Appendix Ap.2 Software Support for Proposers

Ap.2.1 Items Available via Anonymous FTP

The following items are available to proposers via anonymous FTP at legacy.gsfc.nasa.gov. The subdirectories are listed in block parentheses.

- text of the XTE NRA in an ASCII or PostScript file [xte/nra]
- figures from the XTE NRA as PostScript files [xte/nra]
- VIEWING User's Guide and source code (described below) [software/]
- PIMMS User's Guide and source code (described below) [software/]
- XSPEC (described in Chapter 8; the installation is described below) [software/xanadu]
- recommd (described in Chapter 8; installation is described below) [xte/software/]
- timing simulation software (briefly described in Chapter 8; installation described below) [software/ftools/]
- the new RPS proposal preparation tools (described below)

Please consult the help file README for any problems or the FTPmap.txt file for a brief look at the locations of files.

Ap.2.2 VIEWING

VIEWING is a stand-alone program that allows users to calculate the XTE viewing window, either in interactive or batch mode. Recall that the viewing constraint on XTE is slight.

The following sample shows the most basic form in which VIEWING may be used:

```
$ viewing
Enter object name (<CR> to quit) > test
Enter RA (hh mm ss.s or dd.ddd) > 23.45
Enter Dec ((s)dd mm ss.s or (s)dd.ddd) > 33.21
 * test (at alpha= 24.0706, delta= 33.4314, precessed)
  is observable between 1992 Dec 24 and 1993 Feb 26
  is observable between 1993 Jun 24 and 1993 Aug 31
Enter object name (<CR> to quit) >
```

In this most basic form, VIEWING assumes a solar angle constraint of 30^o, a period of interest of 1 year starting from the current date, and an epoch of 1950.0 for the coordinate.

Options can be supplied on the command line as name-value pairs (i.e., name=value), which are:

- start=31-mar-93 to change the start date
- range=70-110 to change the solar angle range
- epoch=2000 to change the epoch
- input=file to read multiple sets of object name, RA, and Dec from the specified file
- output=file to save the results in a named file

This program is available via anonymous FTP at legacy.gsfc.nasa.gov in the pub/viewing directory together with up-to-date documentation. VIEWING currently runs on VAX/VMS machines, Sun workstations, and Ultrix DECstations. It is also available for remote use as part of MIPS. Those who wish to run VIEWING on other platforms should contact the XTE GOF at xtenra@athena.gsfc.nasa.gov.

Ap.2.3 PIMMS User's Guide

PIMMS (Portable, Interactive, Multi-Mission Simulator) is designed for the evaluation of source count rates as well as for the simulation of images and spectra. At the time of writing (Autumn 1994), PIMMS outputs information onto the terminal screen and can produce FITS image files. The capability to write photon data in binary FITS format is under development.

The multi-mission nature is fully realized for the evaluation of source count rates insofar as PIMMS allows the conversion of count rates among different missions. For example, given a spectral form - a 10keV bremsstrahlung, say - the observed Einstein IPC count rate can be converted to the XTE PCA count rate. For many GOs, PIMMS will be the easiest way to estimate PCA and HEXTE count rates for the targets that are a requirement of XTE proposals.

The multi-mission nature is less apparent in spectrum and image simulation. This is due to the limited number of calibration files available to PIMMS at the moment. Expansion of the capabilities of PIMMS is under development.

Both PIMMS and the XTE calibration database on which it relies are undergoing rapid development at the moment. More details are available from the anonymous FTP directory at legacy.gsfc.nasa.gov. PIMMS is located here (the software/ directory) as well as the most-current documentation.

PIMMS is currently supported on Sun workstations, VAX/VMS machines, and Ultrix DECstations.

Ap.2.4 How to Install XSPEC

At the HEASARC, many changes have been made to the XANADU X-ray analysis software package -- changes not only to increase options and facilities for the user, but also to allow for ease and flexibility in installation on VAX, Sun/UNIX, or DEC/Ultrix systems.

Previously, to install a XANADU package, the entire XANADU system was needed. Now, packages such as XSPEC, XRONOS, and XIMAGE are available separately, as is the XANADU library package (including the XANADU libraries, command files, and several packages, e.g., PGPLOT, QDP, FITSIO, that are bundled with XANADU). The entire XANADU system is also available as a single tar file (Unix) or backup file (VMS) for all systems.

For ease of file transfer, object code and built libraries are not included in these packages; they can be made available from HEASARC upon request. Installation scripts have been created to build XANADU and its packages from top to bottom. The necessary installation steps are: (i) obtain the appropriate files; (ii) select an area to put them; (iii) extract them from the save-set; (iv) edit a few minor lines depending upon the PI’s particular setup, and (v) run the scripts.

Formerly, the XANADU package had to be installed at the “root” level on UNIX/ULTRIX systems. This restriction required the attention of a system manager. The current release of XANADU allows the base node to be placed an any directory level with only minimal changes by the installer.

After the files are extracted (explicit directions are included in the ftp directories), the installer may need to make several changes to ensure a smooth installation. First, the file initu.com (VMS) or initu.csh (UNIX) (initu.sh for non-csh UNIX users) may be changed to include the XANADU pathname. If the XANADU pathname is included, the VMS user need only include the file

@sitexanpath:[tools]initu (where sitexanpath is the full XANADU path at the installation) in their login.com. If this path is not included in the initu.com, the user must define the logical variable XANADU (with the /trans=conc option) in their login.com, and then type the line @XANADU:[tools]initu in the login.com. For UNIX/Ultrix csh installers, the file initu.csh can be edited to set the XANADU path as an environment variable (using setenv), and users will neeed to source initu.csh in their .cshrc file -- this statement must be in the .cshrc and not the .login file, or commands will cause certain packages to fail! In addition, the UNIX installer must set the environment variable EXT to the machine type (ulx for Ultrix, sun for Sun, etc.) in initu.csh, or it must be set in individual users' .cshrc scripts.

After the installer has finished editing the initu scripts, and has run it or sourced it, the script initp.com (VMS) or initp (UNIX/Ultrix) should be run or sourced to allow the use of various tools and to set the path of the XANADU library and other libraries. No editing of this script is required. For the VMS installer, all that remains is to run the appropriate installation scripts from the top of the XANADU tree. There is one remaining task for the UNIX or Ultrix installer: change several site-specific files to reflect the local XANADU path. This is not necessary in VMS because logical names can be used in data statements and are automatically converted -- but UNIX is a different story. The file chsitedef.sed (in the tools directory) must be edited to reflect the XANADU path. Then, the executable changesite must be run from the top-level XANADU directory. This step is absolutely necessary to obtain a working XANADU system.

After the above steps have been followed, installation is at hand. The UNIX/Ultrix installation is handled completely through the make system. To make all packages, type make install. Or type make xanlib to make just XANADU routines and libraries, and then make XSPEC, make XRONOS, or make XIMAGE. Under VMS, where make utilities are not common, .com files are provided that perform the same functions, named make_install.com, etc. Special instructions will be provided on request for sites that desire to keep old versions of XANADU available in addition to the improved version.

Once the installation is complete, all executables will be located in the appropriate bin directory for the system (XANADU:[vms.bin] or $XANADU/$EXT/bin) This directory is added to user paths when initu.csh is sourced, or on VMS when initu.com is run. Manuals for the various packages are available in on-line form via the xhelp command through those packages, or in hardcopy from HEASARC or through a printout of TeX versions included with the packages. A guide to the XANADU library routines is forthcoming from HEASARC/OGIP and will be available upon request.

Ap.2.5 How to Install `recommd`

The source code for recommd is C. The source is available from the anonymous FTP account (legacy.gsfc.nasa.gov). The following files must be transferred to make recommd work: recommd.c, recommd.h, and edscfnam.txt. The recommd.1 file contains the Unix man page for recommd. An executable version may be obtained by invoking the C compiler on the user's machine. For example,

```
cc -o recommd recommd.c -lm
```

generates an executable called 'recommd.x' that includes the necessary libraries (the '-lm'). 'recommd' then behaves as described in Chapter 8.

Ap.2.6 How to Install the Timing Simulation Tools

The timing simulation tools are distributed as part of the FTOOLS software, available from the HEASARC on the anonymous FTP account (legacy.gsfc.nasa.gov, directory software/). The FTOOLS distribution contains user set-up scripts (see the README file under software/ftools). The code is distributed as source and binaries (the binaries are specific to particular machine architectures). The machine architectures currently supported are Sun, DEC Ultrix, ALPHA, and VMS.

The user does not need to download all of the FTOOLS distribution to obtain the timing simulation tools. The tools were developed, however, with the intent of using them within the FTOOLS environment.

Ap.2.7 How to Use the New RPS Proposal Submission Tools

In an effort to simplify the proposal submission process, the RPS (Remote Proposal Submission) software has been re-designed. Two versions of the new RPS exist: an automated e-mail submission system and an X-Mosaic form-based system. Both are described briefly below.

The automated e-mail system is an e-mail server that uses a few basic commands to process a user's request. The user starts the process by submitting a blank e-mail request (with the Subject: set to XTE) to rps@legacy.gsfc.nasa.gov. The blank request returns the help page which contains instructions and examples to obtain the blank forms, to submit the final version, etc. The blank form is ASCII text, so any text editor may be used to enter values. The entries are name:value entries; the order of the text is therefore immaterial. Once the form has been edited, it may be re-mailed to the above e-mail address. Verification is the default option (not submit). Some range checking is done and errors are flagged for the user. Other options include ‘submit’ which submits the form for verification and, if no errors are found, sends the form to the proposal database and ‘latex’ which returns a LaTeX version of the form.

The user should be aware that, during the testing of the automated e-mail server, there have been occasional long lags between the time a request is submitted for processing and the time the processed request is returned to the user. We believe this is a network traffic problem; if it occurs, however, please let us know by sending the details of who/what/when/where/ etc. to `xtenra@athena.gsfc.nasa.gov`.

The second RPS tool is the X-Mosaic form. Mosaic is a stateless server, so it functions in a manner similar to that of the automated e-mail server. The user must always ‘submit’ an action to the server to obtain or to update a result. The overall appearance of the Mosaic form is similar to the paper forms. This appearance was retained largely for convenience, although the layout of the form may evolve with use over upcoming proposal periods. On-line help is available as with most Mosaic applications.

The URL for the Mosaic form is: `http://legacy.gsfc.nasa.gov/cgi-bin/RPS.pl`.

Currently, only X-Mosaic is supported due to limitations for forms of PC-Mosaic and Mac-Mosaic. As these limitations are removed by upgrades to the server, RPS will be available.

Appendix Ap.3 XTE Personnel

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