

European Centre for Medium Range Weather Forecasts COMPUTER NEWSLETTER

Fitzwilliam House Skimped Hill Bracknell Berkshire England

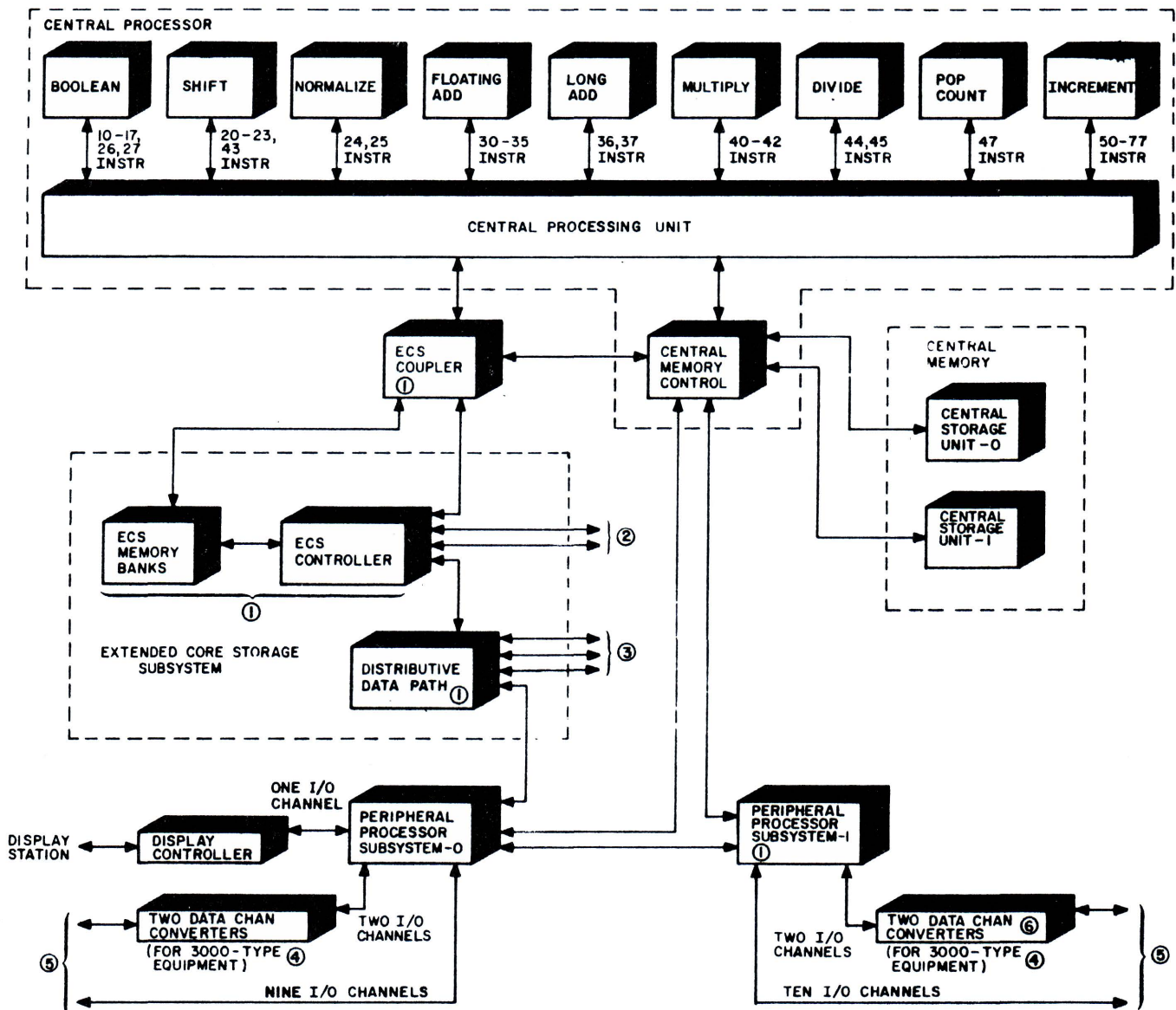
Bracknell (0344) 24777 Telex 847908

In this issue :

Number 5 -- January 1978

Computer Configuration	1
Introduction to Intercom	2
Computer Division Seminars	2
Advice for Users of CRAY UPDATE	5
Machine Performance Statistics	6

Edited and Produced by User Support Section, Brandon House, ext. 286



Computer Configuration

At the time this Newsletter will be published, the acceptance of the CYBER 175, which is planned for the end of January, will probably be passed.

During February the terminals, lines, modems etc., to give access to the CYBER and (via the CYBER), the CRAY at Rutherford will be installed. The detailed plans for these terminals and the changeover from 6600 to CYBER 175, as it affects users, were presented in News Sheet No. 8, distributed 20 January.

This article intends to give an overview of the total configuration operational during the interim period at Rutherford, and the configuration at Shinfield Park with the various extension phases.

Interim Period

At Rutherford, the computer system consists of the CRAY-1 with 500K words memory, one disk controller and four disks. This system is the first one built by Cray Research Inc., and has been used by Los Alamos Scientific Laboratories (New Mexico) for evaluation and development. This system, which is the only one in the field with parity memory, is a rather successful prototype. ECMWF is the second paying customer for it now, and a contract has been signed by United Computing Services to use this system when it goes back to the USA at the end of 1978. The CYBER 175 will have a similar configuration to the 6600, which it will replace: 130K words of memory, 10 PPU's, one printer, one card reader, four tape units and four disks. The main difference is the speed of the processor, which will be two to three times the speed of the 6600, and the capacity of the disks, which will be twice as large as those on the 6600. The system will be accessed via a dozen display terminals and two remote batch terminals in the three Bracknell offices. There will be one RJE and two VDU's at John Scott House, one RJE and four VDU's in Fitzwilliam House and four VDU's, one Decwriter and one Tektronix graphics terminal in Brandon House.

The CYBER and the CRAY will not be linked, but jobs can be submitted to the CRAY via a specially developed tape spooling job transfer system on the CYBER.

Shinfield Park

In October 1978, the CRAY-1 (Serial-1) will be shipped back to the USA and another CRAY-1 (Serial-8) with 1M words of memory will be installed at Shinfield Park.

The new system will have SECDED (single error correction, double error detection) memory, four disk controllers and eight disk drives. It is the intention that the system at Rutherford will be available until the system at Shinfield Park has been installed.

The CYBER 175 will be moved from Rutherford to Shinfield Park, the mainframe will be extended to include 196K words of memory and 20 PPU's. Peripherals will be added in phases. Initially, two disk controllers, eight disks, one dual tape controller, six tape units, two printers, and two card readers will be installed, later four disks will be added (1.4.79) and again later (1.7.79) the configuration will be enhanced with another two disk controllers, four disks, a dual tape controller and two tape units.

The climax of the move will be the acceptance test of the linked computer complex, the link hardware developed by CRAY and the link software by CDC, in November 1978. At that time, the terminals will be moved from Bracknell to Shinfield Park.

The two remote job entry terminals will be installed in the despatch area in the computer block to be operated by the users. The number of in-house terminals will gradually increase to about twenty VDU's and four graphics terminals.

Telecommunications Subsystem

As soon as the acceptance of CYBER and CRAY is successfully completed, the telecommunications subsystem will be installed. This subsystem is under contract with Service in Information Analysis (SIA) Ltd., and consists of Regnecentralen (Denmark) hardware, and specially developed software by SIA. This subsystem will be linked to the CYBER by hardware developed by Regnecentralen; the link software is part of the SIA development.

The purpose of this system is to drive the telecommunication network to the Member States for data acquisition, data dissemination and remote access to the computer system.

.../cont.

Starting with the link to the UKMO, for the vital data acquisition, a mixed network of low and medium speed telecommunication lines to the Member States will be installed in 1978 and 1979, the low speed lines will be gradually enhanced during the years up to 1984 to medium speed lines.

The telecommunications subsystem should be operational by early 1979 to support the operational trials.

The configuration of the system is shown on the next page.

Graphics Subsystem

After acceptance of the telecommunication subsystem, planned for December 1978, the first phase of the graphics subsystem will be installed. For the time being, this subsystem consists of one Versatec 8122 raster plotter connected on-line to the CYBER by an interface, based on a Logical Signal Processor (LSP), to be developed by Systems Reliability Ltd. (SRL).

Another raster plotter will be connected later to the same interface, and the off-line Varian plotter system which is owned by the Centre, will be used as back-up.

Apart from the plotters, the graphics facilities will consist of graphics display terminals and a device-independent graphics software package, which will be developed in-house. A COM microfilm device is planned later.

A first graphics display terminal will be installed early in 1978, to assist in the development of the graphics software package, of which the first phase is planned to be available for operational purposes by the middle of 1979, at which time more graphics display terminals will be added.

- Rob Brinkhuysen

Introduction to Intercom

The first Intercom terminals will be installed within the next few weeks in Brandon House. Other terminals will subsequently be installed in Fitzwilliam House and John Scott House. Consequently, some introductory presentations are being arranged with the intention of explaining the most important facilities, together with some advice on their use. These presentations will be in the meeting room on the first floor at Brandon House. Because of space limitations, attendance must be limited to 15 and the presentations will be repeated as necessary.

Sessions will begin as soon as the terminals are in and running, and will be announced with a News Sheet a week in advance.

- Dave Dent

Computer Division Seminars

January 26 15.00 : K. Petersen - Graphics at ECMWF
February 3 10.30 : A. Riley (U. Leicester) - MANTRAP
February 9 15.00 : I. Mallgrave (Cray Research) - CRAY FORTRAN & Library

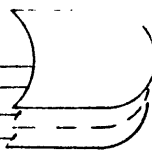
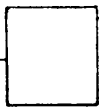
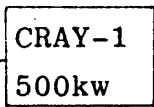
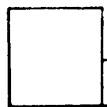
All seminars are held in Brandon House, 1st floor conference room.

The February 3rd seminar will be given by Alex Riley from the University of Leicester, and will cover the post-mortem debugging package MANTRAP. Mr. Riley is one of the original implementors of MANTRAP.

On February 9th, Ms. Irene Mallgrave of Cray Research will give a brief discussion of the internal organisation of the CRAY-1 FORTRAN compiler CFT and the FORTRAN Library FTLIB.

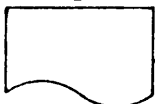
- Richard Friedman

Maintenance control unit

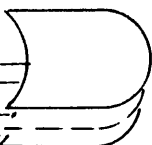
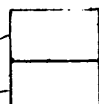
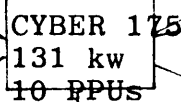


1 DCU-2 disk controller
4 DD-19 disk units

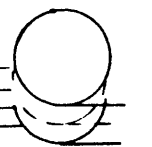
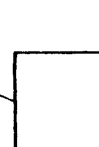
1 580 line printer



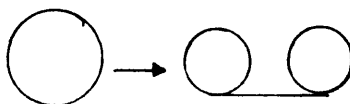
1 405 card reader



2 7154 disk controllers
4 844 disk units



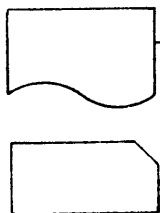
1 7021 tape controller
4 669 tape units



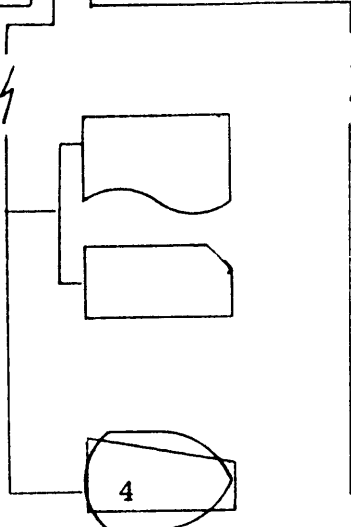
off-line Varian plotter system



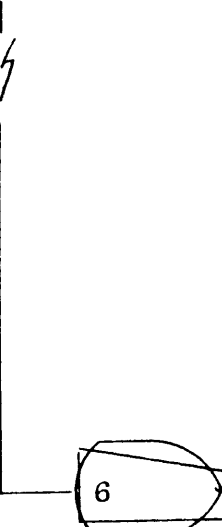
6671 multiplexor



John Scott House



Fitzwilliam House



Brandon House

2 Regnecentralen RJE terminals

10 Newbury 7005 VDUs
1 Decwriter
1 Tektronix 4014

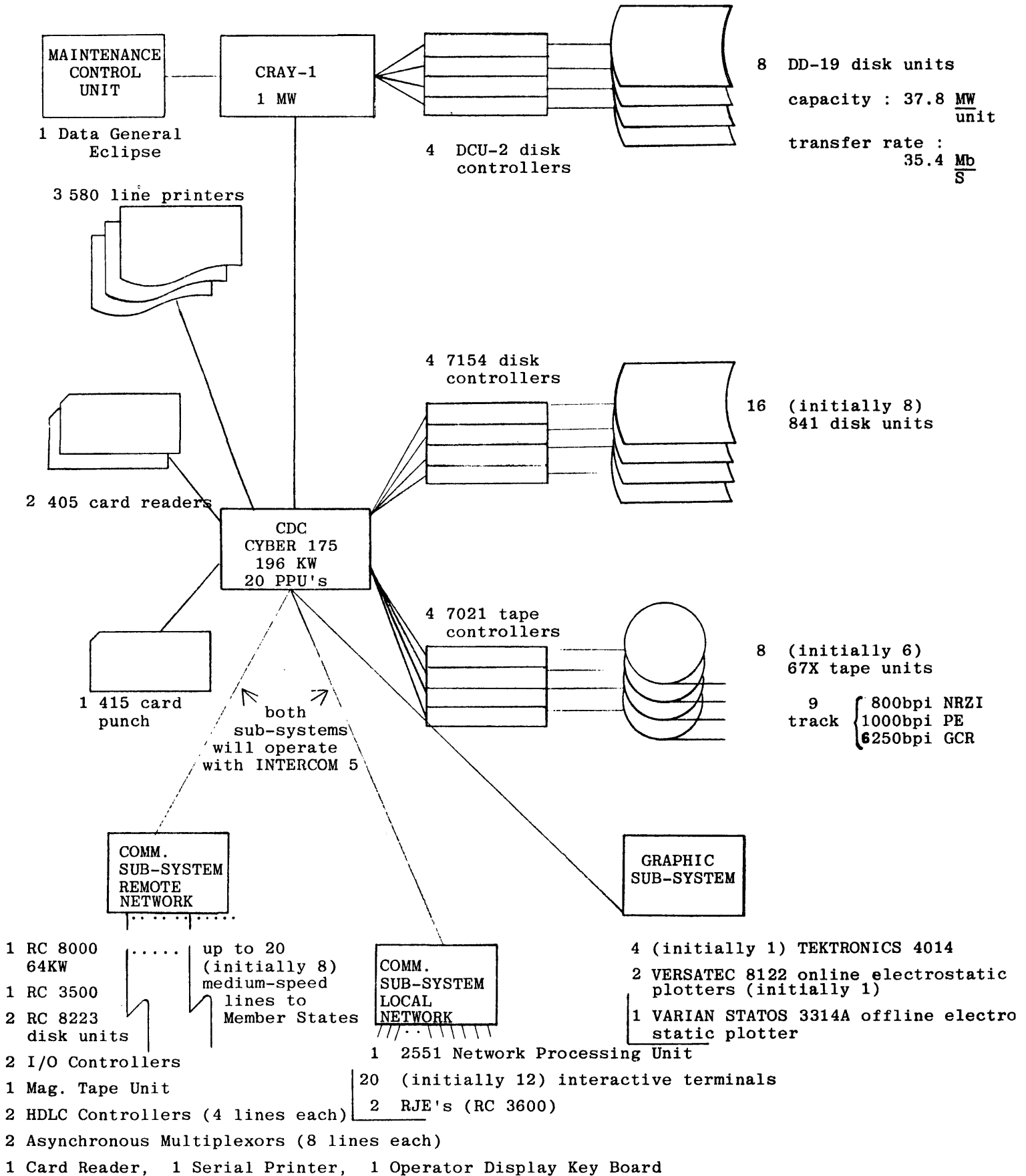
Interim Configuration

CONFIGURATION OF COMPUTER SYSTEM OF ECMWF (FINAL)

Cyber Software : NOS/BE with Intercom 5

Cyber 170 Channel Specifications as in CDC Manual.

Input/Output Specification C170 Computer Systems # 19983600



Advice for Users of CRAY UPDATE

CRAY UPDATE looks like CDC UPDATE. This is misleading. There are so many important differences that each should be approached as a different utility. The CRAY-1 COMPUTER SYSTEM UPDATE REFERENCE MANUAL 2240013 should be used in conjunction with CRAY UPDATE, and is, in general, correct. In this article, we introduce CDC UPDATE users to CRAY UPDATE (- it is not intended as an authoritative document, nor does it seek to amend or contradict information contained in the CRAY MANUAL, which should at all times be consulted when using CRAY UPDATE).

Invoking CRAY UPDATE

UPDATE is called in a similar way on both systems. There are normal, Q, and F forms of UPDATE, and most of the parameter key letters fulfil similar functions. CRAY UPDATE produces by default no output listing. Types of printed listing must be requested using the LIST parameter, as opposed to the L parameter on CDC. There is an L parameter on CRAY UPDATE, but this controls the data set to which printed output is directed.

Q mode CRAY UPDATE requires ALL decks including COMMON DECKS to be requested with *C cards.

Types of CRAY UPDATE

There are two types of CRAY UPDATE:

a) INITIAL RUN

This generates a library from an input data set. CRAY UPDATE recognises any run as an initial run if the first input card begins with either *DK or *CDK.

b) MODIFICATION RUN

This modifies an existing library. CRAY UPDATE recognises any run as a modification run if the first card on the input data set begins with *ID.

The INPUT data set

a) NULL FILE not permitted

Since the type of CRAY UPDATE run is determined by the first directive on the input data set, this data set must not be empty. If an empty file is encountered on the input stream, CRAY UPDATE attempts to find directives in the NEXT FILE!

b) Short form directives only permitted

Only *DK, *CDK, *ID are permitted in CRAY UPDATE. The long forms *DECK etc. allowed in CDC UPDATE are not supported.

c) ADDFILE not supported

*DK on a modification run is the accepted method of inserting new deck in CRAY UPDATE. The CDC facility of being able to direct new decks to be added from a source other than the input data set can be affected by using the *READ directive.

d) Positioning deletes and insertions

The long form for specifying ranges of cards on a *B, *I, or *D directive are supported by both CDC and CRAY UPDATE. There are many short forms available on CRAY UPDATE; they should be avoided as they do not obey the same rules as short forms in CDC UPDATE.

e) PURGE, PURGE DECK, YANK, SELYANK not supported

There is provision in the structure of cards stored in CRAY UPDATE LIBRARIES for some of these facilities to be added later, but they are not supported as yet.

f) EDIT

The *EDIT directive in CRAY UPDATE enables a single deck or range of decks to be written to the new program library with all inactive cards purged. Re-sequencing does not take place

g) CDK

A COMMON DECK is identified to CRAY UPDATE by *CDK, not *CD.

.../cont.

Moving CDC libraries to the CRAY-1

This can be accomplished as follows:

- a) use CDC UPDATE to obtain a SOURCE file;
- b) pass the SOURCE file through a programme to change *DECK to *DK, *COMDECK to *CDK, etc.
- c) use the modified file as input to CRAY UPDATE(N)

Conclusion

It is easy to make errors using CRAY UPDATE. These errors usually occur when trying to use CRAY UPDATE as though it were CDC UPDATE. On most occasions, working through the CRAY UPDATE MANUAL has led to detection of such errors. Though not as sophisticated as CDC UPDATE, CRAY UPDATE has provided a useful means of library maintenance.

- Rex Gibson

Machine Performance Statistics

WEEK	47	48	49	50	51	52
ENDING	27/11	4/12	11/12	18/12	25/12	1/1/78

<u>CDC 6600</u>						
Jobs Central Site	1309	1237	1140	1192	989	72
Jobs Remote	460	410	383	381	243	2
Plots	85	68	49	114	66	2
C.P. Hours	48.7	54.1	80.4	101.1	46.9	101.7
M.T.B.F. (Hours)	168	56	84	84	84	168
Scheduled Availability (%)	96.2	92.5	88.6	96.5	98.5	100
Overall Availability (%)	100	96	92	100	100	100
<u>CRAY-1</u>						
M.T.B.F. (Hours)	7.5	9.5	7.2	11.5	4.6	7.6
Overall Availability (%)	92.2	90.9	94.7	94.8	95.4	93.8

- Eric Walton
