the same job run on the previous system. It is expected that the KRONOS 2.1 system's billing will show another 4% reduction in the average user's bill. With these new systems and hardware, have also come additional capabilities and services at lower cost for the user. UCC is sorry for any inconvenience that we have caused any user and expect that each user will be able to do more work with the new system.

CYBER 74/KRONOS 2.1 CHARGES FOR UNIVERSITY OF MINNESOTA USERS

--by L.A. Liddiard & J.K. Foster

*Central Processor and Memory CP in seconds	\$ 9.00/minute 15¢/second
Bulk Input/Output and Storage	
Mass Storage:	
*TRANSFER: (640 characters/PRU)	10¢/KPR**
On-line	
STORAGE : Direct Access (136,960 characters/Half-track)	1.92¢ /hour (secured) 0.64¢ /hour (unsecured)
STORAGE : Indirect Access (640 characters/PRU)	0.0090¢/hour (secured) 0.0030¢/hour (unsecured)
Private Mountable Pack	
MOUNT : A job requesting a mountable pack file	\$ 2.00/mount
RENTAL : Capacity of 107M characters	25.00/month plus \$5.00/quarter
Magnetic Tape:	
*TRANSFER: (up to 5120 characters/PRU)	\$ 1.50/KPR
MOUNT : Stored tape at Lauderdale site	10¢/mount (labeled) 20¢/mount (unlabeled)
MOUNT : Transient tape	50¢/mount
STORAGE : Shelf storage at Lauderdale site	\$ 2.00/quarter/tape
Unit Record Input/Output	
Line printer pages	3¢/page
Punched cards	\$ 3.00/1000 cards
Microfilm	2/3¢ per frame plus 20¢/setup
Plotter paper: STATOS 31	10¢/foot plus 75¢/setup
Connect Time for Dialed Ports	
Synchronous(2000 or 2400 baud lines)	\$ 3.50/connect hour
Asynchronous(110 or 300 baud lines)	25¢/connect hour

*University grants of money may only be used for charges prefixed with a *; all other charges must be paid through a University budget or other real monies.

**KPR (Kilo Primary Record) is 1000 PRU's (Physical Record Units).

THE SUGGESTION BOX

[Questions and suggestions printed here may be re-worded for clarity. Unsigned cards are ignored.]

- Q/S *Would it be possible for the Fortran STOP routine to print the location of the STOP statement in the dayfile? For example, STOP nnnnn at address 1111111. This would be very helpful in working with long programs written by other people.*
- A We will consider your suggestion for future MNF changes. Currently, we suggest that it is good programming practice to make sure that there is a unique number after the STOP if there is more than one STOP statement in a Fortran program. For long programs written by other programmers, the cross reference map supplied by MNF will locate each occurrence of a STOP statement and allow checking for unique numbered STOP statements.
(L. Liddiard)
- Q/S *Regarding the tri-colored paper in the Lauderdale 1004: 1) its nice for reading left right; terrible for reading columns, 2) the size is wrong when trying to set up form output such as address labels. Also, the 8 lines per inch print out does not conform to the 6 lines per inch used on the high-speed printers and other machines, thus making it difficult to use the 1004 for trial runs. Its great for saving paper but on the whole I don't like it. The green re-cycled paper was better.*
- A Your comments are extremely helpful to us in evaluating paper replacement. The tri-color paper is still on trial. We will welcome more comments on this paper and also on the use of 8 lines/inch print out.
(A. Franck)
- Q/S *Why not rewrite the *number of copies option on the COPY routines for multiple copies so that the to-be-copied file is not rewound to make the multiple copies. Backspace the to-be-copied file or use a scratch file to make the multiple copies. It would then be possible to use this option to make multiple copies of the later files on a tape or disk multi-file file. This would be a convenience for the user.*
- A We do not plan to implement this suggestion for the following reasons: 1) most users desire the copy to be of an entire file. By having only the two files (original and copied) a smaller field length can be used by the COPY routines. (Each file simultaneously in existence requires a 1000 word buffer and a file FET; your suggestion would require three files.) 2) A user needing multiple copies of part of a file can easily put the proper control card in his deck to copy that part of the file to a temporary file and then use the normal copy routines. 3) Backspacing large files tends to be costly.
(L. Liddiard)
- Q/S *On June 11, from before 11:18:46 until after 13:34:41, a job named LM2LDC7 was at control point 6. By what conceivable stretch of the wildest imagination could allowing one job to tie up a control point for 2 1/2 hours be considered a "fair" or "efficient" allocation of resources? Evidently, as a result of this job, the input queue backed up to about 30 jobs and turnaround for a particular job (my job, hence the complaint) increased from 1/2 hour to over 2 hours.*
- A Because jobs rolled out by the operator under the MOMS system were not rolled in properly, operators were instructed not to roll out user jobs. This bug was not corrected by the systems staff because the KRONOS 2.1 operating system automatically and correctly rolls out this type of job. On this specific day and during the time that you mentioned, only jobs requiring more than 110000 CM were slowed down since 900 jobs (39% of the day's total) were run during that period. Most of the backlog on the input queue was due to the large number of jobs being read in during that 2 1/2 hour stretch. We knew that KRONOS would help this particular problem and that gave one more reason for the change.
(L. Liddiard)

AN ERROR NEEDS CORRECTING

On page 6 of the August UCC newsletter, an editorial error permitted the printing of the word "LOSET" rather than the correct "LDSET" in an answer to a Suggestion Box query. The LDSET control card, described on pages 5-58 through 5-62 of the KRONOS 2.1 Reference Manual, allows the user more flexibility and control in the loading of his programs.

NEWS FROM SYSTEM NOTES

A new version of the BASIC interpreter is available under KRONOS, using the following control cards:
FETCH,BASIC.
BASIC.

Some of the additional features of this version of BASIC are:

- 1) the multiple replacement "LET" statement.
- 2) the "ON" statement.
- 3) the "TAB" statement.
- 4) the ability to read data from a file (from TAPE2 by the statement "INPUT +2:<LIST>").
- 5) string variables.

KRONOS 2.1 "INSTANT" CONVERSION GUIDE

EDITION 3 -- SEPTEMBER 1, 1974*

WHAT IS KRONOS?

On September 1, 1974, UCC activated the KRONOS 2.1 operating system full time on the CDC CYBER 74 machine. KRONOS 2.1 is the program which schedules your jobs through the machine, calls up the various language processors (compilers, etc.) and other packages that you request, and records usage statistics and accounting information. KRONOS is Control Data's modern operating system for its 6000 series and CYBER 70 series machines. It provides timesharing capabilities and possesses user-oriented features such as better security (especially for tapes), an easy-to-use permanent file scheme, and a control language (KCL).

REASONS FOR CHANGE

UCC acquired the CDC 6600 in 1966. The first operating systems run on the machine were Chippewa (COS) and SCOPE 2. After the advent of SCOPE 3, a hybrid system was developed at the University which combined aspects of SCOPE 3.1.6, MACE (a CDC precursor to KRONOS), and some locally customized features. This MOMS 1.0 system had been in use for more than 4 years but had become unwieldy and undocumented. With the acquisition of the CYBER 74 (an improved version of the 6600) in 1974, a change to a new operating system seemed warranted because CDC is abandoning SCOPE. KRONOS permits us to run jobs more efficiently, and to use more recent versions of compilers which conform to accepted standards. Also, future CDC systems will be based on KRONOS concepts.

REFERENCES

The standard reference for KRONOS 2.1 is the CDC publication KRONOS 2.1 Reference Manual (publication #60407000B).

In addition, the systems staff has prepared 7 conversion guides:

- #1 MOMS to KRONOS Control Card Conversion Guide (February, 1974)
- #2 Abridged KRONOS Control Cards Description (March, 1974)
- #3 MOMS to KRONOS Compiler Conversion Guide (February, 1974)
- #4 MOMS to KRONOS Tape Users' Conversion Guide (February, 1974)
- #5 Permanent Files Under KRONOS 2.1 (February, 1974)
- #6 KRONOS 2.1 COBOL Conversion Guide (February, 1974)
- #7 KRONOS 2.1 Fortran Extended Conversion Guide (November, 1974) (not yet available)

NOTE: Information in this "INSTANT" may correct certain portions of the first 6 conversion guides since they were produced at an earlier date. Conversion Guide #7 is planned but not yet published.

RUNNING JOBS UNDER KRONOS

The basic job deck setup for KRONOS is:

Job card	:	name7,Tnnnn,CMmmmmmm.	comments	0 < nnnn ≤ 4096 decimal; mmmmmm < 150000 octal
Bin card	:	BIN,ss,bbbb.		ss=site code; bbbb=bin number
Account card	:	ACCOUNT,usernum,DUMMYPW.		usernum=7 character KRONOS user number; DUMMYPW=password that all users begin with.

Other commands :

A RESOURC card specifies the number of magnetic tapes if > 1 and/or user owned packs.

User ECS will be provided with a control card of the form ECS,mmm.

Record separator : 7_8_9

[user program and (if appropriate) user data]

End of Information : $6_7_8_9$

Loading binary decks from file INPUT requires changing the two trailing 7-8-9 record separators to one 6-7-9 KRONOS file separator. Binary decks and 6-7-9 cards, of course, cannot be used at medium speed remote terminals. (See conversion tip #12.)

The usernum on the ACCOUNT card can be obtained from your class instructor or your project director. If that fails, see the consultant at Lauderdale or ExpEng or call 373-4548 during regular working hours. Be sure to have your old account number with you.

The password parameter on the ACCOUNT card specifies a password that some users can immediately change if someone else is suspected of running jobs under your user number.

IF YOU SUSPECT A SYSTEM BUG IN ANY PACKAGE, FILL OUT AN ORANGE PROGRAM TROUBLE REPORT (PTR) CARD SO THAT A SYSTEMS PERSON WILL BE NOTIFIED TO FIX THE PROBLEM FOR YOURSELF AND THE NEXT USER. THANKS !

*A REVISED VERSION WILL BE ISSUED WHENEVER NEW INFORMATION IS AVAILABLE.

CONVERSION TIPS, OTHER CHANGES, AND DIFFERENCES BETWEEN MOMS AND KRONOS

1. Most Language Processors (compilers, etc.) have been converted. The major exception is that RUN23 replaces both FUN and RUN. (See conversion guide #3.)
2. The subroutine library developed at the UofM uses the FTN Fortran compiler calling sequence. MNF uses the FTN subroutine library. A copy of MOMS SYSLIB was brought to KRONOS for RUN23 but will be unsupported. (See conversion guide #3.) The MNF C=RUN parameter gets the RUN/FUN calling sequence.
3. Permanent files using the PACK control cards on MOMS are not available. Pack files which still remained on August 31 were automatically converted to KRONOS permanent files. Call K. Matthews (373-4572) if you have any problems. (See conversion guide #5.)
4. The structures used on MOMS and KRONOS tapes are considerably different. Even though MOMS tapes can be read under KRONOS, it is suggested that you use KRONOS format when writing tapes. (See conversion guide #4.)
5. Many control cards are different under KRONOS. For example, CBR, CBF, CCR, and CCF do not have the options that were available under MOMS. (See conversion guides #1 and #2.) For example: to do 10 copies of file X to file Y (e.g., CBF(X,Y,1,*10) under MOMS) one must use KCL (KRONOS Control Language) such as the following:


```

      SET(R1=10)
      REWIND(X)
      COPYBF(X,Y)
      SET(R1=R1-1)
      IF(R1>0)GOTO,REWIND.
      
```
6. Version 3 of FTN and COBOL were brought over to KRONOS instead of using the untested and possibly unstable Version 4 equivalents. Version 4 of each will be made available later if they prove reliable. FTN 4 will have minor differences over FTN 3. COBOL 4 will be significantly different from COBOL 3. SORTMRG Version 4 is now running but requires use of the 6C parameter to act as Version 3. (See conversion guide #6.) Conversion guide #7 will be available when the change is made to FTN.
7. The applications packages UMST, GPM, S2000, PLIFOR, PLICOB, SIMPLX, BLOCK, KWIC, UMTIMER, PERT66, TXTEDT, TRIAL, GPR31 (Statos 31), and the KRONOS versions of the subprograms PLOTAC, RESTFL, QLENTH, CMXCMBN, CMXMOV, CMXMPY, CMXPLY1, MXTRP1, RVECT, NONLIN, CMXLNEQ, CMXLNEF, DMXLNEQ, MXLNEQ, MXLNEF, FREQDSN, PROCER, PROCERC, and PRNPLOT are not available on KRONOS at the time of this writing.
8. Most packages available via the MOMS ACQUIRE card are accessed with the FETCH command under KRONOS.
9. Permanent files may be automatically backed up on tape at the user's option and at a cost to you. These are called secured files. Back up tapes are made at the end of each working day; therefore, changes that you make to these permanent files on the same day of, and before a system "crash" may not have been backed up. All of the files in a user's CATALOG may be backed up with the command DUMPPF and restored with the command LOADPF. The command DUMPPF. puts all unsecured files onto a disk file called DUMP. File DUMP may then be copied to tape. The command LOADPF. restores a catalog's unsecured files from a file called DUMP after you've copied your backup tape to a disk file DUMP.
10. When deciding whether to create a KRONOS indirect or direct access permanent file, remember that 5 record blocks < 300 sectors < 6 record blocks. (See conversion guide #5.) CATALOGing a file yields its length in octal Central Memory words.
11. MODIFY OPLs will work as they presently exist.
12. A ⁷8₉17 card (⁷8₉ in Col. 1 and 17 in Cols. 2 and 3) may be used as a substitute for a KRONOS ⁶7₉ card at medium speed remote stations and, in the future, at high speed stations as well.
13. Jobs printed at Lauderdale may suffer auto page eject gaps in the output. Printing a Q carriage control in Col. 1 disables this for your job.
14. MNF student batch job setup is as follows:


```

      name7,T1,CM1000.
      BATCHER.
      [standard .. (double period) card and student program]
      6789 end-of-information
      
```
15. The date under KRONOS is returned as yy/mm/dd. Under MOMS it was mm/dd/yy. This will affect MOMS compilers (FTN3,COBOL3) but not KRONOS compilers.
16. The MOMS GROVEL control card facilities are available under the KRONOS LIBEDIT card using an overlay option. GROVEL will not be converted to KRONOS. GROVELed files cannot be used yet under KRONOS.
17. Flag cards under KRONOS (used for literal input of punched cards) consist of 5-7-9 in Col. 1 and 4-5-6-7-8-9 in Col. 2 to enable and a 5-7-9 in Col. 1 to disable. This may not yet affect ExpEng or West Bank.
18. FORTRAN calls to BUFF used for reading and writing tapes under MOMS must be changed to BUFFER IN.
19. Writing tapes at hyper density and KRONOS Internal format (D=HY,F=I) is most efficient and economical. All 8 tape drives read/write at HY.
20. UTALGOL and UMRPG are not yet available (at the time of this writing).
21. The CATALOG control card has been changed so that the D parameter (disable page ejects) is default.
22. Under II.D (Fortran compilers) in the Compiler Conversion Guide (#3) BT means Block Type and RT means Record Type. Z, C, S, U, and F are defined on page 6 of the COBOL Conversion Guide (#6).
23. XMIT and SEND are not yet available.
24. Writing KRONOS labelled tapes is not as easy as writing tapes under MOMS. Essentially, a BLANK card sets up a label to be written with a subsequent LABEL card using the W parameter. Later uses of the tape for reading and writing do not require a BLANK card or the W parameter on the LABEL card. (See Guide #4.)

CYBER 74 OPERATING HOURS

12:01AM 2AM 3AM 4AM 8AM 4PM Midnight

Sunday						
Monday					
Tuesday					
Wednesday					
Thursday					
Friday					
Saturday					

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

**West Bank will close at 10 PM during the summer and return to these hours at the beginning of Fall Quarter.

REFERENCE MANUALS

Copies are available for reference in 140 ExpEng, Lauderdale Users' Room, West Bank Computer Center, all the medium speed terminal sites, and in the UCC Reference Room, 235a ExpEng.]

ALGOL Version 3	60329000D
APL*CYBER	19980400B
BASIC	19980300A
COBOL Version 3	60253000E
COMPASS Version 3	60360900D
FORTRAN 2.3 (RUN23)	60174900F
FTN Version 3	60329100D
FTN DEBUG Users' Guide	60329400B
KRONOS 2.1 Reference Manual	60407000B
MODIFY	60281700E
SIMSCRIPT Version 3	60358500D
SORT/MERGE Version 4	60343900F
T/S FORTRAN (TSRUN)	60408600B
T/S USERS' Reference	60407600B
TEXT EDITOR (EDIT)	60408200A
UPDATE	60342500D

- BMD reference manual (1973)
- MSL Library 3, Edition 3
- MNF reference manual
- DMNITAB II Programmers' reference
- DMNITAB II Introduction
- SPSS: Statistical Package for the Social Sciences
- SPSS Version 5.5 Implementation
- SYSTEM 2000 Reference manual
- SYSTEM 2000 Users' Guide
- UCC Users' Manual, Part 1
- UMST Computer Programs Reference manual

MEDIUM SPEED REMOTE TERMINAL SITES

(Hours will vary from site to site.)

site	supervisor
38 ElectE (East Bank)	J. Guentzel/373-5404 M. Cook/373-3895
N640 EltH (East Bank)	J. DeWitt/376-7377 N. DeWitt/376-7377
S191 KoltH (East Bank)	T. Faulkner/376-7024 J. Abdallah/373-2348
321 MinMet (East Bank)	C. Swanson/373-5475 R. Oelfke/373-5680
69 Physics (East Bank)	Bob Scarlett/373-0243 Dave Olson/376-7175
167 SocSci (West Bank)	G. Lutgen/373-3608
257 BioSci (St. Paul)	R. Comstock/373-0979 R. Cardellino/376-3407
125G ClaOff (St. Paul)	C. Bingham/373-0988
415 CofH (St. Paul)	D. Nelson/376-7003 T. Ehlen/376-7003
24 NorH (St. Paul)	J. Colten/373-0990 D. Rignell/373-0990
Users' Room (Lauderdale)	Shift Supervisor/373-4940

TELEPHONE NUMBERS

373-4548	Account Clerk, CYBER 74
376-3963	Educational Services (R. Franta)
373-4596	ExpEng I/O
376-7067	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 Services (R. Franta)
373-4995	Tape Librarian (leave a message)
373-4360	UCC Main 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 (5)*
N640 EltH (1)	125G ClaOff(1)	167 SocSci(1)	
130 ExpEng (2)	415 CofH (1)		
131 ExpEng (1)	24 NorH (1)		
208 ExpEng (14)*			
S191 KoltH (1)			
321 MinMet (1)			
69 Physics(1)			

*includes 1 interpreting card punch

FALL QUARTER SHORT COURSES

The following short courses have been scheduled for spring quarter. No fees are charged and registration is required only for the keypunch workshops. Attendance at the session, INTRODUCTION TO THE COMPUTER CENTER, is recommended. The listed reference materials are available at the Engineering Bookstore.

INTRODUCTION TO THE COMPUTER CENTER

A general introduction to the Computer Center; equipment, terminal locations, account numbers, job submissions, keypunch sites, tape purchase, necessary forms, etc.; how to use the facilities of the Center.

DAYS : Sept. 30 (Monday)

HOURS : 1:00 - 4:00 PM

ROOM : Botany B6

INSTRUCTOR: R. Franta and others

REFERENCES: Materials from instructor

KEYPUNCH WORKSHOPS

Short workshops on the use of the keypunch. Only 1 session is necessary; each session is limited to 10 people. Use the sign-up sheets in the ExpEng main stairway.

DAYS : Sept. 23,25,27,30, Oct. 2,4 (MWF)

HOURS : 2:00-2:45PM, 3:00-3:45 PM

ROOM : 225 ExpEng

INSTRUCTOR: P. Gerlach

BEGINNING FORTRAN

A presentation of the basic features of the FORTRAN language.

DAYS : Oct. 2,4,7,9,11,14 (MWF)

HOURS : 3:00 - 5:00 PM

ROOM : MechE 18

INSTRUCTOR: R. Franta

REFERENCES: MNF Reference Manual

INTRODUCTION TO SNOBOL

SNOBOL4 is a very powerful string processing and symbol manipulation language used primarily for non-numeric applications. Knowledge of at least one higher level language is assumed.

DAYS : Oct. 23, 25, 28, 30 (MWF)

HOURS : 2:00 - 4:00 PM

ROOM : ChemE 40

INSTRUCTOR: A. Mickel

REFERENCES: A SNOBOL4 Primer by Griswold & Griswold
The SNOBOL4 Programming Language by
Griswold, Poage, and Polonsky

KRONOS CONTROL CARDS

An introduction to the KRONOS operating system, control cards, and utilities.

DAYS : Oct. 3,8,10,15,17,22 (T,Th)

HOURS : 3:00 - 5:00 PM

ROOM : MechE 18

INSTRUCTOR: R. Franta

REFERENCES: KRONOS 2.1 Reference Manual

INTRODUCTION TO MODIFY

MODIFY is a program designed to create, maintain, and update library files.

DAYS : Oct. 21,23,25 (MWF)

HOURS : 3:00 - 5:00 PM

ROOM : MechE 18

INSTRUCTOR: R. Franta

REFERENCES: MODIFY Reference Manual

P L A N A H E A D ---- SHORT COURSES IN COBOL, SYSTEM 2000, AND STATISTICAL PACKAGES @ UCC WITH EMPHASIS ON SPSS WILL BE OFFERED LATER IN THE QUARTER. LOOK FOR THEM IN THE OCTOBER NEWSLETTER.

RETURN TO:

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

IF YOU WISH TO HAVE YOUR NAME
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AT THE ABOVE ADDRESS, OR CALL
373-7744,

