

# GRAPHICS FACILITIES ON THE JADE NORD-10 COMPUTER

JADE COMPUTER NOTE : 2

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14 August 1978

## INTRODUCTION

Several graphics packages are implemented on the NORD-10. These include the Tektronix PLOT-10 A62 and TCS packages and the CERN histogram packages. They have been modified in order to remove bugs and improve performance particularly concerning speed.

The most recent modifications have been to enable the library to be used by Real Time programs as well as background (TSS) programs and to include recent modifications to the CERN histogram packages.

A brief description of each package is given here, together with changes made.

## TERMINAL CONTROL SYSTEM (TCS 3.3)

This package is described in the PLOT-10 manual. It provides facilities to draw lines, define windows and use the cursor on Tektronix storage screens. Many changes have been made to this package in order to reduce the CPU requirements.

## J14014 & J14010

These subroutines have been written so that the user does not have to worry about the correct initialisation calls for TCS. At the start of a graphics program either J14014 or J14010 should be called depending on the type of Tektronix device in use. The screen is cleared and the cursor is moved to the upper left corner of the screen. Alpha numeric mode is selected. The subroutines have one parameter which is the logical unit number for graphical output. For TSS programs this should be 1. For RT programs the number should be the device number for the Tektronix screen e.g. 9 or 34.

e.g. CALL J14014(1)

FINITT

Since the TCS internal buffering facility has been removed there is no need to call this routine at the end of a plot.

#### HDCOPY

The computer now waits for 7 seconds whilst the contents of the screen are copied to the Gould plotter.

#### TKVEC

If you are writing a program which is overlaid the routine TKVEC must go in the root segment.

#### ADVANCED GRAPHING II (AG2)

This package is described in the PLOT-10 manual. AG2 uses TCS and provides a higher level of graph drawing facilities. It is expected that AG2 will not be used significantly. Two changes were made to AG2 during implementation due to word length problems.

#### PLACE

There are two ways of specifying the part of the screen where the graph should go. One is by a holerith literal e. g. 3HSTD and the other is by a number. In our implementation only the numeric form is available.

#### OUBGC

Most of this routine has been dummied. It concerns business calendars and so will probably not affect us.

#### CERN HISTOGRAM PACKAGES - ZHIST & ZH2DH

The ZHIST and ZH2DH together with ZGLIB were written by the CERN DD Division. ZHIST provides facilities for one-dimensional histograms - booking, filling, displaying and storing. ZH2DH provides similar functions for two-dimensional histograms. The routines are described in CERN documents. The changes described in "UPDATES TO ZHIST & ZH2DH" have been made. Titles are now specified as character strings instead of arrays.

Since the logical unit number for graphical output of histograms via the routine ZHPL1 is defined by the call to JI4014, there is no need to call ZGLUN as described on page 21 of the CERN ZHIST document. The second parameter to ZHPL1 is now a dummy.

To plot a histogram on the Tektronix you should use...

```
CALL JI4014(1)
CALL ZGINT
.
.
CALL ZHPL1(NHIST,0,IE)
```

#### SPECIAL NOTES

The AG2 and TCS packages have been compiled in DIRECT-ADDRESSED-CALLS (D-A-C) mode. This results in significantly faster code at the expense of a slightly increased memory requirement. The present Fortran compiler fails to compile part of the ZHIST and ZH2DH packages correctly in D-A-C mode so they are compiled in the normal mode. This means that programs which use AG2 or TCS may be compiled in D-A-C mode but that ZHIST and ZH2DH programs should not.

#### ACCESSING THE GRAPHICS PACKAGE

The compiled versions of the packages are stored on (SYS)GRAPH-LIB:BRF. The NRL load sequence could be :-

```
@NRL
$LOAD <APROG>,GRAPH,FTNLIB
:
```

Only the routines required by the program will be loaded.

Further developments to the library will be noted in the log book and the GRAPH-LIB folder.

