UNIVERSITY OF MINNESOTA COMPUTER CENTER
Deadstart Systems Newsletter

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THE EDITOR RETURNS

Hats off to K. C. Matthews and R. A. Williams for doing such an excellent job
with this newsletter in my absence.

NOTICE OF CHANGES TO THE SYSTEM

Bill Elliott added a new option to EXPLIB, the Express Tape Library data
handler, which facilitates automatic charging for tape storage. The new option
is OP=A. A substantial amount of documentation was also added to the program.
Program TAPES now supports an option which allows a reel owner to designate
another person as owner of the reel. Bill installed a change to PFDUMP which
causes the program to use control word writes rather than conventional writes.
This change speeds up permanent file dumping to 7-track tape by a factor of
10%. The RETAIN command processing in PFILES was corrected so that if the
RETAINed file is not local, the message FILE NOT FOUND is issued. Until now,
PFILES was first purging the intended file and then checking for a local copy.
Bill also repaired a serious problem in UFM which caused MAGNET to abort with
an improper FET out of range error.

Kevin Matthews changed CPUMTR to run under MODE 7 rather than MODE 6. This change
will help track down MODE 1 errors in CPUMTR. Kevin also installed two fixes from
Control Data for PFDUMP. These repairs will enable us to move to a new disk
configuration (explained farther on in this newsletter).

Marisa Riviere changed RFM to call CPM to clear core at the end of program execution. This added security is required in order to run RFM on the 6400.

A long standing problem with the LINK loader has been a MONITOR CALL ERROR in the event of a user request to load a program beyond the user validated field length. Brian Hanson discovered that the error only occurs if the user requests enough BLANK COMMON to extend past his validated limit. The problem is now fixed. Program LINK issues the fatal error message, EXECUTION FIELD LENGTH BEYOND USER LIMIT, and aborts if the execution flag is set. If the execution flag is not set, no error message is given.

Bob Zalusky installed a large portion of his proposed ENABLE/DISABLE INPUT and OUTPUT commands (see DSN 2, 15 p3 and DSN 2, 16 p5). The command ENABLE/DISABLE OUTPUT controls the commands; DISPOSE, SEND and XMIT. When one of these commands is attempted and OUTPUT is disabled, the response is *utility name* TEMPORARILY DISABLED. The ENABLE/DISABLE INPUT command controls the SUBMIT utility. If a SUBMIT is attempted from BATCH origin when INPUT is disabled, the job will not be aborted but merely give a diagnostic message. A job of any other origin attempting a SUBMIT will be aborted. The portion of the ENABLE/DISABLE INPUT and OUTPUT commands which control non-BATCH origin terminals will be installed at a later date by N. L. Reddy.

Bob also modified DSD so that all ENABLE/DISABLE commands are entered into the error log.

Tim Salo repaired a problem with jobcard processing for some delay jobs read by SUPIO. Delay jobs would occasionally receive default values for time limit or field length. Tim supplied two new source versions of programs used by SUPIO, SUPIO1 and 2SU. Program 2SU is a rewritten routine used by 1SU to handle SUPIO termination. The program returns all output files assigned to SUPIO's control point and, if SUPIO aborted, enters a control card record. The external changes to 2SU are:

1) The message, JOBNAMEID.AERQb,FT., is issued for each file returned to the queue.

2) The program SUPIO1 is called after SUPIO aborts.

If SUPIO aborts, 1SU requests additional memory and writes its memory to CM. SUPIO1 then dumps 1SU's memory in a readable format. Tim also installed a modification which allows the queue file subsystems to pass more data through the system sector of input files rather than passing data via separate FET conventions for SUPIO, BATCHIO and EXPORT. This allows SUPIO, BATCHIO and EXPORT to call 1BA to perform functions common to the three subsystems.

PROPOSED CHANGES TO THE SYSTEM

Bill Elliott proposes to add a new control card, SCRATCH, which would run from system origin only. Its task will be to scratch label a tape (destroy an existing label) in a single operation after checking that:

1) The given user number is the tape owner.

2) The tape is labeled and the VOL1 label is protected. If it is not protected, the owner can do his own scratch labeling and should not be asking the operators to do it.

The utility would then write a short ID record with date, VSN and an operator identification. The command format will be, X.SCRATCH(VSN,UN=ABC1234,OP=WJE). The advantages to having such a command are: 1) the entire operation can be handled with one control statement and 2) provides accounting with the ability to charge for this service if such is the desire of UCC.

Bill also proposes that we add a new CMRDECK command which would allow specification of the suffix used to identify the current deadstart tape i.e., SYSAA , SYSAB etc. Program ISF should then be modified so that ISF(P) calls the current SYSPROC file. This would simplify operator directions connected with permanent file dumping and reloading while making the choice of the SYSPROC procedure part of the deadstart tape and thus reduce errors in general.

Kevin Fjelsted proposes that WRITEUP be modified to handle upper and lower case writeups. This would be done with a new parameter on the writeup index card indicating that the writeup is in upper and lower case. A request to output a upper/lower case writeup to a line printer would result in converstion to upper case.

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Tape Pool Implementation - by W. J. Elliott

With the installation of TAPES, the mechanism to support an automatic tape reservation system is available. Several decisions as to exact implementation and validation for use need to be made as well as a charging schedule worked out. As currently configured, the reserve system allows a tape to be entered to one of 6 slots:

small 7-track	User Pool
large 7-track	User Pool
small 9-track	User Pool
large 9-track	User Pool
Staff Scratch Pool (7-track)	
Staff Scratch Pool (9-track)	

The difference between the User and Staff Pool would be:

1) No charge against staff scratch would be made.
2) Tapes reserved from the staff scratch would be automatically reclaimed with no notice after a predetermined amount of time - tentatively 1 month.
3) Tape of lower quality than the user pool (which should be flawless) will be placed there.
4) Staff would be encouraged to volunteer little used or unused reels in their audits to the scratch pool.
5) Scratch pool tapes would be available only to YZE accounts.
6) Scratch tapes would not be tested after release and would be cleaned only on a usage basis.

User pool tapes should be charged at a rate to discourage retention for more than 4 months. The initial charge should be high enough to discourage reservation for less than 1 month to reduce turbulence. Suggested costs are:

TYPE	INITIAL MONTH	MONTHLY
Small	3	$2
Large	4	$3

Staff would not be validated to reserve tapes from the user pool. Only those non-staff accounts with permission to change their passwords and create direct access files would be validated to reserve.

Until tapes are placed by the librarian into the user pool the reserve mechanism is effectively disabled when rate structures are decided upon and published, reels can be easily placed in the User pool. The staff pool can be implemented immediately and should be to uncover any problems in tape pool operation before it becomes available to the general user population.

In connection with accounting, 3 account file messages are indicated:

ZRES,bbTY,VSNVSN,bbUSERNUM.   Reel Reserved
ZREL,bbTY,VSNVSN,bbbUSERNUM.   Reel Released
ZRET,bbTY,VSNVSN,bbbUSERNUM.   Released Reel Restored to User

Where TY=7S   small 7-track
        7L   large 9-track
        9S   small 7-track
        9L   large 9-track
        SC   staff scratch pool (7 or 9-track)

Caution to Staff: Tapes should be reserved only when the normal system is running
                    as reservations made on System time will not carry over.

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Time On Our Hands - by K. C. Matthews

Back in February we wrote an article explaining how time limits would be handled in KRONOS 2.1.2 (DSN vol 2, No. 4, p6). There we noted that there was a 6 bit time limit field. We proposed the following formula:

Time limit = 2*Index+2

with an index of 77B implying an infinite time limit. This gave the following correspondence:

INDEX	VALUE
0	2
1	4
2	6
3	10B
...	...
...	...
76B	176B
77B	Infinite

This is the formula now in effect.

We wish to modify the formula to give greater flexibility in assigning time limits between 176B and infinity. One reason this is needed is the way the "T", command currently works in Telex. After getting a time limit, one can only specify "T,NNN" where the sum of NNN and the elapsed session CPU time do not exceed the user's validation. This is at variance with the 2.0 implementation and very inconvenient.

We propose the following new rule:

The index is interpreted as 4 bits of shift count (S) plus 2 bits of mantissa (M). Then

$$\text{time limit} = (M+1)*2**S$$

That is, a program takes the bottom 2 bits of the index, adds 1, and shifts that number by as many places as are specified in the top 4 bits of the index. This formula is easy enough to implement in the PPU common deck COMPCVI. The following table results:

INDEX		VALUE	INDEX		VALUE	INDEX		VALUE	INDEX		VALUE
0	–	1	1	–	2	2	–	3	3	–	4
4	–	2	5	–	4	6	–	6	7	–	8
10	–	4	11	–	8	12	–	12	13	–	16

etc.

Of course, 77B will still give an infinite time limit. We can also give big finite time limits. Note that some limits can be obtained from several indices. This presents no problem.

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Fitting a FIT for a FET,
or How to Handle Record Manager Abnormal Termination – by K. C. Matthews

This proposal is made in response to a suggestion by Clive Schofield. When a job aborts, program 1AJ scans low core of the program (RA+2 and above) looking for file names and FET addresses. If found, the address is examined to see if it is a valid FET. If it is, and if the file is being written, 1AJ calls CIO to write an end-of-record on the FET which will dump the buffer.

A problem occurs with FTN version 4 which uses the record manager. In low core one finds file names plus FIT addresses, not file names plus FET addresses. Since a FIT doesn't look like a FET, the pointer is ignored and the buffers are not dumped.

The solution seems fairly obvious. If 1AJ cannot find a valid FET at the address, it should investigate the possibility that the address in low core is a FIT pointer. If 1AJ finds what seems to be a valid FIT, it should check the corresponding FET (whose address is stored in the FIT). If this FET looks valid, the normal processing should take place on that FET.

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DUMPPF/LOADPF – by K. C. Matthews

The DUMPPF User's Group (DUG) held its annual meeting in the phone booth by the Best Steak House at Oak & Washington. The following resolutions were unanimously passed, and are now presented to the Systems Group as proposals.

1) Secured Files

DUMPPF should dump secured and unsecured files (in case the user still has files of each type). The FS=parameter should be ignored, but a warning message will be issued if it is used. The parameter will become illegal on June 15, 1977.

LOADPF should still allow the FS=parameter to be used for selecting between old secured + unsecured files. However, this usage should end on June 15, 1977 also. A warning message will again be issued if FS= is used.

2) Protected Files

DUMPPF currently aborts if the user uses it to dump a protected file. This is because the file name is returned to DUMPPF by the PFM CATLIST request, but DUMPPF cannot access the file without the password. For non-system origin jobs, DUMPPF should ignore the existence of a protected file. For system origin jobs, DUMPPF can dump protected files.

LOADPF gets in trouble in the following circumstance. If a user wishes to reload a file named SAM, but has a protected file named SAM already, LOADPF will abort. This is becuase a "file not found" response is given when LOADPF attempts to purge SAM. That is normally no problem. But an error occurs when the SAVE or DEFINE of SAM is attempted. The user can get around the problem by using the NA parameter on the LOADPF card. The DUG feels that this situation is acceptable but should be documented in the writeup.

3) The secretly supported but never published code supporting ultra-private files should be removed.

4) If the user specifies P=fname, records are copied from the P file to the B file (dump file). If there are several files on the P file, they are all copied to the B file. Currently, there is no way to tell DUMPPF to stop at an endfile. DUG proposes that a

CF=NNNN

parameter be added to DUMPPF. This parameter will specify how many files ought to be copied from the P file to the B file. CF=0 will tell DUMPPF to copy to end-of-information. CF=0 will be default, and hence the option is upward compatible with the current DUMPPF. CF by itself will imply CF=1.

5) Some DUG members want list options added to DUMPPF. Unfortunately, there is already an LO parameter in DUMPPF/LOADPF (for local files).

To be upward compatible, we propose

LP=STRING

to give the various list parameters. They are:

D –	files dumped.
C –	files copied.
E –	errors.
I –	input directives.
H –	page headings.

The defaults will be :

LP=DCEIH (all) for batch output
and LP=DCEI for time-sharing output.

SYSTEM MAINTENANCE: People and Procedures

Bob Zalusky has written a very handy PASCAL program used for extracting all
local modifications to a specific CDC product on WPL. The program works by
scanning JPL for modifications to the specified WPL deck. The program is presently
accessed via a non-official UCC DO type procedure on CALLPRG. The call format is:

   DO,MODS(DECK=deckname,OUTPUT=listfile) where deckname is the WPL deck in
   question and listfile is the desired output file (OUTPUT is default).

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Last Week's Systems Group Meeting - by T. W. Lanzatella

1. Deadstart Dump Analysis. K. C. Matthews has taken responsibility for insuring
   that every crash on the CYBER 74 is dumped, analyzed and archived. Bob
   Williams has assumed like responsibilities for the 6400. Our new policy
   is to attempt to discover the reason behind all system crashes and to sign-off
   on each dump. We have instituted a new section of the DSN for deadstart
   dump analysis.

2. Permanent File Restoration Charges. The Systems Group decided to limit the
   permanent file reloading fee to $20.00 per request or $5.00 per file whichever
   is less.

3. Delay Queue. N. L. Reddy reviewed the current state of the Delay Queue and
   described the most recent problem. If an operator attempts to delete a job
   from the Delay Queue but misspells the jobname and attempts to reenter
   the name, the entire Delay Queue disappears. Operations personnel noted
   several occurrances of delay jobs submitted with large time limits which had
   to be dropped at end-of-operations. We all agreed that delay jobs with large
   time limits should only be run on weekends.

4. K. C. Matthews reviewed the future disk configuration, PFM changes and
   PFDUMP changes which will allow direct access permanent file to spread
   over several devices and leave indirect access files on the master devices.
   This new configuration will be implemented as soon as PFDUMP can be repaired
   to support it.

5. B. Fox reported that the System 2000 data base for accounting will not be
   ready until October.

6. The following proposals were presented and approved or disapproved.

   a) Bob Williams' proposal to change the TELEX WARN command back to CDC
      standard and to implement a new command called DIALALL which performs the
      same way as the current WARN command (see DSN 2,17p4) was accepted with
      the following change. The new command will not be DIALALL but DIAL,ALL
      so as to fit in neatly with the current DIAL command. Messages received
      at a terminal from the DIAL,ALL command will be preceded with FLASH
      reflecting the urgency of the message.
   b) S. Yen's proposal to install SPSSONL, a short core version of SPSS,
      was approved.
   c) Bob Williams' proposal to modify the DSD MESSAGE command so that the command,
      MESSAGE., restores the system name and version as the current message in
      the TELEX message buffer was approved (see DSN 2,17p5).

d) Bob Williams' proposal to modify program SET so that the CMRDECK is always displayed if bit 0 of word 13 on the deadstart panel is set despite the contents of word 14 on the deadstart panel or to allow the SYSTEM= command as a CMRDECK entry was defeated (see DSN 2,17p5). The proposal was defeated because Operations Personnel should always know which device is the system device and therefore can deadstart with word 14=0 thus always displaying the CMRDECK.

e) Bill Sackett's proposal to disable the memory change command option for display code input was approved as being a good safety measure (see DSN 2,17p5). The ability to enter display code data directly into memory is still available under DIS.

f) Marisa Riviere proposed that we standardize the location and access of documentation for FETCH type programs (see DSN 2, 17p7). We decided that these files should be placed in the WRITUEP index with an appropriate disclaimer like *UNOFFICIAL* in the index entry.

g) A. B. Mickel proposed a temporary committee to study control card usage statistics. This was approved.

h) Bob Williams' proposal to add DO as a file type in CALLPRG (see DSN2,16p3) was approved. The DO type file will provide a method of maintaining unofficial automatically called procedure files on CALLPRG.

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System Strategy Minutes - by T. W. Lanzatella

The majority of the meeting was spent discussing the effects of system consolidation on the many operational aspects of system maintenance:

a) Deadstart tapes
b) Library tapes
c) SYSPROC

Deadstart tapes. Instead of the usual two copies of the deadstart tape kept in the CYBER 74 machine room, we will now keep three: 1 tape will be kept in the 6400 room, 1 tape will be kept behind the CYBER 74 console and 1 tape will be kept in the CURRENT rack in the CYBER 74 machine room. We have begun using a new naming convention for the ISF system procedure file and binary corrections file (explained elsewhere in this newsletter). The suffix on these names will also appear on the deadstart tape paper label.

Deadstart tapes will always be installed on the same day on both machines. Installation days will continue to be the second and fourth Thursdays of each month.

Library Tapes. In addition to the two copies of the library tape kept in the library tape rack, a third copy will be kept in the 6400 room. Library tape VSN's will be equivalenced on a LABEL card in SYSPROC to facilitate backup usage in the event of tape damage. This is in lieu of using comment strings with the TAPES utility. Library tape installation dates will change to Mondays at 8:00 a.m. This will insure the presence of staff members when the tape is installed. Library tapes are composed of three files: first - CYBER 74 programs, second - 6400 programs and third - programs common to both the CYBER 74 and the 6400. The procedure files called by SYSPROC which are currently kept on M. Riviere's user number on the CYBER 74 will be kept on UN=SYSTEMX on the 6400.

SYSPROC. The KLUDGES files of both machines will be kept as nearly identical as is reasonable, i.e., if an emergency fix to SUPIO is needed, SUPIO will not be placed on the 6400 KLUDGES file.

Another topic brought up to the System Strategy Committee was the inordinate number of permissions assigned to the CSOJ bit in the Access Word. We decided to break down CSOJ to exclude the following four permissions which will be added as separate bits in the Access Word.

1) DSD
2) Field Length override
3) RSB permission
4) Tapes and removable packs assignment permission

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The System Log - by T. W. Lanzatella

Several meetings ago, the System Strategy committee decided to institute a new procedure for dealing with emergency repairs to the system. The new procedure was decided upon because of a severe problem with communication among System staff members as to what programs were being sysedited after every deadstart, why they were being sysedited and who authorized the program changes. An additional problem arose if the emergency fix itself was in error and the individual who made the change was not available. Our previous procedure for dealing with such problems was the NEWSMOD procedure and the SYSMODS writeup. We found this mechanism acceptable as far as user oriented notification is concerned but lacking as a vehicle for staff notification.

Rather than attempt to limit the number of staff members authorized to change the system we have decided to use a System Log notebook which resides behind the console in the CYBER 74 machine room. Staff members who change the system are expected to enter the following information into the System Log at the time of the change:

1) individual making the change
2) date and time of the change
3) program(s) being changed
4) reason for the change
5) location of the source code (mods) used to make the change

Item 5 is particularly important in the event that an emergency repair doesn't work. Staff members should feel no compunction about expounding upon the reason for the change. This information is important and often makes the difference between total confusion and relative control. The System Log has been in use on the CYBER 74 for approximately one month and thus far represents a distinct improvement over prior methods.

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SYSPROC - by T. W. Lanzatella

A particularly confusing area of system maintenance is the transition from the current deadstart tape to a future deadstart tape. The problems arise because of the contents of the emergency changes file called KLUDGES. Often KLUDGES contain programs which, for any number of reasons, run on the current system but not on the future system. Problems may also arise due to procedural changes in the SYSPROC file, the procedure file called by ISF to initialize tape express data, sysedit emergency changes and the library tape and to submit statistics gathering programs. The old solution to these problems was simply to not allow ISF to call SYSPROC when running the future system. But this was

inconvenient because compilers and libraries were then missing from the system.

The ideal solution would be to devise a way whereby the system can specify which SYSPROC and KLUDGES file are to be used at deadstart time.

We have installed a new feature in ISF which supports this capability. Two new parameters were added to ISF, P and J. The P parameter specifies the name of the SYSPROC procedure file while the J parameter specifies the name of the SYSJOB file. The file SYSJOB is analogous to SYSPROC except that it is submitted rather than called. File SYSJOB currently contains calls to machine hardware maintenance programs. The key to this whole scheme lies in the fact that KRONOS offers the capability of automatically executed control statements immediately upon completion of deadstart. Control statements which are to be automatically executed are specified in the IPRDECK which resides on the deadstart tape (see KRONOS 2.1.2 Installation Handbook Rev. M pII -5-17-1).

Using this solution, the problem reduces to naming convention. Each time a new deadstart tape is written, the IPRDECK is changed so that ISF calls a different procedure file than the previous tape. Similarly, the SYSPROC procedure file called by ISF is changed to use a different KLUDGES file. Naming convention is as follows: the first copy of SYSPROC is called SYSAA, the second is called SYSAB and so on. Similarly for the KLUDGES file. File SYSAA uses KLDGAA, File SYSAB uses KLDGAB, etc. The SYSPROC file must reside on the normal disk base (backed up on PN=STF) while the KLUDGES file resides on PN=STF. The suffix used to identify SYSPROC and KLUDGES will always appear in bold letters on the paper label on the deadstart tape.

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Who Gets CFPF? or
UCC Protects Those Who Protect Themselves - by K. C. Matthews

Several users have asked for the access bit CFPF, which allows the creation of protected permanent files. The existence of protected files was announced in WRITEUP,NOTE on the Cyber. Hence, users believe that we intended for someone to use the feature. I would certainly like to use protected files myself. I'd like to protect some procedure files with a simple password so that I won't accidentally PURGE or REPLACE them. Other users have similar desires.

If we allow large scale use of protected files, we face the problem of the user who has forgotten his file password. Since the help-line is a master user over everyone, we assume that the help person now adds looking up lost file passwords to his other weighty duties. I don't know how the help person determines whether the caller has the right to know the file password. One way might be to let any non-student account number know the protected file password if the user can identify to the help-person the password of the user number. The help-person would then try an account card from the terminal; if it worked, he could go back to the ******* number and look up the file password. If this approach is taken, we will have to document the fact that anyone knowing the account # password can really find the file password. For student accounts, I'm assuming that there is a department master user who will verify student identities and recover forgotten passwords. Your suggestions are sought.

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Permanent File News - by K. C. Matthews

Starting Monday, 20 September, we are beginning to use some of the new double
density disk drives to hold user direct access permanent files. These devices
will be given device numbers of 20 and 21. These devices have primary device
masks of 0 (indicating that they have no catalog tracks). No user indices have
these devices as master devices, and no indirect access permanent files reside
on them. The new devices have secondary masks of 377B, indicating that any users'
direct access file may reside on the device. The following article summarizes the
implications of this move.

1) Mod PFMU3 was changed drastically. Previously PFMU3 insured that a direct
    access file must reside on the master device for that user index. Now, however,
    we use the standard CDC code which lets the permanent file reside on any of
    the devices allowed by the secondary mask. For example, consider device 10.
    It has primary and secondary masks of 22B. Bits 1 and 4 are set in the mask.
    Hence, since the primary mask is 22B, users with user indices ending in 1 and
    4 have DN10 as a master device. All of their indirect access files reside
    on this device. Their direct access files can also reside on this device,
    since the secondary mask is also 22B. No direct access files belonging to
    user indices ending in 0, 2, 3, 5, 6, or 7 may reside on DN10. Users on
    device 10 may have direct access files on devices 20 and 21, along with all
    other users, since these devices have secondary masks of 377B.

    One feature of the stock CDC code was not installed. The stock code allows
    the super high user indices (377700B through 377777B) to define direct access
    files on any device in the system, including the 808 and ECS. This feature
    was probably added so that dayfiles could be selected on any equipment. Then
    DFTERM could define the old dayfile as a permanent file wherever it happened
    to be. But this feature was not kept in our version. The maintainers of
    permanent files on both the Cyber and the 6400 were not excited about the
    prospect of system origin jobs accidentally defining files on random devices.
    On our systems, the special user indices will be treated like all others for
    permanent file purposes.

2) When doing a CATLIST,LO=F, we are all used to seeing an asterisk (*) under the
    DN column for direct access files. For named devices, the asterisk is always
    there. For unnamed devices, the asterisk means that the direct access file
    resides on the user's master device. We will now begin to see the numbers
    20 and 21 in this column, indicating the device on which the direct access
    file actually resides. Note that standard CDC control card options like

                          CATLIST,LO=F,DN=20.

    will now be meaningful for our system.

3) Files residing on the new permanent file devices will be dumped twice. Once
    when the user's master device is dumped, and once when the new device is
    dumped. If we have 2 disk packs full of direct access files, this means that
    up to four packs worth of new files will now be dumped. For our 6 user
    permanent file devices, we will be doing the dumping of a system having
    8 permanent file devices.

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This is the standard way the dumping works in CDC KRONOS/NOS systems. It increases the dumping time, but is good for two reasons.

A. When a user calls up requesting the reload of a file, we can always reload it from the dump of the user's master device. If only the files actually residing on DN=10 were dumped for a dump of DN=10, this would force us to search several dump tapes when the user called.

B. If device 20 and 21 crashes and must be reloaded, we can simply use the the dumps of those devices. If these files were only dumped on the dumps of the master devices (DN=10,11,12, and 13) we would have to go through all of those dumps on a reload to find files which had previously been on the wrecked device.

When reloading one of these new devices, one must use the OP=N (non-initial load) parameter on the PFLOAD card. Even though it is an initial load, OP=N is required to make things work. (The CDC PFLOAD/PFDUMP routines are full of odd code.) These devices never have to be reloaded as part of our normal maintenance procedures, since they contain neither catalog tracks nor indirect access permanent files. Finally, we hope that when some more disks arrive in February, we can go back (for a while at least) to having none of these special devices. At that time we hope to have eight master permanent file devices, each with its own 1 bit device mask.

4) The days of lots of extra disk space for staff use are probably over. We will have one "spare" double density drive, which will be pack UCC. To insure that no long term junk builds up on that pack, we will regularly initialize it each Monday morning. We need scratch space on that disk for temporary files.

5) Double density drive OAB is no longer a scratch DJ. It should now be powered down during system time. Drive 1AB (UCC) is the only DJ device that should normally be up during system time.

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Deadstart Dump Archiving - by K. C. Matthews

The seven-track deadstart dump tapes are now being archived on 9-track tapes. Not all deadstart dumps are thus saved. If the cause becomes obvious after the dump is taken, it will not be archived to the nine-track tapes.

On the nine-track tapes, the ECS portion of the tape is normally not saved. This is because ECS occupies most of the file, but is rarely used. If you want the ECS of a particular dump saved, make sure to let K. C. Matthews or R. J. Hursh know.

The deadstart dump archives are maintained on VSN's UC2111 and UC2112. They are multi-file tapes with the SI of DDUMPS. Thus, to find a deadstart dump, one only has to know the FI for the corresponding dump. The FI is always 7 characters. Six characters give the date of the original dump. The seventh runs through the alphabet, beginning at A for each new date.

Thus, the first dump from 2 September has an FI equal to 760902A. The second dump for that day has an FI=760902B. The first (and only) dump from 3 September has the FI 760903A. and so on.

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To recover the deadstart dump from 3 September, the following control cards could be used.

```
LABEL,DUMP,VSN=UC2111,SI=DDUMPS,FI=760903A.
DSDI(NR,...
....
```

The NR parameter is used on the DSDI control card to prevent the time consuming rewind and reposition of the multi-file tape.

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CALLPRG and LIBRARY TAPE NEWS - by M. Riviere

On September 4, I replaced SYSIO on the Library Tape by its future version. The change updated current SYSIO to Level 12.

A problem showed on FORTRAN when the new SYSIO began to be used, related with random I/O, and I had to change back the routine RAMNS= to its level 12 version. I made the change on September 7.

On September 13, J. Mundstock replaced future MNF on CALLPRG with a new version with several bugs fixed.

Also on September 13, M. Frisch removed the CALLPRG entry for UMOPL. The library MNSOPL is replacing now UMOPL.

On September 14, R. Zalusky added two DO type procedures to the CALLPRG index, DEPEND and MODS. These procedures are used for handling JPL and WPL modifications. Robert has a description of these procedures published on this DSN.

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Deadstart Dump Analyses (CYBER 74) - by K. C. Matthews

Period: Tuesday, 7 September - Thursday, 16 September

There were 14 abnormal deadstarts performed during the period. Twelve were caused by the old 1CD problems and attempts to fix it. One was due to hardware (the printer controller). The cause of one has not yet been determined by KCM.

Tuesday, 7 September

12:12 (DD-10) (DD-0 listed in analysis) 1CD (Batchio) hung the system. Dump analyzed by N. L. Reddy, T. Salo. Hopefully this problem was fixed on 16 September.

Wednesday, 8 September

No crashes.

Thursday, 9 September

00:22 (DD-11)

Two words of junk were written into low central memory. Analysis showed that 1CD was wrecked internally. Given to Salo/Reddy.

Friday, 10 September

No problems

Saturday, 11 September

No Problems

Sunday, 12 September

20:51 (DD-12)

The system hung up because a copy of CIO at control point 6 was not moving.
The PP just appeared "Stuck". Two bytes look strange in the PPU's direct
memory cells. I have not been able to determine exactly where the PP was
when it stopped. KCM still looking, but desires fresh ideas from a willing
volunteer.

Monday, 13 September

15:13 (DD-4)
    1CD hung.   Salo/Reddy
15:19 (DD-5)
    1CD hung.   Salo/Reddy

Tuesday, 14 September

14:38 (DD-12)
    1CD hung.   Salo/Reddy
14:50 (DD-13)
    1CD hung.   Salo/Reddy

Wednesday, 15 September (Black Wednesday)

02:35 (DD-1)

Turned out to be a hardware problem. The printer controller was somehow
hung up. Master clearing the controller will solve the problem in the future.

Note: An untested version of 1CD was added to the system at 13:40. Then:

14:00 (DD-2)
    System hung.   CIO PP's not doing anything.
14:12 (DD-14)
    System hung as above.
16:07 (DD-15)
    System hung.   Channel 0 full.
16:25 (DD-17)
    System hung.   CIO not doing anything.
18:25 (DD-20)
    CIO hung again. Level-0 deadstart was done in hopes that the problem would
    be resolved (the system was fairly empty at this time).
18:52 - Dumped PPU to printer
    Same problem.

At 19:00 we took the 13:40 version of 1CD out of the system. It turned out
that in certain circumstances, 1CD was wrecking an instruction in PP resident

used for loading 0 - level PP overlays. (0 level overlays can load anywhere in the PP.) We only have 1 0-level overlay resident in CM-ODF (the drop file overlay). Hence, after 1CD had done its thing, the next PPU program in that PP which calls ODF would be wrecked. That PP was usually CIO or 1CJ.

Other System Problems

On Monday, 13 September and Wednesday, 15 September, several TELEX jobs stopped with the message "Rollin File Bad". Keeping rollout files off the 808 seemed to cure the problem. But Mass Storage Tests reveal no 808 difficulties. When the 808 is not used, the system really has only 2 disk channels and slows down noticeably. We will run without the 808 Thursday and Friday, (16-17 September) and try to investigate the problem more over the weekend.

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"As the System Crashes" or 6400 Dump Status - by R. A. Williams

The following is a summary of the symptoms and suspected causes of 6400 system aborts since we started running the consolidated Operating System.

8/24/76 - 1RI hung at a control point after a TLX request was made with garbage in the request word. Job priority was 7761, since DDF had been called. An attempt to duplicate this probelm was not successful and no leads have been developed.

8/27/76 - The scopes went blank. Since this happened, the CE's found a bad card in the PP Q register which might have caused the problem.

8/30/76 - The scopes went blank. As above.

8/30/76 - The scopes went blank. DIS was up and thus the scope blanking was just a symptom of a hung PP which refused to storage move. The hung PP was caused by a rollout file assigned to equipment TT. Some trap code has been instabled in CPUMTR and 1RI to uncover the cause of this problem.

8/30/76 - CIO hung on a set track bit monitor function. TALKFIL (the fast attach file for TALK) had been assigned mysteriously to equipment TT. The trap code described above should help to diagnose this.

9/2/76 - 1TA hung on a drop tracks function. This resulted from the FNT for a file being written into the FST for the file by DISPOSE code. K. C. Matthews has already discovered and fixed this problem.

9/2/76 - 1TA hung on a drop tracks function. As above. The user was being removed from the recovery file SALVARE.

9/3/76 - 844 disk channel 6 hung full with an FT error on 1RO. This function timeout occurred on a general status (128) function request and was retried several times before hanging in a strange manner. The driver (6DI) seems to get confused in certain odd cases and hang on the channel but it can't be expected to recover from any

hardware problem it might encounter (if it could, we wouldn't need
a machine at all)! It is likely that there is a problem with the
controller but it happens so rarely that it will be hard to diagnose.

9/17/76   The system was taken down for several reasons; a port was hung, rollin
file bad messages were being issued, and ECS was not being used by
the system.
The hung port cause has not been determined; the rollin files which were
bad consist of only a system sector but do reside on mass storage;
and the ECS problem results from the fact that the system does not
inform the operator about a bad label or automatically initialize the
device (as Level 7 did for non-permanent file devices) but simply
leaves a label error indication in the MST and does not use the device.