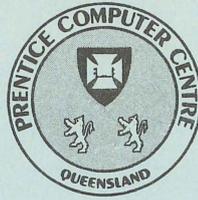


# PRENTICE COMPUTER CENTRE

UNIVERSITY OF QUEENSLAND, ST. LUCIA, QUEENSLAND, AUSTRALIA. 4067.



## SPECIAL MAY 1984 EDITION IBM NEWSLETTER

### CONTENTS

- 1.0 Introduction.
- 2.0 Configuration.
- 3.0 Virtual Machine Concepts.
- 4.0 Philosophy of User Interface.
- 5.0 Accessing the IBM System.
- 6.0 Operation During Free Trial Period.
- 7.0 File Transfers from KL or VAX to IBM.
- 8.0 Synopses of IBM Courses.
- 9.0 Manuals.
- 10.0 The Centre's 'IBM HELP' Desk.
- 11.0 Electronic Mail.
- 12.0 Future Developments.

Authorized by the Director of the Computer Centre



## 1. Introduction

The new IBM 3083 machine will be available for general use from Monday 14 May. To allow training, familiarization and preparation for classes on the new machine, use by University staff and post-graduate students will be free-of-charge for the period 14 May – 20 July. This time also provides the ideal opportunity to transfer applications to the new machine thus relieving some of the congestion on existing services.

The policy on charging (or otherwise) for use of the central computers is currently under review by the Girle Committee, so the basis for use beyond 20 July is, at present, undefined.

The period since the equipment was delivered on 1 March has been one of intense activity in the Centre. Major tasks included equipment installation and acceptance testing, operating system generation, software loading and acceptance testing, interfacing the IBM machine to the existing terminal network via the MICOM circuit switch, staff training and development, and set-up of initial operational procedures.

Unfortunately, this so stretched our staff resources that the level of many existing services degraded and some services were curtailed. For example, our regular user education has decreased while initial courses on the IBM system are being prepared.

This special edition of our newsletter describes the IBM equipment, its mode of operation and the initial services which will be available on 14 May. The software will include a good range of utilities, the languages PASCAL, FORTRAN and COBOL, the SQL Data Base and CAL packages IIAS and IIPS. Additional software – both languages and application packages – is being acquired from various sources and will be made available as it arrives.

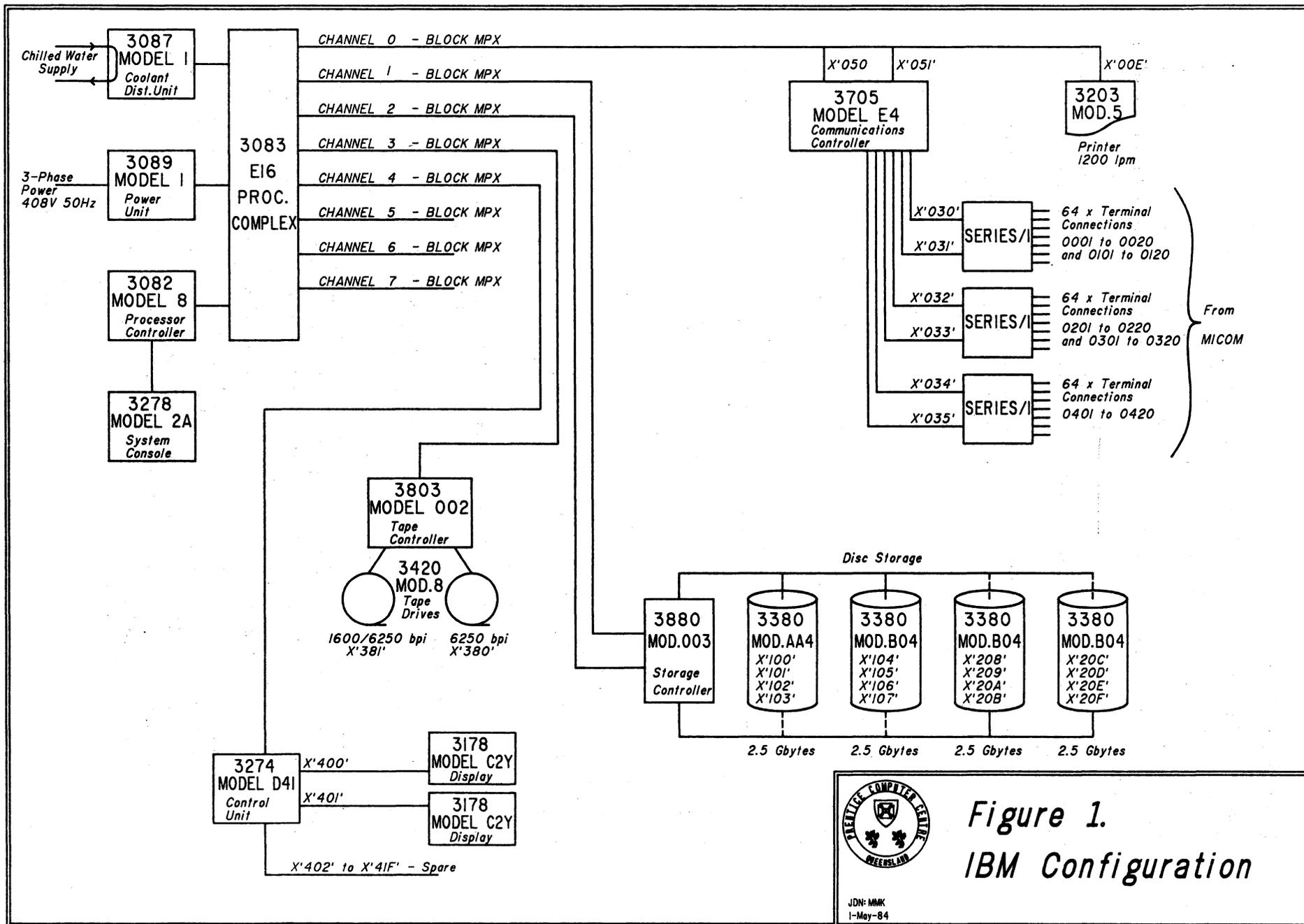
Procedures will be available for transferring files from the KL and VAX to the IBM. The initial release of the IBM system will be supported by documentation (available from the Bookshop), three user courses (Introduction to IBM System, SQL Data Base System and SCRIPT) and consulting services. A new service, the 'IBM HELP' desk, has been established to provide immediate direct assistance to users getting started on the IBM machine.

The aim of this initial release is to make the IBM machine available to users as quickly as possible. Much development work, both short and long term, is required to meet the ever increasing demand and diversity of user needs. Immediate priorities include expansion of the MICOM to increase access to the IBM system, provision of a UNIX environment, interface to the DECNET network for file transfer and access to existing peripherals and development of accounting mechanisms.

While the IBM machine gives a significant increase in the Centre's information processing capacity, many of its services are applications oriented and will complement rather than augment or replace existing services. It is therefore different in philosophy and use from existing services so users must be prepared to spend some time learning and training to become proficient on the IBM system.

Existing services on the KL-10 and VAX 11/780 will continue and develop into the future. Although DEC have discontinued the KL series of machines, they are committed to continuing support for existing installations for 10 years. We envisage continuing the KL-10 for at least 8 years and the VAX indefinitely. The KA-10 will be decommissioned and removed at the end of the current academic year, having completed 16 years of service.

*Director*  
extension 2189



## 2. Configuration

Figure 1 shows the configuration of the IBM system as currently installed.

The 3083E processor is one of IBM's range of large scale computers and is rated at approximately 4-6 MIPS (Million of Instructions per Second). It has 16 Mbytes of memory. Processor and memory logic is densely packed in Thermal Conduction Modules (TCMs) which are directly cooled by chilled water (rather than conventional air-conditioning).

The 3082 is a maintenance processor which operates full-time monitoring and recording the performance of all other elements of the IBM system. Redundant circuits and disk areas are automatically allocated in case of failures and intermittent errors are logged so that components can be replaced before a failure occurs.

The system contains 10 gigabytes ( $10^{10}$  bytes) of disk storage – about three times the amount of on-line disk on the KL, VAX and KA combined. Physically, there are 8 disk drives with two access mechanisms per drive. Transfer rate between disk and memory is 3 Mbytes/sec. All disk storage is fixed Winchester technology type storage and all is permanently on-line. There are no removable disk packs in the system.

Two dual density (6250/1600 bpi) magnetic tape drives can transfer data at 1.3 Mbytes/second. They will be used for back-up and transfer of files to and from other systems. These tapes will also be the basis of future file archival mechanisms.

The printer is a medium speed line printer, 132 characters per line, of the interchangeable printer train type. The initial print train was selected for flexibility and contains full upper and lower case characters, super- and sub-script numerics and a good range of special characters. The full character set is contained in Appendix 1 to this newsletter.

The communications functions are handled by IBM Series 1 processors running the Yale software as front-end machines on the 3083. The Yale software emulates the IBM 3270 style protocols for many ASCII terminal types allowing existing terminals to be used on the IBM system. Thus, at log-on, you must identify your terminal type so the correct terminal characteristic table is used by the Yale software for its emulation. As detailed elsewhere in this newsletter, some IBM software assumes page mode screens with cursors and so, does not operate on hard copy terminals.

Despite its size, the IBM machine is a fairly minimal configuration for this range of equipment with ample scope for expansion to meet work-load increases.

John Noad  
extension 3017

## 3. Virtual Machine Concepts

The native operating software which was purchased with the IBM consists of two major components as well as a number of specialized utilities.

The Control Program (commonly referred to as CP) is the operating system which manages the actual hardware. It does this somewhat differently from conventional operating systems. Instead of providing a comprehensive range of high-level commands as, for example, TOPS-10, UNIX or VMS do, it makes the one real machine look like many separate machines which are called Virtual Machines. Each user may have his own virtual machine on which he would typically run a single-

user operating system, or many users may share a virtual machine which runs a conventional multi-user operating system. In this way it is possible to provide a range of environments on the one set of hardware. A user's terminal becomes the console of his virtual machine which he controls via commands to CP. These commands and their responses take the place of the switches and lights found on older real machines and include commands to load the virtual machine with an operating system which is then used to process high-level commands in the normal manner.

The Conversational Monitor System, or CMS, is the other major component of the native operating software. It is a single-user operating system which runs on virtual machines provided under CP. The facilities available under CMS are similar to those under other operating systems which have been in use at the universities, but the actual commands are, of course, different.

Many of the utilities which are a part of the native operating software are specialized operating systems which run on a virtual machine. This is of no consequence to the average user but is mentioned to emphasize the use and concept of virtual machines.

Software initially available will include the following:

- Pascal, Fortran, Cobol
- SQL (Relational Database)
- Electronic Mail
- Document Composition Facility
- Computer Aided Learning Programs for Authoring and Presentation.

*Allan Woodland  
extension 2935*

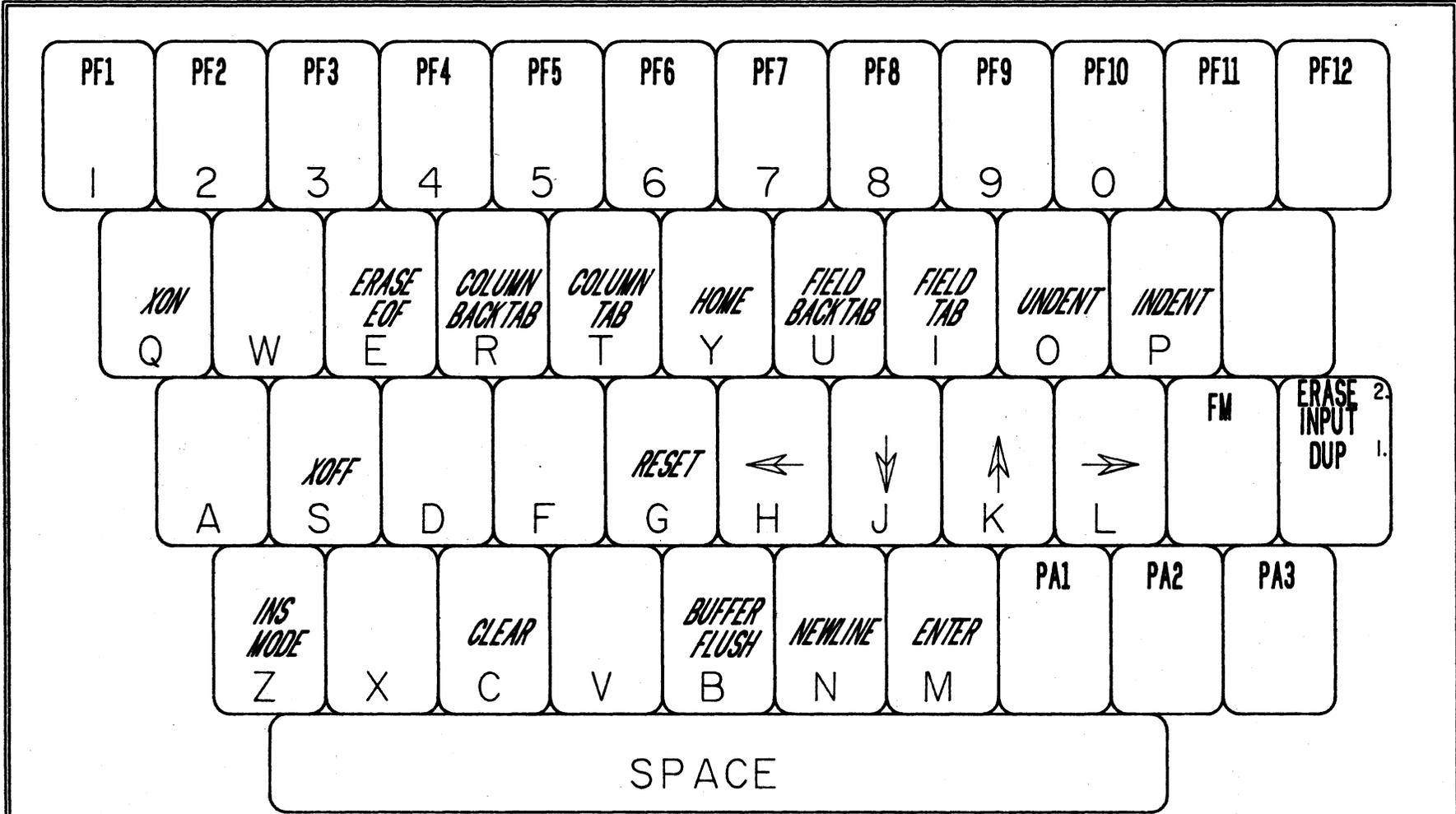
#### **4. Philosophy of User Interface**

Most IBM programs have been written with a particular type of visual display terminal in mind. Whereas the current systems accept and display information line by line, not caring whether the terminal is a screen or hardcopy device, the IBM software expects a display which operates on a screen by screen basis. In order to allow full screens of information to be transmitted to the computer these terminals have a number of specialized function keys which allow the information on the screen to be edited within the terminal before it is sent to the IBM mainframe. These function keys may also be defined to invoke commonly used commands either at the CP or CMS level, or within utilities such as the editor or electronic mail.

The purchasing of these types of terminals specifically for use with the IBM was not considered a viable option as it would have meant users having one terminal for the existing systems and one for the IBM. The block-mode screen is instead simulated by interposing a Series/1 minicomputer running software developed by Yale University, between the IBM host and existing terminals.

Since the keyboards of existing terminals do not have the required functions, these are obtained by typing either control characters or two-character escape sequences (ESCAPE followed by a designated character). Different terminals have different keyboards and the action of each is defined by a separate table in the Yale software. For uniformity the IBM functions have been mapped in a standard manner for a subset of keys which are common to all terminals (see Figure 2). Where a particular keyboard has other keys these will typically be defined as alternatives to obtain some of the same functions. For example, if a terminal has cursor control (arrow) keys, these will, if possible, be defined to duplicate control-H,J,K,L (see Figure 2).

Although, clearly, there are severe limitations, it is possible to use hardcopy ter-



**ESCAPE SEQUENCE**

- 1. UNSHIFTED KEY.
- 2. SHIFTED KEY.

*CONTROL CHARACTER*

Note--: The RETURN key will always perform the ENTER function



Figure 2.  
ASCII KEYBOARD  
LAYOUT FOR IBM

minals. We are looking for software to simplify their use but suggest, that if you have a choice, grab a VDU!

Allan Woodland  
extension 2935

## 5. Accessing the IBM System

Access to the IBM is via the MICOM circuit switch and one of several Series/1 minicomputers. Virtual terminal access from the DECNET or ANF networks is not possible.

When prompted by the MICOM, select the appropriate host (7), to establish connection with the Series/1. The Yale program in the Series/1 will prompt for terminal type (an ENTER (return key) will cause the available types to be displayed). Reply with the appropriate terminal type. Your Terminal Parity should be DISABLED (i.e. NO Parity or Parity OFF)

```
WELCOME TO 'UQNET' MICOM CIRCUIT SWITCH  
SELECT HOST 7 <enter>
```

```
GO <enter>
```

```
YALE ASCII TERMINAL COMMUNICATIONS SYSTEM V2.1  
enter terminal type: <enter>
```

The system will give a list of valid terminal types.

```
VALID TYPES ARE:  
VT100      VI200      VI50      GIGI      VT52  
ADM5       ADM3A     TS1       FR100  
IBM3101    IBM31ALT  IBMPC  
HARDCOPY  TYPETERM  
enter terminal type: VT100 <enter>
```

At this point a LOGO should appear on the screen. Press ENTER, this clears the logo from the screen and leaves CPREAD UQVM in the lower right corner. Now you can begin the logon procedure.

```
L userid <enter>  
ENTER PASSWORD: <your password> <enter>
```

If you make a typing error, UQVM will give you this message:

```
PASSWORD INCORRECT - REINITIATE LOGON PROCEDURE
```

You will have to type L userid again.

After you have entered your password, UQVM gives you a logon message. It shows you the time and date and contains other information about the system. If the logon message fills up the screen and the word MORE... appears in the lower right corner press the CLEAR key to continue.

The last line of the logon message will look something like this:

```
R;T = 0.04/0.09 12:02:37
```

This is called the Ready message. It tells you UQVM is ready to continue. The R stands for Ready and the T for Time. The first set of numbers tell how much time it took UQVM to perform the Logon procedure. The second set of numbers gives you the time of day. You are now logged in and ready to start your terminal session.

To LOGOFF type LOG (short for LOGOFF) and press the ENTER key. UQVM will give you a short logoff message.

Christine Gibson  
extension 3941

## **6. Operation During Free Trial Period**

Clients wishing to participate in the free trial of the new machine should fill in a form available from the Prentice Computer Centre Accounts Section on the Ground Floor of the Hawken Building. Among other things you will need to choose a "name" for yourself. This is typically part of your name or your initials. It is limited to a maximum of six characters and will be concatenated with a two-character Department prefix to become your Userid on the IBM. Userids must be unique. Therefore, the "name" you choose cannot be used by anyone else in your department.

Users will be given a virtual machine with one megabyte of main memory and one cylinder (approximately 1100 blocks in KL terms) of disc storage. CMS will automatically load into the virtual machine when the user logs on.

As we will still be implementing programs and operational procedures during this period, some teething problems may be expected and we ask for your tolerance of these.

Anybody experiencing problems whilst using the IBM system should avail themselves of the HELP facility provided (see separate article this newsletter).

### **Hours of Operation**

The system will be available for **attended** running between the hours of 8am and 6am Monday to Saturday. **Unattended** running will be from 6am Saturday until 7am Monday.

### **Backup**

In the initial stages backup will be done **weekly** with the exception of TDISK and PAGE space. There will be no daily backup during the trial period.

### **Charging**

During the Trial Period no charges will be levied against users, however all usage will be closely monitored, especially in the area of consumables.

Allan Woodland  
extension 2935

## **7. File Transfers from KL or VAX to IBM**

We are endeavouring to obtain software which will allow users to transfer their files from the VAX to the IBM. (Files on the KL could then be first transferred to the VAX via the existing networks.) Until such programs are available files will have to be shipped via magnetic tape. Information on the mechanisms for this will be made available as soon as possible.

Allan Woodland  
extension 2935

## 8. Synopses of IBM Courses

### **IBM Introduction**

This course centres on basic operations and procedures for the IBM 3083 system, viz. logging on and off, file-management, simple utilities, use of the editor XEDIT and the construction and use of simple EXEC (command) files. No prior knowledge is expected.

### **SQL**

SQL provides a means of storing and managing information which can be accessed easily by queries. The results of such interrogations can then be formatted and presented in reports. A knowledge of computers is not necessary to use SQL, but it is strongly recommended that new IBM users should attend a prior IBM Introductory Course..

### **SCRIPT**

SCRIPT is a text-processing package available on the IBM system. Current RUN-OFF users will have little trouble adapting to it, since the ideas are very similar, but a number of additional functions are available, providing greater flexibility.

### **Course Schedule May-July**

#### **May**

Introduction to IBM	May 14, 16, 18 3 half days 9-12 each day
Introduction to IBM	May 14, 16, 18 3 half days 1.30-4.30 each day
Introduction to IBM (GU)	May 15, 17 1 half day (15th) 1.30-4.30 + 1 full day (17th) 9-12 + 1.30-4.30
SQL	May 21-24 4 half days 1-4 each day
Introduction to IBM	May 28-30 3 half days 1-4 each day

#### **June**

Introduction to IBM	June 4-6 3 half days 1-4 each day
SCRIPT	June 18-22 5 half days 9-12 each day
Introduction to IBM	June 25-27 3 half days 1-4 each day

#### **July**

SQL	July 2-5 4 half days 1-4 each day
Introduction to IBM	July 9-11 3 half days 9-12 each day

**Notes:**

1. All of the above courses will be held in Room G13A – Hawken Building (except for those designated GU which will be held in the AES Terminal Laboratory).
2. Enrolments for all courses may be made by phoning extension 3018.

*Barry Maher*  
*extension 3021*

## **9. Manuals**

Manuals to aid clients in the use of the IBM will be available from the University of Queensland Bookshop. The following list is likely to be of fairly general use. Comprehensive lists will be available at a later date.

SC19-6209	CMS Command and Macro Reference
SC19-6210	CMS User's Guide
SC19-6226	System Messages and Codes
SC19-6227	CP Command Reference for General Users
SC24-5219	EXEC 2 Reference
SC24-5220	System Product Editor User's Guide
SC24-5221	System Product Editor Command and Macro Reference
SC24-5236	CMS Primer
SC26-3985	VS FORTRAN Application Programming: Guide
GC26-3986	VS FORTRAN Application Programming: Language Reference
SC26-3988	VS FORTRAN Application Programming System Services Reference Supplement
SC28-6469	CMS User's Guide for COBOL
SH20-6162	PASCAL/VS Programmer's Guide
SH20-6168	PASCAL/VS Language Reference Manual
SH24-5016	SQL/DATA System Terminal User's Guide-VSE
GX20-2365	PASCAL/VS Reference Summary
SX22-0003	Commands (General User) Reference Summary
SX22-0005	Quick Guide for Users
SX24-5122	SP Editor Command Language Reference Summary
SX24-5124	EXEC 2 Language Reference Summary
SX26-3731	VS FORTRAN Application Programming Source-Time Reference Summary

Two sets of manuals will soon be available for perusal by clients. One will be located in the Hawken Batch Station and the other in the Batch Station at Griffith. These are for reference only and should not be removed.

*Allan Woodland*  
*extension 2935*

## **10. The Centre's 'IBM HELP' Desk**

To assist you getting started with the new IBM machine the Centre has established a new service – the IBM 'HELP' desk.

The aim of this service is to provide immediate help with the following problems – using terminals, system commands, the editor (XEDIT), command files (EXEC's) and electronic mail.

The HELP desk is staffed by Christine Gibson from 9am to 1pm and 2pm to

5pm Monday to Friday. Christine can be contacted on extension 3941 [6-3941 from Griffith University or 377 3941 externally] or via electronic mail to the Userid 'CHELP'.

When you phone the HELP desk, Christine will firstly take details of your name, department, Userid and terminal type as well as the nature of the problem. She will then attempt to solve the problem by advice, tests or reference to appropriate manuals.

To ensure fair access to the HELP desk, each phone call will be limited to 10 minutes. If the problem is not solved in that time, if it is outside the scope of the HELP desk (e.g. FORTRAN queries) or if detailed technical advice is required, Christine will forward the query to the appropriate Centre staff. The HELP desk is responsible for ensuring that such problems are solved and you are advised of the solution as soon as possible. Responses to these problems will usually be via electronic mail to your Userid.

Problems sent to CHELP via electronic mail will be cleared every hour and processed as above with responses being via electronic mail. Electronic mail should be used for problems experienced outside of the hours the desk is staffed.

This HELP desk has been introduced for a 6 month trial period following which its operation will be reviewed and decisions taken on continuing or modifying this service.

*John Noad*  
extension 3017

## **11. Electronic Mail**

If you encounter any difficulties using the IBM system, you may wish to communicate with CHELP. It is possible to do this by using the IBM Electronic Mail system, NOTE.

Type NOTE CHELP and press the Enter key (return).

A special screen will be displayed. The following is the heading of your note. This is done automatically.

Date: 27/4/84

From: UQUSER (this is you the sender) at UQVM (the node you are on)

To: CHELP (the recipient of the note)

To write your message you must first type INPUT in the lower left corner of the screen where the arrow is and press the Enter key.

====> INPUT <enter>

The screen display will change slightly and you will be placed into the "INPUT MODE". You can now type in your note. When you have completed your note, press the Enter key twice. This removes you from the input mode. Your note is now ready to send.

At the bottom of the screen display you will see a table like

1 = Help    2 = Add Line    3 = Quit    4 = Tab    5 = Send

The numbers refer to PF keys. There is a pre-defined function assigned to each number shown in this table. So if you decide you don't need to send a note to CHELP after all you can quit from NOTE by using the PF3 key 9ESC key then 3). Similarly you can now send your note using the PF5 key as follows.

Press the PF5 key (ESC key then 5). There is no need to press Enter after using a PF key as the command is entered automatically for you.

Your screen display will disappear and the following message will show on the top of the screen.

Note UQUSER NOTE A0 sent to CCHELP at UQVM on 27/4/84 12:10:05  
Note added to ALL NOTEBOOK.

This means your note has been sent to the user.

If you are expecting a note in return you will know it has arrived when this message is displayed on your screen: (N.B. it will only be displayed if you are logged on).

PUN FILE 5511 FROM UQUSER COPY 001 NOHOLD

If you are not logged on and a user sends you a message, it will be stored for you until you logon again. In your logon messages you will see a line like this:

FILES: 001 RDR, NO PRT, NO PUN

The number next to RDR indicates that you have nnn notes waiting for you in your Virtual Reader. To view these notes do the following:

Type RL (Reader List) and press the Enter key.

The screen display will alter and a type of file list will be shown. The files will be named like this: UQUSER NOTE, UQUSER being the userid of the person who sent the note.

The cursor will be sitting in the CMD column. The functions assigned to your PF keys will be different now. Type PF11 (Peek). The screen display will change again to type out the message you received. When you have finished looking at the message type PF3 (Quit). This will display the reader list again. If you wish to keep the message, type PF9 (Receive), this stores a copy of the message on your area. After the PF9 command has been executed there will be an asterisk shown against the message name. You can now type PF3 to get out of the reader list.

By typing HELP NOTE and pressing the Enter key, you can find more information on the Note command.

### **The TELL Command**

You can use the TELL command to send messages to another terminal user, as long as that person is logged on.

The format of the TELL command is as follows:

TELL name message <enter>

name being the userid of the person you wish to communicate with. You may receive one of the following responses:

CCHELP NOT LOGGED ON                      Self-explanatory  
or

CCHELP NOT RECEIVING; DISCONNECTED

or    The user has a job logged but is running detached

CCHELP NOT RECEIVING; MSG OFF

The user has set her terminal to ignore any messages sent. If this is the case, use the NOTE command to send your message.

*Christine Gibson  
extension 3941*

## **12. Future Developments**

The IBM system, as described in this newsletter, is a 'first release' level of service which will be developed in many directions over time. Current plans include:

- (a) development and support of the SQL Data Base system and CAL software (IIAS & IIPS) as major application areas,
- (b) acquisition of a large range of software, including languages and applications to provide a wide range of services,
- (c) implementation and support of a UNIX virtual machine to provide a significant upgrade path for UNIX users,
- (d) interface of the IBM machine to the DECNET network; at first to allow file transfer between machines but in the longer term to provide virtual terminal capabilities from DECNET machines to the IBM system.

In the longer term we expect developments in 4th and 5th generation languages and so called 'expert systems' on this machine.

However, as always, developments will be oriented to the need of our users and we will welcome requests and proposals for projects applicable to the teaching and research work of the Universities.

*John Noad  
extension 3017*

APPENDIX 1

1234567890= ./STUVWXYZ, #&JKLMNOPQR-":ABCDEFGHI+abcdefghijklmnop  
opqrstuvwxyz@'?:;!\$\*%□1234567890-+( )0-() ≠ ><≤≥≠\*[ ]} { [ ] \* \_ - |  
1234567890= ./STUVWXYZ, #&JKLMNOPQR-":ABCDEFGHI+abcdefghijklmnop  
opqrstuvwxyz@'?:;!\$\*%1234567890-+.) ( 0-() ≠ ><≤≥≠\*[ ]} { [ ] \* \_ - |

