7. COMPUTER STATISTICS

IBM SYSTEMS 27/12/82 - 23/1/83

Weekly availability is uptime/168.

SYSTEM AVAILABILITY - % of 672 hrs available

MVT - 86.9%, CMS - 90.8%, ELECTRIC - 80.9%.

MVT THROUGHPUT

Average jobs/week	8431
Average CPU hrs/week	160

TERMINAL SYSTEM USERS

	CMS	ELECTRIC
Registered users	966	1202
Active users	457	360

SERVICE LEVELS

See Article 3 about new IBM turnround guidelines.

USAGE

Cumulative totals are for 42 weeks. All machines were scheduled to be down for 57 hours at the beginning of this period (until 9.00 on 29/12/82). The CMS monitor was not run during the week beginning 27/12/82.

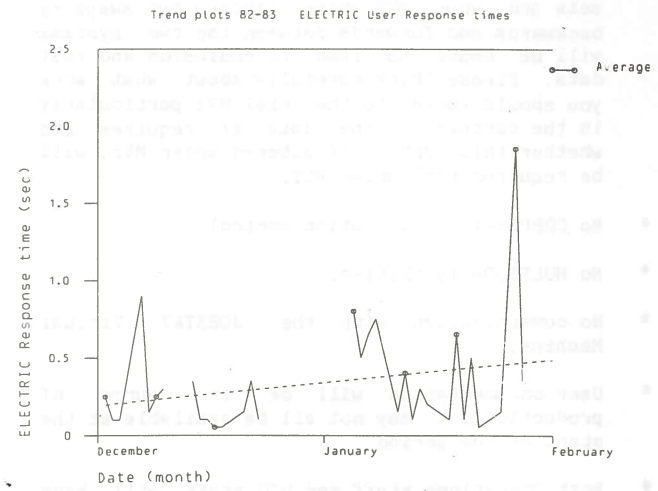
Board	MVT 195hrs	ELECTRIC AUS	CMS AUS	
ASR	316	319	547	
Engineering	560	219	511	
Nuclear Physics	5427	1803	2818	
Science	705	509	856	
Central Funding	175	345	6531	*
NERC	109	78	271	
External	91	85	251	
Overheads	1	6	1032	
TOTAL	7384	3364	12817	

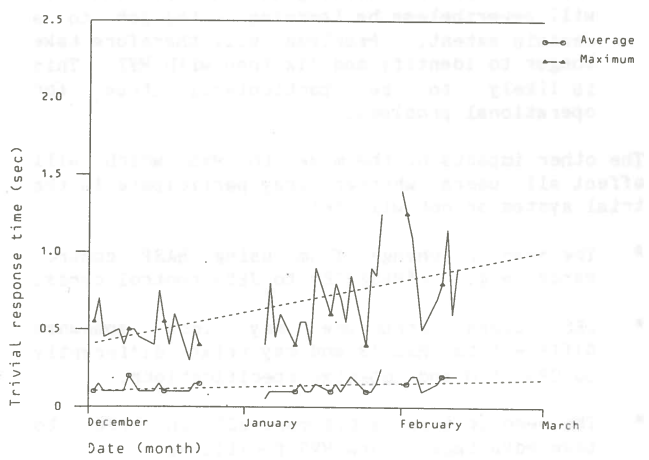
* These entries include some usage due to "service" functions which are strictly an overhead and should be accounted separately.

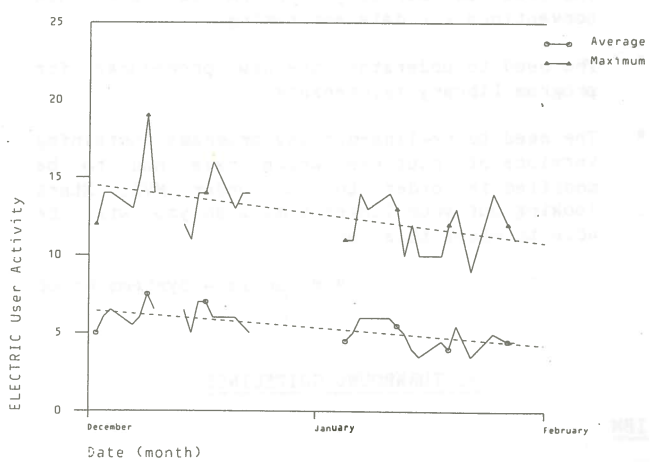
ICF SYSTEMS

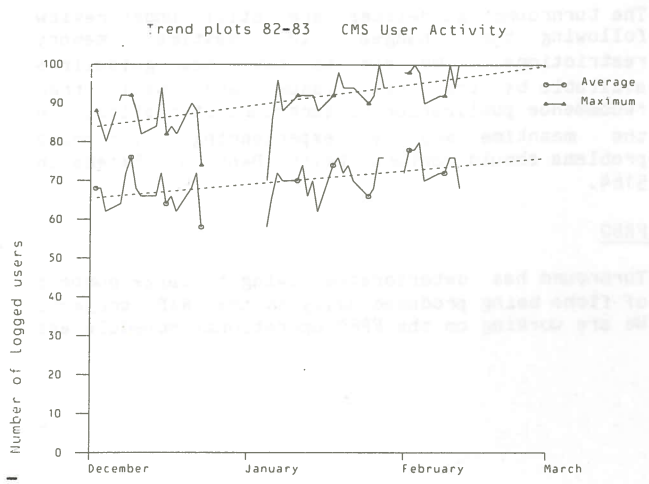
AU USAGE BY BOARD - periods 8204-8301

Board	Prime	GEC	DEC-10	TOTAL
ASR	159	187	41	388
Engineering	10418	3661	6814	20894
Nuclear Physics	179	153	0	332
Science	605	662	792	2060
Central Funding	6804	1445	1348	9597
System Overheads	10493	313	2101	12907
External	387	252	239	879
TOTAL	29045	6673	11335	47057









Rutherford Appleton Laboratory

FORUM

COMPUTER NEWSLETTER

Newsletter of the SERC Central Computing Facility

No. 32 February 1983

1. ROUTING LINEPRINTER OUTPUT TO PRIME PRINTERS

IBM users currently supported by the GEC 2050 workstations at Surrey and Sussex will shortly have to convert their IBM jobs to use the local Primes to print their output. This article briefly describes how output from the IBM can be diverted to a Prime connected to SERCNET without the user needing a Prime identifier.

All lineprinter output should be routed to REMOTE37 (RLPA) which forwards it to the machine and printer specified by a comment card inserted between the JOB card and the EXEC card of the IBM job. Thus the following route card is required:

```
/*ROUTE PRINT REMOTE37
```

The comment card takes the format:

```
//* *FILE SITE=SVPA, USER=GORDON, OUTPUT=LP,
LPQUAL=-FORM MOLS
```

The name specified after the USER parameter appears on the Prime lineprinter banner page. It can be up to six characters long and serves to identify the owner of the output. SITE=SVPA indicates that the output is to be forwarded to the Prime at Sussex, OUTPUT=LP indicates that the output is to be sent to a lineprinter, and LPQUAL=-FORM MOLS is used to tell the Sussex Prime's lineprinter software to print the file on the printer which recognises form type 'MOLS' (the Tally printer situated in the MOLS II building) rather than on the default printer.

Another example is:

```
//* *FILE SITE=SYPE, USER=XTSY03, OUTPUT=LP
```

This will send the lineprinter output to the standard printer on the SERC Prime at Surrey with user name XTSY03 on the banner page.

Yet another example is:

```
//* *FILE SITE=SYPE, USER=EDWARD, OUTPUT=LP,
LPQUAL=-FORM PHYSICS
```

This will print the job output on the Tally printer in the Physics building at Surrey for Edward.

Fuller details on this topic can be found in the latest SERC Prime manual (version 5) and in the latest HASP and FTP news files on the Primes.

Phil Newton - Systems Group

2. MAJOR ITEMS ON THE RAL MVS CONVERSION PLAN or WHY IT IS SO LONG BEFORE YOU CAN HAVE MVS

We shall be running MVS with the JES3 subsystem. This combination will present a system image very much like the current Front End/Back end configuration. The JES3 'Global' Machine (like FEM) provides the interface to the outside world, maintains job queues, looks after output and feeds work to a number of JES3 'Local' Machines (like BEMs). Initially all work will enter the MVS system via a VNET <-> JES3 link either from workstations or from virtual machines running CMS.

MVS and JES3 between them provide much higher levels of security and integrity and a greater degree of flexibility in areas of job scheduling and machine performance. This increased complexity of the operating system compared with MVT will obviously necessitate longer periods of research prior to making any system modifications. We have been working for a long period with MVT/HASP. It was a very stable system which IBM was no longer maintaining or changing. With MVS we shall be using up-to-date IBM software for which updates or new releases will appear at regular intervals. This means that modifications must be more strictly designed using only standard IBM system interfaces in order to facilitate transferability to new releases. This will also add to the design time. Because of the emphasis that both we and IBM put on the security and integrity of the total system stricter procedures for installing modifications and updates must be maintained. Until we become accustomed to all this, testing and installing modifications will take longer than under MVT.

Now, what are the modifications which we need to make to provide you with an adequate service?

JES3 has a SETUP facility of its own so we do not need to graft on our SETUP mods (and you will not need /*SETUP cards any more!!). However, we do have to make JES3 aware of our hierarchical tape library system so an interface to TDMS will be required.

JES3 has a facility for displaying a message from a job to the operator but the facility is not as comprehensive as that which we had under MVT. The message is not retained so that the operator can display it on request nor is there any means by which the operator can send a reply to be displayed in the job's output. Thus this facility has to be considerably extended.

As we do not plan to use the automatic PDS library

management system which we had under MVT we have to re-think the library management procedures to be provided. Along with this comes the whole area of data management and protection. Until now there have been so many loopholes in MVT that any sort of data security was difficult, not to say impossible to achieve. Now that we have an operating system designed with security as a principal consideration, it is possible, with the help of proprietary data management systems, to provide much better data management procedures. As far as the user is concerned this will result in definite rules for dataset naming conventions and for specifying the limits of allowed access to the data. As far as the laboratory's resource management team is concerned it will provide a means of automatic data migration which will cope nicely with the installation of new devices, such as MSS, and the eventual move to a Central File Store. Thus the whole area of data management has to be carefully reviewed and a data management system installed.

Another area where we need to add to the facilities provided by JES3 is in allocation control. This will need to be somewhat more complex than the MVT/COPPER priority system because MVS and JES3 are more sophisticated, allowing more flexible job scheduling and resource management techniques. Allocations will be in the form of an Account Unit of some kind, probably involving CPU time and I/O activity, possibly with an overhead charge for each job, and weighted according to the turnround requested. Our present system for the collection of SMF accounting data will also have to change and accounts programs will have to be re-written.

Operational aspects of these new systems are very different from our current set-up even though the overall roles look very similar. There will need to be a considerable program of education for the operations staff, both formal and hands-on experience. During this learning period the system will be tailored by re-siting consoles and re-routing messages to provide an optimal operating environment.

Another area that we have to develop to keep in line with our current practices is maintenance of information on Job Status - both communicating with the JOBSTAT virtual machine and providing the basis for a MULTIJOB facility. JES3 has a job-network facility which, at first sight, would appear to adequately replace our MULTIJOB system but unfortunately this is not the case. It differs in two important ways. The first job in a JES3 job-network has to know about all the jobs which will depend upon it before it is submitted ; also the dependencies can only be defined in a job-wide manner - not to a step within a job. Thus we plan to add our MULTIJOB scheme as an alternative method of achieving dependent job control.

There will be another area of effort necessary to review library routines and modify any that we need to have under MVS which are found not to work, for example CPULFT , some graphics routines etc.

In parallel with this development it will be necessary to produce documentation both for users and operations staff detailing facilities as they become available and noting any changes in standards or procedures which will be necessary.

The above paragraphs indicate the major development projects which we must complete before a satisfactory production system is available. There are also many smaller items which, although they may not involve much code, may require considerable research and planning to merge them into the main conversion operation. All of these facilities are of course not necessary in order to run an initial 'trial' MVS system.

We expect a full MVS Service to be available by mid 1984. In the meantime we can envisage two stages of 'guinea pig' trial system being available.

By about mid July 1983 we should have an MVS system, brought up to an appropriate service level as far as IBM fixes are concerned. This system will be configured to provide an acceptable operating environment and, seen from the users' point of view, will have an NJE link with VM/370, the MESSAGE facility, CPULFT working, a basic PROCLIB, public libraries and modified HASP information extraction routines. This system will be used by Computing Division to thrash out problems, to give time for operator training and to gain an understanding of how the system runs under load. UIG can at this stage have testing time to try out any critical user programs or any which must be moved to MVS as soon as possible. It will not be possible to use tapes under this system as the interface to TDMS will not be available.

After about another 6 months, when the interface to TDMS is installed and job routing has been sorted out, we will be in a position to run sessions of an 'external' trial MVS system in which users, selected and briefed by UIG, will be able to participate.

There is about a further 6 months of work to provide the remaining facilities which will bring us to a production environment. During those 6 months the external trial system will be available some of the time. The frequency and timing of the trials will depend on many things; how operations staff are able to cope with running them in parallel with the production system; the availability of relevant personnel to monitor the sessions; the introduction of new facilities which need 'production-type' testing; how much the test system impacts the production environment; what problems the users experience which need further tests to sort out etc. etc! We would hope to run the tests at regular, pre-defined intervals but everyone must be aware that a certain degree of flexibility and tolerance is going to be necessary on all sides.

We hope, if things go well and no unforseen problems arise, that we may be able to reduce some of these time-scales and you will be kept informed of any changes in plans. We may, however, discover other problems which need to be fixed as has in fact already happened. When testing out basic JES3 we have recently discovered that it is only possible to re-route job output when the job has finished execution and is in the JES3 OUTPUT phase. We have yet to determine whether it is possible to do anything about this and if it is, what degree of effort will be needed.

The restrictions on the external trial system which will be gradually removed as we move towards the production situation are :

* The data set environments of MVT and MVS will be entirely separate, both for disks and tapes. UIG will assist you in setting up your MVS data sets and your MVS tape library but swapping backwards and forwards between the two systems will be bound to lead to confusion and lost data. Please think carefully about what work you should move to the trial MVS particularly in the context of the data it requires and whether this data, if altered under MVS, will be required back under MVT.

* No COPPER-like allocation control.

* No MULTIJOB facilities.

* No communication with the JOBSTAT Virtual Machine.

* User documentation will be in course of production but may not all be available at the start of the period.

* Both Operations staff and UIG staff will have been trained in dealing with MVS problems but will nevertheless be learning on the job to a certain extent. Problems will therefore take longer to identify and fix than with MVT. This is likely to be particularly true for operational problems.

The other impacts of the move to MVS which will affect all users whether they participate in the trial system or not will be:

* The need to change from using HASP control cards (e.g. /*MESSAGE) to JES3 control cards.

* JES3 class structure may look somewhat different to HASP's and may relate differently to CPU, I/O and job-size specifications.

* The need to learn a bit more JCL in order to take advantage of new MVS facilities.

* The need to strictly conform to the new conventions for data set naming.

* The need to understand the new procedures for program library maintenance.

* The need to re-linkedit any programs containing versions of routines which have had to be modified in order to run under MVS. Start looking out your linkedit maps so you will be able to check this out.

M M Curtis - Systems Group

3. TURNROUND GUIDELINES

IBM

The turnround guidelines are still under review following the changes in daytime memory restrictions. We aim to have new guidelines available by the next issue and will then recommence publication of turnround statistics. In the meantime anybody experiencing turnround problems should contact Keith Benn on Extension 5164.

FR80

Turnround has deteriorated owing to large numbers of fiche being produced daily by the IRAS project. We are working on the FR80 operational schedule and hope to improve the situation. Turnround guidelines will be published in the next issue.

Paul Thompson - Operations Manager

4. IBM 3032 (BACKEND MACHINE)

We are forced to make savings on recurrent costs in the year 1983/84. It has been decided to put the IBM 3032 on a time and parts agreement from 1 April 1983. This means that should the machine fail the meantime to repair could be longer. As a result of this change, there is a possibility that batch hours will be lost.

Meantime between failures on the 3032 is approximately 1 month.

D G House - Head of Operation Group

5. DIARY

AIR-CONDITIONING SHUTDOWN

The date of the next shutdown of all computer systems (except network equipment) for the maintenance of air-conditioning plant is:

1600 hrs on Fri 8 April till 0745 hrs Mon 11 April

CENTRAL COMPUTER REPRESENTATIVES MEETING

The date for the next meeting is Tuesday 22 March. A programme will be sent to representatives shortly. Provisional bookings have also been made for Wednesday 29 June and Thursday 24 November.

COMPUTING DIVISION COURSES

IBM New Users Course	25 - 28 April
ELECTRIC/CMS Conversion Courses	6/7 April
Advanced CMS Course	16/17 March
Prime New User Course	21/22 November *

* Please note that the course scheduled for 23/24 May will not take place.

For further information and enrolment, please contact the Program Advisory Office (0235 446111 or ext 6111) or R C G Williams (ext 6104).

6. OPERATIONS SUPERVISOR

Keith Benn who has been a Shift Leader on the IBM System for many years has taken the post of Operations Supervisor on the Central System. Problems which cannot be resolved by the Shift Leader should be referred to him on Extension 5164.

Paul Thompson - Operations Manager

ICF SERVICES SURVEY 1982

Introduction

A survey of ICF users sent out in October 1982 has been analysed and is presented below. The number of questionnaires distributed and the overall response is discussed. The design of the questionnaire is covered and both quantitative and qualitative results indicated.

Distribution

The questionnaire was sent out to about 1000 SERC supported users. It was distributed to all 'true' ICF Prime and GEC sites through site managers. Sites where there is no SERC funded equipment were excluded. The number of registered users at ICF sites is about 2000 but it was agreed that only SERC approved user views of the service should be sought. Managers were asked to give the questionnaires to Project Leaders in the hope that they would endorse the views expressed by the staff they had asked to provide the detail.

Returns

A total of 190 were returned completed and the data on all but one was usable. Some sites only recently having joined the ICF did not return any questionnaires and some 39 returns did not indicate which site was used. 85 used a Prime site and 73 used a GEC site. Use of more than one site was small: 18 used 2 sites and 3 used 3. About 6 in 10 used an ICF machine not sited at RAL giving a fairly strong external representation. The responses given by most seem to have been carefully considered. This is suggested by the fact that very few indicated QUALity ratings that were inconsistent with their NEED or level of USE.

Design

The overall design was derived from the earlier questionnaires distributed by DL and RAL-UIG covering IBM services. The main change made was to translate all questions about principle services into terms that would be appropriate to ICF users. Questions were added covering aspects of the services for which there is no IBM equivalent.

The resulting questionnaire had in effect 82 separate items for which responses were sought and 76 of these required a statement of the user NEED for the item, an estimate of the USE made of it and a QUALity rating. The ratings are described as follows:

NEED — the importance of the service or aspect of it to your research. Answer on a scale of 0-5, where:
0= No need, 1= Not important, 2= Some need,
3= Average need, 4= Fairly important,
5= Very important.

QUAL — the perceived quality of the service or this aspect of it. Answer on a scale of 1-5, where:
1= Very good, 2= Good, 3= Fair, 4= Poor,
5= Very poor.

USE — the extent to which you actually use the service or this aspect of it. Answer on a scale of 0-5, where:
0= Not used, 1= Little (few times per year)
2= Occasionally(few times per period),
3= Average(few times per week), 4= Daily,
5= Heavily(many times per day).

This rating scheme was considered necessary by both RAL management and user representatives (ULC, GEC and Prime User Groups) but it meant that there were 224 separate responses to be made. That's a lot!.

The earlier questionnaires were wasteful of paper and an ecomomical printing format similar to that for FORUM was used to reduce the whole to a single sheet of paper. Sadly much difficulty was caused by the inconsistent use of the rating scales.

In future questionnaires could be made smaller by omission of items of very limited interest and a different marking scheme used to allow automatic input by optical mark reader.

Analysis

Two types of analysis have been carried out. Quantitatively simple statistics have been generated and these are shown below in a form closly related to the original questionnaire. Qualitatively the comments associated with each major item have been analysed to determine those areas where most attention to the service is needed.

For the 76 items for which NEED, QUALity and USE responses were requested the analysis is presented in the form of 12 numbers gathered into 4 groups. The first group is a simple weighted mean of the responses and should give a measure of the overall NEED, QUALity and USE rating returned by the population. These are admittedly very coarse measures and their relationship to one another cannot be seen without examining the other 3 groups. These attempt to show a more detailed picture of the responses. Each comprises 3 counts showing respectively:

(a) the number of responses for which both NEED and USE are neither Important nor Very Important (<4) these are headed NI;

(b) the number of responses rating the QUALity of the item as Very Good where both NEED and USE were marked as Important or Very Important (headed VG);

(c) as (b) but QUALity marked Good (headed G).

The 3 groups cover ALL questionnaires, those using a PRIME site and those using a GEC site as the labels before the groups show.

Discussion

The following features are highlighted by this analysis:

* Users care more about trivial response time than non trivial response.

* Batch facilities on the MUMs and IBM are not important to many but are considered good.

* MUM printers are the only really significant printing device and the FR80 does not seem to be well known.

* MUM reliability is considered Very Important.

* MUM availability is considered Very Important.

* The MUM filestores are the only significant storage facility and they give good service.

* Message and mail facilities seem to be the most important networking facilities.

* There is a disparity between PRIME and GEC help systems. The former may not be achieving its goal.

* Network status type facilities do not seem to be getting much use.

* User liaison is a low visibility function.

* Service changes and status are best announced through LOGIN messages.

* Manuals seem to be an acceptable education medium.

* FORUM is not rated highly by ICF users.

* Users are usually happy with ICF provided reference manuals

* Text processing is not a significant problem.

* The Tektronix terminal has a better reputation than the Sigma terminal.

* FINGs and SMOG are of no significant interest to ICF.

* Overall telecommunications services do not have a good reputation.

* Overall rating seems to indicate that GEC and Prime provide equally satisfying services.

Conclusions

Overall this survey is likely to lead to some changes in the services offered and visits to those users who need an increased level of contact.

deals with remote faults and comment on the fault escalation procedures.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) Connections to MUM	(a)	4.7	2.4	3.2	144	9	25	63	4	12	56	1	12
(b) Central Services _____	(b)	4.5	2.3	2.9	172	2	10	78	1	4	64	0	6

21. How do you rate repair service following a hardware fault on your local machine.

QUAL RATING	NONE	V GOOD	GOOD	FAIR	POORV POOR
	58	30	55	36	8 2

22. What is your overall rating of the system (hardware and software) you use with respect to its ability to satisfy your needs?

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM	(a)	4.6	2.1	4.1	72	31	60	33	16	22	21	13	27
(b) Central IBM	(b)	4.1	2.4	3.3	161	2	14	76	1	5	57	0	7

23. How do you rate the change in overall services since last year? Answer on a scale of 0-5 where: 0= Not used for more than 1 year, 1= Much better, 2= Better, 3= Same, 4= Worse 5= Much Worse

	CHANGE RATING	NONE	MUCH BETTER	BETTER	SAME	WORSE	MUCH WORSE
(a) MUM	(a)	50	11	64	53	9	2
(b) Central IBM	(b)	125	1	20	37	5	1

24. What is your overall rating of the services provided.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) Services	(a)	4.5	2.2	3.9	87	19	56	42	6	23	24	11	28

25. What would you most like to see improved or added? (Describe your suggestions below)

1. Please tick the SERC services that you have used in the last three months.

(a) MUM	(b) MUM(Batch)	(c) IBM(Batch)
173	68	58

Indicate any non-SERC services used from your MUM.

2. How do you rate average system response for your prime shift interactive work requiring very little computer resources (e.g. most editing commands)? Should there be a published target for response time (service level objective) such as that published for the IBM Front-end service (see FORUM 12).

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) Trivial response time	(a)	4.1	2.2	3.1	92	19	51	44	4	21	23	13	25

3. How do you rate average system response for your prime shift interactive work requiring moderate to large amounts of computer resources (e.g. compilation and execution of interactive user programs)? Comment on the need for published service level objectives.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) Non-trivial response	(a)	4.0	2.6	3.5	107	12	27	48	2	10	36	7	15

4. How do you rate turnaround time for your batch work? Comment on the need for prime shift batch if it is not allowed on your MUM.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM prime shift	(a)	2.9	2.4	2.5	173	4	8	77	1	6	66	3	3
(b) MUM non-prime shift	(b)	3.1	2.0	2.5	176	5	6	79	2	4	68	2	3
(c) Central IBM prime shift	(c)	3.9	2.5	3.0	167	2	9	80	1	2	68	0	4

5. How do you rate turnaround time for your printouts and plots? Indicate if you have any difficulties with FR80 output retrieval.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM plotters	(a)	3.5	2.2	2.4	179	4	4	82	1	2	68	3	1
(b) MUM printers	(b)	4.1	2.1	3.5	115	28	31	59	9	11	29	17	19
(c) Central IBM printers	(c)	3.4	2.4	2.9	180	2	3	83	1	0	68	0	2
(d) Central FR80	(d)	3.0	2.4	1.7	189	0	0	85	0	0	73	0	0

6. How do you rate system reliability (number of times the system goes down during your working session)? Comment on the importance of access from/to other networks (PSS,IPSS,Computer Board funded).

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM reliability	(a)	4.5	2.1	4.0	90	37	34	44	20	15	23	14	19
(b) Central IBM reliability	(b)	4.0	2.5	3.3	160	3	12	78	2	2	55	0	10
(c) SERC Network	(c)	4.2	2.6	3.5	131	9	20	64	5	8	40	3	14

7. How do you rate availability (fraction of time system is available when you need to work)? Comment on the timing and duration of preventative maintenence sessions and the amount of corrective maintenence required.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM availability	(a)	4.5	2.0	4.1	81	38	46	39	23	14	23	13	26
(b) Central IBM availability	(b)	4.0	2.3	3.3	160	3	17	76	2	4	56	0	12
(c) SERC Network	(c)	4.1	2.4	3.7	133	15	23	62	9	9	41	6	15

8. How do you rate data integrity (no loss or corruption of files)?

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM files	(a)	4.8	1.5	4.1	75	74	26	35	34	12	21	32	12
(b) MUM tapes(if available)	(b)	3.9	2.0	2.7	173	7	5	75	5	4	61	1	2
(c) Central IBM OS datasets	(c)	4.3	1.6	3.7	168	14	6	76	6	3	63	5	4
(d) Central IBM Private tapes	(d)	3.9	1.9	2.7	182	3	2	84	0	1	68	2	1
(e) Central IBM Private disks	(e)	3.5	1.5	2.4	187	1	1	85	0	0	71	1	1
(f) MUM archived files	(f)	3.9	2.1	2.3	182	3	1	80	2	1	71	1	1

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(g) Central IBM archived datasets	(g)	3.5	1.5	2.1	186	2	0	84	1	0	70	2	0

9. How do you rate the amount of terminal and communications equipment available for satisfying your work requirements? Comment on the need for terminals dedicated to your project and located in non-public areas.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM public VDU's	(a)	4.2	2.3	3.8	109	24	25	60	9	3	33	11	14
(b) MUM public graphics terminals	(b)	4.3	2.3	3.4	127	17	16	63	6	2	47	6	8
(c) MUM public hardcopy terminals	(c)	3.8	2.6	3.1	152	10	15	75	4	1	55	2	10
(d) Home terminals	(d)	3.4	2.8	2.8	170	7	5	67	1	3	61	3	4
(e) Ports for dial-up terminals	(e)	3.2	2.6	2.6	177	6	3	79	4	0	67	1	3

10. How do you rate SERC Networking Facilities? Comment on the Gateway facilities provided by SERC network to allow you to access machines on the SERCnet or on other networks.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) Job Submission to Central IBM	(a)	3.9	2.0	3.0	164	8	17	78	3	4	58	5	10
(b) Output Retrieval from RAL IBM	(b)	4.0	2.2	3.1	163	6	13	79	2	3	57	4	7
(c) File transfer to/from same type MUM	(c)	3.8	1.8	1.9	159	17	12	70	9	6	55	10	7
(d) File transfer to/from different type machine	(d)	3.7	2.3	2.5	168	7	9	77	5	3	57	3	8
(e) Interactive access via other type machine	(e)	4.0	2.5	3.0	163	5	13	76	3	6	58	2	8
(f) Interactive access via same type machine	(f)	4.0	1.9	3.2	162	14	9	72	7	4	60	8	4
(g) Message and Mail Facilities	(g)	4.0	2.0	3.2	141	15	27	67	6	8	43	10	18

11. How do you rate the quality of help you receive from support personnel? Comment on availability and quality of staff, percentage of problems fixed, response time, feedback of information to users.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM site manager	(a)	4.1	1.7	2.6	163	18	5	77	7	1	60	9	2
(b) Central support	(b)	3.6	2.3	2.1	175	8	3	83	2	0	62	5	3
(c) Central Communication Support	(c)	3.6	2.2	2.6	184	3	1	85	0	0	69	2	1
(d) Central Resource Management	(d)	3.5	2.4	1.9	185	2	0	84	0	0	70	1	0
(e) Central IBM Program Advisory	(e)	3.2	2.3	1.6	187	1	1	85	0	0	72	0	1
(f) Central IBM Operations	(f)	3.1	2.1	1.6	187	1	1	85	0	0	72	0	1

12. How do you rate HELP? Comment on basic structure, style and content of the HELP system and indicate any sections which are very bad or very good.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM HELP system	(a)	3.6	2.4	2.6	162	13	10	80	4	0	53	8	9
(b) Network status(GEC)	(b)	3.6	2.3	2.6	172	5	9	79	3	3	61	3	7
(c) NETSTAT(Daresbury)	(c)	3.5	2.8	2.5	182	1	2	85	0	0	70	1	0

13. How effective is User Liaison? Comment on how effectively you think the user liaison process works at getting your needs considered by the management at all levels.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM site manager	(a)	4.0	1.7	2.5	170	10	6	80	3	2	63	6	3
(b) Central staff	(b)	3.7	2.2	2.2	181	5	2	83	2	0	67	3	2
(c) Central machine specific User Group	(c)	3.4	2.5	1.8	186	2	0	85	0	0	71	1	0
(d) User Liaison Committee (all machines)	(d)	3.6	2.5	1.6	188	1	0	85	0	0	72	1	0

14. How do you rate the facilities for announcing service changes and status?

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM Login Messages	(a)	4.1	2.2	3.3	127	16	25	56	8	12	40	10	11
(b) Usernotes	(b)	3.9	2.9	2.6	167	7	4	77	3	3	58	4	2
(c) NEWS	(c)	3.9	2.4	2.6	167	10	7	73	7	4	62	4	3
(d) IBM Computer Bulletins	(d)	3.5	2.4	2.3	185	1	2	84	0	0	69	0	1

15. How do you rate the following for educating the user to use SERC Computing facilities and providing information about them?

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) Manuals	(a)	4.7	2.5	3.3	126	11	25	58	5	13	40	6	12
(b) User Support staff	(b)	4.2	2.0	2.5	164	16	5	79	5	0	57	9	4
(c) User Meetings	(c)	3.0	2.9	1.9	182	3	4	83	1	1	70	1	2
(d) FORUM	(d)	3.1	2.5	2.2	181	2	5	82	1	1	69	0	3
(e) Central IBM courses	(e)	3.0	2.3	1.6	189	0	0	85	0	0	73	0	0

16. How do you rate the provision of manuals. Several different types of manual are produced or provided for each machine type. Comment on the need for those types not available for your machine.

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) MUM Introduction or Primer	(a)	4.2	2.3	2.6	163	8	9	76	4	3	59	5	4
(b) MUM General Reference	(b)	4.5	2.5	2.9	157	12	9	71	6	5			
(c) MUM Manufacturer's Reference	(c)	3.8	2.9	2.6	167	5	5	73	3	3	65	2	1
(d) Specialised Reference (eg GINO,NAG)	(d)	4.4	2.2	2.7	163	14	5	75	6	1	60	7	3

17. How do you rate the software you use for text processing? Please specify the package used (RUNOFF, GEROFF).

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) _____	(a)	4.1	2.5	2.8	166	3	7	79	2	3	56	2	2

18. How do you rate the hardware you use for computer graphics?

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) Tektronix terminals	(a)	4.2	2.3	3.1	150	16	11	70	9	4	59	4	4
(b) Sigma GOC	(b)	4.3	2.4	3.3	147	12	16	70	4	6	52	4	7
(c) Tektronix hardcopy	(c)	4.0	2.7	2.7	168	6	7	76	2	3	67	1	3
(d) FR80	(d)	3.5	1.8	1.8	189	0	0	85	0	0	73	0	0
(e) Benson hardcopy	(e)	4.1	2.0	2.5	177	6	6	80	4	1	66	2	5
(f) Other (specify)	(f)	4.1	2.5	3.4	181	0	4	79	0	3	71	0	1

19. How do you rate the software you use for computer graphics?

		NEED	QUAL	USE	ALL: NI	VG	G	PRIME: NI	VG	G	GEC: NI	VG	G
(a) GINO and associated libs	(a)	4.4	2.2	3.3	137	16	26	62	9	10	52	8	9
(b) FINGS and associated libs	(b)	2.9	2.9	2.3	185	1	1	83	1	0	72	0	1
(c) SMOG	(c)	2.8	2.2	2.0	187	0	2	85	0	0	71	0	2
(d) Other (specify)	(d)	4.2	2.2	3.5	173	5	8	79	3	2	65	2	4

20. How do you rate Telecommunications support for terminal and communications fault repair. Indicate who