RUTHERFORD FORUM

195 COMPUTER NEWSLETTER

FORUM CENTRAL COMPUTER NEWSLETTER

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Cigar Updates, Preface, Contents, Part A, D8, D9
Program Library Manual Update
Electric Update Number 3

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MR K KNOWLES
ROOM 3
BUILDING R20

Programme for 195 Representatives Meeting

Wednesday 28 November 1979
Rutherford Laboratory Lecture Theatre.

09.45 COFFEE

10.00 Introduction

10.05 The Computing Division

- F R A Hopgood (Head of Computing Division)

10.25 The IBM 3032

- A R Mayhook (Systems Group)

10.45 General Meeting

11.45 Computer Graphics

- C D Osland (Systems Group)

12.30 Parallel Category Meetings.

LUNCH

14.00 CMS Concepts and Facilities

- T G Pett (Systems Group)

15.00 FINISH

15.00 Category Representatives Meeting.

ATTENDANCE

COMPUTING DIVISION

D Asbury, K Crennell, B J Davies, K Duffey, A S Dunn, R Freeman, D S Greenaway, P J Hemmings, H Hurst, A Mayhook, C Osland, D F Parker, T Pett, D H Trew, S Tunstall, S H Ward, C A Wilkins.

Category Representatives

P Lamb	MSSL
R Maybury	HEP Counters
E Gill	NERC
C Webb	Laser
N J Diserens	Tech RL
M Waters	BCRG

Attendance

Group Representatives and Others

J Allison	Manchester HEP
E Bailey	Daresbury
K E Barrett	Lanchester Polytechnic
K R Bentley	NERC Bidston
C Blamey	AWRE
I Bloodworth	Birmingham
T A Broome	SNS
J V Carey	RGO
E F Clayton	Imperial College Film Analysis
D S Collins	IOS Wormley
J Conboy	UCL/Film Analysis
D Cooper	Oxford/Chemistry
J K Davies	Oxford/SPS Muons
A Diggory	Durham
M Dowson	Leicester
I Dunbar	Sussex
D N Edwards	Liverpool
C W Fay	IMER Plymouth
D French	British Museum (Nat. History)
J Gerratt	Bristol
L E Gill	ORLS
M Godden	UCE(ORLS)
A Grimm	NERC
P J Grout	Oxford Theoretical Chemistry
A Harrison	Durham
J C Hart	HEP Counters
J Hutton	HEP Data Handling
E P Jerrom	Admin(F&A)
P Johnson	Liverpool Film Analysis
A Kalam	Bath
J Lang	Culham
C Leary	IOS Wormley
D H Long	Appleton
A P Lotts	Durham Film Analysis
J Macallister	Oxford
F MacDonald	Birmingham Film Analysis
B Mack	RGO
T C McArthur	Bristol HEP
D McGregor	ISC Newbury
P McLaughlin	MSSL
A M Mehdi	Bath
A J Middleton	Tech RL
G D Mountain	Queen Elizabeth College
P J Negus	Glasgow Film Analysis
A Nicholson	Liverpool Film Analysis
P Norrington	Oxford Theoretical Chemistry
M J O'Connell	SNS
J Phillips	ERCC
M Phillips	UCL Counter group
D C Rance	Admin(F&A)
R G Roberts	Theory RL
M Russell	LBS
H Saraph	UCL
T P Shah	HEP
C P Stewart	Leicester
D Ward	Cambridge

H M Watson	HEP Data Handling
N West	Oxford Film Analysis
J F Wheeler	IHGS London
J B Whittaker	HEP Counters
F Wickens	HEP
J N Woulds	Daresbury
B Wyatt	ITE Bangor
J B Young	AWRE

NOTES FOR 195 REPRESENTATIVES' MEETING 28 NOVEMBER 1979

1. INTRODUCTION

1.1 Head of Computing at the Rutherford Laboratory

Mr. W. Walkinshaw retired at the end of August 1979. Professor F. R. A. Hopgood has succeeded him as head of Computing at Rutherford Laboratory.

1.2 Computing Division

From 1st September 1979 a single division, to be known as the Computing Division, was formed by combining the Atlas Computing Division and the Computing and Automation Division. The Computing Division is responsible for the management and development of the SRC Interactive Computing Facility as well as the batch processing facilities based upon the IBM 360/195 complex housed at the Laboratory.

1.3 The Three Machine Complex

Since 10th April 1979, the Virtual Machine operating system on the IBM 3032 has provided an additional Back End computer coupled to the two IBM 360/195 computers. It has also provided facilities for development of software in two main areas: to allow the 3032 to take over from the 195 the Front End activity controlling the network of workstations and the scheduling of work within the system; and implementation of CMS.

Meet no Note

The total number of jobs submitted per week by users has increased. Over the period April - October about 20% (90679 of the total 465233) were run on the 3032 Back End machine (CEM). The 3032 CPU time cannot be precisely converted into 195 units, but a conversion factor of 1 unit of 3032 CPU time into 0.5 units of 195 CPU time is used in all job accounting. Thus the 3032 delivered 1105 195-CPU hours to users out of a total of 5919 hours.

2. HARDWARE

2.1 General

A T-Bar switching unit has been installed. This enables the dynamic relocation of Unit Record equipment (such as line printers) between processors.

The remaining 4 Model 1 (100 Mbyte) disk drives have been upgraded to Model 11's (200 Mbytes).

2.2 Performance

An addressing fault on one of the channels caused some problems involving the overwriting of disk data during June.

There was a problem during part of June and July affecting telecommunications. This was overcome by reconfiguring the system console controllers, whose access priority inexplicably affected communications through the telecommunications controllers (the Memorex 1270's).

At about the same time there was a problem with the 2305 (fixed head file).

During October and November there were three unscheduled Cold Starts; two were due to faults in a Disk Control Unit; the cause of the other is still under investigation.

2.3 Shutdowns

There will be a shutdown for air-conditioning maintenance for 4 days, from 6 am on Friday 7th March to the evening of Monday 10th March.

2.4 Maintenance

Maintenance is carried out on selected Thursdays from 15.00 to 19.00. The dates for 1980 are as follows:

195/1 - January 10th, February 7th, March 6th, April 3rd, May 8th, June 5th, July 10th, August 7th, September 4th, October 9th, November 6th, December 4th.

195/2 - January 24th, February 21st, March 20th, April 17th, May 22nd, June 19th, July 24th, August 21st, September 18th, October 23rd, November 20th, December 18th.

3032 - January 31st, February 28th, March 27th, April 24th, May 29th, June 26th, July 31st, August 28th, September 25th, October 30th, November 27th; The December date is yet to be arranged.

2.5 System Development

The system continues to be required for System Development on Tuesday and Thursday evenings. Users complained that System Development periods have been over-running and it has been decided to extend the period by 30 minutes and to ensure that the sytem is available at the scheduled times. System Development therefore now runs from 17.30 to 19.30.

3. SYSTEM SOFTWARE

3.1 HASP and OS

There was a HASP cold start on 17th September to allow the introduction of additional Remote Station numbers.

A new Operating System nucleus was introduced on the 3032 after the Cold Start to speed up the interface between MVT on the CEM, and VM on the 3032 for the handling of I/O.

The reply to the HASP STATUS command for those jobs that request or imply the use of a Back End machine has been changed from NEEDS BEM to NEEDS ANY BACK.

3.2 Fortran

Some changes were made to the re-entrant part of the Fortran interrupt handler during November. This fixed

some problems with programs run on the 3032, as described in 3.3 below. Version 2.2 of the Fortran Library was about to be installed (this actually took place on 13th December). This version fixed several bugs found in the previous version, in particular in the partial array handler.

3.3 MVT on the 3032

The first version of a multi-CPU system was introduced operationally on Tuesday 10th April 1979.

The only way of identifying on which one of the three central processors a job has been run is carried in the first line of the HASP Log, where the initiator is identified as Fx. Bx or Cx and where x is the initiator number and F identifies the Front End machine and B and C identify the Back End machines, where C is currently the 3032.

Accounting for jobs run on the 3032 is done in 195 equivalent seconds and the conversions from 195 units and vice versa are done by the system at job start and job end. The conversion factor was obtained by averaging the result for a large number of jobs and is subject to adjustment in the light of experience. Since the conversion factor is an average one the charge for any particular job will not be the same on the 3032 as on the 195's, but for most jobs the difference should be small. However those jobs which make extensive use of floating point arithmetic, particularly double precision, will be heavily charged on the 3032 and these jobs can be directed to the 195's by including a /*NEEDS FLOAT card in the deck.

The first 2 of a series of Front End tests were held on 25th July and 21st/22nd November. On both occasions ELECTRIC response was unacceptable. At the meeting users requested that these tests be restricted to 4 hours at a time until we have a system which it is felt could be run for a longer period while giving a reasonable response. This practice has now been implemented and further tests are currently being run on Wednesdays, initially in the mornings only.

There have been some bugs in the MVT system on the 3032: these are fully documented in DOC=ALERT.3032, and are described below.

i) The ++H STAT command produces incorrect NOT EXECUTED steps on some occasions. This occurs when the time used is very small, or 0, notably from steps using the Null Program (this phenomenon is sometimes seen with procedures like FHCL, where a language procedure has a Link-Edit step, but no GO step). Users should therefore interpret NE replies from ++H STAT commands with caution.

ii) There was a problem with the clock on the 3032 losing significant amounts of time. This was remedied by modifications to the MVT Control Program of the 3032 CEM.

iii) Two problems were fixed by the new interrupt handler. Firstly, there was an underflow/overflow problem. Programs which rely on Standard Fixup of underflows, but complete satisfactorily otherwise, were failing on the 3032 with overflows. This was caused by a bug in a section of code in the Fortran Library not used by the 195's because the fixup was performed by the hardware. Secondly, job termination after 10 (default) messages did not work, although all the error messages were output, including the termination messages. If further errors occurred in the job then the termination messages were repeated after 10 more errors, but the job still continued. All new Fortran load modules now include the new interrupt handler, which causes the correct action to be taken on the 3032. Old load modules will have to be re-linked using the link edit card

REPLACE IHOEFNTH, IHOETRCH

3.4 ELECTRIC

A reduction in the dumping frequency of the 3350 disks was being considered. This would mean that the ELECTRIC online and Level 1 archive packs would not be backed up as frequently as at present, probably only on Monday, Wednesday, Friday and Saturday nights. There was no objection to this at the meeting.

The following changes have recently been made to ELECTRIC:

i) The OBEY command has been introduced; this causes the entries in a text file to be processed as

commands. This command is fully documented in the update to the ELECTRIC manual which is being distributed with this Forum; it is also described in the ELECTRIC file DOC=ELECTRIC.PART2.SECT8.

ii) The commands CANCEL, RATION, RESET and STATUS, which ELECTRIC passes on to COPPER (see CIGAR section D3) are brought into line with other commands by allowing minimum abbreviations and positional parameters as follows:

Command	Abbreviation	Positional Parameters
RATION	RA	ID ACCT
CANCEL	CA	JOB ID ACCT O
RESET	RESE	JOB ID ACCT
STATUS	ST.	JOB OPT SKIP

The parameter setting O=DUMP or O=PRINT with the CANCEL command can be used to cancel a job with a dump or to cause the output to be printed respectively.

iii) The output job submitted by the PRINT, PUNCH or TAPE commands, previously called idOUTPUT, is now called idPRINT, idPUNCH or idTAPE respectively. The parameter JBNM can still be used to override the latter part of the jobname.

iv) If an attempt is made to submit a job with a jobname longer than 8 characters, then the jobname is truncated and no error message is output.

3.5 T.D.M.S.

Most of the facilities described in Section D12 of CIGAR now work, including password protection of volumes. However the LIST command does not recognise the corporate field OWNER; ACCT and ID should be used instead. ALso the ADDKEY command has not been implemented as described in D12.4.3 but CHANGE KEY may be used instead. Section D12 of CIGAR will be updated to allow for these differences.

4. WORKLOAD

The machines are fully loaded, but not saturated. The fact that not all the priority 1 work is being cleared weekly is due to the uniqueness, or to resources and

conditions, of one or two repetitive streams of jobs. It is often the case that more work could have been done but that this is prevented by dependencies between jobs, such as their being identically named, or being conditional upon one another, or requiring exclusive use of disk or tape datasets. Some of these constraints could be avoided (for example by having duplicate copies of data).

5. DISKS

All the Model 1 3330 disk packs have now been withdrawn to allow the upgrade of the Model 1 drives to Model 11's. Many of the packs were found to be already disused. In other cases data was moved to public packs, or new Model 11 disks were issued. This exercise involved the tracing of at least 40 owners, but only in one case were we unable to identify the owner of a group of datasets (11 datasets on XFJA01). Entries for the old Model 1 packs were removed from TDMS when the users indicated satisfaction with the arrangements made.

Any queries about the whereabouts of data formerly on Model 1 packs should be directed to Peter Hemmings.

6. WORKSTATIONS AND TELECOMMUNICATIONS

6.1 General

A meeting of workstation representatives was being held at Rutherford Laboratory on 29th November.

6.2 EPSS

The Post Office is expected to terminate its EPSS service six months after introducing its public Packet Switching Service, PSS, in 1980. Users who at present make use of EPSS for access to or via the Laboratory are asked to let E. B. Fossey have full details of their continued requirements so that the need for a connection to PSS may be determined.

7. LIBRARIES AND PACKAGES

7.1 RHELIB Routine JOBID (SY/34)

A change was introduced to this routine during August to allow it to return a full 3 character identifier when called as an integer function. e.g.

```
      INTEGER*2 ID2
      .
      .
      .
      .
      ID=JOBID(ID2)
```

This would place the first 2 characters of a 3 character identifier in ID2 and the full identifier (padded on the right with blanks) in ID (which is assumed to be INTEGER*4). With 2 character identifiers ID2 contains the complete identifier (as before), but the four characters in the result, ID, are the two characters of the identifier padded on the right with two blanks.

The routine will continue to work as previously when called as a subroutine, returning only two characters in ID2, as in the function call. Thus existing programs only need to be changed if there is a requirement to obtain the full identifier. Then it is necessary to recompile, changing the call to a function and re-linking, replacing the original control section, e.g.

```
      ID=JOBID(ID2)
      .
      .
      .
      .
      END
//L.SYSIN DD *
 REPLACE JOBNAM
  .
  .
  .
/*
```

7.2 GENSTAT

Version 4.02 of the GENSTAT statistical package has been installed on the RL Central Computers to replace

version 4.01. This version is fully documented in the Rothamstead Newsletter. No change to the procedure for using GENSTAT at RL is required.

7.3 CSMP-III

The IBM Continuous System Modelling Program (CSMP-III) has been installed on the RL Central Computer System. CSMP-III is given minimum support at RL and users should consult with the IBM CSMP-III Program Reference Manual (reference copy only at RL). CSMP-III User Note 1 is available from the Computer Receptionist and describes how to invoke the program at RL. CSMP I is still available.

7.4 Supported Packages

A revised list of supported packages is being issued as Section 6 of this Forum Bulletin.

8. SHORT ITEMS

8.1 ALGOL 68/C

Release 1.271 of the Cambridge Algol 68/C Compiler has been installed on the RL Central Computer. Algol 68/C is given minimum suport at RL. Algol 68/C User Note 1 is available from the Computer Receptionist and describes how to invoke the compiler at RL. Users will need an Algol 68/C Reference Manual from the University of Cambridge for full details of the language. A reference copy only is available at RL.

8.2 Three Character Identifiers

All two character identifiers were issued by the Summer and after changes to HASP, ELECTRIC and other parts of the system software three character identifiers beginning with the letter O are now being issued; all identifiers beginning with O are three character identifiers.

8.3 FORMS 666 Printer

Line printer output on standard forms is spaced at 8 lines per inch. Jobs submitted with FORMS=666 are printed at 6 lines per inch. The operational arrangement that one printer was constantly set to print FORMS=666 has now been withdrawn; jobs requiring

FORMS=666 are now printed on the TN train printer at operationally convenient times. In practice this will not be done when there is a large queue for FORMS=555. Since FORMS=555 also prints at 6 lines per inch users should change from 666 to 555, as support for FORMS=666 will probably be withdrawn.

8.4 Restart for Long Running Jobs

Users are reminded that all jobs which request large amounts of CPU time should have mechanisms for restart. Attention is drawn to the notes in Section 6 of Forum 4 concerning restarts in long running jobs.

8.5 Use of Overlay

It has been noted that certain users are not having due regard to the effect on the operational efficiency of their jobs in planning the overlay structure of their programs. A bad overlay structure increases disk activity, and this reduces the CPU efficiency of jobs. The aim should be to ensure that each overlay uses a significant amount of CPU time. There is always a limit to the amount of core which can be saved by overlay if a measure of efficiency is to be maintained; overlay also costs extra CPU time and the penalty of this can sometimes outweigh the benefit gained by squeezing a job into a smaller class. Users who are encountering problems in this area are invited to consult the Program Advisory Office.

8.6 New SORT/MERGE System

A new Sort/Merge system called CASORT was installed on 18th July. It is entirely compatible with the previous IBM system and identical JCL and programs may be used. The SORT workspace requirements for CASORT are however roughly one third of those for the IBM system, so it is recommended that users reduce the SORT space allocation in all jobs accordingly. Users should also find that the number of disk I/O operations required for sorting are substantially reduced. Regular users of this facility may obtain a CASORT manual from the Manuals Librarian; this also describes how to call the Sort package from high level languages, including Fortran.

8.7 User Libraries

The User libraries, formerly on model 3330-11 disks have been copied to model 3350 disk packs (named RHEL06

and RHEL07). No change in the use of User Libraries is required.

8.8 VIEW Program

The VIEW program (run by the VIEW procedure) was modified during September to process control characters, such as carriage return, line feed, backspace, correctly. The principal high level routines affected are the contouring routines. In addition an error in the handling of vector families has been corrected.

8.9 IMPACT

IMPACT is undergoing tests by selected users; it is the subject of a separate discussion at this meeting.

8.10 HPD

The HPD is now running on 195/2 instead of 195/1 as formerly.

8.11 Jobs Submitted from ELECTRIC

The automatic STATUS command issued when a job is submitted from ELECTRIC is now issued in such a way that the JOB INPUTTING reply should not be produced.

8.12 VIEW$

Users who are still using the VIEW$ program via the JOBLIB procedure from SYS1.SMOG, as described in the SMOG manual, have been getting 0C4 abends from this old version of the program. VIEW$ should be used via the procedure VIEW$, as described in Part III Section 9 of the ELECTRIC manual.

QUESTIONS RAISED AT THE 195 GROUP REPRESENTATIVES MEETING

Q1. Can you say how long ELECTRIC will continue to be supported?
A1. No - when ELECTRIC is no longer used. (F R A Hopgood)

Q2. What is the official position of the extended OBEY command?
A2. The facilities are now available to all users and the documentation will be issued as an update to the User's Manual. It can also be found in the ELECTRIC file DOC=ELECTRIC.PART2.SECT8. (T G Pett)

Q3. Is the OBEY command de-grading response as people can cause large queues on EXEC?
A3. The OBEY command may well be affecting the general response but there is no evidence to indicate that the amount of job submission has increased because of it. (T G Pett)

Q4. Is the shortage of resources in the afternoon due to I/O or CP power?
A4. Tests carried out since the user's meeting has shown that the 3032 has enough CPU power for our purposes and that there is no serious I/O problem. The difficulties must therefore lie with the order in which virtual machines and jobs within the MVT virtual machine are scheduled. If we can solve the scheduling problem we will have a viable system. (A R Mayhook)

Q5. How many private disks are available?
Q6. Which disks are being mounted most?
A5/6. 13 spindles are currently used for the mounting of about 60 demountable 3330 200 Mb model 11 disks. In a typical week there are approaching 1000 disk changes (compared with about 6000 tape mounts). We would like to reduce the number of disk changes, which require about two or three minutes to perform. Some ways of achieving this might be: to acquire further 3350 disk units to free some more of the permanently mounted 3330's; to identify heavily used data sets and ensure that wherever possible they are permanently mounted (this implies creating space by removing data sets no longer earning their keep); to identify suitable arrangements for sharing the demountable 3330's. We shall be approaching disk users independently. However, against these considerations is the fact that contentions for different areas of a disk affect the peformance of a system, and one point of interest is whether the performance can be improved by giving each machine its own areas for workfiles. If this proved beneficial the number of spindles may be reduced. (P J Hemmings)

Q7. Can you tell from your output if a disk had to be mounted?
A7. No. The way SETUP controls the devices is such that the job will not start unless the disk (or tape) is already mounted. Messages which appear in the HASP log refer only to changes during the job usually when one tape is removed (the K message) and replaced by another (the M message). (P J Hemmings)

Q8. What is the policy with regard to the storage of large source files?
A8. We see that source files are required during the development of a program. Thereafter compiled forms of the program should be used either directly or in conjunction with a few subroutines which might be problem dependent. The majority of source files will therefore be required to be very accessible either in ELECTRIC if they are to be edited, or in permanently mounted datasets for a limited period only. Thereafter they should be moved away from the busy areas, either into the ELECTRIC archive or onto demountable disk or tape. In either case particular files may be restored comparatively easily when needed. In this connection the program adviser is often able to arrange short term loans of ELECTRIC space during the implementation of a large program but there can be no question of indefinite loans. Likewise with disk datasets. (P J Hemmings)

Q9. How often are the CERN libraries copied over?
A9. It is intended to implement an up to date version of the CERN library early in 1980. (P J Hemmings)

Q10. When will NAG Mark 7 be mounted?
A10. The current version is Mark 6. We possess a tape containing Mark 7 and copies of a mini manual and a full manual which has been updated. Any user requiring the Mark 7 version of a NAG subroutine before we upgrade our current versions should contact User Support Group. (P J Hemmings)

Q11/12. Are numeric IDs being converted to 3-character Ids and will numeric IDs be phased out?
Can't you allow IDs beginning with 0 followed by 2 digits to be synonymous with the 2-character numeric ID?
A11/12. Moving to 3-character IDs beginning with 0 gave us an extra 676 IDs if we use only alpabetic combinations to avoid confusion between 0 and 0. We had a considerable waiting list when we started to use the new IDs and have since issued even more, leaving us with about 450 unissued IDs. To replace existing numeric IDs would take 360 of these. Our plan is to release another bank to two character IDs so that we can have a second letter to start 3-character IDs. This of course takes time. I am therefore unwilling to globally replace 2-character numeric IDs. (In fact some users have indicated they would not want to change their identifier.) However, I will sympathetically consider individual requests but if there are many of these I will have to resort to your suggestion of preceding the existing 2 numerics with the letter 0 instead of issuing an entirely alphabetic ID. (P C Thompson)

Q13. Can the new system with the 3032 as front end be simulated?
A13. In principle, yes. However we do not have a suitable simulation system ready, and to get one going would take many months of work. It might be worth investigating for the future. At the present time we have no choice but to carry on with tests in the production system. (A R Mayhook)

Questions

Q15. Will the back to back systems be moved into VNET?
A15. Once the initial program of work to get the workstation under control of the RSCS networking software has been completed we will look at the possibility of using VNET(RSCS) for linking to other sites including CERN. I don't expect this will be possible before the middle of 1980. (A R Mayhook)

Q16. How much effort is going to go into local editors at the workstations?
A16. Existing GEC 2050 workstations have insufficient capacity for local data editing facilities. The Multi-User Minicomputers installed by the SRC Interactive Computing Facility and more powerful enhanced workstations provide local data storage with scope for local data editing and file handling as well as the usual job submission and output retrieval features of a workstation. Provision of centralised software support depends on the degree of standardisation in such systems and upon the availability of effort and funds. (E B Fossey)

Q17. Can ELECTRIC be offloaded onto a mini during development periods?
A17. There is no possibility of running ELECTRIC in a mini. (A R Mayhook)

Q20. Will the scheduling problems be alleviated by the release 6 of VM?
A20. The release 6 schedule will allow us better control of the system but we won't know how much better till we try it. (A R Mayhook)

Q22. What is the timescale of availability of IMPACT and documentation?
A22. Guinea-pig users from 1/12/79, new users from 1/1/80. There will be xeroxed copies of manuals to begin with. (C D Osland)

Q23. Is the use of magnetic tape not available?
A23. It will be available early in 1980. (C D Osland)

Q24. What interfaces are available for users who, for instance, input a CALCOMP program from another establishment?
A24. Routines could be added to the interface. SMOG could be used instead. (C D Osland)

Q25. Can you say anything about new facilities users may get access to, eg. titles on microfiche ?
A25. Other facilities except font redefinition and use cannot be considered until after the VNET project due to manpower conflicts. (C D Osland)

Q26. Will there be manuals provided for CMS users?
A26. Yes. A Primer Manual is being written for users who only require to use the simplest CMS facilities for file-editing and job submission. Manuals describing all the facilities of CMS will also be available. (T G Pett)

Q27. Will anyone with a link to Gandalf be able to use CMS even if they are not on the site?
A27. Yes, anyone with a Gandalf terminal will be able to use CMS. (T G Pett)

Q28. How far have you got resolving problems of sharing files under CMS?
A28. File-sharing on a "read-only" basis should not present any problems. File-sharing for read/write purposes is more dificult. It may be that the best solution is for a group of users to have a special minidisk for shared files which can only be updated by one user at a time. (T G Pett)

Q29. Can strings of text be held in memory?
A29. No. (T G Pett)

Q30. Are edits saved in anything other than a very bad crash?
Q41. What happens if the system goes down while disk and directory are being updated?
A30/41. No. All editing since the last time the file was written to disk is lost if there is a system crash. The SAVE command can be used periodically during an editing session to cause the file to be written. Alternatively, AUTOSAVE causes this to be done automatically after a specified number of edit instructions. The last good copy of the directory on the disk is always preserved. (T G Pett)

Q31. Can files be merged?
A31. Yes, by using the edit command GETFILE. (T G Pett)

Q32. Can you get the editor to automatically generate line numbers?
A32. Yes, for files with fixed length records. The records can have serial numbers on the left or right hand side and these are stored in the file. The serial number increment can be set by the user. (T G Pett)

Q33. Can the filemode number be changed?
A33. Yes, by using the RENAME command. (T G Pett)

Q34. Can you edit a file with filemode number 3?
A34. Files with filemode number 3 are erased after the first read. Editing does not cause the file to be erased. (T G Pett)

Q35. How many simultaneous users can CMS support?
A35. It depends to a large extent on the available hardware. There are CMS systems which support 150 to 200 simultaneous users. At Rutherford we expect to be able to support up to 40 users on the 3032 with ELECTRIC still at 60 but this depends on having a drum as the paging device. (T G Pett)

Q36. Is it possible to load from an OS object library and a a load module library?
A36. OS object modules can be used under CMS, load modules cannot. (T G Pett)

Q37. Are there any problems for remote users?
A37. To allow terminals attached to workstations to access CMS the workstations have to be transferred from HASP to VNET. When this has been done it will be possible to access ELECTRIC or CMS. (T G Pett)

Q38. One user had problems transferring datasets to a VM system in Milan.
A38. We have not had real problems transferring datasets to VM from MVT although you have to obey the rules! Only certain types of OS datasets ar supported under CMS and the user would be advised to consult the documentation before effecting the transfer. (R M Freeman)

Q39. Will libraries like RHELIB be available under CMS?
A39. Eventually, provided the source can be located. Clearly introducing the libraries will be a gradual process and there wont be equivalents to all routines under CMS compared to MVT particularly in the "SY" routines. It obviously depends to some extent on whether there is an equivalent concept under CMS to MVT, eg. OS datasets and their attributes cf. CMS files. (R M Freeman)

Q40. Is it possible to access someone's CMS minidisk from OS?
A40. No. (T G Pett)

Q42. Are there plans for an ARRAY processor at RL?
A42. SRC already support three devices which can be considered as parallel, vector or array processors. They are:
(1) The CRAY computer at Daresbury
(2) The Distributed Array Processor (DAP) to be attached to the 2980 at QMC. SRC provide support via the DAP Unit at QMC run by D Parkinson and also awards of computer time can be made via the normal grant application procedure.
(3) The AP120-B array processor attached to the PRIME 400 at the Atlas Centre. (F R A Hopgood)

Q43. How does one get more information on these facilities?
A43. CRAY, from User Support at Daresbury
DAP, from DAP Unit at QMC
AP-120B, from Alan Bryden, Computing Division.
(F R A Hopgood)

SECTION 2 SUPPORTED PACKAGES

A list of supported packages was last published with Forum number 6 (December 1978). The revised list extends beyond those supported on the 195 by Computing Division. There are four levels of support, as follows:

1. MAXIMUM SUPPORT

   - Complete documentation
   - Support always available in office hours
   - Immediate maintenance

2. HIGH SUPPORT

   - Good documentation
   - Support usually available in office hours
   - High priority maintenance

3. STANDARD SUPPORT

   - Basic documentation
   - Limited support - list of local experts available
   - Maintenance referred to issuing body

4. MINIMUM SUPPORT

   - Usually some documentation
   - Support not usually available
   - No maintenance

The packages listed below are those afforded some level of support at the end of November 1979. Initial queries may be directed to the Program Adviser, who will either deal with the query, or where appopriate, put the user in touch with the appropriate expert. No commitment is implied on anyone to continue support of a particular package. If users have any suggestions as to additions, deletions, corrections or changes which should be made to this list they should contact Mrs. S. H. Ward, User Support Group, Computing Division.

The following abbreviations are used in the list below: AL - Appleton Laboratory; BCRG - Bubble Chamber Research Group; CD - Computing Division; DL - Daresbury Laboratory; HEP - High Energy Physics Division; ICF - Interactive Computing Facility; Tech - Technology Division.

PACKAGE	LEVEL	SUPPORT	DESCRIPTION
ALCHEMY	Min	DL	Quantum Chemistry
ALGOL	Min	CD	Compiler
APPLE	Min	BCRG	Direct Channel Partial Wave Analysis
ASAS	High	ICF	Finite Element
ASCOLI	Min	BCRG	Three Body Partial Wave Analysis
Assembler(F)	Std	CD	360 Assembler
Assembler(VS)	Std	CD	Compiler
ASTAP	Min	ICF	Statistical Analysis Program
ATMOL	Min	DL	Quantum Chemistry
BABBAGE XREF	Std	HEP	Produces formatted listing of BABBAGE programs plus cross-reference table
BCPL	Std	CD	Compiler
BDMS	Min	Durham	Berkeley Data Base Management System
BERSAFE	High	ICF	Finite Element
BMDX72	Min	CD	Bio-Medical Statistics Package
BUEDDY	Std	Tech	2-D Eddy Current Program
CAMAL	Min	CD	Symbolic Algebra
CAPSTAN	Min	CD	Critical Path Analysis
CASORT	Std	CD	Sort/Merge
CERN Library	Std	CD	Subroutine Library
CFD/CFDX	Min	CD	Translator - generates ASK for ILLIAC IV
COBOL(E,F,ANS)	Std	CD	Compilers
COCOA	Min	CD	Text Processing
COPYTP	Std	HEP	Copies GEC 4080 tapes
CPC Library	Std	CD	Subroutine Library
CSL	Min	ICF	Simulation
CSMP 1	Min	CD/CPC	Continuous System Modelling
CSMP 3	Min	CD	Continuous System Modelling
DAP16	Std	HEP	Cross-assembler for Honeywell DDP516
DSKSOL	Std	Tech	Solves large sets of linear equations using backing store
ECAP1	Min	CD	Circuit Design
ELECTRIC	Max	CD	Text Editing
FAMULUS	Std	CD	Easy to use Text Sorting and Indexing
FAPLOT (ENPLOT)	Std	CD/HEP	Histogramming Package
FELIB	High	ICF	Library of Finite Element Routines
FORTRAN G1	Max	CD	Compiler
FORTRAN H Extended Plus	Max	CD	Compiler
FOWL	Std	CD	Monte-Carlo Phase Space Program
GENSTAT	Min	CD	Statistics package
GEOMETRY, KINEMATICS & ORACLE	Min	BCRG	Film Analysis Programs

PACKAGE	LEVEL	SUPPORT	DESCRIPTION
G-EXEC	Max	NERC	Relational Data Base and General Data Handling System
GFUN	Std	Tech	Magnet Design
GINO-F	Std	CD	Graphics
GPSS	Min	CD	Simulation
GRAPHICS/SUMX	Min	BCRG	SUMX with Graphics Options (via MUGWUMP)
Harwell Library	Std	CD	Subroutine Library
HBOOK	Std	HEP	Histogramming Package
HPLOT	Min	HEP	Graphics (part of HBOOK)
HYDRA	Std	HEP	Program Management with Dynamic Memory
IBM Utilities	Std	CD	(some)
ICCG	Std	Tech	Sparse linear equation solution by pre-conditioned conjugate gradient method
INFOL	Std	HEP	Database Report Generator
JSPLOT	Min	BCRG	Histograms/Scatter Plots via MUGWUMP
KWIC360	Min	CD	Text Processing Index System
MAST	High	CD	Message Switching
MINUIT	Std	Oxford	Minimizing Package from CERN
MORTRAN	Std	HEP	Structured FORTRAN pre-processor
MTUT	Std	HEP	Initialises and checks GEC 4080 tapes
MUGWUMP	High	CD	Graphics Package and Filestore
NAG Library	Std	CD	Subroutine Library
NAP	Min	ICF	Circuit Design
NEWPAC	Min	CD	Finite Element
OLYMPUS	Min	CD	Standardises the design and structure of programs
OSDITTO	Std	CD	Tape and Disk Utilities
OSFLOW	Std	CD	Flowcharting Program
PASCAL	Min	CD	Compiler
PATCHY	Std	HEP	Source code maintenance in multi-version programming
PFORT	Min	ICF	Fortran Verifier
PL/1 (F)	Std	CD	Compiler
PL/1 (optimizing)	Std	CD	Compiler
PL360	Min	CD	Compiler
POLYGRAPHICS	Min	CD	Graphics Package
PPE	Std	CD	Problem Program Evaluation
PRINT	Std	HEP	Prints files on a GEC 4080 tape
REDUCE	Min	CD	Algebraic Manipulation
RL Library	Std	CD	Subroutine Library
RL Utilities	Std	CD	Utilities described in Program Library Manual
SCFOR	Min	CD	Graphics Package
SCHOONSCHIP	Min	CD	Symbolic Algebra
SIMULA	Min	ICF	Simulation
SHELX	Min	DL	Crystallography
SMOG	High	CD	Graphics

Supported Packages

PACKAGE	LEVEL	SUPPORT	DESCRIPTION
SPICE	Min	ICF	Circuit Design
SRAM	Std	CD	CASORT Sort/Merge callable from high level languages
SSP Library	Min	CD	Scientific Subroutine Package
STACKER	Min	CD	7 to 9 track Tape Conversion
STAGE2	Min	CD	Macro Processor
STAIRS	Min	CD	Information Retrieval
SUMX	Std	CD	Statistics Package
TPELEC	Std	HEP	Copies files from a GEC 4080 tape to ELECTRIC
TRANSFER	Std	HEP	Copies ELECTRIC files to a GEC 4080 tape
TRIAB	Min	HEP	Book-keeping system for the analysis of experiments, including tape management
VICAR	Std	AL	Image Processing
XRAY74	Min	DL	Crystallography
ZBOOK	Std	HEP	A dynamic memory management system, callable from FORTRAN

SECTION 3 FILE TRANSFER TO OTHER LABORATORIES

Some public files have been created either to detail the status of link software or to initiate transfers. They are in the public directory of ELECTRIC, JB=B2B. The file JB=B2B.$INDEX lists the purpose of the other files in that directory. It is updated from time to time. Its contents on 3 January 1980 were:

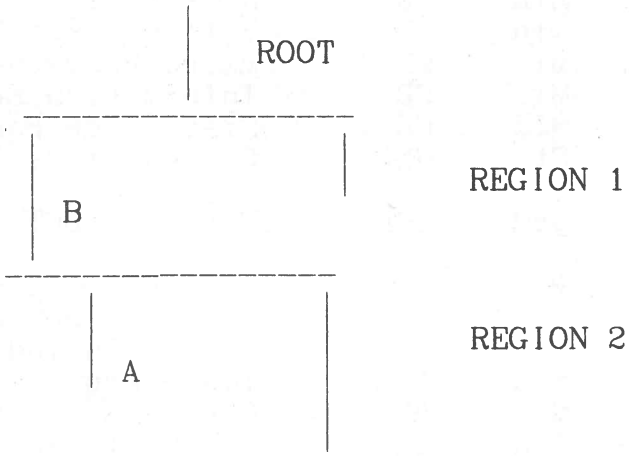
List of Files in this directory - M.JOBFILE.B2B

NOTES	Notes on the present status of the link software
CERNFTS	Notes on how to do file transfer between RL and CERN
PRINTING	Notes on how to route output between CERN and RL
DESYFTS	Proposals on DESY/RL job transfer and output routing
TRANFILE	EXEC file to transfer file from RL to CERN
FETCHFLE	EXEC file to fetch a file from CERN to RL
SUB2CERN	EXEC file to submit a job into the CERN batch
SUBFETCH	EXEC file to put a file into the CERN FETCH Q
DESYTRAN	EXEC file to transfer a file from RL to DESY
SUB2DESY	EXEC file to submit a job into the DESY batch
DLTRAN	EXEC file to transfer a file from RL to Daresbury

This is file M.JOBFILE.B2B.$INDEX

SECTION 4 SOME ASPECTS OF USING OVERLAY

Some interesting points have been learned about overlaying with multiple regions. A program had a structure of the type...



where a subroutine in one region (segment A) called a subroutine in a different region (segment B). Such calls were made in an analysis program several times per event, and although not requiring any overlay movements, the time taken was very large. A suggestion was made to provide references from the ROOT to the routines in segment B (by means of an external statement in the MAIN program). This eliminated the problem. (Note that the program in the RL library ERTREE for producing pictures of overlay structures does not always correctly handle multiple region overlays).

SECTION 5 Rutherford Laboratory Computer Advisory Committee

The Committee met in November and its business included a Progress Report covering the period from July to September 1979 and the future development of the SRC computing facilities.

The Progress Report noted that about one fifth of the jobs run by the MVT system had been run on the 3032 computer and that the total of their corrected CPU time also amounted to about 20% of the total equivalent 195 time for the quarter. A provisional timetable for moving the front end functions to the 3032 was outlined and its dependence upon the successful conclusion of further tests of the system was recognised.

SECTION 6 CENTRAL COMPUTERS FROM 1ST JANUARY 1980

1. Central Mainframes

All facilities are scheduled to be available to users for 24 hours a day - with the following exceptions:-

DAY	TIME	REASON
Weekly		
Monday to Friday	1200-1300	ELECTRIC program testing
	1300-1400	MAST program testing ELECTRIC and all MAST-supported satellites and devices would be affected but only very occasional use is made of this period and due warning will be given. See Note 1.
Tuesday and Thursday	1730-1930	OS and HASP development Local system development This affects all facilities. The time includes IPL time to restore the system to normal use. On the occasions when these development periods are not required normal processing will continue. Due notice will be given.
Wednesday (as required)	0830-1400	Front-End (3032) tests No facilities affected. Normal process continues with interruptions only for IPL (2). Separate notice will be given of this occasional requirement which will cease when we can accept the 3032 in its front-end role.
Thursday	1500-1900	RPM, IBM Mainframes See Notes 2, 3 and 4

2. FR80

Available as follows:-

Monday to Wednesday	0830-1700)	
Thursday	0830-1300)	
Friday	0830-1600)	Supplemented by operational support from 360 operators outside these hours - as required.

Not available

Thursday	1300-1700	Required for hardware maintenance but will be released before 1700 where possible.

3. GENERAL

Bank Holiday etc, - SEPARATE NOTICES WILL BE ISSUED. Will Group and Category Representatives please ensure necessary publicity is given when these special notices are received. Amendments to this schedule via 'Newsletter' should be displayed at the local site.

NOTES

1. Local System Software (ELECTRIC, MAST, etc)

Modifications or alterations to the local system programs are not introduced operationally until they have run successfully with user programs and for this purpose the lunch-time period 1200-1400 hours is used when required. In these cases when a fault is discovered with the program under test, the test is terminated and the operational version is restored. It is emphasised that this testing period is used very occasionally, on which days due warning is given in ELECTRIC day-file, on the computer notice board and over the intercom.

2. IBM Computers - Hardware Maintenance

Hardware maintenance on the IBM computers will be completed on Thursdays on the dates shown:-

360/195-1 (1500-1900)		360/195-2 (1500-1900)		3032 (1500-1900)	
January	10	January	24	January	31
February	7	February	21	February	28
March	6	March	20	March	27
April	3	April	17	April	24
May	8	May	22	May	29
June	5	June	19	June	26
July	10	July	24	July	31
August	7	August	21	August	28
September	4	September	18	September	25
October	9	October	23	October	30
November	6	November	20	November	27
December	4	December	18	December to be arranged	

During maintenance periods major facilities will remain, (ie Job Submission, output retrieval, ELECTRIC, etc). However, with only two processors available turnround will be adversely affected.

3. Deferred Maintenance

On occasions it may be necessary to schedule a session - not exceeding 4 hours - to correct faults which we have temporarily fixed or by-passed. This is referred to as deferred maintenance. When required, this will be provided for on a Thursday. The time of commencement will depend upon the work involved - but it has to be scheduled during the time for which maintenance is contracted (ie 0900-1800 hrs).

4. Engineering Changes

Recommended changes to the hardware arise from field experience or post-manufacture research, either to correct faults or to improve performance or reliability. Many of these 'changes' are done during the monthly maintenance and to individual units during normal processing. Some larger 'changes', however, cannot be accommodated in this way and very occasionally there is a need to schedule a period of approximately 1 shift for this purpose. Reasonable advance notice should always be possible.

5. Changes to Schedule

Where, for any reason, a scheduled session is not to be utilised, normal processing will continue. In these, and all other circumstances, where changes to the schedule are necessary, users will be advised, as time permits, via the Reception Notice Board, ELECTRIC message and day-file and over the intercom system.

SECTION 7 A NOTE ON THE USE OF TDMS

The Tape and Disk Management System TDMS

The successful operation of TDMS relies upon only having those tapes actually needed in the Local Library. Considerable operational difficulties arise if users submit very large numbers of jobs requesting tapes from the Home or Archive Libraries, particularly outside Prime Shift.

There are two methods of achieving movement of tapes to the Local Library.

1. By job submission requesting a tape in the standard form
2. By direct contact with the Tape Library Staff.

When more than 10 tapes from an individual user or Group are required to be moved the second method should be used and the Operations Staff have been instructed to ignore any unreasonable requests, especially at weekends.

It will also greatly assist everyone if, where tapes are known not to be required, that the Tape Library Staff are informed so that such tapes may be moved out of the Local Library.

If you need to contact the Tape Library, this may be achieved in any of the following ways:

1. Write to the Tape Librarian, Computing Division, Building R27, Rutherford Laboratory
2. Use the courier service
3. Telephone 0235-21900 Ext 333
4. Call or leave a message at Computer Reception
5. Use the ELECTRIC message and mail facility TOID=JU
6. Send a message to the hard copy terminal ++T.

SECTION 8 Workstations as at 1/1/80

Networked workstations are indicated by N.

Site	Remote No		Site Identifier
Appleton Laboratory	12		X4
Bangor University	90		
Belfast	25		
Birkbeck College	77		
Birmingham (Physics)	4		XB
Birmingham MUM	87	N	
Bristol (Physics)	16	N	XT
Bristol MUM	69	N	
Cambridge (Cavendish)	61		
Cambridge MUM	71	N	
Cardiff MUM	76	N	
CERN	10		XC
CERN Job Transfer System	66		
Cranfield	62		
Cranfield MUM	82	N	
Culham Laboratory	55		
Daresbury	31		XD
Daresbury (NSF)	88	N	
Daresbury Laboratory (back-to-back)	60		
DESY Hamburg	64		
DESY Job Transfer System	79		
Durham	8	N	XH
East Anglia MUM	92		
Edinburgh (Physics)	33		XE
EPSS	22		
ERCC I.C.F.	50		
ERCC/PO Dial	29		
Exeter	63		
Forestry Commission	70		
Glasgow (Nat Phil)	9		XG
Glasgow MUM	73	N	
ICS Newbury	67		
IGS Edinburgh	1		X3
IGS Keyworth	52		X3
IGS London	15		X3
IMER (Plymouth)	57		X5
Imperial College (Nuclear Physics)	7		XI
Imperial College (Mech Eng)	56		
IOS (Bidston)	51		
IOS (Wormley)	21		X6
ITE (Bangor)	89		
ITE (Monkswood)	27		
Lancaster	43		XL
Leicester	28		
Liverpool	44		XP

Manchester	41		XM
Manchester (EWS)	94	N	
Metronet	68		
MSSL	18		X2
Newcastle MUM	83	N	
Nottingham MUM	84		
Oxford (Nuclear Physics)	2		XX
Oxford R.H.A.	58		
Queen Mary College	5		
Reading	17		XR
Royal Greenwich Observatory	40		
Royal Holloway College	26		X1
Royal Observatory Edinburgh	30	N	
Sheffield (Chemistry)	38		
Sheffield (Physics)	42		
SMBA (Oban)	78		
Southampton	11		XS
Surrey	72		
Sussex	34		
Sussex MUM	95		
Swansea	32		
TRRL Crowthorne	59		
UCL (Dept of Statistics and Computer Science)	3		XF
University College (Physics)	14		XU
Warwick MUM	93	N	
Westfield College	13		XW
York	39		

Workstations at Rutherford Laboratory

Data Edit 4080	53	N
Finance R20	65	
IBM 1130 R1	24	
ICF GEC 4070	47	N
ICF Prime 400 A	37	
ICF Prime 750 B	50	
Laser Lab	36	
NBRU	6	
NERC R30 Rm 7	81	
RL W/S R1	23	
R1 Rm 1.75	76	
R2 Rm 1.03	75	
R25 Rm G19	74	
R26 GEC 2050	19	N
SNS 4070 R2	54	
R34 PDP/8	80	
R30 NERC	81	