

4.0 COMPILING PROGRAMS USING GRAFLIB

4.1 GENERAL

The NASADIG code installation script combines the subprograms for both SYSLIB and GRAFLIB into one relocatable object library. Thus, an application program is compiled and linked in the same manner regardless of whether SYSLIB, GRAFLIB, or both are used.

4.2 COMPILING ON DEC VMS SYSTEMS

On DEC VMS systems, GRAFLIB object code is contained in the NASADIG relocatable object library file "NASADIG.OLB". If the NASADIG.OLB library file is in the same directory as the program being compiled, the VMS commands to compile and link a program that uses GRAFLIB are:

```
$ FORTRAN program_name.FOR
$ LINK program_name.OBJ,[subroutine_name.OBJ,...],NASADIG.OLB/LIB
```

The brackets [] indicate that the list of user-defined subroutine object file names is optional.

Systems on which NASADIG is installed should define the system global logical variable "NASADIG" as follows:

```
$ DEFINE NASADIG host_name:[directory_path]NASADIG.OLB
```

If the "NASADIG" logical variable is defined on your system, the VMS commands to compile and link a program that uses GRAFLIB are:

```
$ FORTRAN program_name.FOR
$ LINK program_name.OBJ,[subroutine_name.OBJ,...],NASADIG/LIB
```

4.3 COMPILING ON UNIX SYSTEMS

On UNIX systems, GRAFLIB object code is contained in the NASADIG relocatable object library file "libnasadig.a". If the libnasadig.a library file is in the same directory as the program being compiled, the UNIX command to compile and link a program that uses GRAFLIB is usually of the form:

```
f77 -o program_name.x program_name.f [sub_name.o ...] libnasadig.a \
/usr/lib/libX11.a
```

The brackets [] indicate that the list of user-defined subroutine object file names is optional. The above statement is representative only, and may be different on any particular UNIX system. For example, the name of the FORTRAN compiler "f77" varies among different UNIX systems. Check your system documentation for the name of the compiler on your system, and the exact syntax of a command line that invokes it.

Systems on which NASADIG is installed should define the system global shell variables "NASADIG" and "NASAXLIB". For a Bourne shell, the variables would be defined as follows::

```
NASADIG = "[directory_path]/libnasadig.a"
NASAXLIB = "[X_library_directory_path]"
```

If the "NASADIG" shell variable is defined on your system, the UNIX command to compile and link a program that uses GRAFLIB is usually of the form:

```
f77 -o program_name.x program_name.f [sub_name.o ...] $NASADIG \
$NASAXLIB/libX11.a
```

4.4 COMPILING ON DEC ALPHA OSF/1 SYSTEMS

On DEC Alpha OSF/1 systems, GRAFLIB object code is linked in the same manner as on other UNIX systems, except the DEC-specific "-taso" compiler option should be specified to use the shared object form of the X library:

```
f77 -o program_name.x program_name.f -taso [sub_name.o ...] \  
libnasadig.a /usr/lib/libX11.so
```

4.5 SYSTEM CONSIDERATIONS FOR THE X WINDOWS DEVICE DRIVER

UNIX systems with the X11 Release 5 version of X windows may use the X Windows device driver. For this driver to work properly, the following steps should be followed prior to running the application program.

1. Set the DISPLAY environment variable on the host system.

On host systems that will be running the graphics application program under a Bourne shell, issue the operating system command

```
DISPLAY = <workstation_network_id>:0.0; export DISPLAY
```

Under a C shell, this command takes the form

```
setenv DISPLAY <workstation_network_id>:0.0
```

2. Allow remote host access on the workstation.

Issue the following command on the workstation to accept X windows graphical information from a single host system.

```
xhost +<host_network_id>
```

To permit the workstation to accept X windows graphical information from any host system, the command is simpler.

```
xhost +
```

The xhost command is often found in the directory /usr/bin/X11.

For example, if you are running a NASADIG graphics application on a Cray host system with a host_network_id of "beast.jsc.nasa.gov" from a X workstation with a workstation_network_id of "pc1.jsc.nasa.gov", issue the command

```
DISPLAY = pc1.jsc.nasa.gov:0.0; export DISPLAY           (Bourne shell) or  
setenv DISPLAY pc1.jsc.nasa.gov:0.0                   (C shell)
```

on the Cray, and the command

```
xhost +beast.jsc.nasa.gov
```

on the X workstation prior to running the application program.

After the executing graphics application program on the host has drawn an X windows frame on the workstation, the plot may appear to be incomplete. If the plot appears incomplete

3. Use the mouse buttons to display the X windows command menu, and select the Refresh option.

Refreshing the screen will cause the entire plot image to be displayed. The window may be resized by "grabbing" a corner of the window using the mouse and "dragging" it to a new location. When you are done viewing the plot image on the screen

4. Move the mouse cursor into the window, and press any mouse key followed by any keyboard key to terminate the X display window.

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