RUTHERFORD FORUM

195 COMPUTER NEWSLETTER

FORUM CENTRAL COMPUTER NEWSLETTER

Number 6 December 1978

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Section 9 Current Fortran Bug List.

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Cigar Updates Contents, C8, C9, D5, D12, Part E

Program Library Manual Update Contents, UT/23 on, others

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Programme for 195 Representatives Meeting

Tuesday 3 October 1978,
Rutherford Laboratory Lecture Theatre.

09.45 Introduction

09.50 Future Developments

10.15 TDMS - The first six months
10.30 TDMS - Phase 2 Information and Protection

10.45 COFFEE

11.00 General Meeting

Updated meeting notes are given here together with considered answers to some of the questions.

12.10 Parallel Category Meetings.

LUNCH

13.45 The Development of Terminals and Editing Facilities

Covering the data editing 4080, TSS and Gandalf, the nodal 4080, considerations of suitable work to move from ELECTRIC, the advent of remote editors generally.

15.00 FINISH

15.00 Category Representatives Meeting.

ATTENDANCE

C & A DIVISION

C J Adams, G H Adamson, D Asbury, J W Burren, C Cooper, M W Ellwood, E B Fossey, R M Freeman, P Girard, D S Greenaway, P J Hemmings, G A Lambert, A R Mayhook, D Parker, D Rowley, P C Thompson, D Trew, S J Tunstall, W Walkinshaw, S H Ward.

Category Representatives

J Barlow	Film Analysis
R Carter	NERC (deputising for K Jeffery)
B Martin	Theory
R Maybury	HEP

Attendance

Group Representatives and Others

J W Alcock	Bristol University
K E Barrett	Lanchester Poly
G Baxter	IGS
S J Beard	Reading Univ. Comp. Sc. Dept.
R Bentley	IOS Bidston
I Bloodworth	Birmingham HEP
T A Broome	SNS Target
R O Butt	RL Administration
J V Carey	RGO
E F Clayton	Imperial College/Film Analysis
C J Collie	Technology Division CAG
D Collins	IOS Wormley
J G Conboy	UCL/Film Analysis
M Coupland	UCL/Counter
J Finch	Exeter
J B Forstyh	NBRU
J Gerratt	Bristol University
L E Gill	UOCE
M Godden	UOCE(ORLS)
P J Grout	Oxford Theoretical Chemistry
J C Hart	HEP
S Henley	NCCG
H G Huckle	MSSL
J Hutton	WA4
M W Johnson	NBRU
H Joyce	Bangor
M L Kendall	Appleton Lab
J Lang	ARD
D Lawrence	Reading Univ. Comp. Sc. Dept
C Leary	IOS Wormley
A P Lotts	Durham/Film Analysis
F MacDonald	Birmingham/Film Analysis
D McGregor	ISC Newbury
B Mack	RGO
L Mapelli	CGA
D J Munday	Cavendish Lab/Cambridge
P J Negus	Glasgow/Film Analysis
M J O'Connell	SNS
K Peach	Edinburgh
H Phelan	IGS/NERC
J Pinfold	Liverpool University
B Pollock	Westfield College
J T Quick	MSSL
M G Reid	Appleton Lab
K Robinson	ACD/Applications Group
H Saraph	UCL
T P Shah	HEP
J Smyth	Forestry Commission

S Treadwell	ICS(ARPANET)
C Webb	Laser
C Whitaker	Cranfield
F Wickens	HEP
J B Young	AWRE

NOTES FOR 195 REPRESENTATIVE'S MEETING 3 OCTOBER 1978

1. INTRODUCTION

There had been a significant improvement in the number of CPU hours delivered to users over the previous six months, mainly due to the fact that during this period a number of hardware problems had been cleared up.

Work is going ahead in the division concerning the future of the Central Computer Facility.

2. HARDWARE

2.1 General

An additional Selector Channel was added to the system in September, as an experiment. It is to be replaced by a Block Multiplexor Channel.

2.2 Performance

May saw a period of apparently variable and random incidents, at a time when many changes to the system had been introduced. Further changes were suspended for two weeks while conditions were allowed to stabilize.

A very intermittent but longstanding CPU fault on 195/2 was eventually cleared in August, after research by IBM design engineers.

Due to a disk malfunction HASP had to be cold started early in September and all jobs then in the machine were lost.

2.3 Shutdowns

Only one shutdown was planned, for air-conditioning maintenance, from Saturday 7th October to Tuesday 10th October.

2.4 Maintenance

Maintenance is carried out on both machines from 15.00 to 19.00. The maintenance dates for the remainder of 1978 are:

195/1 - 5 Oct, 9 Nov, 7 Dec.
195/2 - 19 Oct, 23 Nov, 21 Dec.

Maintenance dates for 1979 are:

195/1 - 4 Jan, 8 Feb, 8 Mar, 5 Apr, 3 May, 7 Jun,
5 Jul, 9 Aug, 6 Sept, 4 Oct, 8 Nov, 6 Dec.
195/2 - 18 Jan, 22 Feb, 22 Mar, 19 Apr, 17 May, 21 Jun,
19 Jul, 23 Aug, 20 Sept, 18 Oct, 22 Nov, 20 Dec.

2.5 System Development

The system will continue to be required for System Development on Tuesdays and Thursdays from 17.30 to 19.00.

3 SYSTEM SOFTWARE

3.1 HASP and OS

There was a HASP cold start in June to allow the inclusion of more workstations.

3.2 ELECTRIC

The serious shortage of online space in ELECTRIC made it necessary to archive all files not used for six months. This exercise was carried out during June. Allocations were then reduced accordingly. The space recovered by the archiving is still disappearing rapidly, and the co-operation of users in archiving or deleting files not currently in use is very necessary. Letters have been sent to those users with large allocations, requesting them to reduce their holdings.

The following changes have been made to ELECTRIC since the last meeting:

i) Copy operations from one file into another are no longer queued but interleaved. Users copying large files probably have to wait longer, but small copy operations are not held up. This applies to the COPY command, and the copy performed at the end of a MODIFY, but not to EXEC, PRINT, PUNCH and TAPE commands or copying to or from an OS dataset; these commands are still processed sequentially and can give rise to a copy queue.

ii) Typing of directories no longer outputs blank entries. The full list of entries, including blanks, can be obtained by putting YES or YS in brackets after the filename.

iii) Scratching of a graphics file by any user who is a partner to the owner's main directory is now allowed. Partners to a main directory also have access to that user's archived files for the purpose of restoring them or moving them to a different level, but not for deleting or renaming them.

iv) A parameter with a null value - ie, no characters after the equals sign - no longer causes a fault if that parameter is not used. PARM commands are retained after an NF=30 fault, and any parameter which is not required can be deleted by re-typing the command and giving that parameter a null value.

v) The device type and lineprinter output destination are now output as part of the reply to LOGIN. These are the values of DEV and ROUTE given with the LOGIN command, or the default values if these parameters are omitted.

vi) The PRINT command used with a file or files containing text layout instructions now does the layout processing in the output program. This reduces ELECTRIC's overheads but it is estimated that the output program will take up to 2 or 3 times as much CPU time. It may be necessary to use the TIME parameter with the PRINT command to increase the CPU allowance. In particular the 10 seconds limit for priority 12 may now cause these jobs to fail.

vii) The TRANSFER command (minimum abbreviation TR) is now available. It transfers a logged-in user from one terminal to another. This is primarily intended for users of terminals attached to a Terminal Switching System, where a terminal's address can change if the TSS goes down. It can also be used to transfer from an alphanumeric terminal to a graphics terminal. The login parameters ID, ACCT and KEY are compulsory, and the effect is to transfer the user with the given ID to the terminal from which the TRANSFER command was sent. If this terminal is already logged-in the effect is to interchange the two users. The values of parameters such as DEV and ROUTE are not changed by the TRANSFER command; they may be reset with the SET command if desired. The TRANSFER command cannot be used by a user who does not have a login key.

viii) When a message is sent via the MESS command to a logged in user it now contains the MAST address of the sender.

ix) An EXEC command using the default file, where this is an edit file, now applies to the corresponding text file.

x) When printing a file it is now possible to omit the heading but still include the line numbers by the use of the parameter HEADING=NO with the PRINT command.

It is hoped in the near future to allow a few more logged in users, as an experiment. Also a new decoder is being prepared which will allow the use of positional parameters.

Meeting Notes

3.3 Compilers

The possibility of purchasing the PL/1 Optimizing Compiler had been under consideration. It has now (since the meeting) been decided to go ahead with this.

3.4 MAST

All available MAST slots have now been allocated. This has necessitated an increase in the number of terminals attached to the Terminal Switching System in R1 and R26.

3.5 T.D.M.S.

The introduction of this new facility revealed some problems which had not been apparent during the development phases. In particular, moving tapes into the local library was sometimes subject to delay. This problem has now been eliminated.

Users should understand that the movement of tapes into the local library can be achieved in one of two ways:

i) By the submission of a job requesting access to a particular tape, i.e. on the /*SETUP card.

ii) By a request to the tape librarian for a tape to be moved into the local library before submission of a job.

The effectiveness of the system depends upon limiting the local library to tapes which are in current use, so requests to the tape librarian must fall into this category. Tapes which have not been used for several weeks are moved from the local library to the main library without reference to the user concerned.

All foreign tapes submitted for inclusion in the Rutherford Tape Library must be accompanied by the following information: user's name, account number and id; tape number, density and label type (SL or NL). Any tape submitted without this information cannot be registerd in the system. When submitting tapes to the tape library, users should remember to allow 24 hours for acclimatisation before using the tape.

The system will reject any job that requests a tape which is still in transit (i.e. it has not been registered) or that requests a tape which is in the Absent Library.

To enable users to determine the location of their tapes the job TDMSLIST has been added to the ELECTRIC JOBFILE.

To find a single tape, use the command

```
EXEC JB=TDMSLIST,TAPE=volid
```

where 'volid' is the tape number.

To find a list of tapes

```
EXEC JB=TDMSLIST,TAPE='volid1,volid2.....'
```

where 'volid1', 'volid2' etc. are the tapes concerned.

Output is sent to ELECTRIC, but can be diverted to a printer by adding a ROUTE parameter.

4 WORKLOAD

During September the backlog of work was being cleared each weekend. A large fraction (30%) of the work was submitted at Priority 1. All the time used was accounted against the overall and, where appropriate for SRC Grant Holders, individual allocations of time. On some occasions, more work could have been run if it had been submitted.

5 DISKS

There is a heavy demand for both permanently mounted disk space for private datasets, and space for user libraries. The number of user libraries is still increasing, and this is recognised as one of the main pressure areas after ELECTRIC.

Holders of datasets on RHEL03, RHEL04 and RHEL05 which have not been registered with P.A.O. are now contacted on a weekly basis, and the datasets are deleted after a further fortnight if no response is forthcoming.

More use of de-mountable disk space for large datasets is being made and a second de-mountable public disk, DDRL21, has been introduced. It must be remembered that datasets on both DDRL12 and DDRL21 are subject to the same rules as permanently mounted datasets as regards registration - that is, datasets must be registered with P.A.O. before being mounted on a public disk.

6 WORKSTATIONS AND TELECOMMUNICATIONS

6.1 Communications Group Activities

One of the very pressing problems facing the remote activities on the 360/195's is access to ELECTRIC. These problems are manifested at both the systems software and the hardware levels. The various plans for a more flexible approach to terminal use include the use of switching facilities to enable easy use of more than one computer from the same terminal, and the provision of facilities for data-editing on other computers.

Meeting Notes

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At the systems software level, the main pressure is centred on MAST slots for supporting terminal access to the 360/195's.

Slots are not only required for access to ELECTRIC, but also to TSO on the Daresbury machine. At present, MAST has a maximum of 255 slots, about 180 of which are provided for remote terminals, and the remainder for RL on-site terminals. Of the remote slots a pool is maintained for use by networking RJE's, and the remainder are specifically assigned to devices connected as main or auxilliary consoles to RJE's, mainly GEC2050's.

It is likely that the medium to long term future, while seeing a continued expansion of terminal facilities overall, will in fact see a decrease in the requirement for the direct software interface slots provided by MAST. Alternative routings for connections will become available via networking facilities to machines other than the 360/195's, such as Daresbury and data-editing facilities, although connections to ELECTRIC will still require MAST.

Work is now in hand to provide a more extensive range of MAST slots to enable the current pressure to be more easily absorbed.

To clarify how networking will change the situation, nodal computers have been developed at DARESBURY (PDP 11/10) and RL (GEC4080) to act as switches for data sent through. A nodal computer can have a number of ports connected to RJE workstations, mainframe or mini computer ports, or another network node. The user at a terminal connected to say a GEC2050 can then initiate a 'CALL' to a computer port or to a terminal on another workstation, either on his own node or on a node connected to it, and data subsequently coming from the user's terminal will be routed on the path of the call, until the user disconnects the call.

Typically the user will initiate a call to ELECTRIC with a command such as !!EL. This connection will then exist until a similar request, perhaps to a different service, disconnects the call. Login to ELECTRIC will then proceed in the same way as now.

The current status of this work suggests a service becoming available to an initial group of users quite soon (say Oct 1978), and will then be made available on a controlled basis to workstations showing a requirement for this kind of connection.

6.2 CERN Workstation

This workstation has become physically too large for the standard workstation housing, and during August the equipment was re-installed in a 6 ft. rack. At the same time a panel was installed in the new rack for Remote Connection Indicators in relation to the Index ports and the remote Tally printer.

7 LIBRARIES AND PACKAGES

7.1 Harwell Subroutine Library

A new version of this library has been implemented. It incorporates all modifications and updates to 13th April 1978. The facilities described in section C10.3 of CIGAR now apply to this version. The old library will still be available as SYS1.HARLIB73 until 31st December 1978, to allow users time to make appropriate changes to their programs if necessary. The routines that have been withdrawn in the new version are the following:

EB01A EB01AD EB04A EB04AD
ID03B
LA01A LA01AD
MA01A MA01AD MA02A MA02AD MA02C MA02CD MA03A MA03AD MA03B MA03BD MA04A MA04AD MA04B MA04BD MA13A MA13AD MA15A MA15AD MA15B MA15BD
MB01A MB01AD MB03A MB03AD
MC13A MC13C
MD01A MD01AD MD02A MD02AD
ME03A ME03AD ME04A ME04AD
MN01A MN01AD MN01I MN02A MN02AD MN02I
NS02A NS02AD
OE01A OE01B
PA01A PA01AD PA02A PA02AD
TG01A TG01AD TS02B TS02BD
VA01A VA01AD VB04A VB04AD VE04B VE04BD
ZA04BS ZA04ED ZA04FD ZA04HD ZA04HS ZA04ID ZA04IS ZA04JD ZA04JS ZA04KD

Users may be interested in a new routine in this library, ZA21AS, which can be used to switch the INIT parameter on and off when using the DEBUG facility with the G1 compiler.

7.2 NAG Library

Mark 6 has now replaced Mark 4 as the currently implemented version of the NAG Library. The old library will still be available in SYS1.NAGMK4 until 31st December 1978. The routines that have been withdrawn in the new version are the following:

A01AAF A01ABF A01ZAF
C02AAF C02ABF C02ACF
D02ACF D02AEF
E02AAF E02ABF E04CAF E04CBF E04DAF
F01ARF F01ASF F01BGF F01DFF F01DGF F02ACF F02ASF F02AZF F03AJW
G02AAF G02ABF G02ACF G04AAF G04ABF G04ACF
H01AAF H03AAF
M01BDY
S13ABF S15AAF S17AAF S17ABF S18AAF S18ABF S20AAF S20ABF

7.3 MHREAD (RW/23)

A new version of MHREAD was being field-tested, and a revised writeup has been prepared. It fixes some known bugs, and the error recovery has been improved. It was implemented during System Development on 5th October, and the writeup is in ELECTRIC, in DOC=CIGAR.PARTE.RW.MHREAD.

7.4 CERN Library

Users are reminded that not all routines in CERNLIB are compatible with the version of this library on the CERN 370/168. Certain subroutines in the CERN Library have been extended at Rutherford; the incompatabilities are found when programs using these extensions are taken to CERN. The IBM version of the CERN library exists in load module form and may be obtained by specifying 'SYSLIB=SYS1.CERN360' on the EXEC statement. These modules are at present untested.

The Rutherford Program Library in now also available on the 168 at CERN, and users are again warned that there are differences in some routines between the versions on the two machines. Refer to Section 6 of this Forum for further information on the CERN and Rutherford libraries.

7.5 Subroutine CORE (SY/12)

A new version of this subroutine has been installed. This version is compatible with the REREAD (DH/25) subroutine.

7.6 List of Supported Packages

The list of supported packages has been revised and is now included as Section 3 of this Forum. We welcome suggestions and information about packages suitable for inclusion.

7.7 MINUIT

A 'standard' version of MINUIT has now been defined. It is that set up on the 195 by John Macallister at Oxford in September 1977 (last modification, March 1978). It can be used via the procedure RLMINUIT as follows –

```
//jobname  JOB  job-parameters
// EXEC RLMINUIT,REGION.G=90K,VERSION=xxx
//C.SYSIN DD *
        SUBROUTINE FCN(.........)
        ...
        END
//G.SYSIN DD *
    control cards
/*
```

where xxx is either SHORT or LONG (default is SHORT).

The program is in double precision. Data card formats in A10 should be interpreted as 2X,A8. Only the subroutine FCN needs to be supplied but if you wish to have your own MAIN routine the FORTRAN statement CALL MINUIT activates the program.

7.8 TPCOPY

A new version of this utility was installed in October. The label fields on the output tape are now updated correctly, and an additional option for reading past a double end of file mark has been provided. The writeup in DOC=CIGAR has been updated.

8. SHORT ITEMS

8.1 REMOTE 24 Output - Weekends

Weekend output for the workstation in R1 (REMOTE 24) is now printed during the early hours of the following Monday morning.

8.2 FLIST

An improved procedure for FLIST has been implemented for simulating lineprinter output on the FR80. The parameters are compatible with the old version and the new parameter OPTION controls layout, line length and width, character size, etc. The parameters available with FLIST are LPI, MODE, CAMERA and OPTION. The basic method of control is through the MODE parameter -

MODE	OUTPUT PRODUCED
P	Lineprinter 132 wide, 66 lines/page (LPI=6) or 88 lines/page (LPI=8).
T	A4 size output (on CAMERA=HCS), 66 lines/page, 80 characters/line.
A4	A4 size output on HCS, 54 lines/page, 65 characters/line.
A5	2-up on A4 size output (like R.L. Reports), 54 lines/page, 65 characters/line.

The default value for MODE is P. The only cameras currently supported are MFCH (default), HCS and BW35. The lines per inch (LPI) can be 6 or 8 (default). The default FONT is Smog font 1 on all cameras. The previous FLIST used font 1 only on MFCH.

The hardcopy produced by FLIST is now acceptable for printing by Reproduction.

An RL report (RL-78-086), describing all the text output facilities which use the FR80, is now available in draft form from the Manuals Librarian (RL extension 272), and in DOC=CIGAR.PARTE.UT.FLIST. A description of the common facilities of FLIST and SYSOUT=M will be published as updates to CIGAR.

Meeting Notes

8.3 Priority Time

Until recently each account was allocated 10 hours per week at priority 3, and jobs submitted at this priority were run when all other work was exhausted. In August priority 3 was renamed as priority 1, so that at some later date priority 3 can be introduced for special purposes.

8.4 New Class Structure and Turnround

The new class structure described in section 9 of Forum 4 was introduced at the end of August. As a consequence, jobs requesting between 560K and 1000K will only receive overnight turnround; the lunchtime session, when formerly some of these jobs were run, has been withdrawn. The core size boundaries and turnround guidelines are repeated below.

Short Jobs

Core Size Requested	P12	P10	P8	P6	P4
0– 210K	15 mins.	30 mins.	2 hrs.	overnight	weekend
212– 350K	–	1 hr.	3 hrs.	overnight	weekend
352– 560K	–	2 hrs.	4 hrs.	overnight	weekend
562–1000K	–	overnight	overnight	overnight	weekend
>1000K	–	weekend	weekend	weekend	weekend

Long Jobs

priority > 4 and core < 1000K	overnight
priority 4	weekend
any job > 1000K	weekend

It will be seen from the above that it is a waste of high priority time to run any job over 560K at a priority greater than 6, and any job over 1000K at a priority greater than 4.

Users running jobs at low priority, or with large core requests, are advised to compile the program separately in a short job using at least priority 6, and store the load module in a user library. This avoids having to wait a week or more for a job to run, only to fail with compilation errors.

Jobs greater than 560K cannot be run on the Front End Machine, and users should avoid submitting any large core jobs for execution only on the Front End; in particular, users are advised to run ELSEND as a single step job, and not to mix it with other steps. One can often to avoid the use of ELSEND altogether by writing data to a short-lived OS dataset, logging in and using the COPY command to copy the data into ELECTRIC.

8.5 Priority 12 Lines Limit

The 5000 lines limit for output on priority 12 jobs has been removed, but the default for all jobs remains at 5000 lines.

8.6 F1 Procedures

The procedures named F1CLG, etc. are no longer recognised. The corresponding FG procedures should be used.

8.7 User Course

The next user course is being held at the end of October and is already fully subscribed. By the end of this course we shall have taken over 100 students from about 60 different groups. The next course after this is to be held from 15th to 18th January, and after this the course will be run 2 or 3 times a year.

8.8 Abend Codes

Users who do not have easy access to the Messages and Codes manual are able to obtain a description of certain Abend Codes by submitting a job from the ELECTRIC JOBFILE, e.g.

```
EXEC JB=ABEND,CODE=ABC
```

will print (default route is ELECTRIC) the description, if there is one, of Abend code ABC.

8.9 Output for Visitors

Visitors to the Laboratory have always routed their output to the XZ pigeon hole, by the use of these two characters at the beginning of their jobname. Since the move to R26 confusion has sometimes arisen over the final destination of this output. In future visitors who wish to collect their output from R26 should use XZ, and visitors wishing to collect it from R1 should use XQ.

8.10 SYS1.PROCLIBA

The rationalisation of the procedure libraries is nearing completion, and SYS1.PROCLIBA was disconnected at the end of October. Attempts have been made to contact the owners of all the procedures left in this library. The ELECTRIC file DOC=ALERT.PROCLIBA contains a list of all the procedures which are no longer available.

8.11 Date of Next Meeting

(Provisionally) WEDNESDAY 7 FEBRUARY 1979.

QUESTIONS RAISED AT THE 195 GROUP REPRESENTATIVES MEETING

Tape and Disk Management System

Q1. What is the time scale for TDMS utilities?
Q39. When will users be able to submit a job which will tell them the location of all their tapes?
A1/39. I cannot give a very accurate estimate at this time, but it should be before the end of the year. (A R Mayhook)

Q2. How will defaults be set up?
A2. I believe this refers to password protection of tapes. The system has been set up with no password protection on any tape. This protection will not change unless you change it. The TDMS update facility will enable you to protect your tapes if you wish to do so. (A R Mayhook)

Q3. Should users feel guilty if they allow tapes to move to the Home Library?
A3. Users can always assist in the smooth running of the TDMS by informing the Tape Library staff of any tapes not in current use and these will be returned to the Home Library. (G A Lambert)

Q4. Could a 'sticky label' or standard form be used for all foreign tapes asking questions required?
A4. A suitable form is being designed. (G A Lambert). See Section 5 of this FORUM. (Editor)

Q5. Are tape moves made at weekends?
Q10. Is it possible to move tapes from the Home to the Local Library at mid-day as well?
A5/10. Currently tapes are moved into the Local Library at approximately 10.00 am, 4.00 pm and 10.00 pm daily Monday to Friday, and once daily, depending upon the tapes involved at weekends. As very few are moved at the 10.00 am run this will now be delayed until 11.00 am daily. (G A Lambert)

Q6. If an RL tape is taken away from RL for a short period, is this known to TDMS?
A6. All Rutherford issued tapes removed from the Tape Library are marked as absent and hence any job requesting such tapes will be rejected by TDMS. Foreign tapes removed from the library are deleted from TDMS completely. (G A Lambert)

Q7. Could tape information wait for the UPDATE utility where, for example, the density is uncertain?
Q8. Occasionally users have 'foreign' tapes whose density is unknown.
A7/A8. Users sending tapes to RL should include all necessary information otherwise the tape will not be booked into TDMS. If a user is unaware of the density that the tape has been written at, a request for this to be determined should be made. It might

take an extra day to put the tape into the Library if the Librarian first has to find the density. (G A Lambert)

Q9. Could the file count be recorded in TDMS?
A9. It is very difficult to obtain the necessary information so that the files can be updated. Therefore I think the answer must be 'no'. (A R Mayhook)

Q11. What is the timescale to move tapes from archive to the Local Libraries?
A11. Generally archive tapes requested during prime shift will be available for use the following day. (G A Lambert)

Q12. If the 'user' field is to be of any general use it will need to be accessible from user programs.
A12. It is intended that some form of access to the information in TDMS files will be available to batch programs. This will include the possibility of modifying the user field. I cannot estimate when the facility will be available. (A R Mayhook)

Q13. Do you plan a scheme whereby you submit a small job to move the tape to the LOCAL Library?
Q14. Will it be possible to move the tapes with the UPDATE facility?
A13/14. Submitting a dummy SETUP job which requests the tape which is to be moved to LOCAL is a bad way of achieving the objective, since it causes the operators to mount a tape unnecessarily. There will be a command to 'move tape' in the user's version of the TDMS update program which will flag a tape as being wanted. This is a non-SETUP batch job which is better than running a SETUP job because it doesn't cause an unnecessary tape mount. Alternatively you can contact the tape librarian directly. This has the advantage that it does not need to run a job, but there is the possibility of notes made on backs of envelopes going astray. (A R Mayhook)

Q15. With 7 track tapes is it necessary to give density as well as tracks?
A15. If you do not specify density you will get the default value which is 800 bpi for 7 track tape. You should make sure that the value in the TDMS files is correct. (A R Mayhook)

ELECTRIC

Q16. Is there any possibility of printing Archive files containing documentation, particularly package information.
A16. No. Use the facilities for keeping the file or files in an OS data-set as described in the ELECTRIC Users Manual, Part 1, Section 8.1.3. (T G Pett)

Q17. Is it necessary to hold documentation in the machine?
A17. The two advantages of machine readable documentation are timeliness and accessibility. Draft copies still subject to

editing can be made available before a formal release can be made. Also, the user community is now so large that it is out of the question to print everything for everybody or even for every representative (of which there are over 200). Documents may therefore be made available on demand. Whether ELECTRIC or another online system is the best means of achieving this or whether some other system eg using demountable disks, is a question on which there is no standard policy. (P J Hemmings)

Q18. Could the default file be current file when handling the edit part and vice versa?
Q19. It seems necessary to have an abbreviation for current file particularly when adding or moving text.
A18/19. Some form of abbreviation for current file will be implemented. The exact form of the syntax is still under discussion. (T G Pett)

Q20. Could the routing of punched output to Glasgow be rationalised. At present jobs submitted through the RJE on cards have PUNCH=REMOTE9 as default whereas PUNCH and EXEC have LOCAL as default. As a result quite a lot of unwanted cards are punched off at RL.
A20. It would be easy to implement a scheme in which the default destination for punched output was the same as for printed output. The problem is that not all workstations have card punches. The solution to this problem will be considered but it is not a short term measure. (T G Pett)

Q21. Can the LOGIN queue be updated as users leave so that the rate of change can be assessed?
A21. Yes, this will be done. (T G Pett)

Q22. Can a method of line number removal like LINENUM=NO be implemented for GRAPHICS text prints?
A22. Yes, considered as a future development. (T G Pett)

TERMINAL SWITCHING SYSTEMS

Q26. Will we be running TSS and GANDALF in parallel?
A26. Yes, the connections already using TSS will stay until the people in charge of the appropriate computers decide to move them. The data editing machine will probably move to GANDALF first and some ports on the 195. (C J Adams)

Q27. Are external candidates required for use of the network?
A27. The intention is to move workstations onto the network one or two at a time, beginning with those known to need access to more than one site. (P M Girard)

Q28. Will the initial system be a single PACX?
A28. Yes, with 72 ports and 72 terminals connections initially. Maximum 124 ports and 254 terminals. (C J Adams)

Q29. How as a remote workstation can we get connected to the Data Editing machine?
A29. Network workstation software for 2050s is in the final stages of testing before being put into production. Network software for OS4000 is currently under development and it is hoped to have this in production early in 1979. These two developments will enable workstation terminals to gain access to the Data Editing system. (C S Cooper)

Q30. Is there any policy of standardizing for example, JOB CONTROL and 'EDITORS' between various machines?
A30. There is no prospect of a world wide standard for people who have to use various machines. There are however many instances of compatibility between the JCL for the 195s at Rutherford and the 165 at Daresbury. The principal catalogued procedures eg FHCLG are common and have the same parameters. The standard libraries have the same names eg SYS1.HARLIB, SYS1.NAGLIB, SSP, and SYS1.RHELIB, although the implementation dates will in general be different. Names like DISK30, DEN6250 and model DCBs are generally known to both systems. But there are important differences principally related to HASP and the difference between ELECTRIC and TSO. (P J Hemmings)

Q31. Is there any access to the 4080 via the 195?
A31. Terminal access to the Data Editing 4080 via the 195 is possible but not recommended. It is intended that local access should be through TSS or GANDALF and remote access by means of network software (cf.Q29). (C S Cooper)

Q32. Are there plans to connect TSS to any other machines?
A32. Yes, we will probably connect to the Nodal 4080 exchange rather than direct to the 195. (C J Adams)

Q33. Is it possible to connect to 195, 4080 and PRIME from the same source?
A33. Not yet, as it has not been agreed with ACD the timescale for connecting GANDALF to the 4070 and the PRIME. (C J Adams)

FUTURE DATA EDITING FACILITIES

Q34. What is the long term future of ELECTRIC?
A34. ELECTRIC would be available on a front-end machine, but will be frozen when a satisfactory system is available. Future development work, if required, would then be with CMS. (J W Burren)

Q35. What thought is being put into compatibility between file structure of 4080 and, say, CMS?
A35. The 4080 (OS4000) has a filestore which includes a catalogue/directory structure which is generally similar to that of ELECTRIC. CMS does not have a directory structure: users have a small number of minidisks, each of which has a single directory level. It is too early to be able to say whether or not major

effort would be put into providing a full directory structure for CMS. (C S Cooper)

Q36. Will there be more than one 4080?
A36. There is no technical reason against having more than one 4080 providing data editing facilities. Primary considerations in providing further such systems are likely to be user pressure and timescales for obtaining a front end for the dual 195 system. (C S Cooper)

Q37. How many CMS users will a 3032 support?
A37. CMS is a full time-sharing system, that is, the user at a terminal can run the compilers and his own programs and these execute while he is at the terminal. The number of simultaneous users that a 3032 would support is thus dependent on the balance of user's terminal activities. It is, of course, also dependent on the configuration of the 3032. There are examples of installations with numbers of simultaneous users ranging from 70 - 200 on 370/168s (the equivalent of the 3032). We would aim to provide a system with of the order of 100 ports. A system having to handle other activities including upwards of 50 RJE stations is likely to have restrictions on the activities allowed at terminals. (J W Burren)

GENERAL

Q38. Please can we have FORUM issued within a month of the meeting of 195 reps?
A38. This time we have allowed ourselves four weeks to complete the editing (including writing the TDMS article), plus two to three weeks printing. You will know when you read this how successful we have been! (P J Hemmings)

Q40. Several users have complained about the delays which can arise on P8 (<210K, <90 seconds) jobs in the afternoons. The following would be helpful to clarify the situation:-
a) A distribution of percentage of jobs against the time taken during afternoons in, say, 15 minute intervals. This would help to distinguish between targets of two hours and average figures published in quarterly reports. If possible this information would be useful on a regular quarterly report basis.
b) How many hours of P8 time are allocated each week.
c) If there is a need to improve the situation would it be acceptable to the majority of users to cut the P8 allocations with a corresponding increase in P6 allocations. One suggestion is a 50% cut which would force short non-essential work into P6.
A40. Apart from one period of hardware problems there is no evidence, during the past quarter, to support your suggestion that afternoon P8 turnround regularly exceeds the published guideline of 2 hours. Study of turnround statistics is complicated by those jobs where turnround is adversly affected by factors under the users control (eg job is part of a multijob chain, tape not available).

The subject was raised at the Category Representatives meeting and it was decided that a cut in the P8 allocations was not warranted. User Support Group is still studying turnround and is considering various ways of publishing the statistics.
Taking your final point we all agree that "inessential" work should not be run at priority 8! (P C Thompson)

Q41. Is there any way in which card output can be routed to CERN? This is useful for sending programs and data to CERN for use on the 370/168 and 7600, especially after the user has arrived and someone at home can send decks over the link.
A41. We have never supported card output for predominantly economic reasons. Card reader/punches are extremely expensive from GEC. However, when the 'back-to-back' system is in operation, hopefully by mid-November) card output at CERN will be possible via this onto the CERN card punches. (M R Jane)

Q42. Could the date and, possibly, time of execution be added to the job header produced at remote stations, replacing some of the many asterisks?
A42. These are available at the bottom of the JCL listing, but we plan to add date and time of printing to the remote job header page. (G H Adamson)

Q43. Could a message be issued if a job is cancelled for a /*NORESTART card?
A43. Hasp will be modified to do this. (G H Adamson)

Q44. Is there a close data-set in MHREAD?
A44. A facility for closing a data-set within the routine will be provided as soon as possible. (R M Freeman)

Q45. As the machine is lightly loaded can large core jobs be run on say Wednesday?
Q46. Is there no possibility of running >1000K on one night during the week?
A45/46. The lighter loading of the machine during August and September is a seasonal characteristic. There is evidence of the seasonal build-up in October. The question of jobs over 1Mbyte still needs examination. Users requiring this are invited to write explaining their requirements to the head of Computing and Automation Division - Mr W Walkinshaw. (P J Hemmings)

SECTION 2 GRAPHICS SOFTWARE DEVELOPMENT

1 INTRODUCTION

Around July 1977 a project was set up to rationalize the graphics systems provided on the RL central computers. Three broad areas of development were defined for the project:

(a) completely rewritten low level graphics software package to be used by SMOG, MUGWUMP and GINO to generate graphics orders;

(b) completely rewritten DESPOOL program together with any HASP modifications required by it;

(c) substantially improved documentation of all graphics facilities.

2 AIMS OF THE NEW LOW LEVEL GRAPHICS SYSTEM (IMPACT)

When the new system was proposed, a large number of graphics packages and programs co-existed at RL. They were:

Producing MUGWUMP files:

MUGWUMP package
VIEW$ program
GINO interface

Producing FR80 output:

SMOG package
SCFOR package
ELFR80 program
GINO interface
POLYGRAPHICS package
FLIST program

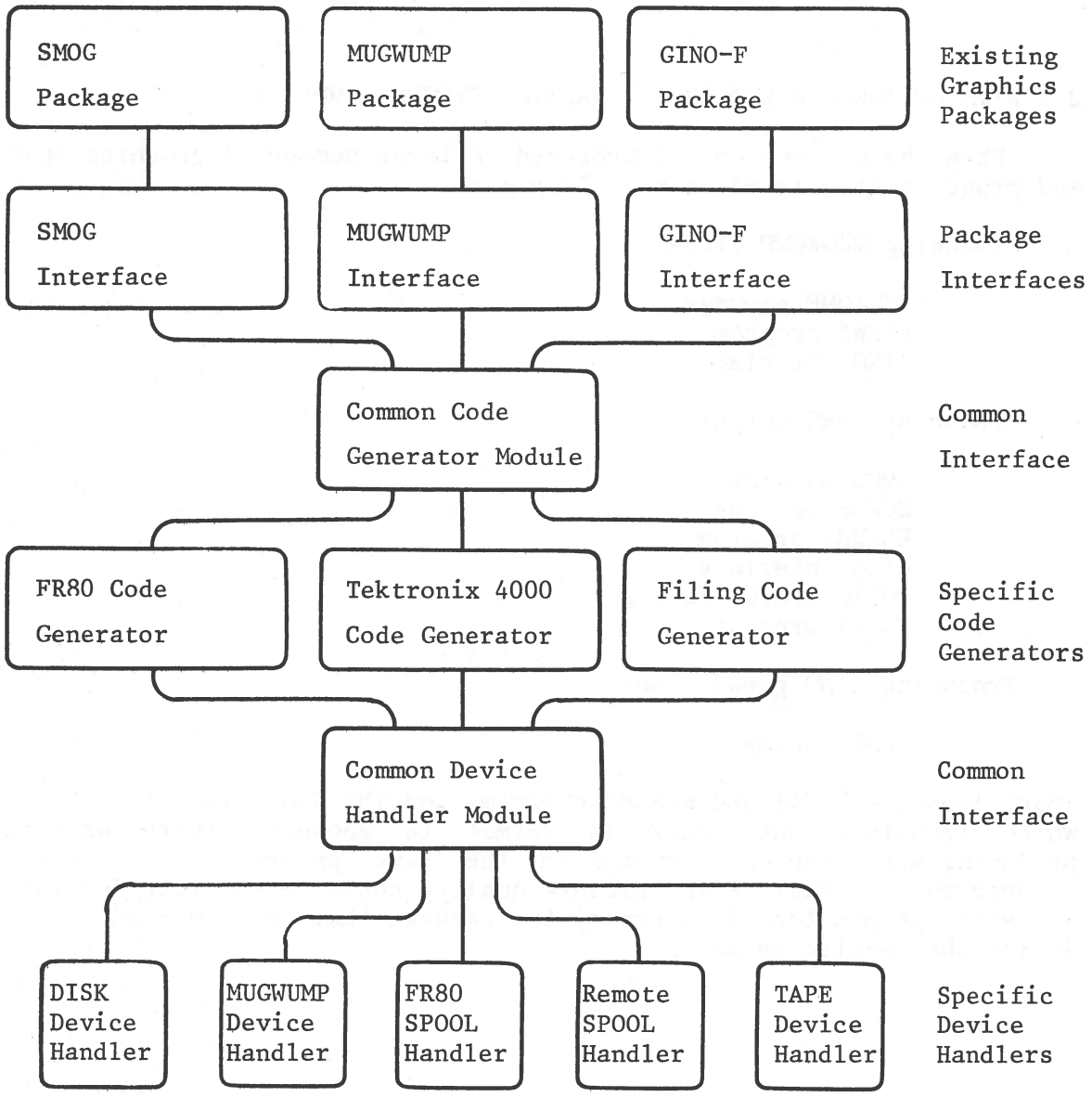
Producing GINO pseudo code:

GINO package

Apart from the VIEW$ and ELFR80 programs and the GINO interface packages, which transform one code/file format to another, there was no way of producing more than one format from the same program. Even using the transformation programs the picture quality could be severely degraded. As a result, people tended to employ the package that was designed for the device they wanted to use.

The possibility of basing all packages and programs on a single existing RL package (GINO or SMOG) was investigated thoroughly and rejected. The result would be a package which to most people was only really capable of the functions common to the existing packages; it would also be very large.

It was decided to maintain SMOG, MUGWUMP and GINO to the levels defined in their respective User Manuals, but to replace the low level system (below the level called by the user) with a common code generator/device handler system. The design owes much to the GINO philosophy about organization although radically different in most other ways. In particular the RL system, which is now known for convenience as the IMPACT system, separates the code generator and device handler functions. These two sub-systems only communicate via a formal interface. Diagrammatically the system becomes:



It was decided to adopt the technique of dynamically loading relevant sections of code (at execution time) on the 360. This technique has the enormous advantage that changes to the system can be made without requesting users to relink their programs. In addition, new devices and paths to devices may be added and are immediately available to existing programs without modification.

3 PROGRESS ON THE IMPACT SYSTEM

The majority of the effort in the project has been devoted to the IMPACT system. There are several sections within IMPACT and progress has been made in all of them: Interfaces; Code generators; Package to IMPACT conversion routines; and Device handlers.

4 PROGRESS ON 'DESPOOL' SYSTEM

During and immediately after the development of the Dual 195 system, many deficiencies in the facilities for controlling and indicating the routing of HASP output became apparent.

The new program will avoid most of the deficiencies in the current DESPOOL program that are apparent to operators and users, including the excessive CPU and lapsed times, the problems of too much output to fit on one tape and the restriction of one only FR80 stream per job.

5 PROGRESS ON DOCUMENTATION

The new system contains new facilities as well as supporting existing facilities: all require documentation. Also the majority of the problems brought to the attention of those supporting graphics were caused (or not helped) by the documentation available. Part of this was due to the fact that the SMOG manual was written for the 1906A with only an out-of-date appendix dealing with the 360.

The existing documentation on the 195 system was also very scattered and consisted of

(1) ELECTRIC User's Manual (MUGWUMP basic package)
(2) RL report on MUGWUMP 3-D histograms
(3) SMOG System Manual (SMOG basic package)
(4) About 7 Graphics User's notes (others obsolete)
(5) FR80 User Note 10 (Archuleta package)
(6) CIGAR (introduction to graphics on the 195)

The new RL Graphics Manual has been designed as a complete guide to graphics on the Central Computer system. It contains four parts, each split into chapters on separate topics:

A Basic graphics routines (includes rewritten chapters 3 to 8 of SMOG manual).

B High level routines (includes all information from Graphics User notes and FR80 User note).

C Implementation specific information, including one page guide for users of high level routines.

D Technical appendices.

The aim is that those who wish to construct their own pictures from primitives will be satisfied with Part A and one chapter of Part C. Those who are only using available high level routines (for instance graph drawing or contour plotting) will only refer to the relevant chapters in Part B and the one page JCL/command language summary in Part C.

6 TIMESCALES

We have decided that there will be four phases in the introduction of the new system. When introducing the original SMOG system in 1975/6 there was a trial period for 'guinea-pig' users which proved very useful in isolating and curing errors before too many people hit them and became disillusioned. We are therefore planning on two levels for each of two releases of the system. In each case the first level will be for guinea-pigs, the second for everyone.

Date	Rel.	System	Status
15 Nov 78	1.0	IMPACT	Restricted SMOG replacement for guinea-pig users; SPOOL and DISK device handlers only;
		DESPOOL	Operational testing;
		MANUAL	Draft available for guinea-pig users.
1 Jan 79	1.5	IMPACT	Full SMOG replacement; TAPE and remote punch support added;
		DESPOOL	Installed operationally;
		MANUAL	Locally duplicated version available on request.
Feb 79	2.0	IMPACT	Full interface to FR80; Tektronix interface for guinea-pig users (T4010 only); commissioned 4080 output retrieval;
		MANUAL	Relevant sections available printed but loose-leaf.

Apr 79	2.5	IMPACT	Full facilities of Tektronix, including 4014, supported; MUGWUMP device handler supercedes current system;
		MANUAL	Full manual available in own binder (like ELECTRIC).

The system will be readily extensible in areas that may require modification because of changing hardware, operating systems or applications software. The final product will be a system that is rugged, small, well documented for both user and maintainor and equally useful to people requiring full control of their output and those who wish to use reliable simple facilities for common applications.

SECTION 3 SUPPORTED PACKAGES

A list of supported packages was last published with Forum number 3 (August 1977). The revised list extends beyond those supported on the 195 by C and A 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 October 1978. 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, C&A Division.

The following abbreviations are used in the list below: ACD - Atlas Computing Division; AL - Appleton Laboratory; BCRG - Bubble Chamber Research Group; C&A - Computing and Automation 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	C&A	Compiler
APPLE	Min	BCRG	Direct Channel Partial Wave Analysis
ASAS	Min	ICF	Finite Element
ASCOLI	Min	BCRG	Three Body Partial Wave Analysis
Assembler(F)	Std	C&A	360 Assembler
Assembler(VS)	Std	C&A	Compiler
ASTAP	Min	ICF	Statistical Analysis Program
ATMOL	Min	DL	Quantum Chemistry
BCPL	Std	C&A	Compiler
BDMS	Min	Durham	Berkeley Data Base Management System
BERSAFE	Min	ICF	Finite Element
BMDX72	Min	C&A	Bio-Medical Statistics Package
BUEDDY	Std	Tech	2-D Eddy Current Program
CAMAL	Min	C&A	Symbolic Algebra
CAPSTAN	Min	C&A	Critical Path Analysis
CERN Library	Std	C&A	Subroutine Library
CFD/CFDX	Min	C&A	Translator - generates ASK for ILLIAC IV
COBOL(E,F,ANS)	Std	C&A	Compilers
COCOA	Min	ACD	Text Processing
CPC Library	Std	C&A	Subroutine Library
CSL	Min	ICF	Simulation
CSMP 1	Min	C&A/CPC	Continuous System Modelling
DSKSOL	Std	Tech	Solves large sets of linear equations using backing store
ECAP1	Min	C&A	Circuit Design
ELECTRIC	Max	C&A	Text Editing
FAMULUS	Std	C&A	Easy to use Text Sorting and Indexing
FAPLOT (ENPLOT)	Std	C&A/HEP	Histogramming Package
FORTRAN G1	Max	C&A	Compiler
FORTRAN H Extended Plus	Max	C&A	Compiler
FOWL	Std	C&A	Monte-Carlo Phase Space Program
GEOMETRY, KINEMATICS & ORACLE	Min	BCRG	Film Analysis Programs
G-EXEC	Max	NERC	Relational Data Base and General Data Handling System
GFUN	Std	Tech	Magnet Design
GINO-F	Std	C&A	Graphics
GPSS	Min	C&A	Simulation
GRAPHICS/SUMX	Min	BCRG	SUMX with Graphics Options (via MUGWUMP)
Harwell Library	Std	C&A	Subroutine Library
HBOOK	Std	HEP	Histogramming Package
HPLOT	Min	HEP	Graphics (part of HBOOK)
HYDRA	Std	HEP	Program Management with Dynamic Memory

PACKAGE	LEVEL	SUPPORT	DESCRIPTION
IBM Utilities	Std	C&A	(some)
ICCG	Std	Tech	Sparse linear equation solution by pre-conditioned conjugate gradient method
JSPLOT	Min	BCRG	Histograms/Scatter Plots via MUGWUMP
KWIC360	Min	C&A	Text Processing Index System
MAST	High	C&A	Message Switching
MINUIT	Std	Oxford	Minimizing Package from CERN
MUGWUMP	High	C&A	Graphics Package and Filestore
NAG Library	Std	C&A	Subroutine Library
NAP	Min	ICF	Circuit Design
NEWPAC	Min	C&A	Finite Element
NONSAP	Min	ICF	Finite Element
OLYMPUS	Min	C&A	Standardises the design and structure of programs
OSDITTO	Std	C&A	Tape and Disk Utilities
OSFLOW	Std	C&A	Flowcharting Program
PASCAL	Min	C&A	Compiler
PATCHY	Std	HEP	Source code maintenance in multi-version programming
PL/1 (F)	Std	C&A	Compiler
PL360	Min	C&A	Compiler
POLYGRAPHICS	Min	C&A	Graphics Package
PPE	Std	C&A	Problem Program Evaluation
REDUCE	Min	C&A	Algebraic Manipulation
RL Library	Std	C&A	Subroutine Library
RL Utilities	Std	C&A	Utilities described in Program Library Manual
SAP	Min	ICF	Finite Element
SCFOR	Min	C&A	Graphics Package
SCHOONSCHIP	Min	C&A	Symbolic Algebra
SIMULA	Min	ICF	Simulation
SHELX	Min	DL	Crystallography
SMOG	High	C&A	Graphics
SORT/MERGE (IBM)	Std	C&A	Sort/Merge
SPICE	Min	ICF	Circuit Design
SSP Library	Min	C&A	Scientific Subroutin Package
STACKER	Min	C&A	7 to 9 track Tape Conversion
STAGE2	Min	C&A	Macro Processor
STAIRS	Min	C&A	Information Retrieval
SUMX	Std	C&A	Statistics Package
TRIAB	Min	HEP	Book-keeping system for the analysis of experiments, including tape management
VICAR	Std	AL	Image Processing
XRAY74	Min	DL	Crystallography