

MIW
JC739

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DEADLINE FOR THE APRIL NEWSLETTER IS
 MARCH 24 -- ALL READERS ARE INVITED
 TO SUBMIT ARTICLES FOR PUBLICATION.

BULLETINS

System 2000-----consulting-----System 2000

System 2000 consulting hours for spring quarter
 are 10:00-1:00 AM and 1:00-2:00 PM Monday through
 Friday. Anyone with questions or problems may
 call during these hours or make an office
 appointment for another time. The number to call
 is 376-1761.

System 2000-----consulting-----System 2000

UCC newsletter

VOLUME 12 NUMBER 3 MARCH, 1978

Director: Peter C. Patton
 Editor : A. Koepke

Comments about the content of this newsletter, or
 suggestions for changes may be directed to the
 editor, 235a Experimental Engineering, 373-7744.

The University of Minnesota adheres to the prin-
 ciple that all persons shall have equal oppor-
 tunity and access to facilities in any phase of
 University activity without regard to race, creed,
 color, sex, age, or national origin.

S T A T I S T I C S P A C K A G E S

Cluster analysis package

We are providing partial support (Level 5) for CLUSTER, a cluster analysis package based on the Anderberg routines. CLUSTER was implemented by Jeffrey Loesch of SSRFC. It will be available as FETCH,CLUSTER. Documentation is available from the UCC Reference Room or from WRITEUP,CLUSTER. The writeup is about 25 pages of upper-lower case text.

Since CLUSTER will be available and since BMDP1M, 2M, and 3M are available for users, we decided that BCTRY, the old cluster analysis package, should be dropped from the system at the beginning of the Spring quarter.

R.L. Hotchkiss, 373-5756

SPSS

SPSS Version 7.0 will become the current version at the beginning of Spring quarter; the actual date will be announced as a system note. The major changes are documented in the SPSS-6000 Version 7.0 update document that is available from the UCC Reference Room. Current users of SPSS should be aware of the differences between Version 6.5 and Version 7.0. One of the most important changes is the way in which the data selection control cards are processed now. In SPSS 7.0, SAMPLE, SELECT IF, and REJECT IF are executed in sequence. That is, both the evaluation of a data selection card and the decision to select or reject a case now correspond to the placement of that card in the job deck relative to any other data selection or data modification control cards.

Previously, the conditions specified on the SELECT IF and REJECT IF cards were evaluated in sequence, but the decision to accept or reject a case was postponed until all data modifications of the same type (starred or non-starred) had been executed. Sampling was always done first in a series of data selection and data modification statements, regardless of the placement of the SAMPLE card in the job deck.

There are two reasons why the processing of data selection control cards was changed for 7.0. First, the new scheme allows somewhat more flexibility (for example, when SAMPLE cards were processed first, it was impossible to permanently sample from a selected group of cases). Second, and more important, the old method of executing data selection cards was extremely inefficient, especially for a job that performed many data modifications and then selected only some of the cases for analysis. Now, the point at which cases are selected for further processing is under the control of the user and, by judicious placement of data selection cards relative to data modification cards, job costs can often be reduced substantially.

SPSS Version 6.5 job decks must be modified to accommodate the new processing of data selection control cards.

Another major change is ASSIGN MISSING. For the sake of consistency with the McGraw-Hill manual, a minor change has been made to the ASSIGN MISSING facility in SPSS-6000. In Version 7.0, the

special status of a variable with ASSIGN MISSING in effect is not preserved across procedures or saved as part of the system file. The specific missing value remains in effect. Previously, an ASSIGN MISSING associated with a variable applied for all transformations in a run and was saved with the system file.

S.P. Yen, 373-4886

T I M E S H A R I N G

Timesharing, trapping, and tracing

The long requested T and U parameters are now available on the RUN and RNH commands for timesharing FORTRAN users.

The T parameter acts identically to the T parameter on the MNF batch control statement which enables TRACEing (DOLOOPING, FORMATIO, SUBSCRIPTS, TRANSFERS, STATEMENT NUMBERS, SUBPROGRAM CALLS; see Chapter 10 of the MNF reference manual for details on TRACEing).

The U parameter disables the MANTRAP diagnostic post-processor (see WRITEUP(MANTRAP) and the UCC Newsletter, October 1977). This is not normally recommended except possibly when using a FORTRAN driver for COMPASS subroutines.

A slight disadvantage is that the T parameter now serves dual functions. In the FORTRAN subsystems (MNF, FORTRAN, FTNTS) T means tracing, but for precompiled programs in the EXECUTE subsystem, T means Transmit for file name replacement.

The T and U parameters can be used with each other and/or any of the other standard RUN/RNH options described on page 4-17 of the KRONOS 2.1 Timesharing Reference Manual.

T.J. Hoffmann, 376-5262

I M S L

The International Mathematical Statistical Library (IMSL) Edition 6 will be updated during Spring quarter break to reflect the latest release from IMSL, Inc. which was received on January 15 of this year. Source code changes have been made to the library as well as documentation changes in the IMSL manual.

A reference copy of the IMSL manual is available in the UCC reference room. You may also order this manual by writing:

IMSL, Inc.
64 GNB Building
7500 Bellaire Boulevard
Houston, Texas 77036

A machine retrievable writeup is available on both the Cyber 74 and the 6400. To obtain a copy of this writeup execute the following control statement:

WRITEUP,IMSL.

The following is a list of the IMSL routines that have been changed.

*FTCOMP	MGAMMA	*NRWRST	*RLSEP
IBCICU	*MBSYN	*OFROTA	*SSSBLK
LEQIS	*NMKEN	RLONE	

The starred routines are those which have had major changes that would affect given results.

If you encounter any problems when using IMSL please call me.

K. Fjelsted, 373-5780

1 / 0 = 0 / 0 = 0

Recently, an instructor was showing a group of students the features of computer arithmetic on CDC 6000 and Cyber machines, where, in floating point arithmetic, 1./0. generates an infinite value and 0./0. generates an indefinite value. Computation continues however. When printed, these values show up as R (range error) or I (indefinite) in a Fortran program or U (undefined) in a Pascal program. If these values are used in a later calculation, computation ceases with a mode exit. The fact that indefinite and infinite values only show up when used and not when generated is often inconvenient in error detection but, nonetheless, is well defined in CDC and UCC documenta~~ft~~on.

Then the instructor went on to show the fallacy of division by zero in integer arithmetic. To his chagrin, 1/0 and 0/0 both gave a value of zero. Unfortunately, this is true for all our compilers that allow integer arithmetic. Two things are involved here. First, the 6000 and Cyber machines do not have integer divide instructions. 1/0 and 0/0 are converted to floating point operations, infinite and indefinite are generated, but then become zero when converted back to integer by the unpack instruction. It would take two machine instructions with considerable time and space overhead to detect both infinities and indefinites with every integer divide. Second, once detected, infinite and indefinite values cannot be returned as integer values, for they are legitimate integer values for addition and subtraction operations. The only alternative would be to stop with a pseudo mode exit in For various reasons this was not done in Fortran, BASIC, or COBOL. However, Pascal checks for division by zero at compile time and at run time if checks are on (default).

So, what to do? We will modify our documentation to call attention to this anomaly. Programmers who want their programs to continue and to continue correctly despite a possible division by zero should check for zero divisors in both floating-point and integer divisions in end-cases, such as, where a divisor is a count minus one or a sum of differences.

R.L. Hotchkiss, 373-5756
E.J. Mundstock, 373-5907

M N F - B A T C H E R

BATCHER will disappear this spring

During the planning of our proposed change to the NOS operating system, we had to decide what to do with BATCHER, the student MNF compiler. We decided to drop BATCHER for a number of reasons.

Most students now run their batch jobs from one of the open shop 1004 terminals on campus. This more or less defeats the purpose of BATCHER.

BATCHER does not allow the use of MANTRAP. This much needed fatal error traceback is very useful to students since it eliminates the need to interpret memory dumps.

BATCHER would require a large amount of work to convert it to NOS for use on the proposed upgraded system.

All of the special features provided by BATCHER (that is, job usage limits) are available with NOS through other means.

For these reasons, we have decided to drop BATCHER when the NOS operating system goes into production use (at the end of Spring quarter, 1978).

Any questions on this matter should be brought to me.

R.T. Franta, 376-3963

G E N E R A L C O M M E N T

From The Assistant Director's Desk

Our efforts to disseminate information about UCC and our facilities and capabilities are not always broad enough to reach all of the 42,000 students on the Twin Cities Campus. Tom Potter, a junior who is Chair of the University Resources Committee of the Twin Cities Student Assembly, has come forward with several good ideas to help us and the students. Whenever possible, we will be implementing his ideas over the next few months.

One problem area appears to be informing students about hours and services in the interactive instructional labs, none of which are under our direct control. We will be working with students and with the lab supervisors to solve this problem.

We write and publish approximately 100 documents in addition to this newsletter. However, we are somewhat dependent upon teaching faculty to inform students, in particular the undergraduates, that this material is available, that most of it is free, and that it can be had for the taking in Experimental Engineering, either in room 140 or on the second floor in the small hallway to your left as you come up the main stair.

* * *

The user's meeting on February 14 was well attended; 119 people signed the roster. We explained the reasons for considering an upgrade of the Cyber 74 system: "the usage level expected in 1981 was achieved by our users in 1977-78," said Dr. Patton. Larry Liddiard described the

THE SUGGESTION BOX

WHEN WILL FTN VERSION 5 BE AVAILABLE?

P.C.:27FEB78

hardware and the computer room layout which would permit our operations staff to manage the 6400 and the Cyber 74/172 multi-mainframe side-by-side. He also pointed out that the change from KRONOS to NOS will involve few changes in user commands and procedure files. Steve Nachtsheim discussed new data base systems which will be available on an upgraded system and Andy Mickel discussed the tricky problem of character sets and conversion. Bill Franta described the TERA microcomputer experimental project. Mike Skow reported on the changes in the instructional labs and the reasons for these changes. Mike Frisch discussed new or improved software products and I described user services plans for modifying documentation, consulting, and the inventory of vendor manuals in the reference room. Also, reporting for Rich Franta, I stated that conversion seminars would be offered later in spring quarter.

Not until CDC releases it. It is promised for about a year and a half from now. Note that FTN5 is likely to be unreliable for a while after it is released and we may not get it immediately after release.

J. Mundstock

I SUGGEST THAT ONE SHOULD BE ABLE TO USE THE MAP CARD EXACTLY AS BEFORE. I STILL NEED THIS FEATURE EVEN WHEN I USE MNF; THE FILE ZZZZMP CONTAINS ONLY A PARTIAL MAP. IT IS INCONVENIENT AS COMPARED TO THE MAP CARD.

D.T.:10JAN78

The staff presentations and the question period were followed by a user forum during which Geoffrey Wattels raised a question about student crowding in the instructional labs and about the reduced access to MERITSS via dial-up access. Skow explained that only in-lab undergraduate student use is paid for by funds from the legislature; dial-up access is intended for emergency use such as handicapped students and other special cases, or for departments that purchase dial-up access.

As described in WRITEUP(MANTRAP), Sections 1.0 and 5.0, a full load map cannot be obtained when MANTRAP is used. Use of the MNF(U) option suppresses MANTRAP and permits MAP control cards to be processed. It is true that its effect on the load map is the least satisfactory aspect of MANTRAP. However, it is not easy to see how this could be changed.

C. Schofield

The next user's meeting will be held on April 20; the time and place will be announced.

IT WOULD BE EXTREMELY HELPFUL IF CONSULTING HOURS WERE EXTENDED TILL CLOSING TIME.

M.H.:07FEB78

* * *

Regardless of any future modifications to our hardware, we will be converting our Cyber 74 operating system from KRONOS to NOS 3, probably during the June break. As a conversion aid, we will be publishing and distributing an UPGRADE Newsletter, in hard copy and as an easily updated, indexed WRITEUP file, starting soon. Watch for notices in your NOTE messages.

We cannot now extend our consulting hours (in ExpEng 140 or at Lauderdale) beyond 9 PM. We understand, however, that the instructional lab in Lind Hall will be open and may have consulting until at least Midnight on weekday evenings next quarter. When this information is firm, we will inform you in this Newsletter.

T. Hodge

* * *

Users who want CDC NOS manuals may order them through our reference room, 235a Experimental Engineering, with journal vouchers deposited in advance. We cannot handle cash. However, cash orders may be placed directly with CDC by writing:

WHY DID YOU REMOVE ALL THE USER ACCESSIBLE TIMESHARING TERMINALS FROM EXP ENG? ALL OF MY JOBS ARE SUBMITTED FROM MY TELETYPE AT MY LAB WITH HARD COPY DISPOSED TO THE LINE PRINTERS AND/OR THE PLOT BIN. ON MANY OCCASIONS MY WORK HAS BEEN WELL SERVED BY QUICK ACCESS TO A TERMINAL; TO FIX A BUG OR RE-RUN A JOB WITH NEW DATA FOR EXAMPLE. NOW I MUST TRUDGE BACK (IN THE SNOW) TO DO THESE SAME TASKS AND RETURN A SECOND TIME. IT'S A REAL NUISANCE. WHY DID YOU DO IT WITHOUT NOTICE? THIS IS THE SORT OF ACTION YOU SHOULD BRING UP AT USER MEETINGS AND NOT THE USUAL STALE NEWS AND FAIT ACCOMPLI WHICH SO OFTEN THEY FEATURE. NOW TO BE MORE POSITIVE: WHY WON'T YOU BRING BACK AT LEAST ONE CRT FOR THE CONVENIENCE OF MIRJE USERS OF THE SYSTEM.

A.S.:23JAN78

Control Data Corporation
Literature and Distribution Service
8001 East Bloomington Freeway
Minneapolis, Mn 55420

T.D. Hodge, 373-4599

You raise two questions. Why did we move the CRTs out of ExpEng? Should the Instructional Labs provide service to research users? To answer the first one: in response to repeated demands for more keypunches near the high speed I/O station in ExpEng, we walled off some of the user room space to create a user keypunch area. We then moved the displaced CRTs to the new large instructional lab in Lind Hall which will have extended hours

beginning Spring Quarter. The second question has been brought up before the Timesharing Subcommittee of the University Computer Advisory Committee once a year for years. The answer has consistently been that, during off-peak hours, it is reasonable for research users to make use of the equipment, to the extent that it fits their needs, but instructional labs cannot be modified or equipped to suit research use. It is clear, since the lab terminals are largely hard-wired to MERITSS, that most researchers are not well-served by the instructional labs. The question could perhaps be re-stated: can public terminals be set up to serve researchers who are temporarily away from their offices and labs? This is a separate question which could be presented as part of a proposal by a user to the University Computer Advisory Committee.

T. Hodge

TONIGHT SOME JERK LET A 481 SECTOR JOB OUT ON THE LAUDERDALE 1004. SINCE IT'S NO INCONVENIENCE FOR LAUDERDALE USERS TO HAVE A JOB DISPOSED, HOW ABOUT KEEPING LIMITS TO 200 DAY AND NIGHT? HAVING A JOB DISPOSED IS CERTAINLY LESS INCONVENIENT THAN WAITING 15 MINUTES.

P.C.:17FEB78

The night limit for printing on the Lauderdale 1004 is 500 sectors so you experienced the longest wait possible for this site. I am sorry but we do not feel that 15 minutes is an extraordinary period of time to wait during night hours. For this reason the limit will remain as it is. Thank you for your comment.

R. Franta

I SUGGEST THAT THE COLLECTION OF MANUALS IN THE USER'S ROOM BE PUT IN BETTER SHAPE. ALTHOUGH I REALIZE IT IS IN BAD SHAPE BECAUSE OF MISUSE BY USERS, I HAVE NOT MISUSED AND I THINK YOU SHOULD REPLACE RIPPED-OFF MANUALS AND MISSING MANUALS.

D.T.:10JAN78

We do a once a year clean-up of the reference manuals in the user rooms and at the terminal sites. We simply do not have the money to do more frequent replacements.

A. Koepke

THE CRT ROOM IN LIND HALL CLOSES WAY TOO EARLY, AT 10 PM. WHEN THE TERMINALS WERE IN EXP ENG THE ROOM WAS OPEN UNTIL 12. I DON'T HAVE TIME AS A GRAD STUDENT TO WAIT IN LONG LINES DURING THE DAY. MORE HOURS ARE NEEDED.

C.S.:23JAN78

We have transmitted your comment to the supervisor of the Lind Hall lab. He informs us that he has been able to get the dollars needed to keep the room open and monitored for an additional 3 hours each week.

The money for this activity comes from instructional funds since these open labs, of which there are now 10, are intended primarily for students doing classwork on MERITSS (6400). We understand that graduate students are supported by

their departments and primarily use terminals provided by individual departments for access to MIRJE on the CYBER 74. (There are exceptions to this policy, by special permission.)

T. Hodge

IN THE NOVEMBER 1977 NEWSLETTER THE CDC PUBLICATION FTN VERSION 4 IS RECOMMENDED AS THE MANUAL FOR THE CURRENT MNF. THIS NEWSLETTER ALSO RECOMMENDED THAT PEOPLE INTERESTED IN PURCHASING THIS PUBLICATION CONTACT THE REFERENCE DIVISION AT THE MINNESOTA BOOK CENTER. THIS REFERENCE DIVISION WILL NOT ORDER THESE CDC MANUALS (OR ANY OTHER). THEY RECOMMENDED ORDERING THEM FROM CDC.

CAN'T UCC STOCK THE POPULAR CDC REFERENCE MANUALS, OR AT LEAST PROVIDE THE SERVICE THAT THE BOOKSTORE CAN'T?

D.P.:10JAN78

We will take orders for CDC manuals if you will bring a journal voucher from your department. Call 373-7744 if you need information on prices. Unfortunately, we cannot handle cash payments, so we are unable to serve students who do not have departmental support. The Book Center did not tell us that they would no longer order manuals. Thank you for bringing this to my attention.

A. Koepke

DOCUMENTATION

New and revised WRITEUP documents

10JAN78 CATLSYS Extended CATLIST utility.
15FEB78 CLUSTER Cluster analysis package.
16JAN78 COPYMF Copy multi-file tapes.
16JAN78 PERMITS Information on permanent file permits.
04JAN78 RJE1977 SUP10 statistics for 1977.

New printed publications

IMAGPLT: write plot files to Dicommed image processor
A Guide to Record Manager (\$)
SPSS-6000 Version 7.0 Update (free)
SPSS MANOVA(\$)
SPSS NON LINEAR (\$)
SPSS SPECTRAL (\$)
SPSS SURVIVAL (\$)
SPSS MULT RESPONSE (\$)

PRODUCTION USAGE SUMMARIES

	<u>January, 1977</u>	<u>January, 1976</u>
CDC Cyber 74		
Number of Batch jobs and MIRJE sessions	89,274 (99,199)	68,789 (81,087)
Total Central processor hours inc. DELAY	167 (207)	130 (169)
DELAY queue processor hours	43 (48)	-
MIRJE terminal hours	7,690 (9,389)	-
Mass storage transfers (KPR)	277,123 (352,522)	200,592 (246,117)
Magnetic tape transfers (KPR)	4,874 (6,668)	6,287 (8,066)
Pages printed, charged from UCC	811,559 (909,244)	688,732 (790,705)
Cards punched	428,907 (473,036)	428,137 (457,881)
Microfilm frames produced	15,898 (280,039)	18,427 (232,533)
Status plotting production (feet)	6,676	4,615
Tapes mounted	9,243	8,263
Average file storage (2210M available)	1,150.6 million char	847.6 million char
Mean time between failures	28.2 hours	24.2 hours
Available during scheduled hours	97.3 percent	98.7 percent
SUPIO uptime during available hours	98.1 percent	-
(totals in parentheses include staff development, accounting, and maintenance runs)		
CDC 6400		
Number of jobs run	146,063	126,638
Central processor hours	86	83
MERITSS terminal hours	22,799	19,097
Number of terminal sessions	48,124	39,591
Maximum number of simultaneous users	125	105
Average file storage	235.9 million char	217.2 million char
Mean time between failures	67.0 hours	39.7 hours
Available during scheduled hours	99.7 percent	98.9 percent

CYBER 74 DOWNTIME SUMMARY : February, 1978

	<u>Monday-Friday</u>	<u>other</u>	<u>total</u>
	<u>0800-1800</u>		
Total possible scheduled uptime hours	200.	280.	480.
Total downtime hours (see Schedule A)	9.7	3.3	13.0
Total uptime hours	190.3	276.7	467.0
Uptime percentage	95.2 percent	98.8 percent	97.3 percent
Average downtime per occurrence	20.1 minutes	15.2 minutes	18.6 minutes
Mean time between failures	6.9 hours	21.5 hours	11.4 hours
Subsystem failures			
SUPIO	5	16	21
TELEX	1	0	1
EXPORT	3	2	5

Schedule A: downtime hours


	<u>Number</u>	<u>Total hours</u>	<u>Average minutes</u>
(1) Preventive maintenance over-runs	0	0.0	0.0
(2) Software related problems	2	0.1	2.0
(3) Hardware related problems*	36	10.2	17.0
(4) Indeterminate software/hardware problems	0	0.0	0.0
(5) External Problems	4	2.8	42.3

*The large number of hardware failures this month can be attributed to an elusive communications problem existing between peripheral processors and central memory. CDC continues to work on this problem.

SUBMISSION SITE USAGE SUMMARY: TELEX EXCLUDED : February, 1978

submitted from	total jobs	%	pages printed	%	cards read	%
Lauderdale	2,486	3.1	345,845	26.4	1,263,104	10.7
ExpEng	7,022	8.8	227,899	17.4	2,112,699	17.8
West Bank	11,052	13.9	124,477	9.5	1,690,714	14.3
6400	1,636	2.1				
SUPIO	57,302	72.1	612,016	46.7	6,776,830	57.2
TOTALS	79,498		1,310,237		11,843,347	

The following letter was mailed to many people in the Health Sciences and to users of the Health Computer Science Center.

TO: Users of Computing Services in the Health Sciences
FROM:  Lyte French, Vice President
SUBJECT: Recent Developments in Health Sciences Computing

You are already aware that there have been extensive discussions over the past two years regarding the future of general purpose computing in the Health Sciences. The Control Data 3300 was becoming overloaded, also it offered no capability for interactive data based management.

Similarly, the growth of computing at the University, and particularly in interactive data based management as a whole required a major expansion of the Cyber 74 system. Over the years the Cyber system has enjoyed a broad base of support including legislative support.

It became increasingly evident as the planning committee discussed a new computer in the Health Sciences that one which would provide adequate service was not fiscally viable. Accordingly on November 30, 1977, the Health Computer Sciences Advisory Committee recommended that the Health Sciences rely upon an expanded Cyber system for services to the Health Sciences. I concurred in that recommendation.

Following the committee action I delegated to Frank Verbrugge, Director of University Computer Services, responsibility for implementing the committee decision. He tells me that plans are proceeding and that a Cyber 172 will be added to the Cyber 74 in April of this year. A formal proposal for funding the new system will be presented to the Board of Regents for action at its next meeting. Frank Verbrugge has also appointed, with my concurrence, a Task Force on User Services Planning for the Health Sciences which has broad representation of the Health Sciences. Professor Eugene Johnson of the Department of Biometry has agreed to serve as the chairman. The Task Force will submit its report to the all-University Advisory Committee on University Computer Services.

The Control Data 3300 will be gradually phased out of service on a time schedule which will provide adequate time to users for program conversion and at the same time minimizing the overall operation costs. It is hoped that a conversion schedule of six months will prove adequate so that use of the 3300 could be discontinued about October 1, 1978.

Several specific activities will get under way at once.

- . All users will be approached to determine what the individual conversion problems are.
- . There will be a schedule of short courses in the near future which will assist the users in program conversion. The Applications Programming group in the Division of Health Computer Sciences will serve as the liaison group for programming assistance.
- . A plan will be developed for a system of remote accesses to the Cyber system.

I recognize that the change-over of computing service for the Health Sciences presents many difficulties. I am hopeful that they will be satisfactorily met and resolved and that the end result will be an enhanced computing service for the Health Sciences. Frank Verbrugge assures me of his determination to make it so.

LAF/jm

cc: Membership of the following:
Health Computer Sciences Advisory Committee
Advisory Committee on University Computer Services
User Services Planning for the Health Sciences Task Force

SPRING QUARTER 1978 SHORT COURSE SCHEDULE

Form is: Course, Days, Time, Dates, Location, Instructor.

Introduction to UCC.....	th,	2:15-4pm,	30 Mar,	Exp. 193,	RTF
Introduction to System 2000.:	mwf,	2:15-4pm,	3-14 Apr,	Lind H 54,	JC
LISP.....	mwf,	3:15-5pm,	3-21 Apr,	Lind H 320,	JH
Intermediate FORTRAN.....	tth,	6:15-8pm,	4-27 Apr,	Lind H 54,	RTF
KRONOS Control Statements....	tth,	2:15-4pm,	4-25 Apr,	Green H 211,	RTF
KCL and Procedure files.....	th,	2:15-4pm,	27 Apr,	Green H 211,	RTF
Introduction to Timesharing.:	mw,	2:15-4pm,	10-12 Apr,	Bleg H 420,	RTF
Beginning COMPASS.....	mwf,	2:15-4pm,	17-28 Apr,	Lind H 54,	KCM
System 2000/Report Writer....	mwf,	2:15-4pm,	17-21 Apr,	MinMet 116,	JC
Record Manager.....	mwf,	2:15-4pm,	17-21 Apr,	Aero 211,	SR
Spring Quarter Users Meeting:	th,	1:15-4pm,	20 Apr,	ClaoOff B45	
Pascal.....	mwf,	3:15-5pm,	24 Apr - 12 May,	Aero 21,	ABM
Sort/Merge.....	mwf,	2:15-4pm,	24-28 Apr,	Aero 211,	SR
COBOL.....	mwf,	2:15-4pm,	24 Apr - 12 May,	MinMet 116,	JC
MODIFY.....	mwf,	2:15-4pm,	1-5 May,	Aero 211,	RTF
Introduction to Timesharing.:	tth,	2:15-4pm,	2-4 May,	Green H 211,	RTF
ARCHIVE.....	t,	3:15-5pm,	2-9 May,	Ford H 40,	JPS
System Enhancement.....	m,	2:15-4pm,	8 May,	Mech E 302	
Graphing Packages.....	twth,	7:30-9:30pm,	9-11 May,	Laud Conf Rm,	KM
Advanced FORTRAN.....	tth,	2:15-4pm,	9 May - 1 Jun,	Ex 193,	RTF
System 2000/PLI.....	mwf,	2:15-4pm,	15-19 May,	Lind H 54,	SPN
SPSS (computer neophytes)....	m,	2:15-3:30,	15 May,	Mech E 18,	SPY
SPSS (SPSS neophytes).....	t,	2:15-3:30,	16 May,	Mech E 18,	SPY
SPSS (SPSS intermediates)....	wth,	2:15-3:30,	17-18 May,	Mech E 18,	SPY
SPSS On Line.....	f,	2:15-3:30,	19 May,	Mech E 18,	SPY
SNOBOL.....	mwf,	3:15-5pm,	15-26 May,	Lind H 320,	JPS
System Enhancement.....	t,	2:15-4pm,	23 May,	Lind H 54	
SPSS crosstabs.....	t,	2:15-3:30pm,	30 May,	Lind H 54,	SPY
SPSS regression.....	th,	2:15-3:30pm,	1 June,	Lind H 54,	SPY

RETURN TO:

UNIVERSITY COMPUTER CENTER
 227 EXPERIMENTAL ENGINEERING
 UNIVERSITY OF MINNESOTA - TWIN CITIES
 208 UNION STREET SE
 MINNEAPOLIS, MN 55455

UNIVERSITY ARCHIVES
 11 WALTER LIBRARY
 UNIV OF MINNESOTA
 EAST BANK CAMPUS

ALL SYSTEMS GO!!

MIU
8C739

The Regents, in their March meeting, approved the proposal to upgrade the Cyber 74 to a Cyber 74/172 multi-mainframe system.

We will begin installation of the Cyber 172 on March 31, 1978 and it will be brought up with the NOS operating system on or about April 15th.

The articles in this newsletter "extra" describe some of the forthcoming changes. We will be publishing special UPGRADE bulletins at irregular intervals throughout this conversion period, to keep you informed about all hardware and software changes. These UPGRADE bulletins will be available both in printed copy and as an indexed WRITEUP document.

ACCOUNTING PERIOD CHANGES

The accounting period for March will run through 4:00 PM (1600 hours) on Saturday April 1.

Our end of fiscal year will be at 4:00 PM (1600 hours) on Saturday July 1.

This is a change from our past procedures. We will, in future, extend a month's accounting period through the following Saturday whenever the last day of any month falls on a Friday. We do this to avoid interrupting the long Friday through Saturday processing period.

J. Foster

INTERIM USE OF THE CYBER 172

The Cyber 172 will initially be brought up with the NOS Release 3 operating system on approximately April 15, 1978 (see SYSNOTE and Cyber 172 bulletins which will have more specific dates and times). Until the Cyber 74 is changed from the KRONOS 2.1 Release 13 operating system on June 11, 1978, the combined system will exchange job files to allow users to access both machines. After the June 11 switch to the NOS multi-mainframe software for both the Cyber 74 and the Cyber 172, the combined system will allow common:

I/O queues

TAPES facility

System library and Applications programs disk

User files on specific named disks to be accessible from both machines.

Beginning July 2, 1978, there will be a common user number and billing for both machines for those requesting such use.

Specific configuration for interim period (April 15-June 11)

Central Processors - The processor is approximately 1.3 times the speed of the CDC 6400; a second processor will be added about May 12.

Central Memory - 131,072 60-bit words with Single-bit Error Correction and Double-bit Error Detection; (SECDED) MOS memory.

Extended Core Connection - The transfer of job files to the Cyber 74 will be through the current Extended Core Storage.

Mass Storage - three channel controllers with four double density disks (936M characters) for permanent files, queues, system programs, and application libraries. One single density disk (110M characters) for removable disk pack use.

Magnetic tape - One channel controller to two or three CDC 669-4 9-track tape units with 800 NRZ and 1600 PE recording at 200 inches per second. One channel to two CDC 607 7-track tape units.

Local Record Equipment - One CDC 405 card reader (1200 cpm) and one CDC 580-12 line printer (1200 lpm with 95 ASCII character train).

Communications - CDC 2551 with 60 interactive connections; initially 20 Bell modems (fifteen at 30 cps and five at 10 cps) will be used. Then an additional ten Bell modems will be transferred from the Cyber 74's CDC 6676 to the CDC 2551 on or about May 15. Other modems will be added as the demand requires.

To run Batch jobs on the Cyber 172

You will be able to send jobs to the Cyber 172 via the SUBMIT utility--a mechanism already familiar to many users. Specifically, a new parameter will be added to the SUBMIT control statement that will specify the machine on which the SUBMITTED job is to be run. For example:

```
SUBMIT(job,MI=mid)
```

This will cause the input file "job" to be run on the machine specified by "mid". The machine ID's are to be MI=MA for the Cyber 74 and MI=MC for the Cyber 172. The machine ID will default to the machine the job is currently executing on. For example, if a Cyber 74 user wishes to SUBMIT a Batch job to the Cyber 172 the following job deck structure could be used:

```
job1,Ttt,CMmmmmmm.
USER,userid,passwor.           Cyber 74 user number/password.
COPYEI(INPUT,FILE1)
SUBMIT(FILE1,MI=MC)
7/8/9                          end of record
job2,Ttt,CMmmmmmm.
USER,userid,passwor.           Cyber 172 user number/password.
COPYBR(INPUT,FILE2)
...
Control statements for Cyber 172 execution
...
GOTO(1UNPAGE)
EXIT.
1UNPAGE,UNPAGE(I=OUTPUT,0=FILE2)
DAYFILE(FILE2)
SUBMIT(FILE2,MI=MA)             Send output back to Cyber 74.
7/8/9                          end of record
job3,Ttt,CMmmmmmm.
USER,userid,passwor.           Cyber 74 user number/password
COPYEI(INPUT,FILE3)
DISPOSE(FILE3=PR/S=site,B=bin)
7/8/9                          end of record
...
Program (as needed)
...
7/8/9                          end of record
...
Data (as needed)
...
6/7/8/9                        end of information
```

The SUBMIT control statement also has sophisticated reformatting capabilities for constructing input files. Users should refer to the following references:

- KRONOS 2.1 Timesharing User's Reference Manual, Revision D, Section 8.
- KRONOS 2.1 Reference Manual, Volume 1, Revision D, Pages 1-6-16 through 1-6-19.
- NOS Version 1 Reference Manual, Volume 1, Revision E, pages 1-6-21 through 1-6-14.

Transferring permanent files from the Cyber 74 to the Cyber 172

1. If the user wishes to transfer all of the files from a particular user number on the Cyber 74 to a user number on the Cyber 172, call the HELP-Line (376-5592) and give the user number on which the files reside (the user numbers on the two machines will be the same). See the section titled, "Cyber 172 accounting."
2. To transfer an individual file from the Cyber 74 to the Cyber 172 you can build an Batch input job that copies the file from INPUT and issues a permanent file command (SAVE, RETAIN, etc.) This input job could then be SUBMITTED (refer to the preceding section). Example:

```
job4,Ttt,CMmmmmmm.
USER,usernum,passwor.           Cyber 74 user number/password.
ACQUIRE(FILE4)                 File to be sent to Cyber 172.
COPYBR(INPUT,JOB)
COPYEI(FILE4,JOB)
SUBMIT(JOB,MI=MC)
7/8/9                             end of record
job5,Ttt,CMmmmmmm.
USER,usernum,passwor.           Cyber 172 user number/password.
COPYEI(INPUT,FILES)
RETAIN(FILES)
6/7/8/9                             end of information
```

3. Those users who have an ARCHIVE or DUMPPF tape copy of the Cyber 74 permanent file may use ARCHIVE or LOADPF on the Cyber 172 to create a copy on the 172.
4. Users of mountable disk packs may ask that they be mounted on the Cyber 172.

NOTE: No common permanent files that are accessible to both the 74 and 172 will be available until the multi-mainframe software is installed on June 11.

Moving OUTPUT-type files from the Cyber 172 to the Cyber 74

Users SUBMITTING jobs to the Cyber 172 may get PRINT, PUNCH and PLOT files returned to the Cyber 74 where they can be printed, punched, plotted or disposed to a remote terminal. To do this, users can format a job with their output and SUBMIT the job to the Cyber 74. This job would then do a DISPOSE to the desired queue and/or terminal (site).

To use magnetic tapes on the Cyber 172

For the initial 2 month period, until common permanent files are available, the EXPRESS TAPES facility will be a daily generated copy of the one existing on the Cyber 74. Thus, magnetic tapes will be entered and withdrawn from the tape library in the normal Cyber 74 fashion.

NOTE: Since only the Cyber 74 copy of the EXPRESS TAPES file will be updated, tapes read or written on the Cyber 172 will not have the correct usage count or TAPES information.

To use the Cyber 172 interactively

1. Open a Cyber 172 account.
2. Transfer permanent files required from Cyber 74 to Cyber 172
3. Dial into CDC 2551; (number will be published in UPGRADE bulletins)
4. Use SUBMIT to load/dump permanent files to/from magnetic tape

Cyber 172 accounting

Until the beginning of the next fiscal year (July 2, 1978) there will be separate master account tapes with separate billings for the Cyber 74 and the Cyber 172. Users of the Cyber 172 must have a valid Cyber 74 account since, as noted in "how to run a Batch job on the Cyber 172," supply charges for printing, plotting, and punching cards will go the Cyber 74 account number.

As previously announced at the February 14 user meeting, we will go to a single user number for both Batch and MIRJE use of the Cyber 74 at the beginning of fiscal 1978-79. The Cyber 172 will have this single number from the startup date. To ensure continuity and compatibility with the Cyber 74, this number will be the Batch number if both a Batch and a MIRJE number are assigned to the same problem name. The reason for this is that magnetic tapes and mountable disk packs are currently assigned to the Batch number of a Cyber 74 user. Although the account number for validations is identical for both machines, each will have its own passwords and validations.

Validations

Machine:	Current:	On July 2, 1978:
Cyber 74	MIRJE number Batch number password password MAXFL MAXFL 55-71K 155-231K	Batch-MIRJE number password Batch MAXFL 155-231K MIRJE MAXFL 55K
		On April 15, 1978:
Cyber 172		Batch-MIRJE number password Batch MAXFL 101-155K (> 111K only after 6 PM) MIRJE MAXFL 55-111K

Currently each account number is given the lowest maximum field length (MAXFL) and the user must justify (call L. Liddiard 373-5239) any requests for maximum field lengths greater than MAXFL. The reason for this is two fold. First, in our CDC operating system these field lengths were found to be the largest acceptable for good overall throughput and user satisfaction. Second, our accounting has never charged for Central Memory, but the SRU accounting on NOS will have a CM factor that ensures that those using that resource pay accordingly. Thus, the new "request for access" forms will allow the user to select

his maximum field length, although we still recommend the lowest maximum field lengths as given in the above tables.

Who should transfer to the Cyber 172?

1. Those desiring faster interactive MIRJE response times.
2. MIRJE users of the Cyber 74 with greater than 55K maximum field length; Cyber 74 MIRJE use will be restricted to maximums less than 55K After July 1, 1978.
3. Current users of MIRJE who use more than the median amount of resources (we will be sending you letters if you fall in this category).

Cyber 74 changes as of April 15, 1978

On April 15, the Cyber 74's magnetic tape configuration will change. Now, we have:

9-track 1 controller 3 tape units
7-track 2 controllers, 7 tape units

After April 15, there will be:

9-track 2 controllers 4-5 tape units
7-track 1 controller 5 tape units

9-track tape users have often found bottlenecks; in future, the 7-track tape units will become likely candidates for slow turnaround. We suggest that 9-track tapes should be the preferred medium after this change occurs.

L. Liddiard

RATES

..... "We lose a little on each job, but..."

With the implementation of the network operating system (NOS), UCC will be changing the method of accruing processing related charges. In the past, we have billed for central processor time (CP), mass storage transfers (MS), and magnetic tape transfers (MT). Each of these resources was multiplied by a dollar factor and all were summed in order to determine the total job cost, exclusive of tape mounts, pages printed, etc.

Under NOS, we will utilize the system resource unit (SRU) as the billing unit for processing related charges. The SRU is a measure more closely reflecting the actual resources used in processing a job. The result of the SRU calculation is a single number measuring the resources used. The formula for the SRU calculation is:

$$SRU = M1*((CP)+M2*(IO)+M3*(CP+IO)*CM+M4*(CP+IO)*EC)+AD$$

where

CP	=	CP0*S0+CP1*S1	
IO	=	MS*S2+MT*S3+PF*S4	
CP0/CP1	=	central processor seconds in CP0 or CP1	
MS	=	mass storage transfers	
MT	=	magnetic tape transfers	
PF	=	permanent file accesses	
CM	=	central memory	
EC	=	extended core storage	
M1	=	overall weighting factor	= 1.0
M2	=	IO weighting factor	= .85
M3	=	CM weighting factor	= .002
M4	=	EC weighting factor	= .001
S0	=	CP weighting factor	= 1.0 for the Cyber 74 = 0.4848 for the Cyber 172
S2	=	MS weighting factor	= .125
S3	=	MT weighting factor	= 1.8375
S4	=	PF weighting factor	= .125
AD	=	constant adder	= 0

In plainer terms, this means that we will begin charging for permanent file accesses, central memory usage, and extended core storage usage with the advent of NOS. In addition, there will be a minimum charge of .5 SRUs for any job run on the system.

The charge per SRU is given in the following table:

PRIORITY	ACCOUNT TYPE	
	INTERNAL	COMMERCIAL
HIGH	\$.22/SRU	\$.34/SRU (not available yet)
NORMAL	\$.16/SRU	\$.25/SRU
LOW(Delay)	\$.11/SRU	\$.20/SRU

As stated in earlier newsletters, the overall goal in any modification to the rate structure was to ensure that the typical job would cost about the same under the new structure as it did under the old

structure. The variable to be used to offset the added charges for CM, EC, and PF is paper related charges. Effective July 2, 1978, the UCC paper-related charge will be reduced from \$.03 to \$.02 per page.

In order to measure the effects of these rate changes, both simulations and actual job measurements were undertaken. Job data from a "normal" two week period was accumulated and processed under the new rate structure in order to ascertain the effect on users. From these tests, the users can expect the following changes in processing charges:

ITEM	ALL JOBS	INTERNAL NORMAL	DELAY	COMMERCIAL NORMAL	DELAY	BATCH JOBS	TELEX JOBS
Average old CP/MS/MT cost	1.22	1.06	2.00	1.97	3.59	1.18	1.41
Average new SRU cost	1.33	1.15	2.19	2.16	4.05	1.30	1.46
RATIO: old/new	1.090	1.084	1.095	1.096	1.128	1.101	1.035
CORRELATION: old-new	0.987	0.986	0.990	0.998	0.999	0.987	0.996
Average old total cost(with paper)	1.49	1.30	2.40	2.41	4.38	1.47	1.59
Average new total cost(with paper)	1.50	1.31	2.45	2.45	4.58	1.49	1.58
RATIO: total old/new	1.006	1.007	1.020	1.016	1.045	1.013	0.993
CORRELATION: old-new	0.986	0.985	0.989	0.995	0.997	0.986	0.993

To enable current Cyber 74 users to project their costs under the new rate structure, a parameter has been added to the COST control statement to include the appropriate charge based on SRUs. COST(SR) will provide the additional dayfile messages denoted by the asterisk (*) below:

```

PROJECTED COST BASED ON SRUS
CP      XXX.XXX SEC      $ XX.XX
MS      XXX.XXX KPR      $ XX.XX
MT      XXX.XXX KPR      $ XX.XX
*PF     XXX.XXX KUN
*CM     XXX.XXX KWD
*EC     XXX.XXX TKS
*EC     XXX.XXX KWH
*SR     XXX.XXX KUN      $ YY.YY
CURRENT JOB COST      $ XX.XX

```

The CM and EC figures represent average usage through the entire job.

The dollar figures represented by the Xs above represent the old cost; the dollar figure represented by the Ys above represent the new cost. see WRITEUP(COST) for more details.

WRITEUP(SRU) may be referred to for more detailed information as to permanent file operations (PF) (units per operations, etc.), magnetic tape (MT) operations (7 track versus 9 track, opens and closes, etc.), and for examples of SRU calculations from job dayfile messages showing the unit transformations from current dayfile messages to SRU charges.

..... we make it up on volume!"

In addition to the rate changes noted above, the following rate changes will be introduced on July 2, 1978.

To balance the change in job costs due to the introduction of SRU accounting, we will lower the paper-related charge from \$.03 to \$.02 per page.

With the introduction of 1200 baud timesharing capability, a new timesharing connect-time rate schedule will be introduced. The new schedule is:

	<u>110 baud</u> <u>(10 cps)</u>	<u>300 baud</u> <u>(30 cps)</u>	<u>1200 baud</u> <u>(120 cps)</u>
INTERNAL (per connect hour)	\$1.00	\$1.50	\$2.50
COMMERCIAL (per connect hour)	\$2.50	\$3.50	\$5.50

The new rate for medium speed (SUPIO) connect time will be \$4.50 per connect hour.

With the installation of new metal shelving and storage cabinets at Lauderdale, we will charge \$5.00 per shelf per calendar quarter for shelf storage.

S. Nachtsheim
W. Sackett
J. Foster

CYBER 172 USERS AND COORDINATION

With the installation of the Cyber 172, the validations on the Cyber 74 will be changed somewhat in order to ensure that it is a batch-oriented machine. In like fashion, the Cyber 172 will be an interactive oriented machine. It is to the advantage of timesharing users of the Cyber 74 to transfer to the Cyber 172 at their earliest convenience. The Cyber 172 will be "geared" for timesharing from both the hardware and software viewpoints.

In order to ease the transition from the Cyber 74 to the Cyber 172 and to accomodate users of the Health Sciences CDC 3300 who wish to transfer to UCC equipment, a Coordination Team has been established. This team is charged with providing administrative assistance to users who are moving from the 74 to the 172 or from the 3300 to the Cyber 74/172 system. The group is composed of Rich Franta, Larry Ozga and Steve Nachtsheim.

During the period in which the interim system is operating (April 1 through June 15), current Cyber 74 users who wish to transfer to the Cyber 172 should contact Steve Nachtsheim at 373-7878; current Health Sciences CDC 3300 users who wish to transfer to the UCC complex should contact Larry Ozga at 376-5605 or 373-0328. Anyone who is not a current user of either the Cyber 74 or the Health Sciences machine and wishes access to the Cyber 172 should contact Rich Franta at 376-3963.

Current users of the Cyber 74 who transfer to the Cyber 172 may be eligible for small grants of computer time to assist in the transfer. These grants are applicable to the Cyber 172 only and must be utilized before July 2, 1978. These grants will not apply to supplies; only to SRU costs.

In the near future a series of seminars, short courses, and documentation specifically designed for current users on the CDC 3300 will be offered. Health Sciences users will be notified of these offerings and other matters relating to conversion from the CDC 3300 to the Cybers via special UPDATE bulletins to be issued by UCC and distributed to all who currently are on the Health Sciences Computer Center mailing list.

S. Nachtsheim