M E M O R A N D U M

TO : All CDC 6600 jUsers
FROM: University Computer Center
RE : UCC Disaster Area (June Newsletter)

We apologize for the delay in mailing this newsletter. Because
of the delay, the deadline for transferring your files from the
841 disk packs to the 844 disk packs has been changed from
July 1st to July 7th.

At 2:00 PM on July 7th, all the remaining files on the 841's
will be dumped to tape.

REMEMBER: 844 charges begin July 1.
           841 charges end June 30.
           Disk mounting charge for all packs will be $2.00/mount
                after July 1st.

* *

Additional Note:

    New versions of MNF and BATCH will be installed on July 2nd.

Contents:

Appended to this newsletter are two writeups (Introduction to the Keypunch and 6400/6600 ECS Link) which may be detached for future reference.

July 4th Holiday Hours

Lauderdale: Close at 4AM July 4th
Open at 6PM July 4th

ExpEng   : Close at 12 Midnight July 3rd
Open at 8AM July 5th

SHORT NOTES

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New keypunching rates effective July 1, 1973:

        Keypunching - $5.00 per hour plus cost of materials
        Verifying   - $5.00 per hour
        Sorting   - $5.00 per hour
        Interpreting- $1.00 per hour

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User-Owned Magnetic Tapes stored in the UCC tape library need not be re-registered for the new fiscal year unless the account number(s) they are stored under are invalid after June 30, 1973.

Leave a message for the Tape Librarian at 373-4995 (9:30 a.m. through 6:00 p.m., Monday-Friday) or write a note to the following address if any changes are necessary:

        Tape Librarian - Lauderdale
        University Computer Center
        Experimental Engineering Bldg.
        Minneapolis Campus

After July 15, 1973 the operator will not be able to assign any stored tapes that are registered under invalid account numbers.

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Please note that due to increased demands for space, all <u>user-owned storage facilities at Lauderdale</u> will no longer be allowed after June 30, 1973. This means that user-owned file cabinets, card files, etc. must be removed by June 30th.

Active users at Lauderdale may continue to use UCC storage shelves. However, a nominal charge of $1.00 per quarter for each shelf will take effect July 1, 1973. Request forms are available from the Lauderdale Secretary.

Any unauthorized materials or storage facilities remaining on July 15th will be removed by UCC.

***

<u>The file PLOTPAC</u> in subdirectory PLOTPAC on pack UCC001 will be removed on July 1, 1973. This old version has been superceded by the present library version, and a write-up for the new version has been printed including information on differences between old and new.

***

A special section for <u>non-smokers</u> has been set up in the Lauderdale user's room. Your cooperation in maintaining this area would be appreciated.

IMPORTANT NOTICE TO ALL PACK USERS

The CDC 844 disks are now operational and the expected departure of the CDC 841-7 disks is <u>July 1, 1973.</u> Currently there are two types of packs on the 841: private and public packs. The following outlines the procedures required to transfer 841 files to the 844. A sample control card deck appears at the end of this article.

I. User files on <u>public</u> 841 packs.
    841 packs <u>UCC001, UCC002, UCC003</u> transfer to 844 pack <u>UCC101</u>
    841 packs <u>UCC004, UCC005, UCC900</u> transfer to 844 pack <u>UCC102</u>

    1. Dump the 841 subdirectory of files to magnetic tape,
    2. Release the 841 subdirectory,
    3. Create an 844 subdirectory,
    4. Load the dump tape to the 844
    5. Dump the 844 subdirectory to a local disk file
    6. Release the 844 subdirectory
    7. Attach the 841 subdirectory
    8. Use a new verify routine [The 841 subdirectory verified against the 844 dumped to a local disk file]
    9. If verified correctly, then purge the 841 subdirectory. This procedure will insure that the user has a backup copy of the file on magnetic tape and that a correct version exists on the 844. The following reasons indicate the advantages of transferring files to the 844.

        A. There will be <u>no storage charges on the 844 until after July 1, 1973</u>, while files left on the 841 will continue to be charged the normal rate until it is powered down.
        B. The storage rate on the 844 is $.80 per record block (RB) per month (after July 1) versus $1.25 on the 841
        C. The 844 pack has 3280 RB's instead of the 3030 RB's on three 841 packs. This means that a "PACK FULL" message will occur less frequently.
        D. Tests conducted by UCC show that the 844 is always at least twice as fast as the 841 and the PP time charged dropped accordingly giving lower total job cost.

        NOTE: Files left on the 841 public packs will be dumped to magnetic tape before it is powered down.

II. User files on <u>private</u> 841 packs.
    There are several options that the private pack user will want to consider including the cost of the new packs. At the time of the previous article on disk packs we had been quoted a price of $1000 per pack which on a two year write off meant that we would have to charge $130 per quarter for an 844 pack (117M chars) versus $35 for an 841 pack (35M chars). The competitive bidding process of the University has obtained quality packs that allow UCC to charge $80 per quarter for 844 packs (3.3 times the storage at 2.3 times the cost). If private pack users can find other compatible users to share a pack, UCC will allow them to split the pack charge in thirds or halves as long as the total is the $80 per quarter. A split pack has the disadvantage that the other users, although compatible, may use more space than agreed upon, causing a user job to fail on "PACK FULL". Private pack mounts will cost $2.00 per mount.

    The following options are open to private pack users.

    A. Copy the 841 information to an 844 private pack as in section I.
    B. Arrange to share a pack with other users and copy the 841 files to that shared 844 private pack as in section I.
    C. Copy the 841 file to an 844 public pack [UCC103]
    D. Copy the 841 file to magnetic tape if the file does not require random access.

Summary

1 July 73   4-844 Drives
            UCC101 [UCC001, UCC002, UCC003]
            UCC102 [UCC004, UCC005, UCC900]
            UCC103 [New files of users]

1 Sept 73   2 additional 844 Drives $ - Spindle for pack mounts
            UCC104 [New files of users]
            UCCIOQ [System I/O queues]

Cost

Public Pack: $.0016/RB/Hour   RB = 35,840 characters   MONTH ~ 500 hours
                    [Thus the approximate cost is $.80/RB/MONTH]

Private Pack: $80 Rental/Fiscal Quarter 3280RB = 117.545M characters $2/Mount

SAMPLE CONTROL CARD DECK

The following job shows the recommended procedure for transferring an 841 subdirectory to the 844's. The sample subdirectory, GROUP, will be transferred from pack UCC002 to UCC101. The dumped subdirectory will be saved on the magnetic tape MYTAPE. For convenience, it is assumed that subdirectory GROUP has no READ password, and the password ABEL for MODIFY, EXTEND, and CONTROL permissions.

CONTROL CARD	ACTION
JOB,CM21000,T20,55550001	
P,A,GROUP,UCC002.	*Attach 841 Subdirectory GROUP*
REQUEST,MYTAPE,EW. TAPE LOCATION	*Attach Magnetic Tape*
DUMPSD,SD=GROUP,B=MYTAPE,RR.	*Dump 841 subdirectory to tape*
P,R.	*Release 841 Subdirectory*
P,C,GROUP,UCC101,MD=ABEL,CN=ABEL,EX=ABEL.	*Create 844 Subdirectory*
LOADSD,SD=GROUP,B=MYTAPE.	*Load 841 dump tape to the 844 subdirectory*
UNLOAD(MYTAPE)	*Save magnetic tape*
P,R.	*Release 844 subdirectory*
P,A,GROUP,UCC101.	*Attach 844 subdirectory with READ permission*
DUMPSD,SD=GROUP,B=SCRATCH,RR.	*Dump new 844 subdirectory to a local file*
P,R.	*Release new 844 subdirectory*
P,A,GROUP,UCC002,PW=ABEL.	*Attach original 841 subdirectory*
VFYPACK,SCRATCH.	*Verify original 841 subdirectory against dumped 844 subdirectory*
P,D,GROUP.	*Destroy original 841 subdirectory if good verify*

Program VFYPACK compares a DUMPED subdirectory with the attached subdirectory files. VFYPACK aborts if the comparison is unsuccessful; thus, the old subdirectory in the sample job is destroyed only if there is a successful verify.

JOB SCHEDULING POLICIES

In recent weeks there have been several complaints about poor turnaround service for large jobs. These complaints have suggested that service rendered to certain larger jobs is unreasonable and unfair. The purpose of this article is to explore the reasons for this poor turnaround service and to elaborate on UCC policy for the scheduling of job executions in the 6600 computer system.

We are in the process of developing a program which will produce a statistical analysis of input queue and output queue times as they relate to the job time limit, job field length, origin of the job, and the time of day submitted. When these results are available they will be either posted at the I/O stations or published in the newsletter. However, at this time, the following considerations apply.

1. During the first part of the day (from 8 a.m. to 6 p.m.) the workload arrives faster than the system can process it. This means that it is impossible to process all jobs during this period without some delay.
2. Approximately 25% of the jobs are responsible for nearly 80% of the total resource usage on the system. Most of these larger jobs are of a research or non-instructional nature.
3. Of the 7500 users of the system, about 90% are students or users dealing with instructional applications. Most larger jobs are run by users outside of this group.

Considering these facts, it is reasonable and fair that the larger jobs receive poorer turnaround service during periods of saturation.

UCC is funded primarily to serve the instructional computing needs within the University and other instructional needs throughout the State. Research computing is considered secondary to instructional computing. Therefore, our current policy on scheduling of job executions may be summarized as follows.

1. Jobs which are smallest are given highest priority. UCC attempts to provide turnaround service somewhat proportional to job requirements. This insures that the large number of instructional users receive good service.

2. As the system saturates, degradation of service will affect large jobs first. Jobs which demand large amounts of memory so as to prevent other jobs from executing concurrently are the first to be excluded from a fully loaded system.
3. Turnaround should be no worse than one day for most jobs. All jobs from a given day's workload should be completed each day and such turnaround on larger jobs is considered reasonable even by most commercial computer center standards.

The scheduling policies outlined above assure reasonable turnaround service for the majority of users. As improvements are made in the scheduling processes of the system, the above goals will be more closely realized. At the same time, the really large jobs may experience even longer turnaround times.

ON STATISTICAL COMPUTING

The University Subcommittee on statistical computing is responsible for monitoring the UCC - supported statistical packages and for making recommendations to UCC regarding these packages.

The subcommittee would welcome any comments, suggestions or criticisms you may have. Comments and suggestions for modifications or additions should be directed to any of the subcommittee members listed below. [Program bugs should, of course, be reported to UCC, not the subcommittee.]

Name	Address	Campus
R. O. Collier, Co-Chairman	330 Burton Hall	East Bank
J. Neter, Co-Chairman	715 BA	West Bank
D. Anderson	330 Burton or 205 ExpEng	East Bank
R. Anderson	25 Blegen Hall	West Bank
D. Berry	256 Vincent Hall	East Bank
C. Bingham	203 North Hall	St. Paul
T. Hodge	232 ExpEng	East Bank
R. Hotchkiss	235 ExpEng	East Bank
J. S. Hoyt, Jr.	246 Coffey Hall	St. Paul
E. Johnson	1235 Mayo Building	East Bank
J. Clark Laundergan	Sociology Department	Duluth
F. Martin	204 North Hall	St. Paul
D. Weiss	660N Elliott Hall	East Bank

FORTRAN RANDOM NUMBER GENERATOR RANF

Tests of the uniform random number generator RANF used with the RUN, FUN, MNF and FTN compilers have shown it to be relatively poor due to the multiplier chosen. The serial-correlation and distribution-of-pairs tests showed the poor quality of RANF. We plan to change the multiplier soon to a much better one (the same as is used in the MINN routine RAN2F). This will completely alter the random number sequence for RANF. Notice of the change will be given in SYSNOTES.

Note that random numbers should be generated in large groups (using RAN2F) whenever possible. For example, generating a million random numbers a thousand at a time with RAN2F takes one second while generating a million numbers one at a time with RANF takes ten seconds.

IMSL USERS - FTN VERSION

A Fortran Extended version of the IMSL subroutines is now available as a user library on the permanent file IMSLFTN. It can be accessed as shown in the following examples.

FTN example
```
Jobcard
FTN.
A,IMSLFTN.
LOAD,LGO,IMSLFTN.
EXECUTE.
Δ (7-8-9 card)
```

MNF(C) example
```
Jobcard
A,IMSLFTN.
MNF(C,U=IMSLFTN)
Δ (7-8-9 card)
```

(Fortran program with CALL's to IMSL subroutines, e.g. CALL MGAMMA(...))

```
   .                              .
   .                              .
   .                              .
   END                            END
Δ (7-8-9 card)                  Δ (7-8-9 card)
   (Data cards)                    (Data cards)
   (6-7-8-9 card)                  (6-7-8-9 card)
```

We remind users that UCC does not have a set of test decks for the IMSL library and we do not test the routines ourselves.

CDC 6600 USE FOR MAY

Total jobs: 68,294

From ExpEng	34.3%
From Lauderdale	16.4%
From West Bank	18.0%
From Other Remote Terminals	27.7%
For Maintenance	3.6%

Average times:

On Input Queue	21.3 minutes
At Control Point	5.7 minutes
On Output Queue	5.4 minutes
Printing	1.7 minutes

SUMMER SHORT COURSES

The following short courses will be offered by UCC during the summer. No fees are charged. Registration is required only for the starred courses.

The suggested reference books may be purchased at the Engineering Bookstore or you may also use the reference copies in the UCC User Rooms (140 ExpEng or Lauderdale).

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INTRODUCTION TO THE COMPUTER CENTER

A brief introduction to the facilities and resources of the Computer Center. This is a prerequisite for the Beginning Fortran short course.

Day	:	June 19
Hours	:	2-4 PM
Room	:	N647 Elliot Hall
Instructor	:	R. Franta
References	:	UCC Computer Users Reference Manual

BEGINNING FORTRAN

A presentation of the fundamental features of the FORTRAN language. No prior knowledge is required.

Prerequisites: preliminary reading from one of the suggested references and attendance at the Introduction to the Computer Center short course.

Days	:	June 20, 22, 25, 27, 29, July 2
Hours	:	2-4 PM
Room	:	N647 Elliot Hall
Instructor	:	R. Franta
References	:	MNF Reference Manual (UCC), CDC 6000/7000 Series Fortran 2.3 Reference Manual (Control Data Corporation publication #60174900)

MODIFY

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

Days	:	July 5, 6
Hours	:	2-4 PM
Room	:	N647 Elliot Hall
Instructor	:	K. Matthews
References	:	CDC MODIFY Reference Manual, Rev. C (Control Data Corporation publication #60281700)

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The following short courses cover four of the statistical packages available on the CDC 6600. No computer experience is required.

SPSS

Days	:	June 25, 26, 27, 28
Hours	:	2-3 PM
Room	:	Aero 21
Instructor	:	D. Anderson
References	:	SPSS, Statistical Package for the Social Sciences, by Nie, et alia (McGraw-Hill) and SPSS Version 5.0, UCC update describing the CDC 6600 implementation.

BMD

Days	:	July 9, 10
Hours	:	2-3 PM
Room	:	Aero 21
Instructor	:	D. Anderson
References	:	BMD Computer Programs Reference Manual (U of California Press)

*UMST
```
     Days        :  July 12
     Hours       :  1-3 PM
     Room        :  Aero 21
     Instructor  :  D. Anderson
     References  :  UMST Computer Programs Reference Manual (UCC)
```

        Registration is required. We will cancel the course if less than 10 people apply. Call or write Amy Koepke, 227 ExpEng (373-7744) to register for the course.

OMNITAB
```
     Days        .  July 24, 25, 26, 31, August 2
     Hours       :  3-4 PM
     Room        :  Aero 21
     Instructor  :  J. Sneed
     References  :  OMNITAB II Reference Manual (NBS), Introduction to OMNITAB II (UCC)
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    The following courses will be scheduled later in the summer; the schedules will be published in the July Newsletter:
```
     ADVANCED FORTRAN - R. Franta
     SNOBOL - A. Michel
     FILE MANIPULATION ON THE TIME SHARING SYSTEM - J. Eikum
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*LINEAR AND NONLINEAR PROGRAMMING

    A workshop on the linear and nonlinear programming packages available at UCC will be offered during second Summer Session if there is sufficient demand. Call Dennis Kuba (373-4886) if you are interested.

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THE SUGGESTION BOX

    [Suggestions may be reworded for clarity. Unsigned suggestions are not considered.]

Q/S. *When is the new COBOL compiler going to be available?*

  A. The new version of the Cobol 3.0 Compiler was made available May 1, 1973. It correctly compiles and executes the Navy tests for a standard ANSI Cobol.

Q/S. *Why not print banners on the jobs run from medium-speed terminals?*

  A. Currently banners are not printed on medium-speed terminal jobs because a number of people using these terminals did not want the cost of the extra transmission and printing time.
    In the future, as part of a general upgrading of SUPIØ (the controlling program for the medium speed terminals) a table entry will be associated with each terminal. One of the bits in the table will signify whether or not a banner page is to be put on each output file printed by that terminal. Each Remote Job Entry (RJE) site will receive information stating what specific options are allowed in the SUPIØ upgrade.

Q/S. *Please put a <u>high</u> priority on making job displays available! Since turnaround is deteriorating, we could then better judge <u>our</u> waiting time.*

  A. A cathode ray tube displaying job status would cost approximately $400-500 per month at the ExpEng site. For several years we have wanted these displays at all sites, but money has not been available. A CRT job display does <u>not</u> speed job throughput and is therefore hard to justify to UCC administrators. We experimented with a job display at the Lauderdale site but had to drop it when the medium speed ports became saturated with actual I/O terminals.
    We plan to purchase additional memory and ports for the medium speed terminal system and when these arrive, the job display at Lauderdale will be available again (until saturated conditions occur again).

Q/S. *The SCOPE EXIT card is almost useless on a time limit error. Couldn't we get 1-3 seconds longer to try and save intermediate results?*

  A. We intend to allow the following actions on the time limit error.
    1) If the CPU limit is involved, you have 1 CPU second for action.
    2) If the PPU limit is involved, the PPU limit will be reset to infinity and the EXIT taken. In the future, we plan to have all errors handled on an optional basis. The present scheme does allow fairly large copies, etc., to be executed.

Q/S. *When will COBOL Version 4 and Fortran Extended Version 4 be available for use?*

A. Currently there are two problems associated with UCC making version 4 available.
1) These CDC products are 'unbundled' and therefore each costs $250/month.
2) These products use a new CDC execution time package called 6RM (6000 Record Manager) which is used with the Scope 3.4 operating system (and is to be available on Kronos 2.1). Various reports indicate that the 6RM package has helped COBOL execution time, but has made FORTRAN I/O slower. We think that the cost of the packages can be justified, but that the difficulty of putting 6RM into MOMS or changing operating systems make it likely that the 4 versions will not be available in the near future (through 1973). Currently we are upgrading MOMS to accept various SCOPE 3.3 System requests so that the latest versions of COBOL Version 3 and Fortran Extended Version 3 will be available.

Q/S. *Why not change the CERTIFY routine to*
1. *certify in a normal way*
2. *rewind*
3. *write a half-length record*
4. *continue certifying in a normal way*

A. CERTIFY is a PP routine that was not written at the University. It writes 12 inch records, including a .75 inch inter-record gap. The inter-record gap means that approximately 8% of the tape is not tested for flaws. Your suggestion would indeed get that 8% tested on the second pass. Present costs are as follows:

tape size	current CERTIFY charges	PP time
600'	$1.00	.8 minutes * $1.25 + .10 mounting = $1.10
1200'	$2.00	1.6 minutes * $1.25 + .10 mounting = $2.10
2400'	$3.00	3.2 minutes * $1.25 + .10 mounting = $3.10
3200'	$4.00	4.3 minutes * $1.25 + .10 mounting = $5.48

A second pass would mean that we would have to charge approximately twice as much as we do now, bringing the certification cost very near the actual price of the tape.
    We will look into obtaining a commercial tape certifier and cleaner if the revenue can justify the cost.
    We currently use CERTIFY on all tapes which we sell.

Q/S. *The storage shelves at Lauderdale appear to contain materials which are in dead storage. Perhaps 1/2 of the shelves contain material 1-3 years old. Since you have a waiting list of active users needing storage, how about requiring people to renew their storage requests more frequently, or charge for storage?*

A. See article in this newsletter, p. 2.

Q/S. *We don't like the table arrangement at Lauderdale.*

A. The work tables have been re-arranged.

Q/S. *A dollar changer at Lauderdale please?*

A. There is not enough sales volume and inadequate security to provide one. This is vending services' decision, not ours.

Q/S. *When you set up a new version of MNF, why don't you make the old version available also?*

A. When we install a new version of a compiler we will make the current version into an old version. For MNF the old version is called MNFØLD. This method will be used for all compiler changes, not just MNF.
    Before installing a new version of MNF it is tested using 3 large validation programs and 123 user programs to ensure that the new version is as stable as the old version. If you encounter problems with the new version that were not in the old, you may request credit for time and supplies. If a catastrophic problem is encountered on a new version, it will be withdrawn the same day.
    As swimming requires getting into the water, so does a new version of a compiler require that it be used as the standard version.

Q/S. *Incorporate the following into the MNF compiler*
    IF(a op b) s_1, s_2, s_3, ..., s_n
where the s_i = executable statements.
    If the condition is satisfied, then statements s_1, ..., s_n are executed in order of appearance.
    If the condition is not satisfied then execution proceeds to the next statement as with a normal one-branch IF statement.

EXAMPLE
```
        A=1.
        B=2.
        IF (A .LT. B) A=B, J=J-1, GO TO 7
        C=B-1.
      7 CONTINUE
```

EXAMPLE
```
        A=1.
        B=2.
        IF (A .LT. B) A=B, Z=FLOAT(I), B=B*A
      7 A=B-1.
```
This permits execution of more than 1 statement without repetition of the condition. Also complicated
branching is eliminated.

A. Thank you for your suggestion on improving MNF with a new form of the LOGICAL IF statement. Syntatically a
better form would use the ALGOL and PL/1 bracket words of BEGIN and END. Thus

        IF (lexp) .BEGIN. $s_1\$s_2\$...\$s_n$.END.

would allow nesting of these LOGICAL IF's.
        There is a new standard Fortran being developed, but it does not include such syntax. Note that your
second example can easily be rewritten using the current form

```
        A=1.
        B=2.
        IF (A .GE. B) GO TO 7
        A=B $ Z=FLOAT(I) $ B=B*A
      7 A=B-1
```

We do not plan at present to implement your suggested change, but do plan to make the new standard Fortran
a subset of MNF.

Q/S. Omit the COBOL compiler's page eject for the PROCEDURE DIVISION and for the diagnostics which follow the
source listing. This will save paper.

A. We are seriously considering your suggestion since saving printer paper is a serious problem for us. We
plan to implement this as a default condition and allow a new control card option of restoring the page eject.

Q/S. Make MASK an intrinsic function in MNF.

A. We have decided not to make MASK an intrinsic function. In order to make a MASK function for a general
argument the following code would be generated for MASK(J) (since the MASK command of the CDC 6000 computers
is not indexable).

```
        SA2   J
        MX  6 1
        SB7   X2-1
        AX6   B7,X6
```

        This would require more commands than the simple load of a constant such as SA2=077770000 and the code
would fail if J were zero.
        Note that MNF currently generates MASK commands for constants of the form -2^N+1 where N is less than 18.

Q/S. Why does it cost $1.00 (or more) to do an AUDIT on one pack, when with LISTPAK it used to cost about $0.25?

A. Our fault. The PP routines needed for AUDIT were put on the 6603 disk system rather than in ECS. On May 15,
1973 we put the PP routine in ECS and the charges have again dropped to approximately $0.25.

Q/S. Why is the turnaround for large jobs so very poor?

A. Please see the article on UCC job scheduling policies in this newsletter, p. 3.

Q/S. What is the average turnaround time for a medium size job during
a) peak hours
b) at ExpEng
c) at West Bank

A. We are developing a program to provide this type of data about jobs run on the 6600. When the information is
available we will publish it.

Q/S. I thought the workers at Lauderdale were going to park in the back and leave the front spaces for us.
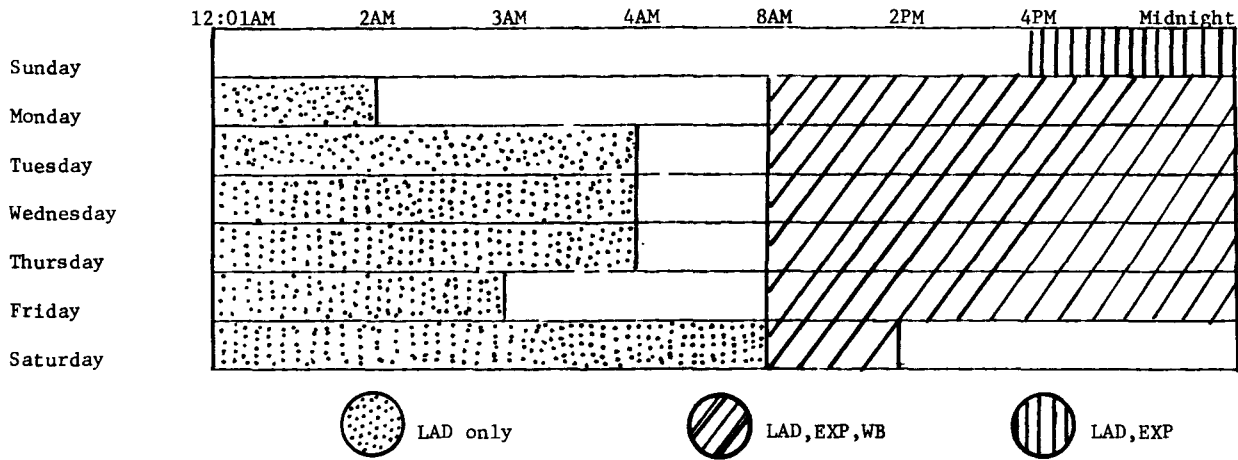
A. We're still working on it. Please remember however that we share the building (and the parking area) with
other departments.

Q/S. Often, especially with student jobs, one would like to correct and return a deck immediately. I find it
outrageous that I must wait an entire cycle of the operator to re-submit a corrected job. It seems
reasonable that the operator could wait 1-3 minutes before picking up new jobs after returning old ones.

A. Having the operator standing around doing nothing is an inefficient use of his time. We suggest that you do
a little table debugging before your first run.

Q/S.   *You should develop some system to allow users to recover from system or operator errors. In the past few months I have had 2 jobs fail, one due to a tape drive failure and one due to a 'misplaced' 7-8-9 card (this card was correct in the deck). Both jobs used several tapes and a large amount of core. The result was an extra 24 hours added to the already slow turnaround. A simple cure would be to allow people who have been abused to have the option of re-submtting their jobs with a P3.*

A. 1. We do have a system to allow users to recover from errors. We allow them to re-submit the job. Automatic recovery in all cases is virtually impossible and we expect that most users want to decide <u>when</u> and <u>what</u> concerning recoveries.

   2. If an error occurs which is beyond the control of a user, then it must not be assumed that this error must be controllable by the computer center. However, we do attempt to solve all valid problems. A realistic approach to any computer usage is to <u>expect</u> errors and <u>plan</u> on dealing with them. All users are abused in this sense.

   3. We are willing to accommodate users with valid deadline constraints on jobs. However, a constraint resulting from poor or unrealistic planning on the part of the user, is not a valid reason for special handling of jobs.

6600 OPERATING HOURS

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

Sunday

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

○ LAD only   ◉ LAD,EXP,WB   ◫ LAD,EXP

Medium Speed Remote Terminals

Room 38 ElectE	(Mpls)
Room N640 EltH	(Mpls)
Room S191 KoltH	(Mpls)
Room 321 MinMet	(Mpls)
Room 69 Physics	(Mpls)
Room 17 AgEng	(St. P)
Room 257 BioSci	(St. P)
Room 384 HortS	(St. P)
Room 54 BA	(WB)

Local Supervisor(s)   Telephone

C. Berg	373-5404
M. Cook	373-3895
J. DeWitt	376-7377
Rod Rosse	376-3149
T. Faulkner	376-7024
J. Abdullah	373-2348
C. Swanson	373-5475
R. Lewis	373-2300
Bob Scarlett	373-0243
Dave Olson	373-0044
R. Vance Morey	373-0763
N. Valentine	373-1059
R. Comstock	373-0928
L. Hulbert	376-3067
J. Heinen	373-1086
M. Brenner	373-0949
H. Smith	373-3608

Useful Telephone Numbers

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

Locations of UCC Keypunches

East Bank		No.	St. Paul		No.	West Bank	No.	Lauderdale	No.
38	ElectE	2	17	AgEng	1	90 BlegH	2	Users Room	4*
N640	EltH	1	302	CofH	1				
130	ExpEng	2	384	HortS	1				
131	ExpEng	1							
208	ExpEng	8*							
S191	KoltH	1							
321	MinMet	1							
69	Physics	1							

*includes 1 interpreting card punch

BEGINNER'S INTRODUCTION TO THE KEYPUNCH

The number of open shop keypunches on campus will slowly be increased as UCC reduces its closed shop keypunching facilities. We hope to encourage users to do their own keypunching and to use the keypunches more efficiently than they have in the past. We have therefore written an <u>Introduction to the Keypunch for Novices</u>.

The text of the <u>Introduction</u> is printed below. Additional copies are available from the Keypunch Supervisor in the Closed Shop keypunch room in Experimental Engineering.

In addition, a half-hour introductory course in keypunch use will be offered twice daily at the beginning of each summer session. The schedule will be:

> 8:30 - 9:00 AM
> 3:30 - 4:00 PM

weekdays only, June 19 - June 29 and July 24 - August 3.

Sign-up sheets will be posted near Room 223 Experimental Engineering. Each session will be limited to 10 persons. Locations will be posted on the sign-up sheets.

If you are unable to sign up in person, call Pat Gerlach at 373-2521 between 1 and 3 PM to have your name placed on the list.

INTRODUCTION

The shift key, marked NUM (Numeric) is at the lower left of the keyboard. Letters are arranged as on a typewriter. Numbers are arranged as on some adding machines. Special characters are all over the place. The - (minus) sign is obtained by pressing the SKIP key in the top row, with or without the shift key.

1. Turn the keypunch on (upper left, 30 second warmup).
2. Put cards neatly in the hopper (upper right-hand side of the keypunch), if there are none there already. The cards face you as you are sitting at the keypunch.
3. There are three switches directly above the keyboard. Put all of them up.
4. There is a little V-shaped lever just below and to the left of the small plastic window in the keypunch. This lever is just above the path the card takes as it goes through the keypunch. This lever can be in one of two positions .... "LEFT ARM DOWN" or "RIGHT ARM DOWN". Turn it to RIGHT ARM DOWN. This key is called the "PROGRAM CONTROL LEVER" on the photographs posted near the keypunches in Room 208 ExpEng. The RIGHT ARM DOWN position deactivates the program drum.
5. Press REL (Release) button on keyboard twice to get two cards. You are now ready to punch the first card. For each subsequent card, press REL once.
6. You can tell which card column is waiting to be punched by looking at the pointer inside the window at the base of the program drum.
7. If you mispunch a card, press REL until the card comes out. Do not rip the card out of the machine. Do not try to re-use a mis-punched card.
8. To backspace a card, press the special button marked "BACKSPACE KEY" on the photos. This button is in the middle of the machine, just below the track on which the card rides along as it moves through the keypunch. If the keyboard seems to be locked, press the BACKSPACE KEY to unlock it.
9. Throw out your used and mis-punched cards. Do not leave them where the next user may mix them with unused cards.
10. If a card jams, call the keypunch supervisor in the closed shop keypunch.

The Ø26 keypunch can be used in a more sophisticated way than this. Writeups will be made available in the open shop keypunch room describing more complex operations on a keypunch.

I N P U T / O U T P U T

Users who wish to exchange information on programs, equipment, etc. with
other UCC users may use this form to submit the information.

To: Editor, N & C
     University Computer Center
     Room 227 Experimental Engineering
     University of Minnesota
     Minneapolis, Minnesota 55455

Please publish the following message in the INPUT/OUTPUT section of the next
UCC Newsletter:

Message: _____

_____ _____

_____ _____

_____

_____

_____

_____

_____

_____ _____ _____

_____ _____

Contact:

    Name _____ _____ _____

    Address _____ __ _____

    _____ _____ _____

    _____ _____

    Telephone _____

6400/6600 ECS LINK - PRELIMINARY USERS GUIDE (5/24/73)

The 6400/6600 Extended Core Storage Link makes it possible to submit batch input jobs, output files, and punch files to the University of Minnesota 6600 MOMS system from any MERITSS terminal. It also makes it possible to send files to the MERITSS system from any job executing on the 6600.

It is necessary that three conditions be satisfied in order to use this mechanism:
1) The user must possess a valid 6600 account number.
2) The user must possess a valid MERITSS user number.
3) The MERITSS user number must be validated to use the transfer mechanism.

A general overview of the ECS LINK will be presented first, including information on file structures. This will be followed by more detailed information on the commands and control cards necessary to utilize the transfer mechanism.

Input files to be submitted (or "XMITTED") to the 6600 must be correctly structured as job files. Chapter 3 of the KRONOS Reference Manual and chapter 6.6 of the UCC Users Manual give several examples of legal job input file structures. Notice especially that end-of-record marks (7-8-9 cards in the examples) are used to separate the various portions of the input file. If only control cards are being submitted to the 6600 (i.e. no program source or data) the input file will consist of only one logical record (the control card record). Either the APPEND command, or the COPYBR utility program can be used to aid in structuring the input file with the necessary end-of-record marks.

It is important to realize that there are significant differences between the MERITSS-KRONOS system on the 6400 and the MOMS-SCOPE system on the 6600. Although there are many control cards which perform the same function on both systems, there are also some cases where the same control card will perform different functions on the two systems. The input file submitted to the 6600 must conform to the specifications of the MOMS system as described in the UCC Users Manual. Thus, all control cards must be MOMS control cards.

An input file submitted to the 6600 is placed in the 6600 "input queue". Since at any given time there may be from 50 to 200 jobs waiting in the 6600 input queue, it is quite possible that the job may not be scheduled for several hours. However, unless the 6600 is exceptionally busy, it is reasonable to expect that a "small" job will be scheduled within 15 to 30 minutes or less.

It is possible that a "STATUS" command may be implemented in the future to make it possible to determine the status of a job submitted to the 6600. Until this status command is implemented, patience is the key to successful usage of the ECS Link. When patience wears thin, please call the MERITSS consultant, John Larsen, at 373-5753 to inquire about the status of a job submitted to the 6600. Please do not attempt to contact 6600 operations with questions of this nature; they do not have a large enough staff to handle inquiries of this type, and have thus been instructed not to give out information on jobs originating on the MERITSS system.

After the job has been scheduled, the control cards in the first logical record of the input file will be processed one by one. If any errors occur during the processing of any control card the job will be aborted (control will be transferred to an EXIT card if one is present, otherwise the job will terminate). When the job terminates

(either because of an error, or because all of the control cards have been processed)
all local files created by the job including the OUTPUT file will be destroyed.
Only the DAYFILE is saved, which is sent automatically back to the 6400 MERITSS user
who originated the job. The DAYFILE will be saved as (or appended to) a permanent
file named "DAYFILE". If the job creates any files which the user wants returned
to the MERITSS system, the files must be explicitly "sent" to the MERITSS system
through the use of the 6600 "SEND" control card. Note that if the 6600 job aborts
before the SEND control card is processed, the file will be destroyed and not be sent
to the MERITSS system.

The MERITSS user who submits an input file to the 6600 does not have to remain on-line
on the MERITSS system. The DAYFILE, and any other files which his job sends back to
the MERITSS system will be stored in his permanent file catalog whether he is currently
running at a terminal or not. Note that for each input file submitted to the 6600,
information is appended to the permanent file "DAYFILE" when the job is completed.
Once this information has been listed, it is a good idea to purge this "DAYFILE".

Output files submitted to the 6600 must be formatted correctly for printing on a CDC
line printer. If the file to be submitted as an output file is not already in the
proper format, the utility program COPYU (writeup available from the UCC librarian)
or COPYSBF can be used to add the carriage control character to column 1 of the file
and move the data over so that it begins in column 10 (COPYU) or column 2 (COPYSBF).

The user may direct output files to be printed at the main computer site at Lauderdale
by designating a site code (LD) or at any participating 6600 remote terminal site.
There are two high speed remote stations, 131 ExpEng (EX) and 90 Blegen Hall (WB)
plus one medium speed station at 302 Coffey Hall in St. Paul (21).

Punch files submitted to the 6600 may be in any one of three formats: coded cards (PU),
binary cards (PB), or absolute binary cards (P8). See pages 9-5 through 9-6 of the
KRONOS Reference Manual for descriptions of these three forms of punched cards.
Punch files will all be punched at the main computer site, but they may be directed
to be hand-delivered to some of the 6600 remote sites. The printed output and
punched cards go into special bins and shelves marked "6400 OUTPUT" at those sites.

FILE TRANSMISSION FROM 6400 TO 6600.

The control card format for
an _input_ file is: XMIT(lfn)

The control card format for
an _output_ or _punch_ file is: XMIT(lfn,dc,AN=nnnnnnnn,S=cc)

Argument   Description

  lfn   Local file name to be submitted. This file must currently be a local
                file. It may not be a direct access permanent file nor a primary
                file. If it is an indirect access permanent file, a GET command
                must be issued prior to the XMIT control card. After the XMIT control
                card is processed, the file "lfn" is detached from the terminal
                job and placed in a queue to be transmitted to the 6600; thus it
                can no longer be accessed on the MERITSS system.

dc   A "disposition code" must be specified to submit either an output or a punch file. If no disposition code is specified, the file is submitted as an input file. The four possible values of the disposition code and their meanings are:

                  PR - "print" (used to submit a file to be printed)
                  PU - "punch" (used to submit a file to be punched in coded format)
                  PB - "punch binary" (used to submit a file to be ·punched in binary format)
                  P8 - "punch 80 columns" (used to submit a file to be punched in absolute binary or "free" format)

nnnnnnnn   A valid 6600 account number.

cc   A "site code" indicating where the output is to be printed or punched. If "S=cc" is not specified on the XMIT control card, "S=LD" is assumed by default and the output will be printed/punched at the main computer site at Lauderdale. (See page 2)

Note that "XMIT" is a MERITSS control card and not a TELEX command. Thus it is necessary to be in the batch subsystem to submit a file to the 6600.

A few examples will clarify the use of the XMIT control card. Assume that the following indirect access permanent files exist:

Filename	Contents
JOB66	An input file structured properly for execution on the 6600 MOMS system.
COMPS	A Compass source program.
CARDS	A list of data that is to be punched in coded format.
LIST	A list of data that is to be printed but which does not have printer carriage control characters in column 1 (i.e. has data in column 1).

Control Cards Entered	Action Performed by the System
GET,JOB66. XMIT,JOB66.	The file "JOB66" is submitted to the 6600 as an input file. After the job has run on the 6600 the DAYFILE will be returned to the 6400 and saved or appended to a permanent file named DAYFILE.
GET,COMPS. COMPASS,I=COMPS,L=CMPLIST. XMIT,CMPLIST,PR,AN=12345678.	The Compass program on file "COMPS" is assembled and the listing written to file "CMPLIST" which is then sent to the 6600 to be printed at the main computer site (S=LD is default). Note that the listing generated by the Compass assembler already has carriage control characters in column 1 and does not need to be reformatted.
GET,CARDS. XMIT,CARDS,PU,AN=12345678.	The file "cards" is submitted to the 6600 to be punched in coded format at the main computer site.
GET,LIST. COPYU,LIST,LIST2,0,0,S1,***. XMIT,LIST2,PR,S=EX,AN=12345678.	The utility program "COPYU" is used to add 10 leading blanks to each line of the file "LIST" so that it will print correctly. This newly

formatted file "LIST2" is then submitted to the
6600 to be printed at the remote station in
Experimental Engineering (EX).

System Responses to the XMIT Control Card.

If the ECS LINK is activated, and if no errors were detected in the parameters on
the XMIT control card, a 7 character job name will be returned to the MERITSS user.
This job name should be recorded for future reference, as it is ·the name that the
job will have on the 6600 (if it is an input file) or the name the file will print
under on the 6600 or a remote station (if it is an output file).

Error messages may be issued by XMIT and indicate that the file has not been placed
in the queue for transmission to the 6600. (See User Guide)

FILE TRANSMISSION FROM 6600 TO 6400

The control card format to SEND a file from the 6600 to the 6400 is:

$SEND(lfn_i=pfn_i,\ldots,lfn_n=pfn_n/UN=uuuuuuu,PW=ppppppp,t)$

Argument	Description
lfn_i	Local file name to be sent to the 6400. This file must be currently a local file; it may not be a magnetic tape, a disk pack file, a permanent file, or a captive file.
pfn_i	Permanent file name that the file will have after it has been sent to the 6400. If "pfn_i" is not specified, pfn_i is assumed to be the same as lfn_i.
uuuuuuu	MERITSS user number under which the file is to be stored on the 6400.
ppppppp	MERITSS password for user number uuuuuuu.
t	Permanent file type. "I" specifies an indirect access file (default) and "D" specifies a direct access file.

The UN=uuuuuuu and PW=ppppppp arguments are not required if the job containing the
SEND control card originated on the MERITSS system and if the files are to be sent
back to the same user who originated the job. This means that if an input file is
being prepared on the 6400 to be executed on the 6600 via the ECS LINK; and if this
input file is going to utilize SEND control cards; the MERITSS user number and
password do not have to be specified on the SEND control cards. However, if a deck
of cards is submitted at one of the 6600 remote stations or at the central computer
site; and if this 6600 batch job wishes to send a file to the 6400, the MERITSS
user number and password must be specified and this user number must be validated
to use the ECS LINK.

A few examples will clarify the use of the SEND control card. Assume that the
following local files exist (within separate jobs):

Filename	Contents
OUTPUT	Complete output file from job (job originated on the 6400).
LGO	Program binary to be executed on the 6400 (job originated on the 6400).
DATA	A data file read in on cards at a 6600 remote station to be sent to the 6400 (job originated on the 6600).

Control Cards	Action Performed by the System
SEND(OUTPUT)	The file "OUTPUT" is sent to the 6400 to be saved as an indirect access permanent file under the user number of the user who originated the job on the MERITSS system. If either an indirect or direct access file already exists with name "OUTPUT" it will be purged first, then the file sent from the 6600 will be saved.
SEND,LGO=PROGRAM/D.	The file "LGO" on the 6600 will be defined as a direct access permanent file named "PROGRAM" under the user number of the user who originated the job on the MERITSS system. If a permanent file named "PROGRAM" already exists on the 6400 under the user number, it will be purged first.
SEND,DATA/UN=USER123,PW=SAM.	If "USER123" is a valid MERITSS user number which has been validated to use the ECS LINK, and if "SAM" is the password for this user number, then the file "DATA" will be saved as an indirect access permanent file on that user number on the 6400. If a permanent file named "DATA" already exists under that user number, it will be purged first.

Note that when a file is sent from the 6600 to the 6400, any other file by that name under the same user number is purged first, then the file from the 6600 is either saved or defined.

System Responses to the SEND Control Card.

If the ECS LINK is active, and if no errors were detected in the parameters on the SEND control card, the message "SENT TO 6400 lfn_1" is issued to the dayfile of the 6600 job for each file successfully processed.

Error messages may be issued by SEND and indicate that at least one file has not been placed in the queue for transmission to the 6400. If more than one file is specified on the SEND control card, an attempt will be made to send each file individually. The "SENT to 6400 lfn_1" message will be issued for those files successfully processed, while error messages will be issued for those files not placed in the queue. (See User Guide)

APPENDIX C

KNOWN PROBLEMS - 5/24/73

1) The file record structure is sometimes slightly altered at EOF or EOI by the insertion of an extra empty record or empty file (at EOI). This can cause problems with random files such as a MODIFY OPL. Until this problem is corrected, the random index should always be re-generated after the file has been transmitted (by using LIBEDIT or GTR).

2) The MERITSS user number and password on the SEND control card are not yet blanked out with asterisks. Until this problem is corrected, be careful to destroy your dayfile after it is returned to you to insure that no one else will learn your user number and password by looking at your discarded dayfile.