

14. COMPUTER STATISTICS

IBM SYSTEMS 2/5/83 - 29/5/83

SYSTEM AVAILABILITY - % of 672 hrs available

MVT - 97.6%, CMS - 98.8%, ELECTRIC - 91.9%.

MVT THROUGHPUT

Average jobs/week 10383
Average CPU hrs/week 152
Average backlog on Monday mornings 10hrs 22 min

TERMINAL SYSTEM USERS

CMS ELECTRIC
Registered users 1105 1147
Active users 520 292

MVT BATCH SERVICE LEVELS

Percentage of prime shift short jobs not turned round inside guideline:

Setup jobs	Size	P12	P10	P8
0 - 210K		-	7.9	7.4
212K - 560K		-	2.3	7.1
562K - 1500K		-	9.5	6.0
Non-setup jobs	Size	P12	P10	P8
0 - 210K		5.5	1.9	1.8
212K - 560K		18.7	7.9	2.4
562K - 1500K		-	8.6	3.3

USAGE

Cumulative totals are for current financial year, 4 weeks to date.

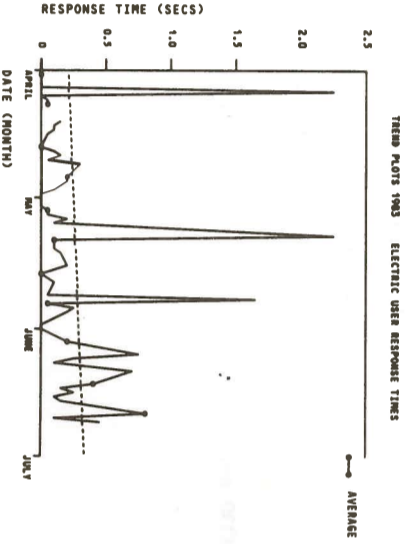
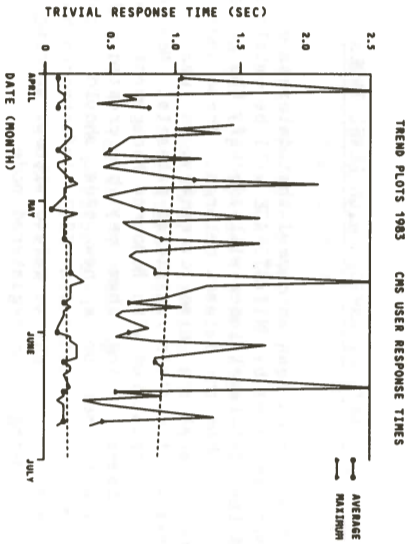
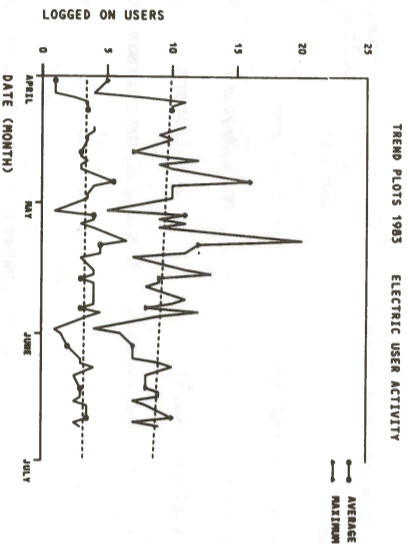
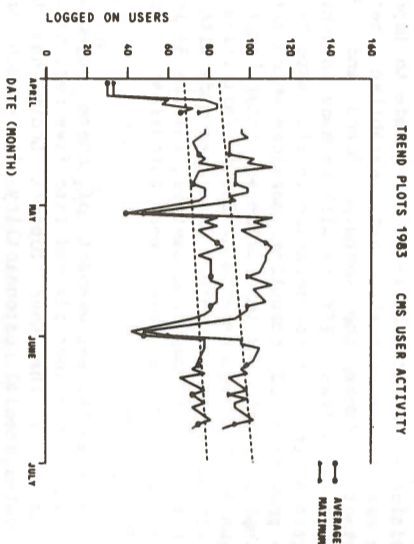
Board	MVT CPUs	ELECTRIC AUS	CMS AUS
ASR	58	43	178
Eng Ineering	148	22	143
Nuclear Physics	817	130	986
Science	136	51	298
Central Funding	5	17	1180 *
NERC	14	2	56
External	7	5	56
Overheads	10	18	898
TOTAL	1195	288	3795

* These entries include some usage due to "service" functions which are strictly an overhead and should be accounted separately.

ICF SYSTEMS

AU USAGE BY BOARD - Periods 8304-8305

Board	Pr-time	GEC	DEC-10	TOTAL
A S R	43	11	10	65
Engineering	2073	835	2172	5081
Central Funding	1076	248	294	1619
Nuclear Physics	35	11	0	47
Science	107	168	65	341
External	53	37	122	213
Systems Overheads	793	79	394	1266
TOTAL	4180	1389	3057	8632



Newsletter of the SERC Central Computing Facility

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CONTENTS

EDITORIAL	Mike Jane
ATLAS 10 'CHRISTENED'	Tim Pett
A USER'S TALE	
THE SCHOOLS PROJECT IN THE COMPUTING DIVISION OF RAL	Andy Ellis
RECENT DEVELOPMENTS IN THE MANAGEMENT OF ACADEMIC NETWORKING	Mike Wells
ELECTRIC	Tim Pett
DIARY	
STATUS OF MANUALS	Jacky Hutchinson
MANUAL STOCK REPORT	Muriel Herbert
REGIONAL LIASON	Geoff Lambert
DATASET NAMES - HIGH LEVEL INDEX	Sue Ward
SERCNET VAX NEWSLETTER	Steven Yip
STATUS REPORT ON REV 19.1 OF THE PRIME OPERATING SYSTEM	Mike Jane
STATISTICS	Milly Ayres Tony Lobley Roy Platon

1. EDITORIAL

Over the next few months FORUM will undergo some changes with a view to making it a better received newsletter throughout the community. This editorial will be a regular feature and will briefly mention items of general interest. We are interested in the views of our readers on any aspect of FORUM and I invite comments to be sent to the Editor. We also hope to include regular contributions from users. This issue contains an amusing tale from the past from a user who wishes to remain anonymous.

The last month has seen the reorganisation of the Computing Division coming into effect. By the next edition of FORUM the majority of the changes will have been made. With luck we may even have moved offices by then.

The Atlas 10 was installed on time by ICL - a most impressive effort, especially as the Fujitsu involvement was conspicuous by its absence. The machine now provides the back-end service for about half the time.

The general service throughout this period has been reasonable apart from a few bad days on PRIME B at RAL (RLPB). Demands on the resources available are still fairly light with only RLPB and the PRIME at UMIST (UMPA) being heavily loaded.

This issue contains an article by Professor Mike Wells who has recently been appointed as the Director Network. I hope that everyone will take heart from the article and have faith in the plans to provide the Joint National Academic Network. SERC is fully committed to this project but continues to be responsible for its users, and to this end will ensure that the performance and growth of this network will satisfy their needs.

Plans to move to Rev 19.1 of the PRIME Operating System have been delayed because of its poor performance on the existing configurations. Users can rest assured that we will implement the new release as soon as possible.

Readers please note that there will be no FORUM published in August.

Mike Jane - Head of User Support Group



Raising their glasses to the Atlas 10 are (from l to r) Dr Geoff Manning, Dr Olaf von Bulow, Prof Bob Hopgood and Dr Jack Howlett.

2. ATLAS 10 'CHRISTENED'

The Atlas 10 was christened on 16 May by Dr Geoff Manning, Director of RAL, who cut the white tape draped over the console and initiated a special job into the system. Before the ceremony, attended by 45 people from SERC and ICL, Dr Jack Howlett, the former Director of the Atlas Lab, gave a nostalgic talk on his experiences of the first Atlas computer. Dr Manning described the changes that have taken place since then, including the merger with the Rutherford Laboratory and the changes in the mainframes, leading up to the decision to purchase the Atlas 10.

Dr Olaf von Bulow, Director ICL Atlas Division, replied with an amusing speech during which he first presented Dr Manning with a 100 yen note as 'discount' on the Atlas 10. He quickly retrieved this by 'selling' to Dr Manning for 100 yen the scissors with which to perform the christening! Apparently it is a Danish custom that you cannot give a sharp implement to a friend, but it is alright if you sell it.

The Atlas 10 has been performing very reliably with no hardware faults to date. All the connectivity tests were completed successfully by the end of May. These were designed to check that the Atlas 10 would support the RAL peripheral equipment, such as disks, tapes, drums, hyperchannel, printers and telecomm equipment.

Software tests revealed a problem with AVM's support of the channel to channel connection between the Atlas 10 and the 3081. (AVM is ICL's

version of VM). Consequently it has not been possible to go into production with AVM as originally intended and VM is being used instead. The production service started on 4 June with the back-end MVT system (BEM) running under VM.

Until the handover date, scheduled for 1 September, RAL and ICL are sharing the use of the Atlas 10. ICL have dedicated access for the period from system development on Wednesday morning to system development on Thursday evening; the BEM is running on the 3032 during this period. At all other times the BEM is running on the Atlas 10. The Atlas BEM system has a charge factor intended to bring it into equivalence with the 3081. Compared with a single 3081 processor this is set currently to 3.75 but may be adjusted in the light of experience.

Problems with I/O contention on the BEM system disk have been alleviated by moving the high activity BEM system datasets to a new 3350 disk. Monitoring of I/O will continue and further balancing of the load will be undertaken if it proves necessary.

Users who make use of the /#NEEDS card to force a job onto a particular processor are warned that there is no /#NEEDS ATLAS at present. Also, using /#NEEDS 3032 or /#NEEDS NOT3081 will cause a job to run in the BEM on whichever processor the BEM is running, Atlas 10 or 3032. The situation will be tidied up after handover when the 3032 has been removed from service.

Tim Pett - Computer Services Group

3. A USER'S TALE

The following article is taken from a report of a project written in May 1977. It tells its own story!

I applied for a 360 magnetic tape in order to make a copy. Notification took a week to come through due to there being only one tape librarian on duty, and the notification being put in the wrong pigeon hole. Meanwhile I tried to read the existing tape into the 195. The basic idea was as follows

- (a) to read files from tape to the 195 disc;
- (b) to read files from the 195 disc to 4080 exchangeable disc;
- (c) to transfer the 4080 disc to the 4070 and read onto fixed disc.

In spite of full time work on the project it took a week to get the files off the tape and onto the 195 disc. This was due to a combination of very slow turnaround on the 195 (4 hours for a priority 10, 10 seconds CPU time job) and difficulty in using the IBM utilities (in spite of PAO advising at every stage). I was then given less than one day's notice that the 4070 exchangeable disc was to be removed. We finally discovered how to use the utility correctly but the main source file failed to copy because it was 50,000 lines long and the 195 would not allow more than 9999 card images to be punched to file on one run. I then spent 4 hours with 2 or 3 system experts trying to use an IBM utility to split the file into 5. The first job failed because there was no disc space. In order to speed up the process I asked for and obtained 2 minutes priority 13 time. I finally obtained an operators' disc for 2 days. In spite of the expert help the IBM utility failed to split the file. Eventually we wrote our own utility and it worked on the last run of the day.

Next morning I came in early to copy the files to the 4080 exchangeable disc, before the unit was removed at 10.00 am. When the program to copy the files failed we discovered the disc had been wiped clean overnight. While re-running the job to split the files, we received a phone call to say that the men had arrived to remove the disc unit. We tried again to use an IBM utility to copy the files - it said the files had been copied, but there were only 999 lines in each file instead of 9990. As there was no time left we had to give up. We later found that the utility was copying 10 cards to each line. We finally succeeded, one day too late, in copying the files from the IBM disc to the PRIME disc. We should then be able to copy them to the 4070 when the PRIME-4070 link became available.

At this point I discovered that one of the machines had lost a space character off most of the lines due to a misinterpretation of the tab character. I tried to read the tape directly into the PRIME but found that the block size of 4240 bytes was too large for the PRIME to handle.

By now I had read the tape into the 1906A, edited and split the large file and punched out the first 2000 lines of FORTAN. I propose to work on cards until the new machine arrives, even if I have to punch out 50,000 cards. I cannot use magnetic tape as the 1906A cannot write a tape that the PRIME can read.

The first attempt at compilation of the FORTAN failed because the compiler objected to the labels at the end of each card. With these removed the only problems were with the REAL 8 type of declaration. I have now received a FORTAN V manual and hope to start making real progress.

Name and address supplied

4. THE SCHOOLS PROJECT IN THE COMPUTING DIVISION OF RAL

The Schools' Project was set up in 1980 to give us a link with local schools running A-level computing courses. Behind this was the idea of putting ourselves in contact with suitable candidates for our ASO trainee programmer scheme early in their A-level career.

These prospective ASOs have the opportunity to work at RAL during the summer holiday at the end of their lower sixth, which puts us in an excellent position for choosing appropriate candidates for the ASO training scheme. Also they find out whether or not they wish to work at RAL.

Such links as this are absolutely essential if the Universities' views as to the suitable contents of an A-level syllabus are to be tempered by reference to present day computing requirements and practicalities. There is also the aspect that with some Education Authorities being reluctant to support A-level computer science the schools become dependent on other agencies for support. Of course with limited resources it is better to encourage the use of computers as tools throughout the curriculum, with the little available staff expertise being disseminated as widely as possible. Yet there are examples that show what can happen in schools when adequate resources are available - Five Ways Software is a case in point. The pupils themselves become a major resource within the school and can produce software both for within their own school and for wider distribution.

Our contribution, constructed from spare parts and a CPU from PRIME, is of a PRIME 400 with a single 80Mb disc dedicated to supporting terminals in five local schools, providing them with more sophisticated computing facilities than are currently available on microcomputers. With it being possible for authorised pupils to transfer files to other machines and peripherals, this provides them with the facilities required for embarking upon more enterprising projects, using techniques that they would not otherwise meet except through textbooks.

The benefit to the Computing Division is that those pupils who join us as ASOs on leaving school are already familiar with some of the machines and peripherals that we use and have had the opportunity to meet and use current ideas and practices. To date we have successfully recruited four ASOs (two in 1981 and two in 1982). Two more will be recruited this summer. The signs are that the project is proving successful.

Andy Ellis - User Support Group

5. RECENT DEVELOPMENTS IN THE MANAGEMENT OF ACADEMIC NETWORKING

Introduction

This short article describes some recent developments in the management of academic computer networking within the United Kingdom. These changes will inevitably affect users of the SERC network, and it is hoped that these notes will reassure such users that their interests will not be overlooked.

Some History

It is now nearly ten years since I produced a report to the Computer Board which proposed the development of a network, capable of handling the traffic from University sites to the major Regional Computing Centres. Since that time there has been persistent, piece-meal groupings of Universities, Research Councils and sub-groups within the Research Councils. There has been a steady move towards the use of non-proprietary, nationally agreed standards, but the present situation is still one of a number of networks rather than a single system.

Over the last few years the pressure for a concerted attempt to establish a single, unified network has been growing. These moves always tended to founder on the extremely sensitive problems of funding and managerial control. However, during 1982 the Computer Board took the decision that it would fund a network which would connect ALL University sites and ALL Research Council sites; the Research Councils, in the shape of SERC and NERC responded by agreeing that they would make available such networking equipment as was at that time in use and which was required for the new network. Finally it was agreed that the new network was to be formed by an evolution of the existing networks, using the agreed standards, together with a use of British Telecom's PSS wherever this was appropriate.

Purpose of the Network

The basic purpose of the Joint Academic Network (provisionally known as JANET) is simply stated: it will allow a user at any University or Research Council site to access facilities at any (other) University or Research Council site. It does NOT control use of that facility; that control remains with the management of the facility. The network will provide a limited number of services which only make sense in the context of a network (the so-called 'value added services'). While no firm commitments can be given, the value added services under consideration include

- Name Server
- Gateway Services
- Network Status
- Network Help facility
- Store and forward for Network Mail and Job Submission
- Status of attached services

The fact that these value added services are to be offered by the network does NOT mean that they may not also be offered by hosts connected to the network. It may mean, for instance, that a group of workers who cannot find any other way of handling their mail can request that it be handled by the JANET mail server in the first instance.

The emphasis in JANET is initially on connectivity, rather than on high-bandwidth connections, since it is judged that the initial benefit is to be found by allowing workers anywhere in the UK to connect to the network.

There will be sites for which an immediate connection to JANET is not feasible. To cater for this, part of the policy is to ensure that JANET can interwork with PSS. Sites not connected directly to JANET can then operate by use of PSS. There will also be at least one, and probably more than one, gateway point from JANET to PSS, and hence on to IPSS. Since use of these services is chargeable, the gateways will be one of the few parts of JANET whose use will require authorisation and which may give rise to charges. With these exceptions it is intended that use will not be charged, and that usage monitoring will be restricted to detection of excessive use, which may of course either be inadvertent, or deliberate.

Management Structures

A network which draws its recurrent funds and future capital from one source, and its initial capital from at least three sources, can expect to have a reasonably complex management structure. JANET certainly conforms to this pattern.

The network implementation is based on two distinct types of activity:

- (1) a single Network Control Centre
This consists of a small group responsible directly to the Executive, and located at one of the larger Network Operations Centres.
- (2) a number of Network Operations Centres
A Network Operations Centre is responsible for the day to day operation of the switching centres. It is expected that there will initially be seven NOCs in the mainland UK located at:

Bath	Cambridge	Daresbury
Edinburgh	London	Manchester
Rutherford		

In addition there will be a switch at Belfast. Each NOC will be a sub-contractor to the Network Executive.

The Joint Network team will continue with many aspects of its present role, acting as the development agency for new hardware and software products required for networking, and advise the Computer Board and Research Councils on networking matters where the need arises. The Network Executive is a newly formed body, consisting of three scientific staff plus administrative support. The Executive is the provider of network services, with strictly limited involvement in the development of new products as distinct from operating existing services and the expansion of these services using proven products. The Executive will delegate much of its day to day work

to the NOCs for the operation of switches and other equipment.

In order to allow an early start on some of these activities there is a Temporary Executive, which has two full time staff and a number of part time advisers, who are initiating some of the more urgent tasks.

A single full time SPSO will act as the head of both the JNT and the Network Executive, and will report to me as the part time Director of Networking. I in turn will report to a small Network Advisory Committee which will serve as a 'management committee' for the network. This group has as its chairman a member of the Computer Board, together with one further Board member, nominees from SERC, NERC and the polytechnics, and the Chairman of the Users' Group, together with myself. The Network Advisory Committee assists in the formulation of forward plans for the network, and with the assessment of the relative priorities of developments. It will also, by virtue of its Board representation, act as a channel for communication between the Board on the one hand and the JNT plus the Executive on the other.

A major role is expected to be played by the user groups. Clearly a service which extends from Plymouth to Aberdeen, with at least sixty sites and many thousands of users cannot operate with a single user group. One plan under consideration is as follows. There would be a number of user groups whose exact area would be determined by purely regional factors. All network sites within a region would be represented on that region's user group, which would also have representation from any NOC within the region and from the Executive. In turn these regional groups would send delegates to a single national user group, whose chairman would be ex officio a member of the Network Advisory Committee. The timing of meetings of this national user group would be arranged so as to precede the meetings of the Advisory Committee.

The Immediate Effects

The immediate effects of all this on the EXISTING network users are intended to be undetectable. There are many users who make regular use of network services, and the intention is that they should continue to do so, exactly as at present. The existing services will continue to be run by the staff who presently run them, and users should continue to report faults to their normal contacts. The effect on those who are NOT YET users, but who wish to become users, or who seek an expansion of their present service is much more noticeable. Requests for new services or for augmentation will in future be dealt with by the Network Executive. Requests which are already in the pipeline are intended to be automatically re-routed to the Executive. A more formal notice, setting out the new procedures, will be sent out shortly to all sites.

It is planned that the present SERC Network Management Committee will continue to operate until 1 April 1984, and indeed it has already scheduled its meetings through to that date. Members of the JNT have always attended SMC meetings, and they will later be joined by members of the Network Executive. From 1 April 1984 some of the functions of the SMC will be taken over by the new

structure. At this time too, new arrangements will start to come into effect for fault reporting and network repair. Obviously, these arrangements will be well publicised in advance.

Achievements to date

Much of this article is, of necessity, written in the future tense. However, I am happy to report that the new structures, even in their present incomplete form, have made some progress in improving the network. Funds have been secured from the Computer Board for upgrading all SERCnet PSEs, to allow them to run GEC's software when this can be clearly demonstrated as being fully operational. The actual acquisition of these upgrades, and their installation, will be progressed by the SERCnet staff. In addition the Executive has funds for the installation of 48 Klobits per second connections between Daresbury-London, London-RAL, RAL-Daresbury, Daresbury-Manchester and Manchester-London. These will use the newly announced BT KiloStream service and will be progressed by the Temporary Executive.

I am sure that many network users are anxious about the future, and I hope that this article will dispel some of their fears. I have no intention of jumping in with sweeping changes purely for the sake of it; the intention is to evolve towards the new networking arrangements over a period. I am sure that mistakes will be made, and I hope that users will accept this assurance that where mistakes occur they are simply that; and that the wrong decision was not arrived at from the blind application of some dogmatic principle.

I look forward to working with you.

Mike Wells - Director of Networking

6. ELECTRIC

Users are again reminded that ELECTRIC will be withdrawn at the end of the year. It is essential that any remaining ELECTRIC users wishing to move to CMS but not yet registered to use CMS must do so at once.

It has recently been decided that job submission from ELECTRIC will cease at the end of September. This will be achieved by removing the EXEC command. However, in order to allow users to copy files out of ELECTRIC and delete unwanted files from the ELECTRIC filestore, unlimited AUs will be provided during the last three months of the ELECTRIC service.

It is hoped that all archived ELECTRIC files can be restored to the online filestore by the time the services closes. If this is not possible, the ability to restore these files will be provided via a batch job.

Tim Pett - Computer Services Group

7. DIARY

The following is a list of future courses/meetings.

- 4 - 7 July IBM New Users Course @ RAL
- 12 July RAL Seminar: Dr Mike Johnson speaking about PUNCH, (PULsed Neutron Computer Hierarchy) for the Spallation Neutron Source.
- 13 July User Liaison Committee Meeting @ RAL
- 20 - 21 July Advanced CMS Course @ RAL
- 22 July RAL Seminar: Dr I Fuchs speaking about Bitnet, an academic network of IBM machines in the USA
- 13 - 14 Sept Prime Manager's Meeting @ UMIST
- 20 - 21 Sept GEC Manager's Meeting @ Heriot-Watt
- 30 Sept Prime User Group Meeting @ Warwick
- 3 Nov GEC User Group Meeting @ RAL
- 21 - 22 Nov Prime New User Course @ RAL

8. STATUS OF MANUALS

The following manuals are due to be produced some time this year; their status is as follows:

- 1. Prime manual for Rev 19, produced by Jaquetta Newberry at UMIST status:- completed and awaiting copying.
- 2. Prime Introduction Manual, produced by UMIST status:- yet to be started, due end of August.
- 3. GEC Reference Manual Volume II, produced by Steve Millmore at RAL status:- in 2nd draft, awaiting final comments from GEC site managers.
- 4. IBM VM Manual, edited by John Watson at RAL status:- in draft, awaiting final comments and minor changes.
- 5. Introduction to CMS, edited by Bob Maybury at RAL status:- being revised.

Steve Millmore, Technical Writer at RAL, has produced a draft of a suggested documentation standard which it is hoped will be accepted by Computing Division. At present, all documentation produced by User Support Group will conform to this standard, and the aim is to extend this standard to computer documentation produced by the division.

Jacky Hutchinson - User Support Group

9. MANUAL STOCK REPORT

On tidying up our manual store, we find that we have a number of IBM manuals (see the list below) which have been superseded. These are available free of charge to anyone who would like a copy. Please contact Muriel Herbert on:

Abingdon (0235) 44 5272	or	Abingdon (0235) 21900 ext 5272	or	Mail the manual numbers to LSIN05 on RLPB
SC19-6209-0	IBM VM/SP: CMS Command and Macro Reference	SC19-6210-0	IBM VM/SP: CMS User's Guide	
SC19-6211-0	IBM VM/SP: CP Command Reference for General Users	SC24-5219-0	IBM VM/SP: EXEC2 Reference	
SC24-5221-0	IBM VM/SP: System Product Editor Command and Macro Reference	SH24-5005-1	IBM VM/Facility/370: Remote Spooling Communications Subsystem Networking Program Reference and Operations Manual	
SC33-0006-4	OS PL/1 Optimizing Compiler: Programmer's Guide	SC33-0027-4	OS PL/1 Optimizing Compiler: Messages	
GC33-4021-3	OS/VS - VM/370 Assembler Programmer's Guide	GC26-3986-1	VS Fortran Application Programming: Language Reference	
GA22-7000-6	IBM System/370 Principles of Operation	GA22-7000-7	IBM System/370 Principles of Operation	
SC19-6201-1	IBM VM/SP: Planning and System Generation Guide	SC19-6200-0	VM/SP: Introduction	
SC19-6212-0	VM/SP: Operating Systems in a virtual Machine	SC19-6202-0	VM/SP: Operator's Guide	
SC19-6203-0	VM/SP: System Programmer's Guide	SC19-6204-0	VM/SP: System Messages and Codes	
				Muriel Herbert - Documentation Officer

10. REGIONAL LIAISON

Following the reorganisation of the Computing Division a new initiative is being made to improve the overall relationship and establish better contact between the Computer Board and SERC Computing Centres. Efforts will be made to achieve a greater level of co-operation in all aspects of the provision of computing services which are of mutual interest, and to provide an interchange of views for the requirements of future facilities and services. Initial contact has been made with the Directors of 56 Computing Centres, and the 34 which have replied so far have been enthusiastic about these proposals.

To assist in the achievement of these objectives the country has been divided into five regions, and a member of the User Support Group has been allocated special responsibility within each area. Anyone who requires information, or has anything they would like to contribute should contact one of the following:

Area	Contact	Telephone Ext.
London, SE England	Dr M R Jane	5408
Midlands, E England	Mr R Maybury	5189
SW England, Wales	Mr G A Lambert	5663
Yorks., NE, NW England	Mr J J C Hutchinson	6193
Scotland	Dr J C Gordon	6574
	Geoff Lambert - User Support Group	

11. DATASET NAMES - HIGH LEVEL INDEX

It has already been announced that datasets on the disks specified by UNIT=STORAGE will be catalogued, and the high-level index will identify the group of users to whom the dataset belongs. These nodes, or 'identifiers' are also currently in use on the disks which contain registered datasets. New nodes must be registered with Resource Management before any datasets using them may be created. Users wishing to set up a new node should contact Mrs M Ayres on extension 5273 (afternoons only). We reserve the right to delete without warning any dataset using an un-registered node.

Sue Ward - Computer Services Group

12. SERCNET VAX NEWSLETTER

A newsletter is available for site managers and users of VAXes in SERCNET who are interested in the development of network software. The newsletter contains up-to-date information on doing file transfers, job submissions and remote logins from VAXes in SERCNET, with a particular interest towards the Rutherford IBM mainframe as the remote target.

Request for copies of the VAX newsletter could be made by sending network POST to username SMLY on node RLWS.

Steven Yip - Computer Services Group

13. STATUS REPORT ON REV 19.1 OF THE PRIME OPERATING SYSTEM

Performance problems with Rev 19.1 on almost all the PRIME systems has forced a delay in its implementation. The exact situation is that we are now actively discussing these problems with PRIME and expect a satisfactory solution in the very near future. In all we will require an extra 4 Mbytes of memory to be distributed as follows:-

Nottingham	P400	0.25 Mbyte
RAL (Prime D)	P400	0.25 Mbyte
City	P550	0.25 Mbyte
Surrey	P550	0.25 Mbyte
Sussex	P550	0.25 Mbyte
Warwick	P550	0.25 Mbyte
RAL (Prime A)	P750	0.5 Mbyte
RAL (Prime F)	P750	1.0 Mbyte
UMIST	P750	1.0 Mbyte

The production of 1500 copies of the Rev 19 Manual is proceeding.

Exact details of the schedule for the implementation of Rev 19.1 will be published as soon as they are known.

Mike Jane - Head of User Support Group